

Submission to the Senate Standing Committee
on
Environment, Communication and the Arts

Enquiry into the effects of Mining on the Murray Darling Basin

17th September, 2009

Dr Pauline Roberts
PhD., BSc., DBM.

Senate Committee on Environment, Communication and the Arts
PO Box 6100
Parliament House
Canberra ACT 2600

Executive Summary

Part A

- > Current exploration on the Liverpool Plains for coal and gas has not been without environmental impact. Current exploration drilling is not benign. Hard rock techniques have not been adjusted to reflect the complex alluvium and aquifer systems of these agricultural areas.
- > Current exploration is not exploration – it is massive redevelopment of the Murray Darling Basin.
- > Monitoring by appropriate environmental agencies such as NSW’s Department of Environment, Climate Change and Water (DECC) is not being carried out during so called “exploration”.
- > NSW DPI is both poacher and gamekeeper regarding granting of licences and monitoring of compliance with procedures and environmental conditions during “exploration”. It appears to struggle to maintain the balance between these two roles whilst claiming – despite clear evidence to the contrary - that an exploration licence is just that, an exploration licence.
- > It is clear from current and previous coal and gas mining projects that water sources are inevitably and irreparably damaged by such industrial development. The fate of the MDB supplies from the Namoi catchment will be no different if mining is allowed into the area.
- > NSW government’s own scientists list subsidence due to longwall mining as a KEY THREATENING PROCESS to water sources and habitat under the Threatened Species Conservation Act. (Refer: Appendix A)
- > However, regardless of its own scientific advice, NSW State Government has continued to grant mining licences and extensions to operations that will trigger these key threatening processes. It is concluded therefore that considerations of the environment or water supplies are given an extraordinarily low priority by the NSW government.
- > The Liverpool Plains will clearly experience a similar fate if there is not intervention on a Federal level to prevent such damage to aquifers and environment in the MDB.
- > It would be illogical, and flies in the face of mountainous evidence in Australia and overseas, to believe that the Liverpool Plains and its recharge ridges could be mined without impact to their precious water supplies and, by extension, the MDB system.
- > Remediation of Acid Mine Drainage from coal and sulphur-based ore mining is expensive, long-term and technically challenging.
- > Monitoring of mining environmental licence and operating conditions compliance by NSW’s DECC is limited. Due to staff cut backs, travelling distances and budgetary pressures, it essentially relies upon the public to report and collect evidence of non-compliances.

- > Given our, and other communities experiences with NSW DPI to date, we concur and have extreme concerns for the current and future fate of our surficial and underground water sources if mining licences are granted in this area.
- > Protection of our water sources, current and future, from the NSW DPI and government has, regrettably, come down to civil disobedience to force a fully independent, catchment-wide Water Study before any mining licence application is granted.
- > Excision of the flood plains does not ensure that Liverpool Plains aquifers will remain unpolluted by mining 'exploration' now or in the future.
- > *“Of concern is the wholly simplistic belief held by both the NSW Government and BHP, that the rocky ridges are distinct from the alluvial plains, and that the former can be safely mined without impact on the latter.”*
- > *“There is no 'dotted line' - neither at the surface nor to any depth or dip - that conveniently separates the pressures, flows and quality of the groundwaters beneath either the ridges or the plains. Topography is surficial - hydrogeology is in 3-D.”*
- > An earlier incarnation of DECC, Land and Water Conservation, agrees with this assessment. It determines ridge country as *“a recognised recharge area”*. (Refer Appendix B)
- > The whole issue did not need to come to civil disobedience. However, the community felt that the prime land and water supplies and environment in general on the Liverpool Plains are worth protecting for their valuable and sustained food production capability and the viability of the MDB as a whole.
- > Protection of our water sources, current and future, from the NSW DPI and lack of government commitment to enforcing environmental compliance has required the undertaking of private, scientific benchmarking.
- > Protection of our water sources, current and future, from the NSW DPI and lack of government commitment to enforcing environmental compliance has required taking the NSW Minister for Mineral Resources to court.
- > **Given all the evidence detailed here in Part A, it is clear the NSW government does not value water supplies – even those connected to the MDB - agricultural production or environmental factors when assessing the appropriateness of exploration or mining licences. As a result, Federal intervention via the Water and/or EPBC Acts is very important to communities questioning the appropriateness of development in NSW within the MDB.**

