

# Chapter 1

## Introduction

### Conduct of the Inquiry

1.1 This committee's inquiry into the Coal Seam Gas (CSG) industry is a subset of its broader inquiry into the Murray-Darling Basin and its capacity to maintain its position as a significant food producer in the context of reduced availability of water for agriculture, both as a result of water management decisions and, potentially, as a consequence of changing weather patterns resulting from climate change.

1.2 The Committee, as part of that general inquiry has been examining:

The economic, social and environmental impacts of mining coal seam gas on:

- the sustainability of water aquifers and future water licensing arrangements;
- the property rights and values of landholders;
- the sustainability of prime agricultural land and Australia's food task;
- the social and economic benefits or otherwise for regional towns and the effective management of relationships between mining and other interests; and
- other related matters including health impacts.

1.3 The committee is required to report on the inquiry into the management of the Murray-Darling Basin by 30 November 2011. This report constitutes a first report on that matter. A final report will be tabled in the Senate on 29 June 2012. The committee will continue to monitor developments in the CSG industry.

1.4 This report concentrates on CSG developments within the Basin, which are the focus of the industry and of public concern. The main regions of concern to this committee, where the industry is expanding very rapidly, are in south-west Queensland and north-west New South Wales. The committee held hearings and inspections in Roma, Dalby and Narrabri and further hearings in Brisbane and Canberra. Details of these and of the submissions that the committee has received can be found in Appendices 1 and 2.

1.5 The committee has received 370 submissions to the general inquiry into the Murray-Darling Basin. Submissions specifically relating to the coal seam gas issue start at approximately number 200.

1.6 The committee has received submissions and some evidence from groups in areas outside the Basin, the Myall Lakes area and the Southern Highlands of New South Wales for example. Many of the issues and concerns dealt with in this report are of immediate relevance to those communities as well.

## Acknowledgements

1.7 The committee acknowledges the contribution of all those individuals and organisations that made written submissions and also those who appeared as witnesses. The committee regrets that it was unable to hear all those who wished to appear in person during hearings and appreciates the efforts made by individuals and organisations in providing information to the committee and giving their time to hosting the committee on its inspections.

## Structure of the Report

1.8 This chapter provides an outline of the CSG industry and of its potential impact on Murray-Darling Basin water resources and agricultural production. Subsequent chapters examine the impact on groundwater, the management of the very large volumes of water that the industry will extract, land access, land use and social impacts. A final chapter reviews the debate over the greenhouse gas footprint of the CSG industry.

## What is Coal Seam Gas?

1.9 Coal seam gas, also known as Coalbed methane (CBM) or Coalbed natural gas (CBNG) in the US, is predominantly methane found in coal deposits un-minable using conventional techniques. Methane is the major component of what is commonly known as fire-damp, a major safety hazard in underground coal mining. Chemically CSG is virtually identical to 'conventional' natural gas. The use of terms such as CSG, shale gas and, generically, unconventional gas, refer to the sources of the gas rather than its chemical composition.

1.10 CSG is a valuable energy source which, with a minimal amount of cleaning, can be used in the same way as natural gas from conventional sources. In 2008 Australia produced 139 Petajoules (PJ)<sup>1</sup> of coal seam gas, predominantly from the Bowen and Surat Basins in Queensland. CSG represented approx 10% of Australia's, and 80% of Queensland's, gas consumption.<sup>2</sup> It is estimated that Australia's demonstrated economic reserves of CSG are some 16 590 PJ; demonstrated reserves are 46 590 PJ and inferred reserves 122 020.<sup>3</sup>

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1 Petajoule is a measure of energy equivalent to 10<sup>15</sup> joules. 1 petajoule is the heat energy approximately equivalent to 43 000 tonnes of black coal or 29 million litres of petrol. [Energy in Australia 2010, Australian Government Department of Resources, Energy and Tourism.]

2 NSW Parliamentary Library Research Service, e-brief 1/2011, January 2011, p 2.

3 CSIRO, presentation to the committee, 6 July 2011. Demonstrated economic reserves are proven reserves, commercially viable with current technology. Demonstrated reserves are those which have been proven but are not commercially viable at current prices or with current technology. Inferred reserves reflect the content of known geological formations which, by extrapolation from demonstrated reserves, are likely to contain given quantities of gas.

