

Submission No: 4
Date Received: 28-6-08
Secretary: <i>[Signature]</i>

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27 June 2008

The House of Representatives
House Standing Committee on Primary Industry and Resources
Sent by email to; pir.reps@aph.gov.au

Inquiry into the Draft Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill

Please find attached our public Submission to the Inquiry.

The views expressed in this Submission are the result of more than eight years of active analysis of the legal, policy and technical aspects of carbon capture and storage (CCS) by AEC and earlier companies involving substantially common owners and management. During that time we have come to be seen as the pioneers in advocating the potential for development of Victoria's brown coal resources using clean coal technology and CCS.

It is from this perspective that we express our extreme disappointment that the Draft Bill does not, in our view, represent a workable solution to the challenge which faces government and industry; of facilitating the timely development of Victoria's brown coal using clean coal technologies and CCS. While we believe that majority of the Draft bill is acceptable, the particular aspects which relate to gaining access to geological storage sites are flawed, perhaps fatally. Unless proponents of carbon storage can gain access to storage sites at acceptable cost and risk then development will stall, with serious adverse consequences for Australia's greenhouse gas abatement strategy.

These flaws have arisen through a failure of the designers of the Draft Bill to understand the different characteristics of a CCS proponent compared to a prospective or existing petroleum developer.

We believe that the legislation can be readily corrected by revisiting those aspects which related to the management of risk between existing rights holders and greenhouse gas storage proponents to ensure there is a level playing field.

We commend our Submission to the Inquiry and request that you give our views careful consideration.

We would be pleased to appear before the Inquiry to answer questions about our Submission but must point out that, due to prior international commitments, our key staff are unavailable until early August.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Allan Blood', written over a white background.

ALLAN BLOOD
Chairman

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The Australian Energy Company Ltd (AEC) is an unlisted public company formed to develop amongst other activities, the Latrobe Urea Project, details of which are described in the attached Brochure. The majority owners in AEC were the creators and driving force behind what is now known as the Monash Energy Project (being developed and now owned by the major international companies, Anglo-American and Shell, www.monashenergy.com.au).

The original proponents of the Monash Energy Project were the first company in Australia to wholeheartedly and publically embrace the need for carbon capture and storage to be part of any new, large brown coal processing project in Victoria.

The AEC Latrobe Urea Project (AEC-LUP) is a \$ 2 billion coal to urea plant which will significantly reduce the need for Australia to import this essential agricultural input. The direct carbon dioxide equivalent (CO₂e) emissions of the project are expected to be about one million tonnes per annum. The facility will be designed to readily enable the geological storage of most of these emissions once the necessary infrastructure becomes available. However, studies have shown¹ that the economies of scale mean that the AEC-LUP proponents are unable to independently develop the required infrastructure without an unacceptable commercial risk². Thus a shared facility and infrastructure would be required by AEC and other project proponents.

It is from this background that AEC believes that they can comment in a very authoritative manner on the matters before the Committee.

Context

While the Draft Bill is seen as providing a possible template for greenhouse gas storage legislation in other jurisdictions, the primary function is to facilitate such storage in offshore Commonwealth waters. Geology and current industrial development dictate that such storage is only likely to occur to a significant extent in two settings; offshore Western Australia and offshore Victoria. In the WA context it will be predominantly CO₂ from oil and gas operations which will be stored. In the Victorian context it is widely envisaged that it is mainly CO₂ from coal processing operations which will be stored.

In practice the real test of whether the proposed legislation meets its objective will be in Victoria. There the proposition is that CO₂ production from coal based processes will be stored within a geological basin containing mature but still operating oil and gas reservoirs and will represent a significant regulatory challenge. Should the

¹ Latrobe Valley CO₂ Storage Assessment report, CO₂CRC, 2005

² By comparison emissions from a full scale Monash Energy Project, without CCS, would be expected to be more than 10 times those of the AEC-LUP.

legislation fail to achieve the objective of promoting coal based CCS it will be a major setback for Australia's greenhouse gas abatement ambitions, as well as the future of new economically sustainable industry using clean coal technologies such as our current project.

