Submission to the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory in Response to the Draft Final Report

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Doctors for the Environment Australia

67 Payneham Road
College Park SA 5069
P [redacted]
E [redacted]
W www.dea.org.au

Healthy planet, healthy people.

Thank you to opportunity to provide further feedback and submission following the release of the Draft Final Report into Hydraulic Fracturing.

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-governmental organisation of medical doctors in all Australian States and Territories. Our members work across all specialties in community, hospital and private practice. We work to minimise the public health impacts and address the diseases caused by damage to our natural environment.

DEA's main activity is to educate and work for action on climate change for we accept on sound scientific evidence the view of the World Health Organization (WHO) that climate change is the greatest global health threat this century.

Principal Recommendation

The moratorium on fracking in NT should be extended indefinitely.

This recommendation is based on:

1. **The risk to health and the environment from fracking is not resolved as seen by widely differing conclusions in different states based on the same basic scientific evidence**

2. **Fracking will greatly increase greenhouse emissions which place the world and Australia in particular under increasing risk and the NT will suffer from the increasing harms**

3. **Alternative energy developments are available to NT which do not harm health, the environment or the climate and these have not been adequately explored and considered**

4. **Prolific use of water by fracking in a water scarce environment is a threat to fundamental human rights**

5. **Trust in the government to re-establish confidence in development approvals by a government acting as arbitrator and not as a proponent**

6. **Aboriginal needs have received inadequate attention**

Discussion of DEA Recommendation for Indefinite Moratorium

1. **The need for certainty**.
This includes certainty that people's health and our environment not be put at risk until many of the current uncertainties have been further researched, and that the NT community will not face another Inquiry, when Inquiries have been one key outcome of the introduction of fracking technology. We have seen already the 2014 Hawke Inquiry and three assessments of the legislation. The 18 months since the election of the ALP government has been a welcome period of certainty with the announcement of the moratorium a key election promise. People don't want fracking; we want certainty.

Reviewing the recent Inquiries in other states, we see that the Victorian Inquiry in 2015 recommended a permanent ban on fracking; South Australia in 2016 recommended that fracking not be allowed in the south east of the state until the industry could demonstrate its social license; while the Inquiry in Western Australia in 2015 recommended regulation to allow fracking. However this finding has led to a new Inquiry recently being announced.

Another review in NT could be planned for 2028 providing certainty as to the future reconsideration of the benefits and risks of fracking as understood by then.

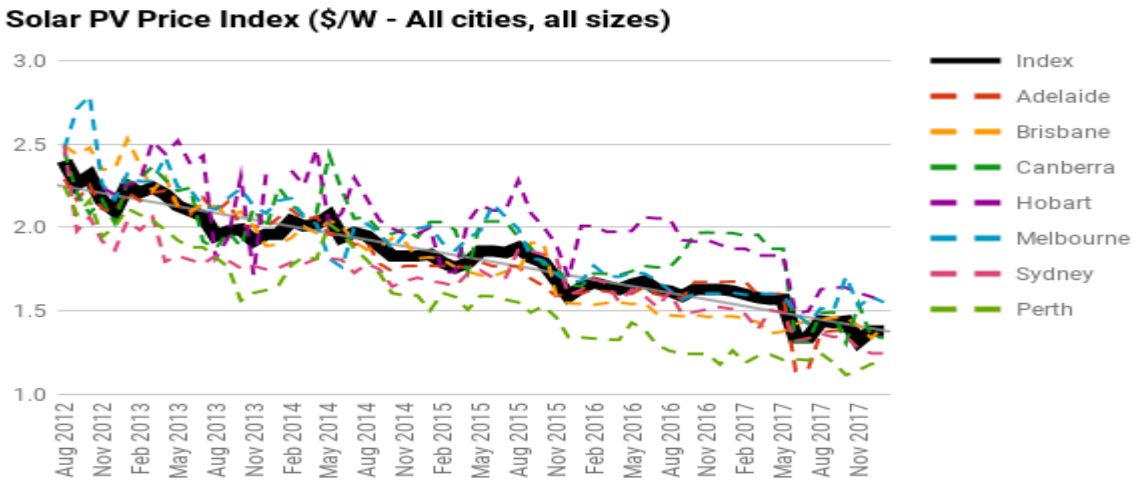
2. **Assessment of the risks**.
The greatest risk to human health we currently face is climate change, due to burning of fossil fuels.[2] Projected impacts in NT include coastal erosion due to sea level rise and storm surges affecting Darwin and the Top End, in addition to riverine flooding in Darwin. By 2070 Darwin will experience 308 days per year over 35 degrees. Territory wide 308 people will die annually due to temperature, an increase of 297.[3]

