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PORTFOLIO COMMITTEE NO. 4

The implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales

Report 42

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The implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales

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Terms of reference

1. That Portfolio Committee No.4 – Industry inquire into and report on the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales, and in particular:

   (a) the status of the implementation of the recommendations,

   (b) the effectiveness of the implementation of the recommendations and whether or not there are gaps in implementation,

   (c) whether any other inquiry findings or other major reports relating to unconventional gas in Australia or the east coast gas market published since the release of the Chief Scientists are relevant to the suitability or effectiveness of the Chief Scientists recommendations, and

   (d) any other related matters.

2. That the committee report by Friday 28 February 2020.[1]

The terms of reference were self-referred by the committee on Thursday 3 October 2019.[2]

1 The original reporting date was 20 December 2020 (*Minutes,* Legislative Council, 15 October 2019, p 503). On 3 December 2019, the committee resolved to extend the reporting date to 28 February 2020.

2 *Minutes*, Legislative Council, 15 October 2019, p 503.

Committee details

Committee members

The Hon Mark Banasiak MLC	Shooters, Fishers and Farmers Party	*Chair*
The Hon Lou Amato MLC	Liberal Party	
Ms Abigail Boyd MLC* **	Greens	
The Hon Catherine Cusack MLC	Liberal Party	
Mr Justin Field MLC*	Independent	
The Hon Trevor Khan MLC	The Nationals	
The Hon Peter Primrose MLC**	Australian Labor Party	
The Hon Adam Searle MLC***	Australian Labor Party	

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* Mr Justin Field MLC substituted for the Hon Emma Hurst MLC from 3 October 2019 for the duration of the inquiry.

** The Hon Peter Primrose MLC substituted for the Hon John Graham MLC from 3 October 2019 for the duration of the inquiry and then replaced Mr Graham on the committee from 12 November 2019.

*** Ms Abigail Boyd MLC is a participating member from 15 October 2019 for the duration of the inquiry.

**** The Hon Adam Searle MLC substituted for the Hon Mick Veitch MLC from 23 October 2019 for the duration of the inquiry.

Chair's foreword

This inquiry was established to examine the status of implementation of the 16 recommendations made in the 2014 Independent Review of Coal Seam Gas Activities in NSW by the NSW Chief Scientist.

During this inquiry, the divergent views on the government's implementation of the recommendations became apparent to the committee. According to the NSW Government and industry stakeholders, all recommendations except for two have been implemented, with the two outstanding recommendations (Recommendations 4 and 9) considered as 'in progress'. However, for all other inquiry participants the recommendations have not been implemented fully or, in some cases not at all, further exacerbating fears and concerns about the impact of the coal seam gas activities.

It also became apparent to the committee that in the five years since the release of the NSW Chief Scientist's report, public communication and access to information about coal seam gas activities has not improved, with efforts by stakeholders to gain information often unsuccessful. The committee has therefore recommended that the NSW Government commit to further improving the accessibility and transparency of information relating to coal seam gas and the wider gas sector through the SEED portal, and through regular updates and accessible links to information on the EPA website.

This inquiry has been an important check and balance on the government's implementation of the NSW Chief Scientist's 16 recommendations. While the committee acknowledges the efforts of the government to date in implementing these recommendations there is clearly more work to be done. Where the committee has identified that the government has not implemented the recommendations of the NSW Chief Scientist in full, we have recommended that all outstanding aspects of each recommendation be implemented.

On behalf of the committee, I thank those that have contributed to our work and the secretariat for their assistance.

Hon Mark Banasiak MLC
Committee Chair

Recommendations and findings

Conduct of inquiry

The terms of reference for the inquiry were self-referred by the committee on 3 October 2019.

The committee received 29 submissions and 2 supplementary submissions.

The committee held two public hearings at the Parliament House in Sydney.

Inquiry related documents are available on the committee's website, including submissions, hearing transcripts, tabled documents and answers to questions on notice.

Chapter 1 Background

This chapter provides background information on the 2014 Independent Review of Coal Seam Gas Activities in New South Wales – including its findings and recommendations and the NSW Government response – with a view to setting the context for the present inquiry.

Final Report of the Independent Review of Coal Seam Gas Activities in NSW

Background

1.1 In February 2013, former NSW Premier Mr Barry O'Farrell commissioned the then NSW Chief Scientist and Engineer, Professor Mary O'Kane, to carry out an independent review of coal seam gas activities in New South Wales.

1.2 The review was guided by the following Terms of Reference:

> At the request of the NSW Government, the NSW Chief Scientist and Engineer will conduct a review of coal seam gas (CSG) related activities in NSW, with a focus on the impacts of these activities on human health and the environment.
>
> The Chief Scientist and Engineer is to:
>
> 1. undertake a comprehensive study of industry compliance involving site visits and well inspections. The Chief Scientist's work will be informed by compliance audits undertaken by regulatory officers, such as the Environment Protection Authority and other government agencies
>
> 2. identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment and water catchments
>
> 3. identify best practice in relation to the management of CSG or similar unconventional gas projects in close proximity to residential properties and urban areas and consider appropriate ways to manage the interface between residences and CSG activity
>
> 4. explain how the characteristics of the NSW coal seam gas industry compare with the industry nationally and internationally
>
> 5. inspect and monitor current drilling activities including water extraction, hydraulic fracturing and aquifer protection techniques
>
> 6. produce a series of information papers on specific elements of CSG operation and impact, to inform policy development and to assist with public understanding. Topics should include: operational processes NSW geology water management horizontal drilling hydraulic fracturing (fraccing) fugitive emissions health impacts wells and bores subsidence.

> The NSW Chief Scientist & Engineer will provide an initial report to the Premier and the Minister for Resources and Energy on her findings and observations by July 2013.[3]

1.3 The NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, was released in September 2014 and concluded with 16 recommendations for action by the NSW Government. These recommendations are addressed in detail in Chapter 2 of this report.

1.4 The NSW Chief Scientist's final report is publicly available at: www.chiefscientist.nsw.gov.au/reports/coal-seam-gas-review - and is reproduced in Appendix 1.

Level of implementation

1.5 Since the NSW Chief Scientist's recommendations were handed down in 2014, the extent and effectiveness of their implementation by the NSW Government has been the subject of scrutiny.

1.6 In 2015, an Upper House Select Committee on the Supply and Cost of Gas and Liquid Fuels in New South Wales commented that:

> The report of the New South Wales Chief Scientist and Engineer, Professor Mary O'Kane in September 2014 sets out in her recommendations a significant body of work that has not been done to date regarding substantial additional scientific research on the impacts of CSG extraction, and regulatory and legislative reform. On any analysis, the body of work she says government needs to do, without which there is no prospect of CSG being environmentally safe in New South Wales, is very substantial.[4]

1.7 In consideration of this view, the committee recommended that:

> … the New South Wales Government fully implement the Chief Scientist and Engineer's Final Report of the Independent Review of Coal Seam Gas Activities in NSW (September 2014) before any expansion of the coal seam gas industry in New South Wales is contemplated.[5]

1.8 The NSW Government released several documents outlining the progress of its implementation of the Chief Scientist and Engineer's recommendations. These documents are summarised in this section.

1.9 Most recently, the Minister for Regional New South Wales, Industry and Trade, the Hon John Barillaro MP[6], and the Minister for Energy and Environment, the Hon Matt Kean MP, [7] were

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3 Terms of Reference, Independent Review of Coal Seam Gas Activities in New South Wales, 2013.

4 Select Committee on the Supply and Cost of Gas and Liquid Fuels in New South Wales, NSW Legislative Council, *Supply and cost of gas and liquid fuels in New South Wales* (2015), p 26.

5 Select Committee on the Supply and Cost of Gas and Liquid Fuels in New South Wales, NSW Legislative Council, *Supply and cost of gas and liquid fuels in New South Wales* (2015), p x.

6 Answers to questions on notice, the Hon John Barilaro MP, Deputy Premier, Minister for Regional New South Wales, Minister for Industry and Trade, 9 October 2019, p 92.

7 Answers to questions on notice, the Hon Matt Kean MP, Minister for Energy and Environment, 9 October 2019, p 26.

asked to update the committee on the government's progress towards implementing the recommendations as part of the 2019-2020 Budget Estimates process.

NSW Gas Plan

1.10 On 13 November 2014, the NSW Government released the NSW Gas Plan in response to the NSW Chief Scientist's final report. According to its preamble, the NSW Gas Plan:

> … brings together the extensive body of work undertaken during the review and makes a series of recommendations which provide a roadmap for the development of a world class gas industry that is safe and sustainable.[8]

1.11 The NSW Gas Plan contains a government response for each of the NSW Chief Scientist's 16 recommendations. All 16 recommendations were supported in the NSW Gas Plan.[9]

1.12 Additionally, the NSW Gas Plan foreshadows a number of new efforts, actions and initiatives to be considered, investigated, scoped or delivered by the NSW Government at a future date in order to address specific recommendations.[10]

1.13 In summary, the NSW Gas Plan foreshadows that the NSW Government will:

- reform legislative and regulatory requirements;
- scope a whole-of-government environmental data portal;[11]
- commission the Independent Pricing and Regulatory Tribunal (IPART) to benchmark compensation rates for landholders;
- establish a Community Benefits Fund;[12]
- appoint the Environment Protection Authority (EPA) as the lead regulator for compliance and enforcement for the coal seam gas industry;
- over time, move to a single Act for all onshore subsurface resources with a single independent regulator;[13]
- develop mandatory standards of training to apply to both industry and government staff; and
- develop a plan to manage legacy matters and ensure no new matters are created through revised industry codes of practice and licence conditions.[14]

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8 The NSW Gas Plan: Government response to the final report of the independent review of coal seam gas activities in NSW by the NSW Chief Scientist and Engineer, p 1 (hereafter referred to as the NSW Gas Plan).

9 The NSW Gas Plan.

10 The NSW Gas Plan.

11 The NSW Gas Plan, p 2.

12 The NSW Gas Plan, p 3.

13 The NSW Gas Plan, p 5.

14 The NSW Gas Plan, p 11.

NSW Gas Plan: Implementation progress report

1.14 In October 2015, the NSW Government released the *NSW Gas Plan: Implementation progress report*, which re-cast the NSW Gas Plan into 17 discrete actions.

1.15 This progress report states that, as at the time of publication:

> Through a whole of Government effort, we have now completed 15 of the 17 actions, meaning that NSW is well positioned for the safe and sustainable development of an onshore gas industry.[15]

1.16 Of the actions identified as 'ongoing' in the progress report, Action 13 relates to the establishment of the Community Benefits Fund and is identified in the report as having an expected operational date of mid-2016. Action 12 relates to the IPART review of compensation rates for affected landholders and is identified in the report as having an expected reporting date of November 2015.[16]

1.17 In reference to the original 16 recommendations handed down by the NSW Chief Scientist, the progress report states:

> The Government has fully implemented 7 of the 16 recommendations made by the Chief Scientist. 3 of the remaining recommendations will be completed by mid-2016, with good progress made on implementation of the remaining 6. [17]

Government response to Chief Scientist's report

1.18 Also in October 2015, the NSW Government released a report titled *Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW* which outlined the NSW Government's progress in implementing each of the Chief Scientist's recommendations.

1.19 In its introduction the report reiterated that:

> In total, seven of the 16 recommendations have been completed. An additional three recommendations will be implemented by mid-2016, and progress has been made against the remaining six recommendations.[18]

1.20 According to the progress updates set out in the October 2015 report, Recommendations 1, 5, 7, 8, 11 and 12 were reported as completed. Recommendations 2, 3, 4, 6, 9, 10, 13, 14, 15 and 16 were reported as ongoing, in progress, to be progressed or partially completed ('complete but work continues'). [19]

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15 The NSW Gas Plan: Implementation progress report, p 2.

16 The NSW Gas Plan: Implementation progress report, p 5.

17 The NSW Gas Plan: Implementation progress report, p 3.

18 Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW, p 1.

19 Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW.

Impetus for this current inquiry

1.21 Since at least 2011, the government has faced calls for tougher regulation, greater scrutiny, increased restrictions and limitations on coal seam gas activities in New South Wales.

1.22 An Upper House inquiry in 2011 into coal seam gas drew attention to the uncertainty around many of the same issues addressed in the NSW Chief Scientist's report, concluding with 35 recommendations to government aimed at strengthening industry regulations, improving industry transparency and accountability, and managing risks to the environment and human health. One of the key themes to emerge from the evidence gathered in 2011 was a call for a moratorium on coal seam gas activities in New South Wales until the long term impacts of the industry are better understood.[20]

1.23 Following the 2011 inquiry, the Coal Seam Gas Moratorium Bill 2011 was introduced in parliament by Mr Jeremy Buckingham, a Greens member. The bill sought to enact a twelve month moratorium on any new coal seam gas prospecting or mining activities in New South Wales while also introducing a permanent prohibition on all coal seam gas activities in the Sydney metropolitan area.[21]

1.24 While this bill was defeated, the NSW Government implemented an immediate hold on coal seam gas exploration and extraction activities in the 'Special Areas' zone of the Sydney drinking water catchment in 2013 – a suspension which remains in place today.[22]

1.25 There was a further attempt to bring forward a statutory moratorium on coal seam gas in 2015, and in August 2019, Mr Justin Field MLC, Independent member, introduced the Petroleum (Onshore) Amendment (Coal Seam Gas Moratorium) Bill 2019 in the Legislative Council. According to its explanatory note, the object of the 2019 bill is to amend the *Petroleum (Onshore) Act 1991* to:

- impose a moratorium on the prospecting for, or the mining of, coal seam gas in New South Wales; and
- reintroduce the public interest as a ground for certain decisions relating to petroleum titles.[23]

1.26 In his second reading speech in the Legislative Council, Mr Field made explicit reference to the Narrabri Gas Project and its potential environmental impacts – a coal seam gas project in the Gunnedah Basin south-west of Narrabri involving the installation of up to 850 new gas wells and the construction and operation of gas processing and water treatment facilities.[24]

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20 General Purpose Standing Committee No. 5, NSW Legislative Council, *Coal seam gas* (2012), p 32.

21 Mr Jeremy Buckingham MLC, Second Reading Speech: Coal Seam Gas Moratorium Bill 2011, 11 November 2011.

22 Former Minister for Energy media release, 12 November 2013, https://www.resourcesandgeoscience.nsw.gov.au/__data/assets/pdf_file/0005/531860/131112-sydney-hold-csg.pdf) and https://www.resourcesandgeoscience.nsw.gov.au/landholders-and-community/coal-seam-gas/the-facts/protections-and-controls - accessed 20 January 2020.

23 Petroleum (Onshore) Amendment (Coal Seam Gas Moratorium) Bill 2019, explanatory note, p 1.

24 Mr Justin Field MLC, Second Reading Speech: the Petroleum (Onshore) Amendment (Coal Seam Gas Moratorium) Bill 2019, 22 August 2019.

1.27 Assessment of the Narrabri Gas Project by the NSW Government has been ongoing since 2014. A media release issued by the former NSW Department of Planning and Environment in 2018 indicates that the project is likely to be referred to the Independent Planning Commission for determination in 2020.[25]

Committee comment

1.28 In undertaking this inquiry, the committee is seeking a more detailed, better-informed understanding of the extent to which the NSW Government has successfully implemented the Chief Scientist and Engineers' recommendations.

1.29 To this end, Chapter 2 of this report is a summary of the evidence gathered by the committee on these important questions, with each of the 16 recommendations addressed in turn.

1.30 The task of assessing the extent and effectiveness of their implementation has been complicated by the changes in portfolio and administrative arrangements that have occurred across the NSW Government since 2014.

[25] Media release, the Department of Planning and Environment, 'NSW Government Assessment of the Narrabri Gas Project proposal update', 23 April 2018.

Chapter 2 Implementation of the recommendations

This chapter lists the 16 recommendations of the New South Wales Chief Scientist contained in the *Final Report of the Independent Review of Coal Seam Gas Activities in New South Wales*, and details the extent to which each recommendation has been implemented by the NSW Government since 2015.

Views on the implementation of the recommendations

2.1 While Lock the Gate Alliance acknowledged that the government had made progress on 'implementing the complicated and multi-faceted recommendations' between 2015 and 2016, since then progress had 'largely stalled'. The group stressed that 'several of the major recommendations have not been implemented at all' leaving rural communities exposed.[26]

2.2 As Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance described, 'the Government's failure to complete and implement the Chief Scientist's recommendations is worsening public distrust and fear and concern about the coal seam gas industry'.[27]

2.3 Inquiry participants described the government's approach to the implementation of the 16 recommendations as 'tardy and negligent',[28] while others were of the view that 'the failure to implement the recommendations raises serious questions about the will of Government and the regulators to even try to regulate' the coal seam gas industry.[29]

2.4 A number of inquiry participants insisted that approval of the proposed Santos Narrabri coal seam gas project not proceed until all of the Chief Scientist's recommendations were met.[30]

2.5 In his evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment asserted that 'the Government responses to 14 of the 16 recommendations are complete, or are complete and ongoing due to their inherently ongoing nature'. In relation to the two remaining recommendations, '[g]ood progress is being made on the pending Government responses to recommendation 4 and recommendation 9'.[31]

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26 Submission 5, Lock the Gate Alliance, p 1.

27 Evidence, Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance, 4 February 2020, p 14.

28 Submission 15, North West Protection Advocacy, p 10.

29 Submission 22, Dr Melinda Mills, p 5; Submission 1, Dr Geralyn McCarron, p 8.

30 See Submission 2, Name suppressed, p 1; Submission 3, Mr Anthony John Pickard, p 2; Submission 4, Ms Felicity Cahill, p 1; Submission 6, Lynn Benn, p 1; Submission 7, Mr David Chadwick, p 1; Submission 8, Name suppressed, p 1; Submission 10, Sydney Knitting Nannas and Friends, p 1; Submission 15, North West Protection Advocacy, p 1; Submission 16, Artesian Bore Water Users Association of NSW Inc, p 1; Submission 21, Miss Suzie Palmer, p 1; Submission 23, Ms Bronwyn Vost, p 1; Submission 24, Dr Keith Fleming, p 1; Submission 25, Armidale Action on Coal Seam Gas and Mining, p 3.

31 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 2.

Committee comment

2.6 There was some concern from committee members that the industry submissions mirrored closely the information contained in the NSW Government submission. Industry representatives indicated at the hearing that they relied on publically available information, including NSW Government websites, to produce their submissions.[32] It seems clear from the evidence that the industry bodies have relied on public statements and information from the NSW Government in this respect and do not have any independent knowledge of these matters.

Intent, communication, transparency and fairness

2014 Recommendation 1[33]

That Government make clear its intent to establish a world-class regime for extraction of CSG. This could be articulated in a clear public statement that covers:

- the rationale/need for CSG extraction
- a clear signal to industry that high performance is mandatory, compliance will be rigorously enforced and transgressions punished
- a fair system for managing land access and compensation
- a mechanism for developing a clear, easy-to-navigate legislative and regulatory framework that evolves over time to incorporate new technology developments
- mechanisms for working closely and continuously with the community, industry, and research organisations on this issue.

NSW Government response to the NSW Chief Scientist's report

2.7 According to the NSW Government submission, this recommendation has been implemented.[34]

2.8 As mentioned in the previous chapter, in November 2014 the government released the NSW Gas Plan in response to the NSW Chief Scientist's final report with the purpose of providing a 'clear, strategic framework to deliver world's best practice standards and regulation for the CSG industry, while securing vital gas supplies for the state'.[35]

Inquiry participant's views

2.9 Doctors for the Environment Australia contended that the government had 'not clearly articulated the rationale/need for [Coal Seam Gas] extraction nor [established] a mechanism for the community or research organisations to work closely with the [Coal Seam Gas] industry'.[36]

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32 Evidence, Mr Ashely Wells, Director-Government Relations, Australian Petroleum Production & Exploration Association, 4 February 2020, pp 3-4.

33 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 12.

34 Submission 19, NSW Government, p 1.

35 Submission 19, NSW Government, p 1.

36 Submission 14, Doctors for the Environment Australia, p 3.

2.10 The Australian Petroleum Production and Exploration Association and Santos contended that the introduction of the NSW Gas Plan fulfilled the requirements of recommendation 1 by publically stating the intent of the government to 'deliver a high performing industry, with a clear and improved regulatory framework that is rigorously enforced'.[37]

2.11 The two organisations added that the NSW Gas Plan addressed the following specific factors of the recommendation:

- The Environment Protection Agency's Compliance Policy provides a rigorous approach to compliance and enforcement.
- The 'Guideline for community consultation requirements for exploration' published in 2016 sets clear, enforceable expectations for industry to work closely and continuously with the community about its exploration activities.
- Santos has also signed the Agreed Principles of Land Access which are based on the values of respect, integrity and trust. Other signatories to the agreed principles are the AGL Energy, Cotton Australia, Country Women's Association, Dairy Connect, NSW Farmers Association and NSW Irrigators Council.
- The Petroleum (Onshore) Act 1991 has been amended to streamline titles administration and ensure rigorous compliance and enforcement processes are in place.
- The Independent Pricing and Regulatory Tribunal (IPART) completed a review of landholder compensation for gas exploration and production in 2015.
- APPEA notes that our Member companies often implement a compensation framework consistent with the recommendation.[38]

Committee comment

2.12 Based on the evidence presented, the committee finds that Recommendation 1 has not been implemented in full. On the material before us, dot points four and five have not even been commenced, despite the passage of more than five years since the final report of the Chief Scientist was delivered. In addition, it is arguable whether NSW Government policy and actions to date have carried dot point two into effect. It is noteworthy that the submissions from the NSW Government and industry did not address these matters.

Recommendation 1

That the NSW Government implement all outstanding aspects of Recommendation 1 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

[37] Submission 17, Australian Petroleum Production and Exploration Association, p 3; Submission 18, Santos, p 6.

[38] Submission 17, Australian Petroleum Production and Exploration Association, p 3; Submission 18, Santos, pp 6-7.

2014 Recommendation 2[39]

That Government ensure clear and open communication on CSG matters is maintained at all times. This includes:

- simplicity and clarity in legislative and regulatory requirements
- ensuring openness about CSG processes in line with an open access approach; publishing all relevant approval requirements, decisions and responses, and compliance and enforcement outcomes on appropriate government websites and making CSG data from companies, Government and research organisations available through a centralised Government data repository
- measurable outcomes to track performance against commitments to reform.

NSW Government response to the NSW Chief Scientist's report

2.13 In response to the NSW Chief Scientist's report, the government acknowledged that 'clear and open communication is vital to ensure constructive, informed and collaborative discussion on gas activities into the future'. As part of meeting this requirement, the SEED (Sharing and Enabling Environmental Data) portal was created — a central location for environmental data, including publically accessible land, air and water data from NSW Government agencies to be shared.[40]

2.14 Another website, The Common Ground, was also established to allow the community to interact with information on all titles and applications for gas and other resources titles through a state-wide map.[41]

2.15 The government advised that, although released in 2017, SEED is an ongoing development with 'future stages of the project … [to] incorporate data gathered by research bodies and the resources industry such as real-time monitoring data and compliance results'.[42]

2.16 Further to SEED, the government has introduced other measures as part of its implementation of the recommendation which include:

- The Digital Imaging of Geological System (DIGS) database – a public, online archive that provides access to non-confidential reports and other important documentary material held by the Department of Planning, Industry and Environment's Division of Resources and Geoscience. This information includes title instruments, title conditions, title renewal information, title transfer, variation and change of name information
- The NSW Major Projects website [which] enables the public to comment and stay up to date on State Significant Development projects (such as gas production projects) and State Significant Infrastructure projects as they progress through the development assessment process under the *Environmental Planning and Assessment Act 1979*. [43]

39 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 12.

40 Submission 19, NSW Government, p 2.

41 Submission 19, NSW Government, p 2.

42 Submission 19, NSW Government, p 2.

43 Submission 19, NSW Government, p 2.

Inquiry participant's views

2.17 Lock the Gate Alliance expressed the view that the implementation of this recommendation was 'unsatisfactory' as a result of limited public access to the Environment Protection Authority (EPA)as the lead regulator.[44] Lock the Gate Alliance noted that attempts to obtain information under the *Government Information (Public Access) (GIPA Act)* have been unsuccessful and alleged that requests for information to the EPA have been referred to Santos.[45]

2.18 Ms Sally Hunter, Secretary, People for the Plains Inc, described how difficult it was to get information from the EPA, stating there appeared to be a 'culture of allowing Santos to be the holder of information and the distributer of information rather than that information being held by the Government and given to the public on request'. She also noted that since 2014 there had 'been a lot of churn in the agencies … [making it] hard for the public to know who to talk to'.[46]

2.19 On the other hand, Santos and the Australian Petroleum Production and Exploration Association concluded that the NSW Gas Plan had established the government's 'commitment to clear and open communication on matters related to coal seam gas development'.[47] In addition, these two organisations remarked that the regulatory framework provided by the Strategic Release Framework for Coal and Petroleum, ensures 'all approvals relating to coal seam gas activities are … accessible online and relevant management plans are also available'.[48]

2.20 When questioned about stakeholder's attempts to gain information about the gas sector via the *GIPA Act,* Ms Tracey Mackey, Chief Executive Officer, NSW EPA, replied that:

> [t]here have been a number of GIPA requests from a range of parties to the EPA around our regulation of the gas sector. Some of those GIPA requests have resulted in a release in part, some have resulted in access being refused and some have resulted in full access to information.[49]

2.21 Ms Mackey stated that the NSW EPA considers each GIPA request on its merits, 'consistent with the requirements of government' with information released, where possible. However, where there are particular considerations for not releasing the information, the reasons are 'clearly stat[ed] … to the applicant around those particular GIPA applications'.[50]

2.22 In relation to claims that the EPA had referred GIPA applications to Santos for information, the Department of Planning, Industry and Environment advised that '[n]o applicants who have

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44 Submission 5, Lock the Gate Alliance, p 5.

