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**SUBMISSION TO THE STANDING COMMITTEE ON ENVIRONMENT AND
PUBLIC AFFAIRS**

**INQUIRY INTO THE IMPLICATIONS FOR WESTERN AUSTRALIA OF HYDRAULIC
FRACTURING FOR UNCONVENTIONAL GAS**

SEPTEMBER 2013

Preamble: The Nature of Yawuru's Relationship to Country

Yawuru are the native title holders of some 530, 000 hectares of land and waters in and around Broome, as determined by the Federal Court of Australia in 2006. Our inherent and prior rights to our country stem from the all-encompassing power and world-creating epoch of *Bugarrigarra*. Country is imbued with a life-force arising from *Bugarrigarra*. In the native title determination, Merkel J noted:

The source of the Yawuru community's traditional laws and customs, which include the laws and customs known as the southern tradition, is the *Bugarrigarra*... Those laws and customs have plainly been transmitted from generation to generation, find their origins in pre-sovereignty norms and, notwithstanding their evolution over time, have had a continuous existence and vitality since sovereignty (*Rubibi Community v State of Western Australia (No 6)* [2006] FCA 82).

Our language, spirit and ancestral wisdom arise from our enduring and interconnected relationship with our country. It is not only the physical horizons that give meaning to our country, but sacred Law and responsibilities conveyed in our stories and rituals also bind Yawuru to country. As asserted in the Yawuru Cultural Management Plan (Yawuru RNTBC 2011), country ought to be viewed through a holistic lens as a living cultural landscape – “the ecology and biodiversity; the hydrology and geomorphology; the history; the harvesting of resources; and the cultural story”. All facets of Yawuru country and cultural life are inextricably linked and are reinforced by the responsibility of traditional owners to look after country. Yawuru are active regulators and monitors of activities taking place on country; we have a cultural and conservation management plan with rangers and country managers engaging in cultural heritage monitoring, wetlands monitoring, conservation estate monitoring, geospatial mapping and other research projects.

Yawuru native title decision-making processes are governed by the Yawuru Native Title Holders Aboriginal Corporation also referred to as the Yawuru Prescribed Body Corporate (PBC). The Yawuru PBC is authorised to hold on trust the Yawuru native title rights. This entity has a prescribed legal role to manage and protect native title for present and future generations and has profound cultural responsibility to promote the long term wellbeing of Yawuru people and the management of Yawuru country.

Yawuru manage and protect a number of key land and water assets and culturally significant sites. These include the Yawuru Conservation Estate, Roebuck Plains pastoral station, Roebuck Bay Marine Park, pockets of land in and around the Broome townsite and the proposed Yawuru Indigenous Protected Area (which would incorporate some of the aforementioned areas within Yawuru land and sea estates). Yawuru's use of land and sea is defined by traditional ecological knowledge passed down from ancestors, for example, understanding the nine habitats and following the cycle of six seasons. It is a significant part of Yawuru's cultural heritage.

Applications by third parties to use Yawuru country must be referred to the Yawuru PBC. The Yawuru PBC Constitution contains a platform for Yawuru decision-making; it mandates informed consent either by consensus or special majority of Yawuru native title holders on native title matters.

Introduction – Purpose of this Submission

In acknowledging Yawuru's unique rights and interests to protect, access, and live on our traditional country, there is a need for the Standing Committee to address Aboriginal interests and Yawuru native title holders' legitimate concerns. The purpose of this submission is to highlight critical concerns that Yawuru native title holders have on the subject of hydraulic fracturing (also referred to as fracking) for unconventional gas in Western Australia (WA) and in and around Yawuru land and waters. There are known shale and tight rock formations contained within the Canning Super Basin and subsequently, exploration and fracking has already taken place on Yawuru country. More widespread exploration is envisaged for the area and would directly affect Yawuru country and marine environments. As Yawuru hold rights to protect, access and live on our traditional lands, it is imperative that we gain a comprehensive understanding of the implications of fracking on our country. Therefore, we have a strong interest in this inquiry and its recommendations.

