NEW SOUTH WALES MINERALS COUNCIL LTD
MININGENUITY™

LEVEL 3, 12 O'CONNELL STREET, SYDNEY NSW 2000
PO BOX A244, SOUTH SYDNEY NSW 1235
• T: 61 2 9274 1400 • F: 61 2 9274 1455

22 September 2009

Committee Secretary
Senate Standing Committee on Environment, Communications and the Arts
PO Box 6100
Parliament House
CANBERRA ACT 2600

By email: eca.sen@aph.gov.au

Dear Sir / Madam

Inquiry into the impacts of mining in the Murray Darling Basin

The NSW Minerals Council (NSWMC) welcomes the opportunity to make a submission to the Senate Standing Committee on Environment, Communications and the Arts' Inquiry into the impacts of mining in the Murray Darling Basin (MDB).

The NSW minerals industry is a key driver of the NSW economy, with NSW minerals production valued at $14 billion for 2007-08. The industry directly employs 47,000 people in mining and minerals processing and supports the employment of a further 200,000 people in businesses related to the mining sector.

Mining is a temporary use of land which has a small footprint comparative with other land uses. In NSW, less than 0.1% of land in NSW is used for mining, with the majority of mining located to the east of the Great Dividing Range. Mining in the MDB occurs within a comprehensive legislative framework that ensures it is one of the most heavily regulated industries in NSW. Rigorous regulation applies throughout all phases of a mining operation, from exploration through to rehabilitation and mine closure.

The Inquiry's Terms of Reference (ToR) raises questions regarding impacts on the MDB of mining operations. Without specific details such as: details of potential mine plans; agreed environmental values of the MDB; detailed hydrological modelling of the MDB and in particular, the alluvial flood plains and the headwaters of the Namoi Valley, the questions cannot be directly addressed. However, NSWMC believes that the existing regulatory framework more than adequately addresses the concerns that are raised by the Inquiry's ToR. The existing regulatory framework allows for the evaluation and assessment of potential impacts of mining projects on the environment, including the MDB and the Namoi Valley. Water Sharing Plans and sustainable yield projects also specifically address the sustainable management of water resources that are so critical to our major primary industries of mining and agriculture. There is also further research being commissioned that will provide more detailed answers.

In NSW, the potential impacts of current and projected mining are comprehensively and satisfactorily assessed by the existing environmental planning and assessment process, regulated by the NSW Government. This framework not only requires detailed, rigorous, science-based environmental assessment, but also the consideration of social and economic impacts of a project, including impacts on other land uses. No mining project can proceed in NSW without a thorough assessment of potential impacts of a mining operation on the surrounding environment, including surface and groundwater resources.

In addition, Water Sharing Plans under the *NSW Water Management Act 2000* more than adequately provide for sustainable management of the State's surface and groundwater resources. The Namoi Valley has existing Water Sharing Plans for both the regulated surface waters and Upper and Lower Namoi Groundwater Sources. Just like all other users, the NSW mining industry must work within these existing regulatory frameworks and market mechanisms. Further research is also being done in the Namoi catchment to better understand water resources and mining's potential impacts on these resources. NSWMC would like to draw the Committee's attention to the commitment by the NSW minerals industry to work with the other key stakeholders to undertake this independent water study.

The study will provide greater spatial understanding of underground and surface water flows in the catchment and also undertake a strategic assessment of the likelihood of potential impacts on the quantity and quality of surface and groundwater resources in the catchment posed by coal and gas development in the Namoi catchment.

The attached submission outlines the NSW's mining industry's contribution to economic, social and environmental management; regulatory processes; industry's current practices that support and promote world's leading practice water management practices; case studies of positive outcomes of agriculture and mining working in partnership for improved environmental outcomes.

NSWMC acknowledges that further improvements to the existing comprehensive regulatory system do exist. NSWMC believes there is a need for a greater focus on strategic land use planning in regional NSW, including the MDB. Whole-of-government regional plans that integrate the natural resource management, conservation planning, development and heritage objectives of government would promote the development of integrated landscapes, sustainable use of resources, reduce land use conflicts and maximise the productivity of developing regions. NSWMC understands that the MDB Plan will aim to provide this overarching framework to benefit all stakeholders operating in the MDB.

If you have any questions regarding the issues outlined in NSWMC's submission, please contact Sue-Ern Tan, General Manager, Policy and Strategy on 9274 1400.

Yours faithfully

Dr Nicole B. Williams
CHIEF EXECUTIVE OFFICER

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Australian Senate

Standing Committee on the Environment, Communications and the Arts

References Committee

INQUIRY INTO IMPACTS OF MINING IN THE MURRAY DARLING BASIN

NSW Minerals Council Submission

September 2009

Contents

1 Executive Summary

The NSW Minerals Council (NSWMC) represents the State's minerals industry, one of the key drivers of the NSW economy. The value of NSW mineral production has been calculated at $14 billion for 2007-08, an increase of 13% on 2006-07. Coal accounted for over 70% of total production value, with metallic minerals also significant at over 20% and the remainder comprised of construction materials and industrial minerals. The industry returns $1.4 billion in royalties and taxes annually to the State Government's consolidated revenue, monies which assist in providing schools, police, health and roads for the people of NSW. In addition to the enormous economic contribution to the State, the NSW minerals industry plays a vital role in securing and reinforcing the social infrastructure of regional communities throughout NSW and the Murray Darling Basin (MDB), particularly in towns such as Orange, Parkes, West Wyalong, Cobar and Broken Hill.

