



Arid Lands Environment Centre (ALEC) Submission to the Northern Territory Hydraulic Fracturing Inquiry

June 2014

The Arid Lands Environment Centre (ALEC) is the peak regional environmental organisation servicing central Australia. ALEC is a community-based organisation, developing and delivering environmental and sustainability programs in Central Australia. For more than 30 years, ALEC has advocated for the conservation and responsible management of land, water and natural resources in the arid lands. Before continuing, on behalf of ALEC, I acknowledge and pay respects to the Elders past and present upon whose land we are lucky enough to be living on and ask that the Commissioner not solely rely on the submissions he receives but to go out and speak to people in the communities and ask them about the groundwater and whether the process of hydraulic fracturing should proceed or not. I have spoken to some, and they are very concerned by fracking. Please consider that this submission-based process of inquiry will not capture their thoughts and concerns and I urge you to speak to the Central and Northern Land Councils to arrange the opportunity to do so.

I also want to acknowledge the Minister for the Environment, Peter Chandler for calling for this public inquiry and the Northern Territory Government for the opportunity to participate in it. ALEC, along with many other Territorians are strongly concerned by the current government's approach to hydraulic fracturing and shale gas. While welcoming this inquiry, it is difficult to know what its value will be when the recent NT Budget allocated \$8 million over 4 years to assist in developing the shale gas industry in the NT. This is compounded by the fact that there remains no comprehensive water-planning framework across the NT. ALEC has some concerns around the purely technical nature of the inquiry which is backed by statements made by the the Mines and Energy Minister Willem Westra Van Holthe at the 2014 AGES Conference through his Director of Mines and Energy:

'The recent announcement of a public Inquiry into fracking in the Territory is designed to provide certainty for the industry to proceed under a leading practice regulatory environment.

However, one key point to note is that it is my intention that the conduct of this Inquiry will not affect current approvals processes in the oil and gas sector. Applications for tenure and for exploration and production licences will be processed as they have been before the announcement of the Inquiry.

I want to be very clear on this; despite calls from environmental lobby groups and others who have concerns about the practice, there will be no moratorium on hydraulic fracturing in the Northern Territory.'

This is a conflicting position with the Minister for Mines and Energy Minister is also the Minister for Land Resource Management and hence groundwater regulation. The Minister's obsession with the 'Golden Age of Gas' comes at the expense of the Northern Territory's groundwater supplies. This itself warrants a public inquiry into water planning, regulation and management in the NT. Without an adequate water planning and management framework, the potential cost to Territorians as a result of this current push for shale gas exploration and extraction is catastrophic. The potential impact of remote and invasive gasfields currently exempted from the Water Act and Waste Management and Pollution Control Acts; potentially exempted from individual and public Environmental Impact Assessment processes and there has been no progress to date on developing the draft Petroleum Regulations (Environment Management and Resource Management) http://www.nt.gov.au/d/Minerals_Energy/Content/File/Petroleum/LegislationReviewPetroleum.docx is risky business. There is nothing in the current Northern Territory government framework for the adequate assessment or approval of unconventional gas projects or for the on-going monitoring and compliance measures to assure Territorians that this gas rush won't come at the expense of our groundwater, the lifeblood of the Northern Territory and our climate. I urge the Commissioner to recommend a moratorium on approvals that involve hydraulic fracturing (including exploration) until an adequate regulatory framework is in place. Anything less threatens our precious groundwater supplies and provides long-term uncertainty for both the gas companies and the community.

Groundwater dependent Territory

The Northern Territory is the most groundwater dependent jurisdiction in Australia with over 90% of all water used being sourced as groundwater. Groundwater is a public resource owned by the Crown with authority to grant extraction licences delegated under the *Water Act*. Mining and petroleum activities are exempted from both the Water Act and the Waste Management and Pollution Control Act.

The approach to groundwater allocation by the current Territory Government has prompted calls for a public inquiry (<http://www.theaustralian.com.au/news/latest-news/inquiry-urged-over-nt-water-licenses/story-fn3dxiwe-1226920605392>) and the process to select members of the NT Catchments Advisory Committee has also raised questions about transparency, accountability and trust (<http://www.abc.net.au/news/2014-05-19/territorians-gather-for-community-water-forum/5460874>).