Part B

- > The exceptional productivity of the Liverpool Plains under dry land and irrigation is well-documented. The Liverpool Plains could be considered Australia's insurance policy for food production with its exceptionally fertile volcanic soils, moderate climate, reliable summer and winter rainfall, high water-holding capacity soils and well-managed, high-output aquifers that form part of the MDB. (Refer Appendices C & D)
- > Government statistics show that the Liverpool Plains' 800,000 hectares (including ridge land) yields 40% above the national average in tonnes per hectare. This food bowl reliably delivers a diversity of grains, oilseeds and livestock to Australia's domestic and export markets.
- > Furthermore, mining and clean food production do not co-exist successfully despite industry and government protests to the contrary. Coal production inevitably produces dusts and toxic minerals that affect plant, animal and human growth, and the health and cleanliness of water sources and food supplies.
- > *"The health of any country that grows adequate food for its own population can be directly linked to the health of the land [and water supplies] that produces that food."*
- > *"Prime Agricultural Land can not be sacrificed for industrial development, because no return to its former glory, let alone clean food producing co-existence is possible once toxic [coal] strata are breached and exhumed, no matter how close to 'world's best practice' such industries consider their methodologies to be." (Appendix E)*

Part A

“The potential impacts of current and projected mining operations on all environmental values in the Murray-Darling Basin and, in particular, the potential impacts upon surficial and groundwater flows and quality in the alluvial flood plains at its headwaters in the Namoi Valley and the Darling Downs catchments.”

1. Current impacts on water

> Current exploration on the Liverpool Plains for coal and gas has not been without environmental impact. Current exploration drilling is not benign. Hard rock techniques have not been adjusted to reflect the complex alluvium and aquifer systems of these agricultural areas.

The highly productive alluvial and recharge ridge land with its natural surficial and underground water supplies, forms part of a well-regulated irrigation system that waters towns, people, stock and native flora and fauna, which thence forth contributes to the Murray Darling system.

Through poorly-regulated and poorly-managed exploration it has already been subjected to:

- a large number of deep bores (when compared to stock and irrigation bores), that transect/penetrate multiple strata and water types/qualities that have been drilled by inexperienced staff using inappropriate drilling methods resulting in poor pressure seals and controls during drilling as determined by civil testimony from several experienced and respected drillers;
- environmentally inappropriate classification and storage of drilling wastes both solid and liquid in form;
- questionable quantitative accounting of drilling fluids pumped into the bores by the contractors – far more chemical fluids pumped in than are retrieved suggesting point source contamination is, and will continue to occur;
- infrequent monitoring or interest in exploration procedure by the NSW Department of Primary Industries (DPI), even though they have a legal responsibility to proactive monitoring of exploration sites;
- governmental and corporate indifference and denial that single and cross-aquifer contamination has, or even may have, occurred due to these events.

Given the quality of the soil and water resources, a full EIA (Environmental Impact Assessment) should have been carried out *before* exploration began in order to determine and help mitigate any environmental impacts, that are, now, all too obvious with the benefit of hindsight.

Contamination caused by inappropriate drilling techniques and the ingress of drilling fluids through permeable strata and ensuing mixing of aquifers will continue to impact the quality of underground aquifers. This problem is especially acute in alluvium since the competence of sealing techniques for exploration bores in such strata have also been called into question.

A fundamental, beneficial quality of our cracking clay soils is that they are 'self mulching'. This means they expand and shrink and move slowly under gravity but at a much faster rate than other soils. Any farmer in the area knows how this affects fence lines, telegraph poles, and water bore casings. Over time, this 'creep' makes even the most permanent structures move, hence our concerns regarding 'permanent' sealing techniques for exploration bores.

Further, it does not appear that the NSW DPI carried out its own prior environmental assessment, as it is required to do, on the potential impact of coal and gas exploration on this area before granting exploration licences. If it did, such analyses for each licence have not been made public as is required and we would encourage this enquiry to apply for such information.

> **Current exploration is not exploration – it is massive redevelopment of the Murray Darling Basin**

Government exploration which occurred with qualified drillers and techniques in the 1970s and 1980s [Len O'Brien, private comm.] largely established the quantities and quantities of coal in the Gunnedah Basin on behalf of private enterprise. In their July 2009 report for the NSW Opposition entitled "*Planning for Prosperity*", the NSW Minerals Council agrees, stating: "*The State's coal resources are generally well understood, and exploration in this sector is largely directed to gaining more detailed knowledge of particular deposits to enable mine planning and development.*" Effectively current "exploration" is in reality, *development*. This therefore calls into question the level of environmental monitoring applied to such practices.

