

# Hume Coal Project - The Impact of Tailings and Chemical Waste Residual

## Background

The Proposed Hume Coal Project is estimated to produce 3,500,000 tons of excavated coal per Year from its Underground mine over an area of 45 sq. kilometres of underground tunneling.

Under schedule 3 of the NSW Environmental Planning and Assessment Regulation Act of 2016, the Hume Coal mine project is known as a State-designated development. This development is a susceptible industrial development on the pristine natural landscape; it is a State designated Development of untested mining methods in NSW and should not be approved by the IPC.

It is within 100 meters of a pristine national park with native fauna and flora. It is within 40 to 100 meters of a pure water catchment area and a pristine natural underground water aquifer. This water supply is for the surrounding agricultural, rural landscape and its people in surrounding towns and the villages. ( Berrima, Exeter, Sutton Forest, Moss Vale, Bowral, Bundanoon, Burrawang, Fitzroy Falls, Belmore Falls, Medway, Penrose, Robertson, Canyonleigh) and other townships in the southern highlands and the future Water supply for the Sydney Basin, Southern Illawarra districts to the NSW East Coast.

## No 1. Species Impact Statement

The Proposed Hume coal mine facilities and extraction using the feathering coal mining method threatens commercial and domestic livestock, natural wildlife species of wombats, kangaroos, wallabies, rock wallabies, possums, native reptiles and ecosystems of water fish and platypus in our water catchment creeks and rivers.

The extraction of coal by feather mining will destroy the flora and ecological communities of their natural habitats. It is also within 100 meters of land reserved for National Park and declared Wilderness with World Heritage Value, declared under the state Government Wildlife and National Park Act of 2012.

The National Park within the coal mining site is a pristine Greenfield as it houses old-growth forests with sensitive flora and fauna species. Adjoining National parks have critical world heritage significance. The Morton National Park and the Fitzroy Falls reservoir will suffer the industrial effects of the Hume coal project; they are the lungs of the Sydney metropolitan area and carbon sink for the now and future generations reducing CO2 carbon emissions for cleaner air quality.

The National parks must be given absolute environmental priority by the Consent Authorities (IPC) and the Minister for Planning Rob Stokes over the Hume coal mine.

The Current EIS produced by Hume does not comply with a comprehensive separate SIS "Species Impact Statement ".

Its content does not show modelling parameter impacts on threatened species, existing landscapes and vegetation throughout the Hume coal mine being 19 years. Salinity in Australia is a major environmental threat degrading soils in NSW and Northern Victoria. Several industries in Victoria across the Murray basin, a food growing area by land clearing and NSW by open-cut Coal Mining.

There are existing contaminated creeks, salinity in soils and rock leaching chemicals caused by the Centennial coal mine in Lithgow. The EPA finds itself in a difficult situation to rectify the environmental issues here as the lack of qualified personnel and clean up facilities plague the department.

The Upper and Lower Hunter coal developments have affected the Australian Hunter Valley wine-growing industry, and many wineries are wiping coal dust from their vines. This industry is worth billions of dollars in GDP revenue to the Australian Government and the business community.

Bulga and Broke townships in the Lower Hunter feel the social and economic impacts of coal mining on the destruction of their towns (save Bulga . org.au) tells all, for towns assistance from the NSW government a cost not considered when the Government granted coal licenses. The current Trade war between China and our wine industry is economically hurting Australia. Approving another coal mine in the Southern Highlands will only add to the further loss of wine sales.

The Hume Coal project's EIS has many assumptions and theories within its effects on the Environment and people of the southern highlands and Sydney.

The sulphuric acidity and future salinized soils resulting from underground coal mining in the Southern highlands will impact. Currently, statistics estimates on salinity by the EPA alone show that by 2050 17 million hectares of land will be classed as having high salinity potential.

High sulphuric soil salts dramatically affect plant root zones, landscape vegetation and agriculture, livestock pasture crops.

Natural wetlands and surrounding Aquifer and rivers will see an increase in salts as Sulphur acidity decreases the ability of plants to absorb Water through their roots systems via osmosis. The cause of leaf burn and necrosis through increased sodium, Sulphur, and chloride creates nutrient and ionic imbalances resulting in poor vegetation growth.