1.11 Natural gas, which when burnt is a cleaner fuel than coal or oil, is promoted as an important transitional fuel for economies, particularly rapidly industrialising countries such as China and India, moving to lower emission and renewable energy futures. The whole of life emissions produced by the coal seam gas industry is the subject of some debate, which is discussed below in Chapter 5. Proponents also note that, used in conjunction with solar thermal power stations, gas-powered generation can provide the required base-load power.

1.12 As a resource CSG is, potentially, highly valuable both as a domestic energy source and as an export commodity, and these new developments are driven by export demand, for it to be realistic to think that some kind of outright ban on further development is likely. For example, the Queensland government clearly views CSG as a driver of economic development and a valuable source of energy, employment, export income and revenue.<sup>4</sup>

## Water

1.13 CSG is dispersed throughout coal seams and occurs:

...in a near-liquid state, lining the inside of pores within the coal (called the matrix). The open fractures in the coal (called the cleats) can also contain free gas or can be saturated with water.<sup>5</sup>

1.14 The gas is held in that state by water pressure. Thus it is necessary to reduce the pressure in the coal seam to allow the gas to flow:

Methane is commonly extracted from coal deposits by pumping large quantities of aquifer groundwater.<sup>6</sup>

A defining characteristic of nearly all CBNG developments is the requirement to initially pump large quantities of formation water from the coal seams (dewatering) to reduce the reservoir pressure and allow the methane to desorb and flow into the cleat or fracture system.<sup>7</sup>

1.15 The term 'dewatering' is frequently used to describe this process. To the extent it suggests the removal of all the water in a coal seam from which gas is being extracted, the term is misleading. Pressure in the target seam is only reduced to a level where the gas will flow. Origin Energy, part of the Australia Pacific LNG (AP LNG) consortium, for example, advises that lowering the pressure of its production field in the Walloon Coal Measures involves the removal of approximately 5% of the water.

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4 See, *Blueprint for Queensland's LNG Industry*, Department of Employment, Economic Development and Innovation (2009)

[http://www.industry.qld.gov.au/documents/LNG/Blueprint\\_for\\_Queenslands\\_LNG\\_Industry.pdf](http://www.industry.qld.gov.au/documents/LNG/Blueprint_for_Queenslands_LNG_Industry.pdf) (accessed 14 June 2011).

5 <http://www.amisglobalsolutions.com/coalseamgas.htm> (Accessed 2 June 2011).

6 *Coalbed Natural Gas; Energy and the Environment* (2010), ed. K J Reddy, p. 6.

7 *Coalbed Natural Gas; Energy and the Environment* (2010), ed. K J Reddy, p. 11.

This still represents a large volume of water; AP LNG estimates that it will produce from 25 000 and 57 000 megalitres of water per annum.<sup>8</sup>

1.16 It is important to note that, as the poor quality of most CSG water suggests, this water is generally not coming from the most commonly used artesian or sub-artesian water sources used by agriculture or for domestic and town water supply. In fact it is normally separated from these sources by tens or hundreds of metres of intervening strata.

1.17 The main cause for concern is with the potential impact of the extraction of large volumes of water on the pressure within adjacent aquifers, the stability of the intervening strata, the levels of water and directions of flow, and the possibility of contamination of higher quality water, all of which may have a long term impact on sources of groundwater used for agriculture, rural communities and the environment.

1.18 These concerns are compounded by the uncertainty surrounding many of these issues. In a briefing to the committee, for example, CSIRO emphasised that it was difficult to accurately estimate impacts of CSG production on water particularly because of the long time delays associated with groundwater processes and the lack of knowledge of baseline conditions against which impacts could be measured.

1.19 Other major issues are use, storage, treatment and disposal of the water. The industry does not have fully developed plans for the management of the water and associated salts and brine. Salt and brine are very significant issues. For example AP LNG advised the committee that, over the 40 to 45 year life of its projects in Queensland, it expected to produce approximately 3.5 million tonnes of salt.<sup>9</sup> Queensland Gas (QGC) expects to produce 4.6 million tonnes of salt from its operations in South-Western Queensland over the next 30 years.<sup>10</sup>

1.20 In addition, the fact that CSG operators are permitted to remove this water outside the normal water approvals and licensing regimes applying to other users has been a significant cause of the hostility of many rural communities and landowners. They have been subject to ever-tightening restrictions on their access to groundwater for agricultural or domestic use, while, at the same time being involved in expensive programs of well-capping and other measures to manage water resources more efficiently.

