

## **AGRICULTURAL COMPETITIVENESS ISSUES PAPER**

### **Synopsis**

In 1992 the Heads of Government of the Commonwealth, States and Territories signed a statement on national environmental policy that included four principles that should “*inform policy making and program implementation*”. This Submission puts the case for the White Paper on Agricultural Competitiveness to demonstrate how its recommendations on agricultural policy for the 21<sup>st</sup> century are informed by these principles. It advocates that this assessment should also address how the land can benefit from ecologically sustainable agricultural development, noting that State environment laws include the objects of “*improving the total quality of life*”, “*promoting a better environment*” and “*enhancing the quality of the environment*”.

The agricultural industry is inextricably linked with the environment, as is the energy sector. Healthy futures are forecast for both sectors if they respond effectively to the challenges they face, but they compete against each other for finite natural resources such as water and land. This draws attention to the significance of environmental factors in responding to the foreshadowed market opportunities and in securing the benefits of resource development for Australia.

The Coal Seam Gas (CSG) industry provides a relevant case study of the complex policy issues surrounding the emergence of a technologically advanced resource industry. Its introduction has been accompanied by significant community disquiet and conflict, well before its full economic potential has been realised. Environmental issues feature strongly in these concerns. Given the scope for competition between the CSG and agricultural sectors, and the growth potential of both, the White Paper could usefully review the relationship between the operation of competitive markets and meeting environmental policy objectives across two important industry sectors.

In doing so, this Submission suggests that the White Paper should take into account evolving values and attitudes to the land that have emerged since the days of our rural pioneers. This could be through giving the land a discrete identity, recognising its intrinsic value and speaking in terms of a relationship with the land, rather than objectifying the land. It suggests the precautionary principle be expanded to require the exercise of caution if an ecologically sustainable development cannot be shown to deliver net benefits to the environment. This will provide a robust platform upon which to build 21<sup>st</sup> century policies.

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## 1. Introduction

The Agricultural Competitiveness Issues Paper outlines a future scenario in which worldwide demand for food is projected to rise by around 75% in the first half of the 21<sup>st</sup> century, with three quarters of this growth being in Asia. It projects a possible doubling of Australian agricultural production by 2050 (p. 2). This suggests the agricultural sector has the potential to make a major contribution to Australian economic development, with ensuing benefits to all Australians.

The Paper locates the agricultural sector within the context of competition for land from other sectors (such as mining), the depletion of groundwater reserves, and cultural and environmental sensitivities. This highlights the need to treat the topic in a holistic way, which the Paper acknowledges in its references to the development of White Papers on Developing Northern Australia and on Energy (pp. 8, 9).

The level of competition for land, water, human, and financial resources is likely to be high. The Energy Issues Paper, for instance, foreshadows growth in the Australian energy sector, commenting that

*(t)he Government supports growth in the energy sector, and seeks to remove unnecessary barriers to continued investment that will deliver economic prosperity and a high standard of living (Department of Industry, 2013, p. 19),*

and makes particular reference to the advent of coal seam gas, where

*(n)ew opportunities in export markets are driving a boom in coal seam gas (CSG) development ... (b)ringing on CSG for LNG at the scale currently seen in Australia is unprecedented (p. 13),*

but notes that, even with the adoption of a multiple land use framework and a harmonised framework for CSG regulation, there is not a nationally consistent framework for land access (p. 21).

The impact of unconventional gases like CSG on the agricultural sector could be very significant. As at 2012 Australia's economically demonstrated CSG resources were 35,905 petajoules (PJ), with potential in-ground resources being 258,888 PJ. Shale gas reserves are almost twice this (John Williams Scientific Services Pty Ltd, 2012, p. 12). Further, according to the Australian Petroleum & Exploration Association (APPEA), production of CSG in Australia in 2012 was 258.1 PJ, a mere 0.1% of Australia's potential in-ground CSG resources, but up 10.8% in just 12 months<sup>1</sup>.

So, in a rapidly changing world that presents major economic development and export opportunities, the agricultural and energy industries each have the potential to deliver very significant benefits to the Australian way of life. Neither Issues Paper suggests, however, that the policy framework is straightforward; of particular moment is the fact that both sectors compete with each other for resources, as well as having significant social and environmental impacts.

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<sup>1</sup> See <http://www.naturalcsg.com.au/coal-seam-gas/the-industry>, retrieved 20 February 2014

It is against this perspective that the Minister for Agriculture's exhortation to

*think of the Agricultural Competitiveness White Paper as the blank slate and build 21<sup>st</sup> century policies that bring a better return to the farm gate (p. ii)*

is welcome. In response, this Submission uses an environmental lens to examine what policy incrementalism has achieved, and suggests that now is the time to reflect on how the four nationally agreed environmental principles listed in the 1992 COAG *Intergovernmental Agreement on the Environment* (Appendix 1) inform agricultural policy. In developing its conclusions it draws on the author's research into public policy developments surrounding the growth of the CSG industry in Australia, and on Australian landscape art to provide insights into current attitudes towards the land.

## 2. Implicit assumptions

The starting point for this Submission is the identification of implicit assumptions that underpin the Issues Paper. Three key concepts relating to competition, human utility, and environmental protection are used, as they provide insights into the values and attitudes embedded in the Paper.

### 2.1 *Competition*

The reference to *competitiveness* in the Paper's title points to reliance being placed on the operation of market forces to secure the most efficient and high value outcomes that are in Australia's best interests. The Paper contains around 50 references to the concept of competitiveness<sup>2</sup>, which it defines as:

*the ability to efficiently use our nation's land, water, human and other resources to achieve sustainable improvement in the standard of living for all Australians and growth in profit for our businesses (p. 1).*

The implicit assumption here is that competition is a good pragmatic foundation for 21<sup>st</sup> century agricultural policies, with regulatory intervention primarily being needed to secure those public policy outcomes that the market place might not otherwise deliver. The policy debate focus is thus directed towards the nature and extent of that intervention, not the basic reliance on competition.

