The Parliament of the Commonwealth of Australia

Down Under:

Greenhouse Gas Storage

Review of the draft *Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill*

House of Representatives
Standing Committee on Primary Industries and Resources

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Canberra

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Foreword

This new legislation sets the framework for the introduction of a GHG geological storage industry in Australia. Through the titles and rights established by the Bill, proponents will set up commercial operations to permanently store captured CO_2 under the seabed in offshore Commonwealth waters.

Throughout the course of the Committee's inquiry, one of the most contentious elements of the legislation has been the management of interactions between GHG storage proponents and pre-existing petroleum title holders. In particular, the protection afforded pre-existing petroleum title holders could frustrate the establishment of GHG storage activities, particularly in areas such as the Gippsland Basin. It was concluded by the Committee that while the Bill largely strikes an appropriate balance between the two industries, further refinements are necessary.

The need for the co-existence of petroleum and GHG storage activities became very clear to the Committee during our deliberations. Both endeavours are in the national interest, and certain key locations in Australia's offshore waters are prime sites for both activities.

The Committee concluded that the best solution would be for the legislation to include a mechanism that would encourage the co-existence of GHG and petroleum activities. The Committee therefore recommends the inclusion of a clause to provide the responsible Commonwealth Minister with the power to direct both parties to come to commercial agreements through negotiation in good faith.

CCS is a costly endeavour, and will require large financial outlay by any prospective proponent. The Committee felt that the legislation did not go far enough to promote investment into, and uptake of, GHG storage. We have suggested that financial incentives be considered by the Government as encouragement to those early investors in this new industry.

The Committee also identified the large role that the petroleum industry is likely to play in the uptake of GHG storage. We heard during the inquiry that petroleum companies currently hold most of the technical knowledge and expertise required to explore for and develop potential GHG storage sites. As such, they may be the best placed to facilitate early uptake of GHG storage. With this in mind, the Committee has recommended that petroleum incumbents be offered a chance to combine a GHG storage title with their production or exploration permits.

A GHG storage industry can only be successful both commercially and in the mitigation of CO_2 emissions if the technology to capture CO_2 is implemented widely. Since the majority of our emissions derive from the coal-fired energy generation sector, the Committee feels that this sector should begin making faster headway with regards to capture. It may be that industries reliant on carbon-intensive energy sources will only remain viable in the long-term if they invest in CCS technology.

Long term liability for CCS storage has also been identified as a significant issue during the course of the inquiry. The Committee is broadly sympathetic to the approach taken by the Bill on this issue, but felt that the transfer of long term liability from GHG operators to the Government could act as an incentive for proper management of GHG storage and strict adherence to site closure responsibilities.

The Committee would like to congratulate the Minister for Resources, Energy and Tourism, the Hon Martin Ferguson MP, for this pioneering legislation. This legislation sets the groundwork for the establishment of a national GHG storage industry in Australia. If we grasp the opportunity provided, it will allow us to lead the world in the implementation and development of CCS.

I would like to thank all those who contributed to this important inquiry through submissions and discussion with the Committee. I would also like to thank Committee members and the Secretariat staff for their efforts throughout the inquiry process.

The Hon Dick Adams MP
Chair

Membership of the Committee

Chair	The Hon Dick Adams MP	
Deputy Chair	Mr Alby Schultz MP	
Members	Mr James Bidgood MP	Ms Kirsten Livermore MP
	Mr Nick Champion MP	Mr Graham Perrett MP
	Mr John Forrest MP	Mr Sid Sidebottom MP
	Mr Barry Haase MP	Mr Tony Windsor MP

Committee Secretariat

Secretary	Ms Janet Holmes (to 20 June 2008)
	Mr Richard Selth (from 3 July 2008)
Inquiry Secretary	Dr William Pender
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Research Assistant	Ms Philippa Davies (7–11 July 2008)
Office Manager	Ms Jazmine Rakic

Terms of reference

The Committee will review the provisions of the draft *Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill.*

Specifically, the Committee will ascertain whether the Bill:

a) Establishes legal certainty for access and property rights for the injection and long-term storage of greenhouse gases (GHGs) in offshore Commonwealth waters;

b) Provides a regulatory regime which will enable management of GHG injection and storage activities in a manner which responds to community and industry concerns;

c) Provides a predictable and transparent system to manage the interaction between GHG injection and storage operators with pre-existing and co-existing rights, including, but not limited to, those of petroleum and fishing operators, should these come into conflict;

d) Promotes certainty for investment in injection and storage activities; and

e) Establishes a legislative framework that provides a model that could be adopted on a national basis.

List of abbreviations

ACA	Australian Coal Association
AEC	Australian Energy Company
AETS	Australian Emissions Trading Scheme
AMPTO	Association of Marine Park Tourism Operators
ANEDO	Australian Network of Environmental Defender's Offices
APPEA	Australian Petroleum Production and Exploration Association
CCS	Carbon Capture and Storage
CEO	Chief Executive Officer
CO_2	Carbon Dioxide
CO2CRC	Cooperative Research Centre for Greenhouse Gas Technologies
CPD	*Commonwealth Parliamentary Debates*
CRC	Cooperative Research Centre
CSG	Coal Seam Gas
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DA	Designated Authority
DRET	Department of Resources, Energy and Tourism
E&P	Exploration and Production

EHR	Enhanced Hydrocarbon Recovery
EPA	Environment Protection Authority, Victoria
ESAA	Energy Supply Association of Australia
ESD	Ecologically Sustainable Development
ETS	Emissions Trading Scheme
GHG	Greenhouse Gas
GHGS	Greenhouse Gas Substance
GHGS AP	Greenhouse Gas Substance Assessment Permit
GHGS HL	Greenhouse Gas Substance Holding Lease
GHGS IL	Greenhouse Gas Substance Injection Licence
IPCC	Intergovernmental Panel on Climate Change
JA	Joint Authority
LNG	Liquefied Natural Gas
MCA	Minerals Council of Australia
MCMPR	Ministerial Council on Mineral and Petroleum Resources
ML	Mining Lease
MMV	Monitoring, Measuring and Verification
NOPSA	National Offshore Petroleum Safety Authority
OCS	Offshore Constitutional Settlement 1979
OPA	*Offshore Petroleum Act 2006*
P&G Act	*Petroleum and Gas (Production and Safety) Act 2004*, Queensland
PEP	Petroleum Exploration Permit
PIRSA	Department of Primary Industries and Resources, South Australia

PPL	Petroleum Production Licence
PRL	Petroleum Retention Lease
PRRT	Petroleum Resource Rent Tax
PSLA	*Petroleum (Submerged Lands) Act 1967*
RCM	Responsible Commonwealth Minister
SCC	Site Closing Certificate
SPCCS	Special Report on Carbon dioxide Capture and Storage
SROSAI	Significant Risk of Significant Adverse Impact
WA	Western Australia

List of recommendations

1 General

Recommendation 1

The Committee recommends the inclusion within the Bill of an objects clause, providing that the legislation:

- provide greenhouse gas injection and storage proponents with the certainty needed to bring forward investment; and
- preserve pre-existing rights of the petroleum industry as far as is practicable to minimise sovereign risk to existing titleholders' investment in Australia's offshore resources.

Recommendation 2

The Committee recommends that the responsible Commonwealth Minister utilise established formal consultation pathways to consult with State Governments, industry and environmental organisations, with a view to achieving national consistency in the administration of GHG storage legislation.

2 Access and property rights

Recommendation 3

The Committee recommends that no acreage be automatically excluded from consideration for selection on the grounds of pre-existing petroleum activities.

Recommendation 4

The Committee recommends that the process for identifying and short-listing acreage for release should be transparent and systematic, and should consider the views and submissions of all relevant stakeholders.

Recommendation 5

The Committee recommends that the criteria established for assessing work bid applications facilitates the uptake of CCS activities while maintaining transparency and consistency.

Recommendation 6

The Committee recommends that the legislation be amended to allow for a GHG assessment permit holder to apply for a single right of renewal for a maximum three years duration.

Recommendation 7

The Committee recommends that the GHG injection and storage rights conferred under s.137 of the *Offshore Petroleum Act 2006* be maintained where practical.

Recommendation 8

The Committee recommends that the Government review the *Offshore Petroleum Act* and proposed amendments to provide for the development of integrated petroleum projects, including the injection and storage of GHG from multiple sources into a single storage formation.

3 Managing interactions

Recommendation 9

The Committee recommends that the Bill be amended to provide for the responsible Commonwealth Minister to direct the parties to negotiate in good faith where there are potential or actual overlapping GHG storage and petroleum titles, under both pre-commencement and post-commencement petroleum titles; and that the responsible Commonwealth Minister be empowered to direct an outcome.

Recommendation 10

The Committee recommends that the regulations and guidelines attendant upon the legislation are released for stakeholder and public comment as a matter of urgency.

4 Investment certainty

Recommendation 11

The Committee recommends that incumbent petroleum operators be offered a one-off opportunity to incorporate a GHG assessment permit over their exploration or production licence, with the condition that they must demonstrate utilisation of this permit within five years, or surrender it.

Recommendation 12

The Committee recommends that those proponents who can demonstrate a readily available CO_2 stream for imminent injection receive preferential consideration when assessing bids for GHG acreage allocation.

Recommendation 13

The Committee recommends that the Government consider further financial incentives for the earliest movers in this new industry, and that these incentives be made public at the earliest opportunity.

Recommendation 14

The Committee recommends that a process for the formal transfer of long term liability from a GHG operator to the Government be established within the proposed legislation, such transfer to be conditional upon strict adherence to prescribed site closure criteria.

5 GHG storage

Recommendation 15

The Committee recommends that general criteria for achieving a site closing certificate be established and published as part of the implementation of the legislation.

Recommendation 16

The Committee recommends that non-fixed closure timeframes as currently prescribed within the proposed legislation be used in preference to alternative models such as fixed term closure periods.

Recommendation 17

The Committee recommends that community and stakeholder engagement strategies be considered as part of any GHG storage activity.

Recommendation 18

The Committee recommends consideration be given to making monitoring data associated with GHG storage project publicly available.

Recommendation 19

The Committee recommends the use of consultative pathways to provide feedback on the wider community's concerns to the responsible Commonwealth Minister.

1

General

1.1 On 18 June 2008, the Minister for Resources and Energy, the Hon Martin Ferguson MP, introduced into the House of Representatives the Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill 2008, the purpose of which is to 'enable carbon dioxide to be stored safely and securely in geological storage formations deep underground in Australian offshore waters under Commonwealth jurisdiction'.[1] The Minister noted the potential importance of carbon capture and storage (CCS) in reducing Australia's greenhouse gas emissions.

1.2 The focus of the Bill is 'on the provision of access and property rights for greenhouse gas injection and storage activities in Commonwealth offshore waters and provides a management system for ensuring that storage is safe and secure'.[2] The Bill is also designed to balance the potential conflict of interest between the offshore petroleum industry and the greenhouse gas (GHG) storage industry in Commonwealth offshore waters. The Minister observed in his second reading speech that:

> The types of geological formations that have stored oil and gas and, in some cases, carbon dioxide for millions of years are the same or similar to the storage formations proposed for greenhouse gas storage. Petroleum and greenhouse gas operations are therefore likely to operate in similar regions. The amendments seek to balance the rights of this new storage industry with the rights of the petroleum industry in a manner that encourages investment in both industries. The proposed legislation recognises the need to:

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1 The Hon Martin Ferguson MP, *CPD*, House of Representatives, 18 June 2008, p. 5132.

2 The Hon Martin Ferguson MP, *CPD*, House of Representatives, 18 June 2008, p. 5133.

- provide greenhouse gas injection and storage proponents with the certainty needed to bring forward investment; and
- preserve pre-existing rights of the petroleum industry as far as is practicable to minimise sovereign risk to existing titleholders' investment in Australia's offshore resources.[3]

1.3 As part of the consultation process connected to the introduction of the Bill, the Minister asked the House of Representatives Standing Committee on Primary Industries and Resources to conduct an inquiry into the provisions of the draft Bill, specifically to ascertain whether the Bill:

> a) Establishes legal certainty for access and property rights for the injection and long-term storage of greenhouse gases (GHGs) in offshore Commonwealth waters;
>
> b) Provides a regulatory regime which will enable management of GHG injection and storage activities in a manner which responds to community and industry concerns;
>
> c) Provides a predictable and transparent system to manage the interaction between GHG injection and storage operators with pre-existing and co-existing rights, including, but not limited to, those of petroleum and fishing operators, should these come into conflict;
>
> d) Promotes certainty for investment in injection and storage activities; and
>
> e) Establishes a legislative framework that provides a model that could be adopted on a national basis.

1.4 The objective of the Bill is to provide an enabling framework for GHG storage in offshore Commonwealth waters. The Committee believes it meets this objective. It is designed to manage interactions between the petroleum industry and the GHG storage industry. With certain caveats, the Committee believes it meets this objective. More detailed examination of aspects of the Bill are provided in this and subsequent chapters.

1.5 The Committee believes that the Bill does establish an effective framework for access and property rights for the injection and long-term storage of greenhouse gases in offshore Commonwealth waters; although how the access and property rights provided for under the Bill

3 The Hon Martin Ferguson MP, *CPD*, House of Representatives, 18 June 2008, p. 5133.

actually operate will depend a great deal on the regulations and guidelines (yet to be issued), and practice over time.

1.6 The Committee also believes that the Bill does provide a regulatory regime which will enable management of GHG injection and storage activities in a manner which responds to community and industry concerns; however, both industry and the community have concerns about how this legislation will operate and these concerns will only be assuaged if both CCS and the legislation fulfil their potential.

1.7 The Committee is of the view that the Bill provides a predictable and transparent system to manage the interaction between GHG injection and storage operators and petroleum operators with pre-existing and co-existing rights, but has recommended a number of changes to defuse potential conflict and increase cooperation between those sectors.

1.8 The Committee believes that to the extent the Bill provides a legislative framework within which industry may operate, it provides some degree of certainty for investment in injection and storage activities, although the report highlights a number of industry concerns in this area. The Committee has made recommendations with a view to increasing levels of investment certainty.

1.9 The Committee believes that the Bill is unlikely to be adopted as the model for a national legislative framework in its entirety, although elements of the Bill may be suited to consistent application nationally. This is the start of a new industry. The Bill does what it is designed to do—namely, provide an enabling framework for GHG storage in Commonwealth offshore waters—and should be enacted on that basis.

The use of the OPA platform

1.10 The decision to use the Offshore Petroleum Act as the platform for GHG storage was based on the technical similarities between petroleum exploration and extraction and GHG storage, and the need to manage the interactions between the two activities within a consistent framework. In evidence before the Committee, the Department of Resources, Energy and Tourism explained:

> Following consultation with relevant Commonwealth agencies, the Offshore Petroleum Act 2006, or the OPA, was identified as the most appropriate vehicle for implementation of a greenhouse gas injection and storage regime in Commonwealth waters. This was

> consistent with the MCMPR principle that existing legislation and regulation relating to assessment and approval processes for CCS be identified, modified and augmented where necessary—in other words, do not unnecessarily duplicate or add to existing legislation or make new legislation. Use of the OPA, which was endorsed by the MCMPR in December 2006, allows for the establishment of an effective regulatory framework for greenhouse gas injection and storage and ensures both the existing petroleum industry and the newly emerging greenhouse gas injection and storage industry can coexist in Commonwealth offshore waters.[4]

1.11 The decision to use the OPA as the platform for GHG storage legislation has received a mixed reception. In its submission, ExxonMobil endorsed the framework established by the Bill, but with certain caveats:

> ExxonMobil believes that the Bill establishes a framework that is suitable for adoption on a national basis by using a regulatory structure analogous to petroleum regulation in Australia. In particular, we note and support the intent of the provisions of the Bill designed to protect the rights of existing petroleum license holders. ExxonMobil retains concerns about some aspects of the Bill that may act as obstacles to establishing the investment and legal certainty required to enable broad, large scale deployment of CCS.[5]

1.12 Likewise, Chevron supported the use of the OPA model:

> The proposal to establish a series of title rights equivalent to those applied to the upstream petroleum industry provides an effective mechanism for providing property rights for carbon dioxide storage proponents and for the regulation of activities related to the storage of greenhouse gases. This property rights model has provided certainty for the oil and gas industry and is an appropriate model for the establishment of a greenhouse gas storage industry.[6]

1.13 Again, however, Chevron questioned the detail of the Bill and its potential impact on the oil and gas industries:

> Chevron is concerned that the title rights, both for the oil and gas industry and the greenhouse gas storage industry, granted post the proposed amendments will have less legal certainty than that

4 Mr John Hartwell, DRET, *Transcript of Evidence*, 15 July 2008, pp. 1–2.

5 ExxonMobil, Submission no. 6, p. 9.

6 Chevron, Submission no. 8, p. 2.

> currently enjoyed by the oil and gas industry. This arises as a consequence of the significant powers provided to the Minister to determine outcomes in the public interest where activities in the oil and gas industry (but potentially in other sectors) come into conflict.
>
> This erodes the certainty currently enjoyed by oil and gas explorers that having discovered a commercial resource they will be able to develop it. Neither the oil and gas explorers (with rights granted post-amendment) nor the greenhouse gas storage assessors (explorers) will enjoy this current level of certainty.[7]

1.14 In evidence before the Committee, Mr Noel Mullen, Deputy Chief Executive, Commercial and Corporate for APPEA, congratulated the Government on its groundbreaking legislation:

> APPEA strongly commends the work of the Minister for Resources and Energy, the Department of Resources, Energy and Tourism and the relevant parliamentary draftsman in preparing the bill we are considering this week. The legislation is truly groundbreaking and it will make Australia the first jurisdiction to develop a comprehensive framework for greenhouse gas injection activities.[8]

1.15 In its submission, Anglo Coal questioned the wisdom of basing legislation for GHG storage on the OPA—the result being an inherently biased piece of legislation:

> It is inescapable that the Bill was originally crafted at a time when the protection of existing petroleum interests was seen as the priority objective, and the reduction of Greenhouse gas emissions was a subordinate consideration. The Bill is heavily biased toward the protection of petroleum interests and, while it nominally makes CCS possible, it does not reflect a determination to make it happen.[9]

Model framework

1.16 While there is acceptance of the OPA model as the framework for the GHG storage legislation, the issue of whether the Bill provides a model framework for other jurisdictions is contested.

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7 Chevron, Submission no. 8, p. 3.

8 Mr Noel Mullen, APPEA, *Transcript of Evidence,* 18 July 2008, p. 19.

9 Anglo Coal, Submission no. 24, p. 1.

1.17 In its submission, BP accepted the bill as a model that could be adopted on a national basis, stating 'We believe that the Bill is acceptable in this regard and encourage the States to mirror this legislation'.[10]

1.18 Chevron also supported the Bill as a model for other jurisdictions:

> Chevron supports the adoption of a nationally consistent approach to the regulation of greenhouse gas storage. It is in the longer term interests of the emergent greenhouse gas storage industry to have a consistent set of legislative arrangements across all Australian Governments as opposed to different approaches in different jurisdictions. Subject to Chevron's concerns identified in this submission, Chevron would support the States and Territories developing legislation that mirrors the approach being adopted by the Commonwealth.
>
> Chevron notes that the legislative package is potentially one of the most advanced attempts by any jurisdiction to legislate title rights for the establishment of a greenhouse storage industry. As such it provides a model for other international jurisdictions where subsurface rights are regulated in much the same manner as Australia.[11]

1.19 In their submission, however, the Australian Coal Association and Minerals Council of Australia argued that:

> Whether the Bill establishes a legislative framework that provides a model that could be adopted on a national basis cannot be determined at this time, given various jurisdictions are still considering their own legislative responses. National consistency is imperative, however the Bill as a model for adoption on a national basis is not supported as it stands given the concerns raised in response to previous terms of reference, which have the potential to be magnified in relation to onshore GHGS operations.[12]

1.20 The Australian Network of Environmental Defender's Offices (ANEDO) rejected the bill as model legislation, 'due to the inadequacies of the "regulatory regime"…Until the suggested appropriate amendments are made, the Bill will remain as an inappropriate means to effectively and responsibly regulate the CCS process'.[13] In evidence before the Committee, Ms Rachel Walmsley, Policy Director for the Environmental

10 BP, Submission no. 12, p. 3.

11 Chevron, Submission no. 8, p. 7.

12 ACA/MCA, Submission no. 27, p. 11.

13 ANEDO, Submission no. 14, p. 19.

Defender's Office New South Wales, highlighted what ANEDO saw as the shortcomings of the Bill as a potential framework:

> At the moment, as we see it, it is not a nationally appropriate model until it has the safeguards in place. As you can see from our submission, it is things like having objectives—that everything under the act is in accordance with the principles of ESD, you have the committee in place, and you have time frames. As I said in the opening statement, an awful lot of detail has been left to regulations, and those details are things like how the environmental impact assessment will work, the monitoring and evaluation, the public interest tests—a whole lot of the meat of how this is going to work we have not seen any detail of yet. It is very hard to be able to say, 'Yes, this bill should be nationally adopted,' when we have not seen the detail of how it is going to work. It could be strengthened by being clearer about property rights, developing this fund, developing an expert committee, just making sure that the architecture is up and running—like a publicly accessible CCS register to enhance transparency—and having more detail around the mandatory reporting. Before we can say this is going to be a nationally appropriate scheme we would need to see more detail; it is of concern to us that so much detail has been left to regulations that we have not seen.[14]

1.21 In its submission, WWF stated that while it supported the creation of a national framework, the Bill as drafted did not provide a suitable model for nationally consistent legislation:

> WWF supports the development of national legislation and the creation of a national task force to facilitate its development. WWF notes that national legislation could be either legislation enacted by the Commonwealth Parliament or legislation enacted by one of the states or territories and adopted by the others (as, for example, has been done in the case of corporate and consumer credit laws). At the very least State and Federal legislation should be consistent.
>
> Unless the current inadequacies highlighted through this submission are addressed, WWF believes that the Bill in its current form is not suitable as a model to be adopted on a national basis.[15]

14 Ms Rachel Walmsley, ANEDO, *Transcript of Evidence*, 16 July 2008, pp. 50–1.

15 WWF, Submission no. 21, p. 9.

National Consistency

1.22 Significantly, from the point of view of national consistency, the Bill as model legislation has received little support from State Governments. In its submission, the Victorian Government rejected the Bill as a legislative model:

> The Victorian Government considers that the Bill does not provide a framework which could be adopted on a national basis, as:
>
> - The considerations for managing such things as the co-existence of CCS and petroleum activities are practically different in an onshore and offshore context.
> - The Bill would provide existing petroleum rights holders with unwarranted monopoly rights, effectively delaying the development of a viable commercial CCS industry for Victoria.
> - The proposed 'impact test' does not operate in a manner which promotes investment in CCS. Put differently, a CCS proponent is always to be measured against a petroleum operator, in determining whether a CCS activity can be approved, and how such test is to be applied is not clear.[16]

1.23 In evidence before the Committee, Ms Kellie Caught, Climate Change Policy Manager for WWF-Australia, highlighted her organisation's preference for the model for legislation being developed in Victoria:

> We have not seen the final legislation from the Victorian government; what they did was put out a discussion paper in which they basically said what their preferred position would be and asked for feedback. Given that some of the things they flagged included objectives, guiding principles, a definition of 'public interest' and clearer guidelines around environmental risks—and also, on the liability issue, they flagged the possibility of that liability being eventually transferred to the state—their preferred model, the model they had in their discussion paper, certainly meets a lot more of our criteria than the current draft national legislation meets.[17]

1.24 The South Australian Government's response to the Bill was also less than a fulsome endorsement:

> As you are aware the Department of Primary Industries and Resources SA (PIRSA) has been in consultation with the Department of Resources, Energy and Tourism throughout the

16 Victorian Government, Submission. no. 16, p. 12.

17 Ms Kellie Caught, WWF, *Transcript of Evidence*, 16 July 2008, p. 58.

> development of this legislation. As a result of this consultation, South Australia has chosen not to make a further detailed submission to the committee. However I do advise that notwithstanding South Australia's support for this Commonwealth Amendment Bill, South Australia maintains some concerns regarding the complexity of this legislation and the Commonwealth's suggested implementation of the objective-based regulatory principles espoused in the Ministerial Council on Ministerial Petroleum Resources (MCMPR) *Regulatory Guiding Principles for Carbon Capture and Geological Storage.*
>
> As a result, South Australia has chosen to approach the concept of "mirror legislation" across all jurisdictions with caution and is not supportive of any motion for "mirror legislation" across onshore and offshore jurisdictions. Accordingly, at the forthcoming MCMPR meeting in Darwin on 16 July 2008 in its support of the draft legislation, South Australia will only support the application of national guiding principles for the regulation and management of Carbon Capture and Storage (CCS), namely those already endorsed by the MCMPR *(The Australian Regulatory Guiding Principles for Carbon Capture and Geological Storage).*[18]

1.25 In its submission, Santos indicated that the framework for GHG storage being developed in South Australia had departed from the provisions of the draft Bill in a number of important areas, and that Santos supported the South Australian legislative model:

> Santos is working closely with South Australian regulators in the development of their comprehensive CCS legislative model. The principles of the current and proposed South Australian model provide an efficient framework for CCS. In particular, in recognition of invested capital and built capacity, Santos supports the following principles that are included in the South Australian model:
>
> - No concurrent CCS titles can be granted over a pre-existing exploration, production, or retention title.
> - Pre-existing petroleum title holders are given priority for a CCS title.
> - Ministerial discretion is limited with all matters referred to the regulatory body in the first instance.