> **Monitoring by appropriate environmental agencies such as NSW's Department of Environment, Climate Change and Water (DECC) is not being carried out during so called "exploration".**

This is because these agencies, set up to protect the environment from cavalier operators, incompetence and negligence, have no authority to examine the environmental effects of "*exploration*" processes in NSW.

Somewhat inconsistently, monitoring by DECC or EPA can occur *after* a mining licence has been granted, suggesting these agencies should have the skills required at their disposal and should have jurisdiction over operations that impact the environment from the onset of "*exploration*".

NSW DPI (Mineral Resources) staff appear to have carried out their own, legally-required, compliance audits *only after* strenuous representation by the local community. Undoubtedly, such ambivalent NSW DPI oversight puts our valuable water resources, and our environment at clear and current risk.

> **NSW DPI is therefore both poacher and gamekeeper regarding granting of licences and monitoring of compliance with procedures and environmental conditions during "exploration". It appears to struggle to maintain the balance between these two roles whilst claiming – despite clear evidence to the contrary - that an exploration licence is just that, an exploration licence.**

2. Projected impacts on water

> It is clear from current and previous coal and gas mining projects that water sources are inevitably and irreparably damaged by such industrial development. The fate of the MDB supplies from the Namoi catchment will be no different if mining is allowed into the area.

The adverse single and cumulative effects of mining on springs, swamps, creeks, rivers, private wells and bores are well-documented. [Refer: www.riversos.com; DECC Scientific Services Report – Ecological Impacts of Longwall Mining in the Southern Coalfields of NSW; NSW Parliamentary Library Briefing Paper #06/09 etc.] As a result, water quality, quantity and water-based biodiversity are all adversely impacted by long-walling and open-cut coal extraction methods.

> NSW government's own scientists list subsidence due to longwall mining as a KEY THREATENING PROCESS to water sources and habitat under the Threatened Species Conservation Act.

NSW DECC's Science Committee, established by the Threatened Species Conservation Act, made a final determination in 2005 listing the "*alteration of habitat following subsidence due to longwall mining as a KEY THREATENING PROCESS on Schedule 3 of the Act.*" (capitals their emphasis) Their review on the environmental impacts of longwalling including on water sources and the limited success of remediation attempts, makes for sobering reading and is attached at Appendix A.

Further, this Science Committee also listed "*alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands*" as a KEY THREATENING PROCESS on Schedule 3 of the Act. [Refer: <http://www.environment.nsw.gov.au/threatenedspecies/AlterationNaturalFlowKTPListing.htm>]

> However, regardless of its own scientific advice, NSW State Government has continued to grant mining licences and extensions to operations that will trigger these key threatening processes. It is concluded therefore that considerations of the environment or water supplies are given an extraordinarily low priority by the NSW government.

> The Liverpool Plains will clearly experience a similar fate if there is not intervention on a Federal level to prevent such damage to aquifers and environment in the MDB.

> It would be illogical, and flies in the face of mountainous evidence in Australia and overseas, to believe that the Liverpool Plains and its recharge ridges could be mined without impact to their precious water supplies and, by extension, the MDB system.

Mining has been shown to continue to affect the quality of water supplies in the surrounding area long after the coal panel has been extracted, the overburden pile grassed and/or the mine closed.

Acid Mine Drainage (AMD) is a well-documented international environmental hazard inherent in coal and sulphur-based mineral mining. AMD is the oxidation of exhumed ores and coals by water resulting in the production of sulphuric acid which continues to drive the process leaching heavy metals and other toxic minerals (eg. lead, arsenic and mercury) into the environment. The health effects of such minerals in water supplies are well documented here and overseas.

Some hard rock mines (eg. tin, gold) are still leaching minerals at toxic levels more than 2000 years after mining has ceased. The movement of the oxidation plume through coal spoil heaps in Canada is estimated to take hundreds of years (20+ generations).

> Remediation of Acid Mine Drainage from coal and sulphur-based ore mining is expensive, long-term and technically challenging.

The effects of AMD are often time latent because it *begins* as a relatively slow process. Toxicity to the environment increases with time, especially in water systems, as the AMD-generating system catalyses its own process. Thus, the pollution resulting in chronic health problems, may only become evident 10, 20 or 50 years after mining has ceased. History shows that liability for remediation is almost certain to become a State matter at this juncture, rather than laid at the door of the mining company responsible.