45 Submission 5, Lock the Gate Alliance, p 5.

46 Evidence, Ms Sally Hunter, Secretary, People for the Plains Inc, 4 February 2020, p 20.

47 Submission 18, Santos, p 7; Submission 17, Australian Petroleum Production and Exploration Association, p 3.

48 Submission 18, Santos, p 7; Submission 17, Australian Petroleum Production and Exploration Association, p 3.

49 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 4.

50 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 4.

formally requested information under the *Government Information (Public Access) Act 2009* have been referred to Santos to obtain the information requested'.[51]

2.23 The Department indicated, however, that section 54 of the Act requires the EPA to consult with third parties to obtain their views before releasing their information where it is reasonably practicable to do so. In turn, 'where requests for information have encompassed Santos' information, Santos has been consulted in order to obtain its views about releasing information'.[52]

Committee comment

2.24 The committee acknowledges the views of inquiry participants concerning the level of access to information offered by the EPA about the gas sector.

2.25 Given that members of the public are lodging GIPA applications as a means to access information, it is evident that government communication about coal seam gas matters is lacking. The committee is therefore of the view that the government should be clearer and more forthcoming in its communication to the public about coal seam gas.

2.26 On the evidence before the committee, recommendation 2 has not been fully implemented by the NSW Government. The relevant legislation does not meet the test laid down by the Chief Scientist in dot point 1, that there be 'simplicity and clarity in legislative and regulatory requirements.' No submission to the inquiry made the case that this had been achieved, nor was there any indication from government that it was likely to be achieved in the foreseeable future.

2.27 The second dot point has also not been fully implemented by the NSW Government. The NSW Government in essence claims that the construction of the SEED portal satisfies this element of the Chief Scientist's recommendations. While the portal has some of the characteristics of the Whole of Environment Data Repository in the Chief Scientist's recommendation 10, it lacks other elements. The committee notes that implementation of recommendation 10 is ongoing and that the SEED portal will be improved and added to over time. While there may be some debate all the elements of dot point two, what is clear beyond any argument is that 'CSG data from companies' is not currently available to the community. Without this being implemented, the committee does not believe there is any credible claim that the NSW Government has fully implemented recommendation 2.

2.28 The committee recommends that the NSW Government commit to further improving the accessibility and transparency of information relating to coal seam gas and the wider gas sector through:

- the SEED portal; and
- regular updates and accessible links to information on the EPA website.

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51 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 4.

52 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 4.

2.29 Further, the committee recommends that the NSW Government take immediate steps to ensure all information listed in dot point two of Recommendation 2 is implemented, including the publication of all coal seam gas data from companies, in the SEED portal and made available to the community.

Recommendation 2

That the NSW Government commit to further improving the accessibility and transparency of information relating to coal seam gas and the wider gas sector through:

- the SEED portal; and
- regular updates and accessible links to information on the Environment Protection Authority website.

Recommendation 3

That the NSW Government take immediate steps to ensure all information listed in dot point two of Recommendation 2 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW* is implemented, including the publication of all coal seam gas data from companies, in the SEED portal and made available to the community.

2014 Recommendation 3[53]

That Government investigate as a priority a range of practical measures for implementation (or extension of current measures) to allow affected communities to have strengthened protections and benefits including fair and appropriate:

- land access arrangements, including land valuation and compensation for landholders
- compensation for other local residents impacted (above threshold levels) by extraction activities
- funding (derived from the fees and levies paid by CSG companies) for local councils to enable them to fund, in a transparent manner, infrastructure and repairs required as a consequence of the CSG industry.

NSW Government response to the Chief Scientist's report

2.30 According to the NSW Government submission, this recommendation has been implemented.[54]

2.31 In the 2015 report entitled *Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW*, the government undertook to 'establish a Community Benefits Fund, with voluntary contributions from both gas companies and the government, to fund local projects in communities where gas exploration and production occurs.' The government also stated that the Land and Water Commissioner would 'continue to provide support to local councils, landholder and members of the community on land access issues'.[55]

53 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 12.

54 Submission 19, NSW Government, p 3.

55 Submission 19, NSW Government, p 3.

2.32 According to the government, the objective of the amendments resulting from the 2015 Walker Review into Land Access Arbitration was to 'restore industry and landholders' confidence in the arbitration process through balancing the rights of industry with the rights of landholders'.[56]

2.33 In addition, the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991* 'provides that explorers must pay the reasonable costs of landholders of the mediation and arbitration process up to the amounts set out in an Order made by the Minister'.[57]

Inquiry participant's views

2.34 Mr Anthony Pickard asserted that the terms used in recommendation 3 such as "other local residents" and "[i]mpacted" were 'too vague' and required fuller definitions. Mr Pickard suggested recommendation 3 be revised so as to offer better protections to 'those who may experience problems as a result of a CSG operation' as well as 'better defin[ing] [the] many possible events that the Recommendation is designed to cover'.[58]

2.35 Lock the Gate Alliance highlighted that the recommendation did not give landholders or Traditional Custodians the right to say no to gas developments, with the group noting that despite some improvements made to the arbitration process following the Walker Review, the 'experience of neighbours of coal mines in many districts indicates [the specifics of the recommendation are] not being met'.[59]

2.36 Some inquiry participants also noted that there was no adequate compensation mechanism currently in place for those impacted by CSG extraction.[60]

2.37 However, the Australian Petroleum Production and Exploration Association and Santos supported the government's statements that the recommendation had been implemented.[61]

2.38 The two organisations referred to the 2016 review by the Independent Pricing and Regulatory Tribunal (IPART) to benchmark compensation rates annually to provide a guide for landholders. This review provided a range of details on landholder compensation for gas exploration and production.[62]

2.39 Santos stated that the compensation framework adopted by the company was consistent with the recommendations of IPART, with details of the framework published online. Santos advised it currently has 20 land access agreements in place and also operates 'a community investment program supporting initiatives that enhance the lives of those who live in the region'. Santos

56 Submission 19, NSW Government, p 3.

57 Submission 19, NSW Government, p 3.

58 Submission 3, Mr Anthony John Pickard, p 30.

59 Submission 5, Lock the Gate Alliance, p 6; See also Submission 13, Name suppressed, p 1.

60 Submission 5, Lock the Gate Alliance, p 6; Submission 13, Name suppressed, p 1; Submission 14, Doctors for the Environment Australia, p 4.

61 Submission 17, Australian Petroleum Production and Exploration Association, p 4; Submission 18, Santos, pp 3-4.

62 Submission 17, Australian Petroleum Production and Exploration Association, p 4; Submission 18, Santos, pp 3-4.

said that '[s]hould the Narrabri Gas Project be approved, Santos w[ould] contribute up to $120 million to a Community Benefits Fund over the life of the project'.[63]

Committee comment

2.40 Legislative changes made subsequent to the Chief Scientist's report relating to compensation for landowners, the IPART review referred to in paragraph 2.38 and the Santos compensation framework does establishes that the first dot point of recommendation 3 has been implemented. However, no evidence has been presented to the committee that establishes, or even seeks to make the case, that dot points two and three have been implemented. Of particular concern to the committee is that the issue of compensation for other local residents who may be impacted by extraction activities does not appear to be even in the process of being addressed by the NSW Government. This is connected to whether recommendation 9 has been implemented.

2.41 On the basis of the evidence before the committee, recommendation 3 of the Chief Scientist's report has not been fully implemented by the NSW Government.

Recommendation 4

That the NSW Government implement all outstanding aspects of Recommendation 3 in the in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

2014 Recommendation 4[64]

That the full cost to Government of the regulation and support of the CSG industry be covered by the fees, levies, royalties and taxes paid by industry, and an annual statement be made by Government on this matter as part of the Budget process.

NSW Government response to the Chief Scientist's report

2.42 According to the NSW Government submission this recommendation is in progress.[65]

2.43 In 2015, the government agreed that the regulation of the gas industry should be undertaken on a full cost recovery basis and anticipated that this would happen over time, with an annual statement included as part of the Budget process.[66]

2.44 The government has since advised that the Department of Planning, Industry and Environment has undertaken work to 'determine the cost of regulating the NSW gas industry and how these costs compare to those in other national and international jurisdictions'. It is anticipated that

63 Submission 18, Santos, pp 3-4.

64 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 12.

65 Submission 19, NSW Government, p 4.

66 Submission 19, NSW Government, p 4.

the 'options for a cost recovery framework that is flexible and accounts for the scale and maturity of the industry' will be provided within the 2019-2020 financial year.[67]

2.45 Further, the Department advised that it was 'considering the best way to report on this matter, … who would do the reporting' and that the content to be included in the annual budget papers was a matter for the Treasurer and relevant Minister.[68]

2.46 In response to questions about the current financial cost of regulating and supporting the industry, the Department advised that the Environment Protection Authority's gas regulation budget for 2019/20 is $3.75 million.[69]

2.47 However, according to Mr Andrew Cowan, Program Manager, Environment Protection Authority, only a small portion — in the order of tens of thousands — through licensing fees would be cost recovered from the $3.75 million total budget.[70]

2.48 In addition, the Department indicated that the Resources Regulator 'expects that its costs associated with regulating the NSW upstream petroleum industry in FY19/20 will be $535,000 including labour, on-costs and operational costs. These functions are fully funded from the mine safety levy'.[71]

Inquiry participant's views

2.49 Some inquiry participants voiced concerns that the CSG industry was not covering the full costs to government, and that at a minimum, royalties were not being paid.[72] These concerns mainly related to Santos, of which some inquiry participants alleged did not pay royalties on its commercial gas.[73]

2.50 In response, Mr Wright of the Department of Planning, Industry and Environment, stated that 'Santos is subject to a royalty regime when it is producing gas beneficially from its exploration wells'.[74]

2.51 Mr Wright explained there is a 'royalty deduction scheme in place for beneficial gas use', and in the case of Santos, 'the cost it incurs in actually bringing that gas to the surface is greater than

67 Submission 19, NSW Government, p 4. See also Submission 17, Australian Petroleum Production and Exploration Association, p 4; Submission 18, Santos, p 8.

68 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 9.

69 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 7.

70 Evidence, Mr Andrew Cowan, Program Manager, Environment Protection Authority, 4 February 2020, p 27.

71 Answers to question on notice, Department of Planning, Industry and Environment, 12 December 2019, p 7.

72 Submission 5, Lock the Gate Alliance, p 6; Submission 13, Name suppressed, p 1; Submission 9, People for the Plains Inc, p 4.

73 Submission 13, Name suppressed, p 1; Submission 5, Lock the Gate Alliance, p 6; Submission 9, People for the Plains Inc, p 4; Submission 24, Dr Keith Fleming, p 2;

74 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 7.

the value of the gas it produces. Therefore, whilst royalties are payable, no royalties are currently being paid'.[75]

2.52 Ms Tracey Winters, Strategic Advisor, External Affairs, Santos, confirmed that as Santos was not currently producing enough gas to offset deductible costs, no royalties have been paid: 'we are not in a tax paying position according to the New south Wales royalty regime'.[76] Santos confirmed that 'Since 2014 the Wilga Park Power Station has beneficially used 5 petajoules of gas'.[77]

Committee comment

2.53 The committee notes stakeholders' understandable confusion about industry contributions to cover the costs of regulating the coal seam gas industry, noting there has been no payment of royalties by Santos on its commercial gas. We note that this is in accordance with the NSW Government regime due to the low production levels.

2.54 While recent changes to the machinery of government resulting in super government clusters may have a contributing impact on why a cost recovery framework for regulation of the coal seam gas industry and the related reporting has not been fully implemented, it is unclear as to why there has been little progress in the intervening years.

2.55 On the evidence before the committee, recommendation 4 has not been implemented by the NSW Government. The post 2019 election machinery of government changes do not explain the failure of the NSW Government on this matter. The committee notes that 5 NSW State Budgets have been delivered since the Chief Scientist's report was delivered and since the NSW Government committed to implementing this recommendation.

2.56 The committee further notes that close to $3.75 million is being paid each year by taxpayers to in effect subsidise the CSG industry. Since the Chief Scientist's report was delivered, this amounts to nearly $20 million dollars of tax payers money.

2.57 The committee urges the government to move on this recommendation. We note that options for a cost recovery framework will be provided in the 2019-2020 financial year and recommend that the NSW Government prioritise the work involved in finalising this framework for the coal seam gas industry and ensure that an annual statement by government is included in the Budget process going forward.

Recommendation 5

That the NSW Government prioritise the work involved in finalising a cost recovery framework for regulation of the coal seam gas industry and ensure that an annual statement by government on this matter is included in the Budget process going forward.

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75 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 7.

76 Evidence, Ms Tracey Winters, Strategic Advisor, External Affairs, Santos, 4 February 2020, p 6.

77 Answers to question on notice, Santos, 13 February 2020, p 1.

Recommendation 6

That the NSW Government provide an immediate explanation why it has not put in place any mechanism to recover these costs or to ensure they are reported in the NSW Budget, as recommended by the Chief Scientist.

Legislative and regulatory reform and appropriate financial arrangements

2014 Recommendation 5[78]

That Government use its planning powers and capability to designate those areas of the State in which CSG activity is permitted to occur, drawing on appropriate external expertise as necessary.

NSW Government response to the Chief Scientist's report

2.58 The NSW Government submission indicates that this recommendation has been implemented.[79]

2.59 According to the government, the Strategic Release Framework for Coal and Petroleum, allows for a more strategic and transparent approach to releasing land for coal and gas exploration '… by identifying areas for release only after environmental, social and economic factors have been considered and the community has had an opportunity to identify what it sees as the issues'.[80]

2.60 The government also outlined other legislative and regulatory reforms undertaken in response to this recommendation, including:

- extinguishing 16 Petroleum Exploration License (PEL) applications as per the *Petroleum (Onshore) Amendment (NSW Gas Plan) Bill 2014*, and modifying existing PELs to remove areas granted over National Parks in 2015
- placing a freeze on PEL applications and Petroleum Special Prospecting Authority applications in order to establish the Strategic Release Framework for Coal and Petroleum
- introducing a buy-back of PELs for titleholders which resulted in the voluntary surrender of 16 PELs. Since then, the government has further negotiated additional PEL buy-backs on a case-by-case basis, and the cancellation of others, resulting in a reduction in the footprint of CSG exploration activities across NSW from around 60 per cent to 7 per cent, and
- a 'use it or lose it' policy implemented through the Petroleum Minimum Standards and Merit Assessment procedure, which requires titleholders to commit to developing the state's gas resources or risk losing their title.[81]

78 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 12.

79 Submission 19, NSW Government, p 4.

80 Submission 19, NSW Government, p 4.

81 Submission 19, NSW Government, p 5.

2.61 The Department of Planning, Industry and Environment advised that under the buy-back scheme, a total of 20 PELs encompassing 140 wells were surrendered.[82]

Inquiry participant's views

2.62 Lock the Gate Alliance argued that the implementation of this recommendation had 'been patchy and … again excluded the areas in the North West already affected by exploration licenses in which Santos has an interest'.[83] Lock the Gate Alliance questioned why exclusion zones for CSG activities created as part of the Strategic Regional Land Use Plans, had been limited to urban residential areas and critical industry clusters in the Hunter region, and not to other regions in order to safeguard water resources or farmland.[84]

2.63 Some inquiry participants were also perplexed as to why the North West of the state had been excluded from the 'Government's "buy back" of coal seam gas exploration licences'.[85]

2.64 One submission author put forward that the 'use it or lose it' policy was 'not being complied with or enforced for expired petroleum exploration licences in the north west' and questioned why this area of the state was not 'being offered protection from an industry that will seriously deplete and contaminate groundwater?'[86]

2.65 Lock the Gate Alliance acknowledged the government's Strategic Release Framework in response to this recommendation, but argued there were serious deficiencies with it. For example, the framework does not:

- appl[y] to the twelve extant Petroleum Exploration Licences in the North West, or
- designate areas *where CSG is permitted*, as the Chief Scientist recommended. Rather, it is an assessment made prior to releasing areas for exploration, with no clear triggers for places that are off-limits, and the release decision entirely at the Minister's discretion.[87]

2.66 Alternatively, Santos and the Australian Petroleum Production and Exploration Association said that since 2015 legislative change has both 'limit[ed] the areas in which coal seam gas activities can be undertaken' and given the NSW Government 'greater strategic control over release of areas for exploration'.[88]

2.67 Mr Wright of the Department of Planning and Environment, advised that the government was investigating the 'potential release of areas for gas exploration in the State's Far West region' [but had] … not issued any new titles since releasing the Gas Plan'. Mr Wright stated that if the

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82 Answers to questions on notice, Department of Planning and Environment, 12 December 2019, p 12.

83 Submission 5, Lock the Gate Alliance, p 6.

84 Submission 5, Lock the Gate Alliance, p 6.

85 Submission 5, Lock the Gate Alliance, p 6; Submission 15, North West Protection Advocacy, p 1; Submission 24, Dr Keith Fleming, p 2.

86 Submission 2, Name suppressed, p 1.

87 Submission 5, Lock the Gate Alliance, p 6.

88 Submission 18, Santos, pp 3-4; Submission 17, Australian Petroleum Production and Exploration Association, p 4.

government were to 'release new gas exploration areas and grant new titles in the future, it will take some time for potential production projects to emerge and obtain development approval'.[89]

2.68 When questioned as to why expired PELs have not been extinguished or cancelled, Mr Wright, replied that 'some of those PELs are still active … with a determination on the applications for renewal … [of those licences] would not be made until such a time as there was a determination on Santos' Narrabri gas project proposal'.[90]

Committee comment

2.69 While the committee acknowledges the government has undertaken work in this area with the Strategic Release Framework for Coal and Petroleum, this recommendation has not been implemented. While the NSW Government has developed the Strategic Release Framework, it has not set out with the clarity required by the Chief Scientist where coal seam gas activity is to be permitted. The failure by government to address the concerns set out in paragraphs 2.62 to 2.65 also highlights that this recommendation has not been implemented by the NSW Government.

2.70 The committee recommends that the NSW Government apply the Strategic Release Framework to the consideration of renewals for the 12 expired Petroleum Exploration Licence areas in the North West of the state given the long period that has passed since those licences were active.

Recommendation 7

That the NSW Government implement all outstanding aspects of Recommendation 5 in the in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

Recommendation 8

That the NSW Government apply the Strategic Release Framework to the consideration of renewals for the 12 expired Petroleum Exploration Licence areas in the North West of the state given the long period that has passed since those licences were active.

2014 Recommendation 6[91]

That Government move to a single Act for all onshore subsurface resources (excluding water) in the State, constructed to allow for updating as technology advances. This will require a review of all major Acts applying to the resources sector.

89 Evidence, Michael Wright, Deputy Secretary, Resources and Geosciences, Department of Planning and Environment, 3 December 2019, p 2.

90 Evidence, Michael Wright, Deputy Secretary, Resources and Geosciences, Department of Planning and Environment, 3 December 2019, p 5.

91 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW, September* 2014, p 13.

NSW Government response to the Chief Scientist's report

2.71 The NSW Government submission indicates that the implementation of this recommendation is complete and ongoing.[92]

2.72 In response to this recommendation the government indicated it would move to establish a single Act for all onshore subsurface resources (excluding water).[93]

2.73 In October 2015, legislative amendments were made to both the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991* as an action under the NSW Gas Plan. According to the government, this harmonization of the two Acts has resulted in 'significantly streamlined titles administration and compliance and enforcement processes'.[94]

2.74 In 2019, the government informed it will 'continue to identify opportunities to further harmonise the regulatory frameworks for all onshore subsurface resources in New South Wales where required'.[95]

2.75 Mr Wright gave evidence that due to the 'complexities of the statutes' the government chose not to put a single statue in place. He further advised that the government had no intention of moving to a single onshore Act at this point in time.[96]

2.76 In terms of the review of all major Acts applying to the resources sector, Mr Wright indicated that a review of the *Mining Act 1992* is currently underway as per the 2019 NSW Minerals Strategy, whereas the *Petroleum (Onshore) Act 1991* does not have a legislated statutory review date.[97]

Inquiry participant's views

2.77 Both Santos and the Australian Petroleum Production and Exploration Association were of the view that this recommendation had been implemented as evidenced by amendments to the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991*.[98]

2.78 Inquiry participants raised concerns that this recommendation had not been implemented, as a single act for all onshore subsurface resources has not been established.[99]

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92 Submission 19, NSW Government, p 6.

93 Submission 19, NSW Government, p 6.

94 Submission 19, NSW Government, p 6.

95 Submission 19, NSW Government, p 6.

96 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 7.

97 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 7; Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 10.

98 Submission 18, Santos, p 4; Submission 17, Australian Petroleum Production and Exploration Association, p 5.

99 See for example Submission 5, Lock the Gate Alliance, p 7; Submission 26, Dr Keith Fleming, p 1; Submission 25, Armidale Action on Coal Seam Gas and Mining, p 3.

Committee comment

2.79 The committee acknowledges the work to date by the government in attempting to consolidate the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991*. While the initial harmonisation of the two Acts to improve and streamline processes is commendable, the committee notes the decision of the government to not proceed with a single statute.

2.80 Accordingly, it is clear to the committee that the NSW Government has not implemented Recommendation 6. It has also not provided any reason why it has failed to do so.

2.81 Given the government's ability to consolidate and modernise other statutes in recent years, the committee is of the view that it is possible to move to a single Act for all onshore subsurface resources (excluding water) in the State.

2.82 The committee therefore supports and reiterates the original recommendation of the NSW Chief Scientist, that the government move to a single Act for all onshore subsurface resources (excluding water).

Recommendation 9

That the NSW Government move to a single Act for all onshore subsurface resources (excluding water).

2014 Recommendation 7[100]

That Government separate the process for allocation of rights to exploit subsurface resources (excluding water) from the regulation of the activities required to give effect to that exploitation (i.e. exploration and production activities); and that it establish a single independent regulator. The regulator will require high levels of scientific and engineering expertise, including geological and geotechnical ability, environmental and water knowledge and information, and ICT capability including data, monitoring and modelling expertise; and will be required to consult – and publish details of its consultations – with other arms of Government and external agencies, as necessary. The regulator will also require appropriate compliance monitoring and enforcement capability.

NSW Government response to the Chief Scientist's report

2.83 According to the NSW Government submission this recommendation has been implemented.[101]

2.84 The government advised that in order for the Environment Protection Authority to carry out its role as lead regulator, a 'dedicated branch was established within the … Authority with additional specialist staff recruited, including hydrogeologists and petroleum engineers to provide technical support and advice on gas activities'.[102] The government added that the

100 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 13.

101 Submission 19, NSW Government, p 6.

102 Submission 19, NSW Government, p 6.

Environment Protection Authority has undertaken approximately 750 gas inspections across the state since taking on the role as lead regulator.[103]

2.85 When questioned as to whether companies are forewarned of an inspection, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority stated that '[a]t times we would give notice, and that would be part of a monitoring program, and at other times we do unannounced visits as a part of our regulatory practice'.[104]

2.86 The Department of Planning, Industry and Environment advised, on behalf of the Environment Protection Authority, that the authority has 'not conducted any un-announced on-site visits in the past 12 months; however, the EPA has conducted numerous un-announced inspections of wells and associated infrastructure'.[105]

2.87 The Department explained that often 'prior notice is given for inspections to ensure staff safety and to allow the licensee adequate time to arrange site access with relevant landowners (where applicable), and to ensure that proposed site visits align with site operations and activities at any given time'.[106]

Inquiry participant's views

2.88 Lock the Gate Alliance voiced concerns that this recommendation had not been implemented as strictly as the Chief Scientist had intended. Although the Environment Protection Authority was the 'lead regulator for gas activities', it did not regulate 'other resource extraction as this recommendation proposed', with grants activity approvals administered by the Division of Resources and Geosciences in the Department of Planning, Industry and Environment.[107]

2.89 Both Santos and the Australian Petroleum Production and Exploration Association supported the government's statements that the implementation of this recommendation was complete.[108]

Committee comment

2.90 The committee agrees that this recommendation has been partially implemented. However, it is clear on the evidence this recommendation has not yet been fully implemented.

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103 Submission 19, NSW Government, p 6.

104 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 10.

105 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 15.

106 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 15.

107 Submission 5, Lock the Gate Alliance, p 8.

108 Submission 17, Australian Petroleum Production and Exploration Association, p 5; Submission 18, Santos, p 9.

Recommendation 10

That the NSW Government implement all outstanding aspects of Recommendation 7 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

2014 Recommendation 8[109]

That Government move towards a target and outcome-focused regulatory system, with three key elements:

- regularly reviewed environmental impact and safety targets optimised to encourage uptake of new technologies and innovation
- appropriate and proportionate penalties for non-compliance
- automatic monitoring processes that can provide data (sent to and held in the openly accessible Whole-of-Environment Data Repository) which will help detect cumulative impacts at project, regional and sedimentary basin scales which can be used to inform the targets and the planning process.

NSW Government response to the Chief Scientist's report

2.91 The NSW Government submission indicates that the implementation of this recommendation is complete.[110]

2.92 In 2015, legislation was passed to support the Improved Management of Exploration Regulation reforms, under which all the codes and conditions that regulate the onshore petroleum industry were reviewed. As a result of these reviews, new Codes of Practice had been introduced which outline 'mandatory requirements for explorers and provide clear standards to enable industry to introduce new technical innovations to meet regulatory requirements'.[111]

2.93 According to Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, the review led to 'new strict rules covering all types of exploration activities introduced, and simplified and strengthened the regulation for gas exploration, effectively making it clearer and more streamlined'.[112]

2.94 The government stated that compliance and enforcement tools to combat non-compliance, were included in the legislative reforms to the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991.*[113]

2.95 Further, the government spoke of the EPA's risk-based licensing system that serves two functions:

109 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 13.