Mining is a temporary use of land. It currently has a very small footprint within NSW (compared to agriculture, urban development and many other land uses) accounting for less than 0.1% of total land use in NSW. The majority of mining is located to the east of the Great Dividing Range. Mining in the MDB occurs within a comprehensive legislative framework that ensures it is one of the most heavily regulated industries in NSW. Rigorous regulation applies throughout all phases of a mining operation, from exploration through to rehabilitation and mine closure.

In the NSW Murray Darling Basin there are seven major coal operations and nine major mineral operations. Coal is mainly mined in the Western Coalfields near Mudgee and the growing development in the coal fields of the Gunnedah Basin. The majority of metallic minerals in NSW (gold, copper, silver, lead and zinc) are mined in the MDB – from Orange through to Broken Hill, Cobar and West Wyalong. Mineral sands are also prevalent between Mildura and Broken Hill.

Mining is a comparatively small user of water in the context of NSW. According to the ABS Water Account (2006) out of the 5,922 GL of total water consumed in NSW during 2004-05, mining operations consumed approximately 63 GL, or just over 1% of the entire State's water consumption. This is compared to agriculture (70%), the water supply industry – including distribution losses (11%) and households (10%).

The MDB, like all other areas of NSW, is a unique landscape due to the combined factors of its geology, landscape evolution, natural resource systems and climate. For this reason it is essential that any land use development assesses the potential impacts on the surficial and groundwater resources, thoroughly, scientifically and on a case by case basis. This should apply to all land uses, including mining and agriculture.

NSWMC believes that the existing State and Federal regulatory framework more than adequately addresses the concerns that are raised by the Inquiry's Terms of Reference. This framework allows for the evaluation and assessment of potential impacts of mining projects on the environment, including the MDB and the Namoi Valley. Water Sharing Plans and sustainable yield projects also specifically address the sustainable management of water resources so critical to our major primary industries of mining and agriculture.

In NSW, the potential impacts of current and projected mining are comprehensively and satisfactorily assessed by the existing environmental planning and assessment process regulated by the NSW Government. The *Environmental Planning and Assessment Act 1979* has primacy in mining project approval processes, with the *Mining Act 1992*, the *Protection of the Environment Operations Act 1997*, and a myriad of other legislation that approvals are required to meet. This framework not only requires detailed, rigorous, science-based environmental assessment, but the consideration of social and economic impacts of a project, including impacts on other land uses. No mining project can proceed in NSW without a thorough assessment of potential impacts on the surrounding environment, including surface and groundwater resources in the catchment.

Water Sharing Plans under the NSW's Water Management Act 2000 more than adequately provide for sustainable management of NSW's surface and groundwater resources. The Namoi Valley has existing Water Sharing Plans for both the regulated surface waters and Upper and Lower Namoi Groundwater Sources. In the same way as all other users, the NSW mining industry must work within these existing regulatory frameworks and market mechanisms. The NSW mining industry also

involved in the commissioning of the Namoi Water Study to better understand water resources and mining's potential impacts on these resources.

There are many examples around NSW where mining and agriculture form the basis of strong diverse regional economies. The Hunter Valley is a strong case in point where one of the world's leading thoroughbred nurseries, a world class wine and tourism industry all coexist with a world leading coal mining sector. Mining and agriculture also currently coexist in the Murray Darling Basin region, particularly in the Central West, with both Cadia Valley Operations and Northparkes mines significantly contributing to the social, environmental and economic fabric of the Orange and Parkes regions.

Ultimately, it is the government that must determine whether the environmental impacts are acceptable in light of the economic and social benefits of mining. NSWMC believes that the planning and water management processes in NSW are designed to effectively balance these aspects in light of the principles of Ecologically Sustainable Development. The industry is committed to leading environmental management practices as well as contributing to the social and economic prosperity of NSW, particularly regional NSW.

2 Introduction

2.1 Background

The NSW mining industry is one of largest and most critical industries for the economy of NSW. The NSW Minerals Council (NSWMC) represents the state's $14 billion mining industry. NSWMC provides a single, united voice for mineral producers, operators, explorers and extractive material producers and associated service providers operating in NSW.

The NSW mining industry has a demonstrable record of good environmental management and continuous improvement, in no small part due to co-operative, consultative and constructive approaches towards ensuring balanced development outcomes. NSWMC is a key stakeholder in many of the environmental, social, regulatory and economic issues critical to the sustainable development of NSW.

NSWMC welcomes the opportunity to make a submission to the Standing Committee on the Environment, Communications and the Arts References Committee's Inquiry into impacts of mining in the Murray Darling Basin (MDB). Mining has and will continue to result in some impacts, particularly environmental impacts. However, any development or land use will have an impact on our natural systems, including agriculture. NSWMC strongly believes that new developments must be assessed on a case by case basis to enable all environmental, social and economic impacts to be balanced.

2.2 NSW Minerals Industry

Mining, a temporary land use, accounts for less than 0.1% of total land use in NSW, less than all the roads in NSW (1.06%) [1].

