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Submission to the Northern Territory Government's inquiry into hydraulic fracturing

April 2017

Submission contact:

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Secretary

Hydraulic Fracturing Taskforce
GPO Box 4396
Darwin, NT 0801, Australia

Email: fracking.inquiry@nt.gov.au

30 April 2017

Dear Secretary,

Consolidated Pastoral Company (CPC) welcomes the opportunity to make a submission to this inquiry into hydraulic fracturing in the Northern Territory.

CPC would welcome the opportunity to appear before the committee to expand on this submission.

Yours sincerely,

Troy Setter

Chief Executive Officer

Consolidated Pastoral Company

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Terms of reference

The Inquiry will:
1. Assess the scientific evidence to determine the nature and extent of the environmental impacts and risks, including the cumulative impacts and risks, associated with hydraulic fracturing of unconventional reservoirs and the Associated Activities in the Northern Territory;

2. Advise on the nature of any knowledge gaps and additional work or research that is required to make the determination in Item 1, including a program for how such work or research should be prioritised and implemented, that includes (but is not limited to);

a) baseline surface water and groundwater studies,
b) baseline fugitive emissions data,
c) geological and fault line mapping, and
d) focus areas for baseline health impact assessment,

3. For every environmental risk and impact that is identified in Item 1, advise the level of environmental impact and risk that would be considered acceptable in the Northern Territory context;

4. For every environmental risk and impact that is identified in Item 1,

a) describe methods, standards or strategies that can be used to reduce the impact or risk; and
b) advise whether such methods, standards or strategies can effectively and efficiently reduce the impact or risk to the levels described in Item 3;

5. Identify any scientific, technical, policy or regulatory requirements or resources that are in addition to the reforms being implemented through the existing environmental reform process that are necessary to reduce environmental risks and impacts associated with the hydraulic fracturing of unconventional reservoirs to acceptable levels; and

6. Identify priority areas for no go zones.
When the Inquiry makes a determination under Item 1 about whether or not there has been an impact or risk on economic, cultural and social conditions, the Inquiry will not only consider the impacts and risks of hydraulic fracturing and the Associated Activities, it will also consider the impacts and risks of the development of the onshore unconventional gas industry, including exploration activities such as seismic surveys and aerial surveys, land access and costs and benefits of the industry. This may be undertaken through a social impact assessment or similar activity.

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Summary

The issues paper released by the Taskforce identifies the potential risks that must be addressed before the Government lifts the moratorium on the use of hydraulic fracturing by the shale gas industry in the Northern Territory.

This submission seeks to identify the possible impact hydraulic fracturing may have on Consolidated Pastoral Company's (CPC) access to clean ground and surface water, the productive capacity of our pastoral leases and therefore, the performance of our properties, herd and the quality of the plants and meat we produce and the health of our workers if the risks identified in the issues paper are not addressed fully.

The submission does not seek to address the science around the risks from fracking; we leave that to the experts.

While all nine areas of risk identified in the issues paper are relevant to CPC this submission focuses on water, land – including land access, the economic impact fracking could have on our business, the regulatory framework and public health.

Water is a key input into beef production. CPC relies on groundwater to meet 90 per cent of its water needs. CPC considers water to be a scarce resource and we continue to invest in expanding water infrastructure to improve water security and water quality across our Territory leases for that reason.

CPC is responsible for protecting the economic and environmental values of 3,173,000 hectares across 10 pastoral leases in the Territory. CPC must have control over both access to and the use of this land if it is to meet its responsibilities as the custodian.

Any adverse impact on access to groundwater or the quality of groundwater would have a significant impact of CPC's business. Further, any changes in land use on pastoral leases that limited the productivity of the lease would have an adverse impact on the viability of our enterprise and local communities.

In our view an effective regulatory framework ensures there is an appropriate balance of the rights of all stakeholders and the natural environment. That requires landowners or leaseholders to have the power to refuse access to their land.

The issues paper lists the potential risk factors associated with the hydraulic fracturing of onshore unconventional shale reservoirs and its associated activities on public health. CPC has a legal and moral obligation to look after the welfare of its employees and their families and therefore would need to be certain those risks have been addressed before agreeing to energy companies accessing its properties.

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Consolidated Pastoral Company (CPC)

CPC is the biggest private beef producer in Australia with an enterprise value in excess of $950 million.

CPC owns and operates a portfolio of 16 cattle stations with a carrying capacity of 367,500 head of cattle across Northern Australia. In the Northern Territory, we hold 10 pastoral leases with a carrying capacity of around 200,000 cattle.

