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Submission to WA Fracking Inquiry

March 19, 2018 By email: info@frackinginquiry.wa.gov.au

Introduction

The Conservation Council of Western Australia (CCWA) is the state's peak conservation organisation representing over 100 community groups and tens of thousands of individual supporters, who are concerned with the conservation of our natural environment and a sustainable future for Western Australia.

In consultation with CCWA member groups and the broader community of people who would be impacted by a gas fracking industry in Western Australia, we have formed the position that unconventional gas development in WA must be permanently banned, as it has been in many other jurisdictions globally. We set out the reasons to support such a conclusion in this submission, and in previous submissions we made to the WA Parliamentary Inquiry on Hydraulic Fracturing, which we further submit for the consideration of this inquiry as if it were part of this submission.

Rather than 'reinventing the wheel' when it comes to research, we submit that the global knowledge base regarding the risks and harms of fracking is very large indeed and growing rapidly. In this respect, we refer the Inquiry to the *Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking* (the Compendium) which is a fully referenced compilation of the evidence outlining the risks and harms of fracking.[1] We request that the full body of evidence contained in this compendium is considered by the Inquiry as if it were part of this submission.

In this submission we have attempted to focus on information specific to Western Australia, summarising the arguments for a permanent statewide ban on fracking under the following headings:

- The Precautionary Principle and the Principle of Intergenerational Equity must be applied
- There is no need for gas fracking, or for the gas it would produce
- Fracking in WA presents an unacceptable risk to the global and local climate
- Fracking in WA presents unacceptable risk to ground and surface water
- Fracking in WA represents an unacceptable risk to public health
- Fracking in WA represents an unacceptable risk to cultural heritage, and to the amenity of regional areas that would be impacted by industrialisation
- Fracking in WA represents an unacceptable risk to existing industries including agriculture and tourism
- Western Australians overwhelmingly do not support gas fracking

In addition, we provide comments on the regulatory regime for fracking in WA as it was prior to the introduction of the South West ban and statewide moratorium.

[1] Concerned Health Professionals of New York & Physicians for Social Responsibility. (2018, March). Compendium of scientific, medical, and media findings demonstrating risks and harms of fracking (unconventional gas and oil extraction) (5th ed.). http://concernedhealthny.org/compendium/

First, a brief comment on the background papers and Terms of Reference for the Inquiry

We are extremely concerned that the Terms of Reference appear to lead the Inquiry to a position that gas fracking can be made to be acceptable through the application of regulatory controls. The background papers issued by the Inquiry add to this concern, as they appear to further endorse the view that it is possible to make fracking acceptable by regulation. We reject this view and we are deeply disappointed that the inquiry appears to have pre-empted its own conclusions in this regard.

In particular we are concerned about the 'Regulatory Environment' background paper published by the Inquiry, which we believe, makes a number of misleading or at the very least contestable claims, and also omits key information. The information presented in the background papers presents what can only be described as an extremely generous and optimistic interpretation of the regulatory environment that existed prior to the statewide fracking moratorium and fracking ban in the South West of the state.

These regulatory arrangements were developed under a government that had a policy of deregulation, removing duplication, reducing environmental 'green tape' and promoting the rapid development of fracking across Western Australia. We will refrain form a full critical analysis of the material here, however we what we believe to be the shortcomings of the pre-moratorium regulatory arrangements elsewhere.

Rather than taking the pre-moratorium regulatory arrangements as the baseline 'status quo' to build from, we hope that the Inquiry understands that the South West ban and statewide moratorium represents the current regulatory position. We hope that this Inquiry can see that position as a baseline precautionary position that has the backing of a strong public and electoral mandate, and is in line with a long and growing list of other jurisdictions that have put in place permanent bans on fracking.

The Inquiry should only recommend a deviation from that position if there is irresistible evidence that fracking in other parts of Western Australia would present a significantly lower risk than in the South West, or other parts of the world where fracking has been permanently banned.

We also note that information about the potential size and scale of fracking operations provided in the Inquiry background papers. Professor Tony Ingraffea, one of the world's foremost experts on fracking made the following comments in relation to the paper:

> *The Background and Issues Paper for the Scientific Inquiry notes, 'A horizontal well, as shown on Figure 1 (with a horizontal length of one kilometre) with ten fracture stages is likely to require 21 million litres of water per well. This is the same as approximately 8.5 Olympic size swimming pools.'*
>
> *I hope the Independent Panel moves forward a decade in its research to acknowledge that state-of-the-art shale gas wells in the U.S. have lateral lengths longer than 3 kilometres, more than 100 fracture stages, use 3 tons of proppant per meter, inject over 100 million litres of water, and use over 400 tons of steel, per well. And each of those wells will cost over $A10 million to complete. The time for comparison to swimming pools is long past.*[2]

We hope information contained in the background papers (whether in regard to the efficacy of regulatory arrangements or the nature of gas fracking activity and its risks) do not represent the pre-determined views of the Inquiry members.

