

Hamparsum Family Submission to Watermark Coal Project

Attention: Director Mining and Industry Projects
Department of Planning & Infrastructure
GPO Box 39
Sydney NSW 2001

Email: plan_comment@planning.nsw.gov.au

Re: Watermark Coal Project Environmental Impact Statement App No: SSD – 4975, Watermark Coal Project

Privacy Statement: We have read the Department's Privacy Statement and agree to the Department using our submission in the ways it describes. We understand this includes full publication on the Department's website of our submission, any attachments, and possible supply to third parties such as state agencies, local government and the proponent. **YES.**

Disclosure of reportable donations: This organisation has not made any reportable political donations.

EXECUTIVE SUMMARY

This submission has been prepared on behalf of our family and will highlight what we see as the main risks associated with the project. We also support the submissions from Earth Systems and Economics at Large on behalf of the Caroon Coal Action Group for the Shenhua Watermark Coal Project.

The main risks highlighted for the Watermark Coal Project are:

- The Gunnedah Formation alluviums are extremely close to the Project and are at a 'high risk' of being irreversibly damaged. The EIS groundwater impact assessment model does not have the appropriate science available on the connectivity levels between the project area and the alluviums to reliably predict the impacts of the project
- The 150m buffer zone is not substantiated by science and should be based on the underlying geological stratas to minimise the impacts from the connectivity of the project area with the floodplain alluviums.
- The disturbance area of the project is > 4,000Ha and it will have significant impacts to the surface water flows within and around the project. The EIS has inadequately addressed all the impacts, especially those related to the Mooki River sub catchment
- The Water Management Plan is inadequate to cope with the high rainfall events the location regularly receives and poses a high risk of contaminating the surrounding areas, fertile floodplains and water catchments.
- The proposed method for discharging contaminated mine water in extreme events is to dump the water in the Mooki River system. This is unacceptable given that the Mooki River is an unregulated stream and does not have the ability to increase flows from a dam to dilute the discharge.
- The Eastern and Western Pit areas will be inundated in a 100 year flood. This breaches the Exploration Licence conditions that prohibits any mining on the floodplain.

- The EIS fails to address the Eastern ,Western pit and overburden stability during flood events and what the impacts may be should they collapse or are undermined by the floodwaters.
- The EIS fails to provide comprehensive baseline data for groundwater and surface water quality.
- The EIS fails to address the cumulative salt loads that will occur from all sources of salt from the site, the recycling of mine water for dust suppression, overburden leaching and the final voids.
- The EIS fails to provide any information on how water with high saline levels will be treated.
- The EIS fails to adequately assess the agricultural impacts of the project to the surrounding Biophysical Strategic Agricultural Land in terms of its land value, crops grown and resulting productivity, economic inputs such as labour, housing and transport costs and possible restraints to access resources such as surface water.
- The acoustic assessment has failed to include all landholder dwellings in the affected zones
- The air quality model has failed to use appropriate baseline wind data and does not address the potential impacts to farmers near the project who work 'outside' all day
- The EIS fails to assess the cumulative risk and impact of rain water contamination for domestic water supplies due to dust.
- The EIS fails to preserve the vulnerable listed Koalas in the project area and the proposed mitigation measure of relocation will reduce their numbers by up to 35%.
- The EIS states that this project application will be expanded in the future via possible underground activities from the Western Pit. This project must therefore be considered as the first foot in the door and like any form of cancer that destroys the host upon which it survives will spread until the whole area is destroyed.

If the Government approves this project, they are knowingly approving the detrimental impacts of this mine at the cost of the landholders and the community and as the regulatory body approving this project will be held accountable for any unacceptable impacts to our family, business, water and land holdings. Once the mine starts, you cannot stop or mitigate the impacts to the water resources, the system enters a new state and is changed forever.

We must be brave in our leadership and listen to the science and ensure that this never happens. Fertile soils and water is life and the unique and iconic Liverpool Plains have both in abundance. Coal however exists in many other places but more importantly there are other alternatives for energy. We implore the Government to make the right decision and reject this application for the Watermark Coal Project.

INTRODUCTION

We are members of the Caroon Coal Action Group/SOS Liverpool Plains and a long term Liverpool Plains landholder. We strongly object to the proposed Shenhua Watermark Coal Mine at Breeza NSW.

We also refer to and support the submissions from Earth Systems and Economics at Large on behalf of the Caroon Coal Action Group for the Shenhua Watermark Coal Project.

The Shenhua Watermark Coal Project will have significant impacts on the Breeza area, the Liverpool plains and the Gunnedah region due to its proposed size, location and proximity to the productive black soil plains, the extensive groundwater alluvium, the reliable surface water systems and the fertile flood plains that surrounds the project.