The concept of competition, however, has a wide reach. Indeed the Paper itself uses the concept in describing three very different scenarios – Australia competing with other nations in domestic and international markets; different industry sectors within Australia competing for limited resources such as land; and Australians competing against the power of nature:

*Key challenges and opportunities for the sector include increasing competition from overseas suppliers ... competition for prime agricultural land; and increasing frequency and intensity of adverse weather events (p. 2).*

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<sup>2</sup> Included in this are the words *compete*, *competing*, *competition*, and *competitive*

## 2.2 *Human utility*

The Issues Paper Overview states that the White Paper will

*provide a platform for enhancing the contribution of agriculture to economic growth, employment creation and national prosperity ... increasing farm prosperity and strengthening our rural and regional communities* (p. 1).

The Issues Paper refers to *economic growth* 4 times, *employment* 10 times, *prosperity* 4 times and *communities* 30 times. Further, as mentioned earlier, these objectives are to be achieved through the efficient use of national resources such as land, water and people. Taken as a whole, the persistent repetition of these goals gives the Paper a strong utilitarian and anthropocentric focus.

Contrasting with this, there is little more than incidental mention of environmental issues<sup>3</sup>, and no definitive discussion of how the forecast growth in the agricultural sector might impact on the environment. Nor are environmental goals presented as important for achieving and sustaining agricultural competitiveness.

The implicit assumption here is that the development of the Australian agricultural industry is to be driven primarily by the objective of maximising its delivery of beneficial returns to the human community (such as food security, employment, export earnings, and improved standards of living), qualified as might be deemed necessary by social and environmental considerations.

## 2.3 *Environmental protection*

This orientation towards human utility puts environmental policy objectives in a subordinate role. It lends itself to adoption of a 'balanced' approach whereby the establishment of a competitive agricultural industry in the 21st century is a primary goal, modified as necessary by other policy goals. In this regard it notes the White Paper on Developing Northern Australia will

*examine the scope for an expanded agricultural footprint in our northern regions. Harnessing these opportunities will require new investment capital, which in turn depends on the prospects for favourable returns at the farm gate, while taking into account cultural and environmental sensitivities* (p. 9).

The implicit assumption here is that existing environmental policy and regulatory arrangements, perhaps with some incremental 'tweaking', already provide sufficient environmental protection in the implementation of other policy initiatives to make the Australian agricultural sector more efficient and competitive. The 1992 environmental principles are not mentioned in the Paper and there is no suggestion of any need to extend environmental regulation. Indeed, there is even one suggestion (by the National Farmers Federation) that environmental protection is a key priority for a reduction in regulation (p. 28).

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<sup>3</sup> The Issues Paper refers to environmental pressures, sensitivities, benefits, risks, standards, regulation and health, but does not expand on any of these terms

### 3. Australian government experiences with CSG

This Submission asserts that reliance on competition to maximise the benefits accruing to Australian society from the agricultural sector, without needing any significant extension to environmental protection policies, is an underlying narrative in the Issues Paper. But is this outlook supported by evidence from elsewhere within the Australian public policy arena?

Developments in the CSG industry provide a relevant case study for exploring this assertion<sup>4</sup>. Like the agricultural industry, as noted earlier the energy industry has the potential to make a very significant contribution to Australian economic development; in addition it has strong environmental connections, and it requires technologically advanced solutions. Further, as described below, it has attracted considerable policy attention from governments over the last 10 years as a result of its rapid growth in Australia during this time. It is thus an informative data source for analysing values and attitudes that shape public policy in an industry sector that has considerable (competitive) overlap with the agricultural sector.

#### 3.1 *Commonwealth of Australia*

Following the 1992 Agreement, in 1997 the Council of Australian Governments developed an agreement on the respective roles and responsibilities of the Commonwealth and the States with regard to the environment (COAG, 1997). This set in place the broad regulatory framework within which the CSG industry lies. It specified that Commonwealth responsibilities should focus on matters of national significance, but with primary responsibility for the assessment, approval and licensing of mining projects such as CSG resting with the state governments.

In recent years the Commonwealth's involvement in the CSG industry has been through a scientific focus on water management and fugitive emissions. In 2010 the National Water Commission issued a Position Statement on CSG, noting that the industry offered substantial economic and other benefits to Australia but risked having significant long-term impacts on adjacent surface and groundwater systems. It recommended the adoption of a precautionary approach to CSG developments (Australian Government, 2010).

The following year, as a subset of a broader inquiry into the management of the Murray Darling Basin, the Senate Rural Affairs and Transport Reference Committee noted that

*(p)ublic anxiety has grown dramatically with the introduction of the industry into regional areas with highly productive agricultural industries and urban centres ... leading to a sense that regulators are playing 'catch up', responding to issues once they emerge rather than anticipating them (Australian Senate, 2011, pp. 6, 7).*

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<sup>4</sup> This section draws on research undertaken by the author as part of his PhD study that is addressing the topic "How an Australian theology of land can inform the public debate surrounding the coal seam gas industry".

This report was followed by the development of a national agreement on CSG in February 2012 (COAG, 2012) that established the Independent Expert Scientific Committee with a particular charter to

- *improve the science base in relation to the interaction of coal seam gas (CSG) and large coal mining developments and water resources; and*
- *provide Commonwealth, State and Territory Governments with expert scientific advice relating to CSG and large coal mining development proposals that are likely to have a significant impact on water resources.*

In addition to these water related initiatives, in April 2013 the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education released a Technical Discussion Paper on Fugitive Emissions (Australian Government, 2013).

Most recently, emphasis has been placed on reviewing developments in the energy and agricultural sectors in terms of the operation of competitive and efficient markets, as seen in the Issues Paper, and in the orientation of the Energy White Paper:

*Energy policy needs to underpin the day-to-day reliability, longer term security and the cost of energy in an efficient and competitive market. The Energy White Paper will consider the supply and use of Australia's energy resources to deliver security of supply, increases in new energy sources to ease demand/supply constraints, regulatory reform to put downward pressure on prices, and improved energy productivity. Downward pressure on prices will help relieve cost-of-living pressures and improve business competitiveness. (Department of Industry, 2013, p. i).*

Further, in 2013 the Productivity Commission reported on its inquiry into the *Non-financial barriers to mineral and energy resource exploration*. In this report it noted that mineral and energy resource exploration could