Yawuru are cognisant of the heightened global and national concerns surrounding fracking and its environmental and social impacts. Similarly, there is a high level of concern within the Yawuru community. The Yawuru PBC has publicly stated that it is opposed to fracking until the practice has been shown to be safe beyond doubt. It is incumbent on the Yawuru PBC to investigate all aspects of unconventional gas exploration and production – in particular, fracking – prior to any further activities taking place on Yawuru country. The Yawuru PBC considers it imperative to set in place a transparent process through which the community is informed and consulted about the implications of operators' proposed practices. To enable this, Yawuru require comprehensive information and advice from independent experts. Yawuru hope that the Standing Committee's inquiry will facilitate this process by shedding light on the impacts of fracking and identifying critical information gaps.

This submission raises questions for the Standing Committee regarding a number of key issues: the terms of reference for the inquiry; free, prior and informed consent; water contamination; the lack of understanding of subsurface ecology; air pollution; public health concerns; regulation of chemicals; indigenous land use and management; and the issue of the State Agreement for the Canning Basin and regional input into decision-making. By raising these questions Yawuru seek to highlight the underlying and urgent need for more detailed information on all of these aspects of fracking prior to both exploration and development activities.

Free, Prior and Informed Consent

Free, prior and informed consent (FPIC) pertains to indigenous peoples' rights to participate in decision-making regarding policies, programmes and projects affecting their land and wellbeing. FPIC is a coherent philosophical framework and a principle approaching universal recognition, achieved through the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). It is Article 32 in UNDRIP that is most relevant to Yawuru:

States shall consult and cooperate in good faith with the indigenous peoples concerned...in order to obtain their free, prior and informed consent prior to the approval of any project affecting their land or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources (United Nations 2008).

According to the Commission on Human Rights (2005:15), FPIC, in the context of development projects affecting indigenous peoples' land and resources, refers to the right not to be coerced or

intimidated when making choices (free), giving consent prior to the authorisation and commencement of projects (prior), possessing full information about the scope and effects (informed), and lastly, having the decision to give or withhold consent respected. For Yawuru, FPIC acts as a guiding principle for native title decision-making processes. The implementation of FPIC principles is two-fold for Yawuru. Firstly, it is relevant to Yawuru's dealings with third parties and governments concerning proposed developments on Yawuru lands, and secondly, with Yawuru community consultation and engagement procedures regarding native title decisions.

Acknowledging FPIC demonstrates a commitment to information-sharing and transparency in regulatory processes. Yawuru calls on operators and government agencies to abide by FPIC as its recognition would ensure that respect for the authority of traditional owners is duly given and that a principled and prudent approach is followed for obtaining community confidence and a social license to operate unconventional gas developments. FPIC is not a veto right and is not intended to impair the "territorial integrity or political unity" of states (United Nations 2008). FPIC, however, implies the legitimate authority of indigenous peoples to demand "that third parties enter into an equal and respectful relationship with them based on the principle of informed consent" (United Nations 2004:5). This enables native title holders, like Yawuru, to demand appropriate information, full transparency, and to exercise meaningful choice over their experiences of economic, social, and cultural development.

Also in line with the norm of FPIC is to 'Show Respect and Ask First', the most important Yawuru protocol and guiding principle embedded in Yawuru laws and traditions. This involves showing respect to our senior people and requesting Yawuru's permission to do any activities on Yawuru country.

These norms, particularly FPIC, could be implemented in WA in a number of ways:

- Public commitment by companies to respect FPIC of native title holders and traditional owners
- Promotion of FPIC at all phases of the project cycle including exploration, construction, operation and closure (Rumler 2011)
- Requirement for companies to follow the existing protocols held by native title holders and traditional owners when engaging with such groups
- Development of a clear 'protocol' by operators for seeking consent from indigenous groups. Such a 'protocol' clearly outlines the expectations, commitments and processes of engaging with community
- If consent is given by the community, then a binding agreement between the company, community and government can be formed (in exchange for the consent) (Rumler 2011:7).
- Consider a formal structure or shared agreement between all stakeholders in the particular region (such as the Canning Basin) facilitating the implementation of FPIC.

Yawuru Concerns over the Terms of Reference of the Inquiry

The terms of reference established by the Standing Committee promote public inquiry into only a few of the many implications of fracking. In this way, the terms of reference are narrow in their scope, constraining the space in which the public can voice their broader concerns relating to

fracking. The terms of reference omit broader concerns of environmental degradation, such as water contamination, air pollution, as well as other issues of hydrology and hydrogeology, produced water, public health, and indigenous land use and management.

