

# SUBMISSION TO THE SENATE ENQUIRY INTO THE IMPACTS OF MINING IN THE MURRAY DARLING BASIN

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The objective of this submission is to draw to the attention of the Senate Committee:

- (1) the scarcity of highly productive soils in a favourable rainfall or underground water regime for food and fibre production within Australia and their presence in the Murray Darling Basin, particularly on the Darling Downs of Queensland (QLD) and the Liverpool Plains of New South Wales (NSW);
- (2) the potential impacts on this capacity if these areas were to be mined; and
- (3) The need for a rigorous land use decision-making process where such competing uses exist.

## **1. Nature of AIAST**

The AIAST is a not-for-profit organisation that serves as the peak body for agricultural scientists and technologists in Australia. Members are drawn from all States and Territories of Australia and work in government departments, research organisations, universities and private enterprise.

## **2. Uniqueness and Productivity of the Agricultural Lands in the Murray Darling Basin**

The cracking clay soils of the Darling Downs and Liverpool Plains are amongst the most productive in Australia in terms of crop production. It is understood the Australian Society of Soil Science Incorporated has made a submission to your Inquiry which provides details on the nature and extent of these soils.

Australia's food and fibre production is highly dependent on the continued use of its prime agricultural lands which are rare (less than 10%) of the better-watered areas of Australia.

Both summer and winter crops are grown in the areas of question and include, but are not limited to, sorghum, sunflower, maize, chickpeas, soybeans, canola, wheat, oats, barley, mung bean and cotton. Additionally, in the areas such as the Felton Valley on the Darling Downs, high value vegetable production (cabbage, cauliflower, broccoli, lettuce, potatoes and capsicum) occurs.

The reasons for the outstanding productivity of the clay soils in these two areas are their (1) inherent chemical fertility, (2) high capacity to hold water after rain or irrigation (high plant available water capacity), (3) location in a zone providing good natural rainfall (600-800 mm/a) and (4) access to good quality groundwater for irrigation.

### **3. Location of soil/water resources in relation to coal and petroleum resources**

It is understood that companies have applied for exploration permits for coal and petroleum over much of the Darling Downs, with many permits for coal being granted in the central and eastern sections and for petroleum in the western areas ([www.dme.qld.gov.au](http://www.dme.qld.gov.au)). The Liverpool Plains overlay the Gunnedah Coal Basin and several major companies have been given exploration permits for coal over this area ([www.dpi.nsw.gov.au/minerals](http://www.dpi.nsw.gov.au/minerals)).

### **4. Potential impacts of mining on the Darling Downs and Liverpool Plains**

The potential impacts of mining on the cropping soils of the Darling Downs and Liverpool Plains and surrounds would be associated with (1) reduction in the yield potential of the reinstated soil, (2) loss or reduction of underground water supplies and (3) noise and dust impacts on surrounding crops and people.

#### ***4.1 Reduction in yield potential of reinstated soil***

The Australian mining industry has developed the technology to successfully rehabilitate diverse landscapes back to native vegetation or grazing, particularly in the case of mining of bauxite and mineral sands. Rehabilitation of land mined for coal by open-cut methods in QLD and NSW has involved, in almost all cases, establishment of pastures for grazing or native ecosystems on land that was capable only of supporting grazing or forestry. To my knowledge, nowhere in Australia have deep cracking clay soils, supporting prime agriculture, been reinstated for cropping after mining.

If the community, industry and government believe that mining should proceed in the Darling Downs and Liverpool Plains but that the land should be returned to its original productivity following mining, then experience from both Germany and the USA shows clearly that the entire depth of the soils need to be conserved and replaced (particularly to retain the plant available water capacity).

#### ***4.2 Loss or reduction of underground water supplies***

Open-cut coal mining of the cropped area is likely to destroy underlying shallow aquifers. Mining of surrounding intake areas could also reduce available water supplies. As indicated previously, the uniqueness of the Darling Downs and Liverpool Plains areas is the quality of the soils and the location with good natural rainfall for grain crops. Additionally, both areas have the benefit of access to good quality underground water for irrigation which can provide insurance in times of drought. In the USA, there is now little mining in “alluvial valley floors” because of the stringent conditions placed on mining in such areas (see the website of the US Office of Surface Mining Reclamation and Enforcement, [www.osmr.gov](http://www.osmr.gov)).

#### ***4.3 Dust impacts on surrounding crops and people***

Australian mines are generally very effective at controlling dust on haul roads to improve safety and health issues. However, it is understood that it is very difficult to control the movement of dust from

piles of overburden that result from coal mining. There is the potential for dust deposition on nearby crops to reduce quality particularly where horticulture crops are grown (e.g. Felton Valley of the Darling Downs where a wide range of vegetables are produced). Also, the dust generated is likely to cause a nuisance to surrounding rural residents.

## **5. Strategic planning in land use**

The Senate is to be congratulated in undertaking this Inquiry that, hopefully, will lead to improved land use planning where there are competing uses from two industries which contribute much of Australia's wealth.

The AIAST, in recognition of the importance of forward planning in the efficient utilisation of soil and mineral resources and in making decisions on land use, included a paper in its Journal earlier this year (Briggs and Whan 2009) which sought to recognise the inherent value of rural lands by:

1. Recommending that the Commonwealth Government seek each State Government's cooperation to develop:
  - a) A legislative framework that requires productive rural land to be subject to planning processes before any development approval is sought that would lead to its alienation.
  - b) Protection of the land above through the use of an appropriate statutory mechanism such as Agricultural Protection Areas.
  - c) Make a single agency responsible for coordination across and within the key bodies to achieve sustainable use of rural lands.
  - d) Place a moratorium on new large scale mining developments until technological advances allow mining activities to better co-exist with traditional rural communities.
2. Indicated that the Australian Institute of Agricultural Science and Technology, in the context of the above, would help identify the provide appropriate technical support to individuals and the community (including government, industries, regional NRM bodies and interest groups) to enhance the planning, use and management of rural lands.

## **6. Conclusions**

The importance of both mining and agriculture to the Australian economy is recognised.

This submission seeks to draw to the attention of the Senate Inquiry of:

- The scarcity of high productive soils in with good natural rainfall and/ access to good quality underground water for irrigation which can enhance yields and provide security in times of drought.
- The high productive capacity of the Darling Downs of QLD and the Liverpool Plains of NSW.
- The potential impacts on crop yields of any replaced soils; the loss or reduction in the underground water resources is capacity if these areas were to be mined; and, the potential

reduction in crop quality and quality of life of adjacent rural communities through aerial deposition of dust; and

- The importance of rigorous land use planning to minimise conflicts between competing and potentially incompatible land uses.

In the absence of any known field research to show the feasibility of reinstating the agricultural productivity of prime agricultural land based on deep clay soils on the Darling Downs or the Liverpool Plains; that research should be conducted to demonstrate whether it is feasible to reinstate these landscapes, prior to any decision being made regarding mining.

## **7. References**

Briggs, H S and Whan, I F (2009). Recognising the Inherent Value of Rural lands. *Agricultural Science* Vol 21 pp 21-26.