- *directly impact existing and future agricultural and other economic land uses, or damage sites of environmental and heritage significance; and*
- *have effects beyond the tenement, for example, on the surrounding region's environment and community,*

and commented on competing land use requirements, recent increases in the frequency and intensity of conflicts and the impact of exploration on prime agricultural land<sup>5</sup>. It also mentioned a Canadian research group survey that suggested that the regulatory regimes of Australian jurisdictions that govern exploration activity are contributing to the decline in their international competitiveness as destinations for exploration (Productivity Commission, 2013, pp. 8 - 10). In addressing environmental management issues the Report stated that the policy challenge for governments is

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<sup>5</sup> See, for example, specific references to conflicts between agriculture and exploration (NSW Parliament, Section 6)

*to achieve an appropriate balance between the benefits afforded by mineral and energy resource exploration and the potential for any associated environmental costs (p. 21).*

There is little in any of these reports to suggest that environmental considerations are significantly reorientating policies in either the agricultural or energy sectors. Rather, such considerations are reactive in nature, responding to particular environmental concerns and operational shortcomings. They are subordinate, in policy terms, to the goal of finding the right 'balance'. On the other hand, economic development opportunities, linked with a growing recognition of the impact of CSG activities on human communities, feature as strong pro-active policy drivers.

### 3.2 Queensland

Queensland has led CSG development in Australia since exploration began in 1976 and extraction in 1996 (O'Kane, 2013, p. 1). It led the way in developing CSG mining as a major industry and in 2004 the Minister for Natural Resources, Mines & Energy informed the Queensland Parliament that CSG was a Queensland success story with a public policy regime that would

*provide the framework it (the Government) needs to continue to create jobs and prosperity for Queenslanders in the years ahead.*

Since then the Queensland Government has

- released a Coal Seam Gas Water Management Policy

*to ensure that salt produced through coal seam gas (CSG) activities does not contaminate the environment and to encourage the beneficial use of treated CSG water (Environment and Resource Planning, 2010);*
- conducted a Parliamentary Inquiry into ways to reduce regulatory requirements impacting on the agricultural and resource industries in Queensland, with the Parliamentary Committee resolving to

*focus on 'methods' to reduce regulatory requirements or 'regulatory burdens' having regard to the need to promote economic development whilst balancing environmental protections (Queensland Parliament, 2012, p. 2);*
- explored possible links between human health and the CSG industry, concluding that

*a clear link can not be drawn between the health complaints by some residents in the Tara region and the impacts of the local CSG industry on air, water or soil within the community (Queensland Health, 2013, p. 18);*
- accepted a Parliamentary Committee's report on an Inquiry into a Private Member's Bill to protect prime agricultural and other land from CSG mining, in which the Chair of the Committee stated that the Bill



*ignores the significant investment by this government in world class frameworks, based on science and logic, to properly manage the social, environmental and economic aspects of the coal seam gas industry, one of our most important industries, and to deliver the best economic outcomes for the whole of the State,*

and that what the Bill proposed was

*sheer economic suicide. It would come at great cost to the 30,000 plus workers in the coal seam gas industry and their families, and the thousands of other businesses and their workers whose fortunes are tied one way or another to the industry (Queensland Parliament, 2013, p. v);*

- received 8 petitions (6,523 petitioners) to Parliament<sup>6</sup> and 4 Questions on Notice<sup>7</sup> that sought a ban on hydraulic fracturing, a moratorium on CSG industry development and the independent regulation of the CSG industry, to which the Government responded

*(a)s the CSG industry develops, there will be more job and local supply opportunities that will generate further wealth within Queensland communities,*

and reiterated a commitment to

*ensuring the CSG industry develops in a way that complements protecting the environment with supporting the economic future of other sectors; and*

- established a *Gasfields Commission* and an *Office of Groundwater Impact Assessment* in 2012

A revealing insight into the Government's approach can be found in its advice to Parliament in 2013 that it accepted the view of the Queensland Competition Authority (QCA) that it was not necessary to establish an independent forum or expert panel to consider contentious proposals with competing economic and environmental issues. This, alongside the view of the QCA that

*rigorous cost-benefit analysis should be applied to any new regulation and that existing regulation that cannot be demonstrated to provide a net overall public or community benefit should be revised or removed (Queensland Parliament, p. 33),*

and the remarks of the Parliamentary Committee Chair that

*(t)he very best scenario is to grow the economy and target environmental improvements, and we welcome the continuing work by the Queensland Competition Authority to help develop a regulatory framework across Government that helps do this (p. v),*

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<sup>6</sup> # 1592, 1701, 1796, 1883, 1909, 1912, 1941 and 1956

<sup>7</sup> # 1290, 1617, 1799 and 674

point to a pragmatic reliance on economic rationalism implemented through the use of cost-benefit analyses to optimise economic and environmental outcomes in a competitive market. There was no discussion of other options.

### 3.3 New South Wales

In 2012 the NSW Parliament inquired into the environmental, health, economic and social aspects of CSG activities in NSW. Drawing on the lodgment of nearly 1,000 submissions to the Inquiry, the Report gave extensive coverage to the negative impact of CSG activities on human activities such as

- a lack of information from Government;
- industry development outpacing the ability of Government to regulate it;
- property rights (lack of equity between landholders and mining companies);
- mining company practices being less than acceptable; and
- the level of uncertainty relating to the potential impact of the CSG industry – health, fracking, water, clean energy and economic benefits (NSW Parliament, 2012, pp. xii, xiv).

Just one chapter (of thirteen) in the Report explored the potential impacts of CSG on the natural environment without referring to consequential impacts on human life, but there was no explicit recognition of the intrinsic value of the environment.

Following this, in 2013 the NSW Premier directed the NSW Chief Scientist and Engineer to conduct a review of CSG related activities in NSW, with a focus on the impacts of these activities on human health and the environment (O'Kane, 2013). In doing so, the Premier noted community concerns about the current operation of CSG activities in NSW.

The Initial Report's Executive Summary described CSG as

*A complex and multi-layered issue which has proven divisive because of the emotive nature of community concerns, the competing interests of the players and the lack of publicly available factual information.*

It also drew attention to the importance of industry compliance, best practice, risk management and stakeholder issues (although there was no recognition of the environment as a stakeholder itself). Compensation was raised as an issue, but only for landholders, not the environment.