18 South Australian Government, Submission no. 20, p. 1.

- Express recognition of the continuing rights of all petroleum title holders to use exogenous as well as indigenous greenhouse gases for purposes of EHR and storage.
- Third party access is by way of commercial agreement, not as a result of Ministerial discretion.[19]

1.26 In its submission, the Western Australian Department of Industry and Resources indicated that it was not committed to the model presented in the Bill, and that it was aware of alternative frameworks being developed in South Australia and Queensland:

> While the Department of Industry and Resources supports the intent of the Bill, it is premature to comment on whether it provides a model for the development of GHG policy and legislation nationally. The Department of Industry and Resources would also refer to the policies and legislative frameworks being developed by the Queensland and Victorian governments principally because they address onshore and offshore GHG matters.[20]

1.27 The submission highlighted a number of key issues, especially around the exclusion of States from the formal framework of the GHG storage aspects of the Commonwealth legislation:

> Despite the concerns raised above, the GHG amendments appear to establish a legislative framework that, with consideration, will provide a model that could be adopted on a national basis. In keeping with the requirements of the OCS, WA will reflect, as far as practicable, the intent of the GHG amendments to the State's *Petroleum (Submerged Lands) Act 1982* or other legislation it deems appropriate for GHG capture and storage.
>
> Unlike the amendments required for the implementation of the NOPSA arrangements in 2004, achieving direct alignment between the Commonwealth and the States petroleum submerged lands Acts have been severed with the commencement of the OPA.
>
> In contrast to the Commonwealth approach, State GHG legislation will have to recognise and address the potential for cross-jurisdictional or trans-boundary storage from onshore areas to the designated waters area covered by the WA petroleum submerged lands legislation. This may also be the case in other jurisdictions.[21]

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19 Santos, Submission no. 22, p. 3.

20 Department of Industry and Resources, Western Australia, Submission no. 17, p. 8.

21 Department of Industry and Resources, Western Australia, Submission no. 17, p. 8.

Committee conclusions

1.28 It is evident to the Committee from this discussion, and aspects of the Bill which will be addressed in subsequent chapters, that the question of whether the framework presented in the draft bill is appropriate and workable is a vexed one. Certainly, there is a lack of consensus as to whether the OPA is the correct basis for legislation on GHG storage in offshore areas, and even less consensus on the question of whether the Bill as drafted provides an appropriate legislative model. Numerous concerns have been presented about the detail of the Bill, as might be expected, and these will be addressed in this and subsequent chapters.

1.29 On balance the Committee agrees that the OPA is the appropriate platform for GHG storage legislation. The Committee agrees with the stance of the Government that the similarities and synergies in the petroleum and GHG storage industries make common legislation appropriate. There are, however, differences between the two industries which must be taken into account. Moreover, these differences are a source of potential conflict which may delay investment in GHG storage. Finding mechanisms for active cooperation between the petroleum and GHG storage industries will be vital to the working of the legislation.

1.30 From the evidence received, it is clear that achieving a nationally consistent framework will require further work between the Commonwealth and the States. A number of State Governments are making progress on the development of GHG storage legislation that is designed to fit their own pre-existing legislative framework. Moreover, it is evident that a number of industry and community groups prefer the legislative frameworks being developed in the States. The best hope would appear to be that active cooperation between different levels of government and industry may be achieved despite legislative differences.

Objectives

1.31 Another criticism of the bill raised in a number of submissions was its failure to define objectives and, thus, clarify the purpose of the bill, especially in defining the relationship between the petroleum industry and GHG storage. In evidence before the Committee, Mr Roger Bounds, Project Director for Monash Energy, highlighted the absence of an objects clause and the consequent need for greater clarity in other sections of the bill:

> In drafting the bill, the government has made a choice not to include an objects clause. As a consequence, it is difficult for us to find evidence that this bill goes to the heart of enabling CCS, rather than trying to reach some balance or in fact protect the interests of incumbents. As a consequence, we would like to see the public interest test clearly bring out that it is in the public interest to facilitate CCS.[22]

1.32 In their submission, the Australian Coal Association and Minerals Council of Australia urged the inclusion of an objects clause:

> The Bill should make provision for an **objects clause** to be included in the OPA, such as objects to include a certain, transparent, effective and efficient regulatory system for GHGS titles and operations, a contribution to emission reduction, and an effective basis for the sustainability of emissions-intensive and fossil fuel industries (as well as appropriate objects for petroleum operations).[23]

1.33 The Australian Coal Association and Minerals Council of Australia proposed the following, 'accompanied by appropriate object provisions for petroleum':

> *The objects of this Act are:*
>
> *(a) to create a certain, transparent, effective and efficient regulatory system for the carrying out of exploration for potential greenhouse gas storage formations and the injection and storage of greenhouse gas substances;*
>
> *(b) to contribute to Australia's international obligations in relation to the reduction in emissions of greenhouse gases;*
>
> *(c) to create an effective basis for sustainability, consistent with a reduction of emissions of greenhouse gases, for Australia's:*
>
> *(i) emissions-intensive industries; and*
>
> *(ii) fossil fuel industries.*[24]

1.34 Anglo Coal also recommended 'a clear statement of objectives, including the facilitation of CCS, to help establish balance between petroleum interests and the facilitation of storage'.[25]

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22 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, pp. 51–2.

23 ACA/MCA, Submission no. 27, p. 6.

24 ACA/MCA, Submission no. 27, p. 15.

25 Anglo Coal, Submission no. 24, p. 1.

1.35 Anglo Coal's submission stated:

> The Draft Bill fails to provide a clear basis for determination of conflicts arising in the event of competing petroleum and CCS priorities. As experience in Australia and elsewhere suggests, this is not a matter that should be left to Regulation.
>
> There has always been an inherent risk that incorporating CCS regulation into existing petroleum legislation would tend to subordinate the facilitation of CCS and the reduction of Greenhouse Gas emissions to the interests of petroleum exploration and production - as we noted in 2006 *"While accepting that CCS is best dealt with by amending petroleum legislation administered by the petroleum regulator, care will need to be taken to ensure that in the process the rights of CCS tenement holders are not subordinated to those of petroleum tenement holders."*
>
> That subordination tendency has clearly been evident [in] the development of the Draft Bill, and in addition to now amending its provisions to more adequately provide for Ministerial determination based on national interest, to provide a level playing field for overlapping tenement holders, and to actively facilitate co-development agreements, we submit that the Bill should also include a clear statement of its objectives for both petroleum and storage regulation.[26]

1.36 In its submission, ANEDO also argued for an objects clause, including the principles of ecologically sustainable development:

> The Bill contains no specified additional objects. There is no requirement for GHG injection and storage operations to be consistent with the principles of ecologically sustainable development (ESD), or recognise community concerns. CCS is by no means a proven method through which to permanently store GHGs; this reality alone provides sufficient cause for the Bill to contain the principles of ESD.[27]

Committee conclusions

1.37 The Committee supports the inclusion of an objects clause within the Bill as a way of clarifying its purpose and giving guidance both to the Government and industry in the operation of the legislation. The

26 Anglo Coal, Submission no. 24, p. 4.

27 ANEDO, Submission no. 14, p. 10.

Committee believes that the twin objectives set out in the Minister's second reading speech provide the necessary content for an objects clause, namely that the Bill:

- provide greenhouse gas injection and storage proponents with the certainty needed to bring forward investment; and
- preserve pre-existing rights of the petroleum industry as far as is practicable to minimise sovereign risk to existing titleholders' investment in Australia's offshore resources.[28]

1.38 The Committee, while sympathetic to the principles of ecologically sustainable development, does not support including said principles in enabling legislation of this type, environmental regulation of GHG storage being the role of other legislation.

Recommendation 1

1.39 **The Committee recommends the inclusion within the Bill of an objects clause, providing that the legislation:**

- **provide greenhouse gas injection and storage proponents with the certainty needed to bring forward investment; and**
- **preserve pre-existing rights of the petroleum industry as far as is practicable to minimise sovereign risk to existing titleholders' investment in Australia's offshore resources.**

Administrative model

1.40 Two significant issues have been raised about the administrative model provided for in the Bill. Under the OPA, administrative authority resides with the Joint Authority (JA), with delegations to a Designated Authority (DA), the Joint Authority consisting of responsible State and Commonwealth Ministers in any given jurisdiction, and the Designated Authority being any subordinate organisation delegated with the administration of given tasks. Under the bill, while petroleum operations will remain subject to JA/DA administration, the responsible Commonwealth Minister (RCM) has sole responsibility for GHG storage operations, and authority over the approval of petroleum operations where they may impact on GHG storage operations. Moreover, the

28 The Hon Martin Ferguson MP, *CPD*, House of Representatives, 18 June 2008, p. 5133.

responsible Commonwealth Minister has wide discretionary powers over a range of matters covered by the Bill. These discretionary powers are largely undefined in the detail of the Bill. Both these issues have caused some concern to those presenting evidence to the Committee.

JA/DA *v*. RCM

1.41 The change to the administrative model proposed under the Bill has caused concern from a range of sources. From the perspective of the petroleum industry, the role of the responsible Commonwealth Minister provides an additional layer of bureaucracy in seeking approvals for petroleum related activities and may act as a disincentive to investment.[29] Elaborating on industry concerns, Ms Elizabeth Clydsdale, Offshore Development Approvals Coordinator, Woodside Energy, stated:

> Yes. We would most likely prefer joint-authority administration of this act, as it is very similar to the petroleum administration that is currently in place, which has a joint authority with a state member and a Commonwealth member. One reason is that, where there may be competing rights, you would have the same authority or body making the decision. We believe it would be difficult for the joint authority to act on the petroleum rights but for a different body—singularly, the Commonwealth minister—to act on the greenhouse gas storage rights. So, simply, we believe it should be the same administrative body. The other issue with having the administration by the Commonwealth minister is that, when a title is a declared title and key petroleum operations have to be approved by the Commonwealth minister, it adds an extra level of approvals, so it would extend the approval process. So, as we understand it, we would have to get our usual approvals from the designated authority to, say, drill a well, but if it were a declared title another approval would have to be gained through the Commonwealth minister.[30]

1.42 Looking at the issue from the perspective of GHG storage, Monash Energy was also concerned at the administrative complexity of the RCM model:

> The mechanism under the OPA for considering the grant of petroleum titles and the exercise of associated discretion is

29 APPEA, Submission no. 29, p. 26.

30 Ms Elizabeth Clydsdale, Woodside Energy, *Transcript of Evidence*, 16 July 2008, p. 23.

> exercised by the Joint Authority. This structure in respect of petroleum titles has a known record and facilitates cooperation between the Commonwealth and the relevant State or Territory.
>
> The proposed mechanism in respect of greenhouse gas titles is for powers and discretion to be exercised by the Responsible Commonwealth Minister. It is presently expected that prospective acreage for greenhouse gas injection and storage will be in locations proximate to and/or under/overlying existing petroleum titles. Monash Energy is concerned about the potential for complexity in decision making that may arise from the division of powers and discretion between a Joint Authority, in respect of petroleum titles, and the Responsible Commonwealth Minister, in respect of greenhouse gas titles. The division is an unnecessary complication that can only derogate from smooth decision making and a level of predictability, being one of the desired outcomes noted in the Standing Committee's Terms of Reference.[31]

1.43 Monash recommended designating 'the Joint Authority as the responsible decision making and administration body in respect of both petroleum titles under the OPA and greenhouse gas titles under the Bill'.[32]

1.44 State Governments were also unhappy with the transfer of authority to the RCM. In its submission, the Victorian Government stated:

> In recent years there has been a progressive shift in administrative authority under the *Offshore Petroleum Act 2006* to the State, and to industry, while retaining some clearly defined Commonwealth involvement in technical or policy issues which have national implications.
>
> The Bill does not seek to replicate this blend of State and Commonwealth decision making authority. As a result, there is an inherent lack of 'balance' in the CCS decision making process, when viewed against the petroleum equivalent Joint Authority/Designated Authority regime.
>
> Power in respect to CCS decision making resides solely in the Commonwealth, with no State delegation or representation. As there is no requirement for the Commonwealth to seek State input in the decision making process, no mechanism will exist for the State's interests to be heard, and accordingly, the Bill fails to offer

31 Monash Energy, Submission no. 13, p. 11.

32 Monash Energy, Submission no. 13, p. 11.

> protection to Victoria's petroleum and non-petroleum entitlements and resources.[33]

1.45 Likewise, the Western Australian Department of Industry and Resources, in its submission, argued for the application of the JA/DA administrative model to GHG storage operations:

> While it is important that interests of each industry be protected, the fact that the Designated Authority can approve petroleum operations which may be overridden by the Responsible Commonwealth Minister could create administrative difficulties. It even appears that when the Responsible Commonwealth Minister is declaring a petroleum title as being a risk to GHG operations, this Minister is not obliged to inform the Designated Authority. This could be avoided if GHG approvals conformed to the Joint Authority and Designated Authority approval system.[34]

Ministerial discretion

1.46 One of the concerns with the RCM model is the level of ministerial discretion allowed for under the Bill. In its submission, Santos questioned the need for such wide discretionary powers and raised concerns about the administrative burden this might create:

> The level of Ministerial discretions contemplated in the Bill is expansive when compared, for example, to the petroleum regime in the *Offshore Petroleum Act 2006* (OPA).
>
> While some of the discretions may be clarified by future regulations and guidelines, the intent of such power in the Bill seems unwarranted and requires clarification.
>
> While the discretions must be exercised lawfully and for a proper purpose and are subject to review in accordance with traditional administrative law principles, the uncertainty associated with them could act as a disincentive for both investments in future petroleum operations and in CCS operations.
>
> The discretions create a further level of administrative burden for holders of petroleum titles, who are already subject to the administration of the Joint Authority.[35]

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33 Victorian Government, Submission no. 16, p. 9.

34 Department of Industry and Resources, Western Australia, Submission no. 17, p. 6.

35 Santos, Submission no. 22, p. 2.

1.47 ANEDO was principally concerned with the lack of transparency and opportunities for community and stakeholder input into RCM decision making processes:

> ANEDO submits that in the regulatory regime proposed by the Bill, there is a distinct absence of public participation, transparency, and accountability throughout the entire CCS process. Additionally, the Bill provides minimal appropriate mandatory considerations that need to be taken into account by the Minister when granting rights associated with the entire CCS process, from the Greenhouse Gas Acreage Releases, to the granting of a Site Closing Certificate. This is particularly apparent throughout the issuing of greenhouse gas assessment permits, greenhouse gas injection licenses, and site closing certificates.[36]

1.48 In its submission, Monash Energy also highlighted the increased scope for ministerial discretion provided under the bill and expressed some concern over how this might be exercised:

> The Commonwealth petroleum legislation has traditionally vested significant discretionary power in the Joint Authority and ultimately in the relevant Commonwealth Minister. Apart from work bid competition between parties to secure an exploration permit, the exercise of this discretion does not generally involve other parties. However, the introduction of the greenhouse gas storage regime contemplated by the Bill significantly expands upon the scope of discretion. The expanded areas of discretion are in sensitive areas of decision making which involve interaction between petroleum activities and greenhouse gas activities which involve rights and interests of competing parties.
>
> The exercise of discretion by the Responsible Commonwealth Minister (Minister) under the Bill is partly guided by having regard to the public interest, but this is only for limited purposes. The Bill fails to provide clarity on what the Minister might have regard to in the exercise of his or her wide discretionary powers. This could be achieved in a number of ways, including the provision of specified criteria and broadening the application [of] a public interest test. The Bill also fails to provide any mechanism to which the Minister could have reference so as to assist the exercise of that discretion.[37]

36 ANEDO, Submission no. 14, p. 13.

37 Monash Energy, Submission no. 13, p. 9.

1.49 In evidence before the Committee, Mr Bounds argued for ministerial discretion, but with explicit avenues provided for consultation and advice:

> We welcome the ministerial discretion which is brought out in the bill, but we think that that ministerial discretion would probably be strengthened by the introduction of some clear advisory role for an external body and that he or she could rely upon that technical advice. We think that there are agencies within the government that are capable of providing that advice and that that should be brought out.[38]

1.50 Monash Energy's submission recommended that the 'exercise of Ministerial discretion should be clarified and a mechanism established under the Bill where the Minister may have access to advice in the areas which call for the exercise of his or her discretion'.[39]

1.51 In its submission, APPEA questioned the scope of ministerial discretion in the absence of regulations and guidelines, and expressed concern at the lack of an appeal process:

> …while APPEA is…supportive of the overall framework provided for by the Bill, the wide discretion for the responsible Commonwealth Minister in a range of matters and the fact that the Bill does not provide explicit definitions in a number of crucial areas (most importantly public interest and significant impact) means that the development and release for consultation of the relevant regulations and guidelines that will underpin the Bill must be undertaken as a matter of urgency.
>
> In addition, given the breadth of the Ministerial discretions, and if the regulations do not ultimately provide sufficient definition of key tests to make clear the criteria and scope of the Minister's decision, APPEA considers that inclusion of a right to a merits-based appeal of a Ministerial decision would be warranted. The Bill provides no opportunity for a merits-based appeal from a Ministerial decision with respect to whether there is, for example, a "significant adverse impact". The only relief is by way of judicial review where the onus will be on the claimant for relief to show that the Minister's decision was either unlawful or reached unlawfully.[40]

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38 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 52.

39 Monash Energy, Submission no. 13, p. 10.

40 APPEA, Submission no. 29, p. 16.

1.52 BP welcomed the flexibility provided by ministerial discretion but urged the publication of regulations and guidelines to provide clarity on the exercise of that discretion. In evidence before the Committee, Dr Fiona Wild, Environmental Affairs Adviser, BP Australia, stated:

> …in a number of areas we are advocating that greater ministerial discretion be included in the bill. This is because of the flexibility required to adapt to the development of an emerging industry. However, to provide this wide discretion, exacerbating uncertainty for investors, we strongly advocate that the minister publish not only regulations but also clear policy guidelines on how he intends to exercise his discretion. Thus, the flexibility in the bill would be balanced by certainty in its implementation.[41]

Committee conclusions

1.53 While acknowledging the concerns of various stakeholders about the administrative framework provided for in the Bill, the Committee is of the view that, subject to the changes recommended in succeeding chapters of the report, the administrative framework provided in the Bill should remain.

1.54 The Committee is of the view that the regulation and administration of a new industry like GHG storage needs a regulatory regime that is simple, centralised and flexible, because there is still much to learn in terms of appropriate management and best practice. The Committee is satisfied that the Bill provides this.

1.55 Nonetheless, it is clear from the evidence provided that the administration of the legislation will necessarily involve a high level of communication and coordination between governments and with stakeholders. The clear identification of pathways for communication and advice is essential.

1.56 The Committee is, therefore, of the view that a centralised authority is essential in the early phases of the offshore GHG storage industry, but that the development of industry and regulatory practices will see ongoing refinement of the system of administration, including intergovernmental roles and responsibilities.

41 Dr Fiona Wild, BP, *Transcript of Evidence*, 18 July 2008, p. 3.

Recommendation 2

1.57 **The Committee recommends that the responsible Commonwealth Minister utilise established formal consultation pathways to consult with State Governments, industry and environmental organisations, with a view to achieving national consistency in the administration of GHG storage legislation.**

2

Access and property rights

2.1 In order to be successful, the draft legislation must establish clear access and property rights for the burgeoning GHG industry, while safeguarding those rights currently held by petroleum licensees. In order to be successful the legislation must:

- Provide transparent processes for both the selection and awarding of acreage for GHG storage;
- Establish a range of GHG titles which are sufficient for undertaking GHG activities; and
- Maintain the current rights of petroleum licence holders.

Acreage selection process

2.2 The process by which GHG acreage is selected is a pivotal issue for the success of the legislation. The intention in the GHG legislation is to follow the model used for petroleum in relation to the selection of acreage for exploration.

2.3 The initial stages for selection of prospective acreage will involve a call for public nominations of areas from interested parties, as well as consultation with State and Territory governments. Through this process it is envisaged that a series of sites will be short-listed that could potentially be released for GHG exploration. Geoscience Australia will then prepare a data package for each site, which will include the geotechnical information currently held by the government; the location and type of any petroleum wells that have been drilled in the area; any 3D seismic work that has been

done; whether there are defence interests or shipping in the area; and, crucially, if there are any overlapping petroleum titles.

2.4 A critical element in the selection of GHG acreage will be the interaction with petroleum title acreage. The most prospective acreage for GHG operations in Australia is in areas which currently also enjoy high levels of oil and gas productivity. The selection of acreage for GHG operations, then, requires complex balancing of the property rights currently held by petroleum and gas title holders with the promotion of the nascent GHG injection industry.

2.5 One of the most significant offshore areas for GHG storage in Australia is the offshore Gippsland Basin. The geology of this area is particularly suited to CO_2 storage, and its proximity to the high emitting coal driven energy sector of the Latrobe Valley also makes it economically attractive. Stakeholder consultation with the Department of Resources, Energy and Tourism to date has suggested that this area is likely to be highly sought after by GHG proponents. However, the region is also a particularly significant area for oil and gas production in Australia. ExxonMobil quantified its understanding of the significance of its oil and gas production from Gippsland in its submission:

> ExxonMobil's Bass Strait (Gippsland) production operations have produced almost two-thirds of Australia's cumulative oil production and almost 30 percent of Australia's gas production.[1]

2.6 There is ongoing debate as to what risks might be involved in the overlapping of GHG and petroleum operations. In its submission, ExxonMobil argued that there are significant risks to its petroleum operations should GHG activities be introduced in the same area, arising from the design of its infrastructure:

> It should … be recognized that the injection of CO_2 into or near operational oil and gas fields within the Gippsland Basin presents significant safety and operational risk and integrity issues to personnel, production and infrastructure. These risks and integrity issues are driven by the fact that none of the Gippsland Basin facilities have been designed for exposure to or handling of CO_2 or its by-products. These risks in Gippsland may not be manageable from either a technical or cost perspective.[2]

2.7 These potential risks must be balanced with the need for storage locations in close proximity to the Latrobe Valley. In evidence before the Committee,

1 ExxonMobil, Submission no. 6, p. 5.

2 ExxonMobil, Submission no. 6, p. 5.

representatives of the Victorian Government argued that to be too conservative in the selection of GHG acreage based on the perceived risks to the petroleum industry would be effectively to offer the petroleum operators the power of veto before any GHG exploration had even begun:

> It is understood that the Commonwealth is intending to release only limited parts of the Gippsland Basin for CCS exploration, excluding areas subject to petroleum titles. Victoria considers that all areas of the Gippsland Basin should be released. Areas should not be excluded solely because there is an existing petroleum title over an area. Victoria is concerned that a possible consequence of the Commonwealth's approach may be that attractive areas for CCS are excluded from exploration, costing many millions of dollars, and taking some five to 10 years, essential for discovering and proving viable CCS injection and storage sites. In most instances, exploration will be unlikely to pose a significant risk of a significant adverse impact on the operations of petroleum titleholders. Therefore exploration should be allowed, indeed, encouraged, to ensure that storage sites are identified as quickly as possible to meet our national objectives.[3]

2.8 Monash Energy in its submission also stated this concern, suggesting that the process for selecting GHG acreage lacks transparency due to the lack of consultation with the wider industry following the initial call for nominations:

> From the outset, greenhouse gas storage considerations, even at the stage of acreage release, are not assessed on an unfettered basis. Instead, the starting point appears to be to consider greenhouse gas acreage release in the context of its impact on other resources 'especially petroleum'…This is not to deny the reality that where potential greenhouse gas storage acreage overlies petroleum tenements, there is a need to consider interactions. However, by using the processes that have been employed for the OPA model, this consideration takes place between Governmental agencies and Departments in a manner that lacks transparency…and consultation. Only the call for nomination of acreage itself involves industry consultation. After that, the assessment, comprehensive compilation of information and package release takes place in a manner where the basis for rejecting certain potential acreage for release is not known to interested parties. It takes place in a manner where an interested

3 Mr Dale Seymour, DPI Victoria, *Transcript of Evidence,* 15 July 2008, p. 19.

> greenhouse gas storage party is not given an opportunity to put alternative evidence that may assist in the proper consideration of any impact on other resources such as petroleum.[4]

2.9 The joint submission from the Australian Coal Association and the Minerals Council of Australia also expressed the need for a greater transparency in the acreage selection process, including a requirement for the Minister to disclose the justification for the selection of final acreage:

> The specific references to compatibility with petroleum resource usage leaves open the potential for acreage to be denied to GHGS AP applicants before a bid process is even commenced.
>
> The ACA and MCA submit that this process requires greater transparency. The factors for consideration in a GHGS acreage release should be set out in publicly available guidelines, or prescribed by regulations. Where a potential applicant nominates an area for acreage release, the Minister should be required to release his or her statement of reasons in reaching the decision to release the acreage or not.[5]

2.10 WWF made the point in its submission that considering a wide range of factors in the initial selection of appropriate acreage for long-term GHG storage is crucially important to the ultimate goal of establishing an effective carbon capture and storage industry:

> In order to facilitate economic, environmentally and socially sound and efficient demonstration and commercialization of CCS, consideration should be given to developing a national interest criterion for selection of storage sites to be licensed for injection. A national interest criterion could include consideration of: distance of storage site from power capture sites or hubs, existing pipeline routes or potential route, quality of the site, potential size of reservoir, access to alternative storage locations, and impact on environmental and culturally sensitive areas.[6]

2.11 Such a 'national interest criterion' would likely acknowledge that sites such as Gippsland are attractive for the long term storage of CO_2 for a number of reasons, which may go some way to counter-balance any risk of impact on petroleum operations.

