



PARLIAMENT OF VICTORIA
Environment and Planning Committee

**Inquiry into onshore
unconventional gas in
Victoria**

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Environment and Planning Committee

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Chair's Foreword

On behalf of the Environment and Planning Committee, I am pleased to present this Interim Report on the Inquiry into onshore unconventional gas in Victoria.

The Committee has sought stakeholder and community views on a range of issues, such as the potential advantages of unconventional gas as an energy source for the state, and the potential risks an unconventional gas industry could pose to Victoria's environment, agricultural industries and public health. It has sought views on whether an unconventional gas industry could co-exist with existing land and water users. It has also sought views on the adequacy of Victoria's current legislative framework to regulate an unconventional gas industry, and the degree to which risks potentially posed by the industry could be managed.

Significantly, the Committee has received over 1700 submissions, which is likely to be the largest response to a call for submissions from a Victorian Parliamentary committee. The submissions have come from a range of stakeholders including, farmers and other landholders, environment and community groups, the gas industry, gas market analysts, hydrogeologists, manufacturers, tourism operators, local governments and the general public.

The Committee has held well-attended public hearings in Melbourne, Sale and Torquay, and has heard valuable evidence from a range of witnesses with different points of view on what is a complex and contested subject. Further public hearings are scheduled in Melbourne and Hamilton, and additional Victorian hearings are planned for the future. The Committee will also be seeking information from other jurisdictions with unconventional gas industries, such as Queensland and New South Wales.

On current arrangements the Committee will not be able to review other regulatory models or the experience of other jurisdictions first hand. The Committee is awaiting additional administrative support to deal with the large workload and the scientific and hydrogeological detail of many of the submissions. Recently, a commitment was made to provide scientific support and the Committee is seeking to employ appropriate scientists.

Over the coming months, the Committee will carefully review the evidence it has gathered to inform its Final Report to Parliament regarding the issues surrounding a potential onshore unconventional gas industry in Victoria. The Committee has also determined to request the Minister for Energy and Resources, Hon Lily D'Ambrosio, appear before the Committee to give evidence.

I thank all those who provided evidence to the Committee to date both through written submissions and by appearing at the Committee's public hearings. Thanks also go to those who have assisted the Committee by hosting the regional hearings and site visits.

Chair's Foreword

I would also like to thank my colleagues on the Committee: Ms Harriet Shing, Ms Melina Bath, Hon Richard Dalla-Riva, Ms Samantha Dunn, Mr Shaun Leane, Hon Adem Somyurek and Mr Daniel Young, as well as the participating members of the Committee: Mr Simon Ramsay, Mr Jeff Bourman and Ms Colleen Hartland, and former Committee member Ms Gayle Tierney. I would additionally like to thank the Committee staff for their work on this Inquiry and the production of this Interim Report.

A handwritten signature in black ink, appearing to read 'D. Davis', with a horizontal line underneath.

Hon David Davis MLC
Chair

Introduction

This Interim Report on the Environment and Planning Committee's Inquiry into a potential onshore unconventional gas industry in Victoria provides an overview of the Committee's activities and the evidence it has gathered in the first twelve weeks of its Inquiry.

The first chapter provides a summary of the conduct of the Inquiry so far, including the Terms of Reference for the Inquiry, the number of submissions received, and the hearings and site visits undertaken by the Committee.

The second chapter presents background information on unconventional gas. It explains the difference between conventional and unconventional natural gas, and describes the geological characteristics of coal seam, shale and tight gas. It also briefly lists the identified potential risks posed by unconventional gas extraction.

The third chapter provides a short history of unconventional gas activity and government policy regarding the regulation of the industry at the Council of Australian Governments level and in Victoria.

The fourth chapter then draws on the evidence the Committee has received so far to identify central themes in the unconventional gas debate and present some examples of different stakeholder views.

The Interim Report concludes with the identification of some key points that will require further consideration as the Committee continues its Inquiry. The Committee understands that unconventional gas is an issue of significant concern to many Victorians.

1.1 Terms of Reference for the Inquiry

On 26 May 2015, the Leader of the Government in the Legislative Council, the Hon Gavin Jennings, moved that the Environment and Planning Committee inquire into matters relating to a potential unconventional gas industry in Victoria. The Legislative Council agreed to the motion and adopted the following Terms of Reference for the Inquiry:

That pursuant to Sessional Order 6 this House requires the Environment and Planning Committee to inquire into and consider matters relating to the exploration, extraction, production and rehabilitation for onshore unconventional gas and present an interim report no later than 1 September 2015 and a final report no later than 1 December 2015 and, in particular, the inquiry should include, but not be limited to, the following —

- (1) the prospectivity of Victoria's geology for commercial sources of onshore unconventional gas;
- (2) the environmental, land productivity and public health risks, risk mitigations and residual risks of onshore unconventional gas activities;
- (3) the coexistence of onshore unconventional gas activities with existing land and water uses, including —
 - (a) agricultural production and domestic and export market requirements;
 - (b) the legal rights of property owners and the impact on property values; and
 - (c) any implications for local and regional development, investment and jobs;
- (4) the ability of potential onshore unconventional gas resources contributing to the State's overall energy sources including —
 - (a) an ability to provide a competitive source of energy and non-energy inputs for Victorian industries;
 - (b) an affordable energy source for domestic consumers; and
 - (c) carbon dioxide emissions from these sources;
- (5) the resource knowledge requirements and policy and regulatory safeguards that would be necessary to enable exploration and development of onshore unconventional gas resources, including —
 - (a) further scientific work to inform the effective regulation of an onshore unconventional gas industry, including the role of industry and government, particularly in relation to rigorous monitoring and enforcement, and the effectiveness of impact mitigation responses; and

- (b) performance standards for managing environmental and health risks, including water quality, air quality, chemical use, waste disposal, land contamination and geotechnical stability;
- (6) relevant domestic and international reviews and inquiries covering the management of risks for similar industries including, but not limited to, the Victorian Auditor-General Office's report *Unconventional Gas: Managing Risks and Impacts* (contingent upon this report being presented to Parliament) and other reports generated by the Victorian community and stakeholder engagement programs.

1.2 Submissions

The Environment and Planning Committee invited submissions by placing an advertisement in the *Herald Sun* and *The Age* on 12 June 2015, and in the *Weekly Times* on 17 June 2015. The Committee's call for submissions was also placed on the Parliament of Victoria's website and announced through the Parliament's Twitter account. The Committee wrote to 172 stakeholders advising them of the Inquiry and seeking input.

The closing date for submissions was 10 July 2015. The Committee acknowledges the relatively short time frame of less than four weeks during which submissions could be received. The Committee considered and granted requests for extensions on a case by case basis.

As of 20 August 2015, the Committee has received and published 1717 submissions. This is likely to be the largest number of submissions ever received by a Victorian Parliamentary committee.

The submissions came from a range of stakeholders including farmers, environmental and community groups, the gas industry, manufacturers, academics, small business owners, scientists, state and local governments, and the general public.

The vast majority of the submissions expressed concerns that an unconventional gas industry in Victoria could pose risks to prime agricultural land and water supplies.

A list of submitters is provided in Appendix 1. At the time of writing this Interim Report, the submissions are still being processed by the Committee secretariat and placed on the Parliament of Victoria website for public access.¹

The Committee notes that the inter-departmental submission from the Victorian Government was received on 3 August 2015, more than three weeks after the closing date for submissions. The Committee has held a hearing with two Departments but has not yet been able to fully consider the inter-departmental

¹ See: Parliament of Victoria (2015) 'Inquiry into Unconventional Gas in Victoria: Submissions', Environment and Planning Committee, Parliament of Victoria website.

submission or seek comment on it from witnesses at public hearings prior to the preparation of this Interim Report. In forthcoming hearings the Committee intends to explore the issues raised by the inter-departmental submission.

1.3 Pro forma submissions

The Committee received 13 different pro forma submissions. The largest of these, facilitated by the Australian Greens website, was sent in by 679 individuals. In 549 cases the submission was identical. The Committee has identified that individual contact details were provided for every pro forma submission received.

1.4 Hearings and briefings

On 23 June 2015, the Committee received an initial briefing on the issue of unconventional gas from the Department of Economic Development, Jobs, Transport and Resources (DEDJTR).

The Committee held public hearings in Sale, Gippsland on 30 June and 1 July 2015, in Melbourne at Parliament House on 22 July, 5 August and 18 August 2015, and in Torquay on the Surf Coast on 12 and 13 of August 2015.

The Committee heard valuable evidence from 89 individuals at public hearings and would like to thank all the witnesses who gave up their time to present to the Committee. A list of witnesses is provided in Appendix 13. The Committee secretariat is in the process of adding transcripts of the hearings to the unconventional gas Inquiry page on the Parliament of Victoria website once they are confirmed.²

The Committee is of the view that it would be beneficial to conduct further public hearings in Melbourne and throughout regional Victoria. Further resources would assist the Committee. Additionally, a full understanding of the potential benefits and impacts of proceeding with an unconventional gas industry in this state would be assisted if the Committee was able to gain information from operational gas projects in Queensland, New South Wales, South Australia and elsewhere.

1.5 Committee resources

The Committee secretariat has worked diligently to process and consider the significant volume of submissions and documents provided by the public. To assist it in this task the Committee has requested appropriate administrative and research support assistance. On 17 August 2015, the Committee received approval to engage scientific expertise to help in its understanding of what is a technical and complex area.

² See: Parliament of Victoria (2015) 'Inquiry into Unconventional Gas in Victoria: Hearings and Transcripts', Environment and Planning Committee, Parliament of Victoria website.

1.6 Site visits

On 1 July 2015, following the conclusion of the public hearings in Sale, the Committee visited the Wombat Gasfield at Seaspray with Lakes Oil and then visited the neighbouring farm of Mr and Mrs Flint.

Background – What is unconventional gas?

Coal seam gas, shale gas and tight gas are forms of unconventional natural gas. Natural gas is a fossil fuel that consists mostly of methane and can be found in a variety of geological settings. Natural gas is a major source of energy in Victoria and is used for home heating and cooking, manufacturing, and generating electricity. The term ‘unconventional gas’ refers to natural gas that is found in different geological settings from conventional gas, and is harder to extract from the ground than conventional natural gas.³

It is important to emphasise that it is the type of rock and the degree of difficulty involved in extracting the gas which define whether the gas is conventional or unconventional, and not the composition of the gas itself. All natural gas is composed predominantly of methane.⁴ As the Australian Petroleum Production & Exploration Association (APPEA) explains in their submission to the Inquiry, the key difference between conventional and unconventional natural gas is the ‘manner, ease and cost’ involved in extracting the gas.⁵

2.1 Conventional gas

Conventional gas is natural gas that is easier to access and extract. Typically, conventional gas reservoirs are found in sandstones and limestones with high porosity and high permeability. The term ‘porosity’ refers to the spaces or ‘pores’ in the rock in which water or gas can be found. The higher the porosity, the greater the amount of water or gas that may be contained in the rock. The term ‘permeability’ refers to the level of interconnectivity between the pores in a rock (a characteristic that allows gas to flow through rock).⁶ Conventional gas found in these porous and permeable sedimentary rocks is trapped in place by layers of impermeable ‘seal’ rocks. When a well is drilled through the impermeable rock to reach the conventional gas reservoir, the gas is able to flow into the well relatively easily.⁷

3 P. Cook (2015) *Transcript of Evidence*, 22 July, p. 2; P. Cook et al. (2013) *Engineering Energy: Unconventional Gas Production*, Report for the Australian Council of Learned Academies, p. 32; C. Ross & P. Darby (2013) *Unconventional Gas: Coal Seam Gas, Shale Gas and Tight Gas*, Victorian Parliamentary Library Research Service, p. 2.

4 *ibid.*

5 Australian Petroleum Production and Exploration Association (2015) *Submission 364*, p. 6.

6 P. Cook et al. (2013) *Engineering Energy*, *op. cit.*, p. 32; APPEA (2015) *Submission 364*, p. 6.

7 State Government of Victoria (2015) *Submission 658*, pp. 5-6.

Victoria's conventional natural gas is sourced from the offshore parts of the Gippsland and Otway Basins, and to a lesser extent from the Bass Basin which is located entirely offshore.⁸ Conventional gas was also sourced onshore in the Port Campbell Embayment area (part of the Otway Basin) from 1986 until 2006 when the commercially viable natural gas was depleted.⁹

2.2 Unconventional gas

It is widely expected that reserves of conventional natural gas will run out in coming decades and this is driving the exploration for the more difficult to access, and costly to produce, 'unconventional' natural gas.¹⁰ The Commonwealth Scientific and Industrial Research Organisation (CSIRO) explains that unconventional gas is 'generally produced from complex geological systems that prevent or significantly limit the migration of gas and require innovative technological solutions for extraction'.¹¹

Advances in mining technology have aided the commercial viability of extracting unconventional gas. Horizontal drilling techniques developed in the United States since the mid-1980s have made it easier to reach unconventional deposits. The practice of hydraulic fracturing or 'fracking' (sometimes also called 'fracking') has increased the productivity of unconventional wells. Fracking involves injecting fluid made of water, sand and chemicals down a well at high pressure to 'fracture' the rocks and allow the gas to flow more easily.¹²

Identified potential risks of the fracking process include increased connectivity between different geological layers, the contamination of water resources, and the risk of spills when fracking fluids flow back to the surface.¹³ Stakeholder groups have different views on whether these risks can be adequately managed. A significant amount of evidence received by the Committee to date has focussed on the potential risks of fracking. It is important to emphasise that coal seam gas wells do not always require fracking. Shale gas and tight gas wells do require fracking.¹⁴

A summary of the different characteristics of coal seam gas, shale gas and tight gas is provided below.

⁸ C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 6; State Government of Victoria (2015) *Submission 658*, p. 11.

⁹ State Government of Victoria (2015) *Submission 658*, pp. 11-12, 92.

¹⁰ C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 2; P. Reith (2013) *Gas Market Taskforce: Final Report and Recommendations*, State Government of Victoria, p. 1.

¹¹ Commonwealth Scientific and Industrial Research Organisation (2012) 'What is Coal Seam Gas?', Factsheet; C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 2.

¹² C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., pp. 2, 18.

¹³ M. Currell (2015) *Submission 11*; Standing Council on Energy and Resources (2013) *The National Harmonised Regulatory Framework for Natural Gas from Coal Seams*, Council of Australian Governments, p. 54; NSW Chief Scientist & Engineer (2014) *Independent Review of Coal Seam Gas Activities in NSW Information Paper: Fracture Stimulation Activities*, NSW Government, p. 12.

¹⁴ C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 18; State Government of Victoria (2015) *Submission 658*, pp. 7-8; P. Cook et al. (2013) *Engineering Energy*, op. cit., pp. 32, 34.