The dependence of the Northern Territory on groundwater for consumptive use, stock watering and environmental health and the current government's approach to water allocation and enthusiasm for extracting shale gas from below aquifers is cause for concern. Given that access to clean water is considered by the United Nations to be a human right, the current Northern Territory Government's approach to groundwater could see charges of human rights abuse, environmental destruction and possible corruption being levelled if contamination of aquifers results from approvals of fracking and gas extraction under the currently inadequate regulatory regime.

Recommendation 1: That a moratorium on hydraulic fracturing is called until a rigorous and robust water planning and management process is developed.

This would include:

- **The removal of exemptions for mining and petroleum activities under the *Water Act* and Waste Management and Pollution Control Act.**

- **A public inquiry into water allocation and licence approvals since August 2012**
- **The reinstatement of Strategic Indigenous Reserves**
- **Publicly funded independent assessment of the Territory's groundwater resources, surface-groundwater interactions, climate projections and future needs.**

Inadequate NT Regulatory Framework

The Northern Territory does not have an adequate regulatory framework to assess, approve or monitor hydraulic fracturing projects. The interaction of the *Petroleum Act and Environmental Assessment Act*, with the exemptions to the *Water Act and Waste Management and Pollution Control Acts* is not clear. The process for approval of exploration and production licences is not transparent. Freedom of Information requests to the Department of Mines and Energy (DME) are expensive (more than \$2400) and attempts to understand what decision-making processes are employed are effectively thwarted. This is not a demonstration of an open and accountable government process.

The review of the Petroleum Act in 2013 made 26 recommendations. A number of these recommendations referred to the drafting of the Petroleum Regulations (Environment Management and Resource Management). Almost 12 months after the June 2013 Progress report - there is still no evidence that any more progress has been made (http://www.nt.gov.au/d/Minerals_Energy/index.cfm?header=Legislation). The relationship between the DME and the NTEPA is not clear. The NT EPA 'expects to use the outcomes of the inquiry to develop environmental assessment guidelines or standards to assess and manage fracturing activities in the Northern Territory.' (<http://www.ntepa.nt.gov.au/news/2014/hydraulic-fracturing-inquiry>). It is hoped that the outcomes of this inquiry provides a strong foundation for assessment of unconventional gas projects. However, confusion reigns where NTEPA Chair Dr Bill Freeland stated on the NT 7.30 Report that this inquiry may enable fracking projects to proceed without the need for individual environmental impact assessments (<http://www.abc.net.au/news/2014-03-29/fracking-inquiry-may-bypass-need-for-individual/5354280>). Again, this reinforces Recommendation 1 to enforce a moratorium until an adequate regulatory framework is developed.

The current 'one stop shop' arrangements between the Territory and the Commonwealth will see a larger role for the NT EPA in carrying out the assessments and approvals process in regards to environmental issues of national significance. The paradox of this process is that the NT EPA is responsible for the assessment and approvals process but the compliance monitoring is carried out by the DME, the agency responsible for the promotion and facilitation of the mining and gas industries. The compliance team within the DME is not adequately resourced to perform the huge monitoring task across some of the most remote places in Australia. The process for environmental compliance monitoring must be adequately resourced and would be best placed with an independent body such as the NT EPA rather than the highly conflicted Department of Mines and Energy. The importance of independent compliance monitoring by the NT EPA ensures that assessments and approvals are not simply granted and handed to another agency to

enforce. An accountability loop would be created rather than an accountability loophole that is currently the case, where it is unclear as to whom the NT EPA Board is accountable to and what is the process to implement recommendations for reform.

Recent approvals for onshore oil and gas projects have proceeded without any opportunity for the public to engage in the process. The NT EPA has developed guidelines to make it easier for gas companies to avoid public scrutiny in the application for exploration or production licenses. It is unclear as to what the processes are for deciding whether a project should submit a Notice of Intent to the NTEPA or not (http://www.ntepa.nt.gov.au/_data/assets/pdf_file/0011/349940/guideline_assessment_petroleum_exploration1.pdf).

ALEC has deep concerns for the lack of process and involvement of the NT EPA in the exploration phase of unconventional gas projects. The use of hydraulic fracturing for the exploration of shale gas and the fact that many wells drilled during the exploration process become production wells demonstrates a strong need for shale gas exploration to be subject to an environmental impact assessment process.