The company is a significant contributor to the Northern Territory economy and employment with an annual turnoff of some 70,000 cattle for the live export trade, the boxed beef export sector and the domestic processing industry. CPC also purchases a significant number of NT cattle for our feedlots in Indonesia.

Water and land are the key inputs into the northern pastoral industry. CPC is a major user of both ground and surface water with our herd consuming an estimated 2,400 megalitres annually.

As the holder of 10 pastoral leases CPC is responsible to the sustainable management of ~3.2million hectares. We also provide a significant public good preserving terrestrial ecosystems and biosecurity through responsible land management practices for which we receive no direct compensation.

The Taskforce issues paper also identifies possible risks to public health from hydraulic fracturing. As a significant employer in the Territory CPC is concerned by the potential risk to the health of its staff posed by fracking.

Therefore, an adverse impact on water quantity or quality and land use by the pastoral industry from the regime for the regulation of shale gas extraction that flows from the Taskforce report, could have implications for the both the Territory economy, rural workers and the natural environment.

Hydraulic fracturing: the risks

CPC notes that in the issues paper the Taskforce identified the potential risks that it considers relevant to the inquiry.

They cover nine themes:

- water;
- land;
- air;
- public health;
- impacts on Aboriginal people and their culture;
- social impacts;
- economic impacts;
- land access; and
- regulatory framework.

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While all nine areas of risk from fracking are directly or indirectly relevant to CPC this submission focuses on land – including land access, water, the economic impact of fracking, the regulatory framework and public health.

Land

Sustainable use

The issues paper identifies possible risks that hydraulic fracturing may have on ecosystems, biodiversity, and soil health.
The paper identifies risks as:

- a risk of vegetation loss on a local scale as a result of areas being cleared for roads, pipelines and drill pads or as a result of spills;
- a risk of loss and/or fragmentation of habitat for fauna on a regional scale as a result of road and pipeline construction and operation;
- a risk of adverse impacts on terrestrial ecosystems, including fauna and flora, as a result of changes to water quality and availability;
- a risk of weed invasion as a result of increased traffic;
- impacts on biodiversity and greenhouse gas emissions due to changed fire regimes; and/or
- a risk of adverse impacts on fauna as a result of increased noise and light from petroleum operations.

There may be a risk that the chemicals used in the drilling and hydraulic fracturing process will have an adverse impact on soil health, including as a result of spills of flow-back water.

An adverse impact on terrestrial ecosystems may be a risk to industries that co-exist with the onshore unconventional gas industry, such as agriculture, pastoralism, fisheries and tourism.

CPC and land management

CPC notes the possible risks to the sustainable use of land identified by the Taskforce in the issues paper.

The carrying capacity of our leases is the key to our profitability therefore any negative impact on that carrying capacity flowing from fracking would threaten the viability of our enterprise and local communities where we directly and indirectly employ significant numbers of people from.

Key to maintaining and improving carrying capacity is access to water. Land effectively has no carrying capacity without water of sufficient quality and in sufficient quantity for animal production. Recent research by government agencies and analysis by CPC has underlined the potential for improved productivity with increased water availability for cattle. Demand for good water is increasing and it is likely that this demand for water from pastoralists will continue to increase into the future.

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These risks are also directly relevant to CPC as the company is responsible for protecting the economic values of 3,173,000 hectares across 10 pastoral leases in the Territory by ensuring good soil health and vegetation management.

CPC is also responsible for the preservation of the environmental values of its leases. In fact, CPC has an obligation, under the terms of its pastoral leases, to take all reasonable measures to conserve and protect features of environmental or ecological significance.

In particular, CPC is concerned by the potential threat to terrestrial ecosystems, including fauna and flora, as a result of changes to water quality and availability and the increased risk of weed invasion from a significant increase in traffic movements across the leases.

Carrying capacity is also a function of land condition. Good land condition drives high levels of productivity and good land condition requires healthy soil, the presence of the naturally occurring diverse suite of species across the various land types and few weed impacts.

Land access

The issues paper states the unconventional gas industry has been highly controversial in Australia in large part due to issues around land use conflict and access to land.

The paper notes that in Australia the Crown owns the mineral and petroleum resources beneath the ground and can grant titles to industry, regardless of the ownership of the land on the surface. This has resulted in tensions between those holding proprietary interests in land, on the one hand, and industry requiring access to the land to explore or extract the gas, on the other.