Primary Focus of this Submission

The primary focus of this Submission concern the commercial aspects of coal based CCS and the Bill; principally in relation to access rights and the related processes. The lack of any comment on the technical aspects of the Bill is due to two main factors, firstly, these aspects have been given a high degree of focus during the development phase and, secondly, the analogy with existing petroleum operations is particularly strong. Thus, AEC considers that these aspects will prove to be practical and workable. In addition the adoption of an objective based regulatory approach in these areas mean that practices can evolve with experience and in essence become self correcting.

By contrast the commercial aspects of the Bill are acknowledged to have been subjected to much less development rigour and the analogy with existing petroleum practices and are particularly weak. Further, there is no scope for self correcting as once permits have been granted they create a property right based upon the then law which is all but impossible to change. If the proposed legislation drives coal based CCS into a dead end, it will only be possible to reverse out by compensating the rights holders or waiting for their rights to expire with time.

The rationale for the approach taken to the allocation of access rights is contained in Section 3.2 **Management of Release and Award of Exploration Areas** of the Regulatory Impact Statement (RIS). This section is examined in the next section.

Comments on Regulatory Impact Statement Section 3.2

The opening to this section acknowledges that this aspect was not addressed in the detailed development work previous work which lead up to the Carbon Dioxide Capture and Geological Storage Australian Regulatory Guiding Principles. This is unfortunate as access to storage sites is the critical first step in establishing CCS. If this first step proves to be unworkable by creating unnecessary barriers, then progress in implementing CCS will stall.

The analysis of options provided in the RIS is particularly superficial. The argument that the direct allocation option would not enable the regulator to determine who is "*best qualified to assess and operate the site*" is simply wrong. There is a difference between the owner of the access right, who is likely to also be the owner of the greenhouse gas emitting process and the operator of the site. The latter can, and is

likely to be in some circumstances, a contractor with extensive relevant experience in analogous geological assessment and petroleum operations. The argument about “*lack of transparency*” is also lacking in rigour. There is ample experience in allocation of resource rights through the direct application and grant process used in the onshore minerals and coal industry. Such processes are an everyday occurrence across Australia and the various States and Territories have developed appropriate checks and balances to ensure transparency. The Commonwealth officers who have determined the recommended outcome appear to have ignored this precedent.

The RIS proposes that the current petroleum allocation model should be adopted for greenhouse gas storage on the basis that;

“Overall, it is expected that the market, operating in tandem with a bidding system should provide the best results. To capitalise on the investment in assessing a greenhouse storage site, the operator would have a very strong incentive to do business with a greenhouse gas producer (and vice versa).”

This conclusion is built more on wishful thinking and hope than any strong foundation of analysis. In particular, it appears that little regard has been paid to the fundamental differences between the two uses in terms of commercial maturity and incentives. These aspects are examined in more detail in the next section.

Comparison of the Commercial Context for Petroleum and Coal Based CCS Development

The successful premise behind the petroleum access grant regime in the Offshore Petroleum Act (OPA) is that companies will actively seek to obtain prospective acreage to explore because they see an opportunity to locate petroleum resources and to develop them at ruling global energy prices. Based upon their experience and the pre-commercial information provided by government, they can assess the probability of success and bid accordingly. Granting exclusive access to a particular geological formation can be demonstrated to be economically efficient while companies can share the risk by “farming in” other participants if they wish.

If the petroleum explorer finds resources which are not commercial at the time of discovery, they are able to retain these resources over very significant time periods until development is economic, e.g. the Gorgon gas field was discovered in 1980. The criteria against which the right to resource retention are tested by the government are arguably “soft” as the government is concerned to be seen to promote exploration activity. Thus, it is better to err on the side of the companies retaining access over significant time periods rather than to risk undermining the perceived global competitiveness of the access regime.