2.2.1 Coal seam gas

Coal Seam Gas (CSG) is natural gas found in coal seams at depths of approximately 300-1000 metres underground. The CSG is trapped underground by water pressure. To extract the CSG, a well is drilled into the coal seam and the water is pumped out to release the gas. This water – known as ‘produced water’ or ‘formation water’ – is then separated from the gas at the surface.¹⁵

The produced water can be saline and contain chemicals from fracking fluids or naturally occurring hazardous materials mobilised by the extraction process (known as geogenic materials). The produced water generally requires treatment and extracted salt and/or chemicals and geogenic materials need to be disposed of. It is also important to note that the quantities of produced water can be very large.¹⁶

Coal seams are less permeable than conventional gas systems and the gas does not flow as easily, which means that more wells are required to develop a CSG field than a conventional gas field.¹⁷ It is also often necessary to drill horizontal wells and, as stated above, in some instances to fracture the well to increase the flow of gas.¹⁸

Coal seam gas is commercially produced in Queensland and New South Wales and is the most established kind of unconventional gas production in Australia. Significantly, Queensland and New South Wales have black coal deposits whereas Victoria has predominantly brown coal deposits. As the Victorian Parliamentary Library research paper on unconventional gas explains:

In regard to Victoria’s potential coal seam gas resources, it is important to note that the production of CSG in Queensland and New South Wales is from black coal deposits (bituminous and sub-bituminous coals). The kind, or rank, of coal is an integral factor in determining the gas properties of coal seams. It may be that Victoria’s brown coal (lignite) deposits yield less coal seam gas than black coal deposits. It may also be the case that if there is coal seam gas in Victoria’s brown coal deposits it may be harder to extract and hence more costly to produce than CSG from black coal deposits.¹⁹

Additionally, it is also important to note that because coal seam gas is the most established kind of unconventional gas production in Australia and hence the most well-known, it is common for people to talk just about ‘coal seam gas’. In Victoria, however, there is also potential for shale and tight gas.

¹⁵ Commonwealth Scientific and Industrial Research Organisation (2015) ‘What is Unconventional Gas?’, CSIRO website.

¹⁶ CSIRO (2015) ‘What is Unconventional Gas?’, op. cit.; M. Currell (2015) *Submission 11*, pp. 5-7.

¹⁷ C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 3; P. Cook (2015) *Transcript of Evidence*, 22 July, p. 2

¹⁸ P. Cook et al. (2013) *Engineering Energy*, op. cit., p. 33.

¹⁹ C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 12; T. Moore (2012) ‘Coalbed Methane: A Review’, *International Journal of Coal Geology*, iss. 101, pp. 50-52, 54, 58, 75.

2.2.2 Shale gas

Shale gas is found in shale rock layers at depths of about 1000 to 3000 metres. Shale rock has very low porosity and permeability. It is much harder and deeper underground than coal seams. Fracking is always used in shale gas wells to facilitate the flow of gas.²⁰ Shale gas producers also usually employ horizontal drilling to gain maximum exposure to the deposit.²¹ The New South Wales Chief Scientist and Engineer emphasises the difference between hydraulic fracturing operations for CSG and for shale gas:

There is a major difference in the scale of operations in hydraulic fracturing between CSG and shale resources. Across the world, development of CSG resources have been in the depth range 200-1,000 metres (m) whereas shale resources are typically between 1,500 to 3,000m. The fracture stimulation pumping setup (frac spread) on the surface for CSG may run to 10,000 hydraulic horsepower with four to six high pressure pump units whereas for shale stimulation the power demand may be as high as 50,000 hydraulic horsepower and use 30 pump units. Water use is also much greater for shale than for CSG.²²

Notably, shale gas extraction requires larger quantities of water for fracking than CSG extraction does, but it does not create the large quantities of ‘produced water’ that CSG extraction does.²³ More wells are required to develop a shale gas resource than a conventional gas resource.²⁴

The United States has an established shale gas industry which has grown rapidly since the early 2000s. In Australia, the shale gas industry is in its infancy with the first shale gas well beginning operation in the Cooper Basin in South Australia in 2012. An Australian Council of Learned Academies study, chaired by Professor Peter Cook, who appeared as a witness for the Committee, suggests that shale gas may be present in large quantities in the Otway Basin.²⁵

2.2.3 Tight gas

Tight gas is natural gas that is trapped in compacted sandstones or limestones that are impermeable and non-porous (also known as ‘tight sand’). Tight gas occurs at depths greater than 1000 metres. It is called tight gas because it is tightly constrained within very hard rock formations.²⁶

²⁰ P. Cook (2015) *Transcript of Evidence*, 22 July, p. 9.

²¹ CSIRO (2015) ‘What is Unconventional Gas?’, op. cit.; NSW Chief Scientist & Engineer (2013) *Initial Report on the Independent Review of Coal Seam Gas Activities in NSW*, NSW Government, p. 40.

²² NSW Chief Scientist & Engineer (2014) *Independent Review of Coal Seam Gas Activities in NSW Information Paper: Fracture Stimulation Activities*, op. cit., p. 1.

²³ P. Cook et al. (2013) *Engineering Energy*, op. cit., pp. 24, 119; C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 4.

²⁴ State Government of Victoria (2015) Submission 658, p. 7.

²⁵ P. Cook et al. (2013) *Engineering Energy*, op. cit., p. 49; P. Cook (2015) *Transcript of Evidence*, 22 July, pp. 2-3; See also P. Cook (2013) ‘Unconventional Gas in Victoria: Proceed with Care’, *The Conversation*, 18 November.

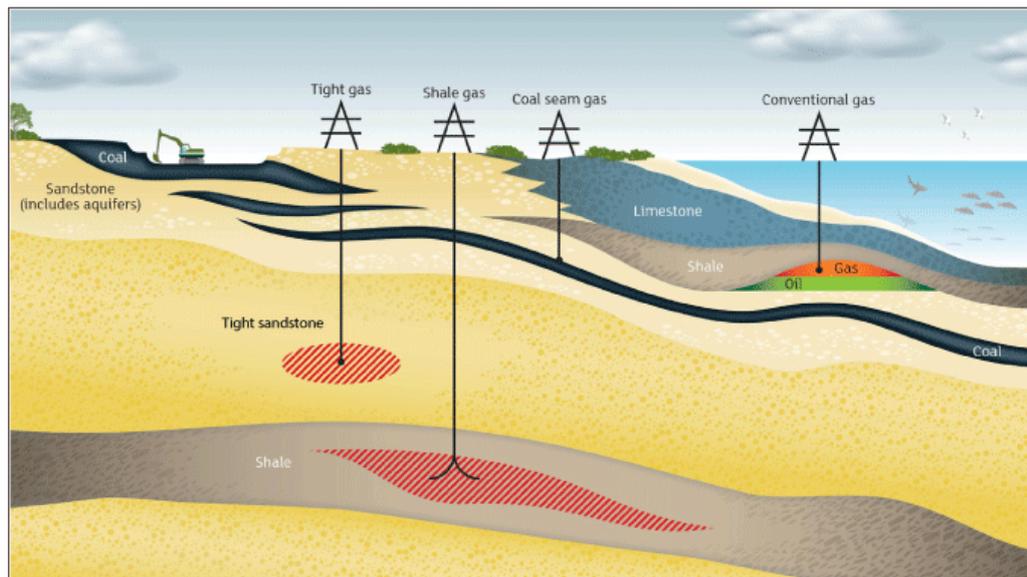
²⁶ State Government of Victoria (2015) Submission 658, pp. 6-7; Rigzone (2015) ‘What is Tight Gas and How is it Produced?’, Rigzone website.

The CSIRO explains that the pores in the rock that contain the tight gas are ‘miniscule’ and that ‘the interconnections between them are so limited that the gas can only migrate through it with great difficulty’.²⁷ All methods to increase the productivity of tight gas deposits are usually employed, including fracking and horizontal drilling. Tight gas, like shale gas, requires relatively large amounts of hydraulic horsepower and quantities of water for fracking.²⁸ More wells are also required to collect tight gas than are needed for conventional gas.²⁹

Tight gas exploration in Australia is also still in its infancy. Notably, the exploration company Lakes Oil discovered tight gas in the Seaspray area of Gippsland in 2004.³⁰ Lakes Oil also suggests that tight gas may be present in the Otway basin.³¹ Lakes Oil has written to the Committee seeking permission to drill two ‘proof of concept’ wells to test the productivity of its sites in the Otway Basin and provide information to assist the Committee’s understanding of Victoria’s prospectivity.³² This is a matter for the Government to consider.

Figure 2.1 and Figure 2.2 provide diagrams that illustrate the different geological settings of conventional and unconventional gas deposits:

Figure 2.1 Examples of Conventional and Unconventional Gas Deposits



Source: State Government of Victoria (2015) Submission 658, p. 6.

²⁷ CSIRO (2012) ‘What is Coal Seam Gas’, op. cit.; C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 4.

²⁸ NSW Chief Scientist & Engineer (2013) *Initial Report on the Independent Review of Coal Seam Gas Activities in NSW*, op. cit., p. 40; C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 4.

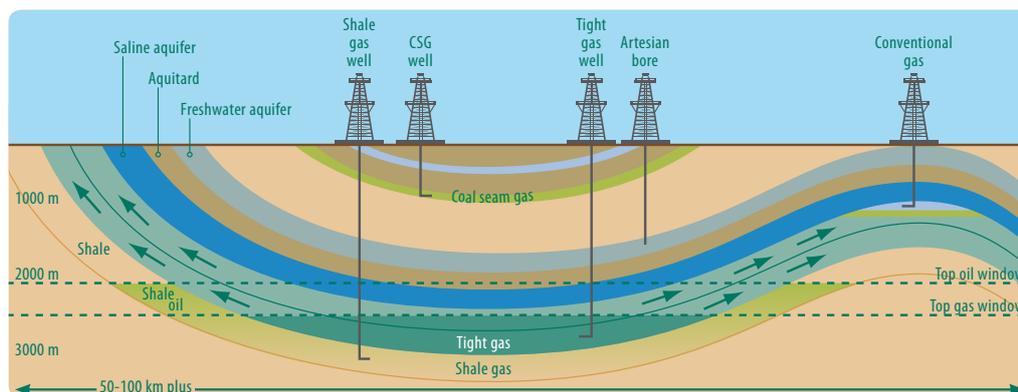
²⁹ State Government of Victoria (2015) Submission 658, p. 7.

³⁰ P. Reith (2013) *Gas Market Taskforce: Supplementary Report*, State Government of Victoria, p. 19.

³¹ Lakes Oil (2015) Submission 510, pp. 11-12.

³² Correspondence from Lakes Oil, Lakes Oil (2015) Submission 510, pp. i-ii.

Figure 2.2 Examples of Conventional and Unconventional Gas Deposits



Source: P. Cook et al. (2013) *Engineering Energy: Unconventional Gas Production*, Report for the Australian Council of Learned Academies, p. 33.

2.3 Potential environmental impacts of unconventional gas extraction

The body of available literature on unconventional gas, government reviews, and evidence received by the Committee identify a number of potential risks posed by unconventional gas extraction. These risks centre on potential impacts on water resources which could affect agriculture and the environment more broadly, and include but are not limited to: the risk of contamination of groundwater with fracking fluid chemicals, geogenic compounds and methane; the depletion of groundwater; subsidence of the ground surface; increased seismicity; pollution risks associated with produced water from coal seams; and fugitive methane emissions.³³

Identified potential risks also include impacts to the surface environment from the industrial infrastructure associated with unconventional gas extraction such as clearing of bushland, fragmentation of native habitat, spread of weeds and increased risk of bushfires.³⁴

Government initiated reviews from multiple jurisdictions are, however, also concluding that these risks can be better managed if regulatory frameworks for industry are improved, monitored and enforced.³⁵ Some of these reviews

³³ See: NSW Legislative Council, General Purpose Standing Committee No. 5 (2012) *Inquiry into Coal Seam Gas*, Parliament of NSW; NSW Chief Scientist & Engineer (2013) *Initial Report on the Independent Review of Coal Seam Gas Activities in NSW*, op. cit.; Standing Council on Energy and Resources (2013) *The National Harmonised Regulatory Framework for Natural Gas from Coal Seams*, Council of Australian Governments; P. Cook et al. (2013) *Engineering Energy*, op. cit.; M. Currell (2015) Submission 11; State Government of Victoria (2015) Submission 658 p. 21; Doctors for the Environment (2015) Submission 416.

³⁴ J. Williams, T. Stubbs & A. Milligan (2012) *An Analysis of Coal Seam Gas Production and Natural Resource Management in Australia: Issues and Ways Forward*, Australian Council of Environmental Deans and Directors, pp. 30-37, 105-106; Australian Academy of Technological Sciences and Engineering (2015) Submission 451, p. 2; P. Cook et al. (2013) *Engineering Energy*, op. cit., p. 24.

³⁵ See for example: NSW Chief Scientist & Engineer (2014) *Final Report of the Independent Review of Coal Seam Gas Activities in New South Wales*, NSW Government; P. Reith (2013) *Gas Market Taskforce: Final Report and Recommendations*, op. cit.; Standing Council on Energy and Resources (2013) *The National Harmonised Regulatory Framework for Natural Gas from Coal Seams*, op. cit.

are briefly discussed in the next chapter of this Report, which provides a short overview of the history of unconventional gas activity in Victoria and the evolution of government policy.

3

History of unconventional gas activity in Victoria and Government policy

This chapter provides a short summary of the history of unconventional gas activity in Victoria and lists key events in the regulation of unconventional gas both at the Council of Australian Governments (COAG) and the Victorian state levels.

Activity relating to a potential unconventional gas industry in Victoria is at an early stage. It is not yet known whether there is unconventional gas in this state that would be commercially viable to produce. The highest potential for unconventional gas is in the Gippsland and Otway Basins.

From 2000-2011, Victorian Governments issued companies with exploration licences to search for unconventional gas, and exploratory drilling and some hydraulic fracturing were undertaken.³⁶ As stated earlier in this Report, the exploration company Lakes Oil discovered tight gas in the Seaspray area in 2004, and acquired a retention lease in 2007.³⁷

3.1 The National Harmonised Regulatory Framework

In late 2011, community concerns over the development of the CSG industry in Queensland and New South Wales – in regards to potential environmental, health and social impacts – led to the then COAG Standing Council on Energy and Resources (SCER) deciding to develop a regulatory framework for the industry.³⁸

The framework, which is called – ‘The National Harmonised Regulatory Framework for Natural Gas from Coal Seams’ – was completed in June 2013. It identifies 18 ‘leading practices’ that can be adopted by regulators to best manage the CSG industry, with particular focus on the ‘core areas’ of ‘well integrity, water management and monitoring, hydraulic fracturing and chemical use.’³⁹ In regard to other forms of unconventional gas, the SCER stated that ‘some of the approaches to leading practice advocated in the Framework may

36 P. Reith (2013) *Gas Market Taskforce: Final Report and Recommendations*, op. cit., p. 20; P. Reith (2013) *Gas Market Taskforce: Supplementary Report*, op. cit., p. 120.

37 P. Reith (2013) *Gas Market Taskforce: Supplementary Report*, op. cit., p. 19.

38 Standing Council on Energy and Resources (2012) *The Draft National Harmonised Regulatory Framework: Coal Seam Gas*, Council of Australian Governments, p. 1. Note: the Victorian State Government’s submission states that the Standing Council on Energy and Resources is now called the COAG Energy Council.

39 See: SCER (2013) *The National Harmonised Regulatory Framework for Natural Gas from Coal Seams*, op. cit, pp. 7-8.

have applicability to other oil and gas activities like shale and tight gas.⁴⁰ The Committee understands that research work and studies continue in relation to the Framework.