The paper outlines the risks to landowners, occupiers and traditional owners associated with the hydraulic fracturing of onshore unconventional shale reservoirs and its associated activities in the Northern Territory.

These risks include:

- Gas companies not consulting adequately with land owners, occupiers, or traditional owners, in gaining access to the land for exploration and extraction purposes;
- Gas companies entering the land without, where required, obtaining the consent of the landowner, occupier, or traditional owners, causing conflict;
- Gas companies and landowners, occupiers, and traditional owners, do not negotiate mutually beneficial conditions associated with any agreement permitting access; and
- compensation paid for access and/or disturbance to land will not be adequate.

The issues paper also states there may be a risk that if there is an incident in the exploration, extraction or production of any gas, the land may not be properly remediated or the land owners, occupiers, or traditional owners may not be adequately compensated.

There may be cumulative risks associated with some or all of the risks identified above.

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Land access and CPC

As the entity responsible for managing 10 pastoral leases in the Territory CPC considers it necessary to control who has access to its stations and the reason for that access.

In that regard CPC notes the regulatory regime in place in New South Wales.

In that state before any activities can commence, the company must enter into a written access arrangement with the landholder.

As part of this process, the company must also consult with the landholder over where drilling will occur, provide a plan and description of the land they wish to access and a description of what sort of exploration methods they intend to use.

Access arrangements may also include provisions to minimise any loss or interference and landholders are entitled to compensation for loss caused, or likely to be caused, as a result of the activities on their land.

If an access arrangement cannot be agreed to within 28 days, the company may request the landholder appoint a mutually agreeable arbitrator in accordance with the Petroleum (Onshore) Act 1991.

If either party is not satisfied with the arbitrator's determination, they can apply to the NSW Land and Environment Court for a review of the determination.

A Code of Practice for CSG Explorers sets standards for industry when negotiating with landholders for land access.

The NSW Government has appointed a Land and Water Commissioner to provide independent advice to landholders, resource companies, the community and government on mining and coal seam gas activities in the state.

Further, CPC understands that an agreement between Santos and AGL and the NSW Farmers Association gave farmers in that state the right to say yes or no explorers seeking access to their land.

Clearly, the ability to refuse access strengthens the position of the farming community in any negotiation.

Land Access agreements must recognise that the pastoralists families and staff plus the local indigenous people live and work in the landscape. Significant buffers must be provided around living and work areas where no mining or mining related activity can take place.

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Local people will still be living and working in the landscape after the gas has been extracted and will be left to deal with any impacts.

Water

The issues paper identifies the possible risks that the hydraulic fracturing of onshore unconventional shale reservoirs and its associated activities may have on surface and ground water resources.

Groundwater

The issues paper states there may be a risk of groundwater contamination from:

- induced connectivity between hydraulically fractured shale formations and overlying or underlying aquifers;
- surface spills of chemicals;
- flowback water or produced water into near-surface groundwater;
- leaky wells as a result of poor design, construction, operation or abandonment practices or as a result of well degradation over the life of the well;
- re-injection of flowback water, produced water or treatment brines into a groundwater aquifer; and/or
- induced connectivity between different groundwater systems as a result of seismic activity caused by hydraulic fracturing or reinjection of water.

Surface Water

The issues paper states there may be a risk of impacts on surface water quality as a result of the following types of incidents:

- on-site spills, including as a result of extreme weather events such as cyclones and floods;
- spills that occur during transportation of chemicals to or from the site during the development and production phases; and/or
- spills of flowback water, produced water or brines produced by water treatment.

Water supply and distribution (quantity)

The issues paper states that there may be a risk of adverse environmental outcomes as a result of reduced water supply due to the large amounts of water being extracted for use in hydraulic fracturing.

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It states there may be a risk of changes to the timing and/or quantity of surface water flows because of the discharge of produced water, which may be significant particularly in arid to semi-arid landscapes.

There may be a risk to surface water and groundwater flow processes as the result of possible seismic activity caused by hydraulic fracturing or reinjection of water.

The paper states economic changes to water quality, supply and distribution may have an adverse impact on industries that may co-exist with the onshore unconventional gas industry, such as agriculture, pastoralism and tourism.

The paper notes there may be cumulative risks associated with some or all of the risks identified above.

Water and CPC

The carrying capacity of CPC's pastoral leases in the Northern Territory is determined by access to clean water. Groundwater meets around 90 per cent of CPC's water needs.