110 Submission 19, NSW Government, p 7.

111 Submission 19, NSW Government, p 7.

112 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 11.

113 Submission 19, NSW Government, p 7.

- [to] provide a framework that includes a formal, structured, evidence-based risk assessment of each licensed activity and aims to ensure that all licensees receive an appropriate level of regulation based on the risk they pose.
- [to] provide incentives for poorer performing licensees to improve their environmental performance and implement programs of works that result in demonstrated environmental improvements.[114]

2.96 In terms of risk assessments, Ms Mackey, Chief Executive Officer, NSW EPA explained such assessments can examine air and odour, water, noise, pollution and the management of incidents and events.[115] She advised that risk assessments are conducted on the ground at the site by a person as 'part of the initial licensing and then updated in terms of our ongoing monitoring' providing a risk profile of the licensee.[116]

Inquiry participant's views

2.97 Mr Anthony Pickard argued that the intent of recommendation 8 could only be effective if there was a 'proper and comprehensive baseline study with which to compare the ongoing monitoring to and the[n] ongoing automatic monitoring'.[117]

2.98 According to Lock the Gate Alliance, the 'Government increased the penalty able to be issued by the EPA for breaches of the *Protection of the Environment Operations Act*' before the release of the Chief Scientist's recommendations, with the 'maximum penalty able to be issued without proceeding to … prosecution … [being] $15,000 for a corporation'. Lock the Gate Alliance was of the view that this penalty was not 'appropriate or proportionate'.[118]

2.99 In addition, Lock the Gate Alliance asserted that the SEED portal was not capable of functioning in the way proposed in this recommendation.[119]

Committee comment

2.100 The committee acknowledges the views of inquiry participants and the work of the government on this recommendation.

2.101 The NSW Government has failed, in its evidence to this inquiry, to explain what 'environmental impacts and safety targets' it has established in response to Chief Scientist recommendation 8. It has also failed to explain how those 'impacts/targets', assuming they exist, are designed to optimise or even to encourage the uptake of new technologies and innovation, as the Chief Scientist also recommended. In the absence of such evidence, the committee can only find this aspect of recommendation 8 has not been implemented.

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114 Submission 19, NSW Government, p 7.

115 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 10.

116 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 10.

117 Submission 3, Mr Anthony Pickard, p 30.

118 Submission 5, Lock the Gate Alliance, p 8.

119 Submission 5, Lock the Gate Alliance, p 8.

2.102 The committee notes that views on what constitute 'appropriate and proportionate' penalties for non-compliance may legitimately differ. However, the relevant penalties do not appear to have been reviewed or changed since the Chief Scientist delivered her report in September 2014. Accordingly, the NSW Government has also not implemented this aspect of the recommendation.

2.103 The evidence from the NSW Government also does not establish that it has 'automatic monitoring processes' in place that are sent to and held in an openly accessible Whole of Data Repository. The evidence also does not establish that it has effective processes in place that enable the detection of cumulative impacts at project, regional and sentimentally basin levels which can be used to inform the targets and the planning process.

2.104 On the basis of the evidence before the committee, the NSW Government has not implemented recommendation 8 of the Chief Scientist's report.

Recommendation 11

That the NSW Government implement all outstanding aspects of Recommendation 8 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

2014 Recommendation 9[120]

That Government consider a robust and comprehensive policy of appropriate insurance and environmental risk coverage of the CSG industry to ensure financial protection short and long term. Government should examine the potential adoption of a three-layered policy of security deposits, enhanced insurance coverage, and an environmental rehabilitation fund.

NSW Government response to the Chief Scientist's report

2.105 According to the NSW Government submission the implementation of this recommendation is in progress.[121]

2.106 In 2015, the government acknowledged the need for 'financial protections to cover potential coal seam gas related environmental risk' with further considerations given to the 'adoption of a three-layered policy of security deposits, industry insurance coverage and potential environmental rehabilitation funds'.[122]

2.107 The government advised that since then, work on a three-layered approach as recommended by the NSW Chief Scientist and Engineer has focused on:

- continuing the existing security deposit scheme under the *Petroleum (Onshore) Act 1991* to cover the costs of rehabilitation.
- requiring coal seam gas operators to hold appropriate insurance coverage or demonstrate alternative financial arrangements to cover the costs of clean-up of potential pollution incidents.

120 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 13.

121 Submission 19, NSW Government, p 8.

122 Submission 19, NSW Government, p 7.

- using the existing financial assurance mechanisms under the *Protection of the Environment Operations Act 1997*, where required, for residual risks that are not covered by the rehabilitation security deposit.
- continuing the government's Legacy Wells program, which provides an existing framework for strategic management of abandoned petroleum wells.[123]

2.108 In response to questions about the government's level of interest and/or commitment to providing an insurance product, the Department of Planning, Industry and Environment advised that the Environment Protection Authority has:

> … consulted with industry members and insurance providers to assess whether existing insurance products and frameworks provide sufficient financial protection against potential environmental incidents and identified requirements for enhanced insurance coverage.[124]

2.109 Ms Mackey, NSW EPA, indicated that advice on this matter had been provided to the government for consideration.[125]

Inquiry participant's views

2.110 According to several inquiry participants this recommendation has not been implemented.[126] Inquiry participants told how 'insurance companies have stated they will not provide insurance for individual farmers for environmental damage, loss of farming, contamination of stock or water or anything else associated with CSG.'[127]

2.111 As Lock the Gate Alliance explained 'landholders in North West New South Wales have approached insurance brokers and coal seam gas companies about environmental insurance.'[128] The response received was overwhelming clear:

> … that coal seam gas operations are not covered by insurance that can protect surrounding landholders, or landholders that host CSG wells, from immediate or long-term environmental damage from, for example, water contamination, weed infestation, water depletion or health damage.[129]

2.112 This was supported by another submission author who explained landholders still have to register what chemicals livestock and crops have been in contact with in areas where coal seam gas activities occur despite not actually knowing what the chemicals are or the quantity:

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123 Submission 19, NSW Government, p 8.

124 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 21.

125 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 14.

126 Submission 1, Dr Geralyn Mc Carron, p 5; Submission 5, Lock the Gate Alliance, pp 8-9; Submission 9, People for the Plains Inc, p 5; Submission 11, Dr Hugh Barrett, p 4; Submission 13, Name suppressed, p 3.

127 Submission 5, Lock the Gate Alliance, pp 8-9; Submission 9, People for the Plains Inc, p 5; Submission 11, Dr Hugh Barrett, p 4; Submission 13, Name suppressed, p 3.

128 Submission 5, Lock the Gate Alliance, p 8.

129 Submission 11, Dr Hugh Barrett, p 4. See also Submission 29, Name suppressed, p 1.

> When CSG is on our farms we do not know what chemicals etc they are bringing on. Yet we still have to sign that we know what our livestock and crops have had contact with, even when they (CSG companies) do not have to tell us.[130]

2.113 Despite the government having indicated that the EPA was developing a Management Framework for Environmental Liabilities, Dr Barrett noted this work was incomplete, with communication and consultation about this issue with the authority being unsatisfactory.[131]

2.114 Dr Barratt expressed the view that the third layer of an environmental rehabilitation fund was 'absolutely crucial given the environmental damage of coal seam gas will extend for many generations beyond the life of the [proposed] Narrabri gasfield'.[132]

2.115 Both Santos and the Australian Petroleum Production and Exploration Association stated they were 'committed to minimising any impacts to the environment from activities' and were aware that the NSW Environment Protection Authority was continuing work on implementing this recommendation.[133] Both organisations referred to the NSW Government holding a 'bank guarantee to cover any remediation required with the amount of the bank guarantee determined by the State. [134]

2.116 Santos added that '[i]n the event of an unforeseen impact to the environment, [it] would be responsible for remediation activities, including to the extent such an event may impact landholders and their activities'.[135]

2.117 At the hearing on 4 February 2020, Mr Richard Bean, Interim Chief Executive Officer, EPA, stated that 'the Government had made a decision on recommendation nine and further details will be available shortly'.[136]

2.118 The EPA released in February 2020 the document *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*.[137] This document outlines a response to the issue of insurance coverage:

> The availability of adequate environmental impairment liability for coal seam gas activities in the insurance market is not straightforward. The local Australian insurance market is less willing to provide these products than at the time of the Chief Scientist and Engineer's review. A requirement that allows for alternative financial arrangements

130 Submission 13, Name suppressed, p 3.

131 Submission 11, Dr Hugh Barrett, p 4.

132 Submission 11, Dr Hugh Barrett, p 4.

133 Submission 18, Australian Petroleum Production and Exploration Association, p 6; Submission 17, Santos, p 10.

134 Submission 18, Australian Petroleum Production and Exploration Association, p 6; Submission 17, Santos, p 10.

135 Submission 17, Santos, p 10.

136 Evidence, Mr Richard Bean, Interim Chief Executive Officer, Environment Protection Authority, 4 February 2020, p 30.

137 NSW Environmental Protection Authority, *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*, February 2020, p 7.

> (for example, asset provisioning or parent company guarantees) where environmental impairment liability insurance policies are not readily available is recommended. [138]

2.119 This document also provides further information on the government's response to the issue of establishing an environmental rehabilitation fund:

> Establishing another environmental rehabilitation fund in the NSW gas sector, which currently has only two active gas projects, is not a feasible option. The NSW Government already funds a program to manage legacy petroleum matters. The Legacy Wells program provides an existing framework for strategic management of abandoned petroleum wells that were not adequately rehabilitated, where the former titleholder cannot be held responsible, and no financial assurance mechanism applies.[139]

2.120 In relation to security deposits, the document indicates:

> The existing security deposit framework is robust, but it is not used to cover environmental liabilities that may arise after rehabilitation activities have been completed and the security deposit is released. Despite potential residual risks being considered low due to current regulatory and operational practices, future liabilities may still arise; for example, where the integrity of a decommissioned well is compromised. Retaining a further financial assurance is beneficial to safeguard against these potential ongoing residual risks. [140]

Committee comment

2.121 The committee acknowledges the frustrations of landholders who are unable to obtain environmental insurance, either because they have coal seam gas activities on their property or live nearby. Given it is has been five years since the release of the NSW Chief Scientist's report, it is disappointing that this issue has not been resolved.

2.122 We note the government has very recently released the document *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*. However, the response in the document indicates that the government will not be fully implementing the Chief Scientist' s recommendation 9. There is still no option for insurance against future risks, including financial loss as well as environmental damage, potentially leaving landholders to carry this risk.

2.123 The committee notes that the government has indicated that it is not feasible to establish an environmental rehabilitation fund in the New South Wales gas sector, given there are only two active gas projects and the existence of the Legacy Wells program.

2.124 The claim made in the recently released EPA document that the local insurance market is less willing to provide these products than at the time of the Chief Scientist's report is troubling. This is not a claim the insurance industry has made to this inquiry. The evidence before the committee is that at no time have products providing insurance against risk to other landowners

138 NSW Environmental Protection Authority, *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*, February 2020, p 7.

139 NSW Environmental Protection Authority, *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*, February 2020, p 7.

140 NSW Environmental Protection Authority, *Safeguarding future environmental liabilities from Coal Seam Gas Activities in NSW*, February 2020, p 7.

been available. The committee asks the EPA to provide evidence that supports its claim and identifies what products have ever been available.

2.125 On the basis of the NSW Government's own evidence to this inquiry, it has not implemented recommendation 9 by the Chief Scientist. To the extent the NSW Government is undertaking work in connection with aspects of recommendation 9 outside insurance to protect other landowners, it has not provided any timeframe in which the community may expect this work to be completed.

2.126 The committee therefore finds that:

- the enhanced insurance coverage as envisaged by the NSW Chief Scientist is not available;
- the conclusion is that these risks are uninsurable; and
- landholders are left to bear the risks posed by coal seam gas activities.

Finding 1

The committee finds that:

- the enhanced insurance coverage as envisaged by the NSW Chief Scientist in Recommendation 9 of the *Final Report of the Independent Review of Coal Seam Gas Activities in NSW* is not available;
- the conclusion is that these risks are uninsurable; and
- landholders are left to bear the risks posed by coal seam gas activities.

Managing risk by harnessing data and expertise

2014 Recommendation 10[141]

That Government commission the design and establishment of a Whole-of-Environment Data Repository for all State environment data including all data collected according to legislative and regulatory requirements associated with water management, gas extraction, mining, manufacturing, and chemical processing activities. This repository, as a minimum, would have the characteristics that it:

- is accessible by all under open data provisions
- has excellent curatorial and search systems
- houses long-term data sets collected as part of compliance activities
- can accept citizen data input
- can be searched in real time
- is spatially enabled
- is able to hold data in many diverse formats including text, graphics, sound, photographs, video, satellite, mapping, electronic monitoring data, etc., with appropriate metadata

141 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, pp 13-14.

- is the repository of all research results pertaining to environmental matters in NSW along with full details of the related experimental design and any resulting scientific publications and comments
- is the repository of historical resources data with appropriate metadata

Various legislative amendments or other incentives will be needed to direct all environment data to the Repository.

NSW Government response to the Chief Scientist's report

2.127 Similar to the response for recommendation 2 of the Chief Scientist's report, the government advised that the implementation of recommendation 10 was complete with the introduction of the SEED portal, but that it was also ongoing as 'more and different types of environmental data are added'.[142]

2.128 Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, explained there are 21 datasets that the Environment Protection Authority shares within the portal that is available to all those interested in that information.[143]

2.129 At the hearing on 4 February 2020, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment described the SEED portal as a 'library navigation catalogue tool … [with] about 2,500 data sets'. She advised that the portal was 'still being developed and over time it will have capacities that are coming through with new technology'.[144]

2.130 Ms Hawyes also advised that sometime in 2020 the SEED portal would have the capacity to house citizen data contributions for citizens science projects.[145]

2.131 In terms of the quality of data currently on the SEED portal and future contributions, Ms Haywes said that each data set has a statement attached identifying 'what it is, where it is from, who owns it et cetera'.[146] Further detail on quality of data was provided in answers to questions on notice:

> Every dataset in SEED includes a Data Quality Statement. 'Data quality' is determined by whether the data is suitable for its original intended use. It helps a user understand how a particular dataset could be used, and whether the dataset can be compared with other, similar datasets.

142 Submission 19, NSW Government, p 9.

143 Evidence, Ms Tracey Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 11; Evidence Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 11.

144 Evidence, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment, 4 February 2020, p 30.

145 Evidence, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment, 4 February 2020, p 32.

146 Evidence, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment, 4 February 2020, p 32.

> The Data Quality statement is prepared by the data custodian (provider of the dataset), using a reporting questionnaire that has been developed in accordance with the NSW Government Standard for Data Quality Reporting. [147]

2.132 The Department of Planning, Industry and Environment advised that the government has invested almost $9.5 million in developing and implementing the SEED portal to date, with forecast costs for running and further development of the portal at approximately $8 million over the four years from 2019/20 to 2022/23.[148]

Inquiry participant's views

2.133 Concerns were raised by inquiry participants that SEED was not 'user friendly'[149]; did not possess the 'functions required'[150]; had 'limited value"[151] and did not allow 'for health data or citizen data to be included'.[152]

2.134 Lock the Gate Alliance argued that the SEED portal does 'not provide the community with access to monitoring data collected by CSG and mining proponents'.[153]

2.135 Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance, explained that while many government agency datasets were included on the portal, they did not necessarily interact with each other in any meaningful way. She also noted that industry data tended not to be on the portal at all.[154]

2.136 When questioned as to whether the SEED portal would contain data from proponents of the coal seam gas industry, such as Santos, Ms Hawyes informed that recruitment was underway for a project and liaison officers to commence that process.[155] The Department of Planning, Industry and Environment confirmed that '[i]t is the intention to make data from the mining industry accessible via the SEED portal regardless of the project.'[156]

2.137 Meanwhile, Santos and the Australian Petroleum Production and Exploration Association agreed that the recommendation had been fully implemented with the establishment of SEED in 2017.[157]

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147 Answers to questions on notice, Department of Planning, Industry and Environment, 12 February 2020, p 2.

148 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 38.

149 Submission 3, Mr Anthony John Pickard, p 32; Submission 24, Dr Keith Fleming, p 3.

150 Submission 5, Lock the Gate Alliance, p 10; Submission 13, Name suppressed, p 3.

151 Submission 14, Doctors for the Environment Australia, p 5.

152 Submission 14, Doctors for the Environment Australia, p 5.

153 Submission 5, Lock the Gate Alliance, p 10.

154 Evidence, Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance, 4 February 202 17.

155 Evidence, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment, 4 February 2020, p 32.

156 Answers to questions on notice, Department of Planning, Industry and Environment, 12 February 2020, p 4.

157 Submission 17, Australian Petroleum Production and Exploration Association, p 6; Submission 18, Santos, p 10.

Committee comment

2.138 Based on the evidence received, the committee believes that this recommendation is only partially complete. While significant work has been done and is ongoing on a repository, critical elements of the NSW Chief Scientist's recommendation remains incomplete at this stage, including the ability for the community to access data and for industry data to be included. We recommend that the NSW Government expedite the work for including coal seam gas industry data on the SEED portal.

Recommendation 12

That the NSW Government expedite its work for including coal seam gas industry data on the SEED portal and ensuring the portal has all the elements and functionality recommended by the Chief Scientist.

2014 Recommendation 11[158]

That Government develop a centralised Risk Management and Prediction Tool for extractive industries in NSW. This would include a risk register, a database of event histories, and an archive of Trigger Action Response Plans. The tool would be updated annually based on Government and company reporting and would include information on risk management and control approaches and draw on data from the Whole-of-Environment Data Repository for the State. The risk tool would be reviewed and commented on by relevant expert and regulatory bodies. The risk tool would be used to assist with:

- assessing new proposals
- assessing compliance
- improving prediction capability for consequences of incidents in risk assessments
- improving prediction capability of risk likelihoods
- informing project design amendments to decrease risk levels (such as undertaken in the Dam Safety Committee)
- informing the calculation of cumulative impacts
- flagging issues or risks that require a higher level of regulatory protection such as inclusion in legislation.

NSW Government response to the Chief Scientist's report

2.139 In 2015 and its submission to this inquiry, the government stated the recommendation was complete as a number of risk management and prediction tools were already being used by various agencies in New South Wales, such as risk-based codes of practices, risk-based licencing and planning assessment processes, to assess proposals, analyse risk and inform compliance activities.[159]

158 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 14.

159 Submission 19, NSW Government, p 9; Submission 17, Australian Petroleum Production and Exploration Association, p 6; Submission 18, Santos, pp 10-11; Submission 5, Lock the Gate Alliance, p 11.

2.140 According to the Department of Planning, Industry and Environment, the Environment Protection Authority developed a coal seam gas risk register in 2014 that identifies potential environmental risks posed by the coal seam gas industry to guide EPA regulatory activities.[160] A review and update of this risk register has recently been undertaken and the revised register is in the process of being finalised.[161]

2.141 In terms of a database of event histories, the Department of Planning, Industry and Environment advised on behalf of the Environment Protection Authority, that the authority uses Case and Investigation Reporting, Administration and Management (CIRAM) system software for the recording of gas incidents and the extraction of event histories.[162]

Inquiry participant's views

2.142 According to Lock the Gate Alliance, the government's response 'hardly seems adequate to fulfil this recommendation in its entirety'.[163]

2.143 Inquiry participants referred to the 2012 Namoi Catchment Management Authority report entitled *Assessing the cumulative risk of mining scenarios on bioregional assets in the Namoi Catchment: Development and Trial of an interactive GIS tool*. This report developed the Namoi Cumulative Risk Assessment Tool (NCRAT) as a means to determine CSG extraction impacts. It was recommended that the tool be used to 'help identify areas that are suitable for mining and areas that should be made off-limits to mining' by overlaying maps of natural resource assets.[164]

2.144 According to Lock the Gate Alliance, this tool is the 'kind of geographic information systems tool that should have been adopted under this recommendation'.[165] Lock the Gate Alliance explained that NCRAT could contribute 'to fulfilling this recommendation by calculating cumulative impacts and identifying issues and risks that "require a higher level of regulatory protection such as inclusion in legislation."'[166]

2.145 People for the Plains observed that such a tool was 'becoming increasingly important in the Namoi due to huge wave of State Significant Developments proposed for the region … and no-one is taking a whole of region view of the cumulative impacts of all these projects.'[167] As a result, People for the Plains called for a 'full moratorium on new project approvals and expansions in the Namoi Valley until it is clear who is taking these impacts into consideration and how the planning and project conditions fully account for these impacts'.[168]

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160 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 18.

161 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 18.

162 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 18.

163 Submission 5, Lock the Gate Alliance, p 11.

164 Submission 11, Dr Hugh Barrett, p 3; Submission 9, People for the Plains Inc, p 5.

165 Submission 5, Lock the Gate Alliance, p 11; see also Submission 11, Dr Hugh Barrett, p 5.

166 Submission 5, Lock the Gate Alliance, p 11.

167 Submission 9, People for the Plains Inc, p 5.

168 Submission 9, People for the Plains Inc, p 5.

2.146 Doctors for the Environment Australia contended that current risk management and prediction tools needed to 'incorporate the growing evidence of adverse health impacts from CSG extraction in order to give an accurate assessment of risk'.[169]

2.147 When questioned as to why the Namoi Cumulative Risk Assessment Tool (NCRAT) was not supported by the government in the assessment of risks, the Department of Planning, Industry and Environment asserted that NCRAT had been 'superseded [by] [m]ore up to date, quality-controlled datasets, including those contained in the SEED portal and those produced by the Bioregional Assessments and GISERA'.[170]

2.148 The Department claimed that '[e]xperienced geographical information systems (GIS) users, informed by appropriate subject matter experts and the latest available data and science, can use similar predictive GIS-based tools to generate a similar form of modelling' to NCRAT, and are well established.[171]

2.149 Mr Wright of the Department of Planning, Industry and Environment reiterated during evidence to the committee that the government's response to recommendation 11 was to 'investigate risk-based approaches … and tools to assist with assessing proposals. Having done that [it] has determined those existing tools … suffice for dealing with responding to the recommendation … [therefore] an additional tool was not required'.[172]

Committee comment

2.150 The committee notes the NSW Government claim that this recommendation is complete. However, inquiry participants have raised a number of issues with the use by government of existing risk management tools, especially in regards to the ability of the tools to identify cumulative risks. The NSW Government was unable to identify a centralised Risk Management and Prediction Tool for extractive industries which it had developed after the Chief Scientist's report or was otherwise in use. While witnesses for the government indicated that there were a number of risk management and prediction tools in use, the only one specifically identified was the risk-based licensing system implemented by the EPA. However, this scheme clearly does not have the functions outlined by the Chief Scientist as being necessary. Accordingly, the evidence before the committee is that the NSW Government has not implemented this recommendation made by the Chief Scientist.

Recommendation 13

That the NSW Government implement all outstanding aspects of Recommendation 11 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

169 Submission 14, Doctors for the Environment Australia, p 5.

170 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 36.

171 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 36.

172 Evidence, Mr Michael Wright, Deputy Secretary, Resource and Geoscience, Department of Planning, Industry and Environment, 4 February 2020, p 33.

2014 Recommendation 12[173]

That Government establish a standing expert advisory body on CSG (possibly extended to all the extractive industries). This body should comprise experts from relevant disciplines, particularly ICT and the earth and environmental sciences and engineering, but drawing as needed on expertise from the biological sciences, medicine and the social sciences. The prime functions of this expert body would be to advise Government:

- on the overall impact of CSG in NSW through a published Annual Statement which would draw on a detailed analysis of the data held in the Whole-of-Environment Data Repository to assess impacts, particularly cumulative impacts, at project, regional and sedimentary basin scales
- on processes for characterising and modelling the sedimentary basins of NSW
- on updating and refining the Risk Management and Prediction Tool
- on the implications of CSG impacts in NSW for planning where CSG activity is permitted to occur in the State
- on new science and technology developments relevant to managing CSG and when and whether these developments are sufficiently mature to be incorporated into its legislative and regulatory system
- on specific research that needs to be commissioned regarding CSG matters
- on how best to work with research and public sector bodies across Australia and internationally and with the private sector on joint research and harmonised approaches to data collection, modelling and scale issues such as subsidence
- on whether or not other unconventional gas extraction (shale gas, tight gas) industries should be allowed to proceed in NSW and, if so, under what conditions.

NSW Government response to the Chief Scientist's report

2.151 According to the NSW Government submission the implementation of this recommendation is complete.[174]

2.152 In 2015, the government agreed it was important to receive expert advice on gas activities to 'ensure that our legislative and regulatory system is informed about the potential impacts associated with gas development, and that decisions are based on the best available science'. As a result, the government committed to working closely with the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC), established in 2012 by the Australian Government.[175]

2.153 Since 2015, the government has continued working closely with the Independent Expert Scientific Committee rather than establish a duplicate expert body in New South Wales.[176]

2.154 Mr Wright summarised how the IESC is engaged by the government:

173 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 14.