Mother Nature has no defence mechanisms to deal with this poisonous situation caused by a Hume coal mine.

Therefore the ultimate fate for Mother Nature's surrounding vegetation is "Death."

.This will be the Case at the Hume coal sites.

Salinity and sulphuric acid soils can also have adverse effects on infrastructure and roads.

The Old Hume Highway, a Pedestrian Motor Way, runs along the east side of the Hume coal mine project and the buildings structures of Medway, Berrima, Moss Vale, Exeter and Sutton Forest.

A 186 square kilometres of groundwater can be affected by the Hume coal project with 45 square kilometres of underground Feather mine coal tunnelling (supported by the Hume coal EIS and water ground studies).

The Hume Coal project can affect all Southern Highlands townships and Bowral, Goulburn, Canberra, The Illawarra region, East Coast, and Sydney.

Underground pipes for Water and sewerage, telecommunication cables, newly installed for the new NBN and electricity cables for street lighting and rail safety lightning at rail crossings could be corroded by the oxidation process.

If Consent is given to the Hume coal project, will the Consenting authorities all agree?

The EPA, The local Member, WSC and D P I E , The Minister for Planning and Environment will all consider "The Cost to the Government and the Community"?

Should rehabilitation of infrastructure and environmental derogations become necessary?

And "Who" pays?

Hume coal's unproven feather mining process is a substantial environmental and economic risk based on many trap assumptions within the Hume coal EIS.

A comprehensively mandatory SIS over and above the EIS with World's Best Practice supported by hydration statistics and biodiversity statistics is essential. This designated development will threaten wildlife species, human population, ecological communities, natural habitats, buildings and infrastructure.

## **No2. Threatening Water by the Hume Coal Project.**

**The existing Berrima Medway Aquifer, Pristine Falls of the Fitzroy Falls and Belmore falls,**

**The World heritage Morton National Park and Belanglo National Park,**

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**Bundanoon creek, bobs creek, The Medway rivulet, the Shoal haven River, Wingarribbee River, and other smaller streams.**

**All are subject to contamination from the Hume coal project.**

The Federal Parliament in June 2013 passed an amendment to the environmental protection and biodiversity conservation Act 1999 (the EPBC Act). This amendment by Federal law is the "Water trigger" in place, which requires the impacts of the Proposed Hume coal project to be comprehensively assessed at a national level;

The amendment now permits The Federal Minister for Planning and Environment to deal with the water resource concerns as a standalone issue and set appropriate conditions on the acceptability of significant impacts on water resources by the Hume coal Project. The Federal Minister has the responsibility to protect the Environment and the Public interest. The question here is, has the Federal Minister undertaken a statement on the Hume coal project, and why is his report not available for the public interest?

## FEATHER MINING

Pristine water aquifers and underground Water used in Feather tunnelling of coal extraction react with concentrated sulfuric acid produced from washed coal tailings of excavated coal. The Water used from the Aquifer to keep the coal excavation Feather tunnels damp is excessive and uses more Water than conventional mine tunnelling.

Feather tunnelling, referred to as The New Method of Coal Excavation in "diagram", looks like a Feather with a straight backbone in the centre and 45 degrees offshoot tunnels going out either side of the spine just like a birds feather.

The fundamental reason to mine this way is to collect 70 to 75 % of the coal available to be excavated in a coal seam as in other forms of coal excavation, i.e. long wall or open cut mining, only 35 % to 45 % maximum yields are produced.

Excessive water use for processing and hydraulic drilling of Coal by Tungsten Carbide tip blades /cutters on coal excavators in feather mining is positively essential.

If breakdowns occur, disastrous consequences within the mine can occur. (Explosions /Fire) Therefore, they must be kept cooler to resist wear and tear and sparking methane gas. Feather mining generates more heat and requires more Water than conventional long tunnel coal mining with tungsten cutters.

Therefore it logically follows that the more Water used for the damping of Feather mining tunnels and the cooling of carbide tungsten cutters, the more oxidation and sulphonation occurs. Introducing carboxyl and sulphuric acid groups will collect within the tunnels, coal seam water and coal cavities.