The 2006 NSW State of the Environment Report shows land use in NSW as "*Agriculture is the dominant land-use system in NSW, accounting for 76% of the State's total land area. Grazing (69.8%) is by far the largest land use, followed by cropping (7.9%), forestry (approx. 3.6%) and mining (approx. 0.1%), with irrigation and other intensive uses accounting for less than 1%. Conservation lands (land managed by DEC for conservation purposes) occupy 7.8% of the total area, while urban development is less than 0.2%* [2]

2.2.1 Our contribution to NSW – Economic

The mining industry is one of the prime drivers of the NSW economy. The value of NSW mineral production for 2007-08 was $14 billion. Coal accounted for over 70% of total production value, with metallic minerals also significant at over 20% of total value. The remainder is comprised of construction materials and industrial minerals [3].

The NSW minerals industry directly accounts for 2 per cent of Gross State Product (GSP). Seventy-five per cent of this is earned through exports. The sector is the largest merchandise exporter in the State, accounting for 35% of export income. Mining and minerals processing directly employ 47,000 people, mainly in regional towns and cities, and indirectly support over 200,000 jobs throughout the State [4].

The NSW minerals industry contributes a significant amount to NSW Government revenue through royalties, taxes and charges. The 2009-10 NSW Budget saw the royalty forecast revised for 2008-09 from $920 million up to $1.4 billion [5].

[1] Bureau of Rural Sciences - Australian Collaborative Land Use and Management Practices
[2] NSW 2006 State of the Environment Report (http://www.environment.nsw.gov.au/soe/index.htm)
[3] Based on figures provided by DPI
[4] ACIL Tasman (2006), *The contribution of the minerals industry to the NSW economy,* Report prepared for the NSW Minerals Ministerial Advisory Council, December, p. vi.
[5] NSW Government, 2008-09 Mini-Budget Papers

The NSW Mining industry also underpins capital expenditure in NSW. According to ABARE forecasts, the NSW mining industry has over $9 billion worth of major projects either under construction, committed or undergoing feasibility studies.

For the NSW community, the economic contribution of the NSW minerals industry translates into:

- High levels of employment within the industry
- High paid jobs for minerals industry employees
- Support for businesses and employment in rural and regional communities
- Electricity, road, rail and port infrastructure
- Contributions to community life through sporting clubs, emergency services, charities and other groups
- Hospitals, schools, police and other community services throughout the State funded in part by the significant royalties and taxes paid by the industry.

2.2.2 Our contribution to NSW – Social Infrastructure

In addition to the enormous economic contribution to NSW, the NSW minerals industry plays a vital role in securing and reinforcing the social infrastructure of regional communities in the MDB and throughout NSW.

Mining in NSW is the lifeblood of many local communities since the mid-1800s. This history has helped build strong relationships between mines and local communities, which have been further strengthened through formal and informal consultation processes.

Work opportunities have been provided by the NSW mining industry and this has contributed to population movement and retention of population in the regional areas of NSW. In many cases this has also contributed to the improvement of key social infrastructure and human services, such as health and education facilities, since government provision of these facilities is fundamentally driven by population growth and demographics.

The NSW minerals industry funds a large range of community groups, activities and projects which contribute to the economic and social fabric of the region. Some of the areas funding is directed towards include: arts and culture; community welfare; education; environment; health, sport and recreation and community enhancement programs.

In many cases, the community is able to participate in determining where this money is spent through the establishment of community groups that will decide on the future allocation of community funding, creating a greater level of community awareness and ownership of the social investment outcomes.

Case Study: Cowal Mine (Barrick) – a Community Collaborative Project

Barrick's Cowal Gold Mine is located 38 kilometres north of West Wyalong and in the Central West of NSW. Cowal Mine consists of an open pit and process facilities which began operating in April 2006. The mine is adjacent to Lake Cowal, an environmentally significant and culturally sensitive wetland. The environmental significance of the area led to two Commissions of Inquiry and a comprehensive Environmental Impact Assessment before Development Consent was granted in 1999. One of the environmental requirements placed on Barrick included the establishment of an Environmental Foundation, known as the Lake Cowal Foundation.

The primary objective of the Lake Cowal Foundation is to "*work towards the protection and enhancement of the natural environment in the Lake Cowal region*". After extensive consultation between Barrick and a number of peak NSW environmental groups, a Memorandum of Understanding was signed for the establishment of the Foundation.

Barrick's commitment to establishing and supporting the Foundation has resulted in positive working partnerships with a wide cross section of the community from local landholders, educational institutions, local and state government, researchers and environmental groups. The Foundation's membership base includes the Total Environment Centre, National Parks Association, Nature Conservation Council and Barrick, and has partnerships with organisations including the Lachlan Catchment Management Authority (LCMA), Rural Lands Protection Board, Greening Australia, National Landcare Program, NSW Dept of Education and Training, Native Grasses Association, CSIRO and, most importantly, the regional farming community.

Barrick provides 1,400 hectares of farming land to support a variety of research and best practice conservation projects and trials. The land also accommodates the Lake Cowal Conservation Centre which provides schools and the broader community with information and educational opportunities based on school curriculum and sustainable land management courses. The Foundation has been involved with the development and implementation of 30 projects with a total of 34 project partners, and worked with over 82 landholders with 13,842 ha of land now managed under improved conservation and farming practices. Many landholders have undertaken property planning courses and participated in other educational opportunities. Some of the major projects include:

- The B.I.G. project is a "catchment scale" natural resource management project focusing on the Bland Creek, developed through a partnership between the Foundation, LCMA, Bland Creek Catchment Committee, Greening Australia and local landholders. In all, 97 landholders have undertaken 134 projects during the three year project.
- Natural Sequence Farming (NSF) is a holistic land management initiative that seeks to reintegrate stream flow and floodplain processes to drive sustainable production and nature conservation outcomes. The Foundation, in partnership with eight private landowners, is undertaking a NSF project along Spring Creek.
- The CSIRO Grasslands Study is a collaborative research project aimed at quantifying the impact of the 2006-2008 drought on the population dynamics and lifecycle of native grasslands.