## **Wells**

1.21 Extraction of the gas requires the drilling of a very large number of wells. Early estimates were of some 40 000 wells being drilled over the 40 to 50 year life of

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8 AP LNG, Submission 366, p.24

9 Mr P. Maxon, CEO, AP LNG, *Committee Hansard*, 9 September 2011, p. 3.

10 Queensland Gas Co. (QGC), *Submission 259*, p. 11.

the industry. More recent experience with production suggests that fewer wells will be required, perhaps 20 000.

1.22 There is wide-spread concern about the security of the gas wells. They will, in most cases, be drilled through shallower sub-artesian and artesian aquifers used for domestic and agricultural supply. To avoid leakage and contamination the wells must be to a very high standard, completely sealed from these intervening strata. The industry is confident that it can do this and will have in place monitoring equipment to ensure that any leakage is identified and rectified very promptly.

1.23 The industry has been complying with its own best practice standards and the Queensland Government has recently published its *Code of Practice for Constructing and Abandoning Coal Seam Gas Wells in Queensland*.<sup>11</sup> The objectives of the code are to,

... to ensure that all CSG wells are constructed and abandoned to a minimum acceptable standard resulting in long term well integrity, containment of gas and the protection of groundwater resources. CSG wells and their associated facilities can be made low risk through compliance to high design standards, robust safety obligations, documented industry standards and experience, and strong governance programs.<sup>12</sup>

1.24 The stability of the wells for the long term and responsibility for their monitoring subsequent to decommissioning remain issues of particular concern.

## **Fraccing**

1.25 The geology of the coal seam determines the complexity of the gas recovery process. Some reserves may be tapped by simple vertical and horizontal wells in greater or lesser numbers depending on the permeability and flow paths within the seam.

1.26 In less favourable conditions, perhaps 30% - 40% of wells in the current developments, some method of 'flow enhancement' including hydraulic fracturing, fraccing, may be necessary to free the gas from the geological structures which contain it. The use of fraccing can reduce the number of wells required thus limiting the impact of the industry on the land surface.

1.27 Hydraulic fracture involves pumping large volumes of water mixed with sand and a range of chemicals into the coal seam under high pressure to fracture the seam, allowing the gas to flow. The purpose of the sand is to hold open the fractures while the gas is extracted. Fraccing fluids are stored and handled separately from the rest of the produced water.

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11 Queensland Government, *Code of Practice for Constructing and Abandoning Coal Seam Gas Wells in Queensland* (November 2011) Version 1.0

12 *Code of Practice*, p.3

1.28 As explained by CSIRO, most of the water and added chemicals used in the fracking process is immediately pumped out of the well. However, fracking can involve very large volumes of water – from 100 to 10 000 cubic metres. Thus a residue of even one per cent is still a significant volume.<sup>13</sup>

1.29 Fracking has become a cause for concern for two main reasons: the potential for the process to damage the strata surrounding coal seams, causing movement of water and gas between them; and the health risks posed by the chemicals used in fracking fluid.

## **Agriculture**

1.30 Much of the land affected by this industry is productive agricultural land and, properly managed, will remain a valuable resource for Australia and the world for many generations. Given the growing world population, and the consequent pressures on water and agricultural land, it is vital that the interests of a valuable, but relatively short lived industry are not allowed to put at risk vital food producing industries and the land, water and communities on which they depend.

1.31 The requirement to give access to a gas company that holds an exploration permit over private land has been a source of considerable anxiety and, in some cases, hostility. The potential impacts on agriculture, the network of exploration and production wells, access roads, pipelines and associated easements, compressors and residential work camps could make some agricultural properties unworkable in their present form.

1.32 The risks of the loss of access to groundwater as a result of CSG mining and of contamination of the soils by salts or brine are of major concern to landholders. The possible alteration of surface drainage patterns as a result of gas related construction or subsidence have also been referred to in evidence to the committee. These matters are discussed below.

1.33 In focussing on agricultural land, the committee is not ignoring the important environmental values of such areas as the Pilliga in New South Wales which must also be protected. It would be an unwelcome outcome if the efforts to protect productive agricultural land led to a relaxation of protection for areas of high conservation value.