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4 Monash Energy, Submission no. 13, pp. 12–13.

5 ACA/MCA, Submission no. 27, p. 27.

6 WWF, Submission no. 21, p. 11.

2.12 In its submission, ExxonMobil commented that current areas of petroleum production in the Gippsland region could potentially be utilised for GHG storage once oil and gas reserves were depleted:

> The Bass Strait fields, which continue to be a major supplier of crude oil to Australia and one of the largest domestic gas sources on the Eastern seaboard, has the potential to be a candidate site for a future CCS initiative once depleted. It is our assessment that there may be depleted reservoirs available for CCS in the Gippsland Basin in the 2025+ timeframe, although this timeframe remains uncertain as production technology development continues to extend the life of the fields.[7]

Committee conclusions

2.13 The Committee acknowledges that the selection of suitable areas for acreage release is an essential requirement for the development of CCS in Australia.

2.14 It is recognised by the Committee that the selection of acreage must balance the needs of potential CCS projects with risks to established activities such as petroleum exploration and production.

2.15 The process for consultation with industry and other stakeholders is an important element in the identification of appropriate areas for acreage release.

Recommendation 3

2.16 **The Committee recommends that no acreage be automatically excluded from consideration for selection on the grounds of pre-existing petroleum activities.**

Recommendation 4

2.17 **The Committee recommends that the process for identifying and short-listing acreage for release should be transparent and systematic, and should consider the views and submissions of all relevant stakeholders.**

7 ExxonMobil, Submission no. 6, p. 2.

Acreage awarding process

2.18 Once the acreage for long term CO_2 storage has been selected, it will be released for bidding. The responsible Commonwealth Minister will make a public call for bids in the Gazette, inviting applications for either work or cash bids for an assessment permit for that block. This mirrors the procedure for the petroleum industry, in which cash bidding is rarely utilised. It is expected that for GHG acreage also, cash bidding will be infrequent. The bidding process is likely to run for six to twelve months.

2.19 In the situation where multiple applicants submit bids, the acreage will be awarded to the applicant that is 'most deserving'. The 'most deserving' applicant will be selected by the responsible Commonwealth Minister through a process of ranking the applicants according to publicly available criteria. These criteria will assess the scope and quality of an applicant's work program bid. This process is parallel to that in bidding for petroleum acreage, which has traditionally based its analysis of the work program on the level of expenditure.

2.20 If certain applicants are deemed to be 'equally deserving' the responsible Commonwealth Minister will request further details for additional work and expenditure at the site. The Minister will then consider this when establishing which of the applicants receives the permit.

2.21 In its submission, BP outlined its concerns with the parity of process between GHG and petroleum bidding:

> Although the Bill is silent on the definition of 'most deserving' for the purpose of awarding acreage, the Australian Government Solicitor's notes state that a work program alone is the criterion. This is a direct analogue with existing petroleum legislation, but the circumstances are different and require different treatment. The petroleum industry is highly developed throughout its value chain, with deep and competitive industrial sectors in all aspects. A bidder for exploration acreage need not have any ability to develop, produce, ship, refine, distribute or market the hydrocarbon because there are so many others who can. The Government therefore has no regard to their ability in these sectors and can focus solely on the exploration work program. However, the GHGS industry has not yet reached this level of maturity. A competent work program is not a sufficient measure of a bidder's ability to progress a development, and the Government will need to take, initially at least, a broader view of a bidder's competencies

> if they want to maximize the prospect of GHGS projects proceeding.[8]

2.22 This argument that the criteria for the analysis of the 'most deserving' applicant should have broader scope has been widely voiced. In its submission, Monash Energy suggested that the criteria should include consideration of the availability of a source of CO_2:

> Monash Energy is concerned to see that the criteria should include recognition of matters peculiar to greenhouse gas, such as a party that has or is reasonably likely to have an identified greenhouse gas stream available for injection into a greenhouse gas storage formation. Monash Energy submits that such a party should be accorded priority over competing parties that base their work bid solely on levels of expenditure, which might otherwise encourage acquisition of acreage on a speculative basis.[9]

2.23 Monash Energy argued that should expenditure alone be considered when assessing the proposed work programs, not only will major factors that could contribute to the success or failure of the carbon capture and storage project be disregarded, but the possibility for acreage to be acquired for the purpose of profiteering is created.

2.24 Further to this, Mr Bounds argued in evidence before the Committee, that should expenditure be the primary criterion for assessing a work bid, it should not be confined to expenditure at the site:

> We would encourage the minister to take into account expenditure that may happen off the permit site as well—the production of CO2 onshore where it involves clean coal technologies, for example; expenditure on transport infrastructure in order to get the CO2 from the point of production to the point of sequestration; and expenditure on the research that has been undertaken at that level. We would encourage the minister to give due weight to the party who holds CO2 that needs to be sequestered, rather than treating it as 'unassociated activities' and thereby leading to a sort of merchant model. We would also encourage the minister to take into account the fact that this is a very young activity globally and there may be further steps that need to be taken in order to facilitate the growth of the clean coal industry in Australia which involve facilitating carbon capture and storage beyond just a work

8 BP, Submission no. 12, p. 6.

9 Monash Energy, Submission no. 13, p. 16.

> program bidding scheme. That is why we say: do not just look at expenditure on the site alone.[10]

2.25 The proposed acreage awarding process has also been criticised for the advantages afforded to petroleum production licensees, should they wish to compete for GHG acreage. The Victorian Government in its submission argued that:

> …the accumulated wealth of knowledge, and longstanding presence, of petroleum operators in the Gippsland Basin, may translate into such operators being considered as 'most deserving' of the grant. The grant assessment criteria ignores the fact that a CCS proponent, new to the area, will not have recourse to basic information and regional studies necessary to make a 'competitive' acreage bid, being the same information which will enable an existing petroleum operator to submit a 'superior' bid.[11]

2.26 The Australian Coal Association and the Minerals Council of Australia concurred, stating in their submission:

> A major obstacle to the creation of a 'level playing field' in relation to work bids is the availability of data. If the petroleum tenement holder wishes to bid for a GHGS AP, in competition with a third party who does not have access to site data, the petroleum tenement holder will have a significant informational advantage.
>
> This gives the petroleum tenement holder, which has obtained its tenement for the purpose of operating in the oil and gas exploration and production market, a competitive advantage to entry into the GHGS injection and storage market. This runs counter to general competition principles, and creates a significant barrier to entry into the GHGS injection and storage market.[12]

2.27 It has been suggested that petroleum licence holders were at an advantage with respect to the expenditure proposed in their work bids. Monash Energy submitted:

> There is the potential for an incumbent petroleum operator who is competing with a new greenhouse gas assessment permit applicant to be at significant advantage in delivering its work bid. Planned activities or even completed operational activities, such as well data/drilling and acquisition of seismic, associated with

10 Mr Roger Bounds, Monash Energy, *Transcript of Evidence,* 15 July 2008, p. 57.

11 Victorian Government, Submission no. 16, p. 7.

12 ACA/MCA Submission no. 27, p. 27.

> petroleum activities conducted under the petroleum licence could also be used, at no or little additional real cost, to support the application for a greenhouse gas assessment permit. This would put the new greenhouse gas assessment permit applicant at a distinct disadvantage. It is important that this imbalance be addressed so that competing parties are competing on an equal footing.[13]

2.28 Monash Energy also suggested that the cash bidding process was inappropriate for GHG acreage and should be removed from the legislation:

> Cash bidding is unsuitable for greenhouse gas storage exploration. This is particularly so where an aspiring greenhouse gas storage aspirant has access to an available greenhouse gas stream. Cash bidding can encourage speculation or hoarding which is inconsistent with the underlying objective for establishing a greenhouse gas regulatory regime, one of facilitating least cost carbon abatement in Australia. Simply because cash bidding has been retained in respect of petroleum exploration permits is not reason enough to provide a similar process for greenhouse gas assessment permits. [14]

Committee conclusions

2.29 The Committee acknowledges that to ensure legal certainty of access rights, a fair and transparent system of competitive acreage awarding should be implemented.

2.30 It is the Committee's belief that the use of work program expenditure alone in determining the most deserving applicant for acreage may not result in an optimal uptake of greenhouse gas injection and storage activities in some situations.

2.31 The Committee is concerned, however, that the use of subjective criteria, such as potential future operability, that may or may not be realised, may reduce the transparency in the bid assessment process.

2.32 The Committee recognises that there may be a disparity between incumbent petroleum operators and new CCS activities in regional knowledge and access to technical data when devising work bids.

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13 Monash Energy, Submission no. 13, p. 16.

14 Monash Energy, Submission no. 13, p. 18.

2.33 The Committee concludes that this information imbalance may influence the outcome of any competitive bid selection process and, therefore, the most appropriate manner to manage this issue will need to be addressed in the development of any work bid assessment criteria.

2.34 The Committee is of the view that cash bidding should remain in the legislation to provide opportunities for alternative acreage allocation where work program bidding may not be suitable.

Recommendation 5

2.35 **The Committee recommends that the criteria established for assessing work bid applications facilitates the uptake of CCS activities while maintaining transparency and consistency.**

Tenure timeframes

2.36 The duration of the GHG permits and licences will be significant to the success of the carbon capture and storage industry, as they must be sufficiently long to facilitate GHG operations, but must not be so long as to cause delays to the progress of this new industry.

2.37 In the legislation as currently drafted, the duration of a GHG assessment permit is six years from the time at which the offer document is made by the responsible Commonwealth Minister, and cannot be renewed. A holding lease lasts for five years and can be renewed once. A GHG injection licence has no fixed term but is subject to certain conditions: if no injection has occurred in the first five years of an injection licence being issued, the responsible Commonwealth Minister can cancel the licence, or under special circumstances, the licensee may apply for a holding lease, to prevent termination of their licence.

2.38 It has been argued that the timeframe of the GHG assessment permit is insufficient for carrying out the assessment activities required to successfully identify a suitable storage formation. Chevron has described the six year duration as 'an absolute minimum period', stating in its submission:

> We acknowledge the desire in government to prevent holding of assessment permits but suggest that six years would be an absolute minimum period to assess an [area] provided results were as

> anticipated. Our experience with appraising the Gorgon Carbon Dioxide Injection Project location has been that it takes a considerable time and effort to fully assess the potential of an area. Chevron would be surprised if the full area under an Assessment Permit could be evaluated during a single six-year period.
>
> For example it is possible to envisage that extensive seismic could be obtained and processed and a single round of drilling undertaken and results interpreted within six years. However, if this round of drilling proved unexpected results that suggested other parts of the Assessment Permit were more prospective, it is arguable that not enough time would be available to assess those other parts of the permit.[15]

2.39 Chevron recommended:

> …that a single right of renewal be incorporated in the proposed Bill but be subject to a rigorous test based upon the results achieved to date and the resulting ongoing work program to fully assess the potential within the permit. Areas that have been assessed during the initial term should be required to be surrendered.[16]

2.40 In its submission, Monash Energy points out that while the tenure framework for GHG titles mirrors that for petroleum in most respects, the inability to renew the assessment permit diverts from this parity. They too recommend a single right of renewal for six years:

> The term of the greenhouse gas assessment permit is 6 years. However, the right to renew a greenhouse gas assessment permit in a manner similar to that afforded to an exploration permit under the OPA is prohibited for a greenhouse gas assessment permit (Readers' Guide [3.22]). This distinction is odd. A greenhouse gas assessment permit holder needs to implement the work programme which would have been approved at the time of being granted the acreage. To implement such a programme for exploration the greenhouse gas assessment permit holder is required to obtain approval to conduct key greenhouse gas operations, before any actual exploration operations can be conducted. If the greenhouse gas assessment permit title needed to be renewed for valid reasons, reasons akin to those for renewal of a

15 Chevron, Submission no. 8, p. 3.

16 Chevron, Submission no. 8, p. 3.

> petroleum exploration permit, it is difficult to see any policy basis for not allowing renewal. [17]

2.41 The Australian Coal Association and the Minerals Council of Australia concurred:

> In light of the various other regulatory obligations on a GHGS AP holder, such as approvals for key GHG operations, the need to enter into agreements with petroleum title holders to conduct same, and the actual carrying out of the assessment activities, **it is questionable whether 6 years will be sufficient for a GHGS AP holder to identify an eligible GHG storage formation and obtain declaration of it as an identified GHG storage formation**.
>
> The ACA and MCA submit that **the Bill should make provision for GHGS APs to be renewed**, in the same manner as PEPs may be renewed under the OPA. However the ACA and MCA do not propose that renewals of GHGS APs be subject to relinquishment requirements.[18]

Committee conclusions

2.42 The Committee recognises that the process to identify and assess a suitable GHG storage formation may involve extensive exploration activities over a period of time.

2.43 The Committee notes the large consensus in submissions that the duration of an assessment permit as currently prescribed in the draft legislation may not be sufficient to undertake the activities required to secure a suitable storage formation.

2.44 Given the imperative for the uptake of CCS activities in Australia, a balance is required between providing sufficient tenure timeframes to assess an area for suitable storage formations and to minimise the risk of speculative acquisition.

2.45 The Committee believes that a maximum renewal period of 3 years achieves this balance, subject to regulatory approval of an appropriate work program for this period.

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17 Monash Energy, Submission no. 13, p. 17.

18 ACA/MCA, Submission no. 27, p. 28.

Recommendation 6

2.46 **The Committee recommends that the legislation be amended to allow for a GHG assessment permit holder to apply for a single right of renewal for a maximum three years duration.**

s.137 petroleum storage rights

2.47 Section 137 of the *Offshore Petroleum Act*, "Rights conferred by a production licence", describes the activities that a petroleum production licensee may undertake subject to regulatory approval:

> (1) A production licence authorises the licensee, in accordance with the conditions (if any) to which the licence is subject:
>
> (a) to recover petroleum in the licence area; and
>
> (b) to recover petroleum from the licence area in another area to which the licensee has lawful access for that purpose; and
>
> (c) to explore for petroleum in the licence area; and
>
> (d) to carry on such operations, and execute such works, in the licence area as are necessary for those purposes.
>
> (2) The rights conferred on the licensee by subsection (1) are subject to this Act and the regulations.[19]

2.48 It is through Section 137(1)(d) of the OPA that petroleum production licensees may obtain approval to carry out certain activities associated with the exploration for and recovery of petroleum including, under certain circumstances, the injection and storage of CO_2. The proposed legislation seeks to protect but not expand these current rights to inject and store CO_2 as part of petroleum production activities.

2.49 The proposed legislation's protection of these rights has been endorsed by the petroleum industry. In its submission APPEA stated:

> APPEA notes the Bill intends that holders of petroleum production licences would continue to have the ability that they currently have (subject to obtaining normal regulatory approvals) to do whatever

19 *Offshore Petroleum Act 2006*, s.137, Rights conferred by production licence, p. 137.

> is necessary in the licence area for the purpose of recovering petroleum in the licence area, including injecting methane and/or carbon dioxide in the licence area for gas recycling or enhanced petroleum recovery and (subject to approval) injecting for disposal in the licence area methane or carbon dioxide stripped from the petroleum stream that is recovered in the licence area. APPEA strongly supports the intent of the Bill in this regard…[20]

2.50 ExxonMobil, in its submission, similarly stated its support of the Bill's protection of these existing production licence rights:

> It is intended that holders of petroleum production licences will continue to have the ability that they currently have under section 137 of the OPA and (subject to obtaining normal regulatory approvals) to do whatever is necessary in the licence area for the purpose of recovering petroleum in the license area, including:
>
> - Injecting methane and/or carbon dioxide in the licence area for gas recycling or enhanced petroleum recovery; and
> - (subject to approval) Injecting for disposal in the licence area methane or carbon dioxide stripped from the petroleum stream that is recovered in the licence area.
>
> ExxonMobil supports the intent of the Bill in this regard…[21]

2.51 APPEA also suggested, however, that these rights be confirmed more explicitly. They put forward the following recommendation:

> APPEA recommends the Bill be amended to:
>
> - Confirm that holders of petroleum production licences continue to have the ability that they currently have (subject to obtaining normal regulatory approvals) to do whatever is necessary in the licence area for the purpose of recovering petroleum in the licence area. Specifically, such an ability must include the long-term disposal of carbon dioxide (including incremental investments to dispose of additional carbon dioxide over and above what might otherwise have been required to meet specification or other project limits). APPEA notes that to do anything else would be to remove a right currently enjoyed by pre-commencement title holders[22]

2.52 The proposed legislation also allows a production licensee to apply for the grant of a GHG injection licence within the blocks covered by their production licence, provided there are no existing GHG titles in force in

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20 APPEA, Submission no. 29, p. 5.

21 ExxonMobil, Submission no. 6, p. 13.

22 APPEA, Submission no. 29, p. 20.

the area already. This is a non-competitive allocation process, and the GHG licence may only be used to store any CO_2 that is produced in the course of petroleum production activities as per the intent of s.137 of the OPA.

2.53 This provision in the draft legislation is made to accommodate petroleum production licensees' existing right under the OPA to inject substances, without the requirement for a separate injection title. Offering the option of attaining a GHG injection title allows the petroleum licensee to receive recognition for mitigated emissions under possible external schemes, should such recognition require a GHG licence.

2.54 The Victorian Government suggests, however, that this non-competitive awarding of acreage for GHG storage is problematic:

> The Bill enables the holder of a production licence to progress the existence of suitable CCS injection and storage formations situated within the production licence area, through to the grant of a CCS injection licence.
>
> Although all greenhouse gas substances stored in such formations must initially be the by-product of petroleum extracted from within the production licence area, it is seemingly inevitable (from an economic and practical perspective) that, after such petroleum production ceases, storage of 'outside' sourced greenhouse gases will proceed (noting the Bill is silent on this issue).
>
> This regime clearly reduces the ability for a 'greenfield' CCS proponent to compete for access to 'key' CCS storage sites.[23]

2.55 Rio Tinto, in its submission, argued that while it could be suggested that this non-competitive process might impede the transparency of the awarding process, there might also be advantages:

> Rio Tinto believes that storage formations are a natural resource and should be subject to transparent, equitable, competitive processes to allocate usage rights to ensure optimal utilisation in the public interest. On that basis, it may be argued that the petroleum licence holder should always be required to win a competitive bid process for the grant of an injection licence. However the CCS industry is immature and the environmental imperative and timeline for emissions mitigation and deployment of CCS does not respect market forces. Consequently government policy in this area need always be framed within the context of a

23 Victorian Government, Submission no. 16, p. 7.

> necessity to facilitate the development of a CCS industry faster than the market would otherwise deliver, and to support the broader government agenda of improving carbon productivity as described by Minister Wong. Further, it is also necessary to consider the current rights of petroleum producers under their production licences and consider, in a pragmatic sense, the risks and opportunities of the natural advantage of the petroleum industry to develop CO_2 storage facilities in association with its current petroleum production activities.[24]

2.56 Monash Energy warned in its submission that this non-competitive awarding process could be problematic should petroleum title holders seek to expand their sources of CO_2 outside their own production. They submitted that:

> … to safeguard against exploitation of this right, the Bill should be amended to provide that the Minister must have regard to the extent to which the source of the greenhouse gas substances are derived from operations integral to the licence holder's petroleum production operations and the proximity of the same.[25]

2.57 Conversely, BP argued in its submission that 'there should be no restriction on the source of CO2 so as to encourage the greatest uptake of GHGS'.[26]

Committee conclusions

2.58 It is the Committee's conclusion that in the interest of maintaining legal certainty within the petroleum industry the existing right of petroleum production licensees to inject and store CO_2 approved through s.137 of the OPA be preserved.

2.59 The Committee believes that inviting petroleum production licence holders to apply for GHG injection licences non-competitively for these GHG storage activities encourages petroleum producers to mitigate their emissions, and is therefore positive.

2.60 The application of s.137 of the *Offshore Petroleum Act* to CO_2 injection and storage activities associated with petroleum production should however be clearly defined, and proponents encouraged to seek appropriate GHG

24 Rio Tinto, Submission no. 9, p. 4.

25 Monash Energy, Submission no. 13, p. 28.

26 BP, Submission no. 12, p. 7.

injection licences for these activities, in an effort to maintain regulatory consistency with the wider GHG injection and storage industry.

2.61 The Committee is of the opinion that any approval of injection and storage of GHG under s.137 should be subject to a similar level of technical regulatory assessment as the wider GHG industry approvals process.

Recommendation 7

2.62 **The Committee recommends that the GHG injection and storage rights conferred under s.137 of the *Offshore Petroleum Act 2006* be maintained where practical.**

Integrated projects

2.63 The right of petroleum production licensees as currently stipulated in Section 137 of the OPA limits the injection of GHG substances to those derived from the same production licence area.

2.64 The new GHG legislation does not expand this right to allow for the injection of CO_2 derived elsewhere. The Committee received several submissions to the effect that this undermines 'integrated projects' currently proposed in the oil and gas industry.

2.65 These integrated projects are designed to process produced petroleum, removing the CO_2 from a number of licence areas at a central location (most commonly an on shore processing plant). The co-mingled CO_2 from all the combined licence areas would then potentially be returned offshore and re-injected into a storage formation within a single production licence.

2.66 In evidence before the Committee, the Department of Resources, Energy and Tourism stated:

> Subject to approval, petroleum operators can already inject and store CO2 that is derived from production within a production licence as long as it is stored within the same production licence—that is, a single production licence can inject and store its own CO2.[27]

2.67 The Department agreed, however, that:

27 Mr. John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 33.

> It is more economically viable for a number of different production licences with a resource to have their processing at one central facility. Therefore, this is probably the way petroleum rights will go.[28]

2.68 ExxonMobil suggested in its submission that the Bill be amended to allow for the injection of GHG substances in licence areas other than that in which it was derived:

> A further consideration of injection for business purposes is the recognition that often, CO2 recovered from production from offshore fields will be recovered by onshore facilities, reflecting a mix of all fields/licences producing to the plant. In such cases, injection for either improved hydrocarbon recovery or disposal will not be on the licence area where the CO2 was produced. ExxonMobil recommends revising the text of Section 137 (1)(c) to read "in any licence area."[29]

2.69 In evidence, Mr Niegel Grazia, Vice-president, Government Affairs, Woodside Energy, outlined the plans for the Browse development, a large integrated LNG development in the North West Shelf, and the implications should re-injection not be allowed in a centralised licence area:

> Woodside is proposing to develop large gas resources offshore from Western Australia and in remote areas in the Northern Territory. … Large-scale LNG developments such as Browse are world-scale undertakings and involve capital investments likely to exceed $20 billion. These developments should have the opportunity to sequester greenhouse gases arising from the production stream and processing activities. The bill in its current form limits that opportunity to sequester greenhouse gases arising from the production stream and processing activities.[30]

2.70 As the legislation is currently drafted, in order for a petroleum operator to inject GHG substances from multiple licence areas into a single storage location, they would be required to enter a competitive process in order to be granted a GHG injection licence. Mr Grazia argued further, that the commercial viability of their development would be put into question should they be forced to enter into a competitive bidding process:

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28 Mr. John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 33.