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[2] Professor Anthony Ingraffea, Dwight C. Baum Professor in Engineering, Cornell University – Presentation to Conservation Council of WA public event 'Fracking Q&A', University Of Western Australia, 15 March 2018.

1) The Precautionary Principle and the Principle of Intergenerational Equity must be applied

A growing list of countries, states and sub-national governments have banned gas fracking globally (for a full up-to-date list see the Compendium). However the Inquiry has sought input regarding the particular Western Australian context.

In a Western Australian context, there is a paucity of data regarding our geology, and the potential impacts of fracking on our groundwater have not been well researched.

The WA Environmental Protection Act provides as its first Object and Principle, that:

> *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason to for postponing measures to prevent environmental degradation.*[3]

We submit that an application of the Precautionary Principle is necessary here, because the risks that such large-scale experimentation could result in significant impacts are very high indeed.

The second Object and Principle provided in the Act is the principle of intergenerational equity

> *The present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.*[4]

We submit that any decision that allows gas fracking to take place in Western Australia would be in direct breach of both of the above principles. As such, we urge the Inquiry to recommend that Western Australia follows the same regulatory pathway as many other countries which have banned gas fracking permanently.

2) There is no need for gas fracking, or for the gas it would produce

There is no demonstrated need for the gas that would be extracted. Western Australia already has a huge amount of surplus gas, far exceeding our energy needs, which is currently being exported as fast as petroleum companies can develop it. There is no need for additional gas as an energy source in the WA economy. For almost all applications of gas as an energy source, there are economically viable alternatives for energy generation in the form of renewable energy, for which WA has abundant opportunities. Estimates of future demand for gas in the WA economy do not indicate that there will be significant growth in demand in the future. In its most recent (2017) Gas Statement of Opportunities for Western Australia[5], the Australian Energy Market Operator (AEMO) found that:

- WA domestic gas demand growth remains low
- In the near term, to 2020, the domestic gas market is well-supplied
- Gas supply (not including fracking) is expected to exceed forecast demand over the entire outlook period

The AEMO projections appear to be based on a 'business as usual' scenario. Investigation of other scenarios including where renewable energy gains a high level of penetration in the WA energy market

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[3] *Environmental Protection Act* (Western Australia (1986) 4A Object and Principles of the Act. Principle 1
[4] *Environmental Protection Act* (Western Australia (1986) 4A Object and Principles of the Act. Principle 2.
[5] Gas Statement of Opportunities for Western Australia (AEMO) 2017 http://www.aemo.com.au/-/media/Files/Gas/National_Planning_and_Forecasting/WA_GSOO/2017/2017-WA-GSOO.pdf

also show that gas demand is unlikely to increase significantly (for example, see submissions from *Climate Analytics* and *Sustainable Energy Now*).

As such, the idea that more gas will be required as part of a transition to high levels of renewable energy here in WA does not bear scrutiny.

The ability of gas generation to provide 'peaking' generation (and even the increasing use of gas generation equipment in performing this role in this role) does NOT require large additional volumes of gas to that which is currently available (and projected to be available) in the WA energy market. This is because peaking services are required during only comparatively short time intervals, and the overall amount of gas consumed is relatively low, even if the number and capacity of generation facilities required may be larger than currently installed.

For similar reasons, which are also elaborated further below and in other submissions, gas is not similarly necessary as a transition fuel in other economies.

3) Fracking in WA presents an unacceptable risk to the global and local climate

Gas, especially when extracted by the process of fracking is a highly polluting fossil fuel. Western Australia has some of the world's largest fossil fuel deposits in the form of onshore (unconventional gas) which would be developed by the use of fracking technology. It is our moral responsibility to do everything we can to ensure that this resource remains undeveloped.

Lifecycle emissions associated with the development of WA onshore gas resources have been estimated to be extremely high, up to and more than 30 billion tons of Carbon Dioxide equivalent[6] if WA's entire economically recoverable onshore gas resources were to be developed. Even the domestic emissions component of this pollution is far greater than Australia can emit in order to remain compliant with its international obligations under the Paris Agreement.

There is simply no ethical or science-based argument that can be made to support or allow the release of this amount of carbon pollution, especially when the gas is not needed; alternative energy sources are available at a low cost.

We have presented significant and detailed evidence to support this conclusion in our submission to the WA Parliamentary Inquiry on Hydraulic Fracturing, however climate change impacts were considered to be outside the scope of that inquiry and as such our submission was ignored in this regard. We urge the inquiry to revisit this.

We understand that the Inquiry may also be inclined to avoid dealing with the problem of carbon pollution, by considering that certain carbon pollution arising from the development and use of gas from fracking in WA would be outside the scope of its consideration. We do not believe that this is an ethical position to take, or one that will result in a credible inquiry report that can be accepted by the wider community or the academic and research community. Clearly, there is a strong community expectation that the inquiry will examine 'lifecycle emissions from unconventional gas development; in line with the election commitment made by WA Labor prior to the state election. To ignore this would be to produce a report that could not be considered a credible basis for decision-making. Furthermore, just because impacts may be considered out of the scope of consideration by the inquiry does not mean that they do not occur or are somehow not real or relevant. If the Committee believes there is a legal limitation

[6] Climate Analytics, *Western Australia's Gas Gamble*, 2018

under the Environmental Protection Act to the consideration of Scope 2 or scope 3 emissions (we do not believe there is), then we request that the analysis of emissions from these areas is provided to the Government under 'other advice'.