3.2 The National Partnership Agreement

Also of relevance is the COAG ‘National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development’ made between the Commonwealth, New South Wales, Victorian, Queensland, South Australian and Northern Territory governments in 2012.⁴¹ The stated purpose of the National Partnership Agreement was to ‘strengthen the regulation of CSG and large coal mining development by ensuring that future decisions are informed by substantially improved science and independent expert advice’.⁴² As part of the Agreement, the Commonwealth established the ‘Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Developments’ (the IESC) under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). The role of the IESC is to improve the science base and provide advice on the impact of CSG and coal mining on water resources.⁴³

One of the tasks of the IESC is to facilitate ‘bioregional assessments’ of the groundwater and ecology in regions with potential for CSG or coal mining.⁴⁴ The inter-departmental submission to this Inquiry explains that Victoria has received \$10.13 million in Commonwealth funding as part of the National Partnership Agreement to fund water studies in the Gippsland and Otway Basins.⁴⁵

3.3 Key Victorian regulatory developments regarding unconventional gas

In August 2012, the Victorian Government announced a hold on approvals to undertake fracking as part of onshore gas exploration and on the issuing of new exploration licences for CSG, until the National Harmonised Regulatory Framework had been completed and considered, and the above mentioned water studies under the National Partnership Agreement got underway.⁴⁶

⁴⁰ SCER (2013) *The National Harmonised Regulatory Framework for Natural Gas from Coal Seams*, op. cit., p. 9.

⁴¹ See: Council of Australian Governments (2012) *National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development*.

⁴² COAG (2012) *National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development*, op. cit., p. 1.

⁴³ *ibid.*, pp. 13-15.

⁴⁴ *ibid.*, pp. 8, 13-14.

⁴⁵ State Government of Victoria (2015) *Submission 658*, p. 10.

⁴⁶ M. O’Brien, Minister for Energy and Resources (2012) ‘Reforms to Strengthen Victoria’s Coal Seam Gas Regulation and Protect Communities’, Media Release, 24 August.

In December 2012, the Government established the Gas Market Taskforce which was chaired by the former Federal Government Minister, the Hon Peter Reith, and consisted of industry representatives. The Taskforce was asked to ‘provide policy options to the Victorian Government on improving the operation and efficiency of the eastern Australian gas market’.⁴⁷

In November 2013, the Taskforce presented its final report and recommendations – sometimes called the ‘Reith Report’ – and recommended the development of an unconventional gas industry in Victoria. The report further recommended that the regulations underpinning unconventional gas exploration and development be strengthened, particularly by the full implementation of the 18 leading practices outlined in the National Harmonised Regulatory Framework.⁴⁸

The then Premier of Victoria, the Hon Denis Naphthine, announced in late November 2013 that the Government would seek public feedback on the Gas Market Taskforce Report, and conduct a formal community consultation process on issues surrounding onshore gas from April 2014 to July 2015, during which time the moratorium on hydraulic fracturing would remain in place.⁴⁹ The then Deputy Premier, the Hon Peter Ryan, further explained that the moratorium would also extend to the issuing of new coal seam, shale and tight gas exploration licences until at least July 2015.⁵⁰ The water science studies – consisting of a collation of existing Victorian water data and bioregional assessments of the Gippsland and Otway Basins – were also announced at that time.⁵¹ (The inter-departmental submission to the Inquiry states that these studies are now complete, and were provided to the Committee on 3 August 2015.)⁵²

In April 2014, the former Department of State Development, Business and Innovation engaged consulting firm ‘The Primary Agency’ to conduct the twelve month community and stakeholder engagement program.⁵³ In April 2015, The Primary Agency presented its *Report on Community and Stakeholder Attitudes to Onshore Natural Gas in Victoria*.⁵⁴

In September 2014, the Victorian Parliament passed the *Resource Legislation Amendment (BTEX Prohibition and Other Matters) Act 2014*, which imposed a restriction on the use of BTEX compounds in hydraulic fracturing in Victoria. The

47 P. Reith (2013) *Gas Market Taskforce: Final Report and Recommendations*, op. cit., p. 9.

48 *ibid.*, pp. 1, 4-8.

49 D. Naphthine, Premier (2013) ‘Gas Market Taskforce Paper Open for Public Consultation’, Media Release, 21 November, p. 1.

50 See: Victoria, Legislative Assembly (2013) *Debates*, Book 16, 27 November, pp. 4188-4190.

51 P. Walsh, Minister for Water & G. Hunt, Minister for Environment (Cth) (2013) ‘Major Victorian Water Study Launched’, Joint Media Release, 22 November.

52 State Government of Victoria (2015) *Submission 658*, p. 10, and see: Victorian Government (2015) ‘About the Water Studies’, Onshore Gas Community Information website. Information provided on the Onshore Gas Community Information website states that the Victorian Government has also undertaken geophysical studies: ‘A gravity survey over parts of South Gippsland was completed in July 2014 and a seismic survey has also been undertaken in June and July 2015’. See Victorian Government (2015) ‘Geophysical Studies’, Onshore Gas Community Information website.

53 State Government of Victoria (2015) *Submission 658*, p. 11; The Primary Agency (2015) *The Primary Agency website*.

54 See: The Primary Agency (2015) *Report on Community and Stakeholder Attitudes to Onshore Natural Gas in Victoria*, Melbourne.

acronym 'BTEX' refers to 'benzene, toluene, ethylbenzene, and xylene', which are compounds found in petroleum products that are known to be harmful to human health.⁵⁵ The inter-departmental submission to the Inquiry notes that BTEX compounds can also 'occur naturally within the vicinity of natural gas and petroleum deposits.'⁵⁶

The Victorian Labor Party went to the November 2014 state election with a policy to hold a Parliamentary committee inquiry into unconventional gas.⁵⁷ The moratorium on hydraulic fracturing and the issuing of unconventional gas exploration licences has been continued pending the Committee presenting its Final Report to Parliament.⁵⁸

The Committee notes the tabling of the Victorian Auditor-General's self-initiated report on 19 August 2015 investigating the state's preparedness to effectively respond to potential environmental and community impacts if an unconventional gas industry proceeds in Victoria.⁵⁹ Due to this timing, the Committee has not assessed the VAGO report at the time this Interim Report was prepared. It will be considered in the Committee's Final Report.

The following chapter of this Interim Report draws on the evidence the Committee has received so far to identify emerging themes in the unconventional gas debate and present some examples of stakeholder views.

55 C. Ross (2014) *Research Note on the Resources Legislation Amendment (BTEX Prohibition and Other Matters Bill) 2014*, Victorian Parliamentary Library and Information Service, p. 1.

56 State Government of Victoria (2015) Submission 658, p. 5.

57 L. D'Ambrosio, Minister for Energy & Resources (2015) 'Inquiry to Give Regional Communities a Voice on Coal Seam Gas', Media Release, 27 May.

58 *ibid.*

59 See: Victorian Auditor-General's Office (2015) *Unconventional Gas: Managing Risks and Impacts*, VAGO, 19 August.

4 Central themes of the Victorian unconventional gas debate and stakeholder views

The Committee's Inquiry into a potential unconventional gas industry in Victoria received more than 1,700 submissions. The Committee understands that this is an issue that many Victorians are deeply concerned about. The subject is complex and contested. However, the evidence that the Committee has received through the submissions and the evidence of witnesses at Committee hearings contains a number of recurring themes. This chapter of the Interim Report briefly identifies some of these themes and provides examples of stakeholder views. A full review and reflection on these themes and how they correspond with the Terms of Reference for the Inquiry will be provided in the Committee's Final Report.

4

4.1 Community concern

The vast majority of submissions to the Committee express concerns about the potential risks an unconventional gas industry could pose to the Victorian environment. The concerns centre on potential risks to Victoria's prime agricultural land and to the water resources that support agriculture. The importance of agriculture, in particular the dairy industry in the case of Gippsland, to the Victorian economy is frequently emphasised. Additionally, the importance of the tourism industry to many regional areas with prospects for unconventional gas production has also been raised with the Committee.

These concerns are widespread, and shared by a broad cross-section of the community including farmers and other landholders, environmental groups, landcare groups, medical professionals, hydrogeologists, tourism operators, small business owners, and local councils.⁶⁰ The Committee has been informed that, while the designation does not have legal standing, since 2012 over 60 communities in Gippsland and Western Victoria have declared themselves 'gas field free' and formed local action groups.⁶¹

For example, the submission from 'Gas Field Free Seaspray' states that: 'Seaspray has two unconventional gas mining exploration licences covering the entire township and surrounds; Lakes Oil for tight gas and Ignite Energy for coal seam gas.'⁶² The submission explains that following a community survey in which 98 per cent of those surveyed confirmed that they did not want gas fields in

60 See: Environment and Planning Committee (2015) 'Inquiry into Unconventional Gas in Victoria: Submissions', Parliament of Victoria website.

61 C. Aldenhoven (2015) Submission 817, pp. 22-24; Lock the Gate (2015) Submission 393, pp. 2-3.

62 Gas Field Free Seaspray (2015) Submission 426, p. 2.

Seaspray or surrounding areas, the community declared itself ‘gas field free’ on 28 July 2013. The occasion was marked with the formation of a human sign, made up of 650 people, spelling out the words ‘No Gas Fields’.⁶³ The Gas Field Free Seaspray submission also expresses the uncertainty the community feels about the development of an unconventional gas industry in their area:

We have an overwhelming grief in our community as generational farmers face the uncertainty of a future in an industrialised environment, their properties devalued and unable to develop their business plans for future expansion. The prospect of leaving a long held family farm and life’s work is heart wrenching and has led to extremes of depression and feelings of hopelessness.⁶⁴

Similarly, ‘Gas Field Free South West’ describes itself as a group of farmers from the Byaduk, Byaduk North, Wallacedale and Branxholme area, south of Hamilton, which is covered by Petroleum Licence Permit 150. Their submission states that: ‘On Sunday 3 May 2015, our community came together in order to officially declare ourselves ‘Gas Field Free’. Around 250 land holders took time out from their busy Autumn sowing season to bring their tractors to help make a large sign saying ‘Food Not Gas’.’⁶⁵ The submission further states that:

Are we really prepared to risk a sustainable income from a product that all people need – food – and for which there is a growing demand for safe, clean and green food, for a short term (15-20 years) industry known to be damaging to human health and the environment...?⁶⁶

Of the 17 local councils that have made submissions and/or presented at Committee hearings to date, most but not all are opposed to an unconventional gas industry proceeding in Victoria.⁶⁷ As Councillor Neil Rankine from the Bass Coast Shire Council stated in his evidence to the Committee:

I would like to point out that Bass Coast Shire unanimously passed a motion — a number of motions in fact — of outright opposition to coal seam gas. Every councillor in our municipality has been told by our community that they do not want this industry. There is good reason for that. Our environment is our economy. Tourism is the industry in our municipality; agriculture and construction are the other two major industries. The tourists who come to our municipality want to see cows in the paddock; they do not want to see an industrialised landscape.⁶⁸

The submission from the Colac Otway Shire Council is similarly representative of local government opposition to the industry. The submission emphasises potential risks to agriculture and environmental-based tourism, and suggests that resources would be better directed into the renewable energy sector:

63 *ibid.*, p. 3.

64 *ibid.*, p. 8.

65 Gas Field Free South West (2015) Submission 210, p. 1.

66 *ibid.*, p. 4.

67 See: Municipal Association of Victoria (2015) Submission 873, pp. 4-6.

68 N. Rankine (2015) Transcript of Evidence, 30 June, p. 2.

The literal footprint of the industry, the amounts of water it requires, and the potential for the processes involved to contaminate groundwater present an unacceptable risk to the agriculture industry and the region's water catchments, especially in the face of climate change and dwindling water supplies. The potential impact on the unique environmental assets within our region, and subsequently the tourism industry, presents an unacceptable risk ... The resources and investment required to conduct appropriate research into these impacts, and to then develop and implement effective regulation of the industry, would be better directed to the renewable energy sector...⁶⁹

The Committee also notes, however, that submissions from Latrobe City Council and from Corangamite Shire – two councils with direct experience of hosting mining industries – did not rule out supporting lifting the moratorium on unconventional gas exploration subject to conditions.⁷⁰

The potential health impacts of an unconventional gas industry are also an issue of community concern. A number of submissions and evidence from witnesses at Committee hearings have raised concerns about health risks potentially posed by the industry. For example, Dr Jo McCubbin stated in her evidence at the Gippsland hearing that: 'When you think about it, the reason that people are disturbed about potentially living in a gas field is concern for their health. They might say they are worried that the water will be contaminated. Why? Because they are worried that they or their stock will get poisoned by it.'⁷¹

The submission provided by Doctors for the Environment Australia (DEA) states that it 'is concerned that the rush to exploit this resource has outpaced regulation to protect public health and to adequately assess the health impacts, including exposures to industrial chemicals.'⁷² The Australian Medical Association – Victoria recommends in its submission to the Inquiry that governments ensure that all future proposals for unconventional gas development are subject to 'rigorous and independent health risk assessments, and take into account the potential for exposure to pollutants through air and groundwater and any likely associated health risks.'⁷³ The DEA further states that a cost-benefit-analysis of an unconventional gas industry in Victoria, should include the costs of air and water monitoring, health risk assessments, and potential adverse public health outcomes.⁷⁴

The Committee hopes to hear evidence on these issues in the planned Inquiry hearing with the Victorian Department of Health and Human Services. The Committee has also resolved to seek evidence from the Minister for Energy and Resources, the Hon Lily D'Ambrosio.

⁶⁹ Colac Otway Shire Council (2015) *Submission 823*, p. 4.

⁷⁰ See: Latrobe City Council (2015) *Submission 354*; Corangamite Shire Council (2015) *Submission 96*.

⁷¹ J. McCubbin (2015) *Transcript of Evidence*, 1 July, p. 2. See also: Environmental Justice Australia (2015) *Submission 837*, pp. 7-8.

⁷² Doctors for the Environment Australia (2015) *Submission 416*, p. 2.

⁷³ Australian Medical Association – Victoria (2015) *Submission 65*, p. 1.

⁷⁴ Doctors for the Environment Australia (2015) *Submission 416*, p. 2.

4.2 Gas industry response to community concern

The submissions to the Committee in favour of an unconventional gas industry proceeding in Victoria mostly came from the gas industry, or individuals who have worked in the oil and gas industry.

The APPEA – the peak national body representing Australia’s oil and gas industry – states that the potential environmental and health risks involved in unconventional gas production can be safely managed and that ‘there is no sound basis for continuing to delay an industry that can provide substantial economic and community benefits to the State.’⁷⁵ The APPEA submission states that many of the risks found in the unconventional gas industry are also present in other industries, and that the coal seam gas industry in Queensland provides an example of how these risks can be successfully managed:

Many of the activities – and associated risks – found in unconventional gas exploration and production are common in other industries. For example, drilling is undertaken in mining and agriculture. Hydraulic fracturing is used in geothermal energy production and to improve the flow of water bores. Pipelines are used to transport water and deliver gas to hundreds of thousands of households. The fact that these risks are manageable is clearly demonstrated by the Queensland coal seam gas industry, which coexists successfully with high-value agriculture and farming practices that are required to meet high standards, such as organic farming.⁷⁶

The APPEA submission highlights the reviews which are concluding that risks involved in unconventional gas production can be effectively managed with strict regulatory frameworks:

The findings of multiple Australian and international reviews and inquiries by eminent individuals and institutions are clear – the risks associated with unconventional gas can be managed effectively through the creation of a robust regulatory regime, underpinned by effective monitoring and compliance.⁷⁷

The APPEA submission further states that: ‘Victoria is fortunate that there are a number of contemporary Australian examples of such regulatory regimes already in place’ and recommends the adoption of the SCER National Harmonised Regulatory Framework for Natural Gas from Coal Seams (discussed in chapter 3 of this Report) to underpin the regulation of unconventional gas in Victoria.⁷⁸

The Minerals Council of Australia submission to the Inquiry emphasises the importance of natural gas to Victoria, particularly to the state’s manufacturing industry, and calls for the moratorium on unconventional gas exploration to be lifted:

75 APPEA (2015) Submission 364, p. 4.

76 *ibid.*, p. 11.