174 Submission 19, NSW Government, p 10.

175 Submission 19, NSW Government, p 10.

176 Submission 19, NSW Government, p 10.

> all gas proposals are referred to that committee as part of our gateway process and before going into the planning process, with a particular focus on … potential water impacts, as well as potential impacts on agricultural land.[177]

2.155 Mr Wright remarked that expert advice is also drawn from the Gas Industry Social and Environmental Research Alliance [GISERA], of which New South Wales joined as a member in 2015.[178]

2.156 Mr Kevin Ruming, Director, Strategic Resource, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment explained that GISERA has a similar role to the IESC, with recent work 'focused in the Namoi region and around the Narrabri Gas Project'.[179]

2.157 The Department of Planning, Industry and Environment advised that the New South Wales Regional Research Advisory Committees, a sub-group of GISERA, identifies projects to be undertaken and then makes recommendations as to what projects should be pursued in terms of research.[180] Mr Ruming stated that this process is overseen by the CSIRO 'to ensure that the research is of a very high quality, is reputable and has integrity, as you would expect.[181]

2.158 According to Mr Wright, once a project proceeds through the Environmental Planning and Assessment Act the Department usually 'engage[s] a range of experts to get additional advice in terms of what the environmental, social and economic impacts of a proposal, including a gas proposal, might be. I know this is the case for the currently in train Santos Narrabri gas proposal'.[182]

2.159 When questioned as to who within government was identifying updated research on unconventional gas for inclusion in the assessment process of projects and the SEED portal, Ms Mackey, NSW EPA, gave evidence that a number of technical experts have been engaged by the authority since the 2015-16 financial year 'to build up capacity within Government to be able to provide advice and keep abreast of current research and best practice in the space'.[183]

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177 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17.

178 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17; Evidence, Mr Kevin Ruming, Director, Strategic Resource, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17.

179 Evidence, Mr Kevin Ruming, Director, Strategic Resource, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17.

180 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 24; Evidence, Mr Kevin Ruming, Director, Strategic Resource, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17.

181 Evidence, Mr Kevin Ruming, Director, Strategic Resource, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 17.

182 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, pp 17-18.

183 Evidence, Ms Tracy Mackey, Chief Executive Officer, NSW Environment Protection Authority, 3 December 2019, p 20.

2.160 In further evidence on 4 February 2020, Mr Andrew Cowan, Program Manager, EPA, told the committee that a scientific research officer was employed to:

> [scan] … and [tap] … into each jurisdiction's processes … looking for any releases across media or where there are international standards that change to see if there is anything that New South Wales can learn from that or if there are any implications for the way New South Wales regulates the industry.[184]

2.161 When questioned as to how new scientific information was brought to the attention of others, representatives of the EPA replied that it could happen in two ways ─ through the gas working group as an item for discussion, or fed through as questions or comments through the planning process.[185]

2.162 In relation to who advises government on whether unconventional gas extraction should be allowed to proceed and under what conditions, Mr Wright stated that the New South Wales planning system in conjunction with the *Environment Protection and Biodiversity Conservation Act 1999* at the Commonwealth level held this function.[186]

Inquiry participant's views

2.163 The University of Queensland Centre for Natural Gas noted that none of the members of the IESC have specific expertise in the petroleum and gas sector. Instead, the Centre suggested that the government should:

> … create a state-based advisory panel … [that] include[d] representatives with expertise in fields such as petroleum engineering, reservoir engineering, reservoir modelling and hydraulic stimulation to augment advice from the IESC, rather than replicate a similar expertise base.[187]

2.164 This was supported by Dr Keith Fleming who argued that any 'expert advisory body on CSG must include specialists with gas section experience, such as reservoir engineering and modelling, for Recommendation 12 to be achieved'.[188]

2.165 Santos and the Australian Petroleum Production and Exploration Association both agreed that the recommendation had been achieved by using the expertise of the IESC.[189]

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184 Evidence, Mr Andrew Cowan, Program Manager, Environment Protection Authority, 4 February 2020, p 36.

185 Evidence, Mr Andrew Cowan, Program Manager, Environment Protection Authority, 4 February 2020, p 36; Evidence, Ms Melanie Hawyes, Deputy Secretary, Policy, Strategy and Science, Department of Planning, Industry and Environment, 4 February 2020, p 36.

186 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 20.

187 Submission 20, University of Queensland Centre for Natural Gas, p 3.

188 Submission 24, Dr Keith Fleming, p 4.

189 Submission 17, Australian Petroleum Production and Exploration Association, p 6; Submission 18, Santos, p 11.

2.166 However, a number of inquiry participants argued that this recommendation had not been implemented and also voiced concerns about the purpose and impartiality of GISERA — a joint research partnership between CSIRO and major gas companies.[190]

2.167 Lock the Gate Alliance highlighted that during Budget Estimates 2019-2020, the Deputy Premier, the Hon John Barilaro MP, 'who has portfolio responsibility for petroleum and mining did not mention GISERA but cited the Commonwealth's Independent Expert Scientific Committee (IESC) as standing in for the expert body recommended by the Chief Scientist', even though the establishment of IESC predates the Chief Scientist's report.[191] As such, Lock the Gate Alliance argued that the IESC did not 'fulfil the need identified by this recommendation. If it had met the need, the recommendation would not have been necessary'.[192]

2.168 Further, Lock the Gate Alliance acknowledged that the 'IESC has undertaken a series of Bioregional Assessments of sedimentary basins targeted by coal and CSG mining, so that body could be said to fulfil the function of advising "on processes for characterising and modelling the sedimentary basins of NSW." The other functions listed here are beyond the scope and remit of the IESC'.[193]

2.169 The Australian Petroleum Production and Exploration Association and Santos said that GISERA's NSW research program is overseen by a Research Advisory Committee with membership from government (22 per cent), CSIRO (22 per cent), industry (11 per cent) and the community (45 per cent), ensuring that projects are conducted in a balanced way.[194] Both organisations insisted that the governance structure of GISERA ensured that its research was 'independent'.[195]

Committee comment

2.170 On the evidence before the committee, the NSW Government has not implemented recommendation 12 made by the Chief Scientist. It has not established its own expert body, as was recommended. The Commonwealth body it seeks to rely upon does not fulfil the functions found by the Chief Scientist to be necessary to provide the NSW Government with the relevant and appropriate advice on gas activities. The NSW Government has accepted (para 2.152) that receiving the advice recommended by the Chief Scientist was important. The evidence shows that it has not taken the steps recommended by the Chief Scientist to receive this advice.

190 Submission 3, Mr Anthony John Pickard, p 34; Submission 5, Lock the Gate Alliance, p 12; Submission 9, People for the Plains, p 6; Submission 11, Dr Hugh Barratt, p 5; Submission 14, Doctors for the Environment Australia, p 5.

191 Submission 5, Lock the Gate Alliance, p 12.

192 Submission 5, Lock the Gate Alliance, p 12.

193 Submission 5, Lock the Gate Alliance, p 12.

194 Submission 17, Australian Petroleum Production and Exploration Association, p 6; Submission 18, Santos, p 11.

195 Submission 17, Australian Petroleum Production and Exploration Association, p 6; Submission 18, Santos, p 11.

Recommendation 14

That the NSW Government reconsider the establishment of a state based Expert Advisory Body to fulfil the recommendations by the NSW Chief Scientist recognising the limitations of the Commonwealth's Independent Expert Scientific Committee.

2014 Recommendation 13[196]

That Government establish a formal mechanism consisting of five parallel but interacting steps. The five steps are given below.

- Companies or organisations seeking to mine, extract CSG or irrigate as part of their initial and ongoing approvals processes should, in concert with the regulator, identify impacts to water resources, their pathways, their consequence and their likelihood, as well as the baseline conditions and their risk trigger thresholds before activities start. These analyses and systems should be incorporated in project management plans to meet regulator-agreed targets. Appropriate monitoring and characterisation systems would be developed as part of these project management plans and then installed. The monitors would measure baseline conditions and detect changes to these, as well as providing data on impacts and triggered risk thresholds.
- Data from the monitors should be deposited (either automatically or in as close to real time as possible) in the State Whole-of-Environment Data Repository by all the extractive industries. Increasingly automated tools to interrogate data in the Repository should be developed, and these used to search data for discontinuities and compliance alerts.
- As a separate process, the expert advisory body would examine on a frequent basis all data relevant to a region or a sedimentary basin. This data would come from a range of sources (the companies' monitoring data along with triangulation/crossvalidation data such as that from satellites, reports from local councils, seismic data, subsidence maps, information from cores, etc.). The expert body would use this data review to check for any factors signalling problems in that region and, if any are found, recommend to Government the appropriate action to be taken with regard to the relevant parties.
- In a parallel process, the Government should commission, construct and maintain a variety of models of each region and in particular one that seeks to address cumulative impacts. These models should feed into the land use planning process and the activity approvals processes, and should assist in target setting for new projects.
- Government, working with other appropriate Australian governments, should commission formal scientific characterisation of sedimentary basins starting with the East Coast basins, and concentrating initially on integration of groundwater with the geological, geophysical and hydrological context. Viewing these integrated systems in models and in interpretation could be described as a 'Glass Earth' approach to understanding the dynamics of activities and impacts in the basins.

NSW Government response to the Chief Scientist's report

2.171 In response to the NSW Chief Scientist's report, the government agreed that improved governance and accountability of water data and water management, and enhanced data

196 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, pp 14-15.

monitoring and real time reporting, was required to 'provide greater confidence to the community about impacts on water from various extractive industries'. In 2015, the Department of Primary Industries, Water was 'using groundwater baseline data from its network of 3,500 monitoring bores to map NSW's underground water resources and how they are used by different industries, including agriculture and mining'.[197] At the time, it was indicated that the 'mapping results [would be] available online and w[ould] support government, industry and the community to quickly identify and respond to pressure on our water resources'.[198]

2.172 In 2019, the government claimed that this recommendation was both complete and ongoing. Of the five parallel but interacting steps, only one appears to be complete — that being mechanisms to identify impacts to water resources through the Review of Environmental Factors and/or Environmental Impact Statement process.[199] The government advised that 'the requirement for Groundwater Monitoring and Modelling Plans during the exploration phase of coal and coal seam gas projects ensures that there is sufficient monitoring being undertaken and suitable data collected'.[200]

2.173 The other four parallel but interacting steps are still ongoing in various stages of completion:

> **Data repository**
>
> Data collection is being addressed through the NSW Government's Water Monitoring Framework (WMF). Under the WMF, the Department of Planning, Industry and Environment's Water Group (DPIE Water) plans to incorporate industry water data into the data acquisition and management system in consultation with relevant agencies. New water monitoring infrastructure is being installed under the WMF and being equipped, after construction, with real-time collection capabilities.
>
> **Examination of data by Expert Advisory Panel**
>
> The NSW Government will continue to work closely with the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, rather than duplicate these functions in NSW.
>
> **Cumulative impacts model**
>
> The Commonwealth Bioregional Assessment Program, with assistance from the NSW Government and industry, has developed a number of surface and groundwater models for the major coal basins in NSW, including the Gunnedah, Gloucester and Clarence-Moreton basins. Those models provide high level of understanding of potential risks to water resources and environmental values. DPIE Water recommends that additional government cumulative models are only considered in areas with a number of future projects, and further evidence confirms that for each area of concern government cumulative models would provide the most effective approach to characterise and manage likely impacts.
>
> Industry should be required to assist resourcing the development of these models.

197 Submission 19, NSW Government, p 11.

198 Submission 19, NSW Government, p 11.

199 Submission 19, NSW Government, p 12.

200 Submission 19, NSW Government, p 12.

Characterisation of sedimentary basins

While considerable formal characterisation already exists, DPIE Water is working with the Division of Resources and Geoscience to characterise the different coal basins through the whole stratigraphic profile, that is unconsolidated alluvial formations to deep coal bearing formations.[201]

2.174 In giving evidence, Mr Mitchell Isaacs, Director, Office of the Deputy Secretary and Strategic Relations (Water), Department of Planning, Industry and Environment, stated that the government had invested $22.8 million in additional groundwater monitoring infrastructure, to provide both geological and water data specifically for coal basins across the state.[202]

Inquiry participant's views

2.175 Lock the Gate Alliance referred to inconsistencies in government claims that 'data collection is being addressed through the NSW Government's Water Monitoring Framework and Water Monitoring Strategy for Coal Basins in NSW' even though the Environmental Impact Statement for the Narrabri CSG project 'demonstrates that "baseline conditions" are not established'.[203]

2.176 In addition, Lock the Gate Alliance argued that throughout the assessment process for the Narrabri gas project, Santos has flatly refused to:

- commit to installing the additional groundwater monitoring bores requested by the Department of Industry Water
- provide information, analysis and commitments … to various government agencies such as the Environment Protection Authority … Rural Fire Service, the Water division of the Department of Planning, Industry and Environment, the Office of Environment and Heritage and Narrabri Council
- calibrate its groundwater model as requested, and refus[ed] to respond to recommendations to undertake uncertainty analysis or worst-case scenario modelling.[204]

2.177 However, Santos and the Australian Petroleum Production and Exploration Association stated that 'potential impacts to groundwater resources are comprehensively assessed through the existing Review of Environmental Factors and Environment Impact Statement processes'.[205] The two organisations advised that the issue of data collection was being addressed through the government's Water Monitoring Framework and Water Monitoring Strategy, and that this data is reviewed by the IESC.[206]

2.178 Santos also stated that the 'Narrabri Gas Project has been independently examined by GISERA and through the Commonwealth Bioregional Assessment Program'. It added that 'water

201 Submission 19, NSW Government, p 12.

202 Evidence, Mr Mitchell Isaacs, Director, Office of the Deputy Secretary and Strategic Relations (Water), Department of Planning, Industry and Environment, 3 December 2019, p 22.

203 Submission 5, Lock the Gate Alliance, p 13.

204 Submission 5, Lock the Gate Alliance, pp 13- 14.

205 Submission 17, Australian Petroleum Production and Exploration Association, p 7; Submission 18, Santos, p 12.

206 Submission 17, Australian Petroleum Production and Exploration Association, p 7; Submission 18, Santos, p 12.

monitoring data is published … and is available to the government for publication in the SEED portal'.[207]

Committee comment

2.179 On the evidence before it, the committee finds that this recommendation has not been fully implemented. We note only one of the five parallel measures of recommendation 13 has been implemented. We acknowledge that the NSW Government is continuing to work on the other areas and recommend that the NSW Government prioritise the full implementation of Recommendation 13.

Recommendation 15

That the NSW Government prioritise the full implementation of Recommendation 13 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.

Training and certification

2014 Recommendation 14[208]

That Government ensure that all CSG industry personnel, including subcontractors working in operational roles, be subject to ongoing mandatory training and certification requirements. Similarly, public sector staff working in compliance, inspections and audits should be given suitable training and, where appropriate, accreditation.

NSW Government response to the Chief Scientist's report

2.180 The NSW Government submission indicates that the implementation of this recommendation is complete.[209] In 2015, the government agreed to 'develop mandatory standards of training to apply to both industry and government staff'.[210]

2.181 The government outlined the requirements in the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 which commenced in July 2016:

- all petroleum site operators are required to ensure, among other issues, that each worker is provided with training and instruction in relation to issues including hazards associated with the work; and ensure that training is reviewed as necessary.
- any person that conducts business at a petroleum site must ensure that each worker engaged is trained, and is competent, in basic risk management techniques used at the site.

207 Submission 18, Santos, p 12.

208 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 15.

209 Submission 19, NSW Government, p 13.

210 Submission 19, NSW Government, p 13.

- a person may only be appointed as an inspector under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* if that person has the appropriate knowledge, skills and qualifications including any qualifications that may be specified in the regulation. Mine safety inspectors undertake ongoing training including in government investigations and training in emergency management.
- people performing the role of rig managers and drilling managers at petroleum sites must have the prescribed competency requirements outlined in the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*.
- the Exploration and Production Guideline: Petroleum Drilling and Well Servicing – Competencies sets a standard for what is reasonably practicable for training and competency.[211]

2.182 The government also advised that EPA regulatory staff regularly undertake competency and skills-based training in best practice regulation, including:

- Noise Monitoring
- Sampling
- 360 degree theatre coal seam gas training modules
- Gas Test Atmosphere
- Air Pollution and Control
- Certificate IV in Government Investigations
- Drafting Statutory Documents
- Investigative Interviewing
- Sediment and Erosion Control.[212]

2.183 The Department of Planning, Industry and Environment, as advised by the Resources Regulator, stated that Resources Regulator inspectors undertake inspections of petroleum sites as part of a planned program of work to assess operator's compliance with work health and safety obligations. Since February 2016, 299 inspections of petroleum sites have been conducted with no breaches of statutory function or training obligations identified.[213]

Inquiry participant's views

2.184 Both Santos and the Australian Petroleum Production and Exploration Association referred to the requirements in the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 which have achieved this recommendation.[214]

2.185 Lock the Gate Alliance also acknowledged that according to the government this recommendation had been implemented in 2015.[215]

2.186 Other inquiry participants did not make comment on the implementation of this recommendation.

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211 Submission 19, NSW Government, p 13.

212 Submission 19, NSW Government, p 13; Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 35.

213 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 29.

214 Submission 17, Australian Petroleum Production and Exploration Association, p 7; Submission 18, Santos, p 12.

215 Submission 5, Lock the Gate Alliance, p 15.

Committee comment

2.187 The committee acknowledges that this recommendation has been implemented.

2014 Recommendation 15[216]

That Government develop a plan to manage legacy matters associated with CSG. This would need to cover abandoned wells, past incomplete compliance checking, and the collection of data that was not yet supplied as required under licences and regulations. There will also need to be a formal mechanism to transition existing projects to any new regulatory system.

NSW Government response to the Chief Scientist's report

2.188 According to the NSW Government submission the implementation of this recommendation is complete and ongoing.[217]

2.189 In 2015, the government committed to 'develop a plan to manage legacy matters and ensure no new matters are created through revised industry codes of practice and licence conditions'.[218]

2.190 However, the government had since advised that in 2014, the Legacy Mines Program was expanded to consider legacy petroleum wells. As Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment explained, this program focuses on 'rehabilitating mine and petroleum sites generally where the operator of those sites no longer exists or cannot be found and there is an ongoing remediation risk'.[219]

2.191 According to the government, the program has assessed a total of 900 petroleum wells, with 350 wells found to be legacy or abandoned. Of these, 36 wells require further action. To date actions on 28 wells have been completed.[220]

2.192 At the hearing, Mr Kevin Ruming, Director, Strategic Resources, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, described the process undertaken to manage legacy sites:

> … basically if you put a methane meter over some of the holes they may have been leaking some methane because back in the 1970s or 1980s they may not have sealed the holes properly. For those that were not sealed properly you need to bring a drill rig in, drill them out and re-cement them properly so they are fully sealed in a framework that we would accept these days.[221]

216 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 15.

217 Submission 19, NSW Government, p 14.

218 Submission 19, NSW Government, p 14.

219 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 23.

220 Submission 19, NSW Government, p 14.

221 Evidence, Mr Kevin Ruming, Director, Strategic Resources, Assessment and Advice, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 24.

2.193 The Department also said other types of work can include 'cut and cap' and cleaning up surface infrastructure in line with relevant Department codes.[222]

2.194 Mr Wright advised that the Legacy Mines Program is funded through the administration levy on mining and petroleum, meaning that the current industry pays for the rehabilitation of historic sites.[223] In the last financial year 2018-19, the total Legacy Mines Program spend (excl. GST) was $3,623,349 while the total spent during the 2017-18 financial year was $4,277,694.[224]

2.195 Mr Wright indicated that '[a]ll works for the full set of wells are planned to be finalised by 2021, subject to ongoing funding'.[225] The Department advised that in the last financial year 2018-19, the Annual Administrative Levy raised $674,710 from petroleum titles from a total of $23,172,345.72 funds raised.[226]

2.196 When questioned about who is responsible for legacy sites, the Department of Planning, Industry and Environment advised that individual land holders or land managers are ultimately responsible, with the program assisting 'landholders by delivering and managing works to reduce or eliminate risks to public health, safety and the environment from legacy mine sites'.[227]

Inquiry participant's views

2.197 According to Santos and the Australian Petroleum Production and Exploration Association, 'wells that have reached the end of their functional life must be plugged and decommissioned in accordance with the NSW Code of Practice for Coal Seam Gas – Well Integrity with records for each well provided to the NSW Government'.[228]

2.198 Santos added that once decommissioning has occurred, 'final rehabilitation will take place and sites will be relinquished, in accordance with all regulatory requirements including the provision of final rehabilitation and relinquishment reports to the regulator'.[229] Further, Santos explained that it:

> … will engage an independent scientific body such as the CSIRO to conduct a study into the integrity of decommissioned wells across its operations … [to] provide a baseline assessment of the long-term integrity of decommissioned coal seam gas wells.

222 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 33.

223 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, pp 23-24.

224 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 32.

225 Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, pp 23-24.

226 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 33.

227 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 32.

228 Submission 17, Australian Petroleum Production and Exploration Association, p 7; Submission 18, Santos, p 12.

229 Submission 18, Santos, p 13.

> The study will reviewed and updated throughout development and decommissioning of the Narrabri Gas Project to ensure any residual risks are appropriately managed.[230]

2.199 Doctors for the Environment Australia expressed the view that legacy issues is a 'massive problem which does not appear to be addressed by the NSW Government'.[231]

2.200 Lock the Gate Alliance referred to the Petroleum Wells Investigation Project, as part of the Derelict Mines Project, which completed a report on the status and potential issue of legacy petroleum wells across the State. However, no information from this project has been made public.[232]

2.201 When questioned as to why the report had not been made public, the Department of Planning, Industry and Environment advised it was the government's intention 'to do so in the new year [2020] with an update on progress to date'. According to the Department, the report will be made public via the Division of Resources and Geoscience's website.[233]

Committee comment

2.202 The committee acknowledges the work undertaken so far by the government to manage legacy matters associated with coal seam gas, and that further work is ongoing in this area. The committee encourages the government to be open and transparent with the community with regard to legacy issues that may arise and the government's responses to them in the future.

2014 Recommendation 16[234]

That Government consider whether there needs to be alignment of legislation and regulation governing extraction of methane as part of coal mining and the application of buffer zones for gas production other than CSG with the relevant legislation and regulation provisions governing CSG production.

NSW Government response to the Chief Scientist's report

2.203 The NSW Government submission indicates that the implementation of this recommendation is complete and ongoing.[235]

2.204 In response to the Chief Scientist's report in 2015, the government advised it would consider this issue in its development of a single onshore resources Act (not including water).[236]

230 Submission 18, Santos, p 13.

231 Submission 14, Doctors for the Environment Australia, p 5.

232 Submission 5, Lock the Gate Alliance, p 15.

233 Answers to questions on notice, Department of Planning, Industry and Environment, 12 December 2019, p 39.

234 NSW Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW,* September 2014, p 15.

235 Submission 19, NSW Government, p 14.

236 Submission 19, NSW Government, p 14.

2.205 However, the government had since advised that it 'determined that the risks associated with coal mine methane (primarily explosion or WHS) are managed consistently across resource types under the harmonised WHS (mines and petroleum) legislation'.[237]

2.206 In response to the issue of buffer zones, the government stated that 'future petroleum titles will be subject to the Strategic Release Framework process, meaning that government will consider local and regional sensitivities when determining the location and footprint of future exploration titles'.[238]

Inquiry participant's views

2.207 According to Lock the Gate Alliance, no information was publically available concerning the government's consideration of 'the application of buffer zones for gas production other than CSG as part of the second stage of work to develop a single onshore resources Act".[239]

2.208 Both the Australian Petroleum Production and Exploration Association and Santos understood that the government had 'considered the need for further alignment of legislation and no changes are currently proposed'.[240]

Committee comment

2.209 The committee notes that the NSW Government has advised that work on this recommendation is ongoing. On the evidence before it, the committee finds that this recommendation by the Chief Scientist is not yet fully implemented.

Recommendation 16

That the NSW Government implement all outstanding aspects of Recommendation 16 in the NSW Chief Scientist's F*inal Report of the Independent Review of Coal Seam Gas Activities in NSW*.

Committee conclusion

2.210 In 2015, an Upper House Select Committee on the Supply and Cost of Gas and Liquid Fuels in New South Wales recommended that:

> … the New South Wales Government fully implement the Chief Scientist and Engineer's Final Report of the Independent Review of Coal Seam Gas Activities in

237 Submission 19, NSW Government, p 14.

238 Submission 19, NSW Government, p 15; Evidence, Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment, 3 December 2019, p 25.

239 Submission 5, Lock the Gate Alliance, p 15.

240 Submission 17, Australian Petroleum Production and Exploration Association, p 7; Submission 18, Santos, p 13.

> NSW (September 2014) before any expansion of the coal seam gas industry in New South Wales is contemplated.[241]

2.211 In October 2015, the NSW Government released the NSW Gas Plan: Implementation progress report, which stated that:

> Through a whole of Government effort, we have now completed 15 of the 17 actions, meaning that NSW is well positioned for the safe and sustainable development of an onshore gas industry.[242]

2.212 Also in October 2015, the NSW Government released a report titled Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW which outlined the NSW Government's progress in implementing each of the Chief Scientist's recommendations, in the following terms:

> In total, seven of the 16 recommendations have been completed. An additional three recommendations will be implemented by mid-2016, and progress has been made against the remaining six recommendations.[243]

2.213 The claims of the NSW Government to have implemented almost all of the recommendations made by the Chief Scientist have been strongly contested in the public arena and by groups in the wider community since this time. However, public knowledge has been limited due to a lack of openness and transparency by government about what exactly it claims to have done in connection with those recommendations.