The 'clean fuel' and 'bridge fuel' myths

Proponents of gas development are often heard presenting an argument that gas is a 'clean fuel' that is playing a positive role in tackling global climate change. A variation to this is that gas is a 'bridge fuel' that is assisting the world move to renewable energy. We note that the draft final report from the NT fracking inquiry partially adopted this view, suggesting that it may be considered acceptable for unconventional gas developments to produce very large amounts of carbon pollution because gas was an energy source that would be important in a transition to renewable energy in the Australian context. We also note that the NT draft report presents no evidence to support this proposition.

Such 'clean fuel' and 'bridge fuel' arguments are spurious and dangerous, as explained in our previous submissions and in a range of literature. The counter argument is summarised recently in the publication *Burning the Gas 'Bridge Fuel' Myth*[7]. This publication makes a number of compelling arguments points in support of its conclusion, including that:

- New gas developments lock in emissions for 40+ years
- New gas is holding back renewable energy
- Existing fossil fuel developments under production or in construction phase (including gas) are already enough to exceed climate goals

The implications of gas being mistaken as a clean fuel for efforts to decarbonise the US economy are discussed most recently in this article published last week: *How Climate Activists Failed to Make Clear the Problem with Natural Gas*[8] in which the author, Bill McKibben, Schumann Distinguished Scholar at Middlebury College, notes:

> *If we hadn't discovered fracked natural gas, the effort to deal with climate change would have moved us far more quickly into renewables. With the move to natural gas, it's as if we proudly announced we kicked our Oxycontin habit by taking up heroin instead.*

There is no evidence that gas as an energy source is used in way that significantly displaces coal as a stationery energy source in Australia, or in the countries that Australia would export gas to.

We note that in the particular domestic context of the USA a decade ago (at a time when renewable energy was significantly more expensive) gas fired electricity generation did replace some coal capacity and this has been credited with reducing the USA's overall carbon footprint. For a variety of reasons including that the USA was a net gas importer prior to the US 'shale gas revolution', the comparison is not analogous to Western Australia. The conclusion that the replacement of ageing coal capacity with new gas generation in the US will deliver a long-term reduction in GHG emissions in that country is also unsupported. A more likely outcome is that the impact of fast-acting climate pollutants (methane in particular) from gas developments in the USA has been significantly underestimated, and that the lock-in effect of new gas generation will significantly delay the transition to renewable energy in that economy, having the net effect of significantly increasing carbon pollution.

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[7] http://priceofoil.org/2017/11/09/burning-the-gas-bridge-fuel-myth/

[8] https://e360.yale.edu/features/how-climate-activists-failed-to-make-clear-the-problem-with-natural-gas-mckibben

In most economies where Australian gas would be used, coal is a cheaper fuel and where it is available and tolerated by policy, it is used for baseload electricity generation. Gas is comparatively more expensive and generally plays a different role in the energy generation mix and is therefore not a significant factor in the early closure of coal fired poser stations.

In terms of new energy generation build, the growth of new renewable energy installation gathering considerable pace, and has exceeded that of coal. New gas generation is therefore much more likely to be displacing renewable energy in the global context. One end-use where gas could potentially provide an emissions reduction benefit as a direct replacement for dirtier fuels is as an energy source for international shipping, however even here there are far better alternatives in the form of renewable energy derived hydrogen and other bio-derived liquid fuels, and the promotion of gas in this market is likely to slow the adoption of these other cleaner alternatives.

Gas can only be treated as a very significant new and additional source of carbon pollution that cannot be tolerated. We note that the Commonwealth Department of the Environment, Water, Heritage and the Arts reached a similar conclusion in 2010 when it assessed the environmental impacts of the Shell Prelude Floating LNG (FLNG) development[9]. The assessment report noted that:

> *Shell notes in the EIS that when the CO2 emissions intensity of the FLNG facility are compared with like for like other fossil fuels (e.g. coal) on a well to wheels basis, the FLNG facility could potentially have a net positive impact, but only if the export of Prelude LNG displaces more carbon intensive fuels in power stations. The Department notes that Shell has not proposed to replace any emitters currently using more carbon intensive fuels, and as such, operation of the FLNG facility will add to Australia's total GHG emissions.*

Even if gas were replacing coal, when the lifecycle emissions from gas development, processing, transport and end-use are taken into account, the total pollution can be similar or even greater than more efficient forms of coal generation.