## **Public concern**

1.34 The coal seam gas industry has become the focus of public concern for a number of reasons. Coal seam gas has been produced in Queensland in relatively small volumes from the Bowen Basin since 1997. It did not attract much public attention until the rapid expansion of the last five years. Public anxiety has grown dramatically with the intrusion of the industry into regional areas with highly productive agricultural industries and urban centres.

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13 CSIRO, *Coal Seam Gas Fact sheet no.3*, p.2. 100 cubic metres= 100 000 litres.

1.35 The very high volumes of water that will be produced as a by-product of gas production, the potential threat that poses to the long-term security of ground and surface water, the potential impact of the industry on agriculture and the impact on rural and regional communities have combined to generate broadly based opposition to the industry.

1.36 Public concern was exacerbated by the realisation that possession of an exploration permit for coal seam gas entitled the holder of that permit to have access to land even without the consent of the landowner. In fact there are very few examples of a company seeking to enforce that legal right, but it nonetheless added to community anxiety about the industry.

1.37 At the same time there is a perception that the rapid expansion of the coal seam gas industry has caught government out, leading to a sense that regulators are playing 'catch up', responding to issues once they emerge rather than anticipating them.

### **Social Impacts**

1.38 The gas industry is already having a range of social impacts which can be expected to grow as the intensity of development increases. The weight of evidence the committee received dwelt on the negative impacts of the industry, reflecting the fact that those who are benefiting from it see little need to contact parliamentary inquiries.

1.39 For landholders the intrusion of a gas company, even at the exploration stage, is significant. Drilling rigs, well heads, access roads, pipelines and other infrastructure have a direct impact on the operation of an agricultural property and the associated noise, dust and movement of people also have a large and often disturbing impact on farming families.

1.40 At the community level, the 'two speed economy' is becoming a day-to-day reality. On the positive side local jobs are created and the demand for a range of local goods and services increases. The obverse of this is that increased demand for many services such as skilled trades and higher wages offered by gas companies can raise the cost of labour, services and housing to other users and make it more difficult to find workers while an influx of fly-in-fly-out workers can create a sense of insecurity for permanent residents.

1.41 Local government faces similar challenges with increased demand on infrastructure such as roads and for some services, and increased costs. The industry can, at the same time, present an opportunity to improve some infrastructure.

1.42 At the committee's hearings in Roma representatives of the Maranoa Regional Council commented that the council was neither for nor against the industry: "Our job is simply to try to represent the community as best we can, such as the different interests you heard today...". A Coal Seam Gas Consultative Council was formed in 2010 with:

the role of bringing the two [gas] companies together, along with a lot of the government departments and the other impacted bodies around Roma, to try and get some agreement on some of the infrastructure developments and so on.<sup>14</sup>

1.43 The two areas of greatest direct concern to the Council were roads and housing. The increase of traffic associated with the industry, particularly heavy vehicles requires greater expenditure on upgrading and maintaining roads in the region. The Council and the companies:

... are having arguments about whether [the gas companies] are or are not and we are agreeing, where we can, on the proportion of damage that is attributable to that industry. So we are having those discussions and trying to leverage money from them for that.<sup>15</sup>

1.44 The Mayor described the housing situation as 'untenable'. Rents are more than doubling and long-term tenants are not having their leases renewed. These problems are typical of all mining towns. Various responses are being developed.

1.45 The Queensland Government is developing some low-cost housing for Roma and the companies have committed funds to construct new houses as well. In addition, the use of fly-in-fly-out workers has been justified as helping to control housing costs.

1.46 The gas companies are also making contributions to the local communities in other ways. Some of it is dismissed as public relations but is no doubt welcomed by the sporting and service clubs that benefit. Other projects such as the redevelopment of Roma Airport and the reinjection of water into the Gubberamunda aquifer will provide the community with lasting benefits.

1.47 The gas companies obligations in this area have been written in to the conditions applying to the production approvals granted in Queensland. For example, the Co-ordinator-General has imposed the following requirements on AP LNG,

- Cooperate with local authorities and service providers with specific actions documented in agreements and underpinned by evidence-based plans approved by the Coordinator-General where there is disagreement,
- Provide mandatory housing in communities to be affected by project-induced population increases,
- Provide financial investments in certain community services,

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14 Robert Loughnan, Mayor, Maranoa Regional Council, *Committee Hansard*, 18 July 2011, p. 20.