The Shenhua Watermark Coal Project is located on a ridge and is surrounded by the extensive high yielding/high water quality groundwater alluviums on the Western, Southern and Eastern side. This is a major concern and caution must be upheld as the Namoi Water Study has highlighted there are 'high risks' associated with open cut coal mines so close to the groundwater aquifers, in this case a miniscule 0.9km.

Given the major significance of this proposed development application to ourselves as profitable high value farmers, employers and community members, we would like to draw attention to the following issues:

1.0 Background of our property "Drayton"

Our property "Drayton" is a 1,480 Ha intensive irrigation farm located on the black soil alluvium plains east of the project area. All of our land is classified as Biophysical Strategic Agricultural Land (BSAL) according to the Gateway process. This land is one of a kind in Australia and supports a double cropping regime year in year out with above average yields. The combination of soil, rainfall, climate & water resources makes this land some of the most productive and highly valued land in Australia.

Our family has owned this land since 1961. The predominant crops grown in rotation are: - Cotton, Durum & Bread Wheat, Sunflowers for oil, Sorghum for livestock feed, Chick Peas & Corn. 956Ha of the property has been fully developed for intensive flood irrigation utilising both Groundwater from Upper Namoi Zone 3 and Unregulated river water from the Mooki River. We have a closed tail water return system with 2 water storages with a total capacity of 1,805ML of water storage.

The entire farming operation uses the latest technology and research to ensure that our operations are sustainable, friendly to the environment and as efficient as possible in terms of the inputs we use and the management of the farming systems. All fields have been laser levelled for maximum water use efficiency, storages have undergone Electromagnetic Surveys to minimise seepage losses, GPS technology is used for precision farming practices on all fields and C-Probes are used for monitoring water moisture levels in the soil profile on a real time basis for irrigation scheduling. We are also cotton BMP (Best Management Practice) growers.

Our property boundary is approx. 2.5Km from the Eastern pit boundary and extends further East until approx. 7km from the Eastern Pit boundary. We have 4 houses, 1 office, 2 workshops, a grain silo

complex and various farm sheds located on the property. We employ 6 permanent staff and up to 5 casuals during busy harvest times.

2.0 Water Impacts

The most concerning issue of the proposed development is the unacceptable high level of risk to the surface water and groundwater resources of the area and the impact the proposed development will have on these resources.

2.1 Groundwater

The Upper Namoi Zone 3 aquifer boundary that we access for groundwater starts 0.9km from the Eastern pit boundary.

As a layman, the sheer size of the Watermark mine and pit disturbance in such close proximity to the Gunnedah Formation alluvium is highly alarming. Given that water is a slave to gravity and pressure, it is inevitable that a project of this magnitude will have some impact on the groundwater resources. The question is to what degree will this impact have?

The EIS does not adequately address this issue in its modelling or supporting data that has been provided. In addition there is conflicting information regarding potential impacts within the EIS itself depending upon which Appendix is being read. For example Appendix T – Groundwater Impact Assessment modelled drawdown levels in the Gunnedah Formation (drawdowns 1-2m) are different to those used in Appendix U – Stygofauna Impact Assessment (drawdowns up to 3.5m). Which one is correct and why is there a difference? The Aquifer Interference Policy requires assessment for any drawdowns greater than 2m.

The key factor in the water model that is supplied by the proponent in Appendix T is the connectivity factors (ie K_v & K_h) used between the Quaternary and Permian structures. There does not appear to be any supporting data as to why they have used the factors shown in the modelling. Nor is there any sensitivity data or testing on these connectivity factors to show how sensitive the potential drawdowns in the Gunnedah Formation are to different connectivity factors.

This is a major flaw in the modelling and should be pursued further to ensure that the connectivity factors are adequate. Obviously if low connectivity factors are used the potential impacts would be understated. Given the importance of these aquifers and their proximity to the Project Area it is paramount that more work is done on the connectivity factors used to ensure the modelling is as robust as possible.

It is an accepted fact that the connectivity factors are not well known outside the alluvium and therefore the degree of confidence that can be placed on the EIS model must be improved. Once the disturbance of the mining pits occur it will create a depressurisation 'pulse' and it CAN NOT be clawed back or mitigated. The 'pulse' will simply work its way through the strata layers over time.

Given the limited scientific knowledge around these connectivity factors the EIS model is really only guessing at what they think might be the connectivity factors and therefore the results of their model could be predicting an absurd result. The groundwater impact assessment model in Appendix T assumes there is no direct connection between the Permian layers and the alluvium aquifers. Figure 5.4 of Appendix T maps the geology of the area and it classifies all areas outside the project area on

the floodplains as 'undifferentiated sediments'. If this assumption is incorrect and there is connectivity between the project area (Permian layers) and the alluvium then all predicted impacts of the model will be understated. This is not a project where we can learn about the connectivity as the project progresses, once the impact occurs it will be impossible to stop or mitigate the impacts.