Cowal Mine's groundbreaking engagement has recently been recognised as the winner of the NSW Minerals Councils' 2009 NSWMC Environment & Community Excellence Award.

2.2.3 Our contribution to NSW – Environment

Land Management

Mining is a temporary use of the land. When mining in a particular area is complete, the land must be rehabilitated to a safe, stable and self-sustaining condition. The NSW Government currently holds more than $1 billion in rehabilitation bonds, providing a strong incentive for the industry to fully meet its rehabilitation obligations.

Rehabilitation objectives are defined early in the planning process in consultation with government, local councils, the community and other stakeholders. On land previously used for agriculture or plantation forestry, the aim could be to rehabilitate the land to its pre-mining level of productivity. In other cases, the objective may be to restore the area as close to its original condition as possible, with its environmental and heritage or conservation values intact.

The industry is an important stakeholder in NSW land use planning and land management issues and has the resources and skills to contribute to lasting, positive land management outcomes.

The industry invests significant resources into conservation activities, including: managing buffer lands or offset sites to improve biodiversity values; partnering with community groups such as Landcare to deliver conservation initiatives; rehabilitating streams to minimise erosion and improve stream health; and undertaking mine rehabilitation that increases biodiversity values in a region.

Biodiversity offsets are established by mining operations to counterbalance impacts on biodiversity that cannot be avoided or mitigated during the mining process, such as the clearing of native vegetation to access mineral resources or to construct buildings and infrastructure. The industry has

been a leader in the use of offsets since the mid-1990s. Along with mine rehabilitation, offsets can help to create lasting, positive biodiversity outcomes.

The NSW minerals industry has embraced their responsibilities to the environment and the community enthusiastically. The Industry has a demonstrable record of good environmental management and continuous improvement, in no small part due to co-operative, consultative and constructive approaches towards ensuring balanced development outcomes.

Case Study – Northparkes Mine (Rio Tinto) – Miners and Farmers Working Together

Northparkes is a copper and gold mine located 27 kilometres north-west of Parkes in the Central West of NSW. It is a predominantly underground mine with a small open cut operation. Northparkes has entered a traditional farming community and taken ownership of productive farming land for the purpose of mining. Northparkes owns 6000 hectares of land around the mine, of which the mining lease covers 1630 hectares, and mining operations cover 11 hectares. The remaining land is actively farmed using sustainable farming methods developed and adopted to maximise productivity and quality while conserving water and soils.

Initially Northparkes managed various land holdings through short-term leases. However, this was resulting in unsatisfactory land management outcomes. In 1997 Northparkes established a Farm Manager role within the organisational structure of the mining operations. The role was responsible for agricultural land-use management of the various land holdings and actively engaging neighbouring farmers.

The development of strategic partnerships, alongside Northparkes' approach to land stewardship, has provided a number of significant milestones:

- Since 1997, 150,000 trees have been planted revegetating more than 350 hectares.
- Local landowners are acknowledging the value of conservation farming practices and adopting on their properties in the region
- District awards received for crops that experienced drought conditions
- Regular on-site field days with the community
- Involvement in research and development including:
  - Long term, large scale agricultural trials
  - Carbon Yield Research Project with CSIRO
  - Identifying optimal fertiliser application rates for fertile soils with I&I NSW
  - Assess the impact of row spacing and sowing rate on yields with I&I NSW

With Northparkes undertaking research and trials on their farming land it enables the local farming community to evaluate if a new farming method could benefit their farming practices, without having to undertake the risk themselves.

For Northparkes, the most significant benefit is the positive relationships that have been established with the neighbours, regulatory bodies and the broader farming community. The majority of farmers that own land adjacent to Northparkes land have and are continuing to adapt their land management practices using with the principles of sustainable farming. The improved relationships with local landholders has resulted in land access agreements for exploration activities being easily facilitated and future expansions in the mining footprint supported by the community.

It is believed that these community partnerships will help to achieve long-term sustainable management of the land once mining ceases.

Northparkes success in managing the land for a beneficial use is valuable in that it builds the industry's reputation as a responsible steward of the land. It effectively demonstrates that miners are good land managers.

Northparkes outstanding work has recently been recognised by the NSW Minerals Councils with a Highly Commended Award in the 2009 NSWMC Environment & Community Excellence Awards.

Water Management

The NSW minerals industry is a world leader in the use, reuse and management of water. The industry is acutely aware that water is a critical resource - it is one of the mining industry's most critical business inputs in the same way it is for other primary industries such as agriculture. For this reason the NSW minerals industry promotes a strategic approach to water management so that water is more efficiently managed and valued as a vital business, community and environmental asset. This involves strategic water planning, constantly improving operational performance and building relationships with stakeholders to generate mutually beneficial outcomes.

Key Minerals Industry Water Facts:

- Mining accounts for only 1.1 % of NSW's water usage
- Of the 5922 gigalitres of water allocated for various consumptive uses in NSW, mining uses 63 GL
- In Australia, water consumption in the mining industry represents only the 6th biggest user of water behind agriculture, households, water supply, other industries and manufacturing
- The minerals industry has an average value of $80 per cubic metre of water used, compared to $40/m³ for the industrial sector and $5/m³ for the agricultural industry (CSIRO, 2007)
- The mining industry is the 4th largest user of "Reuse Water", with the ABS noting that volumes are under-reported due to limitations in measuring and reporting.