<u>No effective way to mitigate emissions</u>

Gas must be treated as a very large, new, additional and unnecessary source of carbon pollution and we submit that there is no way to mitigate the impacts of this very significant new emissions source. The current Commonwealth policy regime is fundamentally inadequate at dealing with carbon pollution from all sources and there is no indication that a policy regime will be established that can provide certainty in this regard. An alternative approach is to introduce state-based requirements for gas developments to offset their emissions, however offsets such as carbon farming are simply not available at the scale required in the Australian context, and the quality of international offsets cannot be guaranteed. In a global context, all available means of offsetting emissions will be required in order to mitigate the impacts of existing fossil fuel developments, leaving no capacity to offset new sources of emissions such as would be created were WA's onshore gas deposits be developed.

Furthermore, it may be problematic to require gas producers to offset the emissions from the combustion of the gas by third parties, and these combustion emissions are likely to occur outside of Western Australian, or even Australian jurisdiction. As such, the ability to execute regulatory authority over the release of these emissions does not match the need to accept moral responsibility for their impacts. We therefore conclude that there are no effective or satisfactory means by which to mitigate either direct or lifecycle emissions from gas development in WA.

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[9] Prelude Floating Liquefied Natural Gas Facility Recommendation Report (EPBC 2008/4146) April 2010

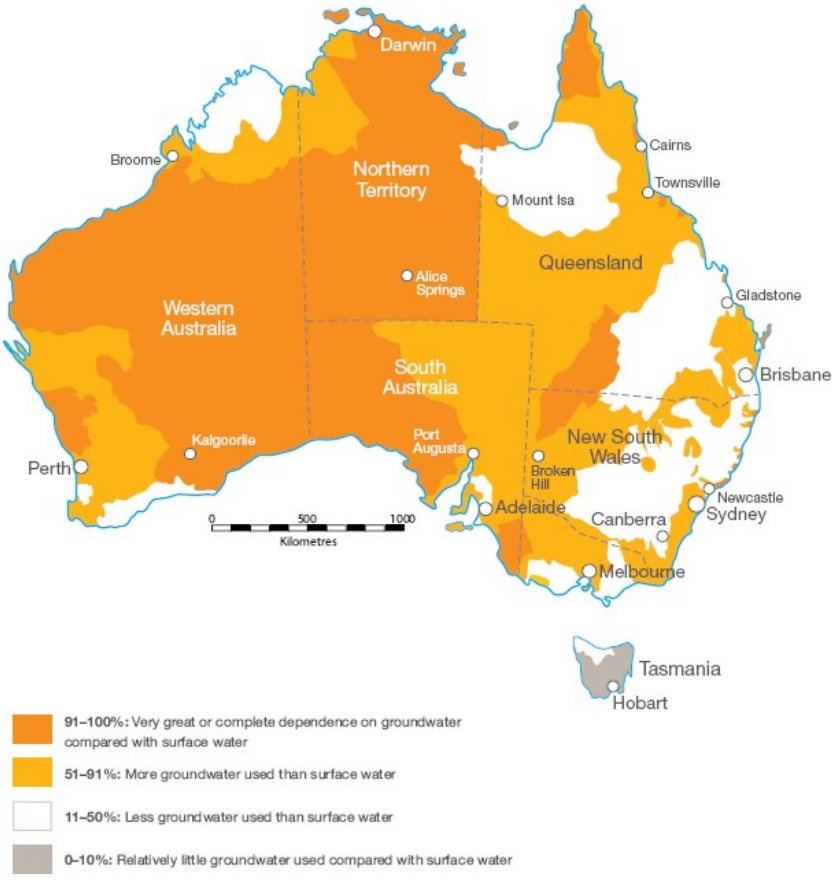
4) Fracking in WA presents unacceptable risk to ground and surface water

There is very considerable research and evidence detailing impacts on groundwater and surface water in other jurisdictions where fracking has taken place. Again we refer the Inquiry to the Compendium.

In a Western Australian context, there is a paucity of data because our geology, and the potential impacts of fracking on our groundwater are not well understood. We submit that an application of the Precautionary Principle is necessary here, because the risks that such large-scale experimentation could result in significant impacts are very high indeed.

Evidence presented in other submissions, including our previous submissions to the Parliamentary Inquiry as well as more recent technical contributions from experts to this Inquiry support this conclusion.

Western Australia has a far greater level of dependence on groundwater than many other countries, and most other parts of Australia (see below). Activities that present risk to groundwater such as petroleum development activities should be treated with a far higher level of caution in the Western Australian context



Groundwater dependency in Australia (CSIRO)

While the experience with fracking in WA is not well developed, there have been some important contributions, which we draw to the attention of the Inquiry.