Whilst many of these damaging pollutants are inevitable consequences of coal mining in inappropriate places, legislative steps should be taken to make mining companies continuously responsible for long term damage after mines have closed. This may also have a sobering effect on the current rush for development regardless of environmental costs.

As of 2005, NSW already has over 570 mines that are abandoned. The NSW DPI estimates that with rehabilitation costs exceeding \$100,000 per hectare, "it is unlikely that most derelict mine sites will be returned to pristine condition". (DPI PrimeFact 22 November 2005) Many of these continue to leach into NSW water sources including drinking water supplies.

Current research indicates that water in aquifers moves slowly, depending on the depth and permeability of the medium in which it is contained. The effects of inappropriate drilling methods and fluids employed at "exploration" on the Liverpool Plains may be found in water 10, 20 or 500 years from now. The effect of *mining* on the Liverpool Plains and its water supplies are likely to be similar – AMD is, unfortunately, merely inevitable chemistry - but on a vastly greater scale. If allowed to occur, mining will, inevitably, poison MDB supplies.

> Monitoring of mining environmental licence and operating conditions compliance by NSW's DECC is limited. Due to staff cut backs, travelling distances and budgetary pressures, it essentially relies upon the public to report and collect evidence of non-compliances.

Extensive evidence from existing mining communities shows that NSW's DECC is unwilling or unable to tackle the serious and continuing acts of non-compliance to environmental licence conditions by coal mine operations.

For example, a recent discharge of turbid water off-site into the Goulburn River by Moolarben Coal Mine, near Mudgee, was only discovered by local graziers who alerted DECC and had the good sense to take photographs of the pollution. DECC's options are "a warning, \$1500 fine, or a long, drawn out court action". Litigation initiated by DECC is rare and the fines appear to be considered little more than 'operating costs' by mine management.

More disturbingly, as an example, NSW DECC knew about the toxic water discharge from the Wallarung coal-fired power station* into water supplies for more than a year without taking any action to stop it and is still currently "reviewing the evidence". Furthermore, the NSW Government's own Rivers audit details ongoing failure to put in place any effective monitoring of NSW river systems. The 2008 update of The Audit Office of New South Wales' 2003 *Protecting Our Rivers* audit seems to confirm that there are currently "no comprehensive arrangements in place or operating for monitoring water quality in our rivers".

As Kellie Tranter LLB of the ABC put it in her report, *Government needs to tackle Water Corruption*: "the NSW Government is hardly in a position to openly assure the public that industries operating near NSW river systems, as well as more remote 'diffuse source' potential polluters, comply fully with their licence requirements and their environmental management responsibilities". [<http://www.abc.net.au/news/stories/2009/04/17/2545722.htm>] [*BHP have to provide a feasibility study for a thermal coal-fired power station in the Caroon area as part of their exploration licence]

> Given our, and other communities experiences with NSW DPI to date, we concur and have extreme concerns for the current and future fate of our surficial and underground water sources if mining licences are granted in this area.

> Protection of our water sources, current and future, from the NSW DPI and government has, regrettably, come down to civil disobedience to force a fully independent, catchment-wide Water Study before any mining licence application is granted.

There is no mention of the word 'water' in the NSW Mining Act and thus "exploration" drilling for coal was undertaken using methods suited to hard rock strata. In our rich, volcanic alluvium with multiple, layered and interconnected water aquifers, as has already been pointed out, this is unacceptable practice - *water* drilling techniques, which keep the aquifers and their different waters separate - should have been employed. Further, there is no acknowledgement of the quality and large amounts of groundwater in permeable 'solid rock' strata (eg. sandstones, coal seams) comprising the ridges and immediately beneath the alluvium.

According to the NSW Parliamentary Library' Research Service Briefing Paper #06/09, entitled: *Mining and the Environment*: "In 2007 the National Centre for Groundwater Management reviewed the 'knowledge and gaps' of groundwater in the Namoi Catchment Area. Despite being one of the most studied catchments in Australia, it found considerable knowledge gaps. The

review recognized that there is a growing interest in both gas and coal potential of the Gunnedah Basin, which underlies the alluvial sediments of the Liverpool Plains, and stated:

“The development of the Caroon Coal Exploration area has the potential to have significant effects on the local surface and ground water quality and quantity. Of larger concern is that this exploration is only the beginning of the expansion of the coal industry within the Namoi Catchment.” [University of Technology, National Centre for Groundwater Management, *Groundwater Knowledge and Gaps in the Namoi Catchment Management Area*. March 2007.]