The Australian Bureau of Statistics publishes the Water Account Australia, with the latest release 2004-05. Water consumption in Australia for 2004-05 was 18,767 gigalitres (GL), a decrease of 14% from 2000-01. In 2004-05, the NSW agriculture industry had the highest water use, accounting for 69% of total water consumption (See Figure 1).

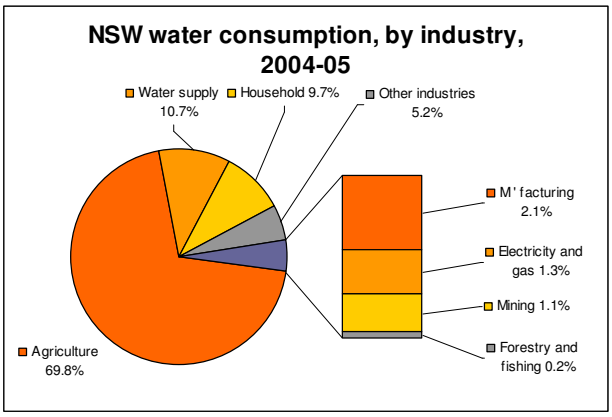

Figure 1 - NSW Water Consumption (ABS) [6]

Cadia Valley Operations, one of Australia's largest gold mines, provides an example of a catchment specific consumptive use in the Murray Darling Basin. Within the Lachlan Catchment, which forms part of the MDB, the quantity of water delivered to the water management system at Cadia Valley Operations (excluding that from other catchments) represents 1.2 percent of total water usage in the Lachlan catchment ("Water Availability in the Lachlan", CSIRO March 2008). The mine also has a reuse efficiency rate of 81%.

Water is vital for mining and minerals processing. Water is used throughout all stages of the mining process including:

- Mineral exploration
- Ore extraction and processing
- Dust suppression
- Site amenities e.g. drinking water and toilets
- Irrigation of surrounding lands and rehabilitated areas.

[6] ABS Water Account, Australia 2004-05

Mines obtain water from a variety of sources including: direct harvesting from the environment (surface water and groundwater); water reused from other sources; on-site recycling and town water supplies. Mines often use water that is unsuitable for other purposes such as deep saline groundwater or effluent from town sewage. For example Cadia Valley Operations sources 30% of its water from Orange and Blayney City Council's effluent. This lower quality water can be used directly, such as for dust suppression, or can be treated to a higher quality. In many mines, a large proportion of water is obtained through mine dewatering – the removal of excess runoff and groundwater seepage into mines. This water can be used during production, returned to the environment, or shared with other local mines, towns or industry.

Even though mining only uses 1% of water in NSW, mining operations can often be the single largest user in a town or region. That comes with a lot of responsibilities to manage our water use effectively. The mining industry is continually looking at innovative ways to reduce its water consumption. Water security is an important business issue and improving the efficiency of water use is an important part of business strategy to ensure secure supplies of water in the future.

In NSW, mining is reported to be the 4th largest user of "Reuse Water", utilising 5 695 ML. The ABS acknowledges that this figure does not include the significant amount of recycled water that is used within mine site operations.

The industry has also developed extensive water sharing systems between sites and other industries which reduces reliance on other forms of fresh water supply. For example, in the Central West the industry provides excess water to power stations and also returns it to streams to supplement environmental flows.

The NSW minerals industry undertakes extensive monitoring of impacts, particularly in relation to monitoring of streams and groundwater. Monitoring is conducted on ground movements, stream flows, water quality, ecosystem health and visual aspects. Monitoring can also be a useful tool for impact prevention in the short term.

Increasingly over the past decade, mining development consents have included conditions requiring the development and implementation of monitoring programs for a range of natural, cultural and physical parameters. These programs serve to increase the confidence of impact prediction by comparing pre-mining assessments with actual impacts observed during and after mining. These programs have also served to refine the impact assessment process to direct appropriate levels of assessment to those values most at risk of impact from any particular mining proposal.

As a result, the industry is one of the largest providers of funding for ecological and cultural heritage data collection. Further, a great deal of this data not only assists the mining application, assessment and approval process, it also serves to grow the corporate and communal knowledge of these important values across the region.

The minerals industry invests heavily in research projects to improve water management, with mines having developed water efficient technology that can be deployed across a number of different industries. Research organisations include the Sustainable Minerals Institute based at the University of Queensland (www.smi.uq.edu.au) and ACARP (the Australian Coal Association Research Program) (www.acarp.com.au).

2.2.4 Leading Practice Water Management

The NSW minerals industry is not content to merely meet the regulations placed on the industry. Rather, it actively develops leading practice in the area of water management. The industry has been fundamental in developing a number of leading practice projects.

- **Strategic Water Management in the Minerals Industry - A Framework**: A publication produced jointly by the Ministerial Council on Mineral and Petroleum Resources (MCMPR) and the Minerals Council of Australia. This aims to promote a strategic approach to water management at mining and processing sites so that water is more efficiently managed and valued as a vital business, community and environmental asset. This framework sets out the strategic issues that mineral operations need to consider for responsible water management at a site and corporate level in order to manage risks and identify opportunities for continuous improvement. It provides high level guidance on issues that should be addressed in developing a water strategy for a business.