In the Initial Report, the NSW Chief Scientist and Engineer explicitly articulated the philosophy behind her initial recommendations:

*At this stage the Review recommendations are aimed at assisting the Government to build trust in the wider community that it has the intention and capacity to oversee the safe introduction of a new industry which can have significant economic benefits. To reap those benefits, a set of risks and challenges need to be addressed and managed.*

There have also been many Government Media Releases relating to CSG<sup>8</sup> as well as petitions with more than 52,000 signatures, raising concerns about CSG mining such as banning hydraulic fracturing, alternative uses of land, environmental protection and water security, health issues and a moratorium on CSG activities<sup>9</sup>. In response, the Minister for Resources and Energy has progressively referred to

- striking the right balance between important agricultural, mining and energy sectors, while ensuring the protection of high value and strategic resources (8 February 2012);
- the Government's new Strategic Land Use Policy (5 June 2012); and
- the establishment of the Environment Protection Authority (EPA), the Office of Coal Seam Gas, and a Land and Water Commissioner, and the protection of aquifers and two kilometre exclusions zones (3 June 2013).

As in Queensland, the language discussing CSG developments is dominated by the advocacy of the economic benefits to be derived from mining CSG balanced by appropriate regulation to protect the environment. One difference between the Queensland and NSW Governments is in their approach to this regulation – the Queensland Government has welcomed the continuing work of the economic regulator, with an emphasis on rigorous cost-benefit analysis, whereas the NSW Government established the EPA as its lead regulator with a prescribed object to

*promote, restore and enhance the quality of the environment, having regard to the need to maintain ecologically sustainable development.*

### 3.4 Other States

In 2012 the Premier of Victoria announced a hold on approvals to undertake hydraulic fracturing, noting

*(e)xploation for coal seam gas in Victoria is at a very early stage. There is currently no coal seam gas production in Victoria.*

He later announced (November 2013) that the moratorium would be extended at least until July 2015, in parallel with a 12 month consultation process on a Gas Market Taskforce Report that looked at gas supply issues in Victoria.

Also exercising a degree of caution, but recognising the very significant shale gas reserves in Western Australia, the WA Parliament initiated an inquiry into hydraulic fracturing in August 2013. 114 submissions have been made to this Inquiry.

Contrasting with Victoria and Western Australia, the Minister for Resources and Energy in South Australia is reported to have

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<sup>8</sup> See, for example, Media Releases dated 11/9/2012, 19/2/2013, 21/5/2013, 3/10/2013, 12/11/2013, 131/2/2013 and 28/1/2014

<sup>9</sup> See, for example, petitions lodged on 9/8/2011, 9/9/2011, 23/11/2011, 3/5/2012, 2/5/2013, 30/5/2013, 22/8/2013 and 12/9/2013

*delivered an emphatic endorsement of hydraulic fracturing, opening his arms to resource companies, while reassuring explorers that the Festival State will not follow neighbouring Victoria which has extended its ban on fracking<sup>10</sup>.*

None of these developments, however, introduce any new elements into the CSG policy mix.

### 3.5 *The rhetoric of economic development*

Emerging from this CSG policy overview is evidence of a consistent and persistent economic development rhetoric (almost ideology) surrounding the CSG debate in Australia, within which the Issues Paper sits comfortably. It is a pragmatic rhetoric that is overwhelmingly anthropocentric and utilitarian. The need to find a 'balance' between (competing) economic, environmental and social goals is a central feature, but minimal attention is given to the intrinsic value of the environment.

## 4. Policy pioneering

The Minister's invitation to view the White Paper as a blank slate provides a good incentive and opportunity to examine the sufficiency of current values and attitudes in shaping a robust policy platform upon which to help Australia's agricultural industry respond optimally to the challenges of the 21<sup>st</sup> century.

### 4.1 *If it ain't broke, don't fix it!*

One view is that current values and attitudes are shaping the policy framework in a constructive and favourable way, and so there is minimal need for change. This is based on the experience gained through the management of the dynamic growth of the CSG industry in Australia, where the last 10 years have witnessed a progressive refinement of CSG regulatory and policy initiatives alongside industry growth.

During this time, policy shortcomings have been identified and addressed, as seen for example in the Senate Committee's description of less than acceptable industry practices; the NSW Chief Scientist and Engineer's Report that recognised the need to build the community's trust in the Government's management of this new industry; and the corrective actions being taken by Commonwealth and State Governments in their responses to the various Reports and Inquiries.

This view leads to a conclusion that the CSG policy framework is evolving in an acceptable way, with debate rightly centering on program implementation and the introduction of appropriate checks and balances, rather than policy review. It looks forward to the CSG industry having a bright future, with flow on benefits to Australia.

Key features are an incremental, primarily reactive, approach to environmental regulation, and a continuing reliance on the tools of competition and market forces to secure increased benefits to the Australian community by improving the efficiency and competitiveness of the industry. As discussed earlier, this is also a central narrative of the Issues Paper.

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<sup>10</sup> See <http://www.spenewsaustralia.org/article.aspx?p=1&id=2457>, retrieved 23 February 2013

So does anything need to be “fixed”? This Submission asserts that the changing attitudes to the environment are sufficiently significant to warrant reflection on environmental principles in Australian legislation. It is to the consideration of this issue that the Submission now turns.

#### 4.2 *Philosophical neutrality?*

An alternative view to the acceptability of maintaining the ‘status quo’ of policy incrementalism is that the continuing expression of significant public disquiet and conflict surrounding CSG mining reflects deep-seated shifts in attitude toward the environment that are not adequately addressed in current environmental policies and legislation. The Minister notes that the Australian economy and the agricultural sector have evolved unrecognisably from rural pioneer days. But might this not also be true with regard to environmental values and attitudes, to which the disquiet and conflict surrounding the advent of CSG mining might bear urgent witness? Examples include much greater recognition of resources not being unlimited (the environment is not a ‘magic pudding’) and of a compelling mutual dependency and respect arising out of the interconnectedness of humanity and the environment.

This extends the scope of the debate beyond giving an almost ideological legitimacy to economic development and scientific rationalism, to the detriment of other factors, into a deeper consideration of the Australian community’s relationship with the environment. It goes beyond, for instance, a sole reliance on rigorous cost-benefit analyses to optimise economic and environmental outcomes in a competitive market. This does not discount the contribution and value of economic development and scientific knowledge, or the operation of a competitive market; rather it asserts the importance of also giving greater regard to those values and attitudes that struggle to be adequately represented in a quantitative, reductionist methodology.