77 *ibid.*, p. 3.

78 *ibid.*, pp. 3-4.

Natural gas is an important product for households, businesses and manufacturing processes. Accessible and reliable sources of natural gas, over a long period of time, have supported the development of Victoria's primary and manufacturing industries. It is now time to consider how unconventional gas can also contribute to the future prosperity of Victoria... The government must remove the moratorium...⁷⁹

Lakes Oil's submission to the Inquiry states that the company has spent in excess of \$80 million exploring the potential for onshore gas resources in the Gippsland and Otway Basins and emphasises that the benefits of an unconventional gas industry will outweigh the perceived risks:

Lakes has been supportive of all the inquiries that have looked into this issue as it believes that once the facts are out there the local and wider community will see that the benefits of an onshore unconventional/conventional gas industry far outweigh the perceived risks. Victoria has been blessed with very significant natural resources which in the past have been exploited to make Victoria the manufacturing heartland of Australia. We believe that by exploiting these deeper, cleaner onshore gas resources we will help rejuvenate industry across the state...⁸⁰

4

4.3 Agriculture, land access, compensation, and reputational risk

A key issue in the unconventional gas debate arises from the fact that unconventional gas deposits can be located under privately owned agricultural land. Farmers have expressed concern to the Committee that unconventional gas mining may not be compatible with agricultural production and may impact on food security.

The Victorian Farmers Federation (VFF) submission emphasises the importance of agriculture to the Victorian economy and the need to ensure its long-term viability:

Despite farming on around three per cent of Australia's available agricultural land, Victorians produce close to 30 per cent of the nation's agricultural exports. What's important to our members is the long term viability of their agricultural businesses. This can relate to improving their productivity or expanding production. The agricultural sector is a significant contributor to the Victorian economy, employing over 191,700 people, that is, one in six regional Victorians. In 2013-2014, agriculture accounted for 48 per cent of the State's total goods exports, valued at \$11.8 billion... Victoria's future success is dependent on remaining competitive in global and domestic markets by boosting productivity.⁸¹

The VFF submission states that there are significant concerns among its membership that an unconventional gas industry will affect agricultural production, particularly in regard to impacts on the quality and quantity of available water and the potential for contamination from the use of chemicals

⁷⁹ Minerals Council of Australia: Victorian Division (2015) *Submission 365*, p. 1.

⁸⁰ Lakes Oil (2015) *Submission 510*, pp. i-ii.

⁸¹ Victorian Farmers Federation (2015) *Submission 471*, p. 12.

in hydraulic fracturing.⁸² The submission further states that there is a lack of scientific information on the risks posed by unconventional gas activities to the Victorian environment and that ‘there are no guarantees from the Victorian Government or the gas industry that these risks can be managed.’⁸³

Notably, the VFF calls for the moratorium on the unconventional gas industry in Victoria to be extended for another five years:

VFF members have responded to these uncertainties on the impacts of unconventional gas activities by calling for a moratorium on issuing licences for all types of unconventional gas exploration and mining until 2020.⁸⁴

Issues to do with land access and compensation have also been brought to the attention of the Committee. The Crown owns the mineral and petroleum resources under privately owned land. Hence, the state government, on behalf of the Crown, licenses companies to explore for and extract unconventional gas. Victorian law provides that gas companies then negotiate access agreements with individual landholders and provide compensation for the disruption to and impact on the property.⁸⁵

The VFF submission to the Inquiry states that the ‘existing legislation does not provide a level playing field’ between landholders and gas companies ‘in negotiating access agreements for the use of agricultural land.’⁸⁶ Notably, the VFF recommends that the State Government ‘Give landholders a right of veto over mining activities on their land’.⁸⁷

Concerns have been expressed to the Committee that compensation paid by companies to landholders will not be adequate to address environmental damage such as the potential contamination and loss of water resources. Additionally, there is concern that unconventional gas activity may reduce the value of properties. There is also apprehension over the rehabilitation of land once the industry has gone.⁸⁸

Concerns relating to the risks an unconventional gas industry may pose to the reputation of Victorian agricultural produce as ‘clean and green’ were also articulated to the Committee. The Committee heard that one of Victoria’s competitive advantages in international, and particularly in Asian, markets is its reputation based on strong environmental protection and food safety.⁸⁹ For example, the East Gippsland Food Cluster – a collaborative network of regional food and wine producers – states that:

82 *ibid.*, pp. 6, 8.

83 *ibid.*, p. 6.

84 *ibid.*, p. 6.

85 C. Ross & P. Darby (2013) *Unconventional Gas*, op. cit., p. 14.

86 Victorian Farmers Federation (2015) *Submission 471*, p. 2.

87 *ibid.*, p. 16.

88 Victorian Farmers Federation (2015) *Submission 471*, pp. 14-19; Environmental Justice Australia (2015) *Submission 837*.

89 Victorian Farmers Federation (2015) *Submission 471*, p. 13.

The East Gippsland Food Cluster is particularly concerned about the potential impacts of Unconventional Gas in Eastern Gippsland. These threats are considered as both perceived (i.e. detract from the clean and green image of our region amongst consumers) and real (i.e. threats to land, soil and water).⁹⁰

The evidence provided by the Australian Dairy Industry Council similarly emphasises the importance of protecting the reputation of the Victorian dairy industry in international markets.⁹¹ It highlights the importance of export markets to the Victorian dairy industry and states that remaining internationally competitive is dependent on ‘two things that unconventional gas mining could put at risk’:

Firstly, the natural resources upon which the dairy industry relies must continue to be available without any negative impact, and our primary focus here is water. Secondly, the dairy industry’s reputation as a producer of high-quality, safe dairy products must be protected. Any possibility that unconventional gas mining could impact these two things, whether it is actual impact or the perception of our customers about impact, will need to be carefully managed to ensure all risks are addressed; for example, by having very robust legislative frameworks and limiting expansion of mining into new areas.⁹²

Submissions from the unconventional gas industry state that agriculture and unconventional gas production can successfully co-exist, with the land being used for multiple functions, when industry best-practice standards are adhered to.⁹³

4.4 Regulation

The Victorian Government is responsible for the regulation of onshore mineral and petroleum resources including unconventional gas. Its responsibilities include licensing mineral and petroleum exploration and development, setting conditions on licences, assessing environmental impacts, monitoring and enforcing industry adherence to regulation, and the collection of royalties from mineral and petroleum production.⁹⁴ The Committee heard different views on whether Victorian regulatory frameworks need to be further developed to address a potential unconventional gas industry in this state.

The Minerals Council of Australia states in its submission that the state’s regulatory framework is already capable of effectively managing an unconventional gas industry: ‘The Victorian regulatory regime is strong and robust. It is capable of supporting the development of an onshore gas industry.’⁹⁵ The energy company Gippsland Gas, a subsidiary of Ignite Energy Resources,

⁹⁰ East Gippsland Food Cluster (2015) *Submission 654*, p. 2.

⁹¹ Australian Dairy Industry Council (2015) *Transcript of Evidence*, p. 2.

⁹² *ibid.*

⁹³ See: APPEA (2015) *Submission 364*, p. 14; Minerals Council of Australia: Victorian Division (2015) *Submission 365*, p. 9; Lakes Oil (2015) *Submission 510*, pp. 2-3.

⁹⁴ C. Ross & P. Darby (2013) *Unconventional Gas*, *op. cit.*, p. 27.

⁹⁵ Minerals Council of Australia: Victorian Division (2015) *Submission 365*, p. 1.

similarly states that ‘the current regulatory framework represents industry best practice’ and that ‘all potential environmental, land productivity and public health risks can be effectively managed within the National Harmonised Regulatory Framework.’⁹⁶

As noted earlier in this Report, the APPEA also views the National Harmonised Regulatory Framework as best practice, and states that: ‘Adoption of the framework does not necessarily require the development of new legislation, as many of its elements are already in place, however in some areas existing legislation or regulation may require adaptation in Victoria.’⁹⁷

Conversely, the VFF states that the current regulatory system is not sufficiently prepared for the industry to go ahead: ‘Given the lack of information around the risks to environment, land and water, the current regulatory system does not encompass the necessary tools and safeguards for an unconventional gas industry.’⁹⁸

The submission by Environmental Justice Australia (EJA) – formerly the Environmental Defenders Office – provides detailed comment on Victoria’s legislative framework in regard to a potential unconventional gas industry. In summary, the EJA asserts that:

The current regulatory regime is not sufficiently robust to protect communities and the environment, and the moratorium on activities associated with the production of onshore unconventional gas should remain in place until more is known about the risks involved, and the regulatory regime is reformed in a way that adequately protects Victorian communities and the Victorian environment.⁹⁹

The submission and evidence of Professor Samantha Hepburn provides detailed commentary on the existing regulatory framework and proposals for improvements, which the Committee will consider as the Inquiry continues.¹⁰⁰

The Committee will also consider evidence on the regulatory framework contained in the inter-departmental submission from the Victorian Government and the Victorian Auditor-General’s report on the state’s preparedness for a potential unconventional gas industry.

4.5 Jobs

The Terms of Reference require the Committee to consider the impact of a possible onshore unconventional gas industry on employment. The submission to the Committee from the Minerals Council of Australia states that:

96 Gippsland Gas (2015) Submission 904, p. 7.

97 APPEA (2015) Submission 364, p. 7.

98 Victorian Farmers Federation (2015) Submission 471, p. 2.

99 Environmental Justice Australia (2015) Submission 837, p. 1.

100 S. Hepburn (2015) Submission 1072.

The development of an onshore gas industry has the potential to bring a great deal of wealth to the state and to the people of Victoria. It also has the potential to support regional economies and provide high-paying jobs to people who want to live in the regions.¹⁰¹

Similarly, the APPEA cited a 2013 study by KPMG of ‘Australia’s nine main resources regions’ which found that, in the five years to 2011, the number of people employed in the resources sector across the sampled regions grew by 13,810 or 50 per cent, whereas the number employed in all industries – including resources – grew by just 14 per cent.¹⁰²

However, submissions from the Australia Institute and others have queried the long-term sustainability of the employment that might be provided by the industry in Victoria. The Australia Institute states that workers are likely to be sourced from interstate on a ‘fly in fly out’ basis, with minimal impact on local unemployment rates.¹⁰³ On the other hand, research by the Gas Industry Social & Environmental Research Alliance in Queensland has found that for each gas industry job created there were two additional jobs created in related construction and professional services. Conversely, for each new gas job there was a reduction of 1.7 jobs from the agricultural sector.¹⁰⁴

It is clear from media reports that the development of coal seam gas in south east Queensland has resulted in considerable social and economic change in rural agricultural areas.¹⁰⁵ The Committee will continue to seek more detailed information to help it understand the likely impacts on regional development in Victoria, were an unconventional gas industry to proceed. This will include examining the economic impacts of the unconventional gas industry in the USA, Canada and elsewhere.

4.6 Gas market

With the recent commencement of liquefied natural gas (LNG) exports from Queensland, the eastern Australian gas market is now linked to the international market and domestic gas consumers are competing with international buyers. It is widely expected that the price of gas in eastern Australia will increase from its relatively low domestic price to reach international parity.

The Committee has heard a broad range of arguments on the question of whether this change in the market provides an urgent case for exploring for and developing unconventional gas in Victoria.

¹⁰¹ Minerals Council of Australia: Victorian Division (2015) *Submission 365*, p. 1.

¹⁰² APPEA (2015) *Submission 364*, p. 15.

¹⁰³ Australia Institute (2015) *Submission 831*, pp. 6-7.

¹⁰⁴ State Government of Victoria (2015) *Submission 658*, p. 42.

¹⁰⁵ J. Grewal (2015) ‘Riches’ Relics in Gas Towns the Boom Forgot’, *Weekend Australian*, 15 August, pp. 1, 10.

A number of manufacturers and others made submissions to the Committee in which they argued that developing a new supply of gas would add to security of supply and result in lower domestic prices. According to CSR, from 2015 onwards gas prices for Australian businesses will more than double, and there may be critical gas shortages and outages of 10 or more days. CSR states that: ‘The development of further gas resources in Victoria will have a highly material and favourable impact on the availability and price of gas, and therefore on the viability of many of our businesses.’¹⁰⁶

The Committee has evidence that Lakes Oil has signed an agreement with a Victorian company to supply gas at below market prices. Another company, Orora, a packaging manufacturer, noted that it had experienced recent increases in the cost of gas which had placed significant upward pressure on their costs and those of other large industrial customers. Orora states that in order to ‘ameliorate rising gas prices’ it has entered into an agreement with an explorer company to supply gas from a prospective CSG field in the Southern Cooper Basin, and that the moratorium in Victoria had discouraged Orora from considering prospective gas suppliers in this state.¹⁰⁷

The Committee has also heard contrary arguments from a range of other stakeholders. For example, the Grattan Institute, while contending that the moratorium was unhelpful for Victoria generally, stated that ‘it is already the case that gas is a more expensive energy source than electricity for most domestic consumers. Unconventional gas development is unlikely to reverse this position’.¹⁰⁸ A submission from the University of Melbourne Energy Institute presented research work which indicates that gas demand is falling and will continue to fall in response to higher prices and fuel switching by manufacturers and consumers.¹⁰⁹

The Committee notes that, other than the likelihood of higher gas prices, it is difficult to predict what will occur with energy markets and it is therefore unclear to what extent unconventional gas could provide a competitive source of energy and non-energy inputs for Victoria. The Committee will seek further information on this topic in forthcoming public hearings.

This chapter has provided a brief snapshot of some of the main issues and stakeholder views on a potential unconventional gas industry in Victoria. Over the coming months, the evidence gathered by the Committee will be reviewed in full. The Committee’s findings and recommendations will be presented in the Final Report which is due to be tabled on 1 December 2015. This Interim Report now concludes with the identification of some key points that will require further consideration as the Committee continues its Inquiry.

106 CSR Limited (2015) *Submission 105*, p. 3.

107 Orora (2015) *Submission 646*, pp. 1-2.

108 Grattan Institute (2015) *Submission 984*, p. 3.

109 T. Forcey (2015) *Transcript of Evidence*, pp. 2-4; University of Melbourne Energy Institute (2015) *Submission 194*.

5

Issues to be further considered by the Committee

The Committee's Inquiry into a potential unconventional gas industry in Victoria has received what is likely to be an unprecedented number of submissions. It has heard a great deal of valuable evidence at the hearings conducted so far and will be conducting further hearings in Melbourne and regional Victoria. Over the coming months, the Committee will fully review and reflect on this material. Some of the key issues to be considered by the Committee are listed below:

The Committee will reflect on the evidence it has gathered on the prospectivity of commercial sources of unconventional gas in Victoria, noting that there are different views on this point.

The Committee will carefully consider the community concerns that have been expressed about potential risks that an unconventional gas industry may pose in Victoria.

The Committee notes the concerns of the Victorian Farmers Federation and will reflect on the VFF's calls for the moratorium on unconventional gas development to be extended, and for landholders to be given the right to veto unconventional gas activity on their land.

The Committee will study the reviews that suggest that risks posed by unconventional gas industries can be effectively managed if sufficiently robust regulatory frameworks are in place, and if industry compliance is monitored and enforced.

The Committee will reflect on the engagement to date between the unconventional gas industry, the Government and the communities in regions where unconventional gas may prospectively be located, and consider how this engagement may be improved.

The Committee will appraise the current legislative and regulatory framework that would govern a potential unconventional gas industry in this state. The Committee will examine the Victorian Auditor-General's report on managing the risks and impacts of unconventional gas and consider its findings.