The heat content in the Feather mine is more significant than conventional mines of open cut or longwall mines which use peer and beam support structures for roofing and sidewalls. When sulphuric acid is mixed at a temperature of 10 degrees C, as in the Case with the Hume method, the tailing s and Water mix temperature will rise.

Sulphur dioxide is produced in enormous quantities in the cavities with no peer and beam support for roofing and sidewalls.

The coal seams tailings mixtures, including detergents, have an absorptive power above acceptable levels in this coal mining method.

They cannot be measured or controlled accurately and require several times their weight in Water or Solid-liquid mass to obtain a constant fluid mixture necessary for any diluting of the contaminated water tailings and Water wash in the Feather mine.

The question here, of course, is, can this Slurry of the toxic fluid mixture, which is at this stage contaminated with sulphuric acid  $\text{SO}_4$  and other poisonous chemicals.

Of lead, mercury, nickel, tin cadmium, arsenic, radioactive isotopes, thorium and strontium, methylmercury, pyrites, methane and vanadium used in nuclear manufacture.

Can they be maintained at a safe liquidity level during this 24/7 coal excavation process?

To allow internal mechanical mechanisms of filtration pumps or dilution pumps in use with this contaminated Slurry is challenging due to the confined spaces within the Feather mine cavities.

Feather cavity mining requires less human resources as there is less space, no human resources results in less control adding to OHS risk, and more machine power is necessary to extract coal.

The contaminated tailings slurry has little chance of dilution with Lime or limestone if not in a liquid flowing structure at all times 24 /7, so Lime or limestone dilution or filtration is not the answer to reduce the toxicity of the mine reducing risk.

"It is a trap assumption theory" to suggest that lime dilution is the answer to dissolve heavy metals and acids, Sulphur, nitrates, zinc, lead, methane, tin etc. The toxic poisons produced within the Mine will form a "poisonous Gel "at moderated temperature s to the surface of the waste tailings placed under the sandstone membrane and pristine water aquifer "this is now in solid form".

Sitting under the Hawkesbury sandstone and pristine water aquifer, this poisonous Gel will seep into the bore water holes, ventilation holes and air ventilation ducting, fuel line ducting, electricity ducting, sewerage ducting and amenities ducting .As temperature rises sulphuric acid will absorb into the Hawkesbury sandstone fractures with higher absorption rates.

Thermal geometric heat reduces oxygen levels and increases underground heat, forming corrosive abilities of the poisonous Gel.

This also causes Sulphuric acid to seep into the degraded status of the water aquifer at 120 meters below the surface.

The fracturing of the Hawkesbury Sandstone membrane will allow the pristine Water Aquifer to Poison.

Lime dilution has no guarantees. " Another trap theory assumption."

There are many instances of mines where lime dilution has been practiced still have devastating environmental consequences for the natural landscape and people that cannot be reversed.

The Bulga mines of NSW, The Lithgow mines of NSW, The Queensland coal mines and Tasmanian coal mines all have poisonous acid flows. The Beaconsfield coal mine TAS methane explosion held 17 people underground, killing a human life; it was shut down in 2012.

The mining institute of America and the National institute for occupational safety and health USA show statistics of the devastating effects of sulphuric acid leakage into water tables, groundwater, rivers and natural landscape Green acid slurry leaching Appalachian Mountains mines. In North America, mines in the Joggings and Port Morien, Nova Scotia, suffered a similar fate.

The People's Republic of China is by far the largest producer of coal in the world, producing over 5.8 Billion tons of coal in 2019, or 45% of all coal produced in the modern world.

An estimated 6 million people work in Chinese mines. As many as 40,000 miners die in accidents each year from the poisonous toxicity of the mines. Occupational health and safety for the Hume coal mine workers are at risk.

Most Chinese mines are deep underground and do not produce the same surface disruption of Strip or Feather mining. Feather mining is used for one main reason only, as it will extract more than 70% of the coal seam.