In this vein, the NSW Chief Scientist and Engineer explicitly identified the “philosophy behind her initial recommendations” – *build trust ... safe introduction of a new industry ... significant economic benefits ... significant risks and challenges*. This extends the debate beyond economic considerations into the realm of political decision-making. But what specific values and attitudes lie behind this philosophy? Does *safe* mean *safe for land* and/or *safe for humans*? And are *economic benefits* to be understood just in terms of the Australian human community?

Similarly, under the banner “*Move to limit ideological objections to Qld mining projects*”, the ABC recently reported the Queensland Deputy Premier saying that

*the Queensland Government was looking to restrict who can object to mining applications, in a bid to crack down on what it calls philosophical opposition to projects*<sup>11</sup>.

This statement serves to highlight the need to include the philosophical stance of the political decision-makers themselves in the policy discussion. There is an embedded

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<sup>11</sup> See <http://www.abc.net.au/news/2014-02-27/move-to-limit-ideological-objections-to-qld-mining-projects/5289246?section=qld>, retrieved 28 February 2014

philosophy at work in the debate that needs to be discussed. This is as true now as it was in the days of the rural pioneers when, as concluded by Lake,

*Protestantism helped lay the foundations for colonial society by encouraging the transformation of the environment according to colonists' values and needs, and by providing ideological support for the British use and occupation of the territory. Prominent Protestants applied their religious ideals to Australia in ways that tended to assist, legitimate or even necessitate the colonization of the land* (Lake, 2008, p. 1).

A somewhat mischievous redrafting of the last sentence as “*Prominent politicians, industry magnates and community leaders applied their worldviews to Australia in ways that tended to assist, legitimate or even necessitate the economic resource development of the land*” illustrates the role that worldviews (philosophy, theology or ideology) can have on public policy.

In addition, and more directly applicable to the future of the agricultural industry, is Reichardt's study of the influence of theology on human impacts on the waterways of the Murray Darling Basin. The particular theological perspective he used was Lynn White's infamous article that Christianity, as it had developed in the West, had formed the worldview responsible for the ecological crisis afflicting the world today (White, 1967). Reichardt concluded that, with regard to environmental degradation in the Murray Darling Basin,

*this ecotheological case study supports White's "ecological complaint" against Western Christianity* (Reichardt, 2009, p. x).

In other words, our rural pioneers' philosophy (theology) did influence their approach to the development of agriculture. So why should things be any different today?

It's worth noting at this point that there has been a very robust debate in theological circles about White's article since its publication over 45 years ago, accompanied by very extensive analyses of humanity's relationship with the environment. Reichardt's study is just one example of this. Arguably, White's article has been a very significant catalyst in the emergence of new theological insights that update those of our rural pioneers. Public policy, like theology, should always be open to critical reflection and change<sup>12</sup>.

#### 4.3 *Philosophy diversity*

Some will hold that these studies, and White's thesis, strengthen the case that theology has no place in a policy debate about resource industries, as they present theology as having an unhelpful impact on environmental attitudes in Australia. They then place a reliance on engineering, scientific and economic disciplines to provide the necessary and sufficient knowledge and conceptual basis upon which to develop informed policies with confidence. But this, itself, reflects a particular philosophical outlook.

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<sup>12</sup> New theological insights are a key focus of the author's PhD thesis

Others will maintain that the last 50 years have witnessed the emergence of an environmental consciousness that demands an updating of the environmental values and attitudes that motivated our rural pioneers in their development of the agricultural industry in Australia.

Yet others will say that ecologically sustainable development (see next section) is the acceptable mantra for propelling the agricultural sector into the 21<sup>st</sup> century.

The reality of philosophy influencing resource policies, as in the current reliance on a strong economic development outlook, highlights the need for worldviews to be tested rather than assumed when starting with a “*blank slate*”. This Submission asserts that no policy is value neutral, so once the philosophies that shape the values and attitudes underpinning policy outlooks are identified, then their acceptability and adequacy should be assessed, particularly in a time of significant change and opportunity.

The Minister’s reference to the days of our rural pioneers is a reminder of the real challenges they faced, and the strong agricultural sector they built. So too, today, there are challenges. This time they arise through the opportunity to prepare the agricultural sector for the 21<sup>st</sup> century, through imaginative and innovative policy pioneering. This Submission holds that a review of environmental principles found in Australian legislation is an essential part of this and can contribute constructively to it.

## 5. Environmental principles

Relevant environmental legislation is described in Appendix 1. Four principles to “*inform policy making and program implementation*” are detailed in an agreement signed by the Heads of Government of the Commonwealth, States and Territories in 1992. They cover the precautionary principle, intergenerational equity, conservation of biological integrity and improved valuation, pricing and incentive mechanisms (COAG, 1992).

These four principles appear as principles of *ecologically sustainable development* in Commonwealth and NSW legislation; three of them<sup>13</sup> appear in Queensland legislation as the basic criteria for assessing mining applications. Thus they have informed policy making through their implementation as resource development principles, consistent with regarding the environment as a resource needing protection so that it can supply human needs.

This is reflected in the language of the legislation that speaks predominantly about protection, conservation, and promoting ecologically sustainable development, but there are a couple of exceptions:

- Queensland legislation speaks of *improving* the total quality of life (though whether the environment is included in this is not clear); and
- NSW legislation speaks of promoting a *better* environment and *enhancing* the environment

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<sup>13</sup> the principle of improved valuation, pricing and incentive mechanisms is not included

With respect to the CSG industry, however, there is minimal evidence of any actions to improve the total quality of life of the environment, to enhance the environment or to promote a better environment. This points to the implementation of environmental principles outlined in 1992 being limited to a focus on resource development which then, by default, became the dominant narrative shaping environmental policy.

Is this an acceptable outcome, and does it provide a defensible and sound platform upon which to build agricultural policies for the 21<sup>st</sup> century? This Submission puts the case that, in the interests of building a robust agricultural industry, and meeting the needs and interests of the Australian community and environment in an optimal way, some policy reform is needed.

The main reasons for this are:

- an increasing level of community disquiet and conflict, given the forecast unprecedented growth in demand for agricultural and energy products, and continuing community polarisation surrounding the CSG industry;
- the risk that undue reliance on competition to deliver optimal policy results will work against the agricultural sector, given the greater revenue growth potential of the energy sector<sup>14</sup>;
- the poor track record of policy incrementalism to keep up with rapid industry growth, as experienced by governments playing 'catch-up' in the CSG industry where the speed of development has outstripped their ability to regulate it; and
- attitudinal changes within the Australian community towards the environment, as discussed in the next section.