There are approximately 400 bores across the 10 pastoral leases. Properties are spread across 5 catchments including the Wiso basin that overlies part of the Beetaloo Gas Reserve area. Newry, Auvergne, Bunda and Kirkimbie bores draw from local aquifers but Manbulloo overlies major aquifers including the Tindall Limestone, Jinduckin and Ooloo aquifers (still draws mainly from the shallow local aquifers). Newcastle Waters, Powell Creek, Tandyidgee and Ucharonidge bores draw from local and regional scale aquifers.

The company also relies on surface water on a number of properties. Natural surface water is a vital part of production on all the CPC leases, spreading cattle out during the wet and early dry seasons to utilize feed resources and allow spelling of areas around bores. Dams to harvest some wet season overland flow for use in the dry are especially important on Auvergne, but also part of the water mix on all the leases.

Water consumption

Water is a key input into beef production.

Research undertaken by FutureBeefi found that in northern Australia at 25^{o}C dry cows may drink 40 L daily but this will increase to 70 L at 32^{o}C, and higher during very hot conditions.

Assuming an average water consumption per animal is 50 litres per day and the carrying capacity of up to 200,000 head the annual consumption by CPC's herd in the NT could be as high as 2,400 megalitres. (40 litres per head per day for 170,000 head)

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Water infrastructure

As stated earlier CPC rightly considers water as a scarce resource and continues to invest in water infrastructure to expand production, improve water use efficiency and water security.

For example, in the financial year 2016-17 the company with invest around $8 million in improving access to water, the efficient use of that water and therefore improving the carrying capacity of its 10 pastoral leases.

Those funds are spent on tanks, covering off more bores, using higher flow water pipes to reduce friction and reducing water loss.

CPC does not operate any open bore drains and the vast majority of our dams are fenced with pumps out of those dams into water troughs to reduce the loss of water.

One area of concern to CPC is how water used by the gas industry would be measured and who is responsible for its measurement and, if necessary who would determine how much water can be consumed and how that limit would be enforced.

Water quality

Water quality clearly is important in beef production given that 60 per cent of the body composition of a cow is water.[ii] Clean water is essential in maximising performance factors such as growth, reproduction and milk production.

Water is needed for body temperature regulation and digestion, absorption and the utilization of all other nutrients.[iii]

The quality of groundwater across the Territory is variable. On the Barkley Tablelands, there is significantly large pools underground of good quality water and low quality water. There's significant underground salt caves and when you're putting a bore down for livestock use or for stock and domestic use, you need to be very careful about that water.

Ground water quality across the CPC leases for stock is generally good to fair with most bores having less than 2000mg/L TDS.

Therefore, CPC's biggest concern is that those water caves would be damaged and the water mixed. Effectively we would have significant areas of poor quality water being mixed with the small quantity available of good quality water.

CPC is also concerned about the possible risk to surface water. Onsite spills, including the result of extreme weather events such as cyclones and floods, could mix poor quality water with our environment.

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It is CPC's view these risks could be significant and, without sound scientific evidence that fracking presents zero risk to the integrity of ground and surface water in the Territory, are too great to allow fracking to occur at this time.

Economic impacts

The issues paper states that the development of an unconventional shale gas industry in the Northern Territory will bring with it economic benefits. However, the paper notes the extent of these benefits is uncertain and with any benefits there are likely to be associated detriments and risks.

The issues paper identifies the possible economic risks that may be associated with the hydraulic fracturing of onshore unconventional shale reservoirs and its associated activities in the Northern Territory.

They include the risk that:

- any economic benefits will not be shared by the regions that are directly affected by the industry;
- benefits will not be shared equitably between the gas companies, the government, and the community;
- there will be a decrease or increase in existing property values;
- there may be a risk that there will be an adverse impact on other businesses, such as tourism, fishing, agricultural and pastoral businesses;
- there may be a risk that energy security in the Territory will be jeopardised if the gas is undeveloped;
- any economic benefits will not outweigh economic detriments; and/or
- if not properly managed, any economic benefits will result in 'boom and bust' economic activity.

<u>CPC and viability</u>

Any adverse impact on access to ground water or the quality of ground water would have a significant impact on CPC and the Territory pastoral industry. Further, any changes in land use on pastoral leases that limited the carrying capacity of the lease would have an adverse impact on the viability of the enterprise.

Regulatory framework

The issues paper states that regulatory framework is the principal way by which governments ensure that industries operate in ways that benefit the community as a whole and are in line with community expectations. However, the paper notes there is a risk that the design and

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implementation of any regulatory framework does not meet its objectives and/or does not meet these expectations.