Other leading researchers have also done a significant amount of work on the groundwater of the Namoi Valley. Scientists Timms and Acworth from the University of NSW stated that, based on the research that had been carried out in the past 10 years, they believe that coal mining on the Liverpool Plains will impact on the groundwater system used for irrigation, stock and domestic use if mining is carried out beneath the flat-lying plains.”

[Refer: <http://www.ccag.org.au/images/stories/pdfs/mining%20and%20the%20environment.pdf>]

Since the undoubtedly complex hydrology of the Liverpool Plains remains poorly understood as stated publicly by water scientists, the Liverpool Plains community believed, from grant of licence in 2005, that independent science should be utilised to determine the spatial arrangement of the aquifers with respect to the coal resources so that ‘go’ and ‘no go’ areas could be determined if mining were to proceed. Such science would clearly require more appropriate and less environmentally-damaging drilling techniques.

The community is not anti-development. However, the community believes that real checks and balances must be applied because of the water resources at stake. Unfortunately, the NSW government, and the “exploration” licence holders did not share the community’s concerns.

As an act of desperation against large company bully tactics and an intransigent state government and mining industry, the Liverpool Plains community set up a Blockade to prevent further exploration drilling on private land and executed a series of legal challenges to heighten awareness of environmental concerns. 14 months later, “The Blockade” is still manned by voluntary community roster, waiting for the now proposed Water Study to be implemented.

Would the community have achieved even this change of heart without direct action? Given the fact that we fought ‘politely’ for two years but got no where, compared to the Blockade, we do not believe so.

Recently the NSW government has moved to excise the flood plains from BHP’s “exploration” licence but not from that of Chinese mining giant, Shenhua’s or those of over-lying gas petroleum leases. Bizarrely, it would appear they may still continue drilling-based “exploration” on the flood plains.

> Excision of the flood plains does not ensure that Liverpool Plains aquifers will remain unpolluted by mining ‘exploration’ now or in the future.

To quote John Polglase, a geologist who lives on the Liverpool Plains:

> *“Of concern is the wholly simplistic belief held by both the NSW Government and BHP, that the rocky ridges are distinct from the alluvial plains, and that the former can be safely mined without impact on the latter.”*

He continues: *“When the Earth and its groundwater resource is considered in 3-D, there is no such compartmentalisation, especially in the Eastern Gunnedah Basin. The plunging folds and fractures of the rock strata comprising the ridges, continue seamlessly under the alluvium at lower relief. Logs from decades of groundwater drilling have shown that water found in the rock strata immediately beneath the alluvium (eg. “rotten sandstone”, coal seams), intimately communicates with or influences the water in the alluvial aquifers above. Ridge groundwater and plain groundwater are either the same (via direct recharge), or they influence each other through their respective hydraulic pressures and permeable media. In summary, the plunging folds and fractures of the rock strata result in various hydraulic pressure flows and interconnecting recharge scenarios for the floodplain aquifers.”*

> *“There is no ‘dotted line’ - neither at the surface nor to any depth or dip - that conveniently separates the pressures, flows and quality of the groundwaters beneath either the ridges or the plains. Topography is surficial - hydrogeology is in 3-D.”*

> An earlier incarnation of DECC, Land and Water Conservation, agrees with this assessment. It determines ridge country as *“a recognised recharge area”*.

Under State Environmental Planning Policy (#46), the NSW government refused an application for limited clearing on a Liverpool Plains ridge property in 1996. The A/Director General stated *“the principle reasons for this [refusal] include the potential impact that the clearing may have on increasing salinity and the conservation value of this remnant vegetation.”* The Notice of Determination continues *“The area is a recognised recharge area. There is significant evidence that shows that continued clearing of these areas will lead to further salinity problems.”* [Refer Appendix B]

> The whole issue did not need to come to civil disobedience. However, the community felt that the prime land and water supplies and environment in general (See Point 3) on the Liverpool Plains are worth protecting for their valuable and sustained food production capability and the viability of the MDB as a whole.