This Submission addresses this last point, that of changing attitudes within Australia towards the environment, and the land in particular. It proposes that the land be recognised as having status in its own right and being vitally interconnected with the human community. In other words, land is to be respected, valued and related to in terms of its own intrinsic worth, rather than just being the source of minerals, the garden for agricultural produce, the venue for recreation, the location and inspiration for spiritual enlightenment, and the home for human life.

## 6. Australian attitudes to the land

This Submission intentionally focuses on non-indigenous Australian landscape art, but in doing so does not discount in any way the value and relevance of Aboriginal Art, which merits a submission in its own right. Rather, this submission intentionally concentrates on non-indigenous Australian landscape art as a powerful way of illustrating how white Australian attitudes towards the land have changed and broadened since European settlement. Interestingly, these emerging attitudes have much in common with Aboriginal interconnectedness and relationship with the land.

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<sup>14</sup> The continuing calls for prime agricultural land to be protected from CSG exploration and development bear witness to this fear within the agricultural sector



In the words of Sir Kenneth Clark:

*In Australian landscape painting, as in all great landscape painting, the scenery is not just painted for its own sake, but as the background of a legend and a reflection of human values* (emphasis added) (R. D. Haynes, 1998, p. 209).

Australian landscape art provides provocative but instructive insights into the range of attitudes we have towards the land and demonstrate how they have changed since the days of rural pioneers. Art critics and historians such as McGrath and Olsen (McGrath & Olsen, 1981), and Haynes (R. D. Haynes, 1998) have commented on the breadth of representations, with a number of conflicting themes emerging, including

- beauty in wilderness;
- the cycle of life and death;
- humanity either belonging or not belonging;
- fear and awe inspired by the immensity of the inland; and
- the paradoxical, majestic, enigmatic and mystical nature of the outback.

There is an ambiguity here in attitudes towards the land that range from an initial impression of malevolence and the desert's vast emptiness to one of inspiration and hope, from the Darwinian wildness and savagery of the desert to it being a place for mythical contemplation, generating a sense of exhilaration, independence and freedom (McGrath & Olsen, 1981, p. 10). As stated by Haynes:

*In the two centuries since European settlement of the continent it (the landscape) has been promoted from 'best forgotten' oblivion to centre stage prominence ... Uluru vies with the Sydney Opera House as the icon of the continent* (R. D. Haynes, 1998, p. 3).

Seven particular paintings are discussed in this Submission as reflecting this range of distinct, definitive attitudes towards the land<sup>15</sup>.

#### 6.1 *First view of the salt desert – called Lake Torrens, Edward Frome, 1843*<sup>16</sup>.



Land is “*Terra Nullius*”. This is a lonely picture, made all the more devastating as it destroyed hopes of pastoral paradises and an inland sea (McGrath & Olsen, 1981, p. 26). The telescope held parallel to the horizon emphasises the flatness of the country and an equally featureless expanse of sky (R. D. Haynes, 1998, p. 91). Land is

<sup>15</sup> The following commentary on Australian landscape art is based on a paper given by the author to an Australian Earth Laws Alliance conference in Brisbane in September 2013

<sup>16</sup> An image of this painting can be found at

<http://www.artgallery.sa.gov.au/agasa/home/Collection/detail.jsp?ecatKey=3800>

nothing, there's no-one there and there's nothing to see. The land can be developed for what it has to offer; minimal regulation is needed. This is the world of the rural pioneer, motivated to prepare a better future for later generations. There is little accountability to the land or recognition of its interests.

## 6.2 *Spirit of the Plains*, Sydney Long, 1897<sup>17</sup>.



Land is a Greek “*Arcadia*” in an Australian setting, a vision of Australia as a kind of pantheistic dissolution of the distinction between humans and the natural world ... an authentic Australian myth (National Gallery of Australia notes). The land is a pristine paradise, where the focus is on its beauty and sacredness, a safe haven

needing protection from the oppressive and greedy practices of the “Powers That Be”. This is the world of environmental spirituality, sanctuary, almost idealistic escapism. Human existence is inextricably interconnected with that of the land.

## 6.3 *Man feeding his dogs*, Russell Drysdale, 1941<sup>18</sup>.



“*Life was not meant to be easy*”. Drysdale’s characters are heroic, unconquered by and not alien to the landscape (McGrath & Olsen, 1981, pp. 44-48). They came to be seen as the Aussie Battler, with the desert as a testing ground for man’s eternal duel with nature (R. D. Haynes, 1998, p. 168). This is the competitive world of the ‘Common Good’, where tough political decisions are made and there are winners and losers. It resembles the anthropocentric utilitarianism found in public policy today

## 6.4 *Lake Eyre* 1975, John Olsen, 1975<sup>19</sup>.



Land is a “*Womb*”. Lake Eyre is the lowest point below sea level in Australia. For Olsen it represents a microcosm of the cycle of life and death, symbolising a fertile womb, giving birth to a multitude of life forms in a festival of life – complete reversal of the common image of the desert as a barren woman past her time (R. D. Haynes, 1998, p. 255). Thus in the ‘dead’ centre of the ancient continent Olsen finds evidence of life. Land is the ultimate source

<sup>17</sup> An image of this painting can be found at <http://nga.gov.au/Exhibition/Long/Default.cfm?IRN=218089&MnuID=3&ViewID=2>

<sup>18</sup> An image of this picture can be found at [http://www.qagoma.qld.gov.au/collection/australian\\_art\\_to\\_1975/russell\\_drysdale](http://www.qagoma.qld.gov.au/collection/australian_art_to_1975/russell_drysdale)

<sup>19</sup> An image of this picture can be found at [http://www.timolsengallery.com/pages/enlargement\\_by\\_artist\\_layout.php?current=116&work\\_id=3483&artist\\_id=1](http://www.timolsengallery.com/pages/enlargement_by_artist_layout.php?current=116&work_id=3483&artist_id=1)

of life but, like Lake Eyre, subject to extreme changes. The world is mysterious, full of beauty but also the uncertainty of existence, where the way ahead combines joy and pain, life and death.