29 ExxonMobil, Submission no. 6, p. 14.

30 Mr. Niegel Grazia, Woodside Energy, *Transcript of Evidence,* 16 July 2008, pp. 12–13.

> Woodside proposes in its submission that integrated petroleum developments be able to sequester greenhouse gases arising from that development, without being subject to competitive bidding for the right to undertake that activity.[31]

2.71 He continued:

> While carbon sequestration forms only one part of an integrated petroleum development concept, any risk to obtaining title, including schedule delays arising from competitive bid processes, can adversely impact concept and investment decisions.[32]

2.72 The expansion of the petroleum production licence holder's rights in this respect is likely to have significantly varied results in different offshore regions. The region in which the Browse development is to be undertaken is unlikely to be in high demand from potential onshore or other third party GHG proponents. However, as the Department of Resources, Energy and Tourism pointed out in evidence, in areas such as Bass Strait where there may be extremely high demand for injection acreage, the implications for the expansion of Section 137 rights could be considerable:

> If you have a look at the two scenarios … in the Bass Strait and off the coast of Western Australia—and look at the concept of integrated projects in the north-west of WA, where there is very little onshore competition from sources such as coal, there are clearly defined ownerships, partnerships and joint ventures. These parties have set very good examples on how different entities can work collaboratively in the same area. The concept of an integrated project is a very clean—and could be a rigorously defined—activity that makes logical sense. But at the fringes there is a whole opportunity, I believe, to exploit such a concept and to provide a competitive advantage to an incumbent petroleum holder that could be quite extensive if manipulated in the right way in other areas.[33]

Committee conclusions

2.73 The Committee notes the significance of emerging integrated projects to the future of the oil and gas industries, and recognises the need to accommodate future GHG storage opportunities associated with these projects.

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31 Mr. Niegel Grazia, Woodside Energy, *Transcript of Evidence,* 16 July 2008, p. 13.

32 Mr. Niegel Grazia, Woodside Energy, *Transcript of Evidence,* 16 July 2008, p. 13.

33 Mr John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 34.

2.74 The Committee believes it essential that clear criteria for defining integrated projects must be developed that address future petroleum development while minimising opportunities for creative exploitation of production licenses and benefits that may be attached to these projects.

Recommendation 8

2.75 **The Committee recommends that the Government review the *Offshore Petroleum Act* and proposed amendments to provide for the development of integrated petroleum projects, including the injection and storage of GHG from multiple sources into a single storage formation.**

3

Managing interactions

3.1 Managing interactions between various stakeholders in Commonwealth offshore areas is the cornerstone of the proposed legislation. Creating a balance between the needs of the petroleum industry and the GHG storage industry is critical to the success of the legislation and the future viability of both industries. The legislation attempts to strike this balance in a range of ways, including:

- Protecting the pre-commencement rights of petroleum operators;
- Applying a 'no significant impact' test to interactions between pre-commencement petroleum title holders and GHG operators;
- Giving equal standing to the post-commencement rights of petroleum and GHG operators;
- Applying a 'public interest' test to interactions between post-commencement title holders;
- Imposing obligations under 'key operations' where titles overlap in a post-commencement world; and
- Regulating for the discovery of petroleum during GHG operations.

Protection of pre-existing rights

3.2 The Committee notes that the protection of pre-existing rights is one of the fundamental, and most contentious, aspects of the Bill. The provisions of the Bill go to great lengths to protect the rights of existing petroleum title holders, an aspect of the bill considered essential by those title holders.

Where petroleum and GHG titles overlap, pre-commencement petroleum title holders are protected from potential impacts of GHG operations where GHG operators cannot demonstrate 'no significant risk of no significant impact', unless the respective title holders come to an agreement.

3.3 The rationale behind giving this level of protection to pre-commencement title holders is avoidance of sovereign risk. In evidence before the Committee, the Department of Resources, Energy and Tourism explained:

> The application of the public interest test on pre-commencement petroleum titles—and I will start with that—is an area that would cause us concern, mainly because of the introduction of sovereign risk. These petroleum companies have taken up tenure, invested money, knowing a certain business environment. To suddenly overlay that with a requirement that to now proceed to a production licence you are required to pass a public interest test, which you were not aware of when you took up your exploration tenure, not only would be of concern for petroleum investors looking at investing in Australia but may even be of concern for wider foreign investment. They would be concerned that suddenly their pre-existing rights can be subject to such tests. In a post-commencement world all entities that go in, be they GHG or petroleum proponents, are aware that there will be public interest assessments right up to the point of their licence, and that gives us a lot more comfort. The companies will come in knowing that that is a hurdle that they have to jump.[1]

3.4 This position was endorsed by APPEA:

> A fundamental starting point for the industry in assessing any ghg injection and storage legislative and regulatory framework is the preservation of the rights of pre-existing title holders (referred to in the Bill as pre-commencement title holders). APPEA is of the very strong view that any ghg injection and storage-related legislation and regulation should protect the rights of pre-existing title holders and provide for the future growth and development of the Australian upstream oil and gas industry. APPEA has long recommended that any legislation should provide a framework where ghg injection and storage or other activities in an area only proceed if they do not impact on existing oil and gas operations or they permit an existing titleholder and a ghg injection and storage

1 Mr John Miller, DRET, *Transcript of Evidence*, 15 July 2008, p. 8.

> proponent to enter into commercial negotiation so that agreements between pre-existing title holders and ghg injection and storage proponents can be struck.[2]

3.5 On the other hand, potential GHG storage proponents regard this protection given to pre-commencement title holders as excessive and a significant hindrance to the take up of GHG storage in Australia. In evidence before the Committee, Mr Bounds of Monash Energy, a potential GHG storage proponent, explained:

> You would be aware that the bill defines pre-imposed commencement titles, and we would like to focus all of our comments upon pre-commencement titles because, in the area in which we are dealing—that is, the Commonwealth borders that are adjacent to Victoria—all the appropriate areas that we believe are suitable for carbon capture and storage are in fact covered by pre-commencement titles. As a consequence, there are no relevant areas that we consider to have high priority in the short term that would be covered by the post-commencement areas.[3]

3.6 Likewise, in its submission the Victorian Government argued that the position set out in the bill created a power of veto over GHG operations in key potential GHG storage areas:

> Where a CCS assessment permit and a pre-commencement petroleum title, or post-commencement production licence coexist, and if the responsible Minister determines that there is a 'significant risk' that the 'key' activities of a CCS proponent may have a 'significant adverse impact' on current or future petroleum operations in that area, in the absence of any agreement by the petroleum title holder to the conduct of those CCS activities, then the Minister must not approve the conduct of those CCS activities.
>
> Similar considerations apply to a CCS proponent wishing to convert its CCS assessment permit to a CCS injection licence, where the CCS assessment permit and a pre-commencement petroleum title or a production licence coexist.
>
> In these circumstances:
>
> - An incumbent petroleum operator is under no obligation to negotiate with, and can refuse to negotiate with, a CCS proponent, regarding the proposed CCS activity. Accordingly,

2 APPEA, Submission no. 29, p. 3.

3 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 51.

access to suitable storage reservoirs in the Gippsland Basin is effectively subject to a 'veto' by incumbent petroleum operators.

- The responsible Minister has no underlying power to determine that the CCS activity is, in fact, in the 'public interest', and should be allowed to be carried out on that basis.

The effect of this regime is to limit a CCS proponent's ability to obtain access to, and property rights in, key CCS storage areas.[4]

Post-commencement titles

3.7 The obligations placed upon both petroleum and GHG operators in a post-commencement environment were also the subject of much comment by proponents of both industries. In its submission, APPEA expressed concern about the impact on the petroleum industry of the uncertainties invested in post-commencement titles:

> As APPEA understands it, approval of key petroleum operations are required where any "key petroleum operation" in respect of a post-commencement petroleum title will have a "significant adverse impact" on ghg injection and storage operations that are being, or could be, carried on under an existing ghg title. When approving key petroleum operations the responsible Commonwealth Minister may impose further conditions on the title.
>
> Even if petroleum operations are approved and no conditions are imposed on the title, the applicant will be required to go through a dual regulatory process - the existing Joint Authority/Designated Authority process for petroleum operations and the responsible Commonwealth Minister for any interactions with ghg operations.
>
> APPEA is concerned that this section of the Bill will provide an on-going disincentive to future upstream oil and gas activity through a dilution of legal certainty for oil and gas producers compared to the level of legal certainty associated with pre-commencement activities.[5]

3.8 Similarly, in its submission, ExxonMobil argued that:

> When approving key petroleum operations the Minister may impose further conditions on the title, for example, that wells are

4 Victorian Government, Submission no. 16, p. 6.

5 APPEA, Submission no. 29, p. 26.

> constructed to a standard that facilitates plugging of the wells in a way that will ensure suitability of the geological formation for storage of GHG. The "impacts" that these operations may have on GHG operations include, not only impacts at the level of geological formations but also physical interference on the surface with a GHG titleholder's operations.
>
> ExxonMobil holds significant concerns around this section of the Bill as it provides a disincentive to future petroleum activity and potentially makes petroleum companies underwrite a portion of the commercial costs of CCS proponents. In addition this provision also raises the need for clarity around the responsibility accruing to pre-commencement title holders in scenarios where already properly abandoned wells are not deemed suitable for the storage of GHG. The Bill remains silent on this matter.[6]

3.9 On the other hand, in their submission to the inquiry, the Australian Coal Association and Minerals Council of Australia highlighted the disabilities GHG proponents would operate under in a post-commencement world:

> The **process in relation to the declaration of a post-commencement petroleum tenement is not clear.** Similarly unclear are the processes to be put in place for the proactive assessment of SROSAI [significant risk of significant adverse impact] on GHGS operations arising from key petroleum operations, before a declaration is made. There is a level of redundancy in the current drafting in that, the Minister must first determine whether there is a SROSAI in relation to GHGS operations, then declare the petroleum tenement, then go through the process of considering SROSAI again together with agreements and public interest as applicable.
>
> Based on the existing provisions of the **Bill,** a post-commencement PEP, PRL or PPL holder can go about key petroleum operations without regard to any impact upon the operations of any GHGS titleholder (subject to the requirements of the Bill in relation to work practices), unless and until the petroleum tenement is declared by the Minister. This is **unlike key GHG operations where these automatically require Ministerial approval.**
>
> The ACA and MCA submit that the Bill should be amended to clarify the process by which the Minister declares post-commencement PEPs, PRLs and PPLs. One remedy would be

6 ExxonMobil, Submission no. 6, p. 17.

> provision for automatic deeming of such tenements as declared upon grant if they are within the proximity (the exact nature of which should be determined on a case by case basis) of a GHGS tenement, or the later deeming of such PEPs, PRLs and PPLs upon the grant of a GHGS title within a proximity (again to be determined on a case by case basis) of such petroleum titles. However this would not account for the fact that PEPs, PRLs and PPLs are also to be declared with reference to the SROSAI on operations under future GHGS titles. Accordingly the Minister should also have regard to whether the petroleum titles are granted over areas suitable to be accessed by emissions sources, or where there is the best suitability of GHGS storage formations.
>
> These provisions of the Bill require significant reconsideration, with **potentially the only workable solution being the application of requirements for approval of key petroleum operations to all post-commencement petroleum titles.**[7]

No significant impact test/Public interest test

3.10 The no significant impact test and the public interest test are the defining mechanisms for deciding the outcome of conflicts in the pre-commencement and post-commencement situations respectively. In evidence before the Committee, the Department of Resources, Energy and Tourism explained:

> Where there are pre-existing rights, the no-significant-impact test is the primary specific test. Where there are no pre-existing rights post commencement, and there are two activities that are at the same level of development and that wish to proceed to the next step, the public interest test would be applied if they could not both go together as they are configured or could be configured. It was the only way to separate two activities where only one could go ahead.[8]

The no significant impact test

3.11 The 'no significant impact test has raised concerns on two levels, the first being that until the criteria for what will constitute 'significant risk of a

7 ACA/MCA, Submission no. 27, p. 21.

8 Mr John Miller, DRET, *Transcript of Evidence*, 15 July 2008, p. 8.

significant impact' are released, industry cannot gauge their potential impact and therefore the probable outcome of the legislation. In its submission, BP stated:

> Pre-commencement petroleum titles and post-commencement petroleum production licenses are adequately protected only to the extent that the Significant Risk of a Significant Adverse Impact test applies. Therefore, it is essential that Parliament provides clarity on the definition of Significant Risk of a Significant Adverse Impact during the legislative process, by the publication of Regulations and the publication of policy guidelines.[9]

3.12 The submission recommended that the Government:

> Publish a definition of Significant Risk of a Significant Adverse Impact during the parliamentary process so that the impact of the Bill on petroleum rights can be fully considered.[10]

3.13 Similarly, from the perspective of GHG storage proponents, the lack of clarity in what constitutes significant risk and significant impact have been a cause for concern. In its submission, Monash Energy noted;

> It has already been observed above that the expressions 'significant risk' (S.6 and S.15F) and 'no significant adverse impact' are, respectively, poorly defined and not defined at all. The adverse impact test is applied for approval to carry on key greenhouse gas operations and approval for an injection and storage licence and relate to having no significant adverse impact on pre existing petroleum titles or a production licence (whenever issued). The test is a central feature of the greenhouse gas legislative regime.
>
> Significant risk has been 'defined' in S.15F as being applicable where a particular operation will have a 'large adverse impact' on other operations. It is not clear if this 'large' adverse impact is intended to be the same as a 'significant' adverse impact otherwise employed in the Bill or whether the use of 'large' was unintended. Where there is the risk of a large adverse impact, a significant risk arises, even if the probability of the large adverse impact is low.
>
> Again referring to Example A, where the probability of a significant adverse impact occurring would be low, in the context of the exemplar petroleum operation, it seems strange that even in such a situation the Minister would refuse approval for conduct of

9 BP, Submission no. 12, p. 5.

10 BP, Submission no. 12, p. 5.

> key greenhouse operations or the issue of a greenhouse injection licence.[11]

3.14 The submission recommended that:

> It is essential that the impact test be better defined. Consideration should be given to reducing the potentially harsh effect of defining an impact as a significant even where the probability is low.[12]

3.15 Concerns about significant risk and significant impact go beyond the question of definition, however. In its submission, the Victorian Government expressed concern that the impact tests would, in effect, give the petroleum industry a right of veto over GHG operations. The submission stated:

> The Bill would provide existing petroleum rights holders with unwarranted monopoly rights, effectively delaying the development of a viable commercial CCS industry for Victoria.
>
> The proposed 'impact test' does not operate in a manner which promotes investment in CCS. Put differently, a CCS proponent is always to be measured against a petroleum operator, in determining whether a CCS activity can be approved, and how such test is to be applied is not clear.[13]

3.16 The result would be a damaging delay to the development of GHG storage capacity:

> To encourage commercial investment in geological storage of carbon dioxide, the Commonwealth must provide a 'level playing field' with the petroleum industry, in particular regarding access and property rights. It must also recognise that there may be circumstances where it is in the national interest to progress a CCS operation, and to manage any resulting impact on petroleum operations.
>
> Pre-existing petroleum operators in the Gippsland Basin may be incentivised to delay CCS activities, as this will drive the use of gas in power stations over the use of coal. Providing equal opportunities for access to CCS storage areas will deliver a fairer outcome, consistent with the intent of the proposed CCS legislation.[14]

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11 Monash Energy, Submission no. 13, pp. 21–2.

12 Monash Energy, Submission no. 13, p. 22.

13 Victorian Government, Submission no. 16, p. 12.

14 Victorian Government, Submission no. 16, p. 4.

3.17 To remedy this imbalance between pre-commencement title holders and GHG storage proponents, the Victorian Government recommends extending the principle of 'public interest' to pre-commencement titles:

> Where a CCS assessment permit and a pre-commencement petroleum title, or post-commencement production licence coexist, and if the responsible Minister determines that there is a 'significant risk' that the 'key' activities of a CCS proponent may have a 'significant adverse impact' on current or future petroleum operations in that area, in the absence of any agreement by the petroleum title holder to the conduct of those CCS activities, then the Minister must not approve the conduct of those CCS activities.
>
> Similar considerations apply to a CCS proponent wishing to convert its CCS assessment permit to a CCS injection licence, where the CCS assessment permit and a pre-commencement petroleum title or a production licence coexist.
>
> In these circumstances:
>
> - An incumbent petroleum operator is under no obligation to negotiate with, and can refuse to negotiate with, a CCS proponent, regarding the proposed CCS activity. Accordingly, access to suitable storage reservoirs in the Gippsland Basin is effectively subject to a 'veto' by incumbent petroleum operators.
> - The responsible Minister has no underlying power to determine that the CCS activity is, in fact, in the 'public interest', and should be allowed to be carried out on that basis.
>
> The effect of this regime is to limit a CCS proponent's ability to obtain access to, and property rights in, key CCS storage areas.[15]

Public interest test

3.18 The public interest test is intended to mediate the interests of the petroleum and GHG storage industries under post-commencement titles. As explained by the Department of Resources, Energy and Tourism, the test is designed for those situations where agreement between parties cannot be reached and co-existence is not possible:

> Maybe I will begin my answer by saying that the public interest test applying in the post-commencement stage can almost be described as a last resort. We would hope that there would be means by which the need to apply this test would not occur—in other words, there would be some agreement between the parties

15 Victorian Government, Submission no. 16, p. 6.

> involved and so forth. It really only applies when there is some view that two activities—that is, petroleum exploitation and gas storage—cannot exist together, and then we would need to have a set of criteria that would be taken into account for what is the public interest. I am grappling towards saying to you that this is something where you will have to try and imagine situations which we hope do not occur and that this can all be worked out in a sensible fashion. But when it can not, then we just need a process that has to be gone through.[16]

3.19 As with the impact test, a pressing concern about the public interest test is the lack of information currently available as to what criteria will be exercised in determining the 'public interest'. In its submission, the Victorian Government stated:

> The Bill seeks to introduce a number of 'public interest' tests.
>
> There are currently relatively few circumstances in the *Offshore Petroleum Act 2006* which require 'public interest' or 'national interest' considerations to be taken into account. The Bill will significantly increase the number of circumstances in which consideration of the 'public interest' must be made by the responsible Minister.
>
> As a threshold issue, the Bill does not seek to provide guidance on what constitutes 'the public', or indeed, what should be taken into account when considering what may be, and what may not be, in the 'public interest'.[17]

3.20 In its submission, Monash Energy recommended:

> A clear definition of what constitutes public interest is required and should be inserted into the Bill, not subordinate legislation or guidelines. Consistent with the need to achieve proper balance, the Bill should provide that, when considering the public interest, the Minister should have regard to the public's interest in the development and management of offshore natural resources and the public's interest in achieving mitigation of greenhouse gas emissions through cost effective development and management of offshore storage. This definition recognises that the public interest is twofold.[18]

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16 Mr John Hartwell, DRET, *Transcript of Evidence*, 15 July 2008, p. 8.

17 Victorian Government, Submission no. 16, p. 6.

18 Monash Energy, Submission no. 13, p. 7.

3.21 In their submission, the Australian Coal Association and Minerals Council of Australia argued strongly for a variety of factors to be taken into account in defining the public interest test, including global leadership in CCS technology and energy security:

> The ACA and MCA submit that regulations or guidelines in relation to the meaning of public interest should explicitly address the importance of GHGS operations. In considering the relative weight of GHGS operations, the ACA and MCA submit that key factors are:
>
> (a) the desire of the Australian Government and the Australian community that Australia be a global leader in advancing the demonstration and deployment of CCS technologies, and in promoting the uptake of these technologies internationally;
>
> (b) the imminent introduction of an AETS;
>
> (c) the ongoing commercial operations of emissions-intensive generation and industrial processes, both in relation to sovereign risk for existing operations and the viability of future operations which provide for the most optimal use of fuel sources;
>
> (d) assuring a viable future for Australia's emissions intensive industries, in particular those which are large point sources of emissions capable of capture; and
>
> (e) the importance of a secure, reliable source of base load energy for the production of electricity for Australian homes and businesses.[19]

3.22 Aside from the need to define 'public interest', further consideration was also argued for extending the public interest test to management of interactions with pre-commencement titles. In evidence before the Committee, Mr Bounds stated:

> First of all, there is a regime for public interest already identified in the bill. We think that that probably needs to be strengthened, and the minister needs to be capable of applying it in a wider range of circumstances, including taking into account the release of acreage and, we suggested, as a deadlock-breaking mechanism. We suggest that he bring a public interest test into that forum when exercising that deadlock-breaking mechanism in a situation where a CCS proponent seeks access to acreage, seeks to undertake any one of the greenhouse gas assessment activities, applies for the

19 ACA/MCA, Submission no. 27, p. 20.

> retention lease or in fact moves all the way through to the injection licence.
>
> One of the questions put forward in the bill that the minister needs to ask is: do you have agreement from the existing petroleum licence holder? In the absence of that agreement, the minister should then be empowered to essentially break that deadlock. At the moment, one could envisage a situation where an existing petroleum licence holder refuses to come to the table and does not undertake such a commercial negotiation or such an approach and, as a consequence, it is difficult to resolve that without the minister compelling the parties to come together and then break the deadlock, if you like. So, what we would then say is that public interest, better defined, would bring into account things like the enabling of coal extraction onshore for the purposes of low-cost electricity generation, addressing issues of energy security and addressing ancillary benefits of developing CCS activities in manners which, potentially, are yet immature.[20]

3.23 Likewise, in evidence before the Committee, representatives of the Victorian Government argued for equal consideration on public interest grounds for GHG operators and petroleum operators under pre-commencement titles:

> The last proposal is the application of the public interest test. An equitable and competitive market for access to CCS storage formations is absolutely essential. The rights of CCS proponents should not be treated as subordinate. Accordingly, the Victorian government proposes that, where there is a significant risk of a significant adverse impact, the responsible Commonwealth minister should be empowered to make a determination on public interest grounds irrespective of whether the overlapping title was granted. Pre-existing petroleum titleholders should not be protected from the application of the public interest test. Where a decision is made on public interest grounds and the rights of the titleholders are in fact impacted upon as a result of that decision, the legislation should acquire the CCS proponent to compensate the other party either in accordance with the compensation agreement or, if there is no agreement, by a dispute resolution mechanism. This arrangement could be modelled on the

20 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, pp. 55–6.

