

BULK WATER ENTITLEMENT SUBMISSION from LATROBE VALLEY SUSTAINABILITY GROUP

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About the LVSG

The LVSG is a grass roots group of local citizens from Traralgon, Churchill, Morwell, Moe and surrounds, who have been campaigning since 2009 for a phase out of all coal and natural gas operations in the Latrobe Valley and for a just transition to truly sustainable and environmentally sound industries and lifestyles to provide alternative employment to the jobs that will be lost as the power stations close, hopefully by the early to mid 2030's, in line with their declared closure dates. Our perspective is that we as individuals all must bear some responsibility for fighting climate change and that we must think globally and act locally.

We also campaign on environmental issues such as protection of local biodiversity, forests, fighting pollution and supporting sustainable industries for our local area.

At the moment, there are over 220 people on our contacts list.

We are aware that the Loy Yang mine void will be just one of three coal mining voids that need to be filled with water to become pit lakes after the power stations close in the mid 2030's.

In total this will require about 2350 GL of water (about 4.7 Syd-Harbs) to be extracted from the Latrobe River System. The expectation is that the filling will take about 20 years after electricity generation ceases at each pit site to fill the voids to a level which is deemed sustainable.

WHY DO THE MINES HAVE TO BECOME PIT LAKES?

There is a need to weigh down the bottom of the mine pits to prevent the underground aquifers from erupting into the bottom of the mines as well as to provide stability of the water pushing against the batters to stop them from eroding away and causing slippage of the surrounding land into the pit. It is infeasible to replace the coal taken out of these voids with rock and other solid materials as the logistics and cost would be prohibitive, so water is the only possible way in which this can be done.

At the moment the aquifers are depressurised to stop them from erupting in the bottom of the pit, but depressurising them is not a permanent solution as it would need to be done in perpetuity, long after the mining companies have relinquished the land. This is something that can't be left for future generations to do. The topmost underground aquifer is just 10 m deeper than the bottom of the mines now and another aquifer is 15 or so metres below it. These aquifers are fed from water collected high up in the Strzeleckis and the Great Dividing Range and with a fall of over 1000m in some cases produce a lot of head pressure on the

bottoms of the pits. This pressure would erupt from the weakest point, which is at the bottom of the pits.

If they were to erupt, then natural springs would dry up and feed into local rivers and streams would be significantly reduced and so would farmers bores would also stop flowing. The effects on the Gippsland Lakes would be catastrophic.

As well, water is needed to stabilise the sides of the pit – the batters, because it will push back against the forces tending to push the mine wall downwards into the pit. The drying of the water table at shallow depths radiating out from the edges of the open cut will also experience a re-watering enabling the surrounding areas to reverse the trend since the mining began of sinking. This will help stabilise the landscape around the edges by reducing the height differential that has been causing earth movements downwards toward the deepest parts of the pit.

COMPETING STAKEHOLDERS FOR WATER

The Latrobe River catchment used to collect about 1000 GL of water annually when measurements were taken in the 1970's, but this was down to about 600 GL by 2019 according to work done by departments inside what was then called DELWP.

The decrease in the supply of water was due to the effects of forestry and climate change. When forests are cut down, the new growth is water hungry for the first 70 years of life and therefore there is less run-off and less water available to sink into aquifers.

Rainfall has decreased in most parts of Gippsland as the Planet's atmosphere and Oceans have warmed. The warming also causes extra evaporation and therefore less run-off into streams.

Before white settlement, all of this water ran into the Gippsland Lakes. Today, the power stations collectively still use about 64 GL annually and Hazelwood still claims their annual entitlement of 11 GL annually to help fill the Morwell Mine void. About 75 GL all up.

As well farming draws another 16 GL for irrigation and industry and water supply to householders draws another 13 GL annually.

The total annual diversion of water from the Latrobe Catchment is therefore about 104 GL..

This leaves on average about 500 GL to flow down the river to the Gippsland lakes, which is half of what it was before settlement, when first nations people managed the ecosystem to provide for their needs.

This does not include the diversion of Thomson River water, which had a very significant effect on the fisheries in the Gippsland Lakes in the 1990's to which the local Lakes fisherfolk can attest. Fish numbers reduced to the extent that it could not support the number of commercial fishing families that had been sustainably operating for over 100 years and that more than half of them had to surrender their licences in the coming decade.

WHY WE CANNOT DIVERT MORE WATER AWAY FROM THE NATURAL RIVER FLOW

The first recorded descriptions of the Gippsland Lakes came from the first white settlers and they describe a lake system very different to today. For many years after the opening of the lakes to the sea at what is now called Lakes Entrance, much of the shore line of all the lakes had thick beds of reeds growing out from the shore towards the middle of the lakes. The reed beds on L. Wellington were estimated to be up to 100 to 150 m thick in places.