Without the independent findings of a scientifically-rigorous, catchment-wide Water Study, the Namoi catchment would have been quickly subjected to death by a thousand cuts as the current, fundamentally-flawed, project-by-project EIA process, allows. We are grateful for the prompt offer to match State funding given by Federal Minister Wong to help this study reach fruition.

Had respect for legitimate concerns regarding mining's potential impact on water resources and environmental factors been taken seriously much earlier by the NSW State government, the Water Study would now be well-advanced. It is currently still in the planning stage, 12 months after the NSW Minister for Primary Industries finally consented to discussions.

> Protection of our water sources, current and future, from the NSW DPI and lack of government commitment to enforcing environmental compliance has required the undertaking of private, scientific benchmarking.

In order to determine current and future impacts on these vital water supplies, local landowners have undertaken a self-funded, scientifically-rigorous program of benchmark testing of their surficial and groundwater supplies in keeping with Australian Drinking Water Guidelines 2004. (Drinking water standards were applied because water collected in the Namoi Valley Catchment contributes to local and interstate drinking water supplies. By comparison stock water testing, offered by mining companies for properties within their licence, are far less stringent.)

Privately-funded, forensic groundwater quality benchmarking has been undertaken here because in NSW, mining operations are not held responsible for any off-site impacts eg. contamination/subsidence/dry bores etc outside the lease area. Given the value of our water resources to human health, food production, environmental wellbeing and the MDB as a whole, and forewarned by the experiences of local people in other developed coalfields that legally pinpointing the cause of water impacts *after* mining has commenced is problematic, benchmarking prior to any development was the only solution. Private soil, air, seismic, pictorial, and product yield benchmarking programs are also underway.

> Protection of our water sources, current and future, from the NSW DPI and lack of government commitment to enforcing environmental compliance has required taking the NSW Minister for Mineral Resources to court.

The community continues to work with the NSW Environmental Defender's Office in taking civil actions to protect its water resources. A legal challenge is being pursued in the Land and Environment Court to challenge the exploration licence and coal authorisation granted to Coal Mines Australia Pty Ltd (BHP). The legal challenge is based on the Minister for Mineral Resources' alleged failure to follow the correct procedures for granting an exploration licence and a transfer of a coal authorisation. In particular, it is alleged that the Minister did not consider the need to conserve and protect the flora, fauna, fish, fisheries, scenic attractions and features of Aboriginal, architectural, archaeological, historical or geological interest in the land as required by the Mining Act 1992. The case has been listed for hearing 26-29 October.

The Minister in charge of Mineral Resources has stated: *"The NSW Government will not allow the integrity of water supplies in the region to be compromised and will not approve any mining that is likely to have an unacceptable impact on the agricultural productivity of the region."* [Personal comm. from Ian Macdonald MLC]

Given its consistently adversarial approach to community concerns, and the lip service this government has paid to water and environmental protections emanating from mining impacts to date, it has been difficult for the community to take such assurances seriously.

So far, it is abundantly clear that the large number of mining impacts and mining environmental licence breaches detailed by concerned members of the public, indeed itemised and forewarned in community submissions, have always been deemed “acceptable”.

3. Potential impacts to Environmental Values

> *The native vegetation of the cracking clay soils of the Liverpool Plains have been nationally recognised as a critically-endangered ecological community.*

In addition to this, this area has nationally-endangered ‘grassy white box woodland’ usually found on the recharge ridges of these Plains.

The community has asked BHP, since we are clearly in the phase of mine planning and development, where are the power station, coal washery, coal loader and associated infrastructure going to go?

Will they all be placed on the Ridges that parts of NSW government consider so important to water recharge? Is it feasible to mine under a power station? It would appear that this development is clearly running out of room to mine, unless there is wholesale clearing of the Doona State Forest.

In 2007, Leard State Forest, according to National Parks Association of NSW “*one of the most diverse woodlands left in a bioregion that has been recognised as a national biodiversity hotspot*” and also a habitat for the nationally-endangered grassy white box woodland, was cleared to make way for an open cut coal mine.

The two photographs: below left, Laird State Forest and at right, an example of the irony with which the State government approaches the environment.



Within Doona State Forest and the other remnant forest on the Liverpool Plains' ridges, there are over 65 vulnerable or endangered species as listed by NSW Parks and Wildlife.