> arrangements which apply on onshore Victoria for land access by a petroleum operator under the Petroleum Act 1998.[21]

3.24 On the other hand, in its submission ExxonMobil urged caution in the definition and application of any tests lest they have a negative impact on Australia's finite petroleum production capacity:

> Effectively, the Bill does not give precedence to either GHG or petroleum applications but provides for a "public interest test" to enable the Minister to prioritise activities where they cannot co-exist. ExxonMobil recommends that, at minimum, the Bill include a definition of "significant adverse impact" or guidance as to what might be considered "significant adverse impact" for use in developing regulations. We respectfully reserve our right to comment on this section in more detail when we have seen how the "public interest test" will be defined in future regulations.
>
> Keeping in mind the importance of energy to the Australian economy, this Bill should consider energy supply when evaluating CCS activities with petroleum activities. Petroleum operations have a relatively finite timeframe of activity and, if wisely executed, they will not affect the viability of future CCS operations. The reverse is not true of CCS operations, which can permanently preclude petroleum operations in an area.[22]

Enforcing agreements

3.25 One method identified for dealing with potential deadlocks between parties in dealing with overlapping petroleum and greenhouse gas title was granting the RCM power to enforce negotiation and agreement between the parties. In evidence before the Committee, Mr Bradley Page, CEO of ESAA, explained:

> I think that the underlying theme in our submission and our concern with the draft bill is that in fact pre-eminent rights sit with the petroleum industry and are much more greatly protected under this amendment than we think is warranted. Our point about much of this is that there are many opportunities for potential commercial arrangements to be struck between the petroleum industry and those who in the future may be seeking to

21 Mr Dale Seymour, DPI Victoria, *Transcript of Evidence*, 15 July 2008, p. 20.

22 ExxonMobil, Submission no. 6, p. 18.

> actually sequester carbon dioxide in adjacent fields or indeed in areas where the petroleum industry already holds leases. But much of the bill is structured in such a way that that sort of negotiation is not possible. The minister's hands are tied in certain circumstances because if there is 'a risk of'—and some of those other ill-defined terms—then the answer is no; there is no opportunity to actually negotiate between parties.
>
> So, really, our point is not that we think we should have pre-eminence in this issue. We think that the storage of carbon dioxide in offshore waters adjacent to some of these petroleum deposits needs, as far as possible, to be done on an equitable basis to enable commercial negotiation to go on and where ministers have discretion that the basis on which they exercise that is clearly defined, including the key terms. We have listed some of those already that lack definition and frankly, therefore, leave risk for both sides.[23]

3.26 A similar stance was taken by Anglo Coal in its submission. It highlighted the success of the agreement process used to mediate the interests of the coal and coal seam gas industries in Queensland:

> …the Draft Bill is scrupulous in its protection of existing petroleum rights, but is weak in its delivery of the other key ingredients for success. It has very limited scope for recognition of the national interest in reducing CO2 emissions, and clearly does not provide a level playing field for CCS developers and petroleum producers.
>
> While there appears to be recognition that co-development agreements between overlapping tenement holders will be required for the regime to function successfully, there is no process prescribed in the Draft Bill for the development of those arrangements, nor is there provision for Ministerial determination in the event that over-lapping tenement holders do not agree on voluntary arrangements.
>
> The Draft Bill fails to provide a clear basis for determination of conflicts arising in the event of competing petroleum and CCS priorities. As experience in Australia and elsewhere suggests, this is not a matter that should be left to Regulation.[24]

23 Mr Bradley Page, ESAA, *Transcript of Evidence*, 16 July 2008, p. 27.

24 Anglo Coal, Submission no. 24, p. 4.

3.27 In their submission, the Australian Coal Association and Minerals Council of Australia also argued for agreement making powers modelled on legislation in Queensland and New South Wales:

> The key features of the Queensland CSG regime are that parties with competing natural resource interests are required, firstly, to exchange relevant information and secondly, consult or negotiate with each other with a view to achieving the best resource management outcome, including safety management arrangements.
>
> Whilst the ACA and the MCA support an agreement-making facilitation scheme such as that included in the Qld P&G Act, it does not consider that this scheme is optimum in its entirety, given that this scheme does not make any provision for a circuit breaker where the holder of an ML refuses to enter into an agreement with the PL applicant.
>
> The model under the NSW Petroleum Act is not by itself sufficient for managing the complex interactions between offshore petroleum and GHG title holders. However it is submitted that one useful aspect of this model is that it provides an express deadlock-breaking mechanisms where private parties are unable to resolve their differences by themselves.
>
> The ACA and MCA submit that **a mandatory process for parties with competing GHGS and petroleum interests to seek to reach agreement is likely to facilitate a more effective coordination arrangement.** It would also **better form the basis of resource allocation decisions by the Minister or the JA** (as the case may be) where agreements are not achieved (in those circumstances where the Minister or JA retains a discretion). The ACA and the MCA submit that the Bill be amended to include a process to facilitate agreement making.[25]

Data sharing

3.28 The issue of data sharing is a difficult and controversial one. Exploration and production data play an important role in identifying areas suitable for GHG storage. More importantly, such data will play an important role in resolving conflict between GHG storage proponents and petroleum

25 ACA/MCA, Submission no. 27, p. 35.

operators in areas with overlapping tenure. A considerable amount of exploration and production data is available on the public record.

3.29 According to petroleum operators, the publicly available data is sufficient to meet the needs of both GHG and petroleum operators in identifying potential GHG storage sites. In evidence before the Committee, Mr John Torkington, Senior Advisor, Climate Change Policy with Chevron Australia, stated:

> I know there has been a lot of discussion in the last few days about access to data and the oil and gas industry having some sort of inherent competitive advantage in terms of bidding for acreage. I think those comments are misguided and do not seem to recognise that all exploration data in the offshore region becomes publicly available in a period of time—the only data that does not is production data. But, if you are looking at bidding on acreage for greenhouse storage, the data sets that will be available for either the oil and gas industry or the greenhouse storage industry should be much the same.[26]

3.30 Mr Mark Nolan, Chairman of ExxonMobil Australia, also highlighted the public release of data:

> The geotechnical data that we gather, recognising that we have drilled over 600 wells in Gippsland, is shared and has been shared with Geoscience Australia from the very start of the operations. So as we drill wells today and obtain logs and reservoir information that is all shared with Geoscience Australia.[27]

3.31 He continued:

> If you take a couple of examples, well data is public access within one year of that data being submitted to the government. Seismic data in the licence areas is available two years after it has been acquired. So within the Gippsland Basin, for example, we have spent over $80 million in the last five or so years on 3D seismic, and that having gone past, in the licence areas, that two-year period, that is in the public domain.[28]

3.32 However, the 'data imbalance' between existing petroleum operators and potential GHG storage proponents remains a significant issue for GHG

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26 Mr John Torkington, Chevron, *Transcript of Evidence*, 17 July 2008, p. 51.

27 Mr Mark Nolan, ExxonMobil, *Transcript of Evidence*, 15 July 2008, p. 44.

28 Mr Mark Nolan, ExxonMobil, *Transcript of Evidence*, 15 July 2008, p. 44.

storage proponents, and has been identified as a major obstacle to potential GHG initiatives. In its submission, the CO2CRC noted:

> An existing holder of an Exploration & Production (E&P) licence who has undertaken an extensive program of data collection, perhaps including production data, will always be in the position of having more technical information available than an incoming storage proponent is likely to have. Petroleum exploration requires the spending of large amounts of money—perhaps hundreds of millions of dollars—in order to identify and exploit petroleum resources. It is difficult to imagine that a storage proponent would be willing to spend equally large sums of money acquiring the same (or comparable) data sets without a prior guarantee that the lease area would be available for storage. Therefore the level of technical understanding that the "sitting" petroleum company will have, is likely to be better than that of a storage proponent that does not have access to the same level of technical data.
>
> If a storage permit is granted, the proponent will need to obtain and interpret sufficient data to ensure that a storage site is adequately characterized and its useable storage capacity confidently predicted. It would obviously be more cost effective if this could be done in collaboration with (or by) existing E&P data holders. This would also serve to greatly accelerate assessment of storage prospectivity. Indeed, lack of access to data could greatly impede the use of CCS as a mitigation option, with negative effects on the attaining of national emission targets and/or the development of new business opportunities that rely on CCS.
>
> Access to good geological and geophysical data in a timely and cost effective manner will be crucial to the success of offshore storage. The draft legislation offers no specific incentive for existing data holders (usually E&P companies) to make their data available. There is a "public interest' clause in the legislation but it is doubtful that this could be used to make existing commercial-in-confidence data available to a third party. Access to data could represent a significant hurdle to the development of offshore storage. This hurdle will be exacerbated by the fact that world wide there is a shortage of people with the necessary skills to assess areas for their storage potential, as well as considerable delays in drilling wells or undertaking seismic surveys.[29]

29 CO2CRC, Submission no. 1, pp. 4–5.

3.33 In their submission, the Australian Coal Association and the Minerals Council of Australia also highlighted the need for access to data, while acknowledging the commercial-in-confidence nature of much of the data required. They urged commercial agreements as a solution to this issue:

> It is imperative that GHGS title holders and applicants have reasonable access to the data of petroleum title holders that may be impacted upon by GHGS operations. A lack of access to data not only poses the potential for the procedural rights of GHGS holders and applicants to be diminished in the various processes involving an assessment of SROSAI and the site plan process, but could also leave the GHGS titleholder exposed to losses and liabilities in the future in the event the issue of a site-closing certificate is deferred.
>
> The ACA and MCA acknowledge the commercial value and sensitivity of data held by petroleum title holders. However it is possible to safeguard the commercial value and sensitivity of the data as well as allow GHGS title holders and applicants access necessary for their purposes. The ACA and MCA recommend the Bill make **provision to allow the** GHGS **party** access **to the petroleum data for the limited purposes of assessing and making submissions on SROSAI and the preparation of site plans.** This should also be made subject **to the** GHGS **party having signed a** strict **confidentiality** agreement in relation to the petroleum data.[30]

3.34 In evidence before the Committee, the Department of Resources, Energy and Tourism indicated that they would be reluctant to compel the release of commercially sensitive data, stating:

> We are a bit reluctant to insert any clauses associated with data access by one proponent or another proponent, mainly because the data is commercial data—a lot of money is being spent to obtain it. Also, it might be a bit of a remote concern but what would stop a GHG proponent putting in some form of slightly silly or unusual proposal in an effort to obtain this commercially sensitive data and therefore go away and refine their project based on the data they have obtained? In essence they might have got tens of millions of dollars worth of leg-up. So it would be the role of the technical regulator to confidentially assess the data in order to make a determination on the most significant impact. I know that is difficult for a new operator in an established operator's realm but the alternatives seem less palatable.[31]

30 ACA/MCA, Submission no. 27, p. 19.

31 Mr John Miller, DRET, *Transcript of Evidence*, 15 July 2008, p. 5.

3.35 One solution identified was to leave access to data subject to commercial arrangements by agreement between interested parties, a practice already widespread in the resources sector. Mr Bob Davies, CEO of the Australian Energy Company, told the Committee:

> I think another area that is important—and I think we focused on it in our submission as well—is the whole issue of access to data. I would just make the point that I have been a signatory to a number of confidentiality agreements, some of them reciprocal, around exploration properties. It seems to me that if a non-petroleum company is going to go and poke a hole in a reservoir someplace and they have signed a confidentiality agreement with a petroleum company to provide that information, under the parameters of the confidentiality agreement it does not need to go into the public domain. The two businesses can agree together to have a confidentiality agreement. There is no reason why the information cannot be reciprocal and the rights to the information exchanged before holes are poked in the reservoir. I think those are perfectly logical solutions to the problems of information and data.[32]

3.36 Similarly, Mr Torkington observed that:

> I think there is a balance in how much data that is commercially sensitive to oil and gas producers you should allow to go forward. We see the existing open-file arrangements being applicable to both the oil and gas and the greenhouse storage industries going forward and we think that should remain. Where we get to more site specific issues, I think we would look towards the various industries working together. The experience we have had on Barrow Island is that very early on we started to engage with the oil operations there. We have had a number of agreements over the last few years dealing with things like exchange of data, access to existing facilities and those sorts of arrangements. Clearly those negotiations can be a bit one-sided. The oil and gas industry might have the data, but the way we have structured it is that, if you show us your data that you have now, we will agree to disclose our data to you as we acquire it. That can have an advantage for the oil and gas industry. For example, if we go out and drill appraisal wells for geological storage, oil and gas proprietors are very keen to find if there is any oil and gas in that well. An early agreement on the exchange of data can address both those concerns. We think that those sorts of arrangements can be

32 Mr Bob Davies, AEC, *Transcript of Evidence*, 15 July 2008, p. 40.

> relatively easily accommodated around the more commercial negotiations that the two parties should look to undertake.[33]

GHG and the discovery of petroleum

3.37 Another contentious issue, one affecting both the GHG storage industry and the petroleum industry is the discovery of petroleum during GHG operations overlapping pre-commencement titles. While the bill, as drafted, protects such discoveries for future exploitation, the petroleum industry is concerned that it gives no direction to the minister to make these findings available to the affected petroleum operator.

3.38 In its submission, APPEA noted:

> In addition, APPEA notes the Bill requires a ghg injection and storage proponent to advise the Minister of any hydrocarbon discovery but is not clear as to the Minister's obligation to advise the petroleum title holder with respect to any find. APPEA recommends the requirements of the Minister in such a scenario be clarified, as petroleum 'discovered' within an existing petroleum title clearly falls within the ownership of the petroleum title holder(s). Given that a ghg injection and storage proponent has no legal right to explore for petroleum, the intellectual property in the discovery should not reside with the proponent and should be made available to the holder of any existing petroleum title over the acreage. Should no petroleum title holder exist, intellectual property rights should reside with the Commonwealth. These data submission and release provisions should mirror the requirements that currently exist under the OPA for the petroleum industry.[34]

3.39 From the point of view of potential GHG storage operators, this provision creates a great deal of uncertainty. In its submission, BP Australia noted:

> In areas with pre-commencement hydrocarbon titles, the Minister can cancel or suspend injection for all or part of the injection license indefinitely if there is a new discovery of petroleum which the Minister considers is commercially viable or likely to become commercially viable in the GHGS assessment area.
>
> In post-commencement areas, the Minister has power to decide whether or not any accidental hydrocarbon discovery takes

33 Mr John Torkington, Chevron, *Transcript of Evidence*, 17 July 2008, p. 52.

34 APPEA, Submission no. 29, p. 4.

> precedence over existing GHGS activity i.e. our understanding is that the Minister could stop GHGS activity and subsequently release the area for hydrocarbon exploration and production. This introduces an unreasonable level of uncertainty for the GHGS operator. The GHGS may have been operating for many years and have made a substantial investment (underpinned by an agreed Site Plan), only to be instructed to cease because of the unexpected discovery of hydrocarbons.[35]

3.40 BP recommended that:

> There should be a Statute of Limitations after which an operating GHGS project is no longer vulnerable to being directed to cease work. Consideration should be given to whether the approval of a site plan is the appropriate time for this Statute to be enforced.[36]

3.41 In their submission, the Australian Coal Association and Minerals Council of Australia held similar concerns. They argued that:

> The Bill should be amended to make provision for the holder of a GHGS IL to be able to apply for a special GHGS HL in circumstances where there is a temporary lack of supply of GHGS to inject and store, or where the Minister gives a direction where there has been a discovery of commercially viable petroleum in an area of overlap between a GHGS IL and a pre-commencement petroleum title.[37]

Committee conclusions

3.42 The Committee believes that the draft Bill largely succeeds in attempting to strike a balance between the entitlements of petroleum operators and GHG storage operators. Protection of pre-commencement rights is essential, as is the legal balance struck between GHG storage and petroleum production in post-commencement titles. However, there is an argument for achieving an even finer balance between the industries as a matter of national interest.

3.43 While the maintenance of Australia's oil and gas exploration and production capacity is essential, so too is the capacity to capture and store greenhouse gases. Australia's energy security depends on both.

35 BP, Submission no. 12, p. 10.

36 BP, Submission no. 12, p. 11.

37 ACA/MCA, Submission no. 27, p. 29.

3.44 With this in mind, the Committee believes it is essential to find a mechanism which will allow both industries to co-exist and overlap. This mechanism could be found in the commercial agreements between different industries within the resources sector in the management of competing interests, and the power to facilitate and direct such agreements found in legislation.

3.45 The Committee believes that the responsible Commonwealth Minister should be able to direct petroleum and GHG operators to negotiate in good faith where titles potentially or actually overlap, and direct agreement where this is otherwise unobtainable. While this will represent some encroachment upon the pre-commencement rights of petroleum title holders in the limited sense that they will be required to negotiate in circumstances where previously they were free of any obligation, it will still enable them to control their own destiny. They will not be obliged to surrender any entitlement. Any potential or actual loss of amenity may be dealt with by commercial agreement. Moreover, this mechanism will overcome the problems associated with data sharing and the accidental discovery of petroleum. They too will be the subject of commercial agreement between he parties.

3.46 The Committee also notes the concern from virtually all sectors about the lack of definition of 'significant risk', 'significant impact' and 'public interest'. While believing that the proper place to define these terms is in the subordinate legislation, the Committee accepts that these issues are of such importance that stakeholders and the public should be able to see how these terms will be defined before the Bill itself passes into law. With this in view, the Committee recommends that the regulations and guidelines attending the legislation be made available for public and industry consultation before the passage of the Bill through the House of Representatives.

Recommendation 9

3.47 **The Committee recommends that the Bill be amended to provide for the responsible Commonwealth Minister to direct the parties to negotiate in good faith where there are potential or actual overlapping GHG storage and petroleum titles, under both pre-commencement and post-commencement petroleum titles; and that the responsible Commonwealth Minister be empowered to direct an outcome.**

Recommendation 10

3.48 **The Committee recommends that the regulations and guidelines attendant upon the legislation are released for stakeholder and public comment as a matter of urgency.**

4

Investment certainty

4.1 The legislation is designed as an enabling framework for carbon capture and storage (CCS) and attempts to provide GHG injection and storage proponents with the certainty in access and property rights needed to bring forward investment. In providing this investment environment for GHG storage activities, the legislation recognises the need to minimise sovereign risk to existing petroleum investment in Australia's offshore resources, and thus preserve security for future investment by the petroleum industry.

Gifting of GHG acreage to petroleum operators

4.2 As discussed in previous chapters, perhaps the most contentious issue with regards to the establishment of a GHG storage industry is the interaction with incumbent petroleum operators. Due to their established activities, in some cases spanning several decades, these operators hold significant quantities of accumulated technical data regarding the areas that could potentially be utilised for GHG storage purposes. The availability of this data may offer considerable advantage in the competitive process for GHG acreage. Additionally, it has been suggested that should these operators object to alternative proponents operating in their area, they could block GHG storage from the outset by claiming significant adverse impact, leading to lengthy litigation.

4.3 The Committee received a proposal from the CO2CRC, Australia's leading collaborative research organisation focused on carbon capture and storage

for an initial 'once-off' opportunity for petroleum title holders to overlay a GHG title on their exploration or production licence area. This was discussed in its submission:

> One possible option for addressing this might be for the Minister to offer holders of existing offshore E&P tenements a once-off opportunity to also have a storage tenement over their existing E&P area? A fee would be payable and to avoid the prospect of the tenement holders just "warehousing" the storage tenement and doing no assessment of storage prospectivity, consideration should be given to a "use it or lose it" clause and/or a requirement to surrender say 50% of the storage acreage after a period of perhaps five years.[1]

4.4 Dr Peter Cook, the Chief Executive of CO2CRC, elaborated on this proposal in evidence to the Committee:

> I have suggested—and it is only a suggestion—that one pragmatic option would be to say to the oil and gas companies, 'As a one-off opportunity, you have the chance to turn this into an exploration and production and storage licence.' People might say that that is going to give a free kick to the oil and gas industry. I do not see it as a free kick. What we are talking about here is taking carbon capture and storage forward so that it takes its place as a key mitigation strategy that Australia can deploy.
>
> I think if you provide that one-off opportunity and you also have levers such as a 'use it or lose it' clause in there—in other words, over a certain number of years you have to surrender a certain percentage of it—then I believe that over the next five years that would result in a very high level of new activity actually assessing the areas. I fear that, without something like that, all that is going to happen is that in a number of areas it will be tied up in the courts for the next five years, with absolutely no forward movement. I think that will be a waste of money and a waste of time and it will not help with the government's objective of decreasing emissions.[2]

4.5 As well as potentially avoiding the problems that could arise in a competitive environment, it has also been suggested that as the majority of expertise with respect to CCS rests within the petroleum industry, they are

1 CO2CRC, Submission no. 1, p. 7.

2 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 4.

in fact best placed to take up GHG storage. In evidence to the Committee, Mr Mullen (APPEA) said:

> As you may be aware, the oil and gas industry has considerable expertise in utilising and developing the technologies that are required for CCS both in Australia and internationally. The oil and gas industry is the only industry undertaking commercial injection and storage activities as an integrated part of its petroleum operations. They are directly linked with our petroleum operations. We are not aspiring to, or trialling, such technology; we have been doing this for many decades.[3]

4.6 Mr Alex Zapantis, Manager of Energy and Sustainable Development at Rio Tinto, corroborated this claim in his evidence before the Committee, while also noting that any gifting of acreage would have implications for an open market for the GHG industry:

> … you need to balance the opportunity which is afforded by, for example, the petroleum industry, which has the expertise, has the infrastructure, has knowledge and is already operating on the ground in these very prospective areas. That is a very significant opportunity in terms of progressing the development of carbon capture and storage. On the other hand, you need to address the risk of anticompetitive, monopoly type behaviour, where petroleum producers might seek to lock up this resource.[4]

4.7 The submission from Rio Tinto added that an unbiased competitive process is always the ideal; however, it may not lead to the desired level of uptake in GHG storage:

> Rio Tinto believes that storage formations are a natural resource and should be subject to transparent, equitable, competitive processes to allocate usage rights to ensure optimal utilisation in the public interest. On that basis, it may be argued that the petroleum licence holder should always be required to win a competitive bid process for the grant of an injection licence. However, the CCS industry is immature and the environmental imperative and timeline for emissions mitigation and deployment of CCS does not respect market forces. Consequently government policy in this area need always be framed within the context of a necessity to facilitate the development of a CCS industry faster than the market would otherwise deliver, and to support the

3 Mr Noel Mullen, APPEA, *Transcript of Evidence,* 18 July 2008, p. 19.

4 Mr Alex Zapantis, Rio Tinto, *Transcript of Evidence,* 18 July 2008, p. 11.

> broader government agenda of improving carbon productivity as described by Minister Wong.[5]

4.8 Dr Cook added the point, in evidence, that the heavy emitters, such as the energy sector, are unlikely to want to bid for storage acreage, and would rather allow those proponents with the expertise, to undertake the storage on their behalf:

> Most of the expertise and most of the knowledge reside in the oil and gas industry. There is no question of that. You may get some new players arising, but they would be coming from well behind in terms of the level of knowledge and the level of expertise. For the most part, companies such as power companies would probably be happy for somebody else to do it for them. I do not think the power companies would really want to get into this area. What they would like to do is have access to this expertise, access to this storage opportunity.[6]

4.9 Mr Zapantis concurred with this position during evidence before the Committee:

> Rio Tinto does not really have a position on who should be doing it as long as someone is doing it. The ideal outcome would be that the companies which are best placed to do this most efficiently in fact are able to do it. But, as I said, you need to manage the risk of non-competitive behaviour.[7]

4.10 In its submission, the Australian Energy Company stated that the high emitting sectors are unlikely to want to bid for storage acreage, and also suggested that a competitive process is inappropriate for the independent petroleum operators as they do not have a CO_2 stream, and that a third party arrangement would be too commercially uncertain to be currently feasible:

> Predominantly, the operators of … 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. … 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

5 Rio Tinto, Submission no. 9, p. 4.

6 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 4.

7 Mr Alex Zapantis, Rio Tinto, *Transcript of Evidence,* 18 July 2008, p. 11.

> and the price they are willing to pay is unknown. Thus, positioning to be an intermediate in some future CCS market is highly risky.[8]

Committee conclusions

4.11 The Committee believes that the potential for conflict to occur between pre-existing petroleum title holders and new GHG operators in a purely competitive environment threatens long delays in the implementation of commercial GHG storage in Australia. These delays could significantly set back emissions reductions, and potentially threaten our energy security.

4.12 Creating certainty of investment and encouraging partnerships between the petroleum production and GHG storage industries is a vital first step in the development of CCS in Australia.

4.13 With that in mind, the Committee believes that an offer to current petroleum title holders to incorporate a GHG assessment permit over their title area, with the proviso that it must be either utilised or surrendered, is a positive suggestion that could successfully speed the process of establishing commercial GHG storage in this country.

Recommendation 11

4.14 **The Committee recommends that incumbent petroleum operators be offered a one-off opportunity to incorporate a GHG assessment permit over their exploration or production licence, with the condition that they must demonstrate utilisation of this permit within five years, or surrender it.**

Promoting uptake

4.15 The initial promotion of this new GHG storage industry is an essential element in ensuring it becomes a viable emissions mitigation option in Australia. The level and speed of CCS uptake is not predicted to be vast from the outset. It is a costly process with an immense amount of infrastructure, data, and specialist expertise required. As such, the Committee has heard that there should be greater incentive for early movers in the new industry.

