

**INQUIRY INTO BENEFICIAL AND PRODUCTIVE POST-  
MINING LAND USE**

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**Date Received:** 23 June 2024

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I have lived in the Hunter Valley all my life and spent decades driving from Newcastle to Muswellbrook and other upper Hunter towns as part of my job.

During that time, I have seen the valley change from a beautiful, largely agricultural and forestry area that attracted tourists, to an area more dominated by coal mines, with worsening air quality.

Coal mining companies, largely foreign owned, have pulled billions of dollars out of this area. While individual coal mining workers can point to high wages, it is very hard to see that this industry has benefited the area. Some residents that I met had to leave because of high rents in competition with miners, and worsening air quality. Agricultural endeavours and coal mining have frequently been at odds over water use and dust.

Nothing has convinced me of the power of the coal mining industry and its influence over politicians and planning laws so much as the experience of Bulga. Once one of the gems of the Hunter Valley, a little colonial era village on a green plain surrounded by black hills, it now has a massive, I repeat, massive coal mine on its doorstep, losing its quiet, clean beauty, to a noisy, dust filled moonscape.

There are already thousands of coal mine voids that have not been rehabilitated or have been poorly rehabilitated. With more big mines due to close in the years to come, poor or non-existent rehabilitation poses a continued threat to our fresh water supplies, whether above ground, or groundwater. The voids have a great potential to damage our groundwater by making it far more saline and contaminating it with heavy metals.

We need this water. So it is imperative that we protect our sources of fresh water diligently. I quote now from Kari Dahlgren, published in 2022 because she describes the process succinctly. “..the majority of mine voids will act as terminal sinks, they will decrease the pressure of groundwater and be a permanent draw on aquifers in the world's driest inhabited continent. However, terminal sinks are still deemed preferable to allowing the water to flow from the void into the groundwater, called groundwater seepage, which contaminates the groundwater supply with saline water from the pit lakes. Mapping groundwater, potential heavy metals, and leachate, and predicting temperatures and rainfall predictions, at such a vast timescale is extremely difficult, and no two mine voids will be exactly the same. The stability of the landform is also in question until the hydrological equilibrium is reached, and thus these areas are unlikely to be accessible to the public for many years. Mine plans have already been approved leaving these final voids. Changing the plan in retrospect or backfilling the voids would be expensive and doing so is not required by regulators.”

We absolutely cannot allow coal mining companies to continue to walk away without filling the voids and rehabilitating the land.

It is all too easy to propose an alternate use for mine voids that avoid the need to fill the void. Companies can paint beautiful pictures of recreational lakes, hydro power sites, aquaculture, tourism and other “imaginative and hopeful futures”. These seem to be a fantasy “the pro-coal lobby is encouraging through presenting the final voids as opportunities for economic diversification. These speculative endeavours generate

hope and displace political demands, despite their general infeasibility.” Dahlgren 2022.

The important word here is infeasibility. If we go back to the hydrology and geology the need for fill is imperative because most voids will be far larger and deeper than voids that have been redeveloped in other parts of the world. They will be wet terminal sinks with increasing salinity and heavy metal concentrations potentially able to make our groundwater in many areas either inaccessible, or unusable, or both. And they could take hundreds of years to reach an equilibrium between water pooling in them or moving out of them.

Productive post-mining land use (PMLU) has the potential to bring many benefits to communities in traditional mining areas as well as to the people of New South Wales generally. Ensuring these benefits are fully realised will require substantial and long-term policy, regulation and funding commitments from the NSW Government. I make the following recommendations.

**1 - PMLU reforms should insist that voids and waste ponds must be rehabilitated with the priority being the protection of groundwater and surface water.**

A PMLU reforms should call for the immediate and comprehensive environmental rehabilitation of abandoned coal mining sites and existing mines as they close, wherever possible avoiding final voids.

Any alternate treatment of the land that avoids filling the void must demonstrate how ground and surface water will be protected from salination and heavy

metals and other mining contaminants and that groundwater availability will not be affected.

It should include mandatory monitoring conducted by government-selected independent assessors, starting with base-line testing of ground and surface water for salinity, heavy metals and other contaminants, and methane emissions.