This lack of knowledge and independent science around the connectivity factors between the project area and the alluvium warrants further investigation and as per the precautionary principle is a prime reason why further independent scrutiny must be taken before any decision is made on the project.

The Namoi Catchment Water Study also raised this issue as an area of importance for further work to be performed. *"One of the main factors influencing the transmission of groundwater impacts from coal and gas developments will occur at the boundary zone of the hard rock and alluvial systems, particularly where the coal seams are in close proximity to the basal alluvium. It is therefore this area that should be considered one of the highest priorities for investigative work to better define the hydraulic parameters of each unit and degree of connection between the hard rock and alluvial systems."* Namoi Water Study, Final Report Section 6.3.2, pg 86

In addition the Namoi Water Study clearly identified under Scenario 2, 3 & 7 that the area around Shenhua Watermark is a "high risk" area to the groundwater alluviums with predicted water declines of > 5m (Figure E5, E6 & E7).

It must be stated that Zone 3 is only a mere 0.9km from the Eastern Pit, Zone 7 & 8 start from 1.3km from the project area. This close proximity of the alluvium to the project area illustrates how important it is that the connectivity factors must be determined by science, not by a mere blanket assumption which has no scientific basis.

The EIS also states that a buffer zone of 150m from the floodplain will be used. Despite this figure being a part of the Exploration Licence conditions, there is no scientific basis to this figure. This is an arbitrary figure that must be reviewed. The Hunter valley has also implemented this 150m buffer zone for the mining operations near the Hunter River and has found the buffer area to be insufficient and hydrological interference with the river has occurred.

The buffer zone should be based on the underlying geological stratas to minimise the impacts from the connectivity of the project area with the floodplain alluviums. Again the EIS does not assess the appropriate buffer zone that should be used based on the strata layers. This assessment must be done and appropriate scientifically based buffer zones used to minimise the risks to the floodplain alluviums.

All of these issues show the potential high risks to the productive Gunnedah Formation alluviums and must not be ignored by the Government. Water is a precious asset of the State of NSW and unlike coal, if managed correctly, it will be a beneficial asset to the state for hundreds of years to come.

The agricultural industry acknowledge how important water is to the State and agreed to average water cutbacks of approx. 67% when the water sharing plan was implemented in 2006. These cutbacks were an enormous shock to all irrigators in the area, especially since most licence holders were fully developed and were left with stranded infrastructure assets due to the water cutbacks. Since that time however there has been an enormous reduction in the level of extractions that have occurred in all of the alluvium zones around the project. As a result the aquifer levels have recovered between 5m – 7m as a direct result of less extraction (as per NOW status report). This is not acknowledged or

discussed in the EIS at all, however it is a significant fact that the aquifer has responded positively and relatively quickly to appropriate sustainable management practices.

The Watermark project poses a serious risk to the successful water reform measures of the water sharing plan by reversing these water level recoveries permanently. This would be a disastrous result to the sustainable management of the water resource and the agricultural economic activity that relies on the alluvium water. This risk should be avoided at all costs.

2.2 Surface Water

Within the project area more than 4,000Ha has been noted as the disturbed land area. The impact this will have on soil sediment transportation, erosion, water quality and divergence of surface water run off is significant.

Appendix S – Surface Water Impact Assessment only deals with the expected changes of catchment areas during operation and post closure. The assessment does not deal with:

- Impacts on Mooki River flows, especially the 'high flow' events as per the Water Sharing Plan for the Phillips Creek, Mooki River, Quirindi Creek and Warrah Creek Water Sources,
- Impacts of surface water losses from Mooki River to the groundwater system due to the mine dewatering (as per Appendix T),
- Impacts of pumping Mooki River water to supply the mine for its water needs especially in low flow or dry times (Mooki river water is one of 3 different types of water sources being used to supply the mine),
- Impacts on environmental flows,
- Impacts on supplementary flows in the regulated Namoi River that are due to Mooki River flows & any impacts to the 66% of natural flows threshold used by the MDBA and Namoi CMA CAP,
- Impacts on changes to surface water run-off in high rainfall events, especially the surface water diversions that will occur to Watermark gully and Native Dog Creek
- Water quality impacts from mine seepage and run off during mine operations and post closure.

It is important that each of these issues is addressed by the EIS.

As discussed earlier, the implementation of the water sharing plan process reduced our groundwater allocations by 67%. As a result we had to find and develop alternative water sources to supplement the groundwater that was lost from our productive operations. The unregulated Mooki River system has provided this alternative water to our farming operations at a huge capital cost to our business. This was necessary to ensure that the infrastructure assets developed to support irrigation activities were not stranded and that the highest level of productivity was maintained.

Our farm is highly reliant on the Mooki River water source which is regulated by the Water Sharing Plan for the Phillips Creek, Mooki River, Quirindi Creek and Warrah Creek Water Sources. The Mooki River is an unregulated stream (does not have a dam at its headwaters to control flows) and is extremely volatile in the flow regime as it responds to rainfall events and catchment saturation levels.