2.214 The evidence before this inquiry now establishes clearly that of the 16 recommendations only recommendations 14 and 15 have been (arguably) fully implemented by the NSW Government. Recommendations 1-3, 7, 10 and 13 have, also arguably, been partially implemented – although this assessment takes the evidence for the NSW Government at its highest and does not necessarily reflect the assessment of the committee. When examining those recommendations which have been part implemented, it is clear that – at best – only a minority of what was recommended by the Chief Scientist has been carried out. For example, regarding Recommendation 10 the SEED portal has been created but does not have all the information or features recommended by the Chief Scientist. Recommendations 3 and 13 each contain three elements of which only one has been implemented. Recommendation 8 has three elements of which only one has, arguably, been implemented.

2.215 Recommendations 4-6, 8-9, 11-12 and 16 have not been implemented at all and, on the evidence before the committee – including the evidence from the NSW Government and its witnesses – there is no indication that the NSW Government has any intention of implementing them.

2.216 Below is a table of the recommendations setting out the level of compliance by the NSW Government, based upon the evidence before the committee and taking the claims by the NSW Government at their highest.

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241 Select Committee on the Supply and Cost of Gas and Liquid Fuels in New South Wales, NSW Legislative Council, *Supply and cost of gas and liquid fuels in New South Wales* (2015), p x.

242 The NSW Gas Plan: Implementation progress report, p 2.

243 Implementing the Final Report of the Chief Scientist and Engineer's Independent Review of Coal Seam Gas Activities in NSW, p 1.

Table 1 Level of compliance by the NSW Government, based upon the evidence before the committee, to the NSW Chief Scientists' recommendations

Recommendations	Recommendation Implemented/ Part Implemented/ Not Implemented
1. That Government make clear its intent to establish a world-class regime for extraction of CSG. This could be articulated in a clear public statement that covers:	**Part Implemented**
• the rationale/need for CSG extraction	Part implemented
• a clear signal to industry that high performance is mandatory, compliance will be rigorously enforced and transgressions punished	X
• a fair system for managing land access and compensation	Arguably yes
• a mechanism for developing a clear, easy-to-navigate legislative and regulatory framework that evolves over time to incorporate new technology developments	X
• mechanisms for working closely and continuously with the community, industry, and research organisations on this issue.	X
2. That Government ensure clear and open communication on CSG matters is maintained at all times. This includes:	**Part Implemented**
• simplicity and clarity in legislative and regulatory requirements	X
• ensuring openness about CSG processes in line with an open access approach; publishing all relevant approval requirements, decisions and responses, and compliance and enforcement outcomes on appropriate government websites and making CSG data from companies, Government and research organisations available through a centralised Government data repository	In part, as the SEED portal exists but does not contain the information recommended by the Chief Scientist
• measurable outcomes to track performance against commitments to reform.	X
3. That Government investigate as a priority a range of practical measures for implementation (or extension of current measures) to allow affected communities to have strengthened protections and benefits including fair and appropriate:	**Part Implemented**
• land access arrangements, including land valuation and compensation for landholders	Yes
• compensation for other local residents impacted (above threshold levels) by extraction activities	X
• funding (derived from the fees and levies paid by CSG companies) for local councils to enable them to fund, in a transparent manner, infrastructure and repairs required as a consequence of the CSG industry.	X

4. That the full cost to Government of the regulation and support of the CSG industry be covered by the fees, levies, royalties and taxes paid by industry, and an annual statement be made by Government on this matter as part of the Budget process.	**Not Implemented**
5. That Government use its planning powers and capability to designate those areas of the State in which CSG activity is permitted to occur, drawing on appropriate external expertise as necessary.	**Not Implemented**
6. That Government move to a single Act for all onshore subsurface resources (excluding water) in the State, constructed to allow for updating as technology advances. This will require a review of all major Acts applying to the resources sector.	**Not Implemented**
7. That Government separate the process for allocation of rights to exploit subsurface resources (excluding water) from the regulation of the activities required to give effect to that exploitation (i.e. exploration and production activities); and that it establish a single independent regulator. The regulator will require high levels of scientific and engineering expertise, including geological and geotechnical ability, environmental and water knowledge and information, and ICT capability including data, monitoring and modelling expertise; and will be required to consult – and publish details of its consultations – with other arms of Government and external agencies, as necessary. The regulator will also require appropriate compliance monitoring and enforcement capability.	**Part Implemented**
8. That Government move towards a target and outcome-focused regulatory system, with three key elements:	**Not Implemented**
• regularly reviewed environmental impact and safety targets optimised to encourage uptake of new technologies and innovation	X
• appropriate and proportionate penalties for non-compliance	Arguable
• automatic monitoring processes that can provide data (sent to and held in the openly accessible Whole-of-Environment Data Repository) which will help detect cumulative impacts at project, regional and sedimentary basin scales which can be used to inform the targets and the planning process.	X
9. That Government consider a robust and comprehensive policy of appropriate insurance and environmental risk coverage of the CSG industry to ensure financial protection short and long term. Government should examine the potential adoption of a three-layered policy of security deposits, enhanced insurance coverage, and an environmental rehabilitation fund.	**Not Implemented**
10. That Government commission the design and establishment of a Whole-of-Environment Data Repository for all State environment data including all data collected according to legislative and regulatory requirements associated with water management, gas extraction, mining, manufacturing, and chemical processing activities. This repository, as a minimum, would have the characteristics that it:	**Part Implemented**
• is accessible by all under open data provisions	Yes

• has excellent curatorial and search systems	X
• houses long-term data sets collected as part of compliance activities	Part implemented
• can accept citizen data input	Unclear
• can be searched in real time	Unclear
• is spatially enabled	Yes
• is able to hold data in many diverse formats including text, graphics, sound, photographs, video, satellite, mapping, electronic monitoring data, etc., with appropriate metadata	Unclear
• is the repository of all research results pertaining to environmental matters in NSW along with full details of the related experimental design and any resulting scientific publications and comments	X
• is the repository of historical resources data with appropriate metadata	Yes
• various legislative amendments or other incentives will be needed to direct all environment data to the Repository.	X
11. That Government develop a centralised Risk Management and Prediction Tool for extractive industries in NSW. This would include a risk register, a database of event histories, and an archive of Trigger Action Response Plans. The tool would be updated annually based on Government and company reporting and would include information on risk management and control approaches and draw on data from the Whole-of-Environment Data Repository for the State. The risk tool would be reviewed and commented on by relevant expert and regulatory bodies. The risk tool would be used to assist with:	**Not Implemented**
• assessing new proposals	
• assessing compliance	
• improving prediction capability for consequences of incidents in risk assessments	
• improving prediction capability of risk likelihoods	
• informing project design amendments to decrease risk levels (such as undertaken in the Dam Safety Committee)	
• informing the calculation of cumulative impacts	
• flagging issues or risks that require a higher level of regulatory protection such as inclusion in legislation.	
12. That Government establish a standing expert advisory body on CSG (possibly extended to all the extractive industries). This body should comprise experts from relevant disciplines, particularly ICT and the earth and environmental sciences and engineering, but drawing as needed on expertise from the biological sciences, medicine and the social sciences. The prime functions of this expert body would be to advise Government:	**Not Implemented**

• on the overall impact of CSG in NSW through a published Annual Statement which would draw on a detailed analysis of the data held in the Whole-of-Environment Data Repository to assess impacts, particularly cumulative impacts, at project, regional and sedimentary basin scales	
• on processes for characterising and modelling the sedimentary basins of NSW	
• on updating and refining the Risk Management and Prediction Tool	
• on the implications of CSG impacts in NSW for planning where CSG activity is permitted to occur in the State	
• on new science and technology developments relevant to managing CSG and when and whether these developments are sufficiently mature to be incorporated into its legislative and regulatory system	
• on specific research that needs to be commissioned regarding CSG matters	
• on how best to work with research and public sector bodies across Australia and internationally and with the private sector on joint research and harmonised approaches to data collection, modelling and scale issues such as subsidence	
• on whether or not other unconventional gas extraction (shale gas, tight gas) industries should be allowed to proceed in NSW and, if so, under what conditions.	
13. That Government establish a formal mechanism consisting of five parallel but interacting steps. The five steps are given below:	**Part Implemented**
• Companies or organisations seeking to mine, extract CSG or irrigate as part of their initial and ongoing approvals processes should, in concert with the regulator, identify impacts to water resources, their pathways, their consequence and their likelihood, as well as the baseline conditions and their risk trigger thresholds before activities start. These analyses and systems should be incorporated in project management plans to meet regulator-agreed targets. Appropriate monitoring and characterisation systems would be developed as part of these project management plans and then installed. The monitors would measure baseline conditions and detect changes to these, as well as providing data on impacts and triggered risk thresholds.	Arguably implemented in part
• Data from the monitors should be deposited (either automatically or in as close to real time as possible) in the State Whole-of-Environment Data Repository by all the extractive industries. Increasingly automated tools to interrogate data in the Repository should be developed, and these used to search data for discontinuities and compliance alerts.	X
• As a separate process, the expert advisory body would examine on a frequent basis all data relevant to a region or a sedimentary basin. This data would come from a range of sources (the companies' monitoring data along with triangulation/crossvalidation data such as that from satellites, reports from local councils, seismic data, subsidence maps, information from cores, etc.). The expert body would use this data review to check for any factors signalling problems in that region and, if any	X

are found, recommend to Government the appropriate action to be taken with regard to the relevant parties.	
• In a parallel process, the Government should commission, construct and maintain a variety of models of each region and in particular one that seeks to address cumulative impacts. These models should feed into the land use planning process and the activity approvals processes, and should assist in target setting for new projects.	Part implemented
• Government, working with other appropriate Australian governments, should commission formal scientific characterisation of sedimentary basins starting with the East Coast basins, and concentrating initially on integration of groundwater with the geological, geophysical and hydrological context. Viewing these integrated systems in models and in interpretation could be described as a 'Glass Earth' approach to understanding the dynamics of activities and impacts in the basins.	X
14. That Government ensure that all CSG industry personnel, including subcontractors working in operational roles, be subject to ongoing mandatory training and certification requirements. Similarly, public sector staff working in compliance, inspections and audits should be given suitable training and, where appropriate, accreditation.	**Implemented**
15. That Government develop a plan to manage legacy matters associated with CSG. This would need to cover abandoned wells, past incomplete compliance checking, and the collection of data that was not yet supplied as required under licences and regulations. There will also need to be a formal mechanism to transition existing projects to any new regulatory system.	**Implemented**
16. That Government consider whether there needs to be alignment of legislation and regulation governing extraction of methane as part of coal mining and the application of buffer zones for gas production other than CSG with the relevant legislation and regulation provisions governing CSG production.	**Not Implemented**

Other inquiry findings or major reports

2.217 This section looks at other inquiry findings or other major reports relating to unconventional gas in Australia or the east coast gas market published since the release of the Chief Scientist's report and which are relevant to the suitability or effectiveness of the Chief Scientist's recommendations.

2.218 The University of Queensland Centre for Natural Gas outlined four inquiries since the release of the *NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales*, relating to unconventional gas in Australia that are relevant to the suitability or effectiveness of the NSW Chief Scientist's recommendations as shown in the below table.

2.219 The University of Queensland Centre for Natural Gas explained that each of the listed inquiries had 'undertaken reviews of available scientific literature and considered submissions from the public, government agencies, industry and academia'.[244]

Table 2 Australian inquiries relating to unconventional gas[245]

Inquiry	Report year	Outcome
Inquiry into onshore unconventional gas in Victoria	2015	Recommendations made to improve management of the industry. Subsequent Government decision to ban hydraulic fracturing and prevent the exploration for and mining of coal seam gas
Inquiry into unconventional gas (fracking) in the South East of South Australia	2016	Natural gas industry should not proceed in the South East of South Australia until it gains social licence to operate
Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation in Western Australia	2018	44 recommendations provided to improve the management of the WA unconventional oil and gas industry. Government has accepted in-principle the Inquiry's recommendations and introduced regulatory changes. State-wide fracking ban lifted on existing petroleum titles, but prohibited in specific areas
The Scientific Inquiry into Hydraulic Fracturing in the Northern Territory	2018	135 recommendations provided to improve the management of the NT onshore shale gas industry. Government accepted all recommendations and lifted the Moratorium.

2.220 The North West Protection Advocacy referred to the eighteen recommendations of the 2016 Australian Senate Select Committee on Unconventional Gas Mining interim report and called for these recommendations to be integrated into the NSW framework. For example:

244 Submission 20, University of Queensland Centre for Natural Gas, p 1.

245 Submission 20, University of Queensland Centre for Natural Gas, p 1.

- the development of a strategy to manage the conduct of Unconventional Gas Mining
- the appointment of an Unconventional Gas Mining Commissioner to oversee the conduct, management, regulation and compliance of the entire industry
- the appointment of a Resources Ombudsman to support individuals affected by coal seam gas mining
- conduct long-term studies into the potential health effects of the unconventional gas mining industry
- work to improve the level of independent scientific research related to unconventional gas mining and its impacts, and that this research be published
- cease approvals for any further unconventional gas mining projects … or the expansion of, or installation of further wells on any existing unconventional gas mining projects
- that landholders be given the immediate right to refuse mining on their land.[246]

2.221 Dr Melinda Mills highlighted that in April 2019, the Permanent Peoples Tribunal Advisory Opinion had recommended that all Unconventional Gas Exploration be banned, given that 'any laws regulating the industry have been largely symbolic in substance and procedure'.[247]

2.222 However, Santos remarked that there have been 'more than 15 inquiries relating to onshore gas development in Australia' of which all have concluded that 'coal seam gas development can occur safely and sustainably with appropriate controls in place'.[248]

A lack of health reports

2.223 Several inquiry participants also spoke of the need for in-depth and independent health impact studies of the unconventional gas industry in an Australian setting, so as to better understand the risk of the industry.[249]

2.224 Both the North West Protection Advocacy and Wando Conservation and Cultural Centre stressed that health had been 'conspicuously missing from the assessment process' for coal seam gas activities in the state.[250]

2.225 As Dr Geralyn McCarron explained, 'an extensive body of international research data has been published regarding the health impacts of the unconventional gas industry', since the release of the NSW Chief Scientist's report. Dr McCarron stated that this research data indicates 'hazards and elevated risk to human health associated with the industry'.[251]

246 Submission 15, North West Protection Advocacy, p 7.

247 Submission 22, Dr Melinda Mills, p 1.

248 Submission 18, Santos, pp 2-3.

249 Submission 15, North West Protection Advocacy, pp 8 and 10; Submission 1, Dr Geralyn McCarron, p 7; Submission 10, Sydney Knitting Nannas and Friends, p 1; Submission 24, Dr Keith Fleming, p 6; Submission 28, Wando Conservation and Cultural Centre Inc, p 5;

250 Submission 15, North West Protection Advocacy, p 7; Submission 28, Wando Conservation and Cultural Centre, p 5.

251 Submission 1, Dr Geralyn McCarron, p 7.

2.226 Similarly, Dr Melinda Mills advised that there is a 'growing body of literature documenting the adverse health consequences of CSG development … [with] overseas and Queensland evidence show[ing] significant health impacts from coal seam gas'.[252]

2.227 Lock the Gate Alliance observed that in June 2019, the Concerned Physicians of New York published the sixth edition of the *Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking*, containing 'up to date research and findings about the harms of unconventional gas extraction'.[253] While Lock the Gate Alliance acknowledged that not all findings from the compendium, nor from recent inquiries into shale gas fracking in Western Australia and the Northern Territory, are applicable to coal seam gas, many were.[254]

2.228 Meanwhile, Doctors for the Environment Australia referred to RMIT hydrogeologist and geochemist, Dr Matthew Currell, who 'recently highlighted a serious lack of appropriate baseline data and insufficient resources available for monitoring and compliance to ensure that water resources can be sufficiently protected by Santos in their Narrabri operations'.[255]

Committee comment

2.229 The committee acknowledges that there have been numerous reports and findings broadly supporting the need to improve management of the coal seam gas industry in Australia.

2.230 We note that a body of reports on the health impacts of coal seam gas activities has commenced and that further studies of this kind would be beneficial to fully understand the health impacts of this industry. The committee therefore recommends that the NSW Government review all new findings in relation to health impacts and that these be included in any new assessment of coal seam gas activities.

Recommendation 17

That the NSW Government review all new findings in relation to health impacts and that these be included in any new assessment of coal seam gas activities.

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252 Submission 22, Dr Melinda Mills, p 3.

253 Submission 5, Lock the Gate Alliance, p 6.

254 Submission 5, Lock the Gate Alliance, p 16

255 Submission 14 Doctors for the Environment Australia, p 19.

The implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales

Appendix 1 Final Report of the Independent Review of Coal Seam Gas Activities in NSW

NSW GOVERNMENT | Chief Scientist & Engineer

Final Report of the Independent Review of Coal Seam Gas Activities in NSW

September 2014

NSW GOVERNMENT | Chief Scientist & Engineer

The Hon Michael Baird MP
Premier
Minister for Infrastructure
Minister for Western Sydney
Parliament House
SYDNEY NSW 2000

Dear Premier,

Final Report – Independent Review of Coal Seam Gas Activities in NSW

In February 2013 your predecessor wrote requesting I undertake an independent review of coal seam gas activities in NSW. I now submit the final report of that Review.

This report presents the Review's findings and recommendations. Detailed support for the outcomes of the Review is provided in the accompanying reports and information papers released as part of the Review.

In presenting this final report I wish again to acknowledge the assistance of many people – the experts who advised the Review; those who took the time to write submissions or talk to my team; colleagues from government departments in NSW and other jurisdictions; colleagues in industry, research organisations, learned academies and professional associations; and the CSG review team itself which worked hard to make sense of a complex and contentious issue.

Yours sincerely,

Digitally signed by Mary O'Kane
Date: 2014.09.30 17:22:51 +10'00'

Mary O'Kane
Chief Scientist & Engineer
30 September 2014

EXECUTIVE SUMMARY

This report is the final and overarching report of the independent review of coal seam gas activities in NSW (the Review) undertaken by the Chief Scientist and Engineer. It presents the main findings and recommendations of the Review along with a summary of Government decisions regarding CSG over the time of the Review and a description of the Review process.

The Review was commissioned on 21 February 2013 by the former Premier, in a climate of community unease about CSG extraction.

The initial report of the Review was released in July 2013. In June 2014 the Review released reports on related matters referred to it by Government (cumulative impacts of activities in the Sydney Water Catchment, and placement of monitoring equipment for NSW water resources). At that time it also released a report on whether adequate financial mechanisms are in place to deal with possible environmental impacts from CSG and related operations.

With the release of this final report, the Review is also releasing reports on regulatory compliance and managing risk.

In preparing these reports, the Review drew on information from a large number of experts from around the world in a range of fields. It also consulted extensively with community groups, industry and government agencies.

Having considered all the information from these sources and noting the rapid evolution of technological developments applicable to CSG from a wide range of disciplines, the Review concluded that the technical challenges and risks posed by the CSG industry can in general be managed through:

- careful designation of areas appropriate in geological and land-use terms for CSG extraction
- high standards of engineering and professionalism in CSG companies
- creation of a State Whole-of-Environment Data Repository so that data from CSG industry operations can be interrogated as needed and in the context of the wider environment
- comprehensive monitoring of CSG operations with ongoing automatic scrutiny of the resulting data
- a well-trained and certified workforce, and
- application of new technological developments as they become available.

All of this needs to take place within a clear, revised, legislative framework which is supported by an effective and transparent reporting and compliance regime and by drawing on appropriate expert advice.

Of course, as the technologies involved are applied in new regions where the detailed hydrogeology is not yet fully characterised, there could be unexpected events, learnings, or even accidents. This is common for new applications in the extractive industries and underlines the need for Government and industry to approach these issues with eyes wide open, a full appreciation of the risks, complete transparency, rigorous compliance, and a commitment to addressing any problems promptly with rapid emergency response and effective remediation. It also highlights the need to record and capitalise on the data and knowledge gained from CSG extraction activities in new regions and to take advantage of new technology developments which, if harnessed appropriately, can make CSG production increasingly safer and more efficient over time.

Contents

1 ABOUT THE REVIEW

1.1 THE REVIEW AND ITS REPORTS

The independent review of coal seam gas activities in NSW (the Review) undertaken by the Chief Scientist & Engineer began in late February 2013. The Terms of Reference for the Review are at Appendix 1. This report is the final and overarching report of the Review.

Over the past 19 months, the Review has examined the coal seam gas (CSG) industry, the potential environmental, human health and social impacts of CSG extraction, and the legislative and regulatory framework within which CSG operations occur in NSW.

The Initial Report of the Review (CSE Initial Report) was released in July 2013. It provided an overview of the issues and made five recommendations. Since then, the Review has released and is releasing reports on major topics identified through the Review, including:

- insurance and related financial coverage to manage environmental impacts (CSE Insurance)
- compliance systems and processes (CSE Compliance)
- risks to human and environmental health (CSE Risks).

The Review has also provided advice on other related matters requested by Ministers, specifically:

- the placement of monitoring equipment for water resources (CSE Monitoring)
- measuring cumulative impacts of activities which impact ground and surface water in the Sydney Water Catchment (CSE Catchment).

A full list of all the reports released by the Review is given at Appendix 2. All are available on the Chief Scientist & Engineer's website (http://www.chiefscientist.nsw.gov.au/coal-seam-gas-review).

In addition, the Review team is releasing information papers on fracture stimulation, abandoned wells and on managing the physical interface between the CSG industry and other activities. As well, more than 20 background information papers by experts were commissioned on a range of topics, with more than one paper for more controversial topics. These background papers are also available on the website.

1.2 PROCESS OF THE REVIEW

Overall the process of the Review was developed in the knowledge that the issues to be examined were contentious, complex, technical and wide ranging. For this reason it was clear that the Review needed to canvass many different opinions and experts covering a range of perspectives and fields, but it had to do this in a way that maintained a level of independence and avoidance (or awareness) of organisations' conflicts of interests.

The Chief Scientist & Engineer established a team within the Office of the Chief Scientist & Engineer (the Review team) to support and facilitate the Review work. The size of the task required the team to grow from the small team already in place in the Office. The fact that the Review team included individuals with a diverse range of academic and professional backgrounds, including computer engineering, chemical engineering, mechanical engineering, petroleum engineering, hydrogeology, medicine, agriculture, chemistry, environmental science, high-tech equipment compliance systems, public policy and communication, brought a range of perspectives to the issues involved. While the Review team members were not CSG experts, their range of experience meant the Review was able

to formulate detailed technical queries and undertake informed analysis and interpretation of relevant issues and information, drawing on experts advising the Review as necessary.

Throughout the Review the team has pursued the philosophy of operating as transparently as possible, publishing all submissions received apart from those marked 'confidential' on the website of the Chief Scientist & Engineer, talking to the media on request and publishing commissioned papers on the website. Those working on the Review, either in the team or as commissioned experts, were asked to declare all real and possible conflicts of interest with a register established and decisions about how to handle conflicts being determined on a case-by-case basis with decisions formally recorded.

The range and complexity of the issues meant that a great many individuals and organisations needed to be canvassed, ranging from independent impartial experts, to key players in the CSG landscape; from those deeply supportive, to others fighting to prevent the industry's further development.

To address the terms of reference and understand the complexities of the issues, the Review team conducted substantial literature searches (CSE Initial Report §1.4.1) and read widely in the peer-reviewed literature as well as the 'grey literature' reports from organisations, industry and associations. During the course of the Review, a range of material was developed and released by other Australian bodies including the Commonwealth (particularly through the IESC processes), the Queensland Government, CSIRO and other organisations. This was taken into account by the Review.

Consultation was undertaken widely with independent academic experts, government agencies, natural gas industry and service companies, industry bodies, wider industry, community activist groups and the broader community to understand the key issues from a range of perspectives. These consultations were done through public submissions, background technical information papers, formal meetings, visits, workshops, interviews and information requests.

Technical assistance and expertise was drawn particularly from universities, publicly funded research organisations, the learned academies and technical consulting firms. Such assistance included commissioned papers, occasional advice on formulating issues, assistance with identifying experts, peer review of the Review reports, and participation in meetings.

A series of background technical information papers was commissioned on a range of issues related to the CSG industry. Independent experts, who had minimal or no actual, potential or perceived conflicts of interest, were engaged to write the papers. The rationale, process and development for the papers is discussed in the Initial Report §1.4.2. More than 20 background papers have been developed and are available on the website (http://www.chiefscientist.nsw.gov.au/coal-seam-gas-review/csg-background-papers).

The Review inspected CSG exploration and related water-management activities at Narrabri and Gloucester and inspected CSG production and related activities at Camden. It also inspected the Apex Energy CSG exploration site in the Sydney Catchment.

A call for public submissions to the Review was made to enable the Review to understand the issues and concerns from various perspectives (CSE Initial Report §1.4.5). Submissions were welcomed throughout the entire Review and provided considerable insight into specific issues. A total of 266 submissions was received. The submissions are available on the website (http://www.chiefscientist.nsw.gov.au/coal-seam-gas-review/public-submissions).

Consultations involving community members and local councils were held across the State in Camden, Campbelltown, Gloucester, Sydney Catchment, Taree, Gunnedah, Narrabri (including the Pilliga) and the Liverpool Plains.

The team also consulted with government agencies in NSW, across Australia, and overseas.

Consultations with NSW Government agencies formed an important part of the Review, and were used to provide information on the current regulatory system, how the system has operated previously, and what reforms have been put in place more recently. The Review had many face-to-face meetings and teleconferences over the period with agencies, and also surveyed relevant agencies to identify data holdings and systems. The Review sought formal advice on specific issues as required. The Review team also worked closely with the Land and Water Commissioner, drawing on his ongoing consultations across the State on CSG.