In an abstract submitted to the Australian Water Association, WA researcher Fiona Mullen makes the following comments based on research into the Wodada Deep and Arrowsmith 2 shale gas exploration wells which tested fracking of the Kockatea Shale in the North Perth basin:

> *Regulatory requirements regarding the assessment of seal integrity in unconventional gas reservoirs are currently not well developed in Western Australia. For example, the Department of Mines advises that geological faults must be avoided during hydraulic fracture stimulation due to the potential for induced seismicity (Department of Mines 2015). This requirement is not considered to be realistic as 2km long horizontal wells are likely to intersect multiple faults on a routine basis. In addition active or critically stressed faults are more likely to be fluid conduits whereas non active or non-critically stressed faults are more likely to act as barriers (Sibson 1987). There is a risk that hydraulic fracturing will result in fault slip and hydrocarbons and potentially other fluids may discharge into low salinity deep aquifers.*
>
> *The existence of thermogenic gas (methane and short chain alkanes) in shallow aquifers should alert regulators to the possibility that the Earths crust is already close to failure.*[10]

The authors recommend a prohibition on fracking in and in other areas it is suggested that fracture stress analysis should be a mandatory requirement.

Professor Ryan Vogwill described similar concerns relating to the attempted fracking (using diesel) of the shale deposits under the Whicher Range:

> *The Whicher Range in the southern Perth Basin is a poignant Western Australian example of the lack of certainty in methods used by unconventional gas proponents to investigate the risks to aquifers. The Whicher Range seismic data interpretations from 2004 and 2012 draw quite different interpretations of the same data. The 2004 interpretation shows relatively little connectivity between faults and relatively little propagation of faults to the surface, hence the industry's appraisal of hydraulic stimulation as low risk at this site. The 2012 analysis of the same data shows significantly more fault connectivity at depth in the target zone and fault propagation to nearer the surface. The 2012 interpretation of subsurface structure (faulting) presents a much greater risk that the 600,000 litres of unrecovered diesel injected into the hydraulic stimulation target zone may reach aquifers near the surface.*[11]
>
> *A permanent moratorium is recommended over conservation estate and public drinking water source areas, given the considerable risk that even surface activities hold in the context of the biodiversity values or long term water supply security that these areas are created to protect.*

Appendix 1 provides more detailed comments on the adequacy of Western Australia and Australia's regulatory framework for the protection of water. These comments conclude that the application of groundwater protection is highly variable, subjective, and at times bears little resemblance to environmental outcomes or sustainability.

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[10] Fiona Mullen and Rosalind Archer, *Unconventional Gas Risk to Deep Aquifers using Stress Analysis* paper submitted to Australian Water Association conference 2018. (This research is currently in publication elsewhere).
[11] Vogwill R., 2017, Western Australia's Tight Gas Industry - A review of groundwater and environmental risks. Conservation Council of Western Australia. ISBN(13): 978-0-9750708-1-9. https://d3n8a8pro7vhmx.cloudfront.net/ccwa/pages/6404/attachments/original/1493710594/Western_Australian_Tight_Gas_Risk_Published.pdf?1493710594

5) Fracking in WA represents an unacceptable risk to public health

There is significant and growing international literature linking gas fracking to serious impacts on public health, including mental health and we again refer the Inquiry to the Compendium for the most recent literature in this area.

In the Western Australian context, to the report by Dr. Melissa Haswell, *Health Concerns Associated with Unconventional Gas Mining in Western Australia*[12] In this report Dr. Haswell reviews the available global literature (which has expanded significantly since), and provides an independent review of the previous reports prepared by the WA Department of Health, and the Parliamentary Inquiry examining health impacts of fracking in the WA context. These reported are often cited by the fracking industry and its promoters in support of the proposition that fracking is safe or can be regulated safely in WA.

In contrast, Dr Haswell concludes that:

> *The Reports do not appear to have fully and accurately assessed the potential risks and benefits of the industry to the health and wellbeing of Western Australians, based on current knowledge.*
>
> *The Reports did not accurately and sufficiently acknowledge the recommendations from many professional public health and medical groups, both in Australia and abroad, to apply the Precautionary Principle to unconventional gas mining.*
>
> *The terms of reference and/or scope of the review were not sufficient to capture the health and wellbeing risks associated with the unconventional gas industry. These risks arise from much more than just the hydraulic fracturing aspect of shale and tight gas mining.*
>
> *The Reports do not reflect current understandings from recent research evidence, which support, rather than refute, risks from unconventional gas activity. Other publications highlight the inadequacy of regulation in the protection of human and environmental health.*
>
> And that there were:
>
> *Issues of potential bias in the interpretation and communication of knowledge- versus opinion that favour industry over the communities that will have to bear the risks that industry brings.*

6) Fracking in WA represents an unacceptable risk to cultural heritage, and to the amenity of regional areas that would be impacted by industrialisation

We submit that the inevitable industrialisation of landscapes that would result from gas fracking operations presents an unacceptable impact on cultural heritage and amenity values both for white and indigenous Australians.

We refer to the evidence presented by Professor Carmen Lawrence and other to the Inquiry, which provide a more comprehensive treatment of this subject matter.