15 Robert Loughnan, Mayor, Maranoa Regional Council, *Committee Hansard*, 18 July 2011, p. 20.



- Fund road upgrades agreed to by road authorities and in accordance with pre-existing standards related to numbers of vehicles using particular roads<sup>16</sup>  
...

1.48 It is important that it be born in mind that this is a relatively short lived boom and that as far as is possible, communities should seek to gain lasting benefits from it. At the same time, communities must avoid creating demands or expectations that are unsustainable once the boom has passed. Where change can be managed it is important that as the industry spreads, the lessons of these early developments are learned and applied.

1.49 State and local government need to have new funding arrangements in place to deal with increased demands; the gas industry has to be given clear guidelines for what will be expected of it in terms of contributions to mitigate disruption of communities.

1.50 There are practical responses to tangible problems such as housing, infrastructure, or public health. However there is relatively little that can be done for those who simply find change difficult to come to terms with.

1.51 For many families it creates a high degree of uncertainty both about the long term viability of their farm or 'lifestyle block' and the immediate changes to a way of life, which may include loss of privacy, increased dust and noise and a loss of a sense of security as gas company employees have access their land.

1.52 The changes are often double edged. A number of submissions have expressed concern about the impact of fly-in-fly-out workers citing research that shows the disruptive impact on the local community and commenting that the employment benefits of development may not necessarily flow to the local community. Yet the use of such workers eases the pressure on housing and the cost of local services

1.53 This conflict was neatly encapsulated on a recent *Insight* television program on the industry from a representative of a local football club:

... there has been a drop off in volunteers because they are working the shifts, they are not home on weekend and the disposable income helps them go away. If they want to go down and the watch the Broncos play they will go there instead of staying in Chinchilla.<sup>17</sup>

1.54 It is easy to understand that the decline in volunteers to help the junior players represents a real loss to the community while, at the same time, welcoming the higher disposable income that give workers the chance to get away for the weekend.

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16 AP LNG, *Submission 366*, p.53

17 *SBS Insight*, 20 September 2011.

## Governance

1.55 The industry is primarily regulated under an array of state laws but approvals are also required under Commonwealth legislation, principally the *Environment Protection and Biodiversity Conservation Act 1999* and the *Water Act 2007*.

1.56 The gas companies have made much of the extremely demanding regulatory environment in Australia. In submissions to the committee, QGC noted that the:

QCLNG Project was assessed for environmental and social impact under Queensland and Commonwealth legislation in a process that began in 2008 and took more than two years. The environmental and social impact assessment totalled more than 12,000 pages.<sup>18</sup>

1.57 AP LNG has described the conditions imposed on it as "unprecedented":

... the Coordinator-General has, in addition to existing legislative requirements, imposed a set of conditions that have not been used to previously regulate project impacts in Queensland. ...

- 58 imposed conditions mainly related to environmental and water issues,
- 16 imposed conditions related to traffic and transport issues, and
- 5 imposed conditions (including many sub-components) related to social and economic impacts.

Conditions imposed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* for each of the three components of the Australia Pacific LNG Project (gas fields, pipeline and LNG facility) total 261.<sup>19</sup>

The large number of conditions is indicative of the many complex issues, challenges and uncertainties that are presented in regulating this industry.

1.58 The Queensland Government has established:

... the LNG Enforcement Unit to ensure the industry complies with the strict new regulatory regime. Fifty new specialist groundwater, environmental and safety staff have been employed. A proactive compliance plan is also in place to closely monitor CSG industry actions.<sup>20</sup>

## Committee view

1.59 The coal seam gas industry is a relatively short-term prospect. Individual gas wells have a life of about fifteen years. The industry is likely to be worked out in the next fifty years. Thus the interests of the industry must not be allowed to undermine or

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18 QGC, *Submission 259*, p. 5.

19 AP LNG, *Submission 366*, p. 5.

20 Queensland Government, *Submission 358*, p. 4.

permanently compromise the long term future of other sectors, most notably agriculture and the environment.

1.60 Given the progress of the industry, it is clear that workable compromises must be struck between the competing interests. This may require further delay in approving new developments or temporary suspension of exploration in particular regions while a sound research-based understanding of geology, groundwater, aquifers and soils is developed. It may involve the exclusion of prime agricultural land (though that can be hard to define) or land exhibiting particular soil types or topography from gas exploration and production. Restrictions on drilling in particularly sensitive aquifers and on certain production techniques such as fracking might be necessary.