8 AEC, Submission no. 4, p. 4.

4.16 One suggestion put to the Committee is that those operators who have an available stream of CO_2 for injection should be given preferential treatment in the allocation of acreage. It is argued that in promoting those operators who are able to begin injection at an early date, you guard against the 'real estating' of GHG acreage, as well as hastening the development of GHG technology and expertise. In its submission, Monash Energy stated:

> Monash Energy is concerned to see that the criteria should include recognition of matters peculiar to greenhouse gas, such as a party that has or is reasonably likely to have an identified greenhouse gas stream available for injection into a greenhouse gas storage formation. Monash Energy submits that such a party should be accorded priority over competing parties that base their work bid solely on levels of expenditure, which might otherwise encourage acquisition of acreage on a speculative basis.[9]

4.17 Woodside Energy, in its submission, also suggested the availability of CO_2 for injection should be an assessment criterion in awarding acreage:

> We submit that … guidelines should be produced in relation to greenhouse gas permits …we offer the following suggestions for bid criteria:
>
> a) an existing (named) CO2 stream;
>
> b) the required timing of the CO2 sequestration (proponent of a project requiring sequestrations earlier than another project).[10]

4.18 BP concurred in its submission, stating that a source of CO_2 was an important factor in the allocation of acreage, and also suggested that business capability to deliver and manage the infrastructure to inject and store this CO_2 should be considered favourably:

> Two obvious examples which would be taken into account are:
>
> - whether a bidder has a source of CO2; and
> - whether the bidder has a credible business plan across the GHGS value chain.
>
> In the first few years of implementation of this legislation, there should be a bias towards industry development, and full support given to those players who can deliver CO2 with the highest level of business and technical capability.[11]

9 Monash Energy, Submission no. 13, p. 16.

10 Woodside Energy, Submission no. 10, p. 10.

11 BP, Submission no. 12, pp. 6–7.

4.19 As well as this suggestion, the Committee has received evidence that the Government should consider *financial* incentives outside of the legislation to encourage rapid uptake of GHG storage. The joint submission from the Australian Coal Association and the Minerals Council of Australia stated:

> It is important that the Bill not be seen as the end solution for all requirements in relation to GHGS injection and storage. To that end, the ACA and MCA urge the Commonwealth, through the Committee, to continue to pursue the other initiatives required to ensure the successful uptake of CCS and GHGS injection and storage.[12]

4.20 In evidence, the Department of Resources, Energy and Tourism supported the need for incentives external to the legislation:

> … if this new industry is to be taken up on the scale that is needed to significantly reduce our greenhouse gas emission levels, incentives to facilitate this uptake are essential. I believe the legislation is designed as an enabling framework. The drivers to take up that legislation are all available if the government chooses to work in private-public partnerships to facilitate early movers, to offer special dispensations in regard to sharing or ultimately taking over long-term liability or, as they are doing now, providing significant funding for the actual development of these projects. … yes, I believe that there is a very strong role for the government to be involved in the rapid and early uptake through the provision of incentives. But I would say that a legislative framework to prescribe those incentives might not necessarily be the best option.[13]

Committee conclusions

4.21 The Committee believes that due to the very large theoretical capacity of Australia's basins and reservoirs, GHG injection and storage offers significant opportunities in the near to mid term to dramatically reduce CO_2 emissions, and, as such, early implementation should be encouraged. Those potential GHG operators who can demonstrate the availability of a CO_2 stream for imminent injection are likely to begin the injection process swiftly. Rapid uptake of the technology also advances aggregate knowledge of this new industry. As such, the Committee feels that allowing these operators preferential consideration in the course of acreage

12 ACA/MCA, Submission no. 27, p. 48.

13 Mr John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 29.

allocation would advance the burgeoning GHG injection and storage industry.

4.22 It is also deemed that the defence of an open market should be a priority, and as such the consideration of readily available CO_2 streams should be incorporated into the transparent bidding process for acreage, with 'available CO_2 stream' as one *highly ranked* criterion among many.

4.23 The Committee also believes that in order to encourage uptake of CCS at levels which could make significant reductions in Australia's greenhouse gas emissions, it is likely that further incentives will be required. It is believed therefore, that the Government should consider ongoing financial incentives for the earliest movers in this new industry.

Recommendation 12

4.24 **The Committee recommends that those proponents who can demonstrate a readily available CO_2 stream for imminent injection receive preferential consideration when assessing bids for GHG acreage allocation.**

Recommendation 13

4.25 **The Committee recommends that the Government consider further financial incentives for the earliest movers in this new industry, and that these incentives be made public at the earliest opportunity.**

Long term liability

4.26 The proposed legislation, like the arrangements in the OPA relating to petroleum, is silent on the question of long term liability, thus leaving it to common law. That is, once the licensee's statutory obligations cease when the site closing certificate is issued, future issues of liability would be in the domain of common law.

4.27 There are no provisions within the proposed legislation for the Government to 'take over' long-term liability from project participants or provide indemnity to project participants in respect of any liability they might incur. This is the product of a deliberate decision.

4.28 In evidence before the Committee, the Department of Resources, Energy and Tourism explained that 'the main concern with accepting liability or explicitly putting limitations on common law post closure liability was the inheritance of this [liability] by the Australian people.'[14]

4.29 Additionally, the Department believed there may be ramifications for other industry sectors from Government assuming long term liability:

> To extend that to making greenhouse gas storage proponents immune from common law liability would be setting precedents which we think do have serious consequences for government regimes going forward.[15]

4.30 There was significant disagreement about the propriety of this position in the evidence received by the Committee.

4.31 In its submission ANEDO suggested that liability transfer to the Government could be a disincentive for ensuring adequate long term management of stored GHG:

> ANEDO is of the view that by providing industry such assurances, the Bill establishes a framework that operates counter to the public interest of ongoing monitoring and site stability to ensure effective long-term GHG storage. ANEDO is also concerned that following the issuing of an SCC, the immediate transfer to the Commonwealth of responsibility for long term site MMV may reduce incentives for project operators to design and implement projects in a safe and reliable manner.[16]

4.32 In evidence Ms Kellie Caught, Climate Change Policy Manager for WWF, argued that common law liability should remain with the proponent to ensure there was recompense in cases of operator negligence:

> On the issue of liability, we still think that common-law liability remains, so that if in 50 or 60 years time there is proven negligence on the part of the operator, the Commonwealth or someone else can still sue for negligence.[17]

4.33 The sharing of liability, whereby the proponent was not indemnified from common law actions resulting from negligence, was potential middle ground explored in evidence by Mr Simon Daddo, Special Council for Woodside Energy:

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14 Mr John Miller, DRET, *Transcript of Evidence*, 15 July 2008, p. 14.

15 Mr John Hartwell, DRET, *Transcript of Evidence*, 15 July 2008, p. 14.

16 ANEDO, Submission no. 14, pp. 6–7.

17 Ms Kellie Caught, WWF, *Transcript of Evidence*, 16 July 2008, p. 60.

> We have gone to what could be described as a middle ground, saying that if the injector has done everything it can and mitigated its issues, and the government is accepting of that through the acceptance of a site plan and the monitoring and whatnot, then it is probably reasonable at that time for the Commonwealth to assume some liability for it, except for occasions where there is obvious negligence or deliberate misconduct.[18]

4.34 In evidence before the Committee, Dr Geoffrey Ingram, Regional Manager, Schlumberger Carbon Services agreed that handover of long term liability would not preclude the ability to seek recompense for acts of negligence or misconduct. He further suggested that the handover of liability from the GHG operator to the Government should occur through collaborative dialogue between parties whereby the proponent demonstrates through established milestones that residual risk has been reduced to as low as possible:

> It was Peter Cook who said that the Otway project is a model for the next big projects because there is a very close relationship between the government, the regulatory agencies and the operators, so they are setting all the data and all the parameters. There is very much an ongoing dialogue between them; it is not something that is dumped all at once 10 years after closure—'Here you go, thanks very much.' I would imagine maybe six-monthly meetings after you close your site to say, 'This is the latest data we have. This is how it's behaving according to the models. This is what we predicted.' By the time the handover comes the residual liability is very, very small, so the government has confidence.[19]

4.35 A number of potential GHG industry proponents endorsed the Government's acceptance of long term liability after a certain period of time. Mr Bounds (Monash Energy) stated:

> We feel that the presentations by the department and the discussions we have had among the industry all seem to align around the idea that, after a certain period of time and with appropriate monitoring and verification, the long-term liability transfers back to the Crown.[20]

4.36 Given that CO_2 would be stored in the subsurface for periods significantly longer than the existence of associated companies, Mr Dominic Brennan,

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18 Mr Simon Daddo, Woodside Energy, *Transcript of Evidence*, 16 July 2008, p. 22.

19 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence*, 17 July 2008, p. 23.

20 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 52.

Senior Council for Monash Energy questioned the appropriateness of companies maintaining this extreme long term liability:

> I think the real crux of this is the intergenerational aspect. We are talking here about potential liabilities which could go out centuries, if not millennia. Here we are; we have World Youth Day and we have the oldest corporation in the world, basically—it is the only one that can go back for 2,000 years. We could be talking about future time frames longer than that and, however strong Shell is, however strong Anglo Coal is, the real prospect of them being around in that sort of time frame is very small. [21]

4.37 While agreeing that common law liability should not generally be assumed by governments, Rio Tinto suggested in its submission that given the immature status of the GHG storage industry, lack of common law precedents may create investment uncertainty and impede commercial development:

> CCS however is not a mature industry. Potential investors can not achieve the level of confidence in strategies to mitigate risks from common law liability for CCS projects that are routinely achieved for investments in mature industries.[22]

4.38 The lack of maturity within the GHG industry and associated risk uncertainty through lack of precedents was also considered a serious impediment to obtaining insurance to underwrite long term liability in Shell's submission:

> Shell has learned, through discussions with leading international insurance brokers and carriers, that the long-term liabilities around CO_2 storage would not be insurable, due to such factors as a lack of actuarial data and the long-term nature of the risk (most policies are annual but environmental liability insurances would stretch to a 10 year period at most).[23]

4.39 Using the development of the Otway Project in Victoria as an example, this concern over insuring against long term liability was also conveyed by CO2CRC in its submission:

> The experience of CO2CRC in taking forward its Otway Project is relevant here. CO2CRC was able to obtain insurance cover for the construction and operational phase of the project but was not able

21 Mr Dominic Brennan, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 58.

22 Rio Tinto, Submission no. 9, p. 11.

23 Shell, Submission no. 30, p. 2.

> to obtain cover beyond 10 years after closure. Companies involved in CO2CRC were reluctant to take on long term liability.[24]

4.40 In its submission Rio Tinto suggested that a means of facilitating the initial development of the GHG storage industry would be for the Government to limit or share common law liability to allow familiarity with the technology and risks to be established.

> One option that could be considered would be for the Commonwealth to assume, share or limit the long term liability for the first Australian commercial scale projects where the storage of greenhouse gases was undertaken under the amended OPA.[25]

Committee conclusions

4.41 The Committee has reservations about indemnifying CCS proponents from common law liability under the proposed legislation. This may act as a disincentive to the design and implementation of strategies to effectively manage long term liability.

4.42 The Committee, however, is also of the opinion that long term common law liability associated with a GHG storage activity may be minimised during post closure timeframes through the development of a robust site closure regime.

4.43 The Committee acknowledges that the issue of long term liability is complex and that there are many valid arguments as to why the Government should take over long term liability including:

- To provide investment surety within the CCS industry by establishing clear timeframes on potential liability;
- To promote and facilitate initial uptake of CCS technology where obtaining insurance may be problematic given the immaturity of the industry;
- To ensure that the potentially extreme long term liabilities associated with GHG storage are formally transferred to an appropriate long term entity such as the Government rather than through de facto inheritance by the passage of time.

4.44 On the balance of arguments the Committee believes that the formal transfer of long term liability from the GHG operator to the Government, under strict conditions, could provide an incentive for the proper

24 CO2CRC, Submission no. 1, p. 5.

25 Rio Tinto, Submission no. 9, p. 11.

management of GHG storage and strict adherence to site closure responsibilities. Nor would it prevent parties from pursuing damages on the grounds of deliberate misconduct or negligence by the operator.

4.45 The Committee encourages the collaborative development between the regulator and the GHG proponent of appropriate liability transfer criteria, preferably on a project by project basis.

Recommendation 14

4.46 **The Committee recommends that a process for the formal transfer of long term liability from a GHG operator to the Government be established within the proposed legislation, such transfer to be conditional upon strict adherence to prescribed site closure criteria.**

Commercial viability of GHG storage

4.47 Carbon capture and storage must be commercially viable in order to attract investment and become a feasible and effective mitigation method for GHG emissions in Australia.

4.48 The success or failure of CCS commercially may also have significant influence on our coal-fired energy generation industry, and therefore potentially our energy security.

4.49 The Committee has received evidence regarding the commercial viability of carbon capture and storage today and into the future. The three main influential factors which have emerged through the evidence are:

- the level of **access** to suitable storage locations;
- the level of development and cost for the **technology** involved; and
- the **incentives** driving investment in GHG storage.

Need

4.50 Australia is overwhelmingly dependent on coal for electricity generation, with coal providing over 75% of electricity generated in the year 2005-06.[26] While the transition to renewable energy sources has begun, this will be a long and costly process. It is accepted, therefore, that in order to begin

26 ABARE, *Energy in Australia 2008*, ABARE, Canberra, February 2008, p. 40.

making considerable reductions to Australia's CO_2 emissions in the near term, abatement strategies will have to be employed.

4.51 CCS, should it be commercially viable, is likely to make up one of those abatement strategies, while also allowing the continued utilisation of Australia's exceptional black and brown coal reserves.

4.52 Dr Cook explained the vital need for GHG storage in evidence to the Committee:

> There are obviously economic considerations that could have a very significant impact on whether or not this technology is used but, quite frankly, our view is that, for as long as we use fossil fuels, we have no alternative but to use this technology. There is no other option that we have at the present time, so it is very important that we pursue this technology. [27]

4.53 Mr Page (ESAA) outlined the possible implications for Australia's economy should CCS not become commercially viable, and therefore a limit be put on low-cost coal fired generation:

> …there are potential impacts on the economy…of not being able to cost-effectively sequester carbon emissions, therefore potentially limiting into the future the role for low-cost, coal fired generation. It could result in very substantial increases in the cost of supplying the nation with electricity, for example, because you automatically have to turn back to more expensive, lower emission technologies. There will also, naturally, be a limit to how much natural gas we are going to choose to burn in generators here rather than sell to other countries that will pay very high prices for it.[28]

4.54 He explained further that the quantity of coal in Australia is vast, and could continue to be utilised at low cost for a significant period—if we manage to economically mitigate the resultant emissions:

> The electricity industry has goodness only knows how much brown coal—some people say about 800 years worth on current usage rates—and in excess of 250 years worth of black coal. That is an accessible, low-cost, relatively high-quality resource if only we can capture the CO2, and we are trying to do something substantial about climate change. If that is not given the appropriate priority and balanced against the undoubtedly important economic issue of gas and liquid fuels for transport and

27 Dr Peter Cook, CO2CRC, *Transcript of Evidence*, 17 July 2008, p. 2.

28 Mr Bradley Page, ESAA, *Transcript of Evidence*, 16 July 2008, p. 32.

> other purposes, we really will not be looking after the national interest at the end of the day. [29]

Access

4.55 In order for it to become commercially viable, potential GHG storage operators must have access to suitable storage sites. Without this guarantee that proponents will have a destination for any captured CO_2, investment into the other elements of the CCS chain will not eventuate.

4.56 Dr Cook explained the situation to the Committee:

> It is very difficult to see how you could persuade investors to spend those very large amounts of money if there is not a degree of certainty about them having the area for storage. So again that is something that needs to be resolved at a fairly early stage; it cannot be done on the basis of saying, 'Well, you do lots and lots of work and spend lots and lots of money and then we will decide eventually whether or not you will be able to store CO2 there.' It has to be an upfront decision, and that is a difficult balance to get right.[30]

4.57 Mr Ralph Hillman, Executive Director of the Australian Coal Association, explained that further studies are required to establish the best storage sites, but that attaining access to those sites through effective legislation is the key requirement:

> We do need to do further mapping to prove up this potential and identify sites. But, ultimately, getting access to those storage sites in an economic way and calling forth the investment in those storage sites will require us to establish the right legal and regulatory framework, and that is what this legislation is about. We think it goes some of the way, but it does, to our mind, need quite a bit of work and we have made suggestions in our submission which go to the specifics of that.[31]

4.58 Dr Cook also pointed out that offshore storage locations, as established by the legislation, are particularly important:

> … it is also crucial that there is access for the offshore area for the deployment of this technology. Why is that? Well, we have done a number of studies both onshore and offshore looking at storage

29 Mr Bradley Page, ESAA, *Transcript of Evidence*, 16 July 2008, p. 33.
30 Dr Peter Cook, CO2CRC, *Transcript of Evidence*, 17 July 2008, p. 3.
31 Mr Ralph Hillman, ACA, *Transcript of Evidence*, 17 July 2008, p. 25.

> opportunities and there is no question that in a number of areas some of the best storage opportunities will be found offshore. That does not mean to say that there will not be some good ones onshore. It is also important, though, to point out that there is still quite a lot more work needed. We are at the stage of having determined, in a broad way, that there is a storage resource there. What we have to do is look at that in a great deal more detail in the future. [32]

4.59 In their joint submission, the Australian Coal Association and the Minerals Council of Australia, concurred, explaining that the investments made by the coal industry and the government so far must not be frustrated by potential conflict with respect to gaining access to offshore storage:

> … it is imperative that the provisions of the Bill not be counter-productive to other government and industry initiatives. The Federal Government has committed $500 million to fund clean coal technologies, with the intent that clean coal will contribute to Australia's energy mix in a carbon constrained future. That investment, and the coal industry's investment of $1 billion on research, development and demonstration of low emissions coal technology through the COAL21 Fund, is based upon the assumption that suitable injection and storage sites will be located and available for use. To the extent that power stations are unable to access suitable injection and storage locations, that assumption will not be realised.[33]

4.60 Mr Bounds explained Monash's belief that access to offshore acreage should be unproblematic, as it is possible to proceed with GHG injection without any interaction with petroleum operations:

> We believe that there are completely and sustainably separate structures—in particular, the saline aquifers which underlie most hydrocarbon-producing basins—where you can sequester CO2 without there being any interference with existing oil and gas production. … We do not believe that you need to or are likely to interfere with the existing oil and gas production, sour their gas fields or introduce a corrosive CO2 stream into existing facilities.
>
> …So the opportunity to sequester into unrelated structures which happen to be geographically in the same area as oil and gas production is technically possible and, we would argue,

32 Dr Peter Cook, CO2CRC, *Transcript of Evidence*, 17 July 2008, p. 2.

33 ACA/MCA, Submission no. 27, p. 21.

> commercially possible. The impediment that exists as a result of linking those other structures to existing oil and gas production licences is creating a barrier to entry, effectively, in terms of being able to get in and do the sequestration work that is necessary.[34]

Technology

4.61 The commercial viability of the geological storage of CO_2 will inevitably be reliant on the technology involved.

4.62 There is some contention as to the level of development of CCS technology. Mr Hillman told the Committee that the technology involved was at a high level of development, saying:

> We know that storage technology is already established and proven; you will have heard, I think, from a number of witnesses to the committee that that is more or less an accepted fact. We also know that Australia is well endowed with potential storage areas.[35]

4.63 He later qualified his statement, explaining that the technology is proven in laboratory conditions. However it is unlikely that capture technology will be demonstrated at commercial scale for some time:

> Carbon capture technologies are technically proven in the laboratory and in some cases at pilot scale. The objective of the Coal21 program and the Coal21 Fund is to demonstrate those capture technologies at a larger scale by 2015. We would like to be ready by 2015 to see those technologies demonstrated at full commercial industrial scale by 2017.[36]

4.64 Ms Walmsley (ANEDO) suggested that the technology is still untested, and therefore unproven. She said:

> I think that is yet to be proven. We have had a look at the pilot projects that are up and running in various states and some of the developments overseas, and there seems to be consensus that the technology is new and is yet to be proven. For that reason, certain safeguards should be put in legislation now. It is untested technology. The technology will not be ready for some time—estimates are around for 2015 for projects. As we have seen in Australia, the Western Australian Rio Tinto-BP project has ceased operations. Even though that was a $2 billion joint venture, it has

34 Mr Roger Bounds, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 54.

35 Mr Ralph Hillman, ACA, *Transcript of Evidence*, 17 July 2008, p. 25.

36 Mr Ralph Hillman, ACA, *Transcript of Evidence*, 17 July 2008, p. 27.

> ceased because of the instability in the site. There is a lot of money involved. This is an untested area. Without that certainty, you need to make sure you have the regulatory safeguards in place.[37]

4.65 Dr Wild (BP) outlined the details of their failed Kwinana project in Western Australia, arguing that while the storage formation in that instance was unsuitable, this doesn't undermine the success of GHG storage technology more generally:

> We announced in May 2007 that we were going to undertake a pre-feasibility study to look at the project in Kwinana. I think it was 500 megawatts of clean coal power generation, using coal from the local area and then taking the CO2 offshore into the couple of opportunities for storage relatively near inshore. I think it was about 200 kilometres offshore. So we carried on that work. It went over about 2½ years. Through the geological studies that we did, it became obvious that the sink—the storage location—actually would not give us the level of security that we would need for a first-of-a-kind project. I do not know who gave you the evidence that this would suggest that CCS does not work. I think that is an extraordinarily long bow to draw. What this suggests is that this particular project, now, is not going to work for us, but it does not mean it is not going to work for somebody else. In terms of giving us the level of security we would need around storage for a major first-of-a-kind project in Australia, it does not quite stack up now for us, but certainly the work that we did was incredibly useful just to see how all the building blocks of a project like this might fit together for Australia.[38]

4.66 Mr Page concurred with Mr Hillman's point that the capture technology in particular will take time to become commercially viable:

> Based on the studies that we have done over the last few years—and those studies have involved us getting quite close to researchers and best information domestically and world wide—the association's view is that the period from here to 2020 will actually be a very difficult period for the industry from a technology perspective. We have very few choices. … Included in that, from our perspective, is carbon capture and storage, whether it is so-called post-combustion capture, which may be viable for retrofitting to existing plants, or whether it is brand new pre-combustion technology. … I would expect over the course of the

37 Ms Rachel Walmsley, ANEDO, *Transcript of Evidence*, 16 July 2008, p. 45.

38 Dr Fiona Wild, BP, T*ranscript of Evidence*, 18 July 2008, p. 8.

> period to 2020 that we will see an increasing amount, but it will remain a minor amount compared to the total potential emissions from the existing fleet of generation. … I think it is reasonable to expect that compared to what our sector emits today, which is around 190 megatons, we are not going to start seeing a substantial proportion sequestered from pilot and demonstration programs. Our expectation is, post 2020, that that is likely to move up quite quickly, but again it will depend upon the economics, what the alternative technologies are, what the price of carbon is and how commercially viable carbon capture and storage becomes.[39]

4.67 Mr Torkington (Chevron) explained that there will need to be a breakthrough in the technology in order for it to become commercially viable:

> I guess it is our view that those costs are currently very high. The technology is possible, but current technology is very difficult. You really need to see a technological breakthrough around capture to bring those costs to the capture component in those sorts of sectors down significantly to make it worthwhile. Again, we would see the economics around the price under emissions trading as being the motivation.[40]

Incentives

4.68 In order for GHG storage to ever become commercially viable, due to the level of expenditure on the technology and infrastructure required, financial incentives will be essential.