Chinese mines experience severe surface subsidence, negatively affecting farmland as it no longer drains. Land subsidence, stone fracturing and leaching of Sulphuric acid and other poisons are absolute and backed with scientific fact; that is why China does not reclaim vast hectares of land in 1000 hectares for its people or land park use. This is abandoned land is unsuitable for agriculture or other human use of life and is hospitable to indigenous wildlife.

According to the United Nations of World Governments and the Chinese Peoples Republic, the reclamation of subsided ground land in China is a significant national crisis. Most world leaders imperatively recognize this and the newly appointed president of the United States that Coal mining for future Electricity needs, producing higher levels of world Co2, with the coming of world climate changes, killing the landscape. People have a limited future for our next generations, and new forms of sustainable energy must be worked on now.

In China, Coal is mainly used for domestic consumption, which is burned with little or no air pollution control mechanisms and contributes significantly to the visible smoke and severe air pollution in their cities, neighborhoods, rural villages

Using coal for fuel has no future for the generations to come, and the Chinese Republic recognizes this fact.

The question here is for our Consent Authorities (IPC) and the Minister.

### **Is Australia going down the same road as the Chinese?**

(The Paris Agreement must be held up as the moral code of truth on the disastrous effects of coal)

Our land (Australia) is the hottest continent on earth and driest on earth.

Agricultural land in the Southern Highlands is one of the most productive types of land in NSW/Australia and the World.

The emerging viniculture with superb world-class wineries and grazing farms at huge investment to their owners will be affected by the contamination of our soils and pristine water aquifer.

Under the EPBC Water Act, the Minister and the IPC can stop the Hume Coal Project from gaining Consent.

Under all circumstances, the Minister and the Independent Planning Commissioners must put the public interest ahead of this development based on the above effects.

**No3. The Hume Coal project will exceed their Water licenses depleting Aquifer water levels, and Cities will be affected.**

The groundwater study was completed on September 24 2013, by the Southern Highlands Groundwater action Group, Pells Consulting and the University of NSW Department of Environment and Civil Engineering Water Research Laboratory

They concluded.

Water licenses for Hume coal will exceed their development Consent limits, and Water holding licenses will be highly doubtful.

The Hume coal mine project is not just an extraction coal mine but a Chemical producing Industry. Landowner's bores will drain to the mine level at 120 meters below the natural surface of the landscape.

The study concludes that on completion of a 45 sq. km underground feathering coal mine, a drawdown of Water will exceed 120 meters, and this is outside the Hume Mine water license, private landholding and leased area.

It is also outside the EIS drawdown of 2 to 80 meters.

The modelling also shown in the study indicates the extent of the drawdown of Water from the Aquifer affecting the Wingecarribee River. The Fitzroy falls water catchment area is an affected boundary, a n d w a t e r models prove a decline in water level. The Hume coal-water drawdown over 20 years affects an area of up to 186 square Kilometres. This drawdown will undoubtedly affect the future water supply of the Sydney basin, The southern highlands and Goulburn which is already short on water supply and the water supply for the city of Canberra.

**No 4 Impact on Water bores, impact on business, impact on farm sustainability.**

There will be over 100 private bores on private land affected by the decline in Water from the Aquifer due to the water use in the Hume Feather coal extraction.

Licenses will exceed maximum limits causing further decline in water levels and contamination of the groundwater. Surface land results in less to no water supply from existing private bores.

This in itself presents an enormous environmental and human problem. A high financial loss is likely to fall on the Government, landholders of farms, wineries, our people of townships and tourism businesses in the Southern Highlands. They will endure the hardships of less business, trade and Farm sustainability with the loss of Water. Under current Pandemic current and future lockdown circumstances, guaranteed water supply assurances become an imperative consideration for independent planning commissioners to not approve the Hume coal project.

Crop growing, cattle grazing, sheep, and other livestock breeds will be affected due to the contaminated Water and loss of Water in their private bores.

The RIO Tinto mine in the Hunter Valley, the Bulga and the Mount Thorley Warkworth mines impact the wine growers and orange industry.

The location changes have occurred here as Government and communities can see the destruction of their land of Water uses by coal mining and LPG mining. Gas and coal mining licenses in this area are being repurchased.

This should be a formable consideration for the consenting authorities "to buy back licenses for the Hume coal project".