Recommendation 2: That projects employing hydraulic fracturing (including exploration) are assessed and approved through public Environmental Impact Assessment processes by the NT EPA.

Recommendation 3: That the NT EPA be resourced to undertake compliance monitoring of projects employing hydraulic fracturing (and general mining projects).

Recommendation 4: Compliance monitoring should be funded as a 'user pays' system where mining and gas companies contribute 1% of their income to a government-owned fund to support compliance monitoring by the NT EPA. This effectively closes the accountability loop between assessment and approval processes and compliance monitoring of resource projects.

Water use and pollution risks

The Northern Territory is dependent on groundwater. Whether for consumptive use, stock watering or environmental health - groundwater is the lifeblood of the Northern Territory (the Department of Land Resource Management states this on the website - though recent water allocations and the Minister's views don't seem to reflect this). Hydraulic fracturing is the single biggest risk facing the groundwater supplies for the Northern Territory. The huge volumes of water used per frack are in the order of megalitres (millions to tens of millions of litres) and result in the permanent injection of toxic chemicals below the surface, a detailed list of chemicals used can be viewed at QGC website <http://www.qgc.com.au/environment/environmental-operations/chemicals-used-in-hydraulic-fracturing.aspx>.

Recommendation 5: All companies conducting hydraulic fracturing operations must submit a list of all chemicals being used in each 'frack'. This information should be made available to the public via the EPA or DME website prior to each fracking operation.

The current lack of knowledge of the Territory's groundwater resource is well known (see Power Water Corporation Submission – June 6). The recent resignations of long-term water planners and hydrogeologists from the Department of Land Resource Management have left a large gap in knowledge of the underground aquifers and surface-groundwater interactions. The current lack of clarity around the water planning framework and the gaps in knowledge of groundwater levels and quality across the NT leaves the groundwater resource vulnerable to over-extraction and contamination. This is compounded by the Federal government abolishing the National Water Commission, which provided a level of oversight to water management in Australia. The NT is well known for having the weakest water protective legislation in the country.

Recommendation 6: That the Department of Land Resource Management reviews, implements and reports back on progressing the recommendations in the Northern Territory Groundwater Stocktake 2011

(http://www.territorystories.nt.gov.au/bitstream/handle/10070/247395/Northern_Territory_Groundwater_Stocktake_WRD11031.pdf?sequence=1&isAllowed=y) including:

- **Filling data gaps**
- **Developing a strategic approach to water allocation planning**
- **Developing a coherent approach to monitoring between areas and the integration of groundwater and surface water.**

The Department of Mines and Energy's and various hydrocarbon-related companies have acknowledged the potential for groundwater pollution, although the risk is reportedly low by these vested interests. ALEC has strong concerns about the pollution risk to groundwater by fracking in the Northern Territory.

Hydraulic fracturing has the potential to contaminate groundwater through:

- Faulty well design and construction
- Cracks and opening of faultlines leading to aquifer leakage
- Movement of radionucleotides
- Salination of bores and aquifers
- Salination of surface water through flooding of containment ponds
- Fugitive emissions moving through aquifers and sedimentary layers and;
- Surface spill seepage.

Although the reported risk of groundwater contamination by companies is low, the sheer volumes of chemicals used and the numbers of projected wells is immense. For example a 1% chemical mix x 20ML water = 200 tonnes of chemicals injected per frack and a risk of well leak reported between 0.03%-0.005% x 68 000 wells = 12-20 leaking wells in the NT as an absolute minimum. Despite the confidence of project proponents that any problem can be technically 'fixed', this is not true, as many geological anomalies cannot be engineered and every frack is technically an experiment. The other consideration that needs to be addressed is the 'cowboy' culture of the Northern Territory, which has already led to a spill on the Plenty Highway (<http://www.abc.net.au/news/2014-06-04/hydrogen-sulfide-spill-highlights-need-for-regulations/5498890>, where Worksafe NT is investigating a number of issues. The salination and pollution of surface water and hence groundwater is most likely to occur from flowback fluid and spills being washed downstream from flooding events. ALEC is concerned that this issue is not adequately addressed through the

Environmental Management Plans required for Petroleum Exploration Licensing (see Recommendation 2).