The Water Sharing Plan has a regime for commence to pump and cease to pump rules for all licence holders stating when a 'high flow' has occurred and irrigators can pump from the river. The pumping opportunities for these high flows are generally sporadic and the events may only be for hours or a matter of days until the river levels drop and pumping must cease. Another words, the window of opportunity to access this water source is extremely limited and infrequent (depending on the season).

If the Watermark project impacts on the availability of this water via reduced surface water flows or water contamination prohibiting us from pumping during the limited 'high flow' events, this will have considerable impacts on our farming operations, productivity and profitability.

The EIS needs to fully assess the impacts the project will have on the Mooki River flows. The majority of irrigators that rely on and access the Mooki River water source are downstream of the project area and the proposed pipelines to and from the Mooki River as shown on the project layout Map – Figure 9.

2.3 Water Management Plan

It is well known that the Project Area is a major water shed area that contributes to the flooding of the black soil plains in times of high rainfall events. The Water Management plan that has been outlined in Appendix S appears to be woefully inadequate for when these events occur to contain all water and dam sediments within the Project Area and avoid contaminated mine discharges being necessary into the surrounding areas, fertile floodplains or streams.

Table 5.4 Schedule of Water Management Structures Appendix S outlines the infrastructure that will be utilised to store mine sediments and contain water on sight in all simulated conditions. Essentially this section is stating that all water and mine sediment will be kept on sight however there is conflicting information within the EIS as to whether this is the case.

For example Appendix S states that *"Based on the configuration and capacity of the proposed water management system, there will be no uncontrolled offsite spills from mine water storages or controlled discharges during non-extreme events."* This statement is extremely misleading as the EIS does not define what an 'extreme event' is nor how often such an 'extreme event' may occur based on historical rainfall records.

In addition Appendix S Chapter 11 states that *"this water will only be released from site if water quality is acceptable, or during a rainfall event that exceeds the design capacity of the sediment control systems"*.

Clearly the Water Management Plan will not be able to contain all water from the Project Area or the Open Cut Pits in 'extreme rainfall events' or 'events that exceed the design capacity of the sediment control system'.

This is totally unacceptable given that all land surrounding the Project Area is Biophysical Strategic Agricultural Land producing high value food and fibre crops. In addition the pipeline that appears to return mine water to the Mooki River system would obviously be the infrastructure used to get rid of mine water in 'extreme events'. This would also be a time when the Mooki River system would be in high flow and the unregulated licence holders on the Mooki River would be pumping to access their allocation whilst the 'high flow' event is occurring. This would mean that the untreated mine water would be polluting the Mooki River and licence holders would be pumping this contaminated water onto their farms to store for later use. If any limitations are placed on these licence holders from pumping during mine water discharge events it will have significant economic impacts which have not been addressed in the Agricultural Impact Statement.

The EIS needs to review the Water Management Plan and assess

- Define what an 'extreme event' is, the probability of occurrence of such events and the level of mine discharges that may occur in such events,
- Define what the water quality parameters are and how this will be established for events where water is 'released from site if water quality is acceptable'
- What are the impacts when the sediment dam material overflows or possibly bursts in 'extreme events',

- What are the impacts to the floodplains, river system, downstream water users, riverine ecology and aquatic life when mine discharges occur in 'extreme events',
- Define the purpose of the pipelines to and from the Mooki River (the upstream pipeline has a pumping station and the downstream pipeline has no pumping station),
- Define the purpose of the pipelines to the private dams located East of the Kamilaroi highway and outside the Project Boundary.

Overall the EIS fails to fully describe and provide an adequate Water Management Plan for the Project Area.

It must be recognised that the land upon which the mine will operate is a high risk area for flooding and extreme rainfall events. The size and location of the mine will create unacceptable impacts and high risks of contamination to the environment, local water catchment and surrounding areas. **It has to be asked why such a mine would be allowed to exist in this location given the risk of high rainfall events occurring as part of the natural weather cycle.** It is also known that climate change has the capacity to increase the intensity and occurrence of these high rainfall events in the next 30 years (the life of the mine).

2.4 Flood Impact Assessment

Part of the Exploration Licence conditions for Watermark was that development approval may not be sought for open cut mining anywhere on the 'floodplain'. **The EIS clearly breaches this condition** as shown in Appendix S

- *Under a 100 year ARI design flood event, a part of the Eastern Mining area will be inundated to 1.7m. A shaped level embankment may be required to prevent flooding of the mining area. The levee would have the potential to increase flood levels by up to 5mm.*
- *A detailed flood modelling study of Watermark Gully indicates that, under a 100 year ARI design flood event, floodwaters may encroach on a small part of the Western Mining Area. The upper reaches of Watermark Gully will be partially filled in for development of the OEA for the Western Mining Area. As a result, the main channel of Watermark Gully will be relocated to the east.*

The EIS predicted impacts for flooding doesn't take into account that every flood event is different and the flooding levels are highly dependent on where the rainfall occurs and when it occurs during the event.