The value of state stamp duty taxes on the resale of land for the State Government, the loss of current existing business and agriculture revenue-producing taxes, the preservation of our fauna and flora and water resources for ourselves and future generations in the southern highlands and Sydney will far outweigh the value of the current Hume Coal project.

#### **No5. Hume coal project will place toxic chronic poison tailings into the Aquifer.**

The tailings of washed coal contain chronic toxicity they include (poison) lead, mercury, nickel, tin, cadmium, sulphuric acid, arsenic, radioactive isotopes of thorium and strontium.

When mercury exposure is deposited within land base water, microorganisms convert to a highly toxic methylmercury form. When humans or animals eat these organisms in the food chain, the accumulated toxins will interfere with human and animal reproductive growth and cognitive behaviour.

The toxins can be the cause of death.

Once tailings water is returned to the below-ground or the natural surface environment at a higher temperature, the change impacts organisms by decreasing the oxygen supply, therefore increasing the toxicity of the tailings.

Local townships in the Southern Highlands will feel the above effects of the water aquifer depletion and contamination in the loss of agricultural trade and production, loss in local business and the Loss of Human Health.

The American NIOSH (national institute of safety and health) reports May 25 2016, journal of occupational and environmental medicine on the impacts on human health of coal mining tailings on Water, Coal workers and the outside general Public.

It provides substantive evidence-based examples where human health is impacted and resulting deaths have occurred.

The NIOSH reports on human health is a considerable concern in Western Europe, China, the USA, Australia and New Zealand.

Pneumoconiosis and Silicosis among underground bituminous coal miners and the local Public are very evident, a significant cost to the community and governments.

Reports and statistics are available and proven, showing fatal occupational lung disease in coal miners and surrounding inhabitants of townships and cities.

On April 5<sup>th</sup> 2010, an explosion of the upper Big Branch Coal Mine in Southern West Virginia killed 29 employees; of the 24 victims left with sufficient lung tissue available for medical examination, 71% were suffering from the presence and profusion of coal macules, nodules, interstitial fibrosis, Silicosis, mixed dust, heavy metals of mercury, Sulphur, shale ash, coal ash containing all toxins mentioned, methane contamination and pneumoconiosis.

Our communities are dependent on the pristine Environment of the Southern Highlands and the benefits it provides for all who live and come here.

The question, of course, is.

Can The Consenting authorities afford an explosion within the Hume Coal Feather mine where Methane and Sulphuric Gas concentrates are significantly higher than any other form of mining?

Where mechanical coal washed wasted tailings with contaminated wastewater of the Dampened coal seams are to be buried underground within the coal feathering cavities following a 45 degree outward direction from the backbone seam for 45 square kilometres. (Noted within the EIS) Thermal geometric Heat content Sulphuric acid, with other toxic flammable metals and methane gases with corrosion capabilities, will collapse the cavities within the mine. Bulkhead seals of coal cavities only have a specific time life before they crack.

An explosion and leakage are highly probable.

A question for the IPC to consider is who will administer the safety of excavated coal voids filled with toxin waste and methane at a depth of over 120 metres. OPHS issues are rampant here

Whilst Posco/Hume is mining within its 20 years of coal excavation.

The EPA NSW acknowledge that they are plagued with staff shortages now and cannot police existing operational coal mines in NSW less starting another.

The Hume Coal Projects suggests in the EIS that they will create 300 jobs; however, it is noted that in the Feathering Coal method of extracting coal, fewer human resources on-site are required, and the mine is more dependent on machine tungsten blades drilling and computer hardware and software to drive the mine.

The question here, of course, is why is this so? Is it because Feather extraction of coal, which is of no new formula, has a higher risk to coal miners? More water usage increases toxic Slurry with coal extraction at 70% of a coal seam. Therefore logic suggests more flammable toxins and higher danger levels to the coal employees and the Environment. 300 jobs could quickly diminish with OHS impacts of the mine.

Tourism, Accommodation, Food culture, Wineries, Crop and Livestock harvesting, The famous Robertson potatoes, The Show Gardens, Hotels of international, historical and local significance of world standard, The Tourist facilities, the travelling Public, The historical townships of Berrima with the best tourist award for NSW are all in the Southern highlands.