The team met with relevant officers from Queensland, Western Australian and South Australian agencies to understand the processes and issues being dealt with in those states. Discussions were held with various Commonwealth Government agencies and agencies from overseas including from Canada, New Zealand, USA and UK. The government agencies associated with resource and environmental management in these other jurisdictions were consulted through meetings, phone discussions and email, with some of these agencies also assisting the Review by providing peer review of report sections, in particular as they related to their jurisdictions.

Various stakeholders from the CSG industry, including companies providing services to the CSG industry, community groups, industry bodies and associations, including from the wider business sector, were invited to meetings with the Review team to discuss key issues and concerns – including those raised in submissions. The Review team met many of these organisations multiple times, including meeting with peak bodies and key stakeholders in the final few weeks of the Review to ensure that the team kept abreast of any new issues that may have arisen.

The Review also ran several workshops aimed at resolving some of the more difficult issues. To understand the complexities associated with cumulative impacts in the Sydney Water Catchment, the Review held two workshops where it brought together top-level experts in relevant fields (see CSE Catchment §1.3.3). To inform the work on CSG risks, four workshops were held. These were a novel way of bringing together stakeholders (many expert) from industry, research organisations, government and the community so participants could hear, debate, consider and, in some cases, resolve opposing viewpoints. Attendees at these workshops were selected for their knowledge, expertise and interest in the issues related to CSG and related activities. Government officials, researchers, and representatives from extractive industries, peak bodies, learned academies and community groups took part, providing a diverse range of backgrounds, expertise and views. Further to this a series of targeted meetings was held with expert practitioners from individual government agencies, research organisations and industry to delve further into specific issues in particular the risks and technical controls available to manage CSG (see CSE Risks §1.2.1).

By far the most complex and time-consuming task the Review undertook was the Compliance Study and its investigation of the processes and systems for ensuring compliance with legislative instruments, regulations and conditions applying to CSG extraction in NSW. The approach to reviewing compliance activity was informed by consultation, public submissions, well inspections, site visits and extensive interaction with the various agencies responsible for compliance with the legislation and regulations pertaining to CSG extraction (see CSE Compliance §1.2), but was challenged by difficulties

in obtaining data to demonstrate compliance, and indeed it ended up being the rate-limiting step for the Review.

1.3 HOW THIS REPORT IS STRUCTURED

This final report provides the overall findings and recommendations of the Review. The individual reports, listed at Appendix 2, provide the detail, evidence and rationale behind various findings and recommendations.

The main findings of the Review are in Chapter 3 and its recommendations are in Chapter 4. As much has happened in Government regarding CSG over the course of the Review, these developments are summarised in Chapter 2 to provide contemporary context for the findings and recommendations.

2 DEVELOPMENTS IN GOVERNMENT AND RELATED ENTITIES SINCE THE REVIEW STARTED

During the course of the Review, a number of regulatory, administrative and process changes have been brought in by NSW Government as well as Commonwealth and local entities to address issues related to CSG.

Legislative reform has included a range of amendments to the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (SEPP), which brought about initiatives such as the Gateway Process, Strategic Agricultural Land mapping, residential CSG exclusion zones and their 2km buffers, as well as Critical Industry Clusters in the Upper Hunter, and clarified the State Significant Development criteria for CSG exploration wells. Further changes to the SEPP were also introduced to stipulate criteria to protect water resources, habitat and amenity; to ensure that decisions around approvals balance economic (resource) and environment issues; and to require the consent authority to consider biodiversity mitigation and offsets.

The *Protection of the Environment Operations Act 1997* and the *Protection of the Environment Operations (General) Regulation 2009* were amended, positioning the Environment Protection Authority (EPA) to be the lead regulator for environmental and human health impacts of CSG; and introducing a risks-based approach to environmental licensing.

Soon to be completed are a review of the *Petroleum (Onshore) Act 1991* and the introduction of a new title instrument that aims to ensure that activity approvals and conditions travel with the petroleum title. The Codes of Practice for Fracture Stimulation Activities and Well Integrity are also being reviewed, while Codes for Safety Management Systems and Emergency Response are being developed.

During the period of the Review, the Commonwealth Government has also introduced legislative changes that impact NSW CSG industry, in particular the introduction of the 'water trigger' under the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*, requiring the CSG-related proposals that are likely to impact significant water resources to be referred to the Commonwealth. Later amendments devolved the Environmental Impact Assessment authority from the Commonwealth to NSW, with the Commonwealth accrediting the NSW processes.

Several changes have also been made to the administrative arrangements in NSW Government agencies for dealing with CSG. These have included the establishment of the Office of Coal Seam Gas in NSW Trade & Investment; the establishment of the position of Land and Water Commissioner; and a review followed by a restructure of the Division of Resources and Energy (DRE) in NSW Trade & Investment, following the appointment of a new Deputy Secretary. Furthermore, the responsibility for collecting minerals royalties (including for petroleum) has been transferred from DRE in NSW Trade & Investment to the Office of State Revenue in the Treasury and Finance cluster of NSW Government, effective from July 2014.

Efforts have also been made to streamline and coordinate processes across regulators, including through a Memorandum of Understanding (MOU) and the establishment of a cross-agency working group on CSG. In addition, several agencies have taken steps to improve regulatory capability and capacity through recruiting staff, purchasing additional

instrumentation and developing materials to improve officers' knowledge of the CSG industry.

On exploration licence issues, the NSW Government has:

- put a hold on CSG exploration and extraction in the Sydney Water Catchment Special Areas
- put a 6 month freeze on new petroleum exploration licence applications, which was extended by a further 12 months to September 2015
- undertaken to audit existing petroleum exploration licences
- designated the Santos Narrabri Gas Project and AGL's Gloucester Gas Project as Strategic Energy Projects
- signed an MOU with Santos to streamline the assessment process for the Narrabri Gas Project
- renewed AGL's Gloucester petroleum exploration licence and granted an activity approval to fracture stimulate four wells.

Initiatives that relate to land access have been introduced by Government and other entities, such as a review of the process for arbitrating land access arrangements for exploration commissioned by NSW Government followed by the announcement in August 2014 that all recommendations of that review were endorsed and will be implemented progressively. A voluntary Code of Practice for Land Access was developed by DRE. An MOU was executed by NSW Farmers, Cotton Australia, NSW Irrigators Council, AGL, and Santos agreeing common principles of access to private agricultural landholders' property.

Other broader initiatives that affect CSG extraction include:

- an Energy Security Summit that examined emerging issues of gas supply for NSW
- the release of the Water Monitoring Framework developed by the NSW Office of Water, which includes a Groundwater Baseline Project commissioned by the Land and Water Commissioner
- an announcement by the Minister for Natural Resources, Lands and Water of a scheme to credit the return of groundwater to the water sources from which it was extracted
- development by the NSW Office of Water of Guidelines to assist proponents to develop Groundwater Monitoring and Modelling Plans
- release of a framework by the NSW Office of Water that describes the assessment criteria for the Aquifer Interference Policy to aid the development of a project proposal or Environmental Impact Statement.

Other developments, not directly related to CSG, that could impact the industry include:

- the release in October 2013 of the Independent Commission Against Corruption's report *Reducing the opportunities and incentives for corruption in the state's management of coal resources,* that makes a range of relevant recommendations on managing the coal mining industry in NSW
- a number of agency amalgamations and restructures including the formation of Bulk Water NSW from the Sydney Catchment Authority and State Water, and the creation of the new Department of Planning and Environment.

6

3 FINDINGS

This chapter presents the high-level findings of the Review. The evidence and reasoning supporting these findings is provided in the various detailed reports of the Review, listed at Appendix 2.

Stakeholders have significant concerns

- Land is a key issue and one that strikes an emotional chord due to the strong affinity Australians have with their land and its central role in the livelihood of rural communities. There is a perceived lack of support for rights of landowners in terms of access to their land. Lack of consultation, inadequate compensation, property value decreases, and potential legacy issues are also cited as major issues by landowners as are the negative impacts on amenity and a lack of adequate benefits for their neighbours and their communities.
- Water is another key issue. Primary producers and others fear that CSG developments will negatively impact prime agricultural land by depleting aquifers and contaminating groundwater reserves. They argue that it could result in reduced food production.
- Other major concerns, especially from community groups, are short- and long-term negative environmental impacts (and who will pay to remediate land); managing produced water and associated by-products such as salts; possible impacts on human and animal health; the distributed nature of the industry (giving rise to concerns including malfunctioning unattended wells and heavy traffic on minor roads); and the cost to the taxpayer of regulating the industry.
- Certain processes such as fracture stimulation ('fracking') and, to a lesser extent, horizontal drilling, are of particular concern in the context of CSG although the use of these techniques in other industries (underground water access in the case of fracture stimulation and infrastructure provision in the case of horizontal drilling) is more accepted.
- There is concern about lack of adequate and respectful consultation. Stakeholders cited the failure of industry proponents and government agencies at all levels to engage, provide information, communicate and address community concerns before proceeding with development. On the issue of consultation and adequate information provision, the Review notes that getting the balance right between overall benefit to society and impact on individuals is a recurrent challenge for governments especially for issues as divisive as CSG. While the Review found that consultation and information provision could be significantly improved, it is clear that there are many in the community whose level of concern is such that they are likely to remain opposed to CSG production in NSW under any conditions.
- A large number of those who expressed their opposition to CSG to the Review also made it clear that they were not opposed to CSG *per se* but were opposed to CSG production in heavily populated areas and in areas of intensive agricultural production.
- Local councils, especially rural councils, are concerned that they are not receiving adequate funds to cover rapid infrastructure upgrades (such as upgrades to local roads and other amenities) necessary to deal with the CSG industry coming to a rural locality.
- The CSG industry is concerned that it is being adversely affected financially by what it perceives to be an uncertain, often changing, and increasingly tough regulatory regime in NSW.
- There is a perception in some parts of the community that CSG extraction is potentially more damaging and dangerous than other extractive industries. This perception was heightened following the release of the American movie *Gasland* in 2010. The Review examined this issue in detail and concluded that while the CSG industry has several

aspects that need careful attention, as do almost all industries, it is not significantly more likely to be more damaging or dangerous than other extractive industries.

- Many perceive the CSG industry to be a new industry that is being fast-tracked without adequate attention to significant concerns. CSG production has been happening at significant levels in North America (where coal seam gas is generally referred to as coal bed methane) for two decades and in NSW for 13 years (at Camden by Sydney Gas, later AGL). CSG from NSW sources currently accounts for 5% of the NSW gas supply. In the 1990s the Government introduced measures such as a five-year royalty holiday (followed by a five-year incremental sliding scale of royalties from 6% up to 10%) to encourage the petroleum industry. This benefit was removed at the end of 2012. Some of the companies that began exploring during this time were responsible for incidents that led to increased concerns about the industry generally.
- Complex and opaque legislation and complex regulatory processes. This concern was raised repeatedly by community, the CSG industry and government agencies. It can lead to considerable administrative burden for those needing to comply, those assessing compliance and those trying to understand the legislative and regulatory regime from the community for the purpose of investigating concerns. This complexity can also lead to gaps, overlaps, contradictions and wasted time in inefficient oversight. The Review agrees that the legislation and regulatory processes need to be addressed.
- Inconsistent legislation. Many industry and community groups have alerted the Review to varying legislative and regulatory regimes for things similar to those relating to CSG extraction. Legislation and regulation covering the construction of wells and production of gas from coal seams as part of coal mining activities is less stringent than that for CSG production. Similarly a 2km buffer zone approach has been introduced for CSG extraction, but no such zone is in place for conventional gas or other types of unconventional gas extraction.

Lack of trust

- CSG companies are viewed as untrustworthy by some members of the community in both urban and rural areas. This lack of trust seems to stem particularly from some CSG exploration companies: being perceived to be in violation of land access regulations; being perceived by some to bully vulnerable landholders; not managing sub-contractors appropriately; engaging in questionable environmental practices; and not reporting accidents to the regulator quickly enough.
- Despite the limited extent of CSG development across NSW, Government is perceived by some as favouring the CSG industry for allowing it to proceed in areas where there has been considerable community opposition. Government is also perceived by some as not managing regulatory compliance effectively and not supporting compliance activities with sufficient penalties where CSG companies have infringed regulations.
- Government and industry information about CSG is perceived by some as lacking independence and, accordingly, is not trusted.
- Among groups trying to understand CSG impacts there is concern about lack of access to raw data, and especially baseline data associated with a locality, before CSG exploration and production commences. While the Government open data access provisions of recent years go some way to addressing this concern, the fact that most companies are not releasing this data in raw form (and are not required by Government to release it) leads to increased suspicion.
- There is considerable social tension and animosity between some neighbours in some local communities where CSG operations are proceeding or proposed. On the one hand there are those who are concerned about potential negative impacts of CSG extraction and see those who want its introduction as 'selling out' to CSG companies. On the other hand, landowners and community members who are in favour of CSG often feel that the debate has been 'hijacked' by environmental activists who are 'using' the community for their own ends.

8

There can be benefits to individuals, industry and communities

- Industry, particularly the manufacturing industry, believes having increased amounts of locally produced gas helps deal with concerns about rising gas prices and possible future shortages. This is a particular issue for several companies that have long-term gas purchase contracts expiring. As well as raising concerns about price, several industry and government figures have also expressed concern about potential gas shortages, in the light of the high-value contracts for the export of gas from the new LNG plants at Gladstone. The impending increase in export capacity is anticipated to lead to greater demand for CSG production and to cause Australian east coast gas prices to rise to meet the export price.
- With effective consultation addressing stakeholder concerns and appropriate levels of compensation, CSG development can provide new revenue streams for landholders and their communities. With appropriate support arrangements in place, landholders can make money from CSG production on their land. While local councils have to ensure their communities can cope with the industry influx, industry activity can bring benefits to communities, especially to rural communities, in terms of increased employment, rents and servicing opportunities.

CSG extraction and related technologies are mature and Australia is well equipped to manage their application

- Unconventional gas production is now a major industry especially in North America where, on balance, it is generally highly valued because of the energy security it provides. On the back of this, there is now considerable investment and experience in the development and refinement of technologies to maximise production while minimising adverse impacts. In Australia related technologies have now been extensively deployed successfully for some years (including at Camden in NSW). The independent petroleum engineering, geological and geophysical experts advising the Review consider that such technologies (including fracture stimulation and horizontal drilling technologies), with appropriate safeguards, are suitable for use in many parts of the sedimentary basins in NSW, noting that drilling in any new location is, to an extent, a learning-by-doing activity as there will always be local geological attributes specific to an individual resource development. These activities can and should be guided by companies investing in geophysics and other characterisation techniques to inform the best drilling and extraction approaches to take.
- There is a long history of working in the subsurface in Australia for the extraction of resources such as minerals, coal, gas, oil, water and, to a lesser extent, geothermal heat. This has led to a good understanding by Australian governments of what is needed to regulate subsurface activities for the purposes of safety, health, minimising environmental impact and protecting high-priority resources such as water. As a consequence Australia has built up high-quality expertise and knowledge of subsurface activities. In the public sector it has government agencies such as Geoscience Australia and State resources departments; research-intensive Earth Science and Mining Engineering departments in universities; publicly funded research agencies such as CSIRO and ANSTO; various collaborative research centres; and relevant national collaborative research infrastructure. In the private sector Australian resources companies have reputations as leading in the applications of world best practice. With Australia heavily invested in resources development, most of the global resources industry service companies have a major presence here. Australia also has a well-educated workforce.
- Australia has a strong track record in water technology innovation and management. Water is a key issue for Australia so we have developed significant capabilities in water management. This includes water treatment, operations and infrastructure for water and fluids management, management of byproducts such as salts, waste disposal,

remediation and rehabilitation. These activities are backed by considerable research and science expertise especially in government agencies, universities, CSIRO, the Bureau of Meteorology and various Cooperative Research Centres. This means that Australia is in a good position to rise to the challenge of managing the various water issues associated with CSG production.

There are things we need to know more about

- While Australia has a long history of working in the subsurface, there is still considerable uncertainty associated with the development of any new resource province. Currently CSG activities tend to be considered mainly at a site-specific level. A better understanding of the industry impacts at scale and over time is needed. To enable better planning decisions and better management of cumulative impacts, it will be necessary that industry collects and provides to Government significantly more data than at present including data from a wider range of sources. With a diverse range of resources, including coal, CSG and underground water, hosted in our sedimentary basins, there is a need to understand better how the different resources and their development regimes interact. More detailed knowledge of the structure and composition (especially regarding hydrogeology) of the sedimentary basins is needed to enhance productivity for the CSG industry through more precise resource characterisation and better subsurface and surface environmental management.
- There is a need to understand better the nature of risk of pollution or other potential short- or long-term environmental damage from CSG and related operations, and the capacity and cost of mitigation and/or remediation and whether there are adequate financial mechanisms in place to deal with these issues. This requires an investigation of insurance and environmental risk coverage, security deposits, and the possibility of establishing an environmental rehabilitation fund. Doing this is essential to ensure that the costs and impacts from this industry are not a burden for the community.
- Legacy issues, including better understanding of inappropriately abandoned wells, need attention.

Risks can be managed

- Management of potential risks associated with CSG, as with other industries, requires effective controls; high levels of industry professionalism; systems to predict, assess, monitor and act on risks at appropriate threshold conditions; legislation; regulation; research; and commitment to rapid remediation, continuous improvement and specialist training. The Review studied the risks associated with the CSG industry in depth and concludes that – provided drilling is allowed only in areas where the geology and hydrogeology can be characterised adequately, and provided that appropriate engineering and scientific solutions are in place to manage the storage, transport, reuse or disposal of produced water and salts – the risks associated with CSG exploration and production can be managed. That said, current risk management needs improvement to reach best practice.
- In particularly sensitive areas, such as in and near drinking water catchments, risk management needs to be of a high order with particularly stringent requirements on companies operating there in terms of management, data provision, insurance cover, and incident-response times.

New knowledge and technologies are becoming available but need to be harnessed to make CSG extraction safer and more productive

- Rapid advances in knowledge and technologies in a wide range of fields (especially in information and communication technologies; numerical modelling; geology, geophysics and petroleum engineering; and new materials) are occurring and can be harnessed to improve CSG production efficiency and to minimise adverse impacts. Some of the most notable recent developments include:

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  - data technologies especially in the area of big data, data analytics and data fusion. These technologies use very large amounts of data from diverse sources to enable better understanding of complex earth systems with an improved grasp of the uncertainties in modelling for purposes such as characterising CSG resources and predicting groundwater impacts. For these powerful technologies to be effective, significantly more data from a wider range of sources need to be collected
  - visualisation technologies that allow for detailed inspection of data. These include using 3D and movie techniques which are often particularly useful in allowing experts from a wide range of disciplines to inspect and analyse large amounts of complex data easily and quickly. They are also used for training and testing responses to hazardous situations
  - sensor and monitoring technologies – both in-line and remote monitoring technologies – are becoming very cheap and are increasingly integrated with onboard signal processing and communications technologies. This means that the very large amounts of surveillance data they produce can be preprocessed locally then rapidly sent to a central data repository
  - artificial intelligence techniques that allow for intelligent, real-time interrogation of monitoring data with alerts when anomalies are detected
  - developments in petroleum engineering that allow for better matching of combinations of appropriate technologies for particular geological situations
  - developments in new materials.
- In order to speed the beneficial uptake of new technology developments for an industry as contentious as CSG, the Review concludes that Government needs access to such expertise on a permanent basis, such as by creation of a standing committee comprising top experts from relevant disciplines, to advise it when to act on new technology developments as they become available.

There are no guarantees

- All industries have risks and, like any other, it is inevitable that the CSG industry will have some unintended consequences, including as the result of accidents, human error, and natural disasters. Industry, Government and the community need to work together to plan adequately to mitigate such risks, and be prepared to respond to problems if they occur.

4 RECOMMENDATIONS

The final recommendations of the Review are presented below, grouped according to themes. Some of the recommendations have been modified, simplified or combined, compared with the form in which they were first presented in previously released reports of the Review; however their intent has not changed.

Intent, communication, transparency and fairness

Recommendation 1

That Government make clear its intent to establish a world-class regime for extraction of CSG. This could be articulated in a clear public statement that covers:

- the rationale/need for CSG extraction
- a clear signal to industry that high performance is mandatory, compliance will be rigorously enforced and transgressions punished
- a fair system for managing land access and compensation
- a mechanism for developing a clear, easy-to-navigate legislative and regulatory framework that evolves over time to incorporate new technology developments
- mechanisms for working closely and continuously with the community, industry, and research organisations on this issue.

Recommendation 2

That Government ensure clear and open communication on CSG matters is maintained at all times. This includes:

- simplicity and clarity in legislative and regulatory requirements
- ensuring openness about CSG processes in line with an open access approach; publishing all relevant approval requirements, decisions and responses, and compliance and enforcement outcomes on appropriate government websites and making CSG data from companies, Government and research organisations available through a centralised Government data repository
- measurable outcomes to track performance against commitments to reform.

Recommendation 3

That Government investigate as a priority a range of practical measures for implementation (or extension of current measures) to allow affected communities to have strengthened protections and benefits including fair and appropriate:

- land access arrangements, including land valuation and compensation for landholders
- compensation for other local residents impacted (above threshold levels) by extraction activities
- funding (derived from the fees and levies paid by CSG companies) for local councils to enable them to fund, in a transparent manner, infrastructure and repairs required as a consequence of the CSG industry.

Recommendation 4

That the full cost to Government of the regulation and support of the CSG industry be covered by the fees, levies, royalties and taxes paid by industry, and an annual statement be made by Government on this matter as part of the Budget process.

Legislative and regulatory reform and appropriate financial arrangements

Recommendation 5

That Government use its planning powers and capability to designate those areas of the State in which CSG activity is permitted to occur, drawing on appropriate external expertise as necessary.

Recommendation 6
That Government move to a single Act for all onshore subsurface resources (excluding water) in the State, constructed to allow for updating as technology advances. This will require a review of all major Acts applying to the resources sector.

Recommendation 7
That Government separate the process for allocation of rights to exploit subsurface resources (excluding water) from the regulation of the activities required to give effect to that exploitation (i.e. exploration and production activities); and that it establish a single independent regulator. The regulator will require high levels of scientific and engineering expertise, including geological and geotechnical ability, environmental and water knowledge and information, and ICT capability including data, monitoring and modelling expertise; and will be required to consult – and publish details of its consultations – with other arms of Government and external agencies, as necessary. The regulator will also require appropriate compliance monitoring and enforcement capability.

Recommendation 8
That Government move towards a target and outcome-focused regulatory system, with three key elements:

- regularly reviewed environmental impact and safety targets optimised to encourage uptake of new technologies and innovation
- appropriate and proportionate penalties for non-compliance
- automatic monitoring processes that can provide data (sent to and held in the openly accessible Whole-of-Environment Data Repository) which will help detect cumulative impacts at project, regional and sedimentary basin scales which can be used to inform the targets and the planning process.

Recommendation 9
That Government consider a robust and comprehensive policy of appropriate insurance and environmental risk coverage of the CSG industry to ensure financial protection short and long term. Government should examine the potential adoption of a three-layered policy of security deposits, enhanced insurance coverage, and an environmental rehabilitation fund.

Managing risk by harnessing data and expertise

Recommendation 10
That Government commission the design and establishment of a Whole-of-Environment Data Repository for all State environment data including all data collected according to legislative and regulatory requirements associated with water management, gas extraction, mining, manufacturing, and chemical processing activities. This repository, as a minimum, would have the characteristics that it:

- is accessible by all under open data provisions
- has excellent curatorial and search systems
- houses long-term data sets collected as part of compliance activities
- can accept citizen data input
- can be searched in real time
- is spatially enabled
- is able to hold data in many diverse formats including text, graphics, sound, photographs, video, satellite, mapping, electronic monitoring data, etc., with appropriate metadata
- is the repository of all research results pertaining to environmental matters in NSW along with full details of the related experimental design and any resulting scientific publications and comments
- is the repository of historical resources data with appropriate metadata

Various legislative amendments or other incentives will be needed to direct all environment data to the Repository.

Recommendation 11

That Government develop a centralised Risk Management and Prediction Tool for extractive industries in NSW. This would include a risk register, a database of event histories, and an archive of Trigger Action Response Plans. The tool would be updated annually based on Government and company reporting and would include information on risk management and control approaches and draw on data from the Whole-of-Environment Data Repository for the State. The risk tool would be reviewed and commented on by relevant expert and regulatory bodies. The risk tool would be used to assist with:

- assessing new proposals
- assessing compliance
- improving prediction capability for consequences of incidents in risk assessments
- improving prediction capability of risk likelihoods
- informing project design amendments to decrease risk levels (such as undertaken in the Dam Safety Committee)
- informing the calculation of cumulative impacts
- flagging issues or risks that require a higher level of regulatory protection such as inclusion in legislation.

Recommendation 12

That Government establish a standing expert advisory body on CSG (possibly extended to all the extractive industries). This body should comprise experts from relevant disciplines, particularly ICT and the earth and environmental sciences and engineering, but drawing as needed on expertise from the biological sciences, medicine and the social sciences. The prime functions of this expert body would be to advise Government:

- on the overall impact of CSG in NSW through a published Annual Statement which would draw on a detailed analysis of the data held in the Whole-of-Environment Data Repository to assess impacts, particularly cumulative impacts, at project, regional and sedimentary basin scales
- on processes for characterising and modelling the sedimentary basins of NSW
- on updating and refining the Risk Management and Prediction Tool
- on the implications of CSG impacts in NSW for planning where CSG activity is permitted to occur in the State
- on new science and technology developments relevant to managing CSG and when and whether these developments are sufficiently mature to be incorporated into its legislative and regulatory system
- on specific research that needs to be commissioned regarding CSG matters
- on how best to work with research and public sector bodies across Australia and internationally and with the private sector on joint research and harmonised approaches to data collection, modelling and scale issues such as subsidence
- on whether or not other unconventional gas extraction (shale gas, tight gas) industries should be allowed to proceed in NSW and, if so, under what conditions.