The extraction of gas for combustion into carbon dioxide is not a side effect or avoidable risk of fracking, but its main purpose. It cannot be mitigated, regulated or managed. Mitigation of climate change requires us to dramatically reduce the burning of fossil fuels, particularly unconventional fossil fuels due to the higher energy input required for their extraction such as fracking. Decisions to further exploit fossil fuels are inconsistent with Australia's commitments to the 2 degree temperature increase as a guard against dangerous climate change. Further investment in fossil fuel exploration is futile because any new discoveries could not lead to increased production.[4] To the extent that the Inquiry is a Scientific Inquiry, the science of climate change is clear and the recommendations around limiting methane leaks to reduce climate change risk miss the main point that carbon dioxide from the burning of fossil fuels is the main cause of climate change.

3. **Healthier viable energy alternatives reduce the need for on-shore petroleum**.

Energy development in the NT is being held back by previous commitment to fossil fuels. For example, the investments in diesel and gas electricity generation in Tennant Creek and Alice Springs made by previous governments were long term commitments that the current government is forced to honour, leading to limitations on investment in renewable energy. Urgently needed investment in energy generation capacity and the education, research and skills development associated with this is undermined by discussion of unconventional gas.

The costs of this current Inquiry likewise could have been used to promote development of our renewable energy potential, and this is much more forward thinking than Inquiring into unconventional gas, particularly with the global renewable energy boom. Over the time since the Inquiry was established in August 2016 until Feb 2018, solar PV has continued its downward decline from $1.7 to $1.4 per Watt, a 20% decline.[5]



Government resources that support fossil fuel development are a subsidy, often unrecognised. Everything that facilitates the use of fossil fuels is a subsidy, including this Inquiry, and development of road and rail and other infrastructure that facilitates fossil fuel development or use. Government subsidies for fossil fuel were reviewed in 2014, and at that time the assistance given by NT government to the mining and fossil fuel sectors was about $88 million or 80% of the royalty income.[6] The idea that fracking is a windfall for government and the people is a convenient myth for industry, whose disproportionate influence on governments is a major concern. Following the Victorian ban on fracking, this state is leading the way nationally in wind energy employment and output, with almost 5000 people employed and the construction of Australia's largest windfarm now underway.[7] South Australia now hosts the largest battery in the world, contributing to its renewable energy capacity and stability.[8]

4. Human rights to a safe environment and water supply
In 1948 the United Nations adopted the Universal Declaration of Human Rights, recognising that "all human beings are born free and equal in dignity and rights," and that "everyone has the right to life, liberty and security of person." Fracking violates these fundamental tenets, impacting health, housing, occupational safety, and other basic rights. Fracking also directly implicates the human right to water, which the UN called "essential to the realization of all human rights."

The Declaration adds that "the will of the people shall be the basis of the authority of government," and "everyone has the right to take part in the government" system. Fracking violates these basic human rights.[9]

5. **Lack of trust in government.**
Regulation and monitoring of hydraulic fracturing is unfeasible in the current NT environment of such distrust of government capacity. This was mentioned in the Draft Final Report, page 20 (our emphasis):

> "The adequacy of the regulatory framework governing any onshore unconventional shale gas industry in the Northern Territory was another key concern for participants at the community forums. The complaints consisted of:
> - an **absence of faith** in the current Territory regulatory framework to adequately, or in some instances, at all, protect the environment from the risks inherent in any onshore unconventional shale gas industry;
> - **distrust in the Government** to make decisions in the best interests of the community;
> - **a perception that the Government and the petroleum industry were too closely aligned** and that the petroleum industry had the ability to distort executive decision-making."

The Draft Final Report makes no recommendations specifically about how the NT government can re-establish trust.