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The provisions of the OPA and their administration would appear to have served Australia well over nearly four decades. It is arguable that most of the few changes which have been made to OPA over the decades have been to the benefit of the companies e.g. the change to renewal provisions as part of the OPA development. The provisions of the new carbon storage Bill will need to stand the same test of time as in forty years time the current Australia government is targeting a 60% reduction in greenhouse gas emissions.

The successful petroleum explorer stands to make an acceptable, and sometimes, spectacular return on the initial risk capital; thus there is a positive incentive to take the risk. The prospective greenhouse gas storage proponent is a party who's business is making something else (mainly power in the Australian context plus other new industries such as coal to oil, chemical products and fertilisers) where emissions happen to be an unwanted by-product. The existing power generator views CCS as one possible future strategic option amongst many. Other options include choosing to continue emitting and pay the carbon price or progressively shutting down.

Currently there is no commercially operating process for removing flue gas from conventional power station flue gas. While technically it can be done, there remains a considerable commercial risk until the technology matures. Brown coal power stations have the largest hurdle in retrofitting such technology as the volume of carbon per unit of power is so high, and they have limited remaining commercial life. Predominantly, the operators of such power stations do not have any technical expertise in the transport and storage of CO₂. Therefore, it would not be surprising if they were uncomfortable about having to bid for access to potential carbon storage sites.

With existing reserve capacity dwindling and no commitment to new base load generating capacity being made, the existing generators can feel reasonably comfortable that power prices must rise to cover the cost of carbon. Whether, the price rise is such that it will inspire a rush of new low emission power station construction is unknown at the moment. The only proven, cost effective option is natural gas, and the availability and cost of large volumes of gas is becoming very problematic very quickly. It would seem a prudent business decision to hold back from any commitment to CCS until the technology and commercial risks are clearer.

Equally, an independent petroleum industry operator, such as Schlumberger, or another oil and gas company, is unlikely to seek to bid as they have no greenhouse gas to store, the availability of CO₂ from a, yet to be developed, third party market is ill defined and the price they are willing to pay is unknown. Thus, positioning to be an intermediate in some future CCS market is highly risky. With the current high oil prices and scarcity of petroleum industry personnel, the incentive to pioneer such a new business is weak.

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Any prospective new coal based processing project is aware that they are likely to incorporate CCS at some point in time. However, for all these projects there are significant hurdles to be overcome in managing the technical, construction and commercial risks of the main plant which will be the major proportion of the cost. CCS adds additional cost, complexity and risk. As the investment has not yet been committed the option of making the "first of a kind" plant investment in a global location which does not require CCS is attractive.

At this point in time we cannot assess with any accuracy the availability and ultimate capacity of high quality, low risk geological storage sites, nor the long term demand. Initial estimates show that storage in offshore Gippsland waters might approach some tens of billions of tonnes. However, the CO₂ formed from the processing of Latrobe Valley coal would also be some tens of billions of tonnes. Therefore, it is prudent to regard storage space as a limited resource, at least until our knowledge advances to a stage where we can confidently demonstrate that this is not so.

While allowing one operator to develop a petroleum resource is economically efficient, this is not necessarily the case for carbon storage. Once a proponent has injection rights to a particular geological formation, they will face a number of conflicting pressures. On the one hand they could benefit financially by contracting capacity with a third party. However, this increases the risk that storage capacity might become limited with time and the proponent may seek to hold on to capacity for potential future projects. Also the third party might be in competition as a producer of the same product e.g. power. Given that storage capacity is difficult to assess at the outset and only becomes clearer with time and that the return on investment for selling storage services is likely to be limited, the overwhelming balance of the incentives is not to sell storage services and capacity.

Overriding all of the risk and lack of an incentive to implement CCS for any corporate entity is the uncertainty that, having bid and acquired an Assessment Permit and undertaken a very expensive evaluation process, the granting of an injection licence could be blocked by the Minister being unwilling to use the Public Interest test to overrule the objection of an existing production licence holder. There has been no such analogous risk for the petroleum industry permit holders in the four decades of offshore exploration and production.