Recommendation 13

That Government establish a formal mechanism consisting of five parallel but interacting steps. The five steps are given below.

- Companies or organisations seeking to mine, extract CSG or irrigate as part of their initial and ongoing approvals processes should, in concert with the regulator, identify impacts to water resources, their pathways, their consequence and their likelihood, as well as the baseline conditions and their risk trigger thresholds before activities start. These analyses and systems should be incorporated in project management plans to meet regulator-agreed targets. Appropriate monitoring and characterisation

systems would be developed as part of these project management plans and then installed. The monitors would measure baseline conditions and detect changes to these, as well as providing data on impacts and triggered risk thresholds.

- Data from the monitors should be deposited (either automatically or in as close to real time as possible) in the State Whole-of-Environment Data Repository by all the extractive industries. Increasingly automated tools to interrogate data in the Repository should be developed, and these used to search data for discontinuities and compliance alerts.
- As a separate process, the expert advisory body would examine on a frequent basis all data relevant to a region or a sedimentary basin. This data would come from a range of sources (the companies' monitoring data along with triangulation/cross-validation data such as that from satellites, reports from local councils, seismic data, subsidence maps, information from cores, etc.). The expert body would use this data review to check for any factors signalling problems in that region and, if any are found, recommend to Government the appropriate action to be taken with regard to the relevant parties.
- In a parallel process, the Government should commission, construct and maintain a variety of models of each region and in particular one that seeks to address cumulative impacts. These models should feed into the land use planning process and the activity approvals processes, and should assist in target setting for new projects.
- Government, working with other appropriate Australian governments, should commission formal scientific characterisation of sedimentary basins starting with the East Coast basins, and concentrating initially on integration of groundwater with the geological, geophysical and hydrological context. Viewing these integrated systems in models and in interpretation could be described as a 'Glass Earth' approach to understanding the dynamics of activities and impacts in the basins.

Training and certification

Recommendation 14

That Government ensure that all CSG industry personnel, including subcontractors working in operational roles, be subject to ongoing mandatory training and certification requirements. Similarly, public sector staff working in compliance, inspections and audits should be given suitable training and, where appropriate, accreditation.

Legacy and consistency matters

Recommendation 15

That Government develop a plan to manage legacy matters associated with CSG. This would need to cover abandoned wells, past incomplete compliance checking, and the collection of data that was not yet supplied as required under licences and regulations. There will also need to be a formal mechanism to transition existing projects to any new regulatory system.

Recommendation 16

That Government consider whether there needs to be alignment of legislation and regulation governing extraction of methane as part of coal mining and the application of buffer zones for gas production other than CSG with the relevant legislation and regulation provisions governing CSG production.

APPENDICES

APPENDIX 1 TERMS OF REFERENCE

Review of coal seam gas activities in NSW

At the request of the NSW Government, the NSW Chief Scientist & Engineer will conduct a review of coal seam gas (CSG) related activities in NSW, with a focus on the impacts of these activities on human health and the environment.

The Chief Scientist & Engineer is to:

1. undertake a comprehensive study of industry compliance involving site visits and well inspections. The Chief Scientist's work will be informed by compliance audits undertaken by regulatory officers, such as the Environment Protection Authority and other government agencies
2. identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment and water catchments
3. identify best practice in relation to the management of CSG or similar unconventional gas projects in close proximity to residential properties and urban areas and consider appropriate ways to manage the interface between residences and CSG activity
4. explain how the characteristics of the NSW coal seam gas industry compare with the industry nationally and internationally
5. inspect and monitor current drilling activities including water extraction, hydraulic fracturing and aquifer protection techniques
6. produce a series of information papers on specific elements of CSG operation and impact, to inform policy development and to assist with public understanding. Topics should include:
   - operational processes
   - NSW geology
   - water management
   - horizontal drilling
   - hydraulic fracturing (fraccing)
   - fugitive emissions
   - health impacts
   - wells and bores
   - subsidence.

The NSW Chief Scientist & Engineer will provide an initial report to the Premier and the Minister for Resources and Energy on her findings and observations by July 2013.

APPENDIX 2 REPORTS AND BACKGROUND PAPERS WRITTEN AND/OR COMMISSIONED BY THE NSW CHIEF SCIENTIST & ENGINEER DURING THE INDEPENDENT REVIEW OF COAL SEAM GAS ACTIVITIES IN NSW

Reports written by the NSW Chief Scientist & Engineer for the Independent Review of Coal Seam Gas Activities in NSW

Available at http://www.chiefscientist.nsw.gov.au/reports

- Initial Report on the Independent Review of Coal Seam Gas Activities in NSW
- Environmental risk & responsibility and insurance arrangements for the NSW CSG industry
- On measuring the cumulative impacts of activities which impact ground and surface water in the Sydney Water Catchment
- Placement of monitoring equipment for water resources in NSW
- Study of regulatory compliance systems and processes for coal seam gas
- Managing environmental and human health risks from coal seam gas activities
- Final Report of the Independent Review of Coal Seam Gas Activities in NSW

Information papers written by the NSW Chief Scientist & Engineer for the Independent Review of Coal Seam Gas Activities in NSW

- Information paper: On managing the interface between coal seam gas activities and other land uses (Setbacks)
- Information paper: Fracture stimulation activities
- Information paper: Abandoned wells

Reports commissioned by the NSW Chief Scientist & Engineer for the Independent Review of Coal Seam Gas Activities in NSW

Available at http://www.chiefscientist.nsw.gov.au/coal-seam-gas-review/csg-background-papers

	Topic	Expert name and organisation	Title of paper
1	Baseline human health	Dr Pavla Vaneckova & Assoc Professor Hilary Bambrick: University of Western Sydney – Centre for Health Research	Approaches to baseline studies of human health in relation to industries with potential environmental impact
2	CSG processes	Professor Peter Cook: PJC International, National Centre for Groundwater Research and Training, Flinders University	Life Cycle of Coal Seam Gas Projects: Technologies and Potential Impacts
3	Community concerns	Dr Melanie Taylor, Ms Natalie Sandy & Professor Beverley Raphael: University of Western Sydney - School of Medicine, Disaster Response and Resilience Research Group	Background paper on community concerns in relation to coal seam gas
4	Data management	Dr Ian Gibson, Intersect Australia	NSW Coal Seam Gas: Data Background Paper
5	Gas dispersion modelling	Professor Peter Rayner & Dr Steven Utembe: University of Melbourne - School of Earth Sciences	Modelling the Airborne Dispersion of Pollutants from Coal Seam Gas Extraction
6	Geology	Dr Craig O'Neill and Dr Cara Danis: Macquarie University - Department of Earth and Planetary Science	The Geology of NSW: The geological characteristics and history of NSW with a focus on coal seam gas (CSG) resources
7	Geology	Professor Colin Ward and Assoc. Professor Bryce Kelly: University of New South Wales - School of Biological, Earth and Environmental Sciences	Background Paper on New South Wales Geology: With a focus on basins containing coal seam gas resources
8	Groundwater	Mr Doug Anderson, Ms Priom Rahman, Ms Erica Davey, Mr Brett Miller, Dr William Glamore: University of New South Wales - Water Research Library	Background Paper on Groundwater Resources in Relation to Coal Seam Gas Production
9	Horizontal drilling	Professor John Carter: Advanced Geomechanics	Background Paper on Horizontal Drilling
10	Legislation and regulation	Ms Sue Graebner, Independent consultant	Legislative framework for CSG exploration and production. Released as appendix to CSE report, "Study of

			regulatory compliance systems and processes for coal seam gas"
11	Methane	Dr Linda Stalker: CSIRO	Methane origins and behaviour
12	Produced water	Assoc Professor Damian Gore and Dr Peter Davies: Macquarie University - Department of Environment & Geography	Macquarie University Background paper on produced water and solids in relation to coal seam gas production
13	Produced water	Dr Stuart Khan and Ms Geena Kordek	Coal Seam Gas: Produced Water and Solids,
14	Risk, insurance & management	Mr Bernard Evans: Hicksons Lawyers	Paper 1 - Insurance and Environmental Securities; Attachment: Environmental risks arising from CSG operations
15	Risk, insurance & management	Mr Tony Abbott: Piper Alderman	Insurance and Environmental Securities; Attachment: Risk Model Evaluation
16	Sedimentary basins	Assoc Professor Tim Rawling & Professor Mike Sandiford: University of Melbourne - Melbourne Energy Institute	Multi basin usage/cumulative impact,
17	Seismicity	Professor Mike Sandiford and Mr Gary Gibson: The University of Melbourne - Melbourne Energy Institute	Seismicity and Induced Earthquakes
18	Seismicity	Dr Barry Drummond: Independent consultant, formerly with Geoscience Australia	Background Paper on Seismicity
19	Subsidence causes	Dr Jubert A Pineda and Professor Daichao Sheng: The University of Newcastle - ARC Centre of Excellence for Geotechnical Science and Engineering	Subsidence: An overview of causes, risks and future developments for Coal Seam Gas production
20	Subsidence monitoring	Dr Simon McClusky and Dr Paul Tregoning: The Australian National University - School of Earth Sciences	Background paper on subsidence monitoring and measurement with a focus on coal seam gas (CSG) activities
21	Subsidence monitoring	Cooperative Research Centre for Spatial Information	Subsidence monitoring in relation to coal seam gas production
22	Water treatment	Emeritus Professor Chris Fell: Fell Consulting Pty Ltd	Water treatment and coal seam gas
Other reports written by or commissioned by the NSW Chief Scientist & Engineer prior to the Independent Review of Coal Seam Gas Activities in NSW			
• Hydraulic fracturing for coal seam gas (CSG) stimulation in NSW, by Dr Rob Jeffrey: CSIRO • CSE draft letter on the likelihood of hydraulic fracturing			

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Appendix 2 Submissions

No.	Author
1	Dr Geralyn McCarron
2	Name suppressed
3	Mr Anthony John Pickard
3a	Mr Anthony John Pickard
4	Ms Felicity Cahill
5	Lock the Gate Alliance
6	Lynn Benn
7	Mr David Chadwick
8	Name suppressed
9	People for the Plains Inc
9a	People for the Plains Inc
10	Sydney Knitting Nannas & Friends
11	Dr Hugh Barrett
12	Mr Christopher Zinn
13	Name suppressed
14	Doctors for the Environment Australia
15	Northwest Protection Advocacy
16	Artesian Bore Water Users Association of NSW Inc.
17	Australian Petroleum Production and Exploration Association (APPEA)
18	Santos Limited
19	NSW Government
20	University of Queensland Centre for Natural Gas
21	Miss Suzie Palmer
22	Dr Melinda Mills
23	Ms Bronwyn Vost
24	Dr Keith Fleming
25	Armidale Action on Coal Seam Gas and Mining (AACSGM)
26	Ms Sally Forsstrom
27	The Australian Workers' Union (AWU)
28	Wando Conservation and Cultural Centre Inc
29	Name suppressed

Appendix 3 Witnesses at hearings

Date	Name	Position and Organisation
Tuesday 3 December 2019 Macquarie Room, Parliament House, Sydney	Mr Michael Wright	Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment
	Mr Kevin Ruming	Director Strategic Resource Assessment & Advice, Division of Resources and Geoscience
	Mr James McTavish	NSW Regional Town Water Supply Coordinator
	Ms Tracy Mackey	Chief Executive Officer, Environment Protection Authority
	Mr Mark Gifford	Chief Environment Regulator
	Mr Jim Bentley	Deputy Secretary, Water
	Mr Mitchell Isaacs	Director, Office of the Deputy Secretary and Strategic Relations (Water)
Tuesday 4 February 2020 Macquarie Room, Parliament House, Sydney	Ms Tracey Winters	Strategic Advisor, External Affairs, Santos Limited
	Mr Nick Fox	Head of Environment and Access, Santos Limited
	Mr Ashley Wells	Director-Government Relations, Australian Petroleum Production & Exploration Association
	Ms Georgina Woods	NSW Coordinator, Lock the Gate Alliance
	Ms Sally Hunter	Secretary, People for the Plains Inc
	Mr Michael Wright	Deputy Secretary, Resource and Geoscience, Department of Planning, Industry and Environment

Mr Kevin Ruming	Director, Strategic Resource Assessment and Advice, Division of Resources and Geoscience
Mr James McTavish	NSW Regional Town Water Supply Coordinator
Mr Anthony Keon	Executive Director, NSW Resources Regulator
Mr Mitchell Isaacs	Director , Office of the Deputy Secretary and Strategic Relations (Water)
Mr Richard Bean	Interim Chief Executive Officer, Environment Protection Authority
Ms Carmen Dwyer	Executive Director, Regional Operations, Environment Protection Authority
Mr Andrew Cowan	Program Manager, Environment Protection Authority
Ms Melanie Hawyes	Deputy Secretary, Policy Strategy and Science, Department of Planning, Industry and Environment

Appendix 4 Minutes

Minutes no. 8
Thursday 26 September 2019
Portfolio Committee No. 4 - Industry
Room 1136, Parliament House, 2.31 pm

1. Members present
Mr Banasiak, *Chair*
Ms Hurst, *Deputy Chair*
Mr Amato
Mr Blair *(substituting for Mr Khan) (from 2.34 pm)*
Ms Cusack
Mr Graham
Mr Veitch
Mr Field *(participating)*

2. Previous minutes
Resolved, on the motion of Ms Cusack: That draft minutes no. 7 be confirmed.

3. Correspondence
The committee noted the following items of correspondence:

Received

- 25 September 2019 – Letter from Ms Hurst, Mr Amato, Mr Khan and Ms Cusack requesting a meeting of Portfolio Committee No. 4 to consider a proposed self-reference into the exhibition of exotic animals in circuses and the exhibition of cetaceans in New South Wales.

4. ***

5. ***

6. Other business
Resolved, on the motion of Mr Graham: That the committee defer consideration of the terms of reference for the implementation of the recommendations contained in the NSW Chief Scientists' Independent Review of Coal Seam Gas activities in New South Wales until its next meeting on Thursday 3 October 2019.

7. Adjournment
The committee adjourned at 2.47 pm, until Thursday 3 October 2019, Macquarie Room (Right to Farm Bill hearing).

Madeleine Foley
Committee Clerk

Minutes no. 9
Thursday 3 October 2019
Portfolio Committee No. 4 – Industry
Macquarie Room, Parliament House, 9:15 am

1. Members present

Mr Banasiak, *Chair*
Ms Hurst, *Deputy Chair*
Mr Amato
Ms Cusack
Mr Field (participating for the duration of the inquiry into the provisions of the Right to Farm Bill)
Mr Graham (from 9.30 am)
Mr Khan
Mr Primrose (substituting for Mr Graham until 9.30 am)
Ms Sharpe (substituting for Mr Veitch for the duration of the inquiry into the provisions of the Right to Farm Bill)
Mr Shoebridge (participating from 1.47pm)

2. Previous minutes

Resolved, on the motion of Ms Cusack: That draft minutes no. 8 be confirmed.

3. Correspondence

The Committee noted the following items of correspondence:

Received

- 26 September 2019 – Email from the Hon Mark Buttigieg MLC, Opposition Whip, to the secretariat, advising that the Hon Penny Sharpe MLC will be substituting for the Hon Mick Veitch MLC for the duration of the inquiry into the provisions of the Right to Farm Bill 2019
- 26 September 2019 – Email from Ms Emily Dyball, Office of Justin Field MLC, to the secretariat advising of Mr Field's intention to participate for the duration of the inquiry into the provisions of the Right to Farm Bill 2019
- 27 September 2019 – Email from Ms Gina Higham, Executive Assistant to CEO and Deputy CEO, Legal Aid, to secretariat, advising that Legal Aid is unavailable to attend public hearings scheduled for Thursday 3 October 2019
- 27 September 2019 – Email from Ms Emilia Michael, The Animal Law Institute, to secretariat, advising that The Animal Law Institute is unavailable to make a submission and attend the public hearings scheduled for Thursday 3 October 2019
- 30 September 2019 – Email from Dr Jed Goodfellow, Science and Policy Team Lead, RSPCA Australia, to secretariat, advising that RSPCA Australia is unavailable to attend public hearings scheduled for Thursday 3 October 2019
- 30 September 2019 – Email from Ms Glenys Oogjes, CEO, Animals Australia, to secretariat, advising that Animals Australia is unavailable to make a submission or attend the public hearings scheduled for Thursday 3 October 2019
- 30 September 2019 – Email from Mr Daniel Cung, Chair, Animal Law Committee, NSW Young Lawyers, The Law Society of New South Wales, to secretariat, advising that NSW Young Lawyers is unavailable to attend public hearings scheduled for Thursday 3 October 2019
- 1 October 2019 – Email from Mr Evan Quartermain, Head of Programs, Humane Society International, to secretariat, advising that Humane Society International is unavailable to attend public hearings scheduled for Thursday 3 October 2019
- 1 October 2019 – Email from Ms Isilay Kizilcik, Supporter Relations Team, FOUR PAWS Australia, to secretariat, advising that FOUR PAWS Australia is unavailable to attend public hearings scheduled for Thursday 3 October 2019
- 1 October 2019 – Email from Mr Douglas Brand, Receptionist/Admin, Law Council of Australia, to secretariat, advising that Law Council of Australia, is unavailable to make a submission
- 1 October 2019 – Email from Mr Mark Johnstone, Director, Policy & Practice, The Law Society of New South Wales, to secretariat, advising that the Law Society of New South Wales is unavailable to make a submission or attend the public hearings scheduled for Thursday 3 October 2019

- 1 October 2019 – Email from Ms Sarah Waladan, Head of Legal and Regulatory Affairs, Free TV, to secretariat, advising that Free TV is unavailable to attend the public hearings scheduled for Thursday 3 October 2019
- 2 October 2019 – Email from Ms Phoebe Fear, Australian Veterinary Association, advising that Australian Veterinary Association is unavailable to attend the public hearings scheduled for Thursday 3 October 2019.

4. Consideration of terms of reference – Independent Review of Coal Seam Gas Activities

The committee considered the following terms of reference:

1. That Portfolio Committee No. 4 - Industry inquire into and report on the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales, and in particular:

    (a) the status of the implementation of the recommendations,

    (b) the effectiveness of the implementation of the recommendations and whether or not there are gaps in implementation,

    (c) whether any other inquiry findings or other major reports relating to unconventional gas in Australia or the east coast gas market published since the release of the Chief Scientists are relevant to the suitability or effectiveness of the Chief Scientists recommendations, and

    (d) any other related matters.

2. That the committee report by Tuesday 12 November 2019.

Ms Sharpe moved: That the terms of reference be adopted.

Mr Khan moved: That motion of Ms Sharpe be amended by omitting ' Tuesday 12 November 2019' and inserting instead ' Friday 20 December 2019'.

Amendment put and passed.

Original question, as amended:

That the committee adopt the following terms of reference:

1. That Portfolio Committee No. 4 - Industry inquire into and report on the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales, and in particular:

    (a) the status of the implementation of the recommendations,

    (b) the effectiveness of the implementation of the recommendations and whether or not there are gaps in implementation,

    (c) whether any other inquiry findings or other major reports relating to unconventional gas in Australia or the east coast gas market published since the release of the Chief Scientists are relevant to the suitability or effectiveness of the Chief Scientists recommendations, and

    (d) any other related matters.

2. That the committee report by Friday 20 December 2019.

The committee divided.

Ayes: Mr Banasiak, Ms Hurst, Ms Sharpe, Mr Primrose.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

5. Conduct of the inquiry – Independent Review of Coal Seam Gas Activities

5.1 Proposed timeline
Resolved, on the motion of Mr Khan: That the closing date for submissions be Sunday 27 October 2019, and that following consultation with the chair, the secretariat circulate dates for the hearing and report deliberative to the committee for consideration.

5.2 Stakeholder list
Resolved, on the motion of Ms Hurst: That the secretariat circulate to members the Chair's proposed list of stakeholders to provide them with the opportunity to amend the list or nominate additional stakeholders, and that the committee agree to the stakeholder list by email, unless a meeting of the committee is required to resolve any disagreement.

5.3 Advertising
The committee noted that all inquiries are advertised via Twitter, Facebook, stakeholder letters and a media release distributed to all media outlets in New South Wales.

6. ***

7. ***

8. ***

9. Adjournment
The committee adjourned at 4.20 pm, until Tuesday 15 October 2019 at 6.30 pm.

Madeleine Foley
Committee Clerk

Minutes no. 11

Wednesday 16 October 2019
Portfolio Committee No. 4 – Industry
McKell Room, Parliament House, 8.04 am

1. Members present
Mr Banasiak, *Chair*
Ms Hurst, *Deputy Chair*
Mr Amato
Mr Graham
Mr Khan
Mr Veitch

2. Previous minutes
Resolved, on the motion of Ms Hurst: That draft minutes no. 9 be confirmed.

3. Correspondence
The Committee noted the following items of correspondence:

Received

- 3 October 2019 – Email from Hon Mark Buttigieg, to secretariat, advising that the Hon Peter Primrose will be substituting for the Hon John Graham for the duration of the inquiry into the implementation

of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales.

- 3 October 2019 – Email from Hon Emma Hurst MLC, to the secretariat, advising that Mr Justin Field will be substituting for Ms Hurst for the duration of the inquiry into the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales.
- 15 October 2019 – Email from the Hon Mark Buttigieg, to secretariat, advising that the Hon Penny Sharpe MLC will no longer be substituting for the remainder of the duration of the inquiry into the Right to Farm Bill 2019.

4. ***

5. Adjournment

The committee adjourned at 9.16 am *sine die*.

Madeleine Foley
Committee Clerk

Minutes no. 15
Wednesday 6 November 2019
Portfolio Committee No. 4 - Industry
Members' Lounge, Parliament House, 12.03 pm

1. Members present

Mr Banasiak, *Chair*
Mr Amato *(via teleconference)*
Ms Cusack
Mr Field *(via teleconference)*
Mr Khan *(via teleconference)*
Mr Primrose
Mr Searle

2. Correspondence

The committee noted the following items of correspondence:

Sent

- 11 November 2019 – Letter from the Chair, to the Department of Planning, Industry and Environment, asking the Department to reconsider the invitation to give evidence at the hearing for the inquiry into the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales.

Received

- 5 November 2019 – Email from Mr Jarrad Tulloch, Manager, Government Services, Office of the Secretary, Department of Planning, Industry and Environment to secretariat, advising that witnesses from the Department, including the NSW Chief Scientist and the Land and Water Commissioner, will not attend the hearing on 11 November 2019
- 5 November 2019 – Email from Mr Jarrad Tulloch, Manager, Government Services, Office of the Secretary, Department of Planning, Industry and Environment to secretariat, advising that representatives from the EPA will not be attending the hearing on 11 November 2019.

3. Inquiry into the implementation of the Chief Scientist recommendations for Coal Seam Gas Activities

3.1 Witnesses – 11 November 2019

The committee considered the correspondence received from Mr Jarrad Tulloch, Manager, Government Services, Office of the Secretary, Department of Planning, Industry and Environment on behalf of invited representatives declining to appear.

Resolved, on the motion of Mr Searle: That:

- the hearing scheduled for Monday 11 November 2019 be postponed until a future date, to be determined via email with members
- members provide a list of proposed witnesses to the secretariat via email by 5 pm, Thursday 7 November 2019, identifying names, where possible, of government representatives to attend the hearing
- the full list of witnesses be circulated to members and agreement sought via email
- following agreement via email, the Chair write to Mr Jim Betts, Secretary, Department of Planning, Industry and Environment asking that the department reconsider the invitation for government representatives to attend a hearing, on the date determined by the committee, and advising that Mr Betts may also put forward any additional relevant witnesses to attend the hearing.

4. Adjournment

The committee adjourned at 12.34 pm, *sine die.*

Emma Rogerson
Committee Clerk

Minutes no. 16

Tuesday 3 December 2019
Portfolio Committee No.4 – Industry
Macquarie Room, Parliament House, Sydney at 9.04 am

1. Members present

Mr Banasiak, *Chair*
Ms Hurst, *Deputy Chair* (*for the inquiry into exotic animals and cetaceans*, *until 9.21 am)*
Mr Amato
Mr Field *(substituting for Ms Hurst for the coal seam gas activities inquiry)*
Mr Khan
Mr Primrose
Mr Searle
Mrs Ward *(substituting for Ms Cusack, from 9.32 am)*

2. Apologies

Ms Boyd

3. Previous minutes

Resolved on the motion of Mr Khan: That draft minutes nos. 11 and 15 be confirmed.