Arts and Crafts, literature, entertainment, Schools, Hospitals, Clubs, Retirement residences, villages and locally living highlanders need the IPC to place the Public interest ahead of Hume coal.

World tourism will come into the Southern highlands when Wollongong sets its sites on receiving international cruise ship tourists into its harbor.

**No 6. A big hindrance Issue is confronting the Federal, State governments with the Proposed Hume Coal /Posco Project.Negative consequences.**

Feather mining of coal cannot be sustained at a viable economic level of production for Hume Coal.

Should negative environmental consequences occur?

The breaching of consent conditions by Hume Coal/ Posco poisoning of the water aquifer and surrounding national park landscape is a costly environmental catastrophe for the NSW government

An impossible amount of capital will be necessary to rehabilitate land and Water once Posco has left and returned to South Korea. Will the rehabilitation cost the same as the revenue collected from the mine for the NSW government, or will it cost far more?

Bringing the site back to a Natural Original State "once Hume coal is gone would not be possible with this Hume Coal mine as the sulphuric acid content in the tailings going into the mine voids is too large in quantity. Contamination of the Aquifer will certainly breach consent conditions.

Sulphur bearing minerals of pyrite s reacts with Water forming sulphuric acid, and elevated concentrations of this acid/Slurry cannot be neutralized by acid mine drainage or Lime content to neutralize as the tailings are not in surface ponds.

Therefore a breach of consent conditions for the mine is exceptionally highly likely.

The costs of rectification of the Water Aquifer leaves no assurance for the future water supply of Sydney and denies make suitable for the Southern Highland Towns, their people and natural landscape.

Who will bear this cost of rehabilitation should contamination of Water and Environment happen ?

What are the guarantee's in the EIS and the SIS to the Environment? To the people of the southern highlands? To Sydney water? To the Federal, State and Local Government from Hume Coal / Posco?

Has an effective comprehensive and substantive SIS been completed showing impacts on people of the Southern highlands and natural species and parks in line with the Environmental Planning and Assessment act Section 5?

No, it has not.

A "Species Impact Statement". The Hume Coal Project Must guarantee and scientifically show that it will impact no natural species of wildlife, flora, ecological species or humans. It should mandatorily be guaranteed and placed on public exhibition for public determination and the determination of the independent Planning commission.

**No7. Hume Coal project Statement: A Fact Stated by Hume coal in their EIS and Sulphuric acid contamination.**

Hume coal intends to extract 3,500,000 tons of coal per year from their underground coal mine.

Geology and Chemistry notes show that for every ton of coal washed for export, approximately 3% is wasted Tailings mass.

This solid mass feeding into the empty Tailing cavities of the underground Feather mine is known as sulphuric acid slurry. This is a highly corrosive mineral acid; the molecular formula is  $H_2SO_4$  with a 98.079g/mol molecular weight. It takes on an explosive gaseous condition when mixed with  $H_2O$  or  $O_2$  and becomes a liquefied sulphuric Chemical. All toxic chemical composition, polluting the natural water Aquifer, will fracture and corrode the Hawkesbury Sandstone membrane below the Aquifer.

At a production level of 3,500,000 tons of coal per year, there will be a tailing mound mass of 105,000 tons of sulphuric acid Slurry produced per year, and Over 19 year period of the mine running, this will amount to approx. Two million tons of sulphuric acid slurry made.

Hume Coal EIS states, "The tailings are not going to be collected and disposed of in tailing ponds at the surface of the coal mine site. Where they can be assessed by the EPA, the mining and planning department and local council WSC.

They are going underground.

**No 8 The Hume coal Project needs a separate EIS for waste "tailings disposal going underground".**

**What impact will 2 000,000 tons of sulphuric acid slurry have on the water aquifer, the Hawkesbury sandstone membrane and surface landscape?**

There are no evaporation statistics provided for surface tailing ponds or surface water for the day-to-day operation of the coal mine; what happens to surface Water when collected Water is exposed to climatic elements? Evaporation of Water has not been addressed nor in underground tailing cavities within the mine itself.