Our property is entirely submerged in a major flood event and we are subjected to strict flood plain management rules and regulations regarding levee embankments and the diversion of water to protect our land from flood events. The proposed flood levee outlined to mitigate the 1.7m of inundation that may occur in a flood event for the Eastern pit needs to have further investigation as to the impacts the levee will have on changing flood flows and impacts to neighbours for all types of flood events. Our property boundary is only 2.5km from the Eastern Pit and will be impacted by such levee embankments.

The EIS also fails to address the Eastern pit and overburden stability during flood events and what the impacts may be should they collapse or are undermined by the floodwaters.

2.5 Water Quality

The Watermark project will have an impact on surface water, groundwater, run off and discharge water quality. Whilst each of these areas have been discussed within the EIS there is no comprehensive baseline water quality studies that cover all the water quality parameters that are required to satisfy baseline data.

Only basic parameters have been reviewed such as pH and salinity and very brief descriptions has occurred for inorganic chemicals such as pesticides and hydrocarbons. There are many water quality parameters that are absent from the real data provided including no information on dissolved metals. In the case of water quality being impacted from the mining operations it is vital that a comprehensive baseline data set is obtained before any mining occurs.

The risk of contamination from the Watermark project area is significant due to the size and location of the activities as stated previously above. It is imperative that if the water quality of the aquifers or river systems are impacted by the mine that the Government have sufficient baseline data to ascertain where the source of the contamination is coming from and to what level the contamination has occurred compared to pre mining levels.

The EIS does not address

- Comprehensive baseline groundwater quality data
- Comprehensive baseline surface water quality data
- Analysis and information on proposed discharge water quality, including timing of discharges, concentrations and loads of toxicants and stressors,
- Analysis and information on mine seepage water quality

2.6 Salinity

Some of the land and shallow aquifers of the Narrabri Formation in the Watermark project area are subject to high salinity levels. Over the years there have been many land management projects and practices directly aimed at managing and mitigating the inherent salinity risks of the area, especially near Native Dog Creek.

The EIS has considered some of these salinity risks in the groundwater and surface water impact assessments however the level of assessment has not adequately addressed the cumulative salt loads that will occur from all sources of salt from the site, the recycling of mine water for dust suppression, overburden leaching and the final voids.

Appendix S predicts that salinity levels within the final voids will rise at 5,000mg/l over 150 years however it then contradicts this amount in Figure 2.14 stating salinity levels could rise by 7,500mg/l each 150 years. It then goes on to contradict these figures by stating that overtime salinity of runoff inflows is expected to decrease, resulting in a slower rate of salinity rise than indicated by the model results.

These conflicting statements and analysis of the salinity levels needs to be substantiated with scientific data and clarified. The predicted salinity levels and the lack of detail on the proposed mitigation process is unacceptable. In addition there is no discussion of how water with high saline levels will be treated. It is noted in Appendix S that the water management plan will recycle mine water for dust suppression at 2ML/day. There is no detail if this water is treated prior to its application and if this water has a high salt load the risk of salt run off from the site is increased.

The risk of runoff and mine discharges from the project area has been discussed previously. It is unacceptable to have an area with a high salinity risk planning for final voids of 100Ha with a possible depth of 80m of highly saline water. It raises the issue of where will this water leach to and how will any run off from the site be contained to avoid the translocation of salt into the Mooki sub catchment and the groundwater? Appendix T states that the final voids for the Eastern & Southern pits were reduced due to concern for continued leakage from the pits into the Gunnedah Formation. It seems contradictory for a void to be acceptable in the Western pit regardless of it being further away from the Gunnedah formation, especially when the connectivity factors are unknown.

Previous mining operations in the Namoi Valley have been allowed to mitigate the predicted salt loads by purchasing salt credits as a condition of their approval eg Idemitsu mine extension, Narrabri North underground mining project. Unfortunately this strategy will fail as there is no working salt credits system in operation for these companies to purchase salt credits from within the Namoi Catchment. In addition, the Namoi catchment already has rising salinity issues within the Namoi River system and further salt loads in the system can not be tolerated.

3.0 Agricultural Impacts

The Agricultural Impact Statement for the Watermark Project outlined in Section 7.20 and Appendix Z concentrates on the land that Shenhua owns however there is very limited analysis on the impacts to the land surrounding the Project Area.

The EIS does not address the following:

- No quantification of the Biophysical Strategic Agricultural Land surrounding the project within a 2km radius nor analysis of the impacts that will occur to this land,
- No assessment of the potential impacts to the land values surrounding the project area,

The areas surrounding the Project area has been developed for intensive agricultural enterprises for generations. As a result there is very limited land that has not had investments over time on both farming systems and capital improvements. The lack of any analysis to assess what impact the Watermark project will have on these farming operations and their land values is a major omission in the EIS.