As detailed in Appendix B, in 1996, the Liverpool Ridges contain the following environmental sensitivities:

- contains remnant vegetation within a region that has been extensively cleared
- contains habitat for at least two threatened fauna species: Koala and Regent Honeyeater
- is dominated by *Eucalyptus albens* vegetation communities which are poorly considered and are considered to be vulnerable communities
- contains remnants potentially available for disjunct populations of a number of species
- contains remnant vegetation that is locally significant for wildlife habitat
- may be important for migratory species such as the silvereye (*Zosterops lateralis*) given, in particular the extent of regional vegetation clearance
- currently has a low boundary to area ratio and the proposal will significantly increase this ratio. As the extent of remnant vegetation in the region is very limited any further fragmentation of the small remaining remnants will have a significant impact on the remaining locally occurring biodiversity.

> Given all the evidence detailed here in Part A, it is clear the NSW government does not value water supplies – even those connected to the MDB - agricultural production or environmental factors when assessing the appropriateness of exploration and mining licences. As a result, Federal intervention via the Water and/or EPBC Acts is very important to communities questioning the appropriateness of industrial development in NSW within the MDB.

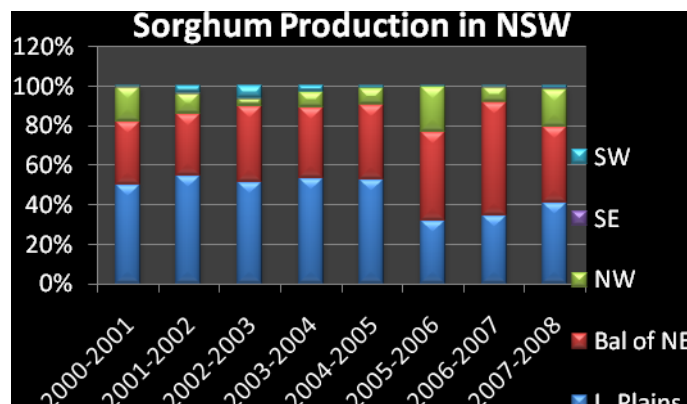
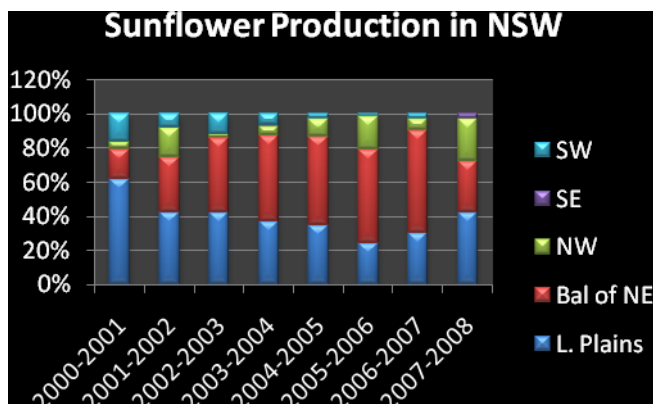
Part B

“Evaluation of the potential impacts in the context of the Murray Darling Plan and agricultural productivity.”

> The exceptional productivity of the Liverpool Plains under dry land and irrigation is well-documented. The Liverpool Plains could be considered Australia's insurance policy for food production with its exceptionally fertile volcanic soils, moderate climate, reliable summer and winter rainfall, high water-holding capacity soils and well-managed, high-output aquifers that form part of the MDB.

> Government statistics show that the Liverpool Plains' 800,000 hectares (including ridge land) yields 40% above the national average in tonnes per hectare. This food bowl reliably delivers a diversity of grains, oilseeds and livestock to Australia's domestic and export markets.

The 800,000 hectares making up the Liverpool Plains are part of the state's NE quadrant for grain production. As shown in the graphs below, Liverpool Plains production accounted for 40% of the state's sunflower and 46% of the state's sorghum crops between 2000 and 2008. (Ref. NSW DPI)



In addition, the Liverpool Plains produces corn, soybeans, wheat, barley, oats, canola, cotton, chickpeas and other legumes, as well as beef, sheep and wool.

The extraordinary strength of this prime agricultural land is not only its consistent production but its adaptive production in response to market forces.

As climate change affects more southerly and westerly regions, (James Cook University, 2009), end users of agricultural products will depend increasingly on consistently reliable areas such as the Liverpool Plains.

However, if coal and gas mining are allowed to threaten this prime agricultural resource and its water supplies, many food businesses will face increased costs and scarcity of clean, reliable domestic supply.