The Committee will consider the scientific data gathered in the water studies of the Gippsland and Otway Basins that have recently been released by the Department of Environment, Land, Water and Planning.

The Committee will appraise the differing evidence it has received regarding the effect an unconventional gas industry in Victoria could have on the price of gas in this state. This is an important question given the reliance of Victoria's consumers and manufacturers on natural gas.

Victoria is in a fortunate position in being able to learn from the experiences of other jurisdictions which have proceeded with unconventional gas industries. In the next phase of this Inquiry, the Committee intends to seek further information from Queensland, New South Wales and elsewhere on matters such as the impact on agriculture and rural communities, evidence of co-existence, health impacts, the question of reputational risk, and the regulatory regimes of other jurisdictions.

The Committee's ability to progress this Inquiry has been dependent on the resources available to it. It has recently received approval to engage scientific expertise and this will assist it in doing justice to the significance of this issue for Victoria.

Appendix 1

List of Submitters

1. Kristin Bitmead
2. Dianne Morris
3. Lynnette Alderson
4. Pam White
5. Lee Gladwell
6. Ray Galdwell
7. Rajeshkumar Patel
8. Alan Coleman
9. Stuart Dalgleish
10. Neville Larson
11. Dr Matthew Currell
12. Vanessa Mullin
13. Lois Doeven
14. Daryl Hook
15. John King
16. Andrew Beale
17. Alexander Arbutnot
18. Paul Calvert
19. Nikki Thompson and Rob Hann
20. Kenneth Reid
21. Wayne Somerville
22. Jenny Jeal
23. Robert McLean
24. Dr Brian O’Sullivan
25. Michael McGarrigle
26. Craig Farmer
27. Nikki Thompson
28. Greg Oates
29. Kim White
30. Robert Whitaker
31. Craig Lambie
32. Kylie Richter-Cools
33. **Pro forma F (see Appendix 2 for list of names)**
34. Paul Alexander
35. Stewart Guthrie
36. Anne Mulvey
37. Brian Bowtell
38. Lorraine Bignoux
39. Sunny Wilson
40. Alison Marchant
41. **Pro forma H (see Appendix 3 for list of names)**
42. Robyn McLachlan
43. Miss Tracey McGuinness
44. Clive and Pamela Newman
45. Jonathan McCarthy
46. Philip Baker
47. Peter Gardner
48. Wendy Evans
49. Peter Roche
50. Monica Petterson
51. Brad Kijlstra-Shone
52. John Bowman
53. Stephen Issell
54. Jeremy Schroder
55. Elizabeth Ellen
56. Julie Francis
57. Gippsland Environment Group
58. Marg Desira
59. Graeme Stockton
60. Jane Gorman
61. Martha Hills
62. Barbara Young
63. Brian Steadman
64. Jo Southern
65. Australian Medical Association Victoria
66. Dr Janeen Samuel
67. Wendy Davis
68. Dr Fred de Munk
69. Dale Gibbs
70. Jackson Docherty
71. Patricia de Moulpied
72. Robin Friday
73. Lynley Manson
74. Ann Wingad
75. Sheridan Guiney
76. Warren Sanders
77. Ian and Marian Cooke
78. William Reid
79. Steve Winfield
80. **Pro forma C (see Appendix 4 for list of names)**
81. Danielle Haywood
82. Raymond Martin
83. Gail Barton
84. Kerry Woodward
85. Stephen Koci
86. Cathy Cheadle
87. Angela Robinson
88. Mordialloc Beaumaris Conservation League Inc

89. Mark Holman
90. Carolyn Gauci
91. David Holmes
92. Des Bryant
93. Elizabeth Pollock
94. Peter Martin
95. Maureen Verstedden
96. Corangamite Shire
97. QLD Department of Natural Resources and Mines
98. Elizabeth Packett
99. Jeremy Rundell
100. Johanne Walker
101. Leendert van Donk
102. Dr John Bardsley and Wendy Radford
103. Peter Elson
104. Rick and Jenny Robertson
105. CSR Limited
106. Deni Collyer
107. Dr Marisa Schlichthorst
108. Rosemary Faris
109. Jane Marriott
110. Irene Yuill
111. Leonie Guion
112. Susan and Colin Wales
113. Louise McArthur
114. Hilary Brown
115. Don Stokes
116. Nicole Bignoux
117. Michael and Margaret Waddington
118. Michael Quigley
119. Margarita Kumnick
120. Andrew Kumnick
121. Martin Pritchard
122. Jacinta Smith
123. Darrell S Morrison
124. James Brown
125. Michelle Hibberson
126. Graeme Biggins
127. Robert and Margaret Vernon
128. Chris Johnson
129. Catherine Vick
130. Robyn Langford
131. Chris O'Reilly
132. Noah Beecher Kelk
133. Kate Shone
134. Jan Morgan
135. Dr Debora Campbell
136. Agribusiness Gippsland
137. Ken Pearce
138. Dot Pearce
139. Bill Frisina
140. Terrie Hall and Ian Fox
141. Coopers Energy
142. Moira Shire Council
143. Miss Tria Manley
144. Bob Weis
145. Graeme Wilson
146. Sustainable Boolarra Group
147. Margaret Byron
148. Peter and Carol McGregor
149. Danielle Anawati
150. Jacinta Hendriks
151. Lyn O'Brien
152. Elisabeth Jones
- 153. Pro forma J (see Appendix 5 for list of names)**
- 154. Pro forma G (see Appendix 6 for list of names)**
155. Bengworden Landcare Group
156. Owen Hendriks
157. Nicholas Hendriks
158. Keith Rayfield
159. Peter Morris
160. Stina Foster
161. Carl Foster
- 162. Pro forma I (see Appendix 7 for list of names)**
163. Melissa Corbertt
164. Queenscliffe Community Association
165. Lucia Rolls
166. Catheryn Thompson
167. Dr Geoffrey Coggins
168. Sylvia Ashcroft
169. Elizabeth Bashford
170. Brian Lawrence
171. Margaret Plowright
172. Jennifer O'Brien
173. Zianna Faud
174. Laura Williams
175. Doug Phillips
176. Dianne Cascianelli
177. Jean Christie
178. Colin Smith
179. Peter Miller
180. Prue Tipping
181. Helen Phillips
182. Gary Milich
183. Margaret Milich
184. Stavroula Kostarakis
185. Rosalind Ellinger
186. Sally Baldwin
187. Dr Anthony Lunken
188. Jason Virgo
189. Robin B
190. Ramona Headifen
191. Ian Onley
192. John Coverdale
193. Mara Luglio

- | | | | |
|------|--|------|---|
| 194. | University of Melbourne Energy Institute | 246. | Margaret Murphy |
| 195. | Kate Leslie | 247. | Mercus Resources |
| 196. | Patricia Fraser | 248. | Andrew and Jill Milne |
| 197. | Dr A. Barrie Pittock | 249. | Mary Rogers |
| 198. | Liana Beavis | 250. | Jasmine Beschorner |
| 199. | Elizabeth Banks | 251. | Tony Hardy |
| 200. | G.H Schorel-Hlavka | 252. | Duncan Reilly |
| 201. | Julie Agar | 253. | Dominic O'Dwyer |
| 202. | Gabriel Brennan | 254. | Noel Will |
| 203. | Heinz de Chelard | 255. | David Metzenthien |
| 204. | Kate Wattchow | 256. | Jack Doeven |
| 205. | Ingrid de Neve and Mark Wallace | 257. | Connor Jolley |
| 206. | Gasfield Free Dean Marsh and Bambra Community Group | 258. | Maureen Cooper |
| 207. | Anunaki Holmes | 259. | Marc De Vecchi |
| 208. | David Williams | 260. | Carol Wilmlink |
| 209. | Dr Angela Munro | 261. | Cr Andrew McEwen |
| 210. | Aggie Stevenson | 262. | Don McArthur |
| 211. | Thomas Rees-Lightfoot | 263. | Diamond J Legend |
| 212. | Georgette Courtenay | 264. | Dr Amanda Peyton |
| 213. | Colin and Jill Frawley | 265. | and Roy and Elizabeth Stephens |
| 214. | Jan Molloy | 266. | Gillian Morpeth |
| 215. | David Tomkins | 267. | Samuel Pottenger |
| 216. | Australian Landscape Trust | 268. | Pam Norton |
| 217. | Bruce Hedditch | 269. | Denyse Menzies |
| 218. | and C. and P Jones | 270. | Hannah Alquier |
| 219. | CSG-Free Maffra and Districts | 271. | SRK Consulting |
| 220. | Danniel Bennet | 272. | John Knox |
| 221. | Diane Lawton | 273. | Pamela French |
| 222. | E McKinnon | 274. | Harry Cossar-Gilbert |
| 223. | Hadyn Cain | 275. | Plastics and Chemicals Industries Association |
| 224. | Julie Hard | 276. | Anne Simons |
| 225. | Leigh Pettingill | 277. | Lawrence Balshaw-Blake |
| 226. | Lesley Briggs | 278. | Steven McGlashan |
| 227. | Marilyn Rossack | 279. | Sally Stead |
| 228. | Paul Bennett | 280. | David Robinson |
| 229. | Russell Haslam | 281. | Eve Stocker |
| 230. | S Galle | 282. | Christine Corbidge |
| 231. | David Fenton and Caroline Coggins | 283. | Vince de Simone |
| 232. | Adam and Jennifer Boughton | 284. | Terry Nelson |
| 233. | Tamara Taylor | 285. | Michael Rosenbrock |
| 234. | Dr Jeffrey Butler | 286. | Trevor Flinn |
| 235. | Bass Coast Shire Council | 287. | Marc O'Carroll |
| 236. | Mark Freeman | 288. | Julia Ditterich |
| 237. | Robert Taylor | 289. | Brett Hedger |
| 238. | Sharyn Munro | 290. | Ian Jeffries |
| 239. | Michael Stanley | 291. | Elizabeth Owen |
| 240. | Frack Free Grovedale | 292. | Marian Noga |
| 241. | Michael Scott | 293. | Moira Van Deur |
| 242. | Jill Smith | 294. | Birgitte Horn |
| 243. | Brian William McLure | 295. | Helen Butcher |
| 244. | Bairnsdale Gas Field Free Group - Meerlieu and District branch | 296. | Josephine Richardson |
| 245. | Edward Stuckey | 297. | Andrew Tune |
| | | 298. | Clare Coney |

299. ClimActs
300. Kurt Liffman
301. Hannah Reid
302. Save the Planet
303. Fiona Kelly
304. Ana Sowards
305. Theresa Battaglia
306. Simone Dunstan
307. Christopher Everist
- 308. Pro forma B (see Appendix 8 for list of names)**
309. Harry Barton
310. Meike Zielinski
311. Paul Wayper
312. Dereka Ogden
313. Gasfield Free Bairnsdale
314. M Colin and Gwenda Barnes
315. Groundswell Bass Coast
316. Leanne Baker
317. Complete Feet
318. Jarod Lazzard
319. Dr Russell Peel
320. Peter Flanagan
321. John Jacobs
322. David Archer
323. Mark Lapierre
324. Lois Rayan
325. Latrobe Valley Sustainability Group
326. Alan Distel
327. Lester Congram
328. Helen Pritchard
329. Dandenong Ranges Renewable Energy Association Inc
330. John O'Reilly
331. Coralie Coulson
332. Helen Pereira
333. Birregurra Against Unconventional Gas Mining Committee
334. Marian (Louise) Lee
335. Linnie Lambrechtsen
336. Jessica Stafford
337. Kongwak Community Group
338. Coal and CSG Free Mirboo North
339. Zachary Casper
340. Jennifer Bishop
341. Lolita Gunning
342. David Myer
343. Jocinda May
344. Thomas Mintsenikos Global Pty Ltd
345. Dr Margaret Lynn
346. Suzanne Brown
347. Craig Walters
348. Alan Thomas
349. Kerri Darby
350. Lorraine Bull
351. Claire McFee
352. David Horner
353. Sarah Martinelli
354. Latrobe City Council
355. Lawrence Reddaway
356. Margaret Lorang
357. Susan Quinn
358. Vicky Shukuroglou
359. Linda Dal Castello
360. Rick Shulver
361. Ulla Taylor
362. Liam O'Brien
363. Haley Rundell
364. APPEA
365. Minerals Council of Australia
366. Eeon D. Macaulay
367. Kerry Johnson
368. Quit Coal*
369. Julie Corridon
370. Bruce Campbell
371. Phil Coyne
372. Tamara Kruger
373. Rachel Ciodo
374. Sue Ganz
375. Nic and Amy Paul
376. John Millane
377. Beyond Zero Emissions Inc.
378. Robert Nolan
379. Pauline Awe
380. Louise Shepherd
381. Gayle Cooper
382. Colin and Lorraine Brimblecombe
383. Richard Schurmann
384. Peter Millard
385. Peter Halcombe
386. Tegan Hop
387. Leah Wendt
388. Voices of the Valley
389. WFI
390. Virginia Shering
391. Vincenzo De Simone
392. Vicki Jans
393. Lock the Gate Victoria
394. Una Allender
395. Trevor Caldwell
396. Heather Richardson
397. Michael Danne
398. No Gasfields for Birregurra
399. Laura Brackley
400. Environment Victoria
401. Simon Kennedy
402. CLIMARTE
403. Henry Leschen
404. Catharina Cook

405. Peter Grenfell
 406. Gail Cartwright
 407. Carmen Vido
 408. Dr Murray Frazer
 409. West Gippsland Catchment Management Authority
 410. Bill Bennett
 411. Julie Constable
 412. Margaret Rolfe
 413. Suzanne Giacometti-Kingston
 414. CSG Free Bass Coast
 415. Glenelg Shire Council
 416. Doctors for the Environment Australia
 417. Roosendaal Farm
 418. Pamela Reeves
 419. Absolution Ecology
 420. Marie Gibson
 421. Karen Fitzpatrick
 422. Jane Brownrigg
 423. Dr David Harding
 424. Geraldine Bagwell
 425. Victorian Trades Hall Council
 426. Gasfield Free Seaspray Group
 427. Daan Spijer
 428. **Pro forma D (see Appendix 9 for list of names)**
 429. Bolwarra Evergreen Indoor Plant Hire
 430. Thomas Clarke
 431. Margaret Gaita
 432. and Julie and David Boulton
 433. CSG Free Kongwak
 434. Michael Howes
 435. Anda Banikos
 436. Jo Livermore
 437. Gerry Dunlop
 438. Louise Nicholas
 439. Malcolm Hansford
 440. Robert Packett
 441. Paul Batey
 442. Nick Brodribb
 443. Daniel Smith
 444. Simon and Louise Manifold
 445. Bio-Dynamic Education and Consultancy Tasmania
 446. Tim Frazer
 447. Quoc An Bui
 448. Janet Watson Kruse
 449. B Phillips
 450. Bessie Tyers
 451. Australian Academy of Technological Sciences and Engineering
 452. Debbie McIntyre
 453. Dr Michelle Sherriff
 454. Leon Furze
 455. Linda O'Hara
 456. Jan Cosser and Guy Gilbert
 457. Robet Brown
 458. Golden Plains Shire Council
 459. Robin James
 460. LIVE (Locals into Victoria's Environment)
 461. Larissa Gardiner
 462. Michael Gooch
 463. Miss Danielle Wilson
 464. Andrew Laird
 465. Surf Coast Air Action Inc.
 466. Friends of the Earth
 467. Naomi Halpern
 468. Karen Large
 469. Denise Schimana
 470. Pamela Fyfe
 471. VFF (Victorian Farmers Federation)
 472. City of Port Phillip
 473. NAGA (Northern Alliance for Greenhouse Action)
 474. Elke Nicholson
 475. Dorelle Davison
 476. David Lamb
 477. Damian Thrum
 478. Beach Energy
 479. Peter Foot
 480. Barbara and Alistair Hopkins
 481. The Australian Living Earth Centre
 482. Debra Fowler
 483. Chris Wilson
 484. South Coast Shire
 485. Jane Donaldson
 486. Clara Davies
 487. Elvyn Dear
 488. Katharine Wheldrake
 489. Lesley Goodge
 490. Elaine Jones
 491. George Laird
 492. Sue Stevens
 493. Shiona Berry
 494. Helen Hilll
 495. Baw Baw Sustainability Network
 496. Dr Peter Laird
 497. Janet Howie
 498. Phil Langdon
 499. Brendan Gray
 500. Andrew Ellery
 501. PESA (Petroleum Exploration Society of Australia Ltd)
 502. Lynda Britten-Epworth
 503. Andrew Harrison
 504. Barwon Region Water Corporation
 505. Moyne Council
 506. Angela Crunden
 507. Michael Blackham