The land devaluation of nearby properties to an open cut coal mine is well documented. Immediately a coal mine is approved the number of willing buyers for the surrounding areas are severely reduced due to the impacts on the operations, productivity and operating costs the mine will have. The EIS has not addressed this issue nor provided any detail on how this impact will be mitigated.

- No assessment of the cumulative impacts to the land surrounding the Project Area is provided,
- No economic assessment of the removal of up to 600ML of water per annum from existing licence holders and the agronomic activity this water would produce is provided,

The Upper Namoi groundwater areas, as discussed previously, have suffered severe cutbacks to the groundwater allocations. As a consequence there is very limited surplus groundwater that is available

for purchase on the open market as most licence holders simply do not have any surplus licences to sell. Groundwater may only be traded or transferred within a Zone, another factor limiting the available supply of water allocations for sale.

There has been no analysis of what impact the required purchase of water will have on the value of groundwater and surface water within the surrounding areas, nor what the value of the reduced productivity will be from the transfer of these water licences from producing agricultural product to dust suppression on mine roads or coal washing.

- No assessment of the impact to labour rates, housing affordability, available skilled labour supply, transport costs (especially in peak harvest times) etc is provided.

It is well known that mining companies compete directly for labour from the agricultural sector. Already the hourly rate for farmhands has increased within the area due to the impact the current active mines have had, let alone what the impact will be if the Watermark Project commences.

There is a limited supply of labour within the region and agricultural enterprises can not pay the same labour rates as that of mining companies. In order to keep our key staff, in the last 3 years the hourly rate of pay for a general farmhand has increased 24%. We have also missed out on being able to employ possible staff if we don't have on farm accommodation included as part of their package. It is simply too expensive and difficult for them to rent a house in Gunnedah if they are not on a 'miners' wage. None of these economic impacts have been addressed in the EIS.

- No assessment of the impact of dust from the Project Area on nearby crops such as cotton, wheat, corn etc is provided.

The surrounding areas generally grow 2 crops per year – a winter crop and a summer crop. All of these crops require clean leaf areas for optimum plant growth and yield. The Hunter Valley experience demonstrates how coal mining dust has interfered with the wine grapes growth and yields. The EIS has not provided any analysis as to what the impacts to plant growth and yields will be to the crops grown on the surrounding land to the Project Area.

One of the highest value crops grown on these lands is cotton. All cotton fibre is classed and the fibre specifications must meet a certain standard 'base grade' of cotton, otherwise the price given for the cotton is discounted. If there is any 'greyness' to the cotton it will be downgraded during this classing stage, current discounts for colour are approx. \$50 - \$65 per bale (equivalent to \$600/Ha). Cotton bolls start opening at the end of February and is fully harvested by the end of May. There is a window of 3 months when the cotton fibre is susceptible to any coal or overburden dust blowing from the Project Area and creating a 'greyness' to the fibre and hence a colour downgrade. The EIS does not address this impact.

The AIS also does not address how the prevailing winds will disperse the dust nor does it address the constant temperature inversion affect that occurs in the autumn and winter months. The topography of the valleys (especially from Breeza to Gunnedah which is in the shape of a natural salad bowl) create temperature inversions which will mean any coal and overburden dust will 'hang' in the valley and be suspended in the air close to the ground until the warm & cool temperatures mix. This natural phenomenon and its impact to the crops growth and yield must be addressed.

- No assessment of the impact of mine discharge water to the Mooki River system on downstream unregulated river Licence Holders

As stated in section 2.3 if the Watermark Project discharge contaminated mine water into the Mooki River system during 'extreme events' this will have a direct impact on downstream users of the Mooki River. The EIS has not assessed what the economic impacts of this contaminated water would be on the downstream licence holders especially if they are prohibited from pumping in such an event and miss the opportunity to access this surface water for their irrigation requirements. All Mooki River water is stored on farm for use to irrigate crops (irrigated crops generally have double the yield of dryland crops).

4.0 Noise, Air Quality & Dust

The Acoustic Impact Assessment in Appendix H has incorrect data for the number of houses located on the property 'Drayton' and the neighbouring properties 'Currabing' & 'Durante'. The model does not include the farmhouses on Long Point Road – 'Drayton Homestead' & the 'Drayton Cottage No 3'. It also does not include the neighbours Homestead on 'Currabing' nor the 'Durante' Homestead on Normans Road.

The Air Quality & Greenhouse Gas Impact Assessment in Appendix G does not have an adequate baseline data set that can be relied upon for the local wind data used in section 5.1.1. WS1 is located in the lee of Breeza State Forest and WS2 is located in the lee of Black Mountain. This wind data does not provide adequate reliable information for the prevailing winds that will occur and blow onto the surrounding areas. Appropriate baseline wind data must be used and the current model is inadequate.