4.69 Mr Zapantis (Rio Tinto) outlined the requirement for incentives from government to ensure the commercial viability of CCS, saying:

> … the factor which is holding back deployment of CCS most significantly is simply the commercial viability of CCS. It is much more expensive to produce low-emission electricity than it is to produce electricity using conventional means. That, added to the fact that there is still some uncertainty around the final costs because an integrated plant has not yet been built, means that the commercial risks are much greater than the rewards, so there needs to be some sort of support from government that enables industry to invest. Industry has enormous resources that it can invest in this technology, but industry can only do so on a

39 Mr Bradley Page, ESAA, *Transcript of Evidence,* 16 July 2008, p. 31.

40 Mr John Torkington, Chevron, *Transcript of Evidence,* 17 July 2008, p. 51.

> commercial basis; that is the role of industry. So, somehow, government policy needs to unlock those enormous resources and bring that investment forwards. Part of that equation is going to be support of these sorts of projects with public funds. At a philosophical level, the role of government is not necessarily to make commercial investments; that is the role of industry. The role of government is to make investments where it is not commercial, in the public interest.[41]

4.70 This point was corroborated by Shell in its submission to the inquiry, which stated:

> Shell is a strong advocate for CCS, but we stress that CCS is not currently commercially viable, while carbon markets do not deliver sufficient incentives to make long-term private investment in CCS attractive. Although Shell supports the Commonwealth's efforts to put in place a regulatory framework to facilitate CCS, it is highly likely a range of other measures will be required to ensure widespread uptake, and use of, CCS, including :
>
> - recognition of CCS as a form of abatement under the proposed Australian Emissions Trading Scheme (on a like for like basis);
> - funding assistance (e.g. bolstered Low Emissions Technology Demonstration Fund);
> - public education, particularly raising community understanding of CCS and dispelling some of the negative perceptions about the technology;
> - robust tax incentives, including PRRT deductibility where CCS costs form part of upstream development costs and R&D tax benefits; and
> - further funding of public /private research initiatives (i.e. CO2CRC).
>
> We encourage the Commonwealth to consider such measures and consult with the petroleum sector and CCS stakeholders on how best they might be implemented.[42]

4.71 Dr Ingram (Schlumberger) stated that political as well as economic drivers will fuel the commercial viability of CCS:

> You will know that if CCS is to have an impact on the CO2 concentrations in the atmosphere we will need to store billions of tonnes of CO2 underground over the next 40 to 50 years. The sheer

41 Mr Alex Zapantis, Rio Tinto, *Transcript of Evidence,* 18 July 2008, p. 16.

42 Shell, Submission no. 30, pp. 3–4.

> scale of the challenge is daunting but, with the right political and economic drivers in place, eminently achievable. [43]

4.72 Dr Ingram continued, stressing that with a price on carbon emissions in an emissions trading scheme, investment in GHG storage should take off:

> You can see in Australia that there will be a price on carbon. And then it comes down to: 'Let's get on and do it,' instead of, 'What else do you need?' The legislation will be coming through. The economics will come through. The technology is already there. What more do we want?[44]

4.73 Another factor in the uptake of CCS, however, is the regulation of emissions. The need to abate emissions or face legal penalties is a strong incentive to pursue CCS, as is illustrated by the Gorgon project in Western Australia. Mr Torkington explained to the Committee the impact of environmental assessments on the development of the Gorgon project:

> The authorisation for the underground disposal of carbon dioxide will be undertaken in accordance with the Barrow Island Act, which enables the minister to place conditions on that project. Importantly, as I indicated in our opening remarks, these projects will still be subject to a range of existing laws—in this case, environmental protection laws. The project has been through an exhaustive environmental impact assessment and approval process under both state legislation and Commonwealth legislation. During that process the state EPA recommended that, if the Gorgon project were to proceed, this component of the project must go forward.[45]

Committee conclusions

4.74 The Committee notes that the commercial viability of carbon capture and storage will constitute the main influencing factor on the level of investment in this new industry.

4.75 The Committee believes that CCS should be promoted as a potential strategy for the mitigation of Australia's CO2 emissions which allows the continued utilisation of our extensive coal reserves.

4.76 The evidence suggests that at present carbon capture and storage is not commercially viable, as the technology is still in the development stages

43 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence*, 17 July 2008, p. 14.

44 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 21.

45 Mr John Torkington, Chevron, *Transcript of Evidence*, 17 July 2008, p. 47.

and remains exceptionally expensive. The lack of genuine incentives to encourage greater uptake, means that a breakthrough in technology which could potentially lead to a reduction in cost is at the present time unlikely.

4.77 The Committee believes that the current proposed legislation, with the amendments recommended in this report, goes some way to assuaging the problems regarding access to suitable storage locations.

4.78 In order to further promote the commercial viability of GHG storage, the Committee concludes that firm environmental regulations will be required to abate the atmospheric emission of CO_2, and greater external incentives will be required.

External drivers—ETS

4.79 In order for CCS to become a financially viable option for the mitigation of GHG emissions, the cost of emitting CO_2 must be high enough such that it is more economical to inject than to emit. It is therefore likely that the principal driver for investment into, and uptake of, GHG storage in Australia, will be the implementation of an emissions trading scheme.

4.80 In evidence to the Committee, Mr Zapantis outlined the dependency of a successful GHG storage industry on the introduction of an emission trading scheme:

> The only reason you are going to inject CO_2 into geological formations, which is an added cost to business, is in order to realise the commercial benefit that the reduced liability for emissions, via the ETS, delivers.[46]

4.81 Mr Torkington concurred, stating:

> Currently, today, these sorts of projects are not commercial. …the commercial motivation is going to come from a different area. In Australia it is going to come from the implementation of a price on carbon emissions.[47]

4.82 Mr Davies (AEC) explained to the Committee that not only is a trading scheme necessary, but that the price of CO_2 emissions must be high enough to justify GHG storage as an option:

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46 Mr Alex Zapantis, Rio Tinto, *Transcript of Evidence,* 18 July 2008, p. 15.

47 Mr John Torkington, Chevron, *Transcript of Evidence,* 17 July 2008, pp. 50−51.

> We do not know what an emissions trading scheme is going to generate ultimately in terms of a price to emit. I would like to think there are two objectives here. The ultimate objective is to drive the value of the CO_2 permits to zero because nobody needs them—the technology has moved on. But we are a long way from that, so we will have to go through a transitionary period. I think of this in the context of what the value is for AEC in injecting CO_2 into the ground, and the first commercial consideration for us is: what is the price of a permit? Can we acquire a permit? What will the future value of that permit be? And what does that mean for me when I talk to shareholders about investing $2 billion in this plant? I do not know what the price of a CO_2 permit is going to be. I hope it will be zero one day, but for the time being it is going to go nowhere but higher. What that says is: what will the cost be to inject CO_2 into the ground? What is my decision point here? If I can emit for $40 and inject for $60 I suspect I am going to be an emitter.[48]

4.83 In addition to the financial incentives an emissions trading scheme will provide for investment into GHG storage, the Committee also received evidence as to how this new industry could be incorporated into the scheme, utilising the new legislation as an enabling framework.

4.84 In its submission, Rio Tinto suggested that the new emissions trading scheme should acknowledge the permanent geological storage of CO_2, provided the scrupulous monitoring and verification assessments required by the legislation have been met:

> The ETS should recognise a reduced carbon liability or a credit (depending on whether CCS is within scope or out of scope of the ETS) for greenhouse gases that have been permanently geologically stored. To be recognised under the ETS as permanently geologically stored, the injection of the greenhouse gas must have been undertaken in a manner that has been subject to rigorous assessment and which meets all of the Government's requirements relevant to ensuring the long term integrity of the geological storage formation. Thus injection must be undertaken under an Injection Licence into an Identified Greenhouse Gas Storage Formation in order for the ETS to recognise a reduced carbon liability or a carbon credit.[49]

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48 Mr Bob Davies, AEC, *Transcript of Evidence,* 15 July 2008, p. 36.

49 Rio Tinto, Submission no. 9, p. 4.

4.85 The CO2CRC also commented in its submission that, subject to satisfactory monitoring results, the trading scheme should recognise injected CO_2 as mitigated emissions:

> Further, the implementation of an ETS, which could be expected to encompass CCS as a tradeable credit, would obviously require MMV, to confirm carbon credits.[50]

4.86 The joint submission from The Australian Coal Association and the Minerals Council of Australia agreed, pointing out that a standardized definition for 'permanency' within the new legislation would assist this process:

> …the ACA wishes to place on record its concern that the issue of what constitutes permanent storage under the Bill, and that the mechanisms by which the Bill seeks to establish a regime for permanent storage must correlate with the requirements of the forthcoming AETS in relation to the conditions upon which GHGS injection and storage will be recognised as a deduction from an emitter's liable emissions, or as an offset (whichever is the position under the AETS).[51]

4.87 It continued:

> The ACA and the MCA submit that in the interests of certainty, if the issue of a site closing certificate, the successful undertaking of MMV, and the current or former GHGS IL holder's compliance with serious situation and remedial directions are carried out in accordance with the Bill, this should constitute permanent storage for both GHGS purposes and AETS purposes[52]

4.88 In its submission, ExxonMobil stated that the Bill, as an enabling framework for a mitigation option, is consistent with its view that an emissions trading scheme should allow industry the choice to adopt the most economical option for mitigating their emissions; carbon capture and storage being but one:

> ExxonMobil favours approaches to the valuation of carbon that create a basis for market principles to drive investment decisions for all forms of GHG mitigation, including CCS. The financial basis for greenhouse gas (GHG) mitigation, including CCS, should be driven by a GHG policy that provides a value for carbon that is

50 CO2CRC, Submission no. 1, p. 6.

51 ACA/MCA, Submission no. 27, p. 40.

52 ACA/MCA, Submission no. 27, p. 41.

> implemented as widely across the economy as practical. The value of carbon should be the basis for selecting the most appropriate method of GHG mitigation without dictating or prohibiting a sound management approaches. In this context the Bill is seemingly compatible with the future development of an Emissions Trading System (ETS).[53]

Committee conclusions

4.89 The Committee notes that the implementation of an emissions trading scheme in Australia is likely to constitute the main driver for investment in to carbon capture and storage. GHG injection adds considerable expense to business and, as such, will only begin to become commercially viable with a combination of both a reduction in the costs of the technology and a sufficiently high price on emitted CO_2.

4.90 The Committee believes that the injection and geological storage of greenhouse gases should be recognised by an emissions trading scheme as mitigated emissions. It is believed that the Bill's requirements with respect to the measurement and verification of injected GHG substances will translate appropriately to the assessment of permanently abated emissions within the new trading scheme.

4.91 The Committee therefore concludes that the Bill provides a successful enabling framework for one method of CO_2 abatement, which should be recognised by any future emissions trading scheme.

53 ExxonMobil, Submission no. 6, p. 18.

5

GHG storage

Site closure

5.1 Once Greenhouse Gas injection operations cease permanently in an injection licence area, the licensee must apply for a site closing certificate. This triggers the commencement of the site closing period, during which the injection licensee will be required to carry out a work program corresponding to a petroleum decommissioning process but potentially with additional requirements.

5.2 These additional requirements may include ongoing monitoring and verification of the behaviour of the injected greenhouse gas substance, in order that reliable predictions can be made as to its potential migration and interaction with the surrounding geological structures. Additionally during this period, the licensee may be required to undertake precautionary or remedial work to prevent or mitigate harmful effects on the geotechnical integrity of the storage site.

5.3 The purpose of the site closure process is to enable the responsible Commonwealth Minister to achieve sufficient confidence about the likely fate of the injected GHG such that the Minister can grant a site closing certificate to the licensee.

5.4 WWF in its submission recommended the use of an expert committee to assist the responsible Commonwealth Minister in determining the suitability of a GHG injection and storage operation for site closure:

> The inclusion of independent expert committee [to determine suitability for site closure certificate], (WWF recommendation 17)[1]

5.5 A number of submissions have suggested that formal criteria be established and published for obtaining a site closing certificate. In its submission BP argued:

> The criteria for achieving a site closing certificate need to be clearly spelled out both to allow a proponent to have certainty of their pathway to achieving closure and to prevent inadequate meeting of site closure requirements e.g. if a proponent ceases injection for 5 years, they lose their ability to inject but this clearly does not equate to site closure. The Minister should not have discretion to deny a site closure certificate once these criteria have been met.
>
> Recommendation 1.2: Criteria by which the Minister will grant the site closure certificate should be published.[2]

5.6 In its submission APPEA recommended that criteria for both the injection and post-injection phase up to the site closure should be established in advance of commencement of injection and storage for individual projects. This would allow a potential GHG injection and storage operator to make commercial decisions on the viability of potential projects:

> With this in mind, APPEA recommends that the conditions and requirements for the injection phase and immediate post injection monitoring phase (including periods of monitoring) prior to site closure be established with certainty up-front and as long as the assumptions made as to the behaviour of the carbon dioxide plume prove to be correct, those conditions and requirements not change in any material way during the monitoring phase or at site closure time.
>
> - This will mean a ghg injection and storage proponent can, with a degree of certainty as to the costs of the project, make upfront commercial decisions as to whether the project is viable. [3]

5.7 To facilitate industry surety, once closure criteria and conditions were established, APPEA also recommended that:

> The Bill and any associated regulations should therefore require regulators to adhere to these principles, allowing no deviation from the conditions and requirements unless established criteria

1 WWF, Submission no. 21, p. 7.
2 BP, Submission no. 12, p. 4.
3 APPEA, Submission no. 29, p. 6.

> for the project are demonstrated to have changed in a material way during the project.[4]

5.8 As Woodside Energy has indicated in its submission, established closure criteria would also need to recognise the predictive nature of any assessment of the long term fate of stored CO_2:

> Predictive modelling is probabilistic by nature due to the uncertainties in subsurface parameters. Therefore the modelled plume will never exactly behave "as predicted". We recommend that a site closure certificate be issued upon satisfaction of conditions relating to plume behaviour falling within a predicted range and after a fixed time from the application for a site closing certificate.[5]

5.9 This uncertainty in the long term behaviour of stored CO_2 would make project specific criteria difficult to establish up front or indeed prior to the completion of injection activities. Only after injection has ceased could monitoring of the stored CO_2 confirm long term modelling independent of the influences created by ongoing injection.

5.10 In evidence, Mr Torkington suggested these site closure objectives and criteria could be established as possible milestones within the site closure process rather than as discrete end point criteria:

> We have suggested that the period of site closure should be marked by a set of criteria, and those criteria principally involve and demonstrate to the state that the residual risk associated with that site is said to be low. Having met those criteria, the government would agree that we have reached site closure.[6]

Committee conclusions

5.11 It is clear from the evidence presented that there is a need for potential GHG injection and storage proponents to be aware of closure expectations prior to project development.

5.12 The Committee accepts that the establishment of such closure criteria would facilitate investment decisions through allowing associated closure costs to be priced into development and investment decisions.

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4 APPEA, Submission no. 29, p. 6.

5 Woodside Energy, Submission no. 10, p. 9.

6 Mr John Torkington, Chevron, *Transcript of Evidence,* 17 July 2008, p. 47.

5.13 The Committee also acknowledges that any established closure criteria should be objective based and capable of encompassing future changes in knowledge and practices within the CCS industry.

Recommendation 15

5.14 **The Committee recommends that general criteria for achieving a site closing certificate be established and published as part of the implementation of the legislation.**

Post-injection timeframes

5.15 Once injection activities have permanently ceased a GHG injection licensee must apply for a site closing certificate. The application for a site closing certificate is the start of the site closing process with the grant of the site closing certificate being the end of that process. During this site closing period the responsible Commonwealth Minister must be provided with information by the injection licensee that enables them to achieve the necessary state of confidence about the fate of the GHG in order to grant the site closing certificate.

5.16 This Legislation does not prescribe a fixed period in which the Minister must achieve the necessary state of confidence and the Minister may defer making a decision on the closure application for as long as is necessary in order to achieve this confidence.

5.17 Ministerial discretion in the post injection closure period may create investment uncertainty for potential GHG operators, as described in the ExxonMobil submission:

> The Bill does not provide a set timeframe for the Minister to grant a pre-certificate notice and could effectively defer this decision indefinitely (section 249 CZFA) leaving a GHG injection licensee "in limbo" in the site closing period. This significant discretion will affect the legal and investment certainty of GHG operations in relation to a site closing certificate. [7]

7 ExxonMobil, Submission no. 6, p. 16.

5.18 A number of submissions supporting fixed term closure periods recommended time frames for this pre-closure period as exemplified in the ANEDO and WWF submissions:

> ANEDO submits that the Bill should be amended to include a mandatory 60 year period of MMV to be conducted by the operator once CCS operations have ceased.[8]

> Include a mandatory MMV period [for GHG operators of 30 years prior to site closure certificate being granted][9]

5.19 Schlumberger Carbon Services, in its submission, also recommended a fixed term closure period which could be significantly shorter than recommended in other submissions, as confidence in the predicted migration of the stored CO_2 could be developed during the injection phase:

> Industry will need certainty around the closure periods of projects and the requirements of the longer term monitoring program to ensure the ongoing safe storage of C02. We suggest a limit of 5-10 years for the post injection - pre-closure/closure junction to be reached. This is not unreasonable given that during the injection phase, the migration pathway of the injected CO2 would have been shown to be predictable and conform to models.[10]

5.20 The concept of refining knowledge of the long term fate of CO_2 during the injection and storage phase is consistent with the intent of the proposed legislation as discussed by the Department of Resources, Energy and Tourism during evidence:

> The other thing that I just want to quickly stress is that, by not having a fixed term closure period, you are encouraging proponents to commence their closure planning right at the grant of the injection licence or even prior to that in some cases. [11]

5.21 The Department of Resources, Energy and Tourism went on to suggest that by encouraging early refinement of closure planning, post-injection timeframes may be significantly shorter than if arbitrary fixed term periods were established:

> So, if this collaboration is ongoing and if the long-term fate is known, the tail on the closure period should not be that great. The perception that seems to have come out here is that this will be as

8 ANEDO, Submission no. 14, p. 11.

9 WWF, Submission no. 21, p. 7.

10 Schlumberger Carbon Services, Submission no. 11, p. 3.

11 Mr John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 35.

> long as a piece of string. I would argue that, in most of the early movers, particularly in nice constrained reservoirs, we are probably shortening the post-injection closure period by having this process in place rather than setting an arbitrary period.[12]

5.22 Countering this argument of fixed term closure periods, Mr Torkington submitted that due to the unique nature of each injection and storage site it might not be practical or appropriate for a one size fits all approach to closure timeframes:

> It needs to be recognised that each sequestration site will be quite unique and therefore it is probably not practical to set a definitive timetable on how long the site should continue to be monitored.[13]

5.23 In its submission, APPEA acknowledged that the primary intent of the closure period is to demonstrate that residual risks are acceptably low:

> Since 2005, APPEA has suggested an appropriate starting point for the development of legislative provisions to deal with post closure responsibilities is for the project proponent to demonstrate to the regulator that the residual risk associated with the project is acceptably low.[14]

5.24 The use of an objectives based closure process is more suited to a variable term closure period, rather than a fixed term period. The Department of Resources, Energy and Tourism argued that for a fixed term period to be established that satisfies objective based closure expectation across the full spectrum of potential GHG injection and storage activities, a conservative timeframe would need to be established:

> For that reason, the establishment of a fixed term closure period would have to be quite extensive—let us start at 50 years—to reflect our uncertainty. If it were any shorter than an extensive period, we would basically be saying, 'If there is still a large degree of uncertainty at that closure point, is the government going to accept that risk?' Each site will be different. So for some there might not be any uncertainty at a fixed point closure period; for others, there might still be a large amount of uncertainty and potentially a large amount of risk though [15]

12 Mr John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 35.

13 Mr John Torkington, Chevron, *Transcript of Evidence,* 17 July 2008, p. 47.

14 APPEA, Submission no. 29, p. 21.

15 Mr John Miller, DRET, *Transcript of Evidence,* 18 July 2008, p. 34.

Committee conclusions

5.25 The Committee acknowledges that the use of variable post-injection timeframes to achieve closure may create additional business and investment uncertainty.

5.26 However, the Committee feels that objective based closure expectations will encourage early development and ongoing refinement of closure strategies and storage knowledge in an attempt to minimise this variable timeframe.

5.27 Additionally, any prescribed fixed term closure periods would need to be sufficiently long to demonstrate in all project cases awareness of the long term fate of stored CO_2 and that residual risks are as low as reasonably practicable.

Recommendation 16

5.28 **The Committee recommends that non-fixed closure timeframes as currently prescribed within the proposed legislation be used in preference to alternative models such as fixed term closure periods.**

Post-Closure Monitoring and Verification

5.29 When applying for a site closing certificate, a GHG injection licensee must supply amongst other things a recommended work program of post-closure monitoring and verification requirements for the storage site.

5.30 As part of the process for issuing a site closure certificate, the responsible Commonwealth Minister will consider the submitted post-closure work program and give a notice to the injection licensee specifying a finalised program of monitoring and verification operations that the Commonwealth proposes to carry out.

5.31 This notice of proposed work program includes an estimate of the costs associated with undertaking the work program. The proposed legislation requires that the injection licensee provide a security for payment of those costs before the site closing certificate can be given.

5.32 The CO2CRC in its submission warns of unrealistic expectations with regards to monitoring and verification requirements within the post closure phases of operations:

> The term for which MMV should be undertaken must be adequate to meet the requirements of the regulator but should not be unduly onerous. Unrealistic MMV requirements could be impossible to meet and/or could be so expensive that they might undermine the financial viability of the storage project. [16]

5.33 For major CCS projects, Dr Ingram suggested in evidence that the cost of monitoring may be minor compared to overall project cost, and that could encourage more thorough monitoring of stored CO_2:

> Monitoring is not going to be a big cost in the project. There is no reason to cut corners with the monitoring, because it is a relatively minor cost in the project.[17]

5.34 The monitoring costs, however, may be difficult to quantify up front or even after injection has ceased, given the potential large post-closure monitoring and verification timeframes that may be required. In its submission CO2CRC noted:

> It could be argued that by the end of a large scale storage project the operator will have a good idea of what MMV does and does not work and of the cost of undertaking the MMV. This may be true to some extent, but it will not remove many of the uncertainties: and realistically it would be impossible to foreshadow what the cost of MMV would be in 20, 30 or 40 years time. [18]

5.35 The uncertainty in monitoring and verification costs is exemplified by experiences at the Otway project by CO2CRC:

> In the case of the Otway Project, due to cost increase totally outside the control of the Project, the cost of MMV has more than doubled over the past four years.[19]

5.36 To manage the costs associated with post-closure monitoring a possible option, suggested by WWF in its submission, was industry funded schemes:

> WWF proposes that once certain validation criteria are met, the Government would then assume financial responsibility, funded by industry insurance mechanisms and perhaps reserves of carbon

16 CO2CRC, Submission no. 1, p. 6.

17 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 19.

18 CO2CRC, Submission no. 1, p. 6.

19 CO2CRC, Submission no. 1, p. 6.

> credits equal to a percentage of the amount of CO2 stored in the geological formation.[20]

5.37 However, in evidence before the Committee, the Department of Resources, Energy and Tourism suggested that, as a relatively small number of proponents were anticipated initially in the GHG storage industry, very large contributions would be required from early projects to ensure the fund was reasonably capable of handling any liabilities.

> You mentioned the industry funded concept with long-term liability. In the longer term, that might have merits but, when you look at the anticipated number of early proponents within this industry, there will not be a huge number. Therefore, distributing responsibilities in such a fund would probably create a higher burden on the initial movers than later on when there is a much more mature industry and lots of players and contributors. It is food for thought looking forward, but it would seem to be a disincentive in itself in the early days.[21]

5.38 In addition to the size of potential contributions, concern was raised over the long term management of such funds in evidence by Mr Ian Briggs, General Manager, Strategic Policy, Environment Division, Department of Industry and Resources, Western Australia:

> I suppose that, when we were looking at the Gorgon one, it opened our minds a little bit more, because usually the liability for mine sites and other projects is fairly short term, and that is, perhaps, less complex than looking out to hundreds of years. I guess that one of the potential issues regarding liability is the fact that records could be lost. Even if you do set up a trust fund, are you confident that that trust will be managed decades ahead?[22]

5.39 In evidence before the Committee, Dr Ingram recommended that it may be more suitable for independent bodies to undertake the post closure monitoring and verification requirements:

> There would need to be some independent monitoring organisation—it might even be the likes of, say, the CRCs or the CSIRO that have an independence from the project upwards but

20 WWF, Submission no. 21, p. 5.

21 Mr John Miller, DRET, *Transcript of Evidence,* 15 July 2008, p. 15.

22 Mr Ian Briggs, Department of Industry and Resources, Western Australia, *Transcript of Evidence,* 16 July 2008, p. 11.

> you would need to have trust on both sides so they can be seen as genuinely independent and therefore giving an unbiased tick.[23]

Committee conclusions

5.40 The Committee recognises that the costs associated with long term post-closure monitoring and verification may be difficult to quantify given the potentially significant periods of time over which monitoring and verification may be undertaken.

5.41 In determining appropriate terms and costs for post-closure monitoring and verification, the Committee believes a balance must be found between ensuring ongoing public confidence in the long term fate of the stored CO_2 and establishing financial values that do not undermine the viability of greenhouse gas storage projects.

5.42 While possibly a future option, the Committee does not currently support the use of an industry fund to finance long term monitoring and verification during the initial stages of GHG Injection and Storage development.

Monitoring and verification technology

5.43 The monitoring of stored CO_2, to verify that its behaviour is as per expectations and that no unforseen negative consequences are occurring, is essential from both a regulatory management perspective and to ensure public confidence in greenhouse gas storage activities. In its submission CO2CRC noted:

> MMV is very important prior to, during and following storage operations. At the onshore CO2CRC Otway Project, an extensive program of subsurface, near surface, surface and atmospheric monitoring is underway. Together, these ensure that there is storage integrity (the CO2 stays within the storage reservoir) and community assurance that the CO2 does not leak into useable groundwater, soils or the atmosphere where, if in high concentrations, it might constitute a health or environmental hazard.[24]

23 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 21.