## **2 – Environmental standards must be maintained or enhanced by PMLU reforms, and mine leaseholders must remain liable for rehabilitation failure in the long-term.**

Mine leaseholders have been permitted to cause severe and widespread environmental harm on condition that they permanently rehabilitate mine sites to strict standards and viable alternative uses including ecosystems and agricultural lands.

Term of reference (g) notes the need for a robust regulatory framework – this should include a guarantee that PMLU reforms must not be made at the cost of reduced environmental outcomes. Rehabilitation and land restoration standards must be maintained or enhanced.

Mine leaseholders must retain long-term liability for failed rehabilitation.

PMLU developments should be restricted to already-disturbed mining land. The IEA recognises that environmental rehabilitation can help improve quality of life and strengthen social cohesion, thereby enhancing the appeal and growth potential of post-mining areas as well as fostering local culture and identity.

### **3 – Mining areas such as the Hunter Valley need an integrated landscape restoration plan, and a dedicated public authority to implement it.**

There are 22 coal mines in the Hunter Valley sprawling across hundreds of thousands of hectares of mine-owned land. Most of these mines are due to close in the coming two decades. The landscape-scale impact of mining, and the end of mining, in the Hunter call for a landscape-scale restoration plan.

This plan should be developed and implemented by an independent, statutorily empowered and well-resourced public authority, staffed by experts in hydrology, geology and biodiversity and free from coal industry influence. This is an essential element of the robust regulatory framework envisaged by term of reference (e).

### **4 – Land restoration is a crucial industry and big employer in the post-mining transition.**

The mine rehabilitation/ land restoration industry should be recognised as a critical and developing industry and given the recognition it deserves.

The scale of the mine rehabilitation and landscape restoration task in coal mining areas like the Hunter Valley is enormous, but the state has a critical knowledge and skills gap in implementing that task.

The Hunter Valley is ideally placed to become a national and global leader in post-mining landscape restoration. This will require investment in training institutions like TAFE, and possibly the establishment of new collaborative research institution such as an

independent Centre of Excellence as proposed by Hunter Renewal.

**5 – Post-mining developments must be driven by meaningful public engagement and deliver lasting benefits for local communities.**

The wind-down of the coal industry has profound implications for mining-dominated communities, especially in the Hunter Valley. Local communities have the most at stake in the transition and must be centrally involved in shaping the development of new industries. This will require changes in planning processes, but should also include new models of development that maximise local benefits such as community-ownership and profit-sharing schemes.

**6 – The NSW Government should facilitate the return of some mine-owned lands to First Nations people.**

Access to country is fundamental to First Nations people's self-determination and ongoing practice of culture. The closure of large mines offers a unique opportunity to return portions of unmined buffer lands to First Nations groups and deliver real and continuing benefits to Aboriginal people. This would help ensure the benefits of mine closure were shared as contemplated by term of reference (e). The government should facilitate this process in collaboration with First Nations groups.

**7–Any cost savings for leaseholders resulting from PMLU reforms must be returned to the local community to be invested in community and environment projects.**

PMLU reforms should be directed solely at benefiting the community and the environment.

## **8 – The government must plan for a rapid pace of change.**

The NSW Government's *Future Jobs and Investment Authorities: Issues Paper* – currently on public exhibition – cites an outdated IEA forecast that global coal demand will reduce by 30% by 2050. More recent estimates are that the transition will occur much faster than that. The IEA's March 2024 forecast is that coal demand will fall by at least 40% and up to 90% during that period.

As the impacts of climate change worsen, it is likely that global efforts to phase out coal will intensify. As so much Australian coal is sold to Japan changes in that country alone can have a huge impact on mine viability.

The government must have legislation in place so that mining companies can't walk away from effective rehabilitation leaving the people of NSW with thousands of hectare of ruined land and water, and footing the bill for rehabilitation.

Most coal mines in the region have approval to leave what are termed 'final voids'. Mine final voids are the large holes that are left in the ground after mining operations have finished. Mines have approval to leave



these large holes rather than to fill them in, even after the landscape has been technically rehabilitated.