Professor Lawrence provides the following in her submission:

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[12] *Health Concerns Associated with Unconventional Gas Mining in Western Australia,* Melissa Haswell, MSc PhD (London) Professor of Health, Safety and Environment School of Public Health and Social Work Queensland University of Technology (QUT), Brisbane. Available online here: https://d3n8a8pro7vhmx.cloudfront.net/ccwa/pages/6404/attachments/original/1490592015/haswell-report_unconventional-gas-and-health-in-wa_final.pdf?1490592015

Fundamental to any conception of environmental justice is the right to an environment that is not only clean and health promoting, but also retains its natural, cultural and heritage values, including its biodiversity, ecological integrity, aesthetic qualities and historical associations. The exploitation of unconventional gas in Western Australia is likely to violate these rights – not to mention the effects adding more fossil fuel supplies would have on the existing burden of greenhouse gas emissions which are already producing accelerated warming, more frequent extreme weather events and wildfires, ocean acidification and sea level rise, all of which have very destructive effects on human health and wellbeing.[13]

The lack of effective protection under the Aboriginal Heritage Act, and the lack of detailed examination of these issues under the Environmental Impact Assessment Process indicate that the current approach to managing these issues is significantly lacking, even for existing industries and activities.

7) Fracking in WA represents an unacceptable risk to existing industries including agriculture and tourism

We refer the Inquiry to research published by The Australia Institute (including *Fracking the future - Busting industry myths about coal seam gas*[14]). This research demonstrates that claims by the fracking industry of significant economic benefit are exaggerated, and come with consequential negative impacts on other industries, which are rarely evaluated.

Here in Western Australia, farming and other primary production on the North Perth Basin are significant employers and sources of economic activity.

Similarly the tourism industry is a very significant employer in WA. We know that the primary reason tourists come to Western Australia is because of our wilderness, nature and natural landscapes, and (to a lesser extent) our clean green food and wine industries. We submit that these values would be significantly compromised were a fracking industry to be developed here in WA.

While we are not aware of any studies that have been undertaken to quantify the impacts here in WA, we note that research is included in the Compendium, which provides a strong evidence base for considering the likely impacts in this state.

8) Western Australians overwhelmingly do not support gas fracking

Part of the job of the inquiry is to understand what Western Australians value about the environment, so that this may be protected. Western Australians have displayed an overwhelming preference for a frack free future in Western Australia. This is because Western Australians place a high value on the protection of health, communities, and the natural environment, and on the confidence that these values will not be compromised.

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[13] Professor Carmen Lawrence, Director, Centre for the Study of Social Change, School of Psychological Science, University of Western Australia.

[14] *Fracking the future - Busting industry myths about coal seam gas* Institute Paper No. 16 March 2014 ISSN 1836-8948 Matt Grudnoff http://www.tai.org.au/sites/defualt/files/IP%2016%20Fracking%20the%20future%20-%20amended_0.pdf

There have been well over 100,000 signatures on various petitions opposing fracking over the last five years, including in the lead-up to the March 2017 state election where thousands of people directly contacted their Members of Parliament and took other action in support of a Frack Free Future.

Numerous communities around the state (and in particular in areas targeted for fracking) have made 'gasfield free community' declarations and in many cases such declarations have been supported by Local Government Authorities.

Several Local Shires have also passed policies supporting communities and seeking to constrain gas fracking developments and the Coorow and Carnamah Shire policy provided with this submission is an example (relevant excerpt provided at Appendix 2 to this document)

The high number of submissions to the Parliamentary Inquiry and now to this inquiry demonstrate a very high level of public interest in preventing a fracking industry from becoming established in Western Australia.

Whether it is informed by science or not, people value the confidence that they can drink water from their tap without worrying for its safety, and the confidence that the resources will be protected so that future generations will be able to do the do the same. They value the ability to visit regional areas and enjoy and experience natural and agricultural landscapes, and to do so without fear that the air that they breathe will cause ill effects on their health. They value the confidence of buying and consuming Western Australian produce without concerns for its safety or whether it is contaminated, or grown in a way that is not environmentally sustainable because water that could be used for food production has instead been allocated to gas fracking.

We submit to the inquiry that this confidence is a function of the relationship that people have to the environment and therefore must be an important consideration for the Inquiry. This confidence has a very significant value, and it is a value that should be protected. However, this confidence can easily be broken, and would be compromised by any fracking developments even if the level of risk is very small indeed.

The lack of effective regulatory controls to protect the environment and communities from the risks of fracking

We believe there is ample evidence and public support to support a permanent ban on fracking in Western Australia for the reasons outlines above and elsewhere. Many of the risks either cannot be regulated effectively (such as climate change impacts, impacts to groundwater, impacts on landscape amenity, impacts on other industries), or regulations that would provide adequate protection would be so onerous as to prevent the activity from occurring in a manner that would be capable of generating profit. For this reason, we urge the Inquiry to recommend a permanent ban on fracking across the state (as has been adopted in many other jurisdictions) as the appropriate regulatory solution.

Without prejudice to this, we take the opportunity to provide some comments on the adequacy of the existing regulatory arrangements in place here in Western Australia.

We draw the Inquiry's attention to the ENGO submission to the DMP on the draft fracking regulations (provided as an attachment). Very few of the concerns raised in this submission are addressed in the current regulatory arrangements that resulted from that process.