No modelling data shows sulphuric acid levels of poisonous material within the tailing cavities and their impacts on the Aquifer. Weights, Structure, Volume, Form and Viscosity should have statistical data on

Lead,mercury,nickel,tin,cadium,arsenic,thorium,strontium,methylmercury,calcium sulphate and Pyrites H2SO4 they are all present in the mine .

**No9 Hume Coal project Pillar and Beam Roof Top Coal Tunneling.**

This is known to have failed clearance in many American and Australian coal mines ventilation drainage is not safe proof. The Tasmanian mine in 2012 was an example (BEACONSFIELD MINE). Any collapsing of cavities subsequently will fracture the Hawkesbury sandstone membrane furthering the water aquifer s ability to be engulfed by toxic sulphuric acid tailings at an m u c h faster pace.

A section of 4.5 sq. kilometres taken in the study by the SHCAG and the EL349 shows clearly that 20 megalitres of tailings contamination will flow each day into the Water aquifer should the Hawkesbury sandstone membrane become fractured. This is for tunnel mining. We can double this for coal feathering mining.

Over the life of the underground tunnelling of coal, the Sedimentary Hawkesbury sandstone membrane, porous, will be swamped with Toxic tailings. It will increase by ten times this amount as the tunnelling is for 45 sq. kilometres.

With fewer hands-on, human safety guidance in the underground mine are placed in jeopardy.

It is highly dependent on mechanical machines working with computer and software systems working 24 /7 hopefully with no downtime. Any mistakes or breakdowns will result in failures of devices that are robotic.

What are the consequences of Machines and computer systems failure? If electricity blackouts occur, which are common in the Southern Highlands, what backups do we have in the Hume mining project? And what backups of electricity do our towns and villages have from protecting themselves from coal dust, noise, and clean filtered Water.

Have the consenting Authorities (IPC) considered the consequences of machine breakdowns that are not addressed in the EIS?

**No10. Can the Aquifer recover?**

The Aquifer cannot recover from this toxic intensity alone. In response to the questions raised in the EIS of groundwater recovery through natural rainfall and surface water inflow, this is based on an assumed continuation of past rainfall and Aquifer recharge patterns.

"This is a trap Assumption".

The most recent information published by the Intergovernmental Panel on Climate and Climate Change clarifies that the validity of such an assumption is improbable.

Recent observational data show that relative to the worst-case scenario model developed by the IPCC Climate change is occurring at a much faster rate and at a greater magnitude than anticipated.

The IPCC noted that the notably significant upward increases in climate change rates coupled with an inherent uncertainty associated with limited temporal data elucidating the groundwater extraction relationship with underground coal mining direct the IPCC to consider underground Coal seam mining with "great precaution and intellectual caution" as its effects on the water aquifer cannot be recovered or reversed. This assessment also applies the Feather mining process. In fact More so, as more Water will be drawn down from the Aquifer and ground Water to suggest in the EIS that only 2 to 80 meters will be drawn down is an assumption.

What are the consent authorities going to do if the drawdown exceeds 80 meters? At this level, the land is DRY the existing Landholders bores are already at 120 meters below surface for Water assurance, should the Water drawdown by Feather mining move down to this level, the land is Drier, andcontamination is assured.

#### **No 11. The Consent Authority.**

The EPA's consent authority and Minister are obliged to regard the public interest Section 791(e) and consider ecologically and sustainable Water principles with all developments where these issues arise. The decision-maker must follow the relevant codes of section 791(E). In the Case of the contamination of the Water aquifer concerning Public interest, i.e. The Battle for Beria, Shut the Gate, No Coal Southern Highlands local Residential and General public support groups, local government support, Federal and State Political members support groups, Local business support, local infant school s and high schools support groups, Nanas for no Southern coal highlands protecting their Grand Children, Media support, and Environmental groups The Colon society, The Wilderness Society, SHCAG members etc. "This Public Interest is a Priority and holds Privilege over any decision on Consent and is covered by the law. Section 791(e)

Consideration must be given to matters of public interest and the conservation of biological diversity and ecological integrity. This, in essence, means that the consenting authority is obliged to approach this matter with extreme legal caution, conscious social notice and make decisions for the Environment and the Public interest. There are no full scientific certainties or guarantees available, as is this Case for the Hume Feathering Coal mining Project.