- **Leading Practice Sustainable Development Handbook for Water Management**: the leading practice booklet for water management in the minerals industry was published in 2008 following a collaborative effort involving academic, government and industry representatives. It provides an up-to-date source of information that seeks to build on the strategic framework and the mine site water management handbook developed by the industry in the late 1990s.

- **Water Metrics Program** - NSWMC, in partnership with the Minerals Council of Australia, has been developing a new water metrics framework which will improve the level of knowledge and water management on sites, provide greater consistency in reporting and enable water accounts to be generated per site. This will enable benchmarking across the industry and continual improvement in water management.

Case Study - Ulan Irrigated Fodder Project

The Ulan coal mine in NSW near Mudgee has developed the Bobadeen Irrigation Scheme. This scheme is a unique solution that uses surplus mine water to irrigate 242 hectares of land specially planted with perennial pastures, which is maintained at an optimal level by beef cattle.

Ulan historically released surplus mine water into the Goulburn River under its EPA licence, consistent with its licence to operate. Now surplus mine water is first pumped to a holding dam and then to five-centre pivot irrigators. The pasture is kept at an optimal level by carefully monitored rotational grazing by beef cattle and the production of fodder. The scheme supports the agistment of 1000 cattle and is producing vigorous perennial pastures that are used by the cattle.

An industry first, this $7 million scheme uses approximately seven mega litres of water per hectare each year and has been heralded as an outstanding and truly sustainable solution to a complex water management problem. The scheme has put an end to offsite discharges and is recognised as a solution that goes beyond the statutory requirement of ceasing an ‘end of pipe’ discharge solution. Most importantly, the scheme allows Ulan to meet its environmental commitments and be a leader in land management.

2.3 Mining in the Murray Darling Basin

There are seven major coal producers and nine major mineral operations in the NSW portion of the MDB – see Table 2. Coal is mainly mined in the Western Coalfields near Mudgee and the growing development of the coalfields in the Gunnedah Basin. The majority of metallic minerals in NSW (gold, copper, silver, lead and zinc) are mined in the MDB – from Orange through to Broken Hill, Cobar and West Wyalong. Mineral sands are also prevalent in the MDB between Mildura and Broken Hill.

Table 2 – Main Operational Mining (Metalliferous and Coal) sites within the NSW Murray Darling Basin [7]

Mine	Production p.a.	Commodity	Operator	Location
Cadia Valley	298,000 oz 28,000 t	Gold Copper	Newcrest	Orange
Cowal Mine	191,000 oz	Gold	Barrick	West Wyalong
Northparkes Mine	76,373 t	Copper	Rio Tinto	Parkes
Ginkgo	392,885 t	Mineral Sands	Bemax	Pooncarrie
Tritton	18,549 t	Copper	Straits	Nygan
Endeavor (Elura)	~420,000 t	Lead/Zinc	CBH	Cobar
Peak	3,742 t	Gold / Copper	PGM	Cobar
CSA	~150,000 t	Copper / Silver	CMPL (Glencore)	Cobar
Broken Hill	123,532 t	Lead / Zinc	Perilya / CBH	Broken Hill
Ulan **	5.25 Mt	Coal	Xstrata	Ulan
Wilpinjong Coal **	5.86 Mt	Coal	Peabody	Mudgee
Charbon	0.94 Mt	Coal	Centennial	Kandos
Boggabri	1.29 Mt	Coal	Indemitsu	Boggabri
Canyon	0.47 Mt	Coal	Whitehaven Coal	Boggabri
Tarrawonga	1.16 Mt	Coal	Whitehaven	Boggabri
Werris Creek	1.11 Mt	Coal	Weeris Creek Coal	Werris Creek

*** On edge of Murray Darling Basin*

[7] NSW Department of Industry and Investment

3 Inquiry's Terms of Reference

3.1 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

3.1.1 Assessing the Impacts of the NSW Minerals Industry

The Inquiry's Terms of Reference (ToR) raises questions regarding impacts on the MDB of mining operations. Without specific details such as: details of potential mine plans; agreed environmental values of the MDB; detailed hydrological modelling of the MDB and in particular the alluvial flood plains and the headwaters of the Namoi Valley, the questions cannot be directly addressed. However, NSWMC believes that the existing regulatory framework more than adequately addresses the concerns that are raised by the Inquiry's ToR.

The existing regulatory framework allows for the evaluation and assessment of potential impacts of mining projects on the environment, including the MDB and the Namoi Valley. Water Sharing Plans and sustainable yield projects also specifically addresses the sustainable management of water resources so critical to our major primary industries of mining and agriculture.

Mining has and will continue to result in some impacts, including environmental impacts. However, any development or land use including agriculture will have an impact on our natural systems. Geology, landscape evolution, ecosystems, water systems and the general environment all vary both within and between mining regions. The economic value of mineral reserves also varies between different areas. These variables mean that a case by case approach to assessment must continue to ensure informed decision making.

In NSW, the potential impacts of current and projected mining are comprehensively and satisfactorily assessed by the existing environmental planning and assessment process regulated by the NSW Government. The following table summarises the main pieces of legislation that play a role in the assessment and approval of mining projects.