We refer the committee to the plain-English guide to how fracking is currently regulated in WA: *Rights, regulations and fracking in WA: How the regulatory system for unconventional gas fails to protect people*

and the environment.[15] This document describes a number of fundamental shortcomings and failings in the existing regulatory system. This document reminds us that:

> *The process of fracking – drilling holes and pumping toxic chemicals into the Earth under pressure – is by definition a polluting activity. For this reason all over the world the industry can only operate where exempted from pollution control regulations that apply to other industries.*

The results of the Western Australian regulatory system can be examined by reference to the outcomes of the handful of fracking attempts which have occurred to date here in Western Australia.

CCWA has carefully examined a number of case studies of gas fracking in WA (to the extent that this is possible given the withholding of various regulatory information from the public domain). We have concluded that almost all of the fracking activities that have been undertaken to date have had serious problems, issues, or impacts on the environment that were not foreseen at the time of approval.

There have only been a handful of gas wells fracked in WA so far, but there have already been serious problems. We summarise them below:

A summary of fracking fails here in Western Australia

Whicher Range: near Busselton - Over 1 million liters of diesel pumped into the well in an attempted fracking operation, some of this was recovered and the rest remains in the environment presenting a permanent contamination risk to aquifers.

Corrybas: near Dongara - The Corrybas well leaked gas as reported by the West Australian[16]

Yulleroo-3: Kimberley - There is a detailed body of evidence surrounding the attempted fracking operations at Yulleroo-3, which has been submitted to this and previous inquiries. This has included the overflow of a wastewater pond following heavy rainfall. This mobilised drilling fluids into the natural environment and demonstrates the significant risk of allowing fracking in the Kimberley where evaporation rates are often exceeded by precipitation for months of the year. Gas leaks also occurred at the Yuleroo-3 well.

Warro 3&4: near Watheroo National Park - The fracking attempt at these wells was abandoned after hitting high-pressure artesian aquifer. The wells were allowed to run water for a period of months in an attempt to de-pressure the aquifer.

Woodada wells: near Eneabba - These wells are located in in a nature reserve and within 500m of Lake Logue - wetland of national significance. Clearly not a location where a high risk industry should be locating, if industry claims are true that every effort is taken to minimise environmental impact.

Drover-01: near Green Head - This well was approved and drilled in a drinking water catchment for 2 towns. Methane has been found in groundwater monitoring bores. Thankfully the well was abandoned before fracking commenced. More detailed information about this case study has been presented to the WA Parliamentary Inquiry and we draw that information to the attention of this Inquiry.

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[15] *Rights, regulations and fracking in WA: How the regulatory system for unconventional gas fails to protect people and the environment,* CCWA 2017, available online here https://d3n8a8pro7vhmx.cloudfront.net/ccwa/pages/1268/attachments/original/1485307130/FFF_170118_Briefing_WA_UG_fracking_regulations.pdf?1485307130

[16] https://thewest.com.au/news/australia/corybas-leak-sparks-alarm-ng-ya-306135

List of Attachments

1) CCWA primary submission to gas fracking Parliamentary Inquiry-2014
2) Appendix A - CCWA primary submission to Parliamentary Inquiry
3) ENGO Submission on WA Fracking Regulations
4) CCWA final evidence to the Parliamentary Inquiry Fracking 2015
5) CCWA Final Evidence Appendix A - CCWA response to APPEA
6) CCWA Final Evidence Appendix B West Australian full finding APPEA misleading and deceptive
7) CCWA Final Evidence -Appendix C - Carnamah Shire Policy - Petroleum, Extractive Industries
8) CCWA Submission to Parliamentary Inquiry on Drover-01 Case study (13 Documents including cover letter and 12 attachments)

Appendix 1

Comments on the adequacy of current regulatory controls for the protection of water resources in Western Australia

Extract from CCWA submission to Senate Standing Committee on Environment and Communications inquiry into the water use and extractive industries, 2017

Water allocation

Water allocation in Western Australia is done on a 'first come, first served' basis, and there is no current provision for statutory water allocation plans to be put in place. As a consequence, many groundwater areas have no strategic management framework or objectives to guide allocation decisions, regional groundwater studies are often not undertaken before allocation decisions are made, sustainable yields are not well understood, and planning for future water resource demands is not a feature of allocation decisions.

Protection of water quality

The regulatory regime applied in Western Australia for the protection of groundwater water quality is in our view inadequate for the maintenance of environmental values and the protection of human health. There is no single agency or regulator responsible for the setting and enforcing of groundwater quality standards or protections. Such protections are given effect through a multitude of different legislative and regulatory instruments, administered by a number of different agencies. As a result the protection of groundwater quality from impacts by extractive industries is highly variable.

Regulatory conditions for groundwater protection from threats by extractive industries are typically established through the requirements for licensing under the *Environmental Protection Act*; through Ministerial Conditions following Environmental Impact Assessment; under the *Petroleum and Geothermal Resources* legislation; under the *Mining Act*; under the *Rights in Water and Irrigation Act*; or through Management Plans or other subsidiary and delegated approvals required by one or more of the agencies responsible for administering these pieces of legislation. This complexity makes it very difficult to ascertain what standards or policies are being applied in different situations, and the lack of transparency under a number of these agencies and jurisdictions makes it impossible for the public to understand which regulator is responsible, and which standards are being applied for water quality protection.