The issues paper lists potential risks associated with the statutory framework regulating the hydraulic fracturing of onshore unconventional shale reservoir as:

Failure to protect the environment;

- Failure to appropriately balance the rights of landowners, occupiers, and traditional owners with those of gas companies;
- Does not adequately mitigate public health risks associated with the unconventional shale gas industry.
- Does not adequately protect Aboriginal culture, values, traditions and communities from risks associated with the unconventional shale gas industry;
- Does not adequately mitigate the social risks associated with the unconventional shale gas industry;
- Fails to ensure any economic benefits are appropriately distributed between the gas companies, the government and the community;
- inadequately monitors or enforces compliance with the regulatory framework;
- Sanctions provided for in the regulatory framework are inadequate or are not utilised by the regulator;
- The cost of complying with the regulatory framework is too high for industry and the industry becomes uneconomic;
- The regulatory framework is needlessly complex; and
- The risk of 'regulatory capture' whereby the regulatory body becomes inappropriately aligned with industry and reluctant to regulate.

<u>CPC and the regulatory framework</u>

CPC notes and agrees with the tests for an effective regulatory framework detailed in the issues paper.

An effective framework balances the rights and obligations of all stakeholders and meets community expectations in relation to environmental management and the mitigation of social risk.

Public Health

The issues paper lists the potential risk factors associated with the hydraulic fracturing of onshore unconventional shale reservoirs and its associated activities on public health.

The main pathway through which chemicals and hydrocarbons will come into contact with humans or livestock is likely to be groundwater and atmospheric emissions.

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Drilling and fracking chemicals

The issues paper states there may be a risk that chemicals used during the drilling and hydraulic fracturing process are harmful to humans and livestock. Further, it states there may be a risk that those chemicals come into contact with humans or livestock via groundwater or atmospheric pathways. While the overall concentration of harmful chemicals in the water is low, the actual amount of chemicals can be significant and may pose a threat to the environment if not properly managed.

Hydrocarbons and BTEX

The issues paper states there may be a risk that hydrocarbons associated with the extracted gas come into contact with humans or livestock via groundwater or atmospheric pathways. It states this may include aromatic hydrocarbons such as benzene, toluene, ethylbenzene and xylenes (BTEX), which have featured prominently in some risk assessments relating to petroleum and unconventional gas extraction, although BTEX is less likely to be a prominent feature of gas extracted from shale deposits. The use of BTEX in drilling and fracking fluids is prohibited in the Northern Territory.

Radioactive substances

The issues paper states there may be a risk that radioactive materials from underground come into contact with humans or livestock as a result of the drilling or hydraulic fracturing process.

Mental health and wellbeing

The issues paper states there may be a risk that the mental health and wellbeing of persons could be affected by an unconventional gas project.

The paper states those factors could include increased costs of living associated with changing property values, access to social services, business failures, increased traffic, effects on the natural environment and concerns about the amenity of the local area.

Diesel fumes

The issues paper states there may be a risk of emissions from plant and equipment, such as diesel fumes from drilling equipment and pumps and from off-site increases in road traffic.

Physical safety

The issues paper states there may be a risk that physical safety may be compromised by factors associated with hydraulic fracturing including road transport accidents and seismic activity.

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Cumulative risks

The paper states there may be cumulative risks associated with some or all of the risks identified above.

CPC and public health

CPC has a legal and moral obligation to look after to the welfare of its employees and their families.

Conclusion

CPC firmly believes the Northern Territory has a number of sustainable and viable industries with significant potential for expansion.

It is our view that beef production in northern Australia could double by 2030 with the right policy settings in place. Beef production is both economically and environmentally sustainable.

These industries, and the communities that they support, should not be put at risk by the approval of an inadequate regulatory regime for hydraulic fracturing in the Northern Territory.

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[i] FutureBeef is a collaborative program for the northern Australia beef industry with partners:

- Department of Agriculture and Fisheries
- Northern Territory Department of Primary Industry and Resources
- Department of Agriculture and Food Western Australia
- Meat & Livestock Australia.

[ii] The Impact of Water Quality on Beef Cattle Health and Performance

Megan N. Brew, extension agent; Jeffrey Carter, assistant professor of Animal Science; and Mary K. Maddox, biological scientist; Department of Animal Sciences, UF/IFAS Extension, Gainesville, FL 32611.

Original publication date September 2008. Revised January 2009. Reviewed October 2014.

[iii] The Impact of Water Quality on Beef Cattle Health and Performance