Only a period of 11 months has been used for these wind stations in the model. Again this is not a sufficient level of data to rely on for the assessment of the air quality and dust impacts the project will have.

The model should also use wind data from the surrounding floodplains which do not have forests or mountains that shadow the wind directions. The closest weather station to the Watermark Project area that is in an exposed area of the floodplain is the NSW DPI Agricultural Research station located about 5.0km East of the Project Area. The air quality model should utilise this data to ensure the model is accurate.

The EIS needs to provide further information as to why the data from the Caroona Feedlot, which was collected over many years, and has conflicting prevailing wind directions used from the WS1 & WS2 sites was not used as a sensitivity option for the model. The robustness of the model has not been proven.

It is also noted in Appendix AF Economic Impact Assessment that the air quality model has been relied upon to assess the affected zones surrounding the Project Area. Gillespie Economics consider that land acquisition largely offsets these impacts within the affected zone:

Noise costs, air quality costs and agricultural production costs will occur at a local level. These have been incorporated into the estimation of net production benefits via acquisition costs for affected properties and mitigation cost. As such, the bearers of these costs are compensated.

This implies that the acquisition process will encapsulate all areas that have been impacted by the project and no disputes or problems will occur. Given the experience of landholders near the Gunnedah Basin mines of Whitehaven, this is very unlikely as many disputes and problems have occurred with these affected landholders. In addition the social cost to the families and the local community has not been adequately acknowledged or addressed in the EIS. The dislocation that will be felt by these landholders who have no choice but to move will be a lifelong affect.

The current practice of land acquisitions only mandate acquisitions when *dwelling*s are located within the zone of acquisition. Farm land which is located within the zone acquisition may not be acquired, but its value, farming operations and productivity could potentially be impacted.

Gillespie Economics consider that there is no need to value impacts on the community outside the affected zone, provided they remain within legislated guidelines. This is inappropriate as compliance with guidelines does not mean community welfare is unaffected in these areas. Local people who are affected by these impacts, but are not compensated for them, incur economic costs of this project. Failure to acknowledge such impacts and estimates serves to overstate the value of the project.

The air quality impact assessment model does not address the impacts of explosive dust drift on people working 'outside'. The model assumes that people are 'indoors'. This is totally unacceptable as the surrounding areas are predominantly agricultural farmlands where staff work 'outdoors' and will be exposed to the explosive fumes and dust for extended periods of time.

The Watermark Project needs to have an adequate air quality dust monitoring program that includes dust monitors in areas where agricultural workers will be exposed to dust. It is essential that dust monitors are placed on nearby agricultural farms on the floodplains.

All farm dwellings rely on rain water as there are no 'town water' supplies to these rural areas. The EIS does not address what the cumulative impact of this dust on the farm dwellings roofs will be and how this will impact the rain water that runs off these rooves into the tanks. The risk and impact of rain water contamination for domestic water supplies due to dust is not assessed in the EIS.

5.0 Noise

The Watermark project is located in a rural agricultural area. We live in an environment that is quiet and undisturbed. This project will change the local environment significantly and represents a 'tipping point' to the current way of life. The EIS does not address this issue in any of its social impacts.

The project is estimating a total of 47 train movements a day once in full production. This equates essentially to a train every 30 minutes, 24/7. The train line is situated at the base of the ridgeline and above the floodplains. The noise from these trains will travel across the floodplains due to no barriers to stop the noise. This noise is exacerbated at night and amplified in the moist air. The constant interruption of the train noises 24/7 will again change the quiet aspects of the rural environment. The EIS does not address this issue in any of its social impacts.

The EIS discusses noise levels for the town of Breeza. However it does not address the impacts these noise levels will have on the community for special commemorative days like ANZAC day. The proposed Eastern pit is adjacent to the Breeza memorial Cenataph that honours our local servicemen and women who fought and served for Australia.

The 2013 Anzac Day service attracted over 100 people from the local district and there are grave concerns that any mining activity during Anzac day services will disrupt the service. Any mining

activity will not only be noisy and intrusive on this day of remembrance however it will also be grossly disrespectful of those Australians who we gather to honour and remember.

If this project is approved, there must be a caveat that no mining activity under any circumstances is to occur on ANZAC day. It is vitally important for the social fabric of the local community that they can gather and remember our Australian war heroes and heritage without any disturbance from a mining operation, especially one that is owned by a foreign nation.

6.0 Ecology - Koalas

The Watermark Project area is a known Koala habitat. These Koala colonies are well established, healthy and are in abundance. It is completely unacceptable that this project will place these Koala populations at risk.