1.61 The public debate on this matter has become very polarised. Particularly in its early stages there was no shortage of examples of 'cowboy' behaviour by exploration companies. This was exacerbated by the high degree of uncertainty that surrounds many of the potential impacts of the industry. The reliance on examples drawn from experience in other countries, particularly the United States, with different legal regimes, financial imperatives and geologies, has not contributed to an understanding of the Australian situation.

1.62 For example, in evidence to the committee, Dr J R Underschultz pointed out to the committee that in the US the industry had been driven by:

... a tax incentive primarily around drilling. The coal seam gas industry received its tax incentive based on the yard stick of how many metres of well that they drilled. ... it became known as factory drilling. They more or less did not worry about the geology. They had a grid pattern that they drilled because there was a tax incentive around drilling.<sup>21</sup>

1.63 In practice the industry's impacts in Australia will vary considerably depending on the regulatory framework, scale of operation, the geology and hydrology of particular locations and regions, the existing land use and the technologies used.

1.64 Cooperation between Queensland and New South Wales in developing similar regulatory regimes reflecting best practice in the industry will also offer a degree of regulatory certainty to the gas companies. A clear regulatory framework which offers CSG companies certainty will also encourage technical innovation to conduct production with the minimum impact both on the land surface and the sub-surface geology.

1.65 It must also be acknowledged that the performance of the gas industry has been highly variable. The committee has received a great deal of evidence about the best practices that the industry can demonstrate and its high aspirations with regard to

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21 Dr J R Underschultz, Theme Leader, Petroleum & Geothermal Portfolio, CSIRO, *Committee Hansard*, 9 August 2011, p. 62.

every aspect of its operations. Equally, examples of poor behaviour have contributed to public hostility to the industry.

1.66 The committee has seen examples of land degradation caused by seepage from extracted water storage ponds, leaking gas pipes, untreated water seeping into watercourses and erosion caused by poorly installed pipelines. It has heard from landholders who felt bullied or patronised by gas company representatives seeking access to their land. These practices may not be typical of the industry but in a highly contested area such as CSG mining they can have a disproportionate impact on public perception.

1.67 Failures to engage with the public have allowed misunderstandings or hostile views to go effectively unchallenged. On the issue of the greenhouse gas footprint of the industry, for example, a scholarly article from the US dealing with shale gas has been the basis for much adverse comment from opponents of the industry even though its direct relevance to Australia and CSG was limited.

1.68 A submission from the *Lock the Gate Group*, in its original version, altered quotations from the same US article to suggest that it was a study of coal seam gas when it clearly related to gas extracted from shale.

1.69 An independent study of the industry in Australia, commissioned by the APPEA and completed in April 2011, which addressed many of these concerns was not made public until November, despite the major gas companies having no stated objection to its publication.<sup>22</sup>

1.70 Despite the extent of the Environmental Impact assessment process required prior to approval, and the array of conditions attached to the approvals, a perception remains that the industry is inadequately regulated.

1.71 The Queensland Government describes its approach to managing the industry as one of 'adaptive management'. This allows it to develop policies in response to evolving knowledge and changing circumstances. Critics see adaptive management as confirmation that government is playing 'catch up'. In addition many submissions to the committee have suggested that the regulatory framework is not sufficiently robust, and particularly that the regulatory authorities lack the resources to monitor such a dispersed and complex industry.

## **Recommendation 1**

**1.72 The committee recommends that federal and state governments conduct a thorough review of the appropriateness of 'adaptive management' in the context of regulating the industry, given the significant gaps in information regarding cumulative and long term impacts of the industry.**

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22 Worley Parsons, *Greenhouse Gas Emissions: Study of Australian CSG to LNG* (April 2011).

1.73 This review should consider particularly whether 'adaptive management' in this context is consistent with the precautionary principle.

1.74 In its submission to this committee the Queensland Government noted four "recent initiatives" which a neutral observer might consider should have been in place somewhat earlier in the development of the CSG industry:

- the development of a code of practice setting "minimum technical requirements" for the construction of CSG wells;
- stringent water quality safety standards for CSG water discharged into the environment;
- restrictions on the use of BTEX chemicals; and
- a requirement that operators submit a plan outlining how they "...propose to manage their CSG water".<sup>23</sup>

1.75 The adoption by the Queensland Government of reinjection, after production approvals had been given, as the preferred method of dealing with produced water is another example of the management of a key impact of the industry being left ill-defined.