The greatest number of recommendations refer to Chapter 14: Regulatory Reform, yet regulatory reform was the subject of both the Hunter reports and 2015 Hawke Report. This reflects the difficulty and on-going challenge of appropriate regulation of fracking in NT.

The final point that the industry has the ability to distort decision making appears likely to be demonstrated if this Inquiry recommends that the moratorium end.

6. **Indigenous knowledge, particularly Indigenous STEM (Science Technology Engineering and Medicine)**[10] was not specifically identified in the Draft Final Report, although there was extensive identification of lack of non-Indigenous knowledge in a range of areas (water, ecology) that will be affected by hydraulic fracturing. While about one third of Territorians are Aboriginal, and of those affected by fracking a high proportion are Aboriginal, the lack of discussion of Indigenous knowledge may reflect the on-going colonisation in NT.[11]

Thus the recommendation to extend the moratorium indefinitely. This responds directly to the Panel's Terms of Reference to determine the nature and extent of the risks associated with fracking, and whether they can be mitigated. The risks cannot be adequately mitigated.

Social Impact Assessment Report

The Social Impact Assessment concludes that: A 'social licence to operate' for an unconventional gas industry is possible with implementation of the SIA Framework proposed by CSRM.

It is unclear the extent to which this is a finding of their consultation; I suggest it was their conclusion prior to the consultation process. This conclusion reflects the issue above that Government and industry are too closely aligned, with industry partners contributing to the funding CSIRO, who are promoting their own work.

Community has clearly rejected fracking and to put the community at the centre is to accept that we have preferred energy options, namely solar, wind, improved efficiency and storage.

In response to recommendations of the report:

Water

Recommendation 7.6: That in relation to other potential shale gas basins in semi-arid and arid regions, **all groundwater extraction for any shale gas production be prohibited** until there is sufficient information to demonstrate that it will have **no adverse impacts** on existing users and the environment.

How can industry demonstrate no adverse impacts? Best possible would be no adverse impacts in time frame available, using measurement techniques available. It is much easier to demonstrate adverse impacts than no adverse impacts, and it would be useful to have a standard.

Recommendation 7.7: That the following measures be mandated to ensure that any onshore shale gas development does not cause unacceptable local drawdown of aquifers:

- **companies be required to 'make good' any problems if this drawdown is found to be excessive** (that is greater than 1 m)

Recommendation should be more specific than "make good".

Land

Recommendation 8.16: Consideration be given to **the feasibility of using the existing Adelaide - Darwin railway line to reduce heavy-vehicle road use**;

It is important both that industry bears the costs to our roads and to our rails, while also promoting rail as the cleanest and safest form of transport.

Greenhouse gas emissions

Data for Australia are given but NT profile is completely different with much higher proportion of emissions from agriculture and land use. NT electricity emissions are relatively small since our population is low relative to land area.

9.3: Greenhouse gas
That **baseline monitoring of methane concentrations be undertaken for at least one year prior to the commencement of shale gas production on a production license.**

Does this mean that methane levels are measured prior to granting of production license? If so, then who defines exactly when production commences in order to ensure this is measured for one year prior to commencement?

Has the panel considered the possibility of methane emissions from exploration, and that methane concentrations should be measured prior to exploration?

There are risks both of accidental release of methane through exploration processes and the possibility for deliberate methane release in order to obscure methane release during the production phase.

9.5.6: Monitoring methane emissions: Toward a code of practice

"Baseline monitoring should be conducted at least a year prior to production (and desirably exploration) to ensure that seasonal variations are captured."

In an environment of high levels of climate variability, exacerbated by extreme weather events of increasing frequency due to climate change, DEA believes that 12 months may be inadequate. As identified by Aboriginal people and others who have lived here for some time, to understand the nature of Australia a much longer time frame of observation is needed. Jessica Weir describes the different time scales of Aboriginal and non-Aboriginal people's connection to and assessment of the land, in relation to the Murray River in "Hope and Farce." River flow should be considered on a decadal scale.[12] We propose that 5 years of monitoring would permit at least understanding of whether there is year-to-year variability and whether even longer monitoring is required before a level can be accepted as baseline.

Recommendation 9.7
That the action framework outlined in Table 9.10 be implemented to mitigate any supplementary risks that may prevent the achievement of lower levels of fugitive methane emissions.