508. Debra King
509. Maggie Riddington
510. Lakes Oil N.L.
511. Neil Longmore
512. Regnan - Governance Research and Engagement
513. Mornington Pennnsula Shire Council
514. Meredith Luke
- 515. Pro forma E (see Appendix 10 for list of names)**
516. Sara Vidal
517. Anne Denham
518. Kendall Lovett
519. Ed Sloane
520. Warrnambool Unfrackaboos
521. Jane Hildebrant
522. Chris Solum
523. Peter Negus
524. Emily Smith
525. Anne Burley and Rupinder Singh
526. Bronwyn Plarre
527. Emma Bitmead
528. Jo May
529. Jocelyn Meyer
530. Leigh Coggins
531. Haydn Barling
532. Elspeth Ferguson
533. Joel Gross
534. Maxwell James Smith
535. Elizabeth Fenton
536. Amanda Hack
537. Greenfields Equestrian and Fencing Pty Ltd
538. Victor Nanut
539. Joanne Ford
540. Trude Ellingsen
541. Rev Jim Houston
542. John Turner
543. Sam Washington
544. Dawn Keen
545. Sue Adderson
546. Madeline Maitri
547. Mike Cleeland
548. Marguerite Marshall
549. Diana and Sandra Svendsen
550. David Martin
551. Leah Sestokas, Amber Sestokas, Aidan Sestokas Sestokas
552. Nick Clarke
553. Terry Swalwell
554. Tasmin Kelly
555. and Maggie and Gary Evison
556. Elizabeth Horner
557. Bernice Davies
558. Ethical Jobs
559. Kelly McLean
560. Danial Murphy
561. Catherine Hearse
562. James and Fiona Whale
563. Josephine Lester
564. Neil Barraclough
565. South Gippsland Landcare Network
566. BKD Design Drafting
567. Ivor Graney
568. David Cooper
569. Francine Bell
570. Anna-Marie Callil
571. Stephen and Lee Storti
572. Kerry Picard-Arnott
573. Norman and Susan De Silva and Family De Silva
574. Nicole Merzliakov
575. Marg Thomas
576. Tony Peck
577. Peter Collins
578. Dr Geralyn McCarron
579. Bernadette Tapscott
580. Jim Walker
581. Sarah Fox
582. Mediasoft
583. Jeremy Klitzing
584. Michael Harris
585. Steven Marshall
586. Nola Wilmot
587. Dian Bedggood
588. David Keith Arnault
589. Barbara White
590. Geoff Ellis
591. Hannah Capon
592. Lisa Habermann
593. Carolyn Davey
594. Keith Field
595. Janet Cameron
- 596. Pro forma A (see Appendix 11 for list of names)**
597. Andrew Pettingill
598. Bayside Climate Change Action Group
599. Ailsa Beth Ripper
600. Chris McGrath
601. City of Greater Geelong
602. Doug Yuill
603. Edwin Jones
604. Elaine Brogan
605. Gail Noble
606. Government of Western Australia
607. Hilary Turner
608. Jan Ken
609. Rebecca Clarke
610. Vicki Cochrane

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|------|--|------|---------------------|
| 611. | Avril Lambert | 663. | Alice Woodruff |
| 612. | Martin Demosthenous | 664. | Dr Alison Ashburner |
| 613. | Buloke Shire Council | 665. | Andrea Brown |
| 614. | Andrew Snook | 666. | Andrea White |
| 615. | Emeritus Professor Malcolm Skilbeck AO | 667. | Andrea Buckley |
| 616. | Yarragon and District Community Association | 668. | Andrew Conley |
| 617. | Neville Chapman | 669. | Andrew Creek |
| 618. | Allan Pratt | 670. | Andy Hook |
| 619. | Dr Helen M Connell | 671. | Ann Shenfield |
| 620. | Caroline Bitmead | 672. | Anna Murphy |
| 621. | Suyin Anson | 673. | Anne Elvey |
| 622. | Kate Soulsby | 674. | Annette Madden |
| 623. | John and Beryl Langer | 675. | Annie Toller |
| 624. | Jan McCann | 676. | Ann-Marie Ingeme |
| 625. | Dr Nancy McMurray | 677. | Anthea Mereweather |
| 626. | Robert Messenger | 678. | Anthony Gleeson |
| 627. | Janene Swalwell | 679. | Anthony Willacy |
| 628. | Dr Katrina Swalwell | 680. | Athena Jeeson |
| 629. | Ian and Gay Cornthwaite | 681. | Bill Pemberton |
| 630. | Anne Young | 682. | Bob Rich |
| 631. | Robyn Muller | 683. | Bonnie Draeger |
| 632. | Ebony Yuill | 684. | Britta Klingspohn |
| 633. | National Toxics Network Inc. | 685. | Bron Jones |
| 634. | Peter Eynaud | 686. | Bruce Hedge |
| 635. | Peter Moir | 687. | Bruce Wyatt |
| 636. | Julie Tyrrell | 688. | Cam Gould |
| 637. | Wattlebank Community Group | 689. | Carli Reeve |
| 638. | Miss Eve Fisher | 690. | Caroline Cox |
| 639. | Gillian Laland | 691. | Carolyn Hanna |
| 640. | Dr George Carman | 692. | Charles Sowerwine |
| 641. | Rob and Sharon Rentsch | 693. | Chris Trueman |
| 642. | Iain Donald | 694. | Christine Banks |
| 643. | Susan Healy | 695. | Christine Simpson |
| 644. | Julian Cook | 696. | Christine Hopper |
| 645. | Jill Poulson | 697. | Christine Hamilton |
| 646. | Orora Ltd | 698. | Colin Smith |
| 647. | Halliburton | 699. | Colin Long |
| 648. | Australian Paper | 700. | Colleen Brown |
| 649. | David Rothfield | 701. | Craig Webb |
| 650. | Neil Phillips | 702. | Craig Mildwaters |
| 651. | Jane Touzeau | 703. | Cyndi Dawes |
| 652. | Shire of Campaspe | 704. | Daniel Diesendorf |
| 653. | Amanda Smith | 705. | Daniel Monaghan |
| 654. | Verity Tuck | 706. | Danielle Smelter |
| 655. | Vicki Perrett | 707. | Darrell Morrison |
| 656. | Craig Carpenter | 708. | David Hollis |
| 657. | Goulburn-Murray Water | 709. | David Dawson |
| 658. | Interdepartmental Submission, Government of Victoria | 710. | David Doe |
| 659. | Sarah Myhill | 711. | David Dawson |
| 660. | Alastair Leith | 712. | David Capon |
| 661. | Alex Schlotzer | 713. | David Vernon |
| 662. | Alice Bleby | 714. | David Feith |
| | | 715. | Deearne Nicholson |
| | | 716. | Denise Murray |

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|------|-----------------------|------|--|
| 717. | Don Tylee | 771. | Louise Simmons |
| 718. | Dorothy Howes | 772. | Louise Avery |
| 719. | Douglas Pretsell | 773. | Louise Sharp |
| 720. | Dr Martin Playne | 774. | Maggie Morgan |
| 721. | Elizabeth Chivell | 775. | Margaret Young |
| 722. | Erika Kotsiakos | 776. | Margaret Ryan |
| 723. | Frederick Tropp-Asher | 777. | Marian Smedley |
| 724. | Freya Headlam | 778. | Marie-Anne Cooper |
| 725. | Gabriel Fuller | 779. | Mark Lapierre |
| 726. | Gary Rundell | 780. | Maureen Campbell |
| 727. | Glenn Michael | 781. | Maureen Corbett |
| 728. | Graham Parton | 782. | Max Sargent |
| 729. | Hannah Dickinson | 783. | Megan Fallon |
| 730. | Helen Henry | 784. | Meredith Newman Debens |
| 731. | Helen Downie | 785. | Michael Wauchope |
| 732. | Ian Robinson | 786. | Mik Weir |
| 733. | Jackie White | 787. | Mike Redfern |
| 734. | Jacquie Kelly | 788. | Monica Winston |
| 735. | James Fahy | 789. | Murray and Alison Clarke |
| 736. | Jamie Crickmay | 790. | Nickee Freeman |
| 737. | Jan Wild | 791. | Noel Wyndom |
| 738. | Jane Leitinger | 792. | Pat Yodo |
| 739. | Jane Ormonde | 793. | Patricia Simmons |
| 740. | Jane Moulin | 794. | Patricia Fraser |
| 741. | Janet Hall | 795. | Patrick Pheasant |
| 742. | Jason Watt | 796. | Patrick Bird |
| 743. | Jeffrey Booth | 797. | Paul Leitinger |
| 744. | Jennifer Forest | 798. | Peter McDonald |
| 745. | Jenny Tame | 799. | Peter Mewett |
| 746. | Jenny Barrett | 800. | Phil Baulch |
| 747. | Jenny Gardner | 801. | Raymond McNeil |
| 748. | Jerome Winston | 802. | Rebecca Rosario |
| 749. | Jesseka Chadderton | 803. | Julie Dingle |
| 750. | Jessie Arnold | 804. | Dr Richard Petheram |
| 751. | Jill Redwood | 805. | Nalin Arileo |
| 752. | JJ Miller | 806. | Mark De-La-Warr |
| 753. | JO Elvins | 807. | Gill Fox |
| 754. | John Graham | 808. | Tanya Laird |
| 755. | John Chadderton | 809. | Kirra Boulton |
| 756. | John Nihill | 810. | Victor Aeberli |
| 757. | Judy Cameron | 811. | The Norwood Resource |
| 758. | Julie Bain | 812. | Elizabeth Balderstone |
| 759. | Justin Teague | 813. | Lorraine Halabarec |
| 760. | Justin Wiseman | 814. | Kirsty Irving |
| 761. | Karen Thomas | 815. | Deborah Bunce |
| 762. | Karina Hogan | 816. | Moreland City Council |
| 763. | Kate Ormonde | 817. | Chloe Aldenhoven |
| 764. | Katherine Copsey | 818. | Adele van Rosmalen |
| 765. | Ken Savage | 819. | Frac Free East Gippsland |
| 766. | Kimberley Nightingale | 820. | Friends of the Gippsland Lakes Parks
and Reserves |
| 767. | Kym Monaghan | 821. | Commonwealth Department of Industry
and Science |
| 768. | Leanne Holmes | 822. | Manufacturing Australia |
| 769. | Lesley Walker | | |
| 770. | Linley Walker | | |

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|------|--|------|--|
| 823. | Colac Otway Shire | 876. | Priscilla Brady |
| 824. | Alternative Technology Association | 877. | Process Consultants Pty Ltd |
| 825. | Moyne Shire Council | 878. | Sebastian Richards |
| 826. | Joan Kinnon | 879. | Debbie Carruthers |
| 827. | Energy Users Association of Australia | 880. | Paul K. Smilich |
| 828. | Australian Water Association | 881. | Naomi Grant |
| 829. | Energy Supply Association of Australia | 882. | Paul and Krysalis Wizard |
| 830. | Jan van de Graaff | 883. | Marek Morgan |
| 831. | The Australian Institute | 884. | Deborah Murrell |
| 832. | Malcom Rowe | 885. | Harin De Soysa |
| 833. | Joan Lindros | 886. | Sue Behrent |
| 834. | Wendy Saphin | 887. | Kate Dumas |
| 835. | Australian Pipelines and Gas Association | 888. | Sweet View Farm |
| 836. | Australian Food and Grocery Council | 889. | Sally Mathrick |
| 837. | Environmental Justice Australia | 890. | Ben Cram |
| 838. | Sally Newell | 891. | Anne Daw |
| 839. | SRK Consulting (Australasia) Pty Ltd | 892. | Ben Courtice |
| 840. | Indigo Shire Council | 893. | Miss Christine Price |
| 841. | Environment Protection Authority
Victoria | 894. | Dr Catherine Pye |
| 842. | Not Available | 895. | Roger Thorrowgood |
| 843. | Australian Dairy Industry Council | 896. | Frank O' Shanassy |
| 844. | Jason Harris | 897. | Chris Bitmead |
| 845. | Syd White | 898. | Victorian Water Industry Association |
| 846. | K. McMahon | 899. | Paula Greenough |
| 847. | Ken Blackman | 900. | Andrew Corcoran |
| 848. | Lana Eichler | 901. | Elizabeth Haughton |
| 849. | Matthew Winkler | 902. | Jacqui Walker |
| 850. | Nic and Amy Paul | 903. | The Portland Field Naturalists Club |
| 851. | Nola Kelly | 904. | Gippsland Gas |
| 852. | Origin Energy | 905. | Katherine Smyrk |
| 853. | Reginald and Olive Waltham | 906. | Ruth Glass |
| 854. | Rachel Wilson | 907. | Jo Livermore |
| 855. | Robert Hodgetts | 908. | Armour Energy |
| 856. | Rod Clark | 909. | Kathryn Senko |
| 857. | Rural City of Wangaratta | 910. | Apollo Bay Community Against Fracking |
| 858. | Tony Woolford | 911. | Avril Baxter |
| 859. | Tracey Tanner | 912. | Energy Australia |
| 860. | V.J. Reschke | 913. | Kees Dogger |
| 861. | Wal Grahame | 914. | Rosemary Maher |
| 862. | David and Sarah Minifie | 915. | Rick Molloy |
| 863. | Alison Leahy | 916. | John Frayne |
| 864. | Barwon Paediatricians | 917. | Chris Brand |
| 865. | Charles Morris | 918. | Nola Anderson |
| 866. | Christopher Bates | 919. | Julie Wallace |
| 867. | Climate Change Our Future | 920. | Lindy Brand |
| 868. | Hilary Da Costa | 921. | John and Leanne Hanrahan |
| 869. | Frack Free Geelong | 922. | Centre for Climate Safety |
| 870. | Geelong Sustainability Group | 923. | Catherine Money |
| 871. | Jillian Sokol | 924. | Peter Smee |
| 872. | Limestone Coast Protection Alliance Inc | 925. | The Global Foundation for Sustainable
Communities |
| 873. | Municipal Association of Victoria | 926. | Ann McAlpin |
| 874. | Miss Helena MacLaughlin | 927. | John Gray |
| 875. | Otway Conservation Association Inc | 928. | Lana Kagan |