Recommendation 7: That companies exploring for hydrocarbons using hydraulic fracturing must conduct baseline water testing within the tenement and across a 1km diameter outside of the tenement prior to fracking and regularly (6 monthly) for the life of the operation.

Recommendation 8: That companies seeking to conduct hydraulic fracturing operations within 20km of human settlements (homesteads, outstations and communities) must pay for baseline water quality testing undertaken by Power Water Corporation or agency responsible for water provision prior to any fracking operations; and 6-monthly on-going for the life of the operation.

Recommendation 9: That the Petroleum Act is amended to require companies exploring for shale and tight gas in the Northern Territory pay environmental bonds as part of the exploration licence application rather than at the production licence application stage.

Fracturing community and country

ALEC has serious concerns about the damaging impacts that fracking has on local communities. The experience from the United States is documented in the article *The underground economy of fracking* by Hamish McDonald (http://www.thesaturdaypaper.com.au/news/economy/2014/06/07/the-underground-economy-fracking/1402063200#.U6_tfRaEJJJ). The environmental impacts of fracking warrant community responses in opposition to the industry and this creates division. The use of fracking in the exploration phase of gas mining adds to the list of environmental threats posed by the industry. Seismic surveys, road construction, drilling, well construction and hydraulic fracturing all have negative impacts on the environment. The remoteness and variable condition of roads in the NT increase the chances of accidents and spills. These are issues that concern many people within local communities. However, the promise of jobs and economic growth creates divisions where those who stand up for the environment or the protection of country are lauded as 'anti-development' and are marginalised by the NT Government.

The challenge for the gas companies and the Northern Territory Government are to prove that hydraulic fracturing is safe. Not simply tell us that it is safe and place the burden of proof on environmental organisations and concerned community members. The burden of proof must be placed on the NT Government and the gas companies. The current approach by the NT Government is not in the long-term interest of the community. This inquiry represents an opportunity for issues to be aired and addressed and is a great step forward. But if this process is shown to be intended solely to 'provide certainty for the industry' thus shifting the costs on to the community – then this will be seen as a massive breach of trust. This is the major issue with hydraulic fracturing – there is very little community trust in the process, the regulatory framework and the ability of companies to 'engineer' every potential problem or risk. Without community trust, there will be no social license to operate and hence grounds for community resistance to shale gas operations.

Recommendation 10: That the NT Government publicly acknowledges the environmental risks of hydraulic fracturing and seeks to understand rather than undermine community concerns through developing dialogue with environmental organisations and concerned community members.

The big issue for the Northern Territory is a large proportion of new companies and international companies have been given approval to frack but do not seem concerned with having a social license to operate. Most areas of operation are remote and far from regional centres. Far away from scrutiny and oversight— and it is up to the individual company and its own policies and operating procedures as to what is reported and how work is conducted. The current risk is that the *laissez faire* attitude of the Northern Territory Government affects the attitude of companies and contractors. ALEC hopes that the industry can prove that it does want to gain a social license to operate in the Northern Territory rather than the sense of entitlement that is being displayed in the media by the likes of APPEA.

The Northern Territory Government must accept responsibility for the growing distrust of the industry by the community. Cutting operational funding to both the Arid Lands Environment Centre and Environment Centre NT demonstrates that the NT Government is taking a ruthless approach to the development of this industry at the cost to community organisations working to educate the public to the inherent risks associated with fracking. It is undeniable that there are significant pollution risks associated with this invasive process. The NT Government must acknowledge this risk and halt the approval of exploration licenses that are likely to use hydraulic fracturing until a robust regulatory framework is in place (Recommendation 1).

ALEC also has concerns that Aboriginal landowners are not being given balanced information about the risks of fracking. It was recently reported in the NT News that information being given to Traditional owners stated that most chemicals used in fracking are 'commonly used in the house' (<http://www.ntnews.com.au/business/aboriginal-body-in-push-for-fracking-in-nt-desert-assures-locals-most-chemicals-used-in-fracking-are-commonly-used-in-the-house/story-fnk2tq5v-1226955811938>). ALEC has strong concerns about this, as it seems that the APPEA information sheets have been reproduced and distributed. ALEC has approached the CLC Mining Division and requested that the environmental impacts of hydraulic fracturing are made clear to traditional owners. ALEC has also requested that balanced environmental information is produced and provided. The conversation is continuing. The costs of this should be borne by the industry and NT Government rather than adding costs to already stretched environmental organisations. ALEC also strongly believes that Strategic Indigenous Reserves for water should be reinstated. This provides aboriginal landowners the opportunity to access water for economic development. The current approach is not allowing potential benefits to flow to First Nations people while the water and gas underneath them are extracted for the benefit of company shareholders at the expense of local communities.