Page 218 states "It is not necessary to formally invoke the precautionary principle."

Precautionary principle should indeed by formally invoked. The precautionary principle states:
"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (page 357 of the Draft Final Report)

Invoking the precautionary principle would lead to recognition that the threats of fracking – serious or irreversible damage – exist. Thus lack of full certainty should not be a reason for development of this industry.

The table 9.9 states that GHG emissions from any new shale gas field in the NT must make a negligible impact on global climate warming. Negligible impact is defined as a "contribution to global Anthropogenic GHG and methane emissions from a new gas field in the NT must be 0.1% or less."

We cannot afford for any single industry to contribute 0.1% (1/1000) of global emissions. We must urgently reduce emissions, not develop new industries based on fossil fuels.[4]

10.1: Public Health

"The key issues addressed here are **whether any of the public health impacts** identified can be **attributed to specific causal factors** in the environment resulting from activities associated with hydraulic fracturing to recover gas from deep shale deposits in the NT."

DEA recommends that the panel consider the possibility of non-specific causal factors, such as general impacts of industrialisation, and solastalgia, or loss of places of solace.[13] *These require some form of recognition.*

Overall, many diseases and conditions that are becoming more common do not have specific identified causal factors: depression, chronic fatigue syndrome, many cancers and even overweight and obesity are the outcome of general effects of the environment that humans are creating. Thus assuming that specific causal factors require identification may underestimate health risks of fracking.

In order to avoid conflict with industry, baseline testing is required for the range of chemicals considered responsible for health effects: (BETX Nox particulates VOCs PAHs formaldehyde etc.). This will complement the other recommendation to prevent direct health damage, namely that wellheads be set back from human habitation by not less than 1600 metres – estimated from the one mile in the Webb reference.

11.1 Aboriginal people and their culture –

We suggest we consider Aboriginal cultures, plural, in recognition of the diversity of Aboriginal people across NT.

> "Many submissions to the Panel noted that, without appropriate mitigation measures, the development of any onshore shale gas industry may damage sacred sites and cause conflict within Aboriginal communities and between Aboriginal people and the shale gas industry."

It is arguable that appropriate mitigation measures do not exist and that development of any onshore gas industry is inherently damaging to sacred sites, risking of conflict. Thus there is no possible mitigation, and this statement would be supported by a recommendation to extend the moratorium indefinitely.

Page 255 from the Draft Final Report:

> Currently, the only condition placed on petroleum permits by the Minister for Resources is that, "Prior to carrying out any work in the permit area the permittee must consult with the Aboriginal Areas Protection Authority and inspect the Register of Sacred Sites. A permittee wishing to carry out work may apply for an Authority Certificate."
> It is clear that gas companies are electing not to get an Authority Certificate to undertake petroleum activities."

Hence Recommendation 11.1 – That gas companies be required to obtain an Authority Certificate prior to undertaking any onshore shale gas activity.

This highlights the question of sincerity of companies in their engagement with Aboriginal peoples, and the possibility that they are ticking the boxes, and following legislation without the following all legal frameworks for the protection of Aboriginal lands in NT.

12. Social impacts

12.15 That ongoing monitoring and measurement of social and cumulative impacts be undertaken with the results publicly available.

Could an example of such reporting be provided? For this information to be useful there needs to be on-going communication between industry and users of the information.

15. Strategic regional environmental and baseline assessment

15.2.5 Public health
Baseline data needs to be obtained on the frequency and duration of the occurrence of symptoms commonly associated with irritant substances (for example, sore eyes, respiratory irritation, and asthma).

It is important that this data is collected before any drilling, fracking and flaring, rather than once exploration has occurred. There is a tension between privacy and the community's right to not be under surveillance, while the impact of fracking is monitored. Issues of population mobility also require attention, as people may be exposed then leave the area without recognising their exposure.

Conclusion

To date the Inquiry has heard widespread concern about the risks of fracking, and has identified regulatory options that may mitigate and minimise these risks. DEA believes that for NT, such a response is premature, overly optimistic, and overlooks climate change which is the greatest threat to human and economic health that we face. We recommend that the moratorium be extended indefinitely, and we anticipate that this will contribute to NT following the leads of Victoria and South Australia in renewable energy.

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