To many in the local community, the final void is a permanent scar on the landscape. It is a reminder of destruction and loss – that which has been taken from the land and will not be replaced – which the evocative terminology ‘final void’ makes all too clear. It is also a source of concern about the environmental impact of leaving these large holes, most of which will become large lakes and hence permanent draws on groundwater supplies or potentially contaminating sources of saline or heavy metal seepage. The debate is as much about hydrology and geology as it is about absence, loss, and ruin. Through the acknowledgement of this loss, an emerging politics drawing on Indigenous dispossession is taking shape in a way that expands out to oppose further ruination (Stoler [2008](#)). However, the void's material absence can also serve as a base for potentiality, which the pro-coal lobby is encouraging through presenting the final voids as opportunities for economic diversification. These speculative endeavours generate hope and displace political demands, despite their general infeasibility.

There are currently approved plans to leave at least forty-five final voids, with a total of 6,050 hectares of voids in the Australian state of New South Wales. This is a total area greater than Sydney Harbour (Walters [2016](#)).

However, at the point where the mine is no longer economically viable, where the coal seam is so deep that the cost of removing the overburden is higher than the value of the coal underneath, the mining process ends. Thus at the deepest point, mining stops. This

leaves a gap where there is no further overburden to backfill the previously advancing void, leaving a final void. This is not the only way to design a mine, but mine plans in this region are crafted on optimizing the profitability of the mine rather than taking into account minimizing final voids (Walters [2016](#)).

Most of the final voids in the Hunter Valley will be what are called terminal sinks. The life of a terminal sink void is that it will first begin to fill with groundwater, because the void is deeper than the groundwater level. Evaporation will be relatively slow at first, as the surface area of the forming lake will be smaller. Eventually, as the groundwater and precipitation continue to fill the void further, the water level will rise and the surface area of the lake will expand, eventually reaching an equilibrium where inflows equal evaporative losses. Reaching this equilibrium will take a very long time. For the Liddell mine, the estimate is fifty years; for the Drayton mine, it will take more than 200 years; whereas for the Mount Thorley Warkworth mine, the estimate is 800 years (Walters [2016](#): 10).

Over time, most of these pit lakes will also become more saline, as evaporation continues and inflows from groundwater continue to contribute salts and, in some cases, heavy metals. Because the majority of mine voids will act as terminal sinks, they will decrease the pressure of groundwater and be a permanent draw on aquifers in the world's driest inhabited continent. However, terminal sinks are still deemed preferable to allowing the water to flow from the void into the groundwater, called groundwater seepage, which contaminates the groundwater supply with saline water from the pit lakes. Mapping groundwater, potential heavy metals, and leachate, and predicting

temperatures and rainfall predictions, at such a vast timescale is extremely difficult, and no two mine voids will be exactly the same. The stability of the landform is also in question until the hydrological equilibrium is reached, and thus these areas are unlikely to be accessible to the public for many years. Mine plans have already been approved leaving these final voids. Changing the plan in retrospect or backfilling the voids would be expensive and doing so is not required by regulators. Despite the legal allowance, the final voids have become a reputational problem for the mining industry; in their terminology, a 'legacy issue'.

The options included recreation, entertainment, hydropower/alternative energy, and tourism. The more specific ideas were theme park, bike trials, rock climbing/abseiling, golf course, film set, floating village, and surf park (Golder and Associates [2016](#)). The feasibility of these ideas for the Hunter Valley was deemed to be beyond the scope of the workshop and, as mentioned earlier, the fact that most voids in the area will be larger and deeper than the examples in other parts of the world, be wet terminal sinks with increasing salinity and heavy metal concentrations, and take hundreds of years to reach an equilibrium and thus be released for the public's use makes the practical realization of such ideas highly questionable. However, their realization does not matter for the coal industry. It is the voids' potentiality that must be maintained through these hopeful 'potential end uses'.

It is hope not in the continuity of mining itself, but about the potentiality of affluent living in the midst of its environmental destruction.

Thus, within the conditions of the Anthropocene, ongoing destruction is enabled through appeals to hope and imagination, rather than legitimate plans. For example, I was made aware of other reports on mine repurposing that have been commissioned by the coal lobby, but they have not been publicly released because they could be construed as industry policy, and thus the impossibility of the alternative end uses would be publicly acknowledged. Releasing the community workshop report, however, was deemed appropriate because it merely reflected community *desires*, rather than being an account of coal industry policy.