4. Correspondence

The committee noted the following items of correspondence:

Received

- 30 October 2019 – Email from Government Whip to secretariat, advising that Mr Farraway will be substituting for Mr Khan at the hearing on 11 November 2019

- 6 November 2019 – Email from Mr Richard Hodge, Policy Advisor, Office of Minister Matt Kean to secretariat confirming previous verbal advice that the Minister is unable to attend the hearing on 11 November 2019
- 6 November 2019 – Email from Ms Georgina Williams, Ministerial contact for Deputy Premier Barilaro to secretariat, confirming that no departmental witnesses will be attending the hearing on 11 November 2019
- 12 November 2019 – Email from Government Whip to secretariat, advising that Mrs Ward will be substituting for Ms Cusack at the hearing on 3 December 2019
- 13 November 2019 – Email from Mr Mahmoud El-Hussein, Acting director, Government Services, Department of Planning, Industry and Environment, to the secretariat, advising that Mr Betts is unable to attend the hearing of the inquiry into the NSW Chief Scientist's recommendations of coal seam gas activities in New South Wales on 3 December 2019.
- 14 November 2019 – Email from Mr Mahmoud El-Hussein, Acting director, Government Services, Department of Planning, Industry and Environment, to the secretariat, advising that Mr Laurie and Mr Wright are unable to attend the hearing of the inquiry into the NSW Chief Scientist's recommendations of coal seam gas activities in New South Wales on 3 December 2019.
- 26 November 2019 – Letter from Mr Banasiak, Mr Veitch, and Mr Primrose requesting a meeting of Portfolio Committee No. 4 to consider a proposed self-reference into the long-term sustainability of the dairy industry
- 18 November 2019 – Letter from Dr Jo Dorning to committee, forwarding the report *The Welfare of Wild Animals in Travelling Circuses*, co-authored with Stephen Harris and Heather Pickett

5. *******

6. *******

7. **Election of Deputy Chair for duration of hearing**

The Chair called for nominations for Deputy Chair.

Mr Searle moved: That Mr Primrose be elected Deputy Chair for the duration of the hearing today.

There being no further nominations, the Chair declared Mr Primrose elected Deputy Chair for the duration of today's hearing.

8. **Inquiry into the implementation of the Chief Scientist recommendations for Coal Seam Gas Activities**

8.1 **Re-opening submissions**

Resolved on the motion of Mr Searle: That the committee re-open submissions to the inquiry for a further 7 days, from Monday 11 until Monday 18 November 2019.

8.2 **Public submissions**

The committee noted that the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee: submission nos. 1, 3-7, 9-12, 14-28.

8.3 **Partially confidential submissions**

Resolved on the motion of Mr Searle: That the committee keep the following information confidential, as per the request of the author: names and/or identifying and sensitive information in submissions nos. 2, 8 and 29.

Resolved on the motion of Mr Searle: That the committee change the publication status of submission no. 13 from public to name suppressed, at the request of the author, and keep confidential their name and other identifying information .

Resolved on the motion of Mr Searle: That the committee keep the following information confidential, as per the request of the author: names and/or identifying and sensitive information in submissions no. 15.

8.4 Timeframe for answers to questions on notice and supplementary questions

Resolved on the motion of Mr Searle: That:

- members provide any supplementary questions to the secretariat within 1 day of receiving the transcript of evidence
- witnesses be required to provide answers to questions on notice/supplementary questions within 7 days.

8.5 Public Hearing

Resolved, on the motion of Mr Searle: That the timing of questioning for today's hearing be left in the hands of the Chair.

Witnesses, the public and the media were admitted.

The Chair made an opening statement regarding the broadcasting of proceedings and other matters.

The following witnesses were sworn and examined:

- Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment
- Mr Kevin Ruming, Director Strategic Resource Assessment & Advice, Division of Resources and Geoscience
- Mr James McTavish, NSW Regional Town Water Supply Coordinator
- Ms Tracy Mackey, Chief Executive Officer, Environment Protection Authority
- Mr Jim Bentley, Deputy Secretary, Water
- Mr Mitchell Isaacs, Director, Office of the Deputy Secretary and Strategic Relations (Water).

The evidence concluded and the witnesses withdrew.

The public and media withdrew.

The public hearing concluded at 11.23 am.

9. Revised inquiry timeline

Resolved, on the motion of Mr Searle: That the committee adopt the following revised inquiry timeline:

- Half day hearing (1pm – 5pm) – Tuesday 4 February 2020
- Report to members – Wednesday 18 / Thursday 19 February 2020
- Report deliberative – Thursday 20 February 2020
- Report tabling – Friday 28 February 2020.

10. Adjournment

The committee adjourned at 11.42 am, until Tuesday 4 February 2020 *(public hearing CSG activities)*

Emma Rogerson
Committee Clerk

Minutes no. 17

Tuesday 4 February 2020
Portfolio Committee No.4 – Industry
Macquarie Room, Parliament House, Sydney at 1.01 pm

1. Members present

Mr Banasiak, *Chair*
Ms Hurst, *Deputy Chair* (until 1.17pm)
Mr Amato (from 1.05 pm)
Ms Boyd (participating)
Mr Fang (substituting for Ms Cusack 2.56 pm- 4.23 pm)
Mr Field (substituting for Ms Hurst for the coal seam gas activities inquiry)
Mr Khan
Mr Primrose
Mr Searle (substituting for Mr Veitch for the coal seam gas activities inquiry)
Mr Veitch (until 1.17 pm)
Mrs Ward (substituting for Ms Cusack 1.00pm- 2.56 pm)

2. Previous minutes

Resolved on the motion of Mr Khan: That draft minutes nos. 12, 13, 14 and 16 be confirmed.

3. Correspondence

The Committee noted the following items of correspondence:

Received:

- 6 January 2020 – Email from Ms Jessica Rossell, A/Director Resources Policy, Department of Planning, Industry and Environment to secretariat, requesting a clarification to transcript of evidence 3 December 2019 and government submission.

Sent:

- 5 November 2019 – Email from the Budget Estimates secretariat to Ms Georgina Williams, Office of the Hon John Barilaro MP, Deputy Premier and Minister for Regional New South Wales, Industry and Trade, attaching transcript of evidence with questions on notice highlighted, supplementary questions and instructions on how to correct the transcript and return answers to questions
- 5 November 2019 – Email from the Budget Estimates secretariat to Ms Addison Ridge, Office of the Hon Melinda Pavey MP, Minister for Water, Property and Housing, attaching transcript of evidence with questions on notice highlighted, supplementary questions and instructions on how to correct the transcript and return answers to questions
- 5 November 2019 – Email from the Budget Estimates secretariat to Ms Jodie Bain, Office of the Hon Adam Marshall MP, Minister for Agriculture and Western New South Wales, attaching transcript of evidence with questions on notice highlighted, supplementary questions and instructions on how to correct the transcript and return answers to questions.

Resolved, on the motion of Mr Searle: That the committee authorise the insertion of a footnote, as requested by the Department of Planning, Industry and Environment, clarifying the number of legacy wells that have required action, to:

- page 23 of Mr Michael Wright's transcript of evidence from 3 December 2019
- page 14 of NSW Government's submission
- page 98 of answers to Supplementary Questions, Question 481, Portfolio Committee No. 4 Budget Estimates 2019-2020.

4. ***

5. ***

6. Election of Deputy Chair for duration of hearing

The Chair called for nominations for Deputy Chair.

Mr Khan moved: That Mr Primrose be elected Deputy Chair for the duration of today's hearing.

There being no further nominations, the Chair declared Mr Primrose elected Deputy Chair for the duration of today's hearing.

7. Inquiry into the implementation of the Chief Scientist recommendations for Coal Seam Gas Activities

7.1 Answers to questions on notice

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from the Department of Planning, Industry and Environment, received 12 December 2019.

7.2 Timeframe for answers to questions on notice and supplementary questions

Resolved on the motion of Mr Searle: That:

- members provide any supplementary questions to the secretariat within 1 day of receiving the transcript of evidence
- witnesses be required to provide answers to questions on notice/supplementary questions within 5 days.

7.3 Public hearing

Witnesses, the public and the media were admitted.

The Chair made an opening statement regarding the broadcasting of proceedings and other matters.

The following witnesses were sworn and examined:

- Ms Tracey Winters, Strategic Advisor External Affairs, Santos
- Mr Nick Fox, Head of Environment and Access, Santos
- Mr Ashley Wells, Director – Government Relations, Australian Petroleum Production and Exploration Association.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance
- Ms Sally Hunter, Secretary, People for the Plains Inc.

Ms Hunter tabled the following document:

- Quantitative data identifying levels of social acceptance of Narrabri Gas Project.

The evidence concluded and the witnesses withdrew.

The following witnesses were examined on their former oaths:

- Mr Michael Wright, Deputy Secretary, Resources and Geoscience, Department of Planning, Industry and Environment
- Mr Kevin Ruming, Director Strategic Resource Assessment and Advice, Division of Resources and Geoscience
- Mr James McTavish, NSW Regional Town Water Supply Coordinator
- Mr Mitchell Isaacs, Director, Office of the Deputy Secretary and Strategic Relations (Water).

The following witnesses were sworn and examined:

- Mr Anthony Keon, Executive Director, NSW Resources Regulator
- Mr Richard Bean, Interim Chief Executive Officer, Environment Protection Authority
- Ms Carmen Dwyer, Executive Director Regional Operations
- Mr Andrew Cowan, Program Manager, Environment Protection Authority.

The evidence concluded and the witnesses withdrew.

The public and media withdrew.

The public hearing concluded at 4.20 pm.

7.4 Tendered documents

Resolved on the motion of Mr Khan: That the committee accept and publish the following document tendered during the public hearing:

- Quantitative data identifying levels of social acceptance of Narrabri Gas Project, tendered by Ms Sally Hunter, Secretary, People for the Plains Inc.

8. Adjournment

The committee adjourned at 4.23 pm, until Thursday 20 February 2020, 10 am, Room 1254, *(report deliberative implementation of the Chief Scientist recommendations for Coal Seam Gas Activities).*

Emma Rogerson
Committee Clerk

Draft minutes no. 18
Monday 24 February 2020
Portfolio Committee No.4 – Industry
Room 1254, Parliament House, Sydney at 10.04 am

1. Members present

Mr Banasiak, *Chair*
Mr Amato, *Deputy Chair*
Ms Boyd (participating)
Ms Cusack
Mr Field (substituting for Ms Hurst for the coal seam gas activities inquiry)
Mr Khan
Mr Primrose
Mr Searle

2. Previous minutes

Resolved on the motion of Mr Searle: That draft minutes no.17 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Sent:

- 14 February 2020 – Letter from Chair to Mr Jim Betts, Secretary Department of Planning, Industry and Environment, requesting timely responses to attached questions from the People for the Plains Inc.
- 14 February 2020 – Letter from Chair to Mr Kevin Gallagher, Managing Director & Chief Executive Officer, Santos, requesting timely responses to attached questions from the People for the Plains Inc.

- 14 February 2020 - Letter from Chair to Mr Richard Bean, Interim Chief Executive Officer, Environment Protection Authority, requesting timely responses to attached questions from the People for the Plains Inc.

4. ***

5. Inquiry into the implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales

5.1 Answers to questions on notice

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from Ms Sally Hunter, Secretary, People for the Plains Inc., received 7 February 2020
- answers to questions on notice from NSW Government, received on 12 February 2020
- answers to questions on notice from Santos Limited, received on 13 February 2020.

5.2 Consideration of Chair's draft report

The Chair submitted his draft report, entitled *'Implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales'*, which, having been previously circulated, was taken as being read.

Resolved on the motion of Mr Field: That paragraph 2.5 be amended by omitting 'confirmed' and inserting instead 'asserted'.

Resolved, on the motion of Mr Searle: That paragraph 2.6 be amended by:

a) omitting 'These concerns were allayed when'; and

b) inserting at the end of the paragraph: 'It seems clear from the evidence that the industry bodies have relied on public statements and information from the NSW Government in this respect and do not have any independent knowledge of these matters.'

Resolved, on the motion of Mr Field: That paragraph 2.10 be amended by:

a) omitting 'On the other hand'; and

b) omitting 'observed' and inserting instead 'contended'.

Mr Searle moved: That the following paragraph 2.12 be omitted: 'Based on the evidence presented, the committee believes Recommendation 1 has been adequately implemented', and the following new paragraph be inserted instead:

'Based on the evidence presented, the Committee finds that Recommendation 1 has not been implemented in full. On the material before us, dot points four and five have not even been commenced, despite the passage of more than five years since the final report of the Chief Scientist was delivered. In addition, it is arguable whether NSW Government policy and actions to date have carried dot point two into effect.

It is noteworthy that the submissions from the NSW Government and industry did not address these matters.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Field moved: That the following new recommendation be inserted after paragraph 2.12:

'Recommendation X

That the NSW Government implement all outstanding aspects of Recommendation 1 in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved, on the motion of Mr Field: That paragraph 2.13 be amended by omitting 'In order to meet' and inserting instead 'As part of meeting'.

Resolved, on the motion of Mr Field: That paragraph 2.23 be amended by:

a) omitting 'Although, the Department did indicate that' and inserting instead 'The Department indicated, however, that'

b) omitting 'Santos have been consulted in order to obtain their views' and inserting instead 'Santos has been consulted in order to obtain its views'.

Mr Searle moved: That the following new paragraphs be inserted after paragraph 2.25:

'On the evidence before the Committee, recommendation 2 has not been fully implemented by the NSW Government. The relevant legislation does not meet the test laid down by the Chief Scientist in dot point 1, that there be 'simplicity and clarity in legislative and regulatory requirements.' No submission to the inquiry made the case that this had been achieved, nor was there any indication from government that it was likely to be achieved in the foreseeable future.

The second dot point has also not been fully implemented by the NSW Government. The NSW Government in essence claims that the construction of the SEED portal satisfies this element of the Chief Scientist's recommendations. While the portal has some of the characteristics of the Whole of Environment Data Repository in the Chief Scientist's recommendation 10, it lacks other elements. The Committee notes that implementation of recommendation 10 is ongoing and that the SEED portal will be improved and added to over time. While there may be some debate all the elements of dot point two, what is clear beyond any argument is that 'CSG data from companies' is not currently available to the community. Without this being implemented, the Committee does not believe there is any credible claim that the NSW Government has fully implemented recommendation 2.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That the following new recommendation be inserted after paragraph 2.26:

'Recommendation X

That the NSW Government take immediate steps to ensure all the information listed in dot point two of Recommendation 2 is implemented, including the publication of all coal seam gas data from companies, in the SEED portal and made available to the community.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That the following paragraph 2.37 be omitted: 'While the committee acknowledges the concerns of inquiry participants in relation to this recommendation, we believe that this recommendation has been implemented, noting that Santos has adopted a compensation framework consistent with the recommendations of IPART', and the following new paragraph be inserted instead:

'Legislative changes made subsequent to the Chief Scientist's report relating to compensation for landowners, the IPART review referred to in paragraph 2.35 and the Santos compensation framework does establishes that the first dot point of recommendation 3 has been implemented. However, no evidence has been presented to the Committee that establishes, or even seeks to make the case, that dot points two and three have been implemented. Of particular concern to the Committee is that the issue of compensation for other local residents who may be impacted by extraction activities does not appear to be even in the process of being addressed by the NSW Government. This is connected to whether recommendation 9 has been implemented.

On the basis of the evidence before the Committee, recommendation 3 of the Chief Scientist's report has not been fully implemented by the NSW Government.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That the following new paragraphs be inserted after paragraph 2.50:

'On the evidence before the Committee, recommendation 4 has not been implemented by the NSW Government. The post 2019 election machinery of government changes do not explain the failure of the NSW Government on this matter. The Committee notes that 5 NSW State Budgets have been delivered since the Chief Scientist's report was delivered and since the NSW Government committed to implementing this recommendation.

The Committee further notes that close to $3.75 million is being paid each year by taxpayers to in effect subsidise the CSG industry. Since the Chief Scientist's report was delivered, this amounts to nearly $20 million dollars of tax payers money.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved, on the motion of Mr Searle: That, where the committee has identified that a NSW Chief Scientist recommendation has not been fully implemented, that the following recommendation be inserted:

'Recommendation X
That the NSW Government implement all outstanding aspects of Recommendation X in the NSW Chief Scientist's *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.'

Mr Searle moved: That the following new recommendation be inserted after paragraph 2.51:

'Recommendation X
That the NSW Government provide an immediate explanation why it has not put in place any mechanism to recover these costs or to ensure they are reported in the NSW Budget, as recommended by the Chief Scientist.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Khan moved: That:

a) paragraph 2.51 be amended by omitting 'and ensure that an annual statement by government is included in the next Budget process'; and

b) Recommendation 2 be amended by omitting 'and ensure that an annual statement by government on this matter is included in the next Budget process'.

Question put.

The committee divided.

Ayes: Mr Amato, Ms Cusack, Mr Khan.

Noes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Question resolved in the negative.

Resolved, on the motion of Mr Searle: That paragraph 2.51 and Recommendation 2 be amended by omitting 'next Budget process' and inserting instead 'Budget process going forward'.

Mr Searle moved: That paragraph 2.63 be amended by:

a) omitting 'concerns remain that';

b) omitting 'sufficiently'; and

c) inserting at the end: 'While the NSW Government has developed the Strategic Release Framework, it has not set out with the clarity required by the Chief Scientist where coal seam gas activity is to be permitted. The failure by government to address the concerns set out in paragraphs 2.56 to 2.59 also highlights that this recommendation has not been implemented by the NSW Government.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Field moved: That the following new recommendation be inserted after paragraph 2.63:

'Recommendation X

That the NSW Government apply the Strategic Release Framework to the consideration of renewals for the 12 expired Petroleum Exploration Licence areas in the North West of the state given the long period that has passed since those licences were active.'

Mr Khan moved: That the motion of Mr Field be amended by omitting 'apply' and inserting instead 'give consideration for applying'.

Amendment of Mr Khan put.

The committee divided.

Ayes: Mr Amato, Ms Cusack, Mr Khan.

Noes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Amendment of Mr Khan resolved in the negative.

Original question of Mr Field put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved on the motion of Mr Searle: That the following new paragraph be inserted after paragraph 2.72:

'Accordingly, it is clear to the Committee that the NSW Government has not implemented recommendation 6. It has also not provided any reason why it has failed to do so.'

Mr Searle moved: That paragraph 2.82 be amended by:

a) omitting 'adequately' and inserting instead 'partially'; and

b) inserting at the end: 'However, it is clear on the evidence this recommendation has not yet been fully implemented'.

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That the following new paragraphs be inserted after paragraph 2.92:

'The NSW Government has failed, in its evidence to this inquiry, to explain what 'environmental impacts and safety targets' it has established in response to Chief Scientist recommendation 8. It has also failed to explain how those 'impacts/targets', assuming they exist, are designed to optimise or even to encourage the uptake of new technologies and innovation, as the Chief Scientist also recommended. In the absence of such evidence, the committee can only find this aspect of recommendation 8 has not been implemented.

The Committee notes that views on what constitute 'appropriate and proportionate' penalties for non-compliance may legitimately differ. However, the relevant penalties do not appear to have been reviewed or changed since the Chief Scientist delivered her report in September 2014. Accordingly, the NSW Government has also not implemented this aspect of the recommendation.

The evidence from the NSW Government also does not establish that it has 'automatic monitoring processes' in place that are sent to and held in an openly accessible Whole of Data Repository. The evidence also does not establish that it has effective processes in place that enable the detection of cumulative impacts at project, regional and sentimentally basin levels which can be used to inform the targets and the planning process.

On the basis of the evidence before the committee, the NSW Government has not implemented recommendation 8 of the Chief Scientist's report.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved, on the motion of Mr Khan: That:

a) paragraph 2.110 be amended by omitting 'Therefore the committee calls on the government to urgently develop and introduce appropriate insurance coverage to ensure landholders are protected'

b) Recommendation 4 be omitted: 'That the NSW Government urgently develop and introduce appropriate insurance coverage to ensure landholders are protected from potential environmental liabilities of coal seam gas activities'.

Mr Searle moved: That paragraph 2.110 be amended by:

a) omitting 'adequate';

b) inserting 'including financial loss as well as environmental damage' after 'future risks'.

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Khan moved: That paragraph 2.111 be omitted.

Question put.

The committee divided.

Ayes: Mr Amato, Ms Cusack, Mr Khan.

Noes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Question resolved in the negative.

Mr Searle moved: That the following new paragraph be inserted after 2.111:

'The claim made in the recently released EPA document that the local insurance market is less willing to provide these products than at the time of the Chief Scientist's report is troubling. This is not a claim the insurance industry has made to this inquiry. The evidence before the committee is that at no time have products providing insurance against risk to other landowners been available. The Committee asks the EPA to provide evidence that supports its claim and identifies what products have ever been available.

On the basis of the NSW Government's own evidence to this inquiry, it has not implemented recommendation 9 by the Chief Scientist. To the extent the NSW Government is undertaking work in connection with aspects of recommendation 9 outside insurance to protect other landowners, it has not provided any timeframe in which the community may expect this work to be completed.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved, on the motion of Mr Searle: That the following new Finding be inserted after paragraph 2.111:

'Finding X
The committee finds that:

- the enhanced insurance coverage as envisaged by the NSW Chief Scientist is not available;
- the conclusion is that these risks are uninsurable; and
- landholders are left to bear the risks posed by coal seam gas activities.

Resolved, on the motion of Mr Searle: That paragraph 2.123 be amended by inserting 'only' before 'partially complete'.

Resolved, on the motion of Mr Field: That paragraph 2.132 be amended by omitting 'advised' and inserting instead 'asserted'.

Mr Searle moved: That Recommendation 5 be amended by inserting at the end: 'and ensuring the portal has all the elements and functionality recommended by the Chief Scientist'.

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That paragraph 2.135 be amended by:

a) omitting 'advice' and inserting instead 'claim'

b) inserting at the end: 'The NSW Government was unable to identify a centralised Risk Management and Prediction Tool for extractive industries which it had developed after the Chief Scientist's report or was otherwise in use. While witnesses for the government indicated that there were a number of risk management and prediction tools in use, the only one specifically identified was the risk-based licensing system implemented by the EPA. However, this scheme clearly does not have the functions outlined by the Chief Scientist as being necessary. Accordingly, the evidence before the Committee is that the NSW Government has not implemented this recommendation made by the Chief scientist.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Searle moved: That paragraph 2.155 be omitted: 'The committee believes this recommendation has not been fully implemented, as the government has chosen to rely on the CIESC which does not perform several functions recommended by the NSW Chief Scientist', and the following new paragraph be inserted instead:

'On the evidence before the Committee, the NSW Government has not implemented recommendation 12 made by the Chief Scientist. It has not established its own expert body, as was recommended. The Commonwealth body it seeks to rely upon does not fulfil the functions found by the Chief Scientist to be necessary to provide the NSW Government with the relevant and appropriate advice on gas activities. The NSW Government has accepted (para 2.137) that receiving the advice recommended by the Chief Scientist was important. The evidence shows that it has not taken the steps recommended by the Chief Scientist to receive this advice.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Resolved, on the motion of Mr Searle: That paragraph 2.157 be amended by omitting ' advised' and inserting instead 'claimed'.

Mr Field moved: That the following new recommendation be inserted after paragraph 2.155:

'Recommendation X

That the NSW Government reconsider the establishment of a state based Expert Advisory Body to fulfil the recommendations by the NSW Chief Scientist recognising the limitations of the IESC'.

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Khan moved: That paragraph 2.164 be omitted.

Question put.

The committee divided.

Ayes: Mr Amato, Ms Cusack, Mr Khan.

Noes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Question resolved in the negative.

Mr Searle moved: That paragraph 2.164 be amended by omitting 'The committee believes that this recommendation has not been fully implemented' and inserting instead 'On the evidence before it, the committee finds that this recommendation has not been fully implemented.'

Question put.

The committee divided.

Ayes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Noes: Mr Amato, Ms Cusack, Mr Khan.

Question resolved in the affirmative.

Mr Khan moved: That Recommendation 6 be omitted.

Question put.

The committee divided.

Ayes: Mr Amato, Ms Cusack, Mr Khan.

Noes: Mr Banasiak, Mr Field, Mr Primrose, Mr Searle.

Question resolved in the negative.

Resolved, on the motion of Mr Field: That paragraph 2.172 be amended by omitting 'completed' and inserting instead 'implemented'.

Resolved, on the motion of Mr Field: That paragraph 2.187 be amended by inserting at the end: 'The committee encourages the Government to be open and transparent with the community with regard to legacy issues that may arise and the Government's responses to them in the future'.

Resolved, on the motion of Mr Searle: That paragraph 2.194 be amended by inserting at the end: 'On the evidence before it, the committee finds that this recommendation by the Chief Scientist is not yet fully implemented'.

Resolved, on the motion of Mr Field: That the following new recommendation be inserted after paragraph 2.208:

'Recommendation X

That the NSW Government review all new findings in relation to health impacts and that these be included in any new assessments of coal seam gas activities.'

Resolved, on the motion of Mr Searle: That lead in paragraphs and a compliance table be inserted depicting the 16 recommendations of the NSW Chief Scientist and whether each recommendation has been fully implemented by the NSW Government.

Resolved on the motion of Mr Searle: That:

a) The draft report as amended be the report of the committee and that the committee present the report to the House, subject to the additional paragraphs and compliance table to be provided by Mr Searle via email for the committee's agreement,

b) The transcripts of evidence, submissions, tabled documents, answers to questions on notice and supplementary questions, and correspondence relating to the inquiry be tabled in the House with the report;

c) Upon tabling, all unpublished attachments to submissions be kept confidential by the committee;

d) Upon tabling, all unpublished transcripts of evidence, submissions, tabled documents, answers to questions on notice and supplementary questions, and correspondence relating to the inquiry, be published by the committee, except for those documents kept confidential by resolution of the committee;

e) The committee secretariat correct any typographical, grammatical and formatting errors prior to tabling;

f) The committee secretariat be authorised to update any committee comments where necessary to reflect changes to recommendations or new recommendations resolved by the committee;

g) Dissenting statements be provided to the secretariat within 24 hours after receipt of the draft minutes of the meeting;

h) That the report be tabled on Thursday 27 February 2020.

6. Adjournment

The committee adjourned at 11.28 am, until Monday 2 March 2020, TBC, Parliament House (Budget Estimates - Agriculture and Western New South Wales hearing).

Emma Rogerson
Committee Clerk