Arguably, the most important challenge that the administrators of this legislation will have to face is how to facilitate the access to the deep saline aquifers which underlie the Gippsland oil and gas fields for greenhouse gas storage while production from existing permits is maintained. Unless this challenge can be met, the development of CCS in SE Australia will stall for many decades. Clearly, the many stakeholders in this issue have different, and conflicting, incentives and objectives. Quantifying and balancing the risks is a complex and expensive undertaking and will only occur if

the parties can develop confidence that their respective rights can be protected. It is totally unclear how the proposed allocation process will facilitate this outcome. Indeed, there are many reasons why a purely market based approach may serve to lock up the storage potential for decades if the objectives of a successful bidder are not aligned with Government expectations. This is a critical issue which must be dealt with.

Summary

In contrast with the petroleum industry explorer, the potential greenhouse gas storage proponent faces a different set of circumstances and dis-incentives as follows;

1. CCS is a high cost, complex activity in which most of the potential owners of the source emissions have limited experience and expertise,
2. The return on investment for CCS is uncertain compared to other alternative actions the potential proponents have,
3. Positive incentives exist to under- develop the potential storage capacity of a geological formation over which an injection right has been granted.
4. The risk that grant of an injection licence will be thwarted due to Government unwillingness to challenge assertions of risk by established rights holders,
5. Unlocking the storage potential of the deep saline aquifers in the Gippsland Basin is the key challenge for the proposed legislation.

A Possible Alternative Regime

Governments at all levels in Australia need to understand and accept that CCS is not analogous to other investment opportunities which can be left to market based mechanisms. In a similar manner to hybrid car production in Australia, it will only happen if there is an effective partnership between governments and industry.

The effective and timely establishment of CCS in Australia is a key aspect of the overall national greenhouse abatement strategy. A failure to maintain the momentum will limit options for abatement, potentially increase the cost of meeting abatement targets and have severe ramifications for particular regional economies.

The challenges of establishing CCS in Australia are many and have been discussed above. These challenges are in addition to the challenges which business faces in undertaking their normal investment and operating activities. Industry does not have to participate in the development of CCS in Australia; it will chose to do so if the cost and risk is seen to be acceptable compared to other available options. To date the investment by industry in CCS has been, in comparison to what will be required in future, low cost and low risk.

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The concept of a Victorian Greenhouse Gas Transport and Storage Hub has been raised as a way in which the many potential users of greenhouse gas storage capacity can share experience, knowledge, cost and risk over time as part of an effective strategic response to a national challenge. While industry will be a major player in the development of such a facility, it is unlikely to come to fruition without facilitation by the Australian and Victorian governments.

The current proposed access legislation is not conducive to the creation of such a Hub as it envisages a purely market based response without establishing the existence of the right market incentives to achieve the desired strategic outcome. An alternative approach would need to include;

1. A clear statement of strategic intent by Government that CCS is a national priority and will be facilitated,
2. A clear statement that stakeholders with existing rights will be protected within limits established by reasonable technical risk analysis,
3. Legislative processes to ensure that the assessment of 1 and 2 are appropriately balanced and that risk management will outweigh risk aversion,
4. Compensation mechanisms if unforeseen or low probability events compromised stakeholders rights,
5. Access to storage rights allocated on a demonstrated needs basis but with obligations to share information and facilitate the development of cooperative transport and storage facilities,
6. Government sharing funding of infrastructure as an incentive and to balance the obligations attached to storage access.

It would be feasible to have such an approach provided as an alternative access regime within OPA which could be determined to apply to a particular region e.g. offshore Victoria, while the current proposed regime could continue to apply in areas where greenhouse gas sourced from petroleum related activities dominates.

It is paramount that the legislation that regulates greenhouse gas storage must facilitate outcomes in the national strategic interest. It is much more important to have a rigorous analysis and debate leading to workable legislation than to push ahead with potentially flawed legislation. Once the balance of rights and obligations has been established, experience shows it is impossible to change.