In granting mining exploration leases, we believe the state government has not properly considered the impact of mining on the aquifers and therefore food production from this area. The State government should be encouraged to consider the full impact to:

- the food production capacity of the state
- the supply chain of that capacity to food processors
- the increased costs of supply interruption
- agricultural and related industry jobs.

For further referenced statistics on the productivity of this area, please refer to the following fact sheets produced by SOS (Save Our Soils) Liverpool Plains:

- Appendix C: *“Liverpool Plains: Critical for Food Security”* (2009)
- Appendix D: *“What will Coal Seam Gas Mining do for Prime Farming and Grazing Country in the Murray Darling Basin?”* (2009)

> Furthermore, mining and clean food production do not co-exist successfully despite industry and government protests to the contrary. Coal production inevitably produces dusts and toxic minerals that affect plant, animal and human growth, and the health and cleanliness of water sources and food supplies.

In my submission to the Senate Enquiry into Food Production in 2009, the following excerpts are of direct relevance to Part B of *this* Enquiry:

“The health of any country that grows adequate food for its own population can be directly linked to the health of the land[and water supplies] that produces that food. Effectively, a food’s nutritional value in terms of baseline nutrition (i.e. minerals) can not rise higher than its source and the nutritional value of that source is directly linked to the quality of the soil, the water and the underlying geology of the region that generated it...”

...Exhuming such strata [that of coal shales etc] to the surface in food producing areas by long wall or open cut coal mining ensures the air, the water, the soil, the people and the food grown here will be contaminated with heavy, radioactive and excessive metals...

...[Why do] Meat and Livestock Australia ask farmers in their Risk Assessment, Livestock Production Assurance audit : “Do stock have access to leaking electrical transformers, capacitors, hydraulic equipment or coal mine wastes?” Further, it explains that “PCB residues have been found in soil below leaking electrical transformers....on former coal mining leases and in materials such as coal washery wastes (chitter).” What farmer would rear stock on industrial wasteland? Yet we are told mining and agriculture can co-exist.”

I concluded my submission, also relevant for Part B of this enquiry into potential impacts to agricultural production, thus:

“When it comes to the question of how Australian Farmers should provide food that is affordable, viable for production and of sustainable impact, I am submitting that Prime Agricultural Land can not be sacrificed for industrial development, because no return to its former glory, let alone clean food producing co-existence is possible once toxic strata are breached and exhumed, no matter how close to ‘world’s best practice’ such industries consider their methodologies to be.

*Aspiring to zero harm, is **not** zero harm.*

If we are indeed serious about:-

- *Australia's food quality and the health of our people generated from it,*
 - *our duty of care to provide affordable, clean food to the nation and to those we export to overseas,*
 - *continuing to have access to international markets because our food is demonstrably clean*
 - *and ensuring that highly productive, quality soil and water situated in a beneficial climate can continue to produce uncontaminated food from innovative farming methods for centuries to come*
- we need to protect such land from wholly inappropriate industrial development.*

Our food chain, our health, our exports, our water supplies are simply too important to risk to the toxic contamination inevitable from industrial development on the Liverpool Plains.

We would not consider growing food on land that was contaminated with PCBs from old gas works or leaking electrical transformers, so why do we believe, against all the evidence to the contrary, that Liverpool Plains farmers can continue to do so once coal and gas mining is sanctioned?

This time, we literally can not have our cake and eat it too. Unless we are willingly prepared to produce cake that is toxic."

For further information on the toxic aspects of coal mining on agriculture, soil and water please refer to Appendix E: *Senate Enquiry into Food Production in Australia – Submission by Dr Pauline Roberts, 11th May 09.*

Thank you for your attention to this submission. Should you require any further information or detailed references, please do not hesitate to contact me on 02 6747 6224 or 0407 011 733.

Pauline Roberts

"The Cottage"
Bundella Station
Bundella
NSW 2343

Enc.

Appendix A: *Alteration of habitat following subsidence due to longwall mining – key threatening process listing NSW Scientific Committee - final determination, 2005.*

Appendix B: *A/Director General Land & Water Conservation letter to Mr S Bloomfield, 1996.*

Appendix C: *SOS Booklet 1. Liverpool Plains Critical for Food Security (2009).*

Appendix D: *SOS Booklet 2. What will Coal Seam Gas Mining do for Prime Farming and Grazing Country in the Murray Darling Basin?*

Appendix E: *Senate Enquiry into Food Production in Australia – Submission by Dr Pauline Roberts, 11th May 09.*