The Gunnedah Shire is known as the Koala capital of the world and for this project to put coal, royalties and profit ahead of a listed vulnerable species that is iconic to the local community is totally unacceptable. The suggested solution of translocating these colonies is utterly ludicrous and goes against the current science which states that the mortality rate of Koalas who have been relocated is approx. 35%. This EIS is not only destroying their current habitat, however the proposed mitigation measures will reduce the numbers significantly. The current practice of just removing the 'animals' or 'people' who call this area their home for the sake of the project to progress is unacceptable.

Given that the Koala is a listed vulnerable species and the proposed mitigation measures of the Watermark project will not preserve these animals, the project areas where the Koalas exist should be left undisturbed.

7.0 Future Expansion

The EIS states that "in recognition of the further potential coal resources and the ability of the Western Mining Area void highwall to provide access to these resources, the cost/benefit analysis found that the retention of a safe and stable final void in the Western Mining Area was the most appropriate outcome."

This statement shows 2 things –

- 1) Shenhua already has plans to expand the current mining application beyond the 30 year time frame into an underground operation. This goal of Shenhua to expand is also supported by the completed Phase 4 exploration drilling program for the deeper Maules Creek coal seams and the land purchases that have occurred on the north west corner and outside the Exploration Licence area for Landholders No 4, 13 & 14 in Figure L1; and
- 2) If approval is given for this open cut mine it will essentially open the door for further expansion of the exploitation of the coal in the area.

We are very concerned about this application and the risks that it poses to the water resources in the area. This open cut mine poses a high risk to these water resources and any further expansion in the same area will also escalate this high risk. The cumulative impacts that will occur from this level of mining must be assessed on sound scientific grounds and will be unprecedented for this area. The approval of this application or any future expansionary activities must be avoided at all costs.

8.0 Conclusion

As a landholder near the Watermark Project we strongly urge that this project for a mega open cut mine is not approved. In this submission we have highlighted the main risks associated with the project

- The Gunnedah Formation alluviums are extremely close to the Project and are at a 'high risk' of being irreversibly damaged. The EIS groundwater impact assessment model does not have the appropriate science available on the connectivity levels between the project area and the alluviums to reliably predict the impacts of the project
- The 150m buffer zone is not substantiated by science and should be based on the underlying geological stratas to minimise the impacts from the connectivity of the project area with the floodplain alluviums.
- The disturbance area of the project is > 4,000Ha and it will have significant impacts to the surface water flows within and around the project. The EIS has inadequately addressed all the impacts, especially those related to the Mooki River sub catchment
- The Water Management Plan is inadequate to cope with the high rainfall events the location regularly receives and poses a high risk of contaminating the surrounding areas, fertile floodplains and water catchments.
- The proposed method for discharging contaminated mine water in extreme events is to dump the water in the Mooki River system. This is unacceptable given that the Mooki River is an unregulated stream and does not have the ability to increase flows from a dam to dilute the discharge.
- The Eastern and Western Pit areas will be inundated in a 100 year flood. This breaches the Exploration Licence conditions that prohibits any mining on the floodplain.
- The EIS fails to address the Eastern, Western pit and overburden stability during flood events and what the impacts may be should they collapse or are undermined by the floodwaters.
- The EIS fails to provide comprehensive baseline data for groundwater and surface water quality.
- The EIS fails to address the cumulative salt loads that will occur from all sources of salt from the site, the recycling of mine water for dust suppression, overburden leaching and the final voids.
- The EIS fails to provide any information on how water with high saline levels will be treated.
- The EIS fails to adequately assess the agricultural impacts of the project to the surrounding Biophysical Strategic Agricultural Land in terms of its land value, crops grown and resulting productivity, economic inputs such as labour, housing and transport costs and possible restraints to access resources such as surface water.
- The acoustic assessment has failed to include all landholder dwellings in the affected zones
- The air quality model has failed to use appropriate baseline wind data and does not address the potential impacts to farmers near the project who work 'outside' all day
- The EIS fails to assess the cumulative risk and impact of rain water contamination for domestic water supplies due to dust.
- The EIS fails to preserve the vulnerable listed Koalas in the project area and the proposed mitigation measure of relocation will reduce their numbers by up to 35%.
- The EIS states that this project application will be expanded in the future via possible underground activities from the Western Pit. This project must therefore be considered as the first foot in the door and like any form of cancer that destroys the host upon which it survives will spread until the whole area is destroyed.

If the Government approves this project, they are knowingly approving the detrimental impacts of this mine at the cost of the landholders and the community and as the regulatory body approving this project will be held accountable for any unacceptable impacts to our family, business, water and land holdings. Once the mine starts, you cannot stop or mitigate the impacts to the water resources, the system enters a new state and is changed forever.

We must be brave in our leadership and listen to the science and ensure that this never happens. Fertile soils and water is life and the unique and iconic Liverpool Plains have both in abundance. Coal however exists in many other places but more importantly there are other alternatives for energy. We implore the Government to make the right decision and refuse this application for the Watermark Coal Project.