Recommendation 11: That the environmental risks of hydraulic fracturing are reported to Traditional Owners through Land Councils working with environmental organisations to produce culturally appropriate information. The cost of this should be borne by the industry and Northern Territory Government.

Recommendation 12: That Strategic Indigenous Reserves for groundwater are reinstated and included in water allocation plans.

The prospective industrialisation of the Northern Territory will negatively impact on both the pastoralism and tourism industries. Pipelines, seismic lines, new roads, more trucks, drill rigs, oil rigs, gas treatment plants – the list goes on, will all impact on the landscape and people connected to it. Pastoralists will be impacted by the increased traffic, dust, noise, need for new fencing, groundwater levels and quality, the spread of weeds and other impacts of exploration and gas extraction. ALEC understands that the NT Cattlemen's Association is developing 'access agreements' for pastoralists to engage with companies contractually. ALEC is not aware of the content of these access agreements but is supportive of pastoralists being given the opportunity to enter into constructive dialogue with these companies. ALEC's concern is that many pastoralists are not aware of the risks that hydraulic fracturing poses to their own businesses and livelihoods. It is hoped that the NTCA is providing opportunities for support to pastoralists who are not happy with the developments and do not seek to enter into access agreements. The other main concern for pastoralism is the impact that invasive gas fields will have on the organic accreditation of Territory beef. Will Territory farmers be able to obtain organic accreditation if they have gas wells on their property or next door?

Recommendation 13: That the NT Government conduct research to explore the risks of the shale gas industry to the Territory's organic beef industry.

The tourism industry in the Northern Territory is one of the three economic hubs that the CLP campaigned on in the 2012 election. Mining, agriculture and tourism - the problem with the current approach to hydraulic fracturing is that agriculture and tourism are pushed to the side. Tourists come to the NT to see some of the world's most intact landscapes and experience the wonder of the cultural and natural landscape. The proposed industrialisation of these landscapes will negatively impact on the tourism industry. People come to experience the wild of the Territory – not the gas wells.

Recommendation 14: That the NT Government conduct a cost-benefit analysis on the impact of the shale gas industry on tourism in the Northern Territory.

ALEC also has serious concerns about the risk of subsidence and earth tremours as a result of hydraulic fracturing. It is a well-documented issue associated with fracking. The risk that fracking poses is increased seismicity – which increases the risk of earthquakes and tremours near waste-water injection sites. A recent study in the United States has linked remote earthquakes to localised tremours (<http://www.sciencemag.org/content/341/6142/164>, <http://www.abc.net.au/science/articles/2013/07/12/3801578.htm>). This means that the risk of earthquakes is increased by the injection of fluids into faultlines. It is not known what the impacts of this will be but it is critical that more is done to investigate the impacts of fracking on the seismicity of the Northern Territory

Recommendation 15: That the NT Government and Geoscience Australia investigate the potential risks of increased seismicity as a result of hydraulic fracturing in the Northern Territory.

Territory benefits?

ALEC is concerned that Territorians are only being told half of the story when it comes to the benefits of the emergent shale gas industry. More jobs, local economic benefits, and reduced cost of living are the benefits sold to Territorians in support of the industry. The industry is based on a Fly In Fly Out (FIFO) specialist workforce with limited positions for low-skilled local workers. The local economic benefits of the mining industry do not flow on to the rest of the economy thus creating a two-speed economy. This is becoming evident in the Northern Territory, where resources led growth is failing to translate benefits to the rest of the economy.

The removal of the domestic gas reserve by the current NT Government will expose Territorians to significant price rises for gas-fired electricity as Territory gas reaches the national and international markets. The lobbying of the gas industry, particularly APPEA, for the removal of domestic reserves is purely about profit making for the industry, not cost of living for Territorians.