Legislation	Responsible Agency
Environmental Planning and Assessment Act 1979	Department of Planning (NSW)
Mining Act 1992	Industry and Investment NSW (NSW)
Protection of the Environment Operations Act 1997	Department of Environment Climate Change and Water (NSW)
Threatened Species Conservation Act 1995	Department of Environment Climate Change and Water (NSW)
National Parks and Wildlife Act 1974	Department of Environment Climate Change and Water (NSW)
Heritage Act 1977	Department of Planning (NSW)
Water Management Act 2000 and Water Act 1912	Department of Water and Energy (NSW)
Dams Safety Act 1978	Dams Safety Committee (NSW)
Environment Protection and Biodiversity Conservation Act 1999 (Cwth)	Department of Environment, Water, Heritage and the Arts (Commonwealth)

NSWMC considers that the existing planning system allows each project to be assessed on its own merits. This framework not only requires detailed, rigorous, science-based environmental assessment, but the consideration of social and economic impacts of a project, including impacts on other land uses. No mining project can proceed in NSW without a thorough assessment of potential impacts of a mining operation on the surrounding environment, including surface and groundwater resources.

Specific risks are identified during the development approval process and assessed using rigorous scientific methods. Appropriate mitigation and management strategies can be implemented to ensure these risks are reduced to acceptable levels. This process takes full account of environmental factors such as emissions, land and water management, mine subsidence, rehabilitation requirements,

biodiversity management and local amenity issues. Mining projects are required to obtain mining leases, project approvals, environmental protection licences, water access and bore licences, with many management plans also requiring approval. More generally, projects need to meet community expectations throughout exploration, planning, operation and decommissioning stages in order to maintain their 'social licence to operate'.

After obtaining approvals, mining projects must adhere to ongoing monitoring, performance reporting and auditing requirements. For example, mines have reporting obligations under the Mining Lease Annual Environmental Management reports, Project Approval reports, Dams Safety Committee and Environmental Protection Licence Annual Returns.

In addition, Water Sharing Plans under the NSW Water Management Act 2000 more than adequately provide for sustainable management of the State's surface and groundwater resources. The Namoi Valley has existing Water Sharing Plans for both the regulated surface waters and Upper and Lower Namoi groundwater sources. As with all other users, the NSW mining industry must work within these existing regulatory frameworks and market mechanisms.

NSWMC and the industry are committed to working with key stakeholders to undertake the Namoi Water Study to better understand water resources and mining's potential impacts on these resources.

Ultimately, it is the Government that must determine whether these environmental impacts are acceptable in light of the economic and social benefits of mining. NSWMC believes that the planning process in NSW is designed to effectively balance these aspects in line with the principles of Ecologically Sustainable Development. The industry is committed to best practice environmental management standards as well as contributing to the social and economic prosperity of NSW, particularly regional NSW.

Case Study – Coexistence in the Hunter Valley – Mining, Thoroughbreds, Tourism and Wine

The Hunter Valley, a key driver of the NSW economy, is an evolving area of NSW that currently provides for many different industries within the Valley. It is a prime example of regional coexistence between mining and agriculture creating a diverse resilient economy over several decades.

There are currently 31 mines in the Hunter Valley producing 134 million tonnes per annum, representing 63.5% of NSW total raw coal production. The Hunter Valley mining industry directly employs more than 10,500 people and indirectly employs 47,000 people.

The Hunter Valley is recognised as one of the top three major thoroughbred nurseries in the world along with Kentucky (USA) and Newmarket (UK). Over half of Australia's thoroughbreds are from the Hunter Valley with industry sales of $222 million in 2006. The industry supports over 100 jobs and has an estimated expenditure of $240 million dollars per annum in the local region. The total value of thoroughbred horses in the Hunter Valley is estimated to be close to $1.65 billion dollars.

Another key industry, coexisting in the Hunter Valley, is the wine industry. The Hunter Valley Wine Industry produces over 39 million litres of premium wine annually. This product is packaged and sold throughout the domestic market and exported to over 50 countries worldwide. The sales value of this wine is estimated at over $270 million per year with flow on benefits worth more than $230 million. There are 125 wineries and over 6,000 hectares of vineyard situated in the Hunter which has been producing wine since 1830, making it Australia's oldest wine region.

The Hunter Valley is a renowned tourist destination with over 2.8 million tourists visiting the wine growing area per annum. These tourists are estimated to generate over $560 million worth of business in the region. The tourist market is catered for by 75 cellar doors, 55 restaurants, three major golf courses, 3,000 beds and substantial infrastructure that allows for a complete tourism experience for visitors to the region.

The Hunter Valley is a living example of coexistence between mining and agriculture, creating a strong and diverse regional economy.

3.2 The potential impacts upon surficial and groundwater flows and quality in the alluvial flood plains at its headwaters in the Namoi Valley

NSWMC believes the potential impacts upon surface and groundwater flows and quality in the alluvial flood plains at its headwaters in the Namoi Valley are addressed within the existing regulatory framework. The existing regulatory framework allows for the evaluation and assessment of potential impacts of mining projects on the environment, including the MDB and the Namoi Valley.

The Namoi Valley like all other areas of NSW is a unique landscape due to the combined factors of its geology, landscape evolution, natural resource systems and climate. For this reason it is essential that any land use (including mining) thoroughly and scientifically assesses the potential impacts on the surficial and groundwater resources. Only through a case by case approach to assessment can all land users continue to ensure informed decision making.

The NSW minerals industry, a world leader in water management, is committed to working with landowners and other key stakeholders to ensure the best outcomes from developing the rich natural resources, both agricultural and mining-related, in the Namoi Catchment.