1.76 In addition, some baseline research that should have been conducted prior to the commencement of production is in fact being carried out in parallel with it. For example, a submission to the committee quotes from a Queensland Gas Company (QGC) request seeking amendments to its consent conditions for extraction in the Ruby (Qld) area on the grounds that:

- There is no regional groundwater model for the Ruby area – the Queensland Water Commission is currently developing one;
- QGC will be "better able to map groundwater contours" once the baseline bore assessments have been completed. The results from the monitoring ... is "many months" away; and
- Information regarding the location and types of aquifers "will be much better" once baseline assessments are completed.<sup>24</sup>

1.77 Concern about uncertainty should be mitigated to an extent by the fact that in New South Wales no production approvals have been given in the Murray-Darling Basin and that the development of the industry in both Queensland and NSW will be phased over time.

The Australia Pacific LNG Project will be developed gradually in stages. As a result, there are large areas within the Project's tenements that are not planned to be developed for more than ten years. This will mean that any

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23 Queensland Government, *Submission 358*, pp 13–14.

24 OzEnvironmental, *Submission 346*, p. 2, quoting pages 32 & 33 of the QGC submission to the Queensland Department of Resources & Environmental Management.

lessons learned in the initial stages of production will improve the processes for subsequent stages of development.<sup>25</sup>

### **Commonwealth Action**

1.78 The committee is aware that many of the issues which are dealt with in this report are the constitutional responsibility of the states and, in other areas, there are overlapping jurisdictions. However the committee believes that there are sound arguments for the Commonwealth to take the initiative in seeking a coordinated approach to this industry.

1.79 The Great Artesian Basin underlies three states and the Northern Territory, thus its management is a matter of national importance. The surface waters of the Murray-Darling Basin are now managed nationally; it is desirable that GAB waters be managed in the same way.

1.80 Coal seam gas is found in several states and the issues surrounding the industry can be expected to recur as it expands beyond its current areas of interest. Thus matters such as land access, land management, extracted water management, technical standards and the disposal of salt and brine should be the subject of a coordinated approach.

1.81 It would, for example, be an unjust outcome if the rights of landholders in Queensland were to be significantly less than those in New South Wales just because the industry originated there and other governments had the opportunity to learn from the problems that emerged.

1.82 The industry will also benefit from a uniform approach to regulation. Regulatory uncertainty is a major risk for any industry and can be a significant cost. In addition the committee has been aware throughout its inquiry of the significant variation in behaviour and approach between the companies. As a general statement if 'best practice' in every area of activity became the industry norm, a great deal of public opposition and concern would dissipate.

1.83 The legal regime in Queensland governing the coal seam gas industry has been evolving rapidly on the basis of actual experience. The lessons learned and the changes made as a result should be available to New South Wales in developing its law in this area.

1.84 The committee trusts that there is extensive consultation between the Queensland and New South Wales authorities. NSW has the opportunity to have a comprehensive regulatory framework in place before production commences, drawing on lessons learned, and Queensland at least has the opportunity to refine its approach for later developments.

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25 AP LNG, *Submission 366*, p. 32.

## Recommendation 2

**1.85 The committee recommends that the Commonwealth Government, through the Council of Australian Governments, or Standing Council on Energy and Resources (SCER), take the initiative in promoting a consistent national regulatory framework for all aspects of the coal seam gas industry.**

1.86 The committee notes the recent announcement by the Commonwealth that it will,

Provide \$150 million to establish a new Independent Expert Scientific Committee that will provide scientific advice to governments about relevant coal seam gas and large coal mining approvals where they have significant impacts on water; oversee research on impacts on water resources from coal seam gas and large coal mining projects; and commission and fund water resource assessments for priority regions.

Establish a new National Partnership Agreement with the states through COAG, agreeing that the Commonwealth and states have to take into account the advice of the Committee in their assessment and approval decisions.<sup>26</sup>

1.87 It is too early to make any comment on how these new arrangements will work but it is to be hoped that they contribute to a more considered approach to the industry.

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26 *New focus on scientific evidence to build confidence in coal seam gas and coal mining*  
21 November 2011, Prime Minister, Deputy Prime Minister and Treasurer  
<http://www.pm.gov.au/press-office/new-focus-scientific-evidence-build-confidence-coal-seam-gas-and-coal-mining>