24 CO2CRC, Submission no. 1, p. 5.

5.44 The oil and gas industries have been undertaking the injection of CO_2 within depleting oil reservoirs as part of enhanced oil recovery for at least 30 years. As suggested in evidence by Mr Torkington, this activity has provided an understanding of monitoring and verification techniques applicable to CO_2 in petroleum reservoirs:

> I think the oil and gas industry has some advantages here. It is our technology. We understand the exploration technologies and techniques. We understand the drilling technologies and, importantly, the monitoring and reservoir management components of it as well. [25]

5.45 While these enhanced oil recovery operations have contributed to the knowledge of CO_2 reservoir behaviour, Dr Cook, in evidence, suggested that the historical focus on monitoring CO_2 behaviour was in fact limited:

> You mentioned enhanced oil recovery. The fact of the matter is that for the last 30 or 40 years that they have been pumping CO2 in the ground they did not do much in the way of monitoring. Really, the monitoring started—and again it was fairly limited—with the Sleipner project in 1996 in the North Sea. [26]

5.46 More recently, international collaboration on monitoring and verification technologies associated with enhanced oil recovery includes the Weyburn-Midale project in Canada. As described in evidence by the Department of Resources, Energy and Tourism:

> That site is actually an international R&D operation. So the results from all aspects of the CO2 injection, including things like the integrity of the well linings as they are going down, through to the monitoring and verification processes that are in place there, are made available through the International Energy Agency's greenhouse gas R&D program not only to financial backers of that project but, more generally, to the scientific community around the world.[27]

5.47 The Otway Project in Victoria is currently the only operational CO_2 storage project in Australia. As suggested in evidence by Dr Cook, the Otway Project has a significant focus on the assessment of monitoring and verification technology associate with the storage of CO_2. 'What we have

25 Mr John Torkington, Chevron, *Transcript of Evidence,* 17 July 2008, p. 51.

26 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 6.

27 Ms Margaret Sewell, DRET, *Transcript of Evidence,* 15 July 2008, p. 4.

assembled in the Otway Basin is the most comprehensive monitoring verification system anywhere in the world.'[28]

5.48 It is anticipated that early greenhouse gas storage projects will be subject to extensive monitoring and verification requirements as suitable techniques are identified and refined. Mr Gerry Morvell, Policy Advisor of the CO2CRC, stated:

> What that means is that for the first few projects—whatever scale they are—the proponents can expect that they will have a more intensive monitoring regime imposed on them, and they will want to do that. As you get past the first half-dozen projects and people gain an understanding that, for example, they can use seismic monitoring only and not have to worry about the other things, you will see a decline in the level of requirements for monitoring.[29]

5.49 The role of government in facilitating the development of appropriate monitoring and verification techniques may also be significant, particularly with initial projects. In its submission, WWF observed that:

> … in the case of demonstration projects, the Government jointly with the other project proponents accept the primary obligation to monitor and verify injection and retention operations from the commencement of operations to avoid delaying demonstration projects and to gather and place in the public domain learnings from the project.[30]

5.50 The CO2CRC submission, on the other hand, suggested that that the actual monitoring and verification activities could be more effectively undertaken on behalf of the government by other parties such as States or the private sector:

> In this regard best practice must be borne in mind, including consideration of whether (as proposed) the Commonwealth undertakes the post closure MMV or whether this can be done more cost effectively by the States or the private sector.[31]

5.51 In evidence before the Committee, Dr Cook drew upon its experience in developing monitoring regimes for the Otway Project to suggest that the development of optimal monitoring and verification processes may

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28 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 6.

29 Mr Gerry Morvell, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 11.

30 WWF, Submission no. 21, p. 4.

31 CO2CRC, Submission no. 1, p. 6.

require significant collaboration between the Government and industry, given the limited knowledge currently available:

> What we have done is developed a monitoring regime by taking the EPA along with us. The EPA started out by saying quite openly, 'We know nothing about this.' We have worked very closely with them to develop the key performance indicators and the technologies we can use for taking this forward.[32]

5.52 This need for a collaborative approach between industry and Government to ensure that any monitoring and verification was fit for purpose was also raised in evidence by Dr Ingram:

> Again, we would say that, because the onus is on the project to prove to the government that what they are going to do is safe and efficient, you really need a collaborative approach for the early projects. Rather than saying it must be monitored with A, B, C and D, the onus is on the project to say: 'No. Because of X, Y and Z we recommend doing it this way.' Ultimately because the liability while the project is still in operation is with the project operator they are going to have to do something that is fit for purpose.[33]

Committee conclusions

5.53 The Committee recognises that monitoring and verification is an essential element of any proposed greenhouse gas storage activities. Best practice monitoring and verification techniques associated with the permanent storage of CO_2 will continue to evolve through lessons learnt from current and future GHG storage activities.

5.54 The Committee believes that the Australian Government should continue to facilitate the development of monitoring and verification technology associated with CCS.

5.55 The Committee is of the view that no amendments to the draft Bill are required in relation to monitoring and verification.

32 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 6.

33 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 19.

Managing public perception

5.56 To ensure the long term viability of CCS it is essential that there is acceptance of the activity within the wider community. The 'social licence to operate' for this industry must include a regulatory framework that responds to stakeholders' concerns, is transparent in its application, and ensures that the storage of greenhouses gases is safe and secure and does not impact on the wider environment. This need for wider community acceptance was described in evidence before the Committee by Dr Cook:

> It is an absolutely crucial question that you ask, if we are going to take the community along with us. They are going to want that assurance, so we are going to have to have a social licence to do this.[34]

5.57 As described in evidence by Dr Ingram, there is recognition that there may be significant reputation impacts to organisations that do not perform to the highest standards and the effect of any poor performance may have industry-wide impacts on public confidence in GHG storage activities:

> …the risk of these projects from a large company's point of view is not financial; it is a reputation risk. We could not stand behind a project if there was any reputation risk in it. That is something that I think everybody is acutely aware of within carbon capture and storage. Public confidence must be built project by project, and it only takes one shonky operator to put it off the table entirely.[35]

5.58 The need to engage and consult with the wider community was considered critical in the development of the Otway Project, as conveyed in evidence by Dr Cook:

> But you have to work through that with the communities, as Mr Morvell has said. It is important to point out that you can persuade people that this is an appropriate thing to do. We are working in the Moyne Shire in western Victoria. The Moyne Shire had a vote on this project within the council and they unanimously supported this project going ahead. They thought that it was an important project. We were pleased that we were able to get that level of community support from them.[36]

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34 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 6.

35 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 22.

36 Dr Peter Cook, CO2CRC, *Transcript of Evidence,* 17 July 2008, pp. 10–11.

5.59 In evidence before the Committee, Ms Walmsley (ANEDO) recommended that consideration of community concerns was of such importance as to warrant a delay in the implementation of legislation:

> I think that, with an untested area such as CCS, a moratorium would give a bit of scope for states to gauge public interest and do a bit more consultation on community concerns than has been done with this bill. So the moratorium option could just be an interim measure while states look into this.[37]

5.60 Several submissions expressed concerns that the discretionary decision making powers provided to the Minister within the proposed legislation did not effectively respond to potential community concerns. This position was exemplified in the WWF submission:

> WWF does not believe that the Bill as it is currently drafted will enable management of GHG injection and storage in a manner that would respond to community concerns. WWF believes that the Bill's environmental impacts, risk assessment, risk management and monitoring activities are too uncertain and rely too heavily on Ministerial discretion.[38]

5.61 In its submission, ANEDO argued that transparency in the ministerial decision making processes contained within the legislation could be improved by the development of an independent expert committee:

> As demonstrated above, there is an enormous focus on Ministerial discretion throughout the entire CCS decision making process. The incorporation of an independent expert committee, with the directive to collect, assess and advise on the data relating to this relatively new CCS concept, would increase the likelihood of appropriate decisions being made that more comprehensively take into account environmental and community concerns.[39]

5.62 In the Victorian Government submission, the role of a possible committee informing the responsible Commonwealth Minister could include formal consultation with relevant industry and community groups. Through pubic availability of any advice from the committee, transparency of ministerial decision making process could be improved:

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37 Ms Rachel Walmsley, ANEDO, *Transcript of Evidence,* 16 July 2008, pp. 51–2.

38 WWF, Submission no. 21, p. 6.

39 ANEDO, Submission no. 14, p. 15.

> An expert 'panel' would be formed, with State and Territory representation, to advise the Minister, including in relation to the application of the 'impact test'.
>
> In other words, the responsible Minister should be obliged to take appropriate advice in the process of making key CCS decisions.
>
> This expert panel would have a formal process of taking submissions from government, industry and community groups.
>
> This will regime will assist in achieving transparency in the decision making process (in particular if the panel's advice is made public), and in achieving a level of predictability in the decisions themselves.[40]

5.63 In evidence before the Committee, Mr Morvell suggested that the establishment of a community based committee provided a mechanism for managing community awareness by making monitoring data available to the public and facilitating positive community perception of CO_2 storage at the Otway Project:

> It goes to the monitoring. In relation to the Otway project, as part of that monitoring regime we actually have a stakeholder committee of community representatives and local landholders so that they have access to all of the data that is coming out. They can make their own informed judgement about what is going on. For a land based project, such a stakeholder committee is essential to that community perception. There is no reason why you could not do something of a similar nature offshore, although the nature of communities offshore is somewhat different. It is more likely to involve users of the environment offshore and interested parties.[41]

5.64 Public disclosure of monitoring information was also highlighted in APPEA's submission as a key factor in addressing public acceptance of the Gorgon Gas Project in Western Australia:

> The joint venturers have committed to publicly disclose monitoring data from the Project, which will assist Australia in the ongoing application of ghg injection and storage technology.[42]

5.65 In ANEDO's submission, concern was raised over the lack of specific objects within the proposed legislation which recognised community concerns:

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40 Victorian Government, Submission no. 16, p. 10.

41 Mr Gerry Morvell, CO2CRC, *Transcript of Evidence,* 17 July 2008, p. 9.

42 APPEA, Submission no. 29, p. 8.

> The Bill contains no specified additional objects. There is no requirement for GHG injection and storage operations to be consistent with the principles of ecologically sustainable development (ESD), or recognise community concerns. [43]

5.66 WWF elaborated on ANEDO's concerns, stressing the importance of clear frameworks within the legislation to assist in demonstrating that CCS is safe and ecologically sustainable, and thus, in turn, ensure public acceptance of associated technology:

> However, equally important is the creation of a clear framework for risk reduction, monitoring and verification and point of liability for stored carbon dioxide. Certainty in relation to these issues are essential to provide confidence that CCS is safe and ecologically sustainable, and these in turn are prerequisites to ensure broad public acceptance and support of the technology.[44]

5.67 AMPTO, in its submission, expressed concern that the proposed legislation did not specifically exclude future drilling and greenhouse gas storage within the Great Barrier Reef Marine Park. Due to the importance of the Marine Park to the wider community its submission recommended that legislation specifically exclude this park from any future greenhouse gas or petroleum activities:

> We would recommend and support an amendment to the Bill which incorporates an appropriate exclusion clause for the Great Barrier Reef Marine Park.[45]

5.68 This principle of formal exclusion of environmentally sensitive areas within legislation was reinforced in ANEDO's submission:

> Additionally, due to the infancy of the technology and lack of understanding of the environmental impacts associated with CCS operations, ANEDO submits that [the] Bill implement extensive buffer zones around marine protected areas, as identified in state or Commonwealth legislation. The Bill should be amended to additionally prohibit CCS operations from occurring in, or in close proximity to, offshore islands.[46]

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43 ANEDO, Submission no. 14, p. 10.

44 WWF, Submission no. 21, p. 3.

45 AMPTO, Submission no. 23, p. 1.

46 ANEDO, Submission no. 14, p. 18.

Committee conclusions

5.69 To facilitate acceptance, the Committee recognises it is important that relevant communities, stakeholders and the wider public be consulted as broadly as possible on GHG activities.

5.70 The use of formal consultation pathways such as stakeholder committees and other consultative forums should be encouraged as part of operational management strategies for GHG injection and storage operations.

5.71 Building public confidence in CCS will require the utmost regulatory integrity and vigilance in the assessment of both potential industry participants and their proposed activities.

5.72 The incorporation of community concerns and opinions in ministerial decision making may be augmented through formal consultations pathways with stakeholders including state governments, industry and environmental organisations.

Recommendation 17

5.73 **The Committee recommends that community and stakeholder engagement strategies be considered as part of any GHG storage activity.**

Recommendation 18

5.74 **The Committee recommends consideration be given to making monitoring data associated with GHG storage project publicly available.**

Recommendation 19

5.75 **The Committee recommends the use of consultative pathways to provide feedback on the wider community's concerns to the responsible Commonwealth Minister.**

5.76 It is the Committee's view that these consultation recommendations be developed through appropriate regulations and guidelines rather than amendments to the draft Bill.

Managing serious situations

5.77 Given the large quantities of CO_2 that may in future be geologically stored, there is a need for an effective regulatory framework to both pre-emptively and reactively manage unintended events that could impact on the environment, or health and safety, or activities of other users of the area. This requirement was detailed in ANEDO's submission:

> It is important therefore that the regulatory regime proposed by the Bill contain rigorous safeguards to manage the unknown impacts associated with CCS.[47]

5.78 The proposed legislation confers on the responsible Commonwealth Minister a range of powers for dealing with situations where injection and storage operations do not go as planned. Unplanned activities include:

- leakage of a greenhouse gas substance from an identified GHG storage formation; or
- an injected greenhouse gas substance behaving otherwise than as predicted in the site plan; or
- injection or storage of a greenhouse gas substance compromising the geotechnical integrity of a geological formation; or
- the identified greenhouse gas storage formation not being suitable for the permanent storage of greenhouse gas.

5.79 If the responsible Commonwealth Minister is satisfied that a 'serious situation' exists, the Minister has power to direct the injection licensee:

- to carry on operations in a manner specified in the direction;
- to cease or suspend injection at one or more, or all, sites;
- to inject GHG at one or more sites;
- to undertake such activities as are specified in the direction for the purpose of eliminating, mitigating, managing or remediating the serious situation.

5.80 A number of submission have suggested that while greenhouse storage activities are still relatively new, the general risks associated with CO_2 geological storage are relatively low. The CO2CRC submission stated:

47 ANEDO, Submission no. 14, p. 10.

> The IPCC Special Report on Carbon Dioxide Capture and Storage (IPCC-SRCCS, 2005) concluded that at a well characterized storage site, the risk of leakage was very low.[48]

5.81 In evidence bore the committee, Dr Cook highlighted low level of risk associated with GHG storage, stating:

> It is sometimes said, and I have certainly seen this in the press, that we are talking about risky technology. I think it is important to address that issue because this is not risky technology; this is technology which, along with all other technologies, carries a component of risk. But we have to manage that risk, and the level of risk in this technology is low. It is the sort of risk that we commonly manage in oil, gas and industrial operations, for example. So there is nothing significant on the risk side of things.[49]

5.82 Likewise, in discussing ExxonMobil's experience with GHG storage at Sleipner, in the North Sea, the representatives of ExxonMobil emphasised that operations had been underway for a decade and that in that time no leakage had been observed.[50]

5.83 As described in evidence by Dr Ingram, the critical elements in managing a serious situation is the development of appropriate detection and trigger mechanisms to ensure intervention occurs as early as possible and thus minimises potential impacts and associated costs:

> It will be done almost in some cases on a trigger mechanism. If something starts to go wrong, you will pick it up very early so you can do the remediation earlier. It is one of these intervention things. The earlier you detect it, the earlier you can do something about it, and often it is a lot cheaper to do it that way.[51]

5.84 In evidence before the Committee, Mr Daniel Van Nispen, Head of Carbon Capture and Storage and Enhanced Oil Recovery at Monash Energy, described possible intervention techniques in managing a serious situation such as unplanned migration:

> No, there are mitigation technologies possible. It is possible to drill wells, for instance, and either produce fluid or inject fluent to

48 CO2CRC, Submission no. 1, p. 3.

49 Dr Peter Cook, CO2CRC, *Transcript of Evidence*, 17 July 2008, p. 2.

50 Mr Mark Nolan & Mr Rob Young, ExxonMobil, *Transcript of Evidence*, 15 July 2008, p. 47.

51 Dr Geoffrey Ingram, Schlumberger Carbon Services, *Transcript of Evidence,* 17 July 2008, p. 19.

> change the pressure field and the direction that the plume is migrating.[52]

5.85 In evidence before the Committee, the Department of Resources, Energy and Tourism indicated that any management actions that may be required in dealing with serious situations should be proportional to potential impacts and include evaluation of root causes of why an unplanned event occurred:

> If there were no tenure there or there were no impacts on any other users, our management strategy would probably be a lot more benign than if there were an adjacent activity that is going to be impacted. We may ask them to look at varying their injection profile, understanding, critically and first of all, the questions: 'Why did that migrate to a location you did not think it was going to migrate to? What does this tell us about your management systems? Why aren't you aware of what's going on here?' [53]

Committee conclusions

5.86 The Committee is of the view that the regulatory powers to deal with serious situations both proactively and reactively should be sufficiently broad to manage the full spectrum of potential issues that may arise when undertaking GHG storage activities.

5.87 In managing serious situations, any directions given by the regulator should be proportional to the nature and scale of risks associated with the event.

5.88 Risk management strategies should include identification of all potential unplanned events, the establishment of appropriate monitoring regimes and associated trigger criteria to undertake specific activities to mitigate unplanned outcomes

5.89 It is the Committee's opinion that the Bill as drafted contains appropriate and sufficient powers to manage serious situations.

52 Mr Daniel Van Nispen, Monash Energy, *Transcript of Evidence*, 15 July 2008, p. 60.

53 Mr John Miller, DRET, *Transcript of Evidence,* 15 July 2008, p. 16.

The Hon Dick Adams MP

Committee Chair

12 August 2008

A

Appendix A – The Inquiry

1.1 The inquiry into the Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill 2008 was referred to the House of Representatives Standing Committee on Primary Industries and Resources on 19 May 2008 by the Minister for Primary Industries and Resources, the Hon Martin Ferguson MP. A copy of the terms of reference is at page xi.

1.2 The committee's inquiry was advertised in May 2008, inviting members of the public to make written submission for the committee's consideration. Letters inviting submission were also sent to relevant Commonwealth, State and Territory Ministers, government departments and major stakeholders. Information concerning the inquiry was also made available on the committee's website.[1]

1.3 During the inquiry the committee received 32 submissions from a range of State agencies, stakeholders, environmental groups and individuals. A list of submissions received by the committee is at Appendix B.

1.4 The committee held 4 public hearings for the inquiry. These provided the committee with the opportunity to hear first hand a range of opinions on the proposed legislation. A list of the organisations and agencies who gave evidence to the committee is at Appendix D. The transcripts of evidence recorded from the public hearings, along with the submissions, are available on the committee's website,

1.5 The committee also conducted an inspection of ExxonMobil's 'Snapper' oil rig in the Gippsland Basin and the Longford gas plant on 8 July 2008.

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1 At <http://www.aph.gov.au/house/committee/pir/exposuredraft/index.htm>

B

Appendix B – List of submissions

Number	Individual/Organisation
1	CO2CRC
2	Attorney-General's Department
3	Dr Michael White
4	Australian Energy Company Limited
5	CONFIDENTIAL
6	ExxonMobil Australia Pty Ltd
7	The Carbon Sense Coalition
8	Chevron Australia Pty Ltd
9	Rio Tinto Australia
10	Woodside Energy Ltd
11	Schlumberger Carbon Services
12	BP Australia Pty Ltd
13	Monash Energy Pty Ltd
14	Australian Network of Environmental Defender's Offices
15	Loy Yang Power Management Pty Ltd
16	Victorian Government
17	Department of Industry and Resources, Western Australia

18	Strike Oil Limited
19	National Generators Forum
20	Government of South Australia
21	WWF Australia
22	Santos Ltd
23	Association of Marine Park Tourism Operators
24	Anglo Coal
25	Energy Supply Association of Australia
26	CONFIDENTIAL
27	Australian Coal Association and Minerals Council of Australia
28	CONFIDENTIAL
29	Australian Petroleum Production & Exploration Association
30	Shell
31	International Power Australia
32	WWF Australia (supplementary to Submission no. 21)

C

Appendix C – List of exhibits

1. Material tabled by Monash Energy at the Public Hearing, 16 July 2008
    - Map: Pre-commencement Petroleum permits overlapping prospective CCS injection sites

D

Appendix D – List of public hearings and witnesses

Tuesday, 15 July 2008 – Canberra

Australian Energy Company Limited

Mr Bob Davies, Chief Executive Officer

Mr Paul Duckett, General Manager, Operational Development

Department of Primary Industries, Victoria

Dr Richard Aldous, Executive Director, Minerals and Petroleum

Ms Anna Beesley, Legal Policy Team Leader—Climate Change, Energy and Earth Resources Policy

Mr Dale Seymore, Acting Secretary

Department of Resources, Energy and Tourism

Mr John Hartwell, Head, Resources Division

Mr John Miller, Policy Officer, CCS Legislation Section

Ms Margaret Sewell, General Manager, Low Emissions Coal and CO2 Storage Branch, Resources Division

ExxonMobil Australia Pty Ltd

Mr Mark Nolan, Chairman

Mr Rob Young, Manager, Issues and Government Relations

Monash Energy Pty Ltd

Mr Roger Bounds, Project Director

Mr Dominic Brennan, Senior Counsel

Mr Daniel Van Nispen, Head, Carbon Capture and Storage and Enhanced Oil Recovery

Wednesday, 16 July 2008 - Canberra

Anglo Coal

Mr Jeff Cochrane, Head, Business Development Asia-Pacific

Mr Bill Koppe, Development Manager

Australian Network of Environmental Defender's Offices

Mr Jeffrey Smith, Director, Environmental Defender's Office NSW

Ms Rachel Walmsley, Policy Director, Environmental Defender's Office NSW

Department of Industry and Resources, Western Australia

Mr Ian Briggs, General Manager, Strategic Policy, Environment Division

Mr Colin Harvey, Principal Legislation and Policy Officer, Petroleum and Royalties Division

Energy Supply Association of Australia

Mr Bradley Page, Chief Executive Officer

Mr Terence Ryan, General Manager Government Relations

Woodside Energy Ltd

Ms Elizabeth Clydsdale, Offshore Development Approvals Coordinator

Mr Francis Cumming, Asset Manager

Mr Simon Daddo, Special Counsel, Environment

Mr Niegel Grazia, Vice-President, Government Affairs

WWF Australia

Ms Kellie-anne Caught, Climate Change Policy Manager

Mr Paul Toni, Program Leader, Sustainable Development

Thursday, 17 July 2008 - Canberra

Australian Coal Association and Minerals Council of Australia

Ms Megan Davison, Assistant Director, Victoria, Minerals Council of Australia

Mr Chris Fraser, Executive Director, Minerals Council of Australia

Mr Ralph Hillman, Executive Director, Australian Coal Association

Mr Scott Singleton, External Legal Advisor, Australian Coal Association

Chevron Australia Pty Ltd

Mr Graeme Harman, Senior Advisor, Government Relations and Policy

Mr John Torkington, Senior Advisor, Climate Change Policy

CO2CRC

Dr Peter Cook, Chief Executive

Mr Gerry Morvell, Policy Advisor

National Generators Forum

Mr John Boshier, Executive Director

Dr Harry Schaap, Policy Advisor

Schlumberger Carbon Services

Dr Geoffrey Ingram, Regional Manager, Australasia

Friday, 18 July 2008 - Canberra

APPEA

Mr Damian Dwyer, Director, Energy Markets and Climate Change

Mr Noel Mullen, Deputy Chief Executive, Commercial and Corporate

Mr Ranga Parimala, Director, Exploration and Access

BP Australia Pty Ltd

Mr Peter Metcalfe, Communications and External Affairs Manager

Dr Fiona Wild, Environmental Affairs Adviser

Department of Resources, Energy and Tourism

Mr John Miller, Policy Officer, CCS Legislation Section

Mr Clement Yoong, A/g Manager, CCS Legislation Section

Rio Tinto Australia

Mr Alex Zapantis, Manager, Energy and Sustainable Development