## 6.5 Parliament House artwork

Three artworks in the new Parliament House in Canberra provide insights into the centrality of land to Australian public policy.

### 6.5.1 *Untitled (Shoalhaven landscape)*, Arthur Boyd, 1984<sup>20</sup>.



This tapestry hangs in the Great Hall of Parliament House. *The architectural vision for the Great Hall was that it would convey a sense of the Australian land, emphasising the importance of the physical environment in shaping Australian values. His design also emphasises the immensity of the landscape ... (it) surrounds the southern doorway of the*

*Great Hall, giving people passing through a sense of moving through the landscape* (Parliament House notes). The tapestry gives land its own dignity and presence within Parliament House, and invites reflection on humanity's interaction with it.

### 6.5.2 *Red Ochre Cove*, Mandy Martin, 1988<sup>21</sup>.



This painting was commissioned for the Main Committee Room of Parliament House, with Tom Robert's *Opening of the First Parliament of Australia by H.R.H. The Duke of Cornwall and York, May 9, 1901*<sup>22</sup> nominated as a reference point for the painting.



Peter Haynes describes *Red Ochre Cove* as an important and very public image in Australian art history, a *reflexive, and challenging, image of our national landscape referencing Aboriginal culture, European settlement, the clash of cultures and the clash of people and nature* (P. Haynes, May 2009).

<sup>20</sup> An image of this tapestry can be found at [http://www.aph.gov.au/Visit\\_Parliament/Parliament\\_House\\_Art\\_Collection/Great\\_Hall\\_Tapestry](http://www.aph.gov.au/Visit_Parliament/Parliament_House_Art_Collection/Great_Hall_Tapestry)

<sup>21</sup> An image of this picture can be found at [http://www.museumsandgalleries.act.gov.au/cmagg/documents/4013CMAG-MandyMartincatalogue\\_260x210\\_wfinalTEXT\\_FA-WEB-SPREAD.pdf](http://www.museumsandgalleries.act.gov.au/cmagg/documents/4013CMAG-MandyMartincatalogue_260x210_wfinalTEXT_FA-WEB-SPREAD.pdf)

<sup>22</sup> An image of this picture can be found at [http://www.aph.gov.au/Visit\\_Parliament/Parliament\\_House\\_Art\\_Collection/Tom\\_Roberts\\_Big\\_Picture](http://www.aph.gov.au/Visit_Parliament/Parliament_House_Art_Collection/Tom_Roberts_Big_Picture)

Comparing the two paintings, the shaft of light shines on an Australian bay not a British Duke, the land not humanity acts as witness, and the curved sky replaces the curved roof of the building. Land is no mere stage or optional extra here. It's as if Martin is saying that legitimacy and authority come from the land, and so land is integral to affairs of state. The Parliament has a responsibility towards the land that goes beyond the application of anthropocentric utilitarianism in the regulation of ecologically sustainable development.

## 6.6 A 'multiterranean' approach

Common threads running through this artwork are that of the centrality of the land to the Australian psyche and public life, and of Australians having a relationship with the land rather than treating land as an object. But what does this mean in policy terms? This Submission has used terms such as *Terra Nullius*, *Arcadia*, *Anthropocentric utilitarianism*, and *Womb* to describe how Australians relate to the land. Other terms giving further insights include *Mother*, *Competitor*, *Adversary*, *Stakeholder*, *Partner* and *Commodity*. The use of such terms, particularly in terms of relationships, helps to focus policy attention on what the interests of the land might be.

But there are many ways to describe the land, without any one way necessarily dominating, and different conceptualisations need to be held in dynamic tension. The policy challenge is to find an approach that accommodates such a range. Just as Australia now is a country with a strong multicultural demographic that is finding its voice in the public square, so too the emerging diversity in the way in which the land is valued and respected suggests the need for a 'multiterranean' approach to the public policy treatment of the interests of the land, that breaks free from a simple objectification of the land. Just as an Anglo-Celtic culture competes against other cultural perspectives to be heard in the public square, so too multiterranean voices should be heard alongside anthropocentric utilitarian perspectives.

This Submission proposes that one such approach is to give explicit recognition to land having its own intrinsic value, a value that is not dependent on, nor defined in terms of, human utility. The form that this might take is discussed in the next section.

## 7. Giving land identity

If land were to be given a discrete identity, independent of human utility, what policy options would this generate? Several possibilities come to mind, including:

- (i) recognising the land as a legal entity;
- (ii) treating the land as a stakeholder in any policy review relating to the environment; and/or
- (iii) in any ecologically sustainable development project
  - consulting with the land as an interested party;
  - paying the land for the extraction of its resources;
  - identifying how the land will benefit from the development; and
  - compensating the land for any resulting environmental degradation.

Just as current policy decision-making seeks to find a balance between the (competing) interests of miners, farmers, landowners, environmentalists, state governments, and the general public, so treating the land as more than an object lays the foundations for taking into account the (competing) interests of land, be it *Terra Nullius, Arcadia, Womb, Mother, Competitor, Adversary, Stakeholder, Commodity, Partner* or independent legal identity. It means including the interests of the land in any consideration of 'the Common Good'.

This use of anthropomorphism with regard to the land brings a wider perspective into the policy mix than is possible through primary reliance on a quantitative, reductionist methodology, regardless of what metaphor is actually used to describe the land. It uses an emotive strategy to test the boundaries of the policy debate as, inter alia, a way of encouraging consideration of implicit attitudes towards the land. For example the issue could be presented as:

*"Would Australians accept any proposal that did not deliver them a net benefit? If not, should the same standard not also apply when considering the net benefit to the land of an ecologically sustainable development?"*

In the view of this Submission, such considerations are an important and necessary component of developing policies for the 21<sup>st</sup> century from a clean slate.

The seeds of an attitude to the land that is more than anthropocentric utilitarianism already exist, as can be seen in the legislative objects of *improving the total quality of life, promoting a better environment* and *enhancing the environment*, although these terms are not explicitly defined in legislation and there is minimal evidence of any resource development targeting these objects. It is a complex matter, but one that should not be lost in the rhetoric of economic development.