929. Dr Sam Long
930. Jane Trengove
931. Janine Strachan
932. Sean Marsh
933. Nigel Heywood
934. Lyn Worcester
935. Dean O'Callaghan
936. CSG-Free South Gippsland
937. Miss Jessica Jones
938. Sustainable Boolarra Group
939. Dr Alphonse Benoit
940. Nelson Brand
941. Sophie Brand
942. Sandra Cutts
943. Phoebe Brand
944. Jillian Thio
945. Anita Hallett
946. Nicki Jennings
947. Jeanette Gamble
948. Damien Shell
949. Reto Zollinger
950. John Jenkyn
951. Christopher Bates
952. Mark Tethington
953. Australian Nursing and Midwifery Federation
954. Kongwak Hills Landcare Group
955. Peter Couch
956. Tony Goodfellow
957. Claire McKinnon
958. Martin Boyer
959. David Franklin
960. Gabriella Hont
961. The Clean Food Garden
962. Cheryl Mainard
963. Stuart Jones
964. Peter Campbell
965. Brigit Skilbeck
966. Suzie Gold
967. Helena Lewers
968. Jeanette and Rex Blennerhassett
969. Robbie Frawley
970. Erin Callahan
971. Sally North
972. Jim Macgugan
973. International Association of Hydrogeologists
974. Rebecca Rosario
975. Surf Coast Air Action
976. Rev Dr Richard Mallaby
977. Rhonda Attwood
978. Richard Purdy
979. Rob Skillern
980. Robert Dart
981. Roger Prowd
982. Roslyn Leary
983. Russell Edwards
984. Grattan Institute
985. Sally Warmington
986. Sandie LaVaughn
987. Sandra Hawkins
988. Sarah Dowling
989. Sarah Charlton
990. East Gippsland Greens
991. Simon Thornton
992. Simone Hill
993. Sophie Gebhardt
994. Spiridon Fragopoulos
995. Stephanie Johnston
996. Steven Ronaldson
997. Sunny Wild
998. Susan Meyer
999. Taffy Avard
1000. Dr Tass Holmes
1001. Thomas Sounness
1002. Tom Bolton
1003. Tony Ennis
1004. Trevor Hoare
1005. Trish Jardine
1006. Tristarnya Sheridan
1007. Ulla Killury
1008. Victoria Smith
1009. Wendy Radford
1010. Zoe Canestra
1011. Zoe Glen-Norman
1012. Katherine Moore
1013. Melinda Venticich and Simon Ransome
1014. Mrs. Helen Boyer
1015. Dr. Barbara Hoare
1016. Billy Greenham
1017. Bernie McComb
1018. Katherine Cunningham
1019. Peter Wonfor
1020. Jennifer Carter
1021. Sharon Wright
1022. Sylvia Collett
1023. Kathleen Dangerfield
1024. Anthony Walker
1025. Lynn Hofmann
1026. Sarah Linton
1027. SACA (Sustainable Agriculture and Communities Alliance)
1028. Gary Goodwin
1029. Daryl Simkin
1030. Mike Robinson-Koss
1031. Susan Holberton
1032. Irene Proebsting
1033. Rebecca Reid

- 1034. Trevor and Dianna Flint
- 1035. Chali Banney
- 1036. Miranda Hill
- 1037. John Poppins
- 1038. Gillian Vanyai
- 1039. Chelsea Heights EarthCarers
- 1040. Naima Fine
- 1041. The Wilderness Society Vic Inc
- 1042. Lighter Footprints
- 1043. Brenton Rittberger
- 1044. Janyne Rees
- 1045. Bronwyn Mibus
- 1046. Ruth Caluzzi
- 1047. Gary Price
- 1048. Robert and Gloria Foard
- 1049. Paul B. Kumnick
- 1050. Southern Otway Food Co-operative
- 1051. David Charleson
- 1052. Lucy Foley
- 1053. Graeme Webb
- 1054. Susan Moss
- 1055. Tracey Anton
- 1056. Peter Sublet
- 1057. Dr Pat Phair
- 1058. Margaret Young
- 1059. Alice Irving
- 1060. Roslyn Webb
- 1061. Wendy Leitmanis
- 1062. Damien Pitts
- 1063. Pat Purcell
- 1064. Prof. Andrew Garnett, University of Queensland, Centre for Coal Seam Gas
- 1065. Jenny Stielow
- 1066. Kate Lidgerwood
- 1067. Jan Earthstar
- 1068. Charlie Davey
- 1069. T. Rawlings
- 1070. Prof. Paul O'Brien
- 1071. Johannes denToom
- 1072. Prof. Samantha Hepburn
- 1073. Garry Owers
- 1074. Lyn Hovey
- 1075. Annabelle Gumpold
- 1076. Pro forma K (see Appendix 12 for list of names)**
- 1077. Elaine Furniss

Appendix 2

Pro forma F Submitters

A2

- 1078. Rhys Schulze
- 1079. Janna Everett
- 1080. Jared Anskaitis
- 1081. Peter Koster
- 1082. Andrew Fox

Appendix 3

Pro forma H Submitters

- 1083. Biranna Stock
- 1084. John and Cynthia Lyons
- 1085. Brendon Thomson
- 1086. Julian Cook

Appendix 4

Pro forma C Submitters

- 1087. J Robinson
- 1088. Elizabeth Bates
- 1089. Peta Fisher
- 1090. J & P Fleming
- 1091. Angie Derham
- 1092. Geoffrey Bates
- 1093. Chris Stubbs
- 1094. David Bourke
- 1095. Alan Broughton
- 1096. Ann Patterson
- 1097. Mark Blandford
- 1098. Debbie Jackson
- 1099. Andrew McArthur
- 1100. Louse McArthur
- 1101. Kaye and Robert Hoffman

Appendix 5

Pro forma J Submitters

- 1102. Geoffrey Pittaway
- 1103. Michael Smith
- 1104. Julia Smith
- 1105. Owen Casson
- 1106. Diane Beyer
- 1107. Carina Beyer
- 1108. Pam Benjamin
- 1109. Peter Benjamin
- 1110. Suzanne Wightman
- 1111. Glenys Pentland
- 1112. Tracey Fraser

Appendix 6

Pro forma G Submitters

- 1113. Suzanne Bitmead
- 1114. Lisa Kirwan
- 1115. Jo Harrison
- 1116. Freya Morris
- 1117. Verity Tuck

Appendix 7

Pro forma I Submitters

- 1118. David Yates
- 1119. CK Bond
- 1120. Lynnette Yates
- 1121. Susan Deery

Appendix 8

Pro forma B Submitters

- 1122. Claire Halliday
- 1123. Wendy Morris
- 1124. Paul Gadsby
- 1125. Philip Waters
- 1126. Andrew McKinnon
- 1127. Sherridan McDonald
- 1128. Julie Stephens
- 1129. Lisa Minchin
- 1130. Anita Hannaford
- 1131. Sian Bloom
- 1132. Robin Massey
- 1133. Rick Shulver
- 1134. James Lockwood
- 1135. Caroline Clarke
- 1136. Janina King
- 1137. Kevin Harbison
- 1138. Kate Ferguson
- 1139. Helen Karpas
- 1140. Julie Gelman
- 1141. Kerry Bourke
- 1142. Maureen Pearl
- 1143. Owen Smith
- 1144. Peter Margrie
- 1145. Rachel Diffey
- 1146. Jacqueline Berry
- 1147. Darian Zan
- 1148. Janet Burchill
- 1149. Louise Harvey
- 1150. Karen Coffield
- 1151. Ellen Fox
- 1152. Helen McKinnon
- 1153. Carol Dyer
- 1154. Bryan Baldwin

Appendix 9

Pro forma D Submitters

- 1155. S & L Souther
- 1156. Lesley Briggs
- 1157. Steven and Fiona Collins
- 1158. Ellen Burton
- 1159. Pauline Fry
- 1160. Hamish Southerland
- 1161. Helen Newman

Appendix 10

Pro forma E Submitters

- 1162. A & M Lange
- 1163. B Hepburn
- 1164. Marissa Mahon
- 1165. Jim Cleary
- 1166. Will Wolseley
- 1167. Ken Stevenson
- 1168. Julian Knox
- 1169. Lorelle Sunderland
- 1170. Maureen Shivel
- 1171. Barry Schulze
- 1172. L & J Grossman

Appendix 11

Pro forma A Submitters

1173.	Abdul Baig	1218.	Anthony Reid
1174.	Adam Quennell	1219.	Anthony Williams
1175.	Adam Watson	1220.	Arisja Oberholzer
1176.	Adrian Francis	1221.	Arnold Greiner
1177.	Adrian Rachele	1222.	Ashley Voigt
1178.	Aidan Macdougall	1223.	Bartolomeo Verduci
1179.	Aidan Matuschka	1224.	Basil Eliades
1180.	Ailsa Jean	1225.	Ben Cronly
1181.	Akarsini Ashman	1226.	Ben Leunig
1182.	Alan Leenaerts	1227.	Bernard Abadie
1183.	Alex Breskin	1228.	Bernard Rowley
1184.	Alex Byrne	1229.	Bernard Silvey
1185.	Alex Delaney	1230.	Bethann Taylor
1186.	Alex Lindeman	1231.	Bethany Ong
1187.	Alexandra Bhathal	1232.	Betty Breneizeris
1188.	Alia Swift	1233.	Bev Cowan
1189.	Alice Burns	1234.	Bev Isaac
1190.	Alisa World	1235.	Bianca Mellor
1191.	Alison MacGregor	1236.	Bill Bradley
1192.	Allison Harvey	1237.	Billy Fox
1193.	Amy Lampugnani	1238.	Billy Price
1194.	Ana Gioino	1239.	Bing Escalante
1195.	Andrea Frisby	1240.	Bobbie French
1196.	Andreas Katsineris-Paine	1241.	Brett Ford
1197.	Andrew Godall	1242.	Brian Earl
1198.	Andrew Nielsen	1243.	Brian McGennissen
1199.	Andrew Peplow	1244.	Brian Reed
1200.	Andrew Pollitt	1245.	Brian Salter-Duke
1201.	Andrew Steward	1246.	Brooke Roberts
1202.	Andy Shanahan	1247.	Bruce Howlett
1203.	Angela Smith	1248.	C Caleo
1204.	Angela Watson	1249.	Caitlin Pheasant
1205.	Ann Abrahamsen	1250.	Callum Irving
1206.	Ann McGovern	1251.	Calum Davies
1207.	Anna Haines	1252.	Can Okyar
1208.	Annabel Davy	1253.	Candace O'Neill
1209.	Annaisse Novak	1254.	Carmel Green
1210.	Anne Boyd	1255.	Carole Nugent
1211.	Anne Caughey	1256.	Carolyn Haywood
1212.	Annette Brooker	1257.	Carrie Templeton
1213.	Annette Herschtal	1258.	Casandra Upton
1214.	Annie Crane	1259.	Casey O'Brien
1215.	Annie Leschen	1260.	Catherine Lance
1216.	Anthony Day	1261.	Catherine McMahon
1217.	Anthony Hamilton-Smith	1262.	Catherine Pendrey

1263.	Catherine Tenni	1317.	Doug Hagan
1264.	Catherine Young	1318.	Douglas Levings
1265.	Cathryn Levett	1319.	Ebony Yuill
1266.	Cecilia Kwok	1320.	Ed Ghiocas
1267.	Charlotte Britton	1321.	Edmond Kennedy
1268.	Chay-Ya Clancy	1322.	Elise Armitage
1269.	Chloe Elmer	1323.	Elizabeth Raimondo
1270.	Chloe Erftemeyer	1324.	Elle Kirk
1271.	Chris Heine	1325.	Ellen Rijs
1272.	Chris King	1326.	Emily Reuter
1273.	Christian Pavez	1327.	Emma Fenty
1274.	Christine Demicoli	1328.	Emma French
1275.	Christine McArthur	1329.	Emma Jones
1276.	Christine Rea	1330.	Emre Durmaz
1277.	Christine Spoljar	1331.	Eric Mainard
1278.	Christine Walsh	1332.	Erica Vernon
1279.	Christopher Ottery	1333.	Evan Hopkins
1280.	Christopher Robertson	1334.	Evelyn Lee
1281.	Claire Carlow	1335.	Fabia Pryor
1282.	Claire Sandford	1336.	Ferne Millen
1283.	Claire van Herpen	1337.	Fiona Macaulay
1284.	Clare River	1338.	Fran Murrell
1285.	Colin Brokenshire	1339.	Frances Schulz
1286.	Colleen Murtha	1340.	Frances Sutherland
1287.	Colleen Wagner	1341.	Fraser Medhurst
1288.	Cristian Hanley	1342.	Gabrielle Demirdjian
1289.	Dale Cadd	1343.	Gabrielle Francis
1290.	Dale Smithyman	1344.	Gavin Brown
1291.	Damian Thrum	1345.	Gemma Garbutt
1292.	Damien Moir	1346.	Genevieve Owen
1293.	Damien Stevens	1347.	Genevieve Smith
1294.	Daniel Voronoff	1348.	Geoff Hollis
1295.	Danielle Charlery	1349.	Geoffrey Falk
1296.	Danny Blay	1350.	Georgie Waddell
1297.	Dave Gregurke	1351.	Georgina Davis
1298.	David Birrell	1352.	Georgina Linnell
1299.	David Brumley	1353.	Georgina Neave
1300.	David Crouch	1354.	Georgina Trimble
1301.	David Graham	1355.	Geraldine Archibald
1302.	David Weinstein	1356.	Gerard Lind
1303.	Dayalan Ramasamy	1357.	Gero von Aderkas
1304.	Debra Millard	1358.	Gillian Clarke
1305.	Declan Jones	1359.	Gillian Trebilcock
1306.	Denise Smallwood	1360.	Glenys Parslow
1307.	Derek Wilson	1361.	Goran Nilsson
1308.	Diana Ward	1362.	Gordon Webb
1309.	Dianne Johnstone	1363.	Greg Campbell
1310.	Dianne Mark	1364.	Greg James
1311.	Dianne Stephens	1365.	Greg Mason
1312.	Django van Tholen	1366.	Guislaine Allen
1313.	Domenico de Pieri	1367.	Hal Peck
1314.	Dominique Plumanns	1368.	Hannah Bolt
1315.	Donna Samuel	1369.	Hans Foik
1316.	Donna Swan	1370.	Harry Hook