The investment in fossil fuel development in the Northern Territory comes at the cost of investing in renewable energy. The NT Budget commits \$8 million over 4 years to developing the shale gas industry but commits nothing to developing the renewables sector.

The current gas rush being pushed by the NT Government is of serious concern. Despite the rhetoric, there is no evidence to suggest that the NT will have cheaper electricity as a result of the development of the shale gas industry. The promises of the industry are plentiful but without a robust regulatory system in place— Territorians are being made to shoulder the risk.

Recommendation 16: That a Northern Territory Sovereign Wealth Fund is established to ensure the monetary benefits of the gas rush are shared for the long-term future of the NT.

Fugitive Emissions and climate change

The Northern Territory Government does not have a climate change policy. There is no plan to reduce emissions. There are no policymakers working on climate mitigation or adaptation. There is no acknowledgement that climate change is an issue and no indication that the NT Government is looking at doing anything about it. This approach is culpable at best and criminally negligent at worst. Climate denial is the current climate policy of the current NT Government and this will have substantial long-term impacts for the Northern Territory.

Recommendation 17: That a moratorium on shale gas development is implemented until a climate change policy to reduce the emissions of the Northern Territory is developed.

In relation to hydraulic fracturing, ALEC is alarmed that shale gas development is being pursued unhindered while renewable energy and energy efficiency is not invested in at all. Northern Territorians are the highest emitters of carbon per capita, more than twice the national average (<http://www.ecnt.org/campaigns/carbon-pollution>). Yet the NT Government is not doing anything about it. Instead, a huge gas rush is being supported without any regulatory infrastructure to mitigate the long-term impacts of the shale gas industry. ALEC is concerned that very little is known in Australia about the impacts of

fugitive emissions both on water quality and air quality. ALEC recommends that the inquiry consider a number of articles in the most recent Science journal <http://www.sciencemag.org/content/344/6191/1464.full> to which the entire issue is dedicated to *The Gas Surge*. The shale gas industry is still in its infancy and despite assurances – each and every frack is a real-world experiment. No one really knows what will happen when they frack a well. As with all experiments, things go wrong, unexpected things happen. Therefore, it is critical that the NT Government regulates to ensure that there is a safety net. The current lack of policy and regulation will expose the Territory to the worst kind of threats - groundwater contamination, increased seismicity and climate impacts.

As a minimum, all shale and tight gas projects requiring hydraulic fracturing should be seeking to offset and measure its emissions.

Recommendation 18: That the NT Government mandates Territory-based environmental and carbon offsets for all shale gas projects.

Recommendation 19: That carbon emission reporting is required for all Environmental Management Plans and Environmental Impact Assessments.

Recommendation 20: That fugitive methane emissions are measured and counted as part of the emissions profile of the industry.

Conclusion

ALEC welcomes the opportunity to make comment on this important inquiry into hydraulic fracturing. Despite the technical focus of the Terms of Reference, ALEC requests that the Commissioner look beyond the technically feasible into the environmentally and socially acceptable. The current situation in the Northern Territory contains large regulatory gaps leaving Territorians exposed to an experimental industry that has the potential to contaminate its groundwater, treble climate impacts and increase seismic risk. ALEC is very concerned about the current government's approach to developing the shale gas industry. The 'open for business' mantra will not protect our aquifers, our clean air or stable geology for future generations. There are no guarantees with the shale gas industry. Therefore, ALEC recommends that a moratorium on hydraulic fracturing and shale gas exploration be enforced until it can be proven to be safe. In the absence of an immediate moratorium I urge you to consider the 20 recommendations made throughout this submission when making your own.

Thank you and good luck!

Kind regards

Jimmy Cocking
Director

Arid Lands Environment Centre
director@alec.org.au
08 8952 2497

LIST OF RECOMMENDATIONS

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This would include:

- **The removal of exemptions for mining and petroleum activities under the *Water Act* and Waste Management and Pollution Control Act.**
- **A public inquiry into water allocation and licence approvals since August 2012**
- **The reinstatement of Strategic Indigenous Reserves**
- **Publicly funded independent assessment of the Territory's groundwater resources, surface-groundwater interactions, climate projections and future needs.**

Recommendation 2: That projects employing hydraulic fracturing (including exploration) are assessed and approved through public Environmental Impact Assessment processes by the NT EPA.

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