NSWMC acknowledges that the potential for further improvements to the existing comprehensive regulatory system do exist. NSWMC believes there is a need for a greater focus on strategic land use planning in regional NSW, including the MDB. Whole-of-Government regional plans that integrate natural resource management, conservation planning, development and heritage objectives of government would promote the development of integrated landscapes, sustainable use of resources, reduce land use conflicts and maximise the productivity of developing regions. NSWMC understands that the MDB Plan will aim to provide this overarching framework to benefit all stakeholders operating in the region.

NSWMC endorses the Draft Terms of Reference for the Namoi Water Study, as it sets a strong framework for collating quality data that will provide greater spatial understanding of underground and surface water flows in the catchment. The study will also undertake a strategic assessment of the likelihood of potential impacts on the quantity and quality of surface and groundwater resources posed by coal and gas development in the Namoi catchment. NSWMC believes that this study will contribute to a rigorous, science-based assessment.

Case Study – Mining and Rehabilitation of Alluvial Flood Plains

Mining is a temporary use of land. One example from the Hunter Valley demonstrates how alluvial flood plains were rehabilitated back to the region's average agricultural productivity levels.

The Development Consent for Hunter Valley Mine, granted 13 May 1993, enabled the mining of 34 million tonnes of coal in a 165 hectare parcel of alluvial land adjacent to the Hunter River. The rehabilitation requirements demanded the reinstatement of 38% to prime agricultural land. Demonstration of this capability involved the growing a Lucerne crop and achieving district average production levels of hay for three consecutive years – nominated at 15 tonnes per hectare per year.

Approximately 1.06 million m^3 of topsoil and subsoil were salvaged from the original landscape and stockpiled away from the mining operation. Prior to commencing the final project a trial was undertaken to prove the concept.

In December 2003, for the first time, 20 hectares were harvested for hay. As expected, the first cut was of lower quality due to the inclusion of weeds and was used for 'cow hay'. A centre pivot irrigator was commissioned in December 2003 and is currently irrigating around 56 hectares. A three-year program was developed from 2004-2007 which successfully demonstrated compliance in achieving the district-average hay production from the alluvial block.

4 Conclusion

Mining is a temporary use of land which has a small footprint comparative with other land uses. In NSW, less than 0.1% of land in NSW is used for mining, with the majority of mining located to the east of the Great Dividing Range. Mining in the MDB occurs within a comprehensive legislative framework that ensures mining is one of the most heavily regulated industries in NSW. Rigorous regulation applies throughout all phases of a mining operation, from exploration through to rehabilitation and mine closure.

The Inquiry's Terms of Reference raises questions regarding impacts on the MDB of mining operations. Without specific details such as: details of potential mine plans; agreed environmental values of the MDB; detailed hydrological modelling of the MDB and in particular, the alluvial flood plains and the headwaters of the Namoi Valley; the questions cannot be directly addressed. NSWMC believes that the existing assessment and approvals framework for proposed mine developments more than adequately addresses the concerns that are raised by the Inquiry's Terms of Reference.

The existing regulatory framework allows for the evaluation and assessment of potential impacts of mining projects on the environment, including the MDB and the Namoi Valley. Water Sharing Plans and sustainable yield projects also specifically address the sustainable management of water resources that are so critical to our major primary industries of mining and agriculture.

In NSW, the potential impacts of current and projected mining activities are comprehensively and satisfactorily assessed by the existing environmental planning and assessment process, regulated by the NSW Government. The *Environmental Planning and Assessment Act 1979* has primacy in mining project approval processes, with the *Mining Act 1992*, the *Protection of the Environment Operations Act 1997* and a myriad of other legislation also required to be met. This framework not only requires detailed, rigorous, science-based environmental assessment, but the consideration of social and economic impacts of a project, including impacts on other land uses. No mining project can proceed in NSW without a thorough assessment of potential impacts of a mining operation on the surrounding environment, including surface and groundwater resources.

In addition, Water Sharing Plans under the NSW's *Water Management Act 2000* more than adequately provide for sustainable management of NSW's surface and groundwater resources. The Namoi Valley has existing Water Sharing Plans for both the regulated surface waters and Upper and Lower Namoi groundwater sources. As with all other users, the NSW mining industry must work within these existing regulatory frameworks and market mechanisms.

Further research is also being done in the Namoi catchment to better understand water resources and mining's potential impacts on these resources. The study will undertake a strategic assessment of the likelihood of potential impacts on the quantity and quality of surface and groundwater resources posed by coal and gas development in the Namoi catchment. NSWMC believes that this study will contribute to a rigorous, science-based assessment. This provides a thorough process for governments to assess the concerns raised by the Inquiry's terms of reference.

NSWMC acknowledges that the potential for further improvements to the existing comprehensive regulatory system do exist. NSWMC believes there is a need for a greater focus on strategic land use planning in regional NSW, including the MDB.

Ultimately, it is the government that must determine whether these environmental impacts are acceptable in light of the economic and social benefits of mining. The industry embraces the planning process in NSW which is designed to effectively balance the impacts of all projects taking into account all the environmental, economic and social impacts.

The NSW mining industry pays significant royalties and taxes which contribute to the NSW Government's consolidated revenue and assist in providing schools, police, health and roads for the people of NSW. In addition to the enormous economic contribution to the State, the NSW minerals industry plays a vital role in securing and reinforcing the social infrastructure of regional communities in the MDB and throughout NSW. The industry is committed to the ongoing environmental, social and economic prosperity of NSW, in particular regional NSW including the MDB.