1371.	Hayley Walker	1425.	Joanne Barnes
1372.	Heather Oldfield	1426.	Joanne Sweeney
1373.	Heather Richardson	1427.	Jocelyn Gray
1374.	Helen Eastwood	1428.	Jodee Dewhurst
1375.	Helen Hoey	1429.	Jodi Cameron
1376.	Helen Keeley	1430.	Jodie Mitchell
1377.	Helen Rickards	1431.	Joe Rafalowicz
1378.	Helen Trueman	1432.	Joel Mather
1379.	Helen Wake	1433.	John and Shirley Gunson
1380.	Henrietta Camilleri	1434.	John Ashton
1381.	Hieu Huynh	1435.	John Begelhole
1382.	Iain Lygo	1436.	John Julian
1383.	Ilse Jamonts	1437.	John Oldfield
1384.	Isobel Monie	1438.	John Paterson
1385.	Jacki Straude	1439.	Jonathan Hicks
1386.	Jacob van Dort	1440.	Jonathon Colliver
1387.	Jacqueline Hannigan	1441.	Jules Banner
1388.	Jacqui Sterling	1442.	Julia Greenwood
1389.	Jacqui Sundbery	1443.	Julia Uren
1390.	Jamie Thompson	1444.	Julie Holmes
1391.	Jan Colliver	1445.	Julie Kidd
1392.	Jan Petersen	1446.	Julie Moore
1393.	Jane Carracher	1447.	Julie Stevens
1394.	Jane Glover	1448.	Justin L'Huillier
1395.	Jane Hughes	1449.	Karen Corbett
1396.	Jane Monk	1450.	Karen Large
1397.	Jane Storey	1451.	Karen Rees
1398.	Janet Pelly	1452.	Karyn Solomon
1399.	Jared Jenkins	1453.	Kate Doyle
1400.	Jarrold Pan	1454.	Kath Angus
1401.	Jasmine Sesso	1455.	Katharine Prata
1402.	Jason Van Rooyen	1456.	Katie Getson
1403.	Jaunita Landeesse	1457.	Katrina Sawyer
1404.	Jay Smith	1458.	Katryn and James Langford
1405.	Jean Lee	1459.	Kellie Wakely
1406.	Jeanne Harper	1460.	Kelly Rattle
1407.	Jeff Parkes	1461.	Kenneth Lydall
1408.	Jen Loader	1462.	Kerri Russell
1409.	Jenna Redknap	1463.	Kerry O'Meara
1410.	Jennifer Bensemann	1464.	Khaseem Warren
1411.	Jennifer Clark	1465.	Kim Brennan
1412.	Jenny Mathews	1466.	Kim Hamilton
1413.	Jenny O'Connor	1467.	Kirsty Hannan
1414.	Jeremy Schroder	1468.	Kirsty McIntyre
1415.	Jess Dalrymple	1469.	Kriss Ellis
1416.	Jess Longmuir	1470.	Kristy Welch
1417.	Jess Pendlebury	1471.	Laurelle Jasper
1418.	Jessamin Kaye	1472.	Leah Oliver
1419.	Jill Bunnell	1473.	Leah Pollard
1420.	Jill Vincent	1474.	Lenka O'Connor Sraj
1421.	JJ Miller	1475.	Leo Chen
1422.	Jo Hughson	1476.	Les Mallett
1423.	Joan Spittle	1477.	Lesley Bowen
1424.	Joan Staples	1478.	Lesley Goodge

- | | | | |
|-------|---------------------|-------|-----------------------|
| 1479. | Lesley Ross | 1533. | Michael Nugent |
| 1480. | Liezl Schnookal | 1534. | Michael Rayner |
| 1481. | Lilja Radley | 1535. | Michael Ruyg |
| 1482. | Lindsay Quennell | 1536. | Michael Zulicki |
| 1483. | Lindy Price | 1537. | Michaela Poncell |
| 1484. | Lisa Hall | 1538. | Michele McCrohan |
| 1485. | Lisa Hilton-Cronin | 1539. | Michelle Johnstone |
| 1486. | Lisa Maza | 1540. | Michelle Niznik |
| 1487. | Lorraine Spalding | 1541. | Mick Lucas |
| 1488. | Lucas Jordan | 1542. | Milla Vincent |
| 1489. | Luke Stafford | 1543. | Miquel Orpella-Comino |
| 1490. | Lynda Crossley | 1544. | Monique Decortis |
| 1491. | Lynn Atkinson | 1545. | Monique Keel |
| 1492. | Lynne Hollis | 1546. | Morgana Creely |
| 1493. | Lynne Wishart | 1547. | Mychelle Whitewood |
| 1494. | Maree Darby | 1548. | Nadia Collis |
| 1495. | Marg Donald | 1549. | Nadia Miller |
| 1496. | Margaret Lynn | 1550. | Nagaraj Nayak |
| 1497. | Margot Hansen | 1551. | Naomi Rose |
| 1498. | Maria Fiotai | 1552. | Narelle Graefe |
| 1499. | Maria Pye | 1553. | Narelle Young |
| 1500. | Maria Triado | 1554. | Natalie Abboud |
| 1501. | Marie Bliss | 1555. | Natalie Jozsa |
| 1502. | Marie Gibbon | 1556. | Natalie Petersen |
| 1503. | Marigold Hayler | 1557. | Natalie Segal |
| 1504. | Marilyn Connor | 1558. | Natalie Stecko |
| 1505. | Marion East | 1559. | Nerida Joss |
| 1506. | Marion Weller | 1560. | Nestor Evangelista |
| 1507. | Mark Dowse | 1561. | Nicola Carlile |
| 1508. | Mark Glickman | 1562. | Nicola Coles |
| 1509. | Mark McKew | 1563. | Nicole Alexander |
| 1510. | Mark Schuliga | 1564. | Nicole Merzliakov |
| 1511. | Mark Seels | 1565. | Nicole Robinson |
| 1512. | Marnie Lee | 1566. | Nigel D'Souza |
| 1513. | Marti Shield | 1567. | Nina Earl |
| 1514. | Martin Davis | 1568. | Nina Hagan |
| 1515. | Martin Rush | 1569. | Olga Morris |
| 1516. | Martin Siegrist | 1570. | Olivia Hartigan |
| 1517. | Mary Edgerton | 1571. | Pam Talbot |
| 1518. | Mary Grant | 1572. | Pat Allan |
| 1519. | Mary-Jane Rosette | 1573. | Patricia Hubbard |
| 1520. | Matthew Ellen | 1574. | Patricia McGann |
| 1521. | Matthew Harris | 1575. | Patrick Alilovic |
| 1522. | Maurice Perry | 1576. | Patrick Hearps |
| 1523. | Meg Pillai | 1577. | Paul Bennet |
| 1524. | Megan Gladysz | 1578. | Paul Pocock |
| 1525. | Mel Audrey | 1579. | Paul Riddle |
| 1526. | Melanie Smith | 1580. | Paul Williamson |
| 1527. | Melanie Wiltshire | 1581. | Pauline McCracken |
| 1528. | Merryn Hamilton | 1582. | Peta Malins |
| 1529. | Michael Grau-Veliz | 1583. | Peter Carroll |
| 1530. | Michael Hamel-Green | 1584. | Peter Hassold |
| 1531. | Michael Kelly | 1585. | Peter Krause |
| 1532. | Michael Lambkin | 1586. | Philip Cahn |

1587.	Philip Horbury	1641.	Sarah Glass
1588.	Philip Riley	1642.	Sarah Griffiths
1589.	Phillip Payne	1643.	Sarah Jones-Hill
1590.	Pia Arrien	1644.	Scott Daniel
1591.	Rachel Laws	1645.	Scott Wilson
1592.	Ray Connor	1646.	Sean Flynn
1593.	Ray Heathcote	1647.	Sean Knight
1594.	Rebecca Cameron	1648.	Sean Weatherly
1595.	Rebecca Edwards	1649.	Sebastian Ramsay
1596.	Rebecca Lloyd	1650.	Sharon Hargreaves
1597.	Rebecca McGhee	1651.	Sharon Lee
1598.	Rebecca Rose	1652.	Sheryl Gay
1599.	Renea Johnson	1653.	Silvia Gonzalez
1600.	Renee Huish	1654.	Simon Conlon
1601.	Richard Lane	1655.	Simon Schulz
1602.	Riley AcAuliffe	1656.	Smith Colin
1603.	Robert Brown	1657.	Sonia Dioguardi
1604.	Robert Cameron	1658.	Sonia Holt
1605.	Robert Dunn	1659.	Sonja van Dort
1606.	Robert Fomiatti	1660.	Sophia Rutter
1607.	Robert Hoogenraad	1661.	Stanislaw Pelczynski
1608.	Robert Humphreys	1662.	Stephen Swan
1609.	Robert Krones	1663.	Steven and Honey Boyd
1610.	Robert Krones	1664.	Stuart Kelly
1611.	Robert McKelvey	1665.	Sue Davis
1612.	Robert Stephen	1666.	Sue Hertzog
1613.	Robin de Garis	1667.	Susan Ablitt
1614.	Robyn Aldrick	1668.	Susan Barnes
1615.	Robyn Hoe	1669.	Susan Bryant
1616.	Robyn Smith	1670.	Susan Hillman
1617.	Rod May	1671.	Susan Leamon
1618.	Roderick Anderson	1672.	Susan Springfield
1619.	Rodolfo Garcia-Flores	1673.	Susie Ross
1620.	Roger Putnam	1674.	Suzanne Edge
1621.	Rosalind Jones	1675.	Tabitha Lowdon
1622.	Rosemary Brooks	1676.	Talia Hoysted
1623.	Rosemary Haas	1677.	Tamara Berquez
1624.	Rowena Smith	1678.	Tamara Murphy
1625.	Rupert Steiner	1679.	Tami McVicar
1626.	Ruth Carson	1680.	Tammie Thornton
1627.	Sahar Naghashian	1681.	Tanya Black
1628.	Sally Dawe	1682.	Tanya Smith
1629.	Sally Gouillet	1683.	Tayla Meerkin
1630.	Sally Walsh	1684.	Ted Woolan
1631.	Sam Shepherd	1685.	Tegan Beaton
1632.	Samuel Dariol	1686.	Tell Arstargazer
1633.	Samuel Hill	1687.	Tess Mancini-Fiske
1634.	Sanaya Khisty	1688.	Tijana Dabic
1635.	Sandra Betts	1689.	Tim Ambrose
1636.	Sandra Bland	1690.	Tim O'Donnell
1637.	Sandra Frost	1691.	Tim Peck
1638.	Sarah Bartak	1692.	Tim Snell
1639.	Sarah Gardiner	1693.	Todd Levi
1640.	Sarah Garry	1694.	Tom Facey

Appendix 11 Pro forma A Submitters

- 1695. Tom Nicholson
- 1696. Tomas Robinson
- 1697. Tomislav Nikolic
- 1698. Tony Canning
- 1699. Tony Gay
- 1700. Tony Henry
- 1701. Tracey Seach
- 1702. Tracy Roberts
- 1703. Travis White
- 1704. Trevor Kingsbury
- 1705. Trish Clayton
- 1706. Valentine Franks
- 1707. Vernon Terrill
- 1708. Vicki Harriss
- 1709. Vikki Patten
- 1710. Virginia Coghill
- 1711. Virginia Lawrence
- 1712. Vonney Lancaster
- 1713. Warwick Sprawson
- 1714. Wendy Menzel
- 1715. William Freeman
- 1716. Yasmin Kellner
- 1717. Ywonne Nilsson
- 1718. Zachary Ellis

Appendix 12

Pro forma K Submitters

- 1719. Andrew and Gill Davies
- 1720. Jenny Bradshaw
- 1721. Alison Marchant
- 1722. Mark Reeves

Appendix 13

Public Hearings (31 August 2015)

Tuesday 30 June 2015 – Gippsland Regional Sports Complex, Sale, Victoria

Wellington Shire

John Websdale , General Manager, Development

South Gippsland Shire

Tim Tamlin, Chief Executive Officer
Cr Don Hill

Baw Baw Shire

Cr Murray Cook
Phil Cantillon, Director, Community Assets

Latrobe Shire

Sara Rhodes Ward, General Manager, Community Livability

Bass Coast Shire

Cr Neil Rankine
Deirdre Griepsma, Environment Manager, Sustainable Environment

Alex Arbuthnot

Lock the Gate Alliance

Chloe Aldenhoven, Community Campaigner, Friends of the Earth
Ursula Alquier, Victorian Coordinator, Lock the Gate Alliance

Ross Scott

Committee for Gippsland

Mary Aldred, Chief Executive Officer

Margaret Williamson

Rodger Davis

Ronald Wangman

Elizabeth Balderstone

Lorraine Halabarec

Andrew Harrison

Marg Thomas

Maureen Verstedden

Glen Maher

Kerrin Schelfhout

Rosemary Maher

Wednesday 1 July 2015 – Gippsland Regional Sports Complex, Sale, Victoria

Dr Jo McCubbin

Australian Dairy Industry Council

Claire Miller, Manager, Policy Strategy, Dairy Australia

Chris Griffin, Member, Natural Resources Management Policy Advisory Group

Irene Clarke, Senior Policy Manager, Australian Dairy Farmers

Lakes Oil NL

Robert Annells, Executive Chairman

Tim O'Brien, Operations Manager

Ignite Energy Resources

Dane Stewart, Manager, Resource Development

Dr John White, Government And Community Liaison

Wednesday 22 July 2015 – Legislative Council Committee Room, Parliament House

Melbourne Energy Institute, University Of Melbourne

Timothy Forcey, Energy Adviser

Australian Academy Of Technological Sciences And Engineering

Professor Peter Cook

Department Of Environment, Land, Water And Planning

Dr Sharon Davis, Executive Director, Water Resources

Kate Houghton, Deputy Secretary, Water and Catchments

Chris McAuley, Director, Water Entitlements and Markets

Victorian Farmers Federation

Gerald Leach, Chair, Land Management Committee

Melanie Brown, Policy Manager

Emily Waters, Policy Adviser, Land Management

Australian Petroleum Production And Exploration Association (APPEA)

Paul Fennelly, Chief Operating Officer, Eastern Australia

Damien Dwyer, Director, Economics

Matthew Paul, Policy Director, Queensland

Dr Matthew Currell, RMIT University, Hydrogeology And Environmental Engineering

Minerals Council Of Australia

Megan Davison, Executive Director, Victorian Division

**Wednesday 5 August 2015 – Legislative Council
Committee Room, Parliament House**

Environment Victoria

Dr Nick Aberle, Safe Climate Campaign Manager

Anne Martinelli, One Million Homes Energy Efficiency Campaigner

Grattan Institute

Tony Wood, Energy Program Director

David Blowers, Energy Fellow

**Wednesday 12 August 2015 – Surf Coast Shire Council,
Torquay**

Surf Coast Shire Council

Keith Baillie, Chief Executive Officer

Cr Margot Smith, Mayor

Kate Sullivan, General Manager - Environment and Development

Rowan Mackenzie, Manager - Environment and Community Safety

Colac Otway Shire Council

Cr Brian Crook, Deputy Mayor

Stewart Anderson, Manager Environment and Community Safety

Barwon Water

Carl Bicknell, General Manager Strategy and Planning

Steven Reddington, Senior Environmental Planner

Frack Free Moriac

Alison Marchant

Damien Marchant

Dr Mike Forrester

G21 Agribusiness

Russell Coad

Otway Harvest Trail
Tom Dennis, President
Kit-E Kline, Vice-President

Ian Clarke

Wendy Klason

Darren Noyes-Brown

Alan Manson

Suzanne Yandle

Chris Johnson

Kristin Bitmead

Thursday 13 August 2015 – Surf Coast Shire Council, Torquay

3228 Residents Association
Sid Pope, President

Friends Of The Earth
Cam (Campbell John) Walker, Campaign Coordinator

Dr George Carman

**Professor Samantha Hepburn, Research Director, Deakin University Law
School**

Michael Blackam, Coffey

Frack Free Geelong
Anthony Gleeson, Frack Free Geelong
Elizabeth Packett, Gasfield Free Torquay

Wurdale Landcare Group
Peter McGregor
Carole McGregor
Lindros

Environmental Justice Australia
Ariane Wilkinson, lawyer

Tuesday 18 August 2015 – Legislative Council Committee Room, Parliament House

Department of Environment, Land, Water and Planning

John Ginivan, Executive Director, Planning and Building Systems

Lee Miezis, Acting Executive Director, Environmental Policy

Dr Sharon Davis, Executive Director, Water Resources

Department of Economic Development, Jobs, Transport and Resources

Paul McDonald, Director, Geological Survey of Victoria,

Ross McGowan, Executive Director, Earth Resources Regulation Branch

Mark Feather, Executive Director, Energy Sector Development Branch

Anthony Hurst, Executive Director, Earth Resources Development Branch