Where they are gazetted, *Public Drinking Water Supply Areas* provide a level of protection by informing a rigorous approach to risk assessment linked to specific numerical water quality values. However these areas are often very small, and take on arbitrary boundaries (such as property boundaries) that do not align to the physical or hydrological extent or nature of the resource to be protected. As a result we have seen high risk extractive activities such as petroleum drilling and fracking approved within the recharge zones and catchment areas of bore fields supplying public drinking water, and within very close proximity to the proclaimed Public Drinking Water Supply Areas.

The majority of extractive industries operate outside of Public Drinking Water Supply Areas, however this does not mean that the groundwater is not being used for drinking and stock watering. Indeed in large areas across the state, groundwater is the primary or only source of drinking and stock water, and is critical for the survival of communities, including Aboriginal communities. The location of many (if not the majority) of abstraction points or natural expressions of groundwater used for drinking in these areas (bores, wells, waterholes) are not known to regulators, making it difficult or impossible for them to properly provide for the protection of these resources when making regulatory decisions.

Water quality protections and standards applied outside the Public Drinking Water Supply Areas appear to be highly variable.

Advice from the relevant WA Government agencies is that the Guidelines for Groundwater Quality Protection in Australia provide the policy framework for assessing risk, determining standards, and therefore setting protection measures for groundwater in WA.

However these guidelines provide almost complete discretion for state regulators in setting numerical standards for permissible water quality impacts.

The following statements are direct quotes from the guidelines:

> *There are currently no water quality guidelines for Groundwater Dependent Ecosystems (GDEs) 'that rely on the subsurface presence of groundwater' (i.e. vegetation). In setting water quality objectives to protect these GDEs, parameters that are important for vegetation health should be considered, such as nitrogen, phosphorus, organic carbon, metals, salinity, dissolved oxygen and pH.*
>
> *There are currently no specified water quality guideline values for protection of cultural and spiritual or industrial water use*
>
> *Even where generic guideline values are available in NWQMS documents, water quality objectives may be locally defined to consider water quality issues specific to the groundwater system in question. This enables existing water quality, community values, potential and future uses to be considered within water quality objectives.*

When it comes down to it, the Guidelines provide that groundwater protection standards for areas outside of drinking water protection zones are to be determined by local regulators taking into account a range of factors as they see fit, including existing and future potential uses of the water resources, as well as other matters such as economic considerations.

In practice this means that there are no consistent groundwater quality protection standards that across the State, and regulators can 'make it up as they go along'.

The most frequent way that this has been applied by WA regulators (especially for extractive industries under the Petroleum and Mining legislation) has been to apply 'As Low As Reasonably Practicable' (ALARP) as the guiding principle for setting standards for groundwater protection.

This ALARP principle bears no relationship whatsoever to the maintenance of ecological processes or protection of human health. It is entirely a construct of what is possible to achieve within a certain budget volunteered by a proponent. In our view this is deeply inadequate and flawed as a basis for setting regulatory conditions for the protection of water as a publicly owned asset.

Appendix 2

Excerpt from Shire of Coorow and Shire of Carnamah policies on fracking

Council support for specific onshore petroleum development or exploration proposals

a. Council does not support further petroleum resource development within the Shire (including exploration) that has not first undergone thorough and independent assessment of environmental, health, agricultural and socio-economic impacts (including cumulative impacts) by the Environmental Protection Authority, Department of Health and other relevant agencies.

b. The Shire of Coorow will consider each proposal for petroleum resource development or exploration within the Shire by applying the follow criteria for decision-making. To be supported by the Shire, exploration and development must;

    - Undertake thorough community consultation and achieve demonstrated broad community support for development
    - Maintain and protect the amenity and character of the Shire, and its existing communities and land uses;
    - Ensure zero impact on groundwater resources used for drinking, agriculture or other existing uses, including the catchment and recharge areas for these resources;
    - Ensure zero impact on the health of communities or individuals within the Shire;
    - Ensure that the impacts on Council infrastructure are adequately compensated for in the immediate and future life of that asset, and that the full costs are recovered for any additional infrastructure required;
    - Provide full transparency to the community regarding all environmental compliance and monitoring data, including air quality and groundwater monitoring results, chemicals used, and any other relevant information that must be disclosed in a timely manner.
    - Accept a 'presumption of liability' for any groundwater pollution that is detected in the vicinity of petroleum operations and which can reasonably be associated with those operations.
    - Provide guarantees of full reparation and remediation of groundwater, land, infrastructure, public health or other unplanned impacts that arise from the development.

c. The Shire of Coorow is not willing to provide its support or assistance to proponents or other parties (including the State Government) who seek to undertake or promote petroleum activities within the Shire that do not meet these standards.