If the Hume coal project and the consenting authorities have certainty that Hume Coal will not harm the pristine water aquifer, will not harm flora and fauna, will not harm the National parks will not damage the water catchment areas, will not harm the health of our Infants in schools with coal dust and noise whilst learning in their formative years (Robertson Infant school on the rail line) and the people of our southern highlands villages and towns and Sydney water. Then the Consenting Authority must avoid practicable decisions where severe irreversible damage to the Environment or our people occurs. (Section 791e)

#### **No 12 Management of underground Tailings and waste.**

The seriousness of the mining tailings underground methodology is. Can the toxic tailings be managed with proper mining engineers and human scientific resources, mine employees and the necessary heavy equipment to dispose of tailing toxic waste, adopting a safe work practice for the mineemployees and local Environment?

Environmental control and transparencies are paramount and mandatory on such a designated development as the Hume coal project. The underground tailings must be available at all times for the appropriate environmental State officials and Local Council Officials to inspect the tailings on a 24/7 basis with scientific testing. Water contamination reports, hydrology reports on decreasing water levels, land subsidence reports, Environmental and Public inspection reports of public interest and safety are appropriate in protecting the people and the Environment of the Southern Highlands.

The Aquifer lays to the top of the sedimentary porous Hawkesbury sandstone membrane with coal seams to the bottom of the sandstone membrane. This membrane is to be drilled or bored for the Collection and Use of Water in the Feather mining process, the extraction cavities of the coal seams will then be filled with the toxic tailings produced from the washing of coal. Two million tons of poisonous Gas and Mass liquid of Sulphuric acid is buried in 19 years. The boreholes and gas extraction holes in the Hawkesbury sandstone membrane are open and porous to Steel or High tensile plastic PVC piping for bores, ventilation ducts, power ducts.

These ducts corrode and splinter if subjected to high acid conditions. The absorption of the corrosive sulphuric acid into the sandstone membrane will corrode the membrane, and tailings will seep into the fractured sandstone membrane and the declining water level of the pristine water aquifer every year.

Capillary action within the sandstone membrane and around bores channels and ducts moves upwards, not downwards, taking the corrosive sulphuric acid as it moves toward the Water Aquifer and then to the land surface.

It will not dissolve; it remains constant within 45 sq.—kilometres of land.

Should the sandstone membrane fracture due to subsidence or gas explosion, collapsing the tailing holding cavities as mentioned earlier. A catastrophic environmental impact of the tailing waste on the Water aquifer and Environment will occur.

The life of the Aquifer will highly likely and inherently be killed and poisoned in 19 years. The water licenses of the Hume coal mine have no guarantee of showing water quantities used each year; they will invariably, like most other mines worldwide where (resource data is available ), will exceed their allowance's.

This has the potential of leaving behind a devastating environmental landscape a disaster for the existing Southern Highland towns of Berrima, Exeter, Burrawang, Bowral, Robertson, Fitzroy falls Sutton Forest, Medway, Bundanoon, Moss Vale, Canyonleigh, Goulburn, Sydney water, Canberra and their inhabitants, a disastrous environmental condition for the National Parks Wildlife Fauna and Flora. Local Businesses, landholders of agriculture and Sydney water will be affected more likely poisoned... No Water aquifer can sustain such contamination and dilute in itself, with 2,000,000 tons of sulphuric acid being placed within it. This has been proven and shown to be the Case in USA coal mines. As the Green Sulphuric Acid flows, it contaminates the remaining Water in the Aquifers at a much higher rate, which is constantly decreasing in volume due to Water used each day to extract coal.

With each year of variable, unpredictable rainfalls due to climate change, the concentration and contamination of land have a much higher percentage to increase. There are numerous Australian, USA and Asian and Chinese Wastewater Management disasters in the Environment worldwide.

We must preserve our Water for ourselves, our children and future generations

The Independent Planning Commission has been given substantive facts for not

Consenting to the Posco Hume coal mine for all the above reasons.

Resource data is available.

Prepared by

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