Today, there are no reed beds at all in L. King and virtually none in L. Victoria. They are rapidly retreating in L. Wellington.

The main reason for this is that salt-water incursion from the sea opening has changed the water from brackish or fresh to saline and the reeds cannot adjust. In drought years, low inflows allow salt water to progress further inland and destroy the reed beds which have tended not to recover, even when higher inflows resume.

This process was amplified with the opening of the Thomson River Dam in the early 1990's and which resulted in noticeable decline in native species such as the black bream, which had sustainably supported the livelihoods of a dozen or so fisher families on the Gippsland Lakes for generations. Many of them were forced to surrender the licences in the coming years and by the time of the banning of commercial lakes fishing in 2017, there were only a few of these families left.

How will Rising Sea Levels Impact the Gippsland Lakes System?

The other factor that will be of increasing importance over the coming years is of sea level rise, estimated to be up to 80 cm higher than today by the year 2100. According to the CSIRO, since the opening of the Lakes to the sea in 1889, the average sea level has risen between 21 and 24 cm.

The reed beds are essential for the survival of many species of sea life. For example the iconic black bream and many other species need low salinity water in which to spawn and they provide sanctuary and protection from larger predator species while the fingerlings grow large enough to fend for themselves. There are many other species which use the beds similarly.

The Ramsa listed wetlands on Lake King and Lake Victoria which support dozens of migratory bird species will be severely affected by further reduction of inflows and in some cases could cause the extinction of some of these species.

The only fairly intact wetland ecosystem in the Lakes system is to be found on the western edge of the system at Sale Common and to a lesser extent at Dowd's Morass near Sale. This area, ironically, is healthy now due to the work over generations of hunters (The Field and Game Society) who decided to divert water from the Latrobe River to create conditions to encourage native duck breeding for hunting. All the other native water birds and wetland animal species are thriving due to the presence of water, but even here when there was a dry period and extreme drought in the years 2016 to 2020, many species including giant river red gums suffered reductions in numbers.

Priority is Protection of the Gippsland Lakes

In conclusion, the priority for this catchment area should be the health of the Gippsland Lakes. This is largely dependent on the Lakes system being guaranteed a constant and reliable inflow of fresh river water from the catchments. All other considerations including the rehab of the mining voids need to be secondary to this.

MANAGEMENT OF THE MINE REHABILITATION

As stated in the previous section, the ecological health of the Gippsland Lakes needs to be the prime consideration of the management of the Latrobe River catchment and the other catchments in the Gippsland Lakes.

In diverting water into the pits, there needs to be certain protocols regarding the syphoning-off of water for this purpose. Some firm rules need to be established.

1. That the amount of water for the mines should occur with reference to the minimum flow requirements for the downstream ecology to be maintained and improved.
2. In times of reduced rainfall, the inflow into the pit lakes should be reduced and stopped completely in extremely dry conditions and not resumed until sufficient rainfall has fallen over the catchment.
3. That not all flood water is captured for pit filling. In a natural setting, the rivers involved have periods of high and low flows. The ecology of the river systems in the catchment has evolved around this regime of high and low flow regimes. This should be maintained to mimic nature as much as possible.
4. Reference to First Nations peoples use of water must also be taken into account.

PRICING WATER FOR PIT REHABILITATION

While some people in the community with strong environmental backgrounds may favour a high price to be charged for mine pit rehabilitation, there also needs to be some pragmatic considerations to be taken into account. These would include

- The capacity of the companies involved to pay for something that does not produce an income now or into the future will need to be financed out of profits elsewhere in their businesses
- The idea of punishing the present owners of the power stations for carbon pollution and the bad health outcomes of the past is counter-productive to getting the rehab done in an acceptable time frame
- While we do not want public money to pay for any part of the rehabilitation, there should be recognition of the fact that Victorians over multiple generations benefitted from a cheaper price for electricity than if the cost of rehab had been factored in and that this occurred when the generators were publicly owned in the days of the old SEC.
- The present generator owners bought these businesses when there were very different conditions at play in the NEM with very little renewable energy in the system.
- Today, these companies, AGL, Energy Australia and to a lesser extent Alinta Energy are reorientating their business models towards working in a renewable energy supplied electricity grid.
- By imposing too high a price for water to fill the voids, then this may reduce their capacity to invest in truly carbon reducing strategies for their operations overall.
- The price for water for pit filling water should be calculated in line with what prices are being charged for irrigation for agriculture, household and businesses supplies.
- The price for pit-filling water needs to be at about the same level, not substantially higher than what other users are paying.

Thank you for reading our submission.