This matter is particularly relevant when considering competition between the energy and agricultural sectors for land and water resources. Arrow Energy has asserted a fundamental premise that agriculture and CSG production are able to co-exist<sup>23</sup>, but what does this mean in practice, particularly if energy developments generally deliver higher economic returns than agriculture? For instance, co-existence might mean:

- a market-driven co-existence, based on unqualified acceptance of the efficient operation of a competitive market; or
- a regulated co-existence, based on a reliance on intervention by government to protect particular agricultural goals.

But will either outlook deliver optimal results for the agricultural industry?

The advocacy of co-existence seems to assume the land is willing and able to supply energy needs and support agricultural production, however they are managed. It includes an optimism that is reminiscent of the magic pudding of Australian storytelling. The reality, however, is less straightforward, and political judgments will have

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<sup>23</sup> See <http://www.parliament.qld.gov.au/documents/committees/AREC/2013/15-ProtPrimeAgriLand/submissions/09-Arrow.pdf> retrieved 3 March 2013

to be made that are not universally supported. In this regard, acknowledging and respecting the intrinsic value of the land may provide a broader framework within which a more acceptable balance between the interests of the agricultural and energy sectors can be found.

As a first step, consideration could be given to expanding the precautionary principle to require the exercise of caution if an ecologically sustainable development cannot be shown to deliver net benefits to the environment.

## 8. Conclusion

In reflecting on Australian agricultural competitiveness, there is a need to explore Australians' relationship with the land, particularly in the context of economic development and strong competition from the energy industry. In this context the language of control, dominion and struggle is common and projects an outlook that casts the land as an adversary.

As recently as 2004 McGirr wrote that *roads are a significant part of bringing a strange land to book, the act of domestication that needs to follow conquest ... and that the railway showed how the land was finally brought into captivity ... it tamed the land* (McGirr, 2004, pp. 25, 198). And in the 2012 ABC documentary "Great Southern Land", Professor Simpson spoke of *conquering the land ... of harnessing and taking ... and of Australians forever being locked in battle with the elements*.

But will reliance on this adversarial outlook deliver optimal results for Australian agriculture, and does it properly reflect Australians' unique connections with their land? This Submission puts the case that giving the land an identity, recognising its intrinsic value and speaking in terms of relationships with the land (rather than objectifying the land) will provide a more balanced platform upon which to build 21<sup>st</sup> century policies.

Moving beyond an objectification of the land may become a policy 'given' in years to come. But for this to happen, attitudinal change is necessary and an appropriate topic for the White Paper to address. This would be assisted through an identification of how policies for ecologically sustainable agricultural development will improve the total quality of life, promote a better environment and enhance the quality of the environment.

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## APPENDIX 1

### Commonwealth and State legislation

#### *Commonwealth*

In 1992 the Heads of Government of the Commonwealth, States and Territories of Australia and the Australian Local Government Association signed a statement on national environmental policy (COAG, 1992). It included four principles that “*should inform policy making and program implementation*”:

*3.5.1 precautionary principle - Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of the precautionary principle, public and private decisions should be guided by:*

- 1. careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and*
- 2. an assessment of the risk weighted consequences of various options.*

*3.5.2 intergenerational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.*

*3.5.3 conservation of biological diversity and ecological integrity – conservation of biological diversity and ecological integrity should be a fundamental consideration.*

*3.5.4 improved valuation, pricing and incentive mechanisms –*

- environmental factors should be included in the valuation of assets and services.*
- polluter pays i.e. those who generate pollution and waste should bear the cost of containment, avoidance, or abatement*
- the users of goods and services should pay prices based on full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes*
- environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solutions and responses to environmental problems.*

The principal Commonwealth Act is the *Environment Protection and Biodiversity Conservation Act 1999* (COAG, 1992). Its objects are (Section 3)

- (a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;*



- (b) *to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and*
- (c) *to promote the conservation of biodiversity; and*
- (ca) *to provide for the protection and conservation of heritage; and*
- (d) *to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous people; and*
- (e) *to assist in the co-operative implementation of Australia's international environmental responsibilities; and*
- (f) *to recognize the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and*
- (g) *to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.*

Also, drawing on the four principles specified in the *Intergovernmental Agreement on the Environment*, Section 3A defines principles of *ecologically sustainable development* to be:

- integration of long-term and short-term economic, environmental, social and equitable considerations;
- not using lack of full scientific certainty as a reason for postponing measures to prevent environmental degradation;
- intergenerational equity;
- conservation of biological diversity and ecological integrity; and
- promoting improved valuation, pricing and incentive mechanism.

### *Queensland*

In Queensland, environmental protection is regulated through the *Queensland Environment Protection Act 1994*, (Queensland Parliament, 1994) whose object is

*to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (Section 3).*

Further, the Act defines environmental value to be

*a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety (Section 9).*

The Act also specifies that three principles found in the *Intergovernmental Agreement on the Environment*, namely the precautionary principle, intergenerational equity and the conservation of biological diversity and ecological integrity form the standard criteria to be used in assessing a mining application (Section 9). But the fourth principle, that environmental factors should be included in the valuation of assets and services, is not in the Act. Further, the Act excludes "economic conditions" from the definition of natural environment (Queensland Parliament, Schedule 4). How, then, an intrinsic (non-economic) value of the environment might be taken into account is unclear.

NSW

Principal Acts in New South Wales are the *Environmental Planning and Assessment Act 1979* and the *Protection of the Environment Administration Act 1991*. The first object of the *Environmental Planning and Assessment Act 1979* is to

*encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purposes of promoting the social and economic welfare of the community and a better environment.*

The term *environmental protection* is defined in the *Protection of the Environment Administration Act 1991* to include anything that furthers the objectives of the Environment Protection Authority (EPA), which are defined to be:

- (a) *to promote, restore and enhance the quality of the environment, having regard to the need to maintain ecologically sustainable development, and*
- (b) *to reduce the risk to human health and prevent the degradation of the environment*

with *ecologically sustainable development* being defined as requiring

*the effective integration of economic and environmental considerations in decision-making processes ... through the implementation of ...*

- (a) *the precautionary principle – namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation ...*
- (b) *inter-generational equity – namely, that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*
- (c) *conservation of biological diversity and ecological integrity – namely that conservation of biological diversity and ecological integrity should be a fundamental consideration,*
- (d) *improved valuation, pricing and incentive mechanisms – namely that environmental factors should be included in the valuation of assets and services(Schedule 4).*

These are the four principles found in the *Intergovernmental Agreement on the Environment*.