Yawuru calls on the Committee to recommend a far wider public inquiry into fracking with broadened terms of reference, which supports analysis on an array of issues and their subsequent social, cultural and environmental impacts. There is an evident knowledge gap regarding the impacts of unconventional gas development, with a lack of rigorous scientific testing and controlled studies of impacts, especially in Australia. The community ought to possess a comprehensive understanding of the nature and effects of fracking and gas development activities prior to giving consent for such activities to go ahead. With this in mind, Yawuru have put forward a number of concerns and questions to be addressed by the Committee. Yawuru would like to request a copy of the Committee's report following this inquiry.

Yawuru Concerns and Questions

Surface and Groundwater Contamination

Yawuru understands that the major causes of water contamination through fracking usually emerge during surface operations, such as the management of produced water and defective wells. In both cases, the depths of the shale or tight rock formations at which the fractures are made do not have significant bearing on whether or not water can be potentially contaminated.

Firstly, fracking can release toxic substances embedded within the source rock itself, along with the desired gas resource. Evidence from America suggests that these particulates include naturally occurring radioactive material, salts, oils, arsenic, benzene, toluene, ethylbenzene and xylene (BTEX), mercury, hydrogen sulphide, lead and dissolved hydrocarbons among others (Colborn et al 2010:4; Bamberger and Oswald 2012:71). In the fracking process, these particulates, along with other naturally occurring water found in the shale formation, return to the surface as 'produced water'. Flowback water is also a form of wastewater but refers to the fracturing fluid pumped into the shale formation that flows back to the surface (usually 25% to 75% of initial fracking fluid) (Schramm 2011; The Royal Society and The Royal Academy of Engineering 2012:20). Inadequate treatment or disposal of the produced water may lead to contaminated surface water and groundwater.

The Department of Mines and Petroleum (DMP), the regulators of petroleum activities in WA, have noted that produced water is likely to be stored in polymer and clay lined ponds (evaporation ponds) or enclosed tanks when there are multiple production wells (Government of Western Australia 2013a). In these ponds, the produced water evaporates and the residue is tested and then taken to a disposal facility. Some studies suggest that produced water contained in evaporation ponds involves major risks to both surface water and groundwater. Research shows that accidental spills, inadequate treatment of produced water, and storm events or high rainfall may lead to overflow of ponds, with the runoff potentially contaminating other surface waters (Broomfield 2012:x; Hunter 2011:12). Further, the composition of the flowback and produced waters depends on the nature of the rock formation, and if there is insufficient knowledge on the formation, the effects of the produced water are also unclear (The Royal Society and The Royal Academy of Engineering 2012:20).

Research has demonstrated that chemicals (in produced water) in the evaporation ponds show more harmful health effects than the chemicals used in the fracking formula (Colborn et al 2010:10). Evaporation ponds are banned in NSW and in Queensland and are criticised internationally, as there are significant environmental risks and impacts associated with the use of this mechanism. Given this, it is disconcerting for Yawuru that DMP has stated it would typically store produced water in ponds in WA. Furthermore, DMP requires operators to submit a strategy for managing produced water within the 'Environment Plan' (under the *Petroleum and Geothermal Energy Resources (Environment) Regulation 2012*); however, Yawuru understands that DMP does not provide guidelines, standards or any oversight on water management, which is problematic.

Secondly, studies indicate that poor well structural integrity, including faulty or disbonding steel casings and imperfections in the cement sealing outside the well, can lead to stray gases and other fluid leakages. More specifically, problems can include tubing and casing leaks, poor mud displacement, improper cement slurry design and damage to initial cementation (Brufatto et al). Ingraffea (2012) conducted well integrity research in the Marcellus shale formation (1.5 – 2.5 kilometres underground) in Pennsylvania, United States, and found that loss of well structural integrity is still common (6.6 per cent of wells in 2012 reported violations and 'violations impending' comments). The potential deteriorating effects of repeated fracturing and pressurisation of the well casing and cement are not adequately known, and therefore more research is required (Broomfield 2012:ix).

Yawuru understands that the uncontrolled migration of hydrocarbons as a result of poor well design can potentially contaminate aquifers and surface waters. Studies on the Marcellus shale divulge that stray gases or uncontrolled migration of hydrocarbons, particularly methane, do occur within close distances to well pads (1 km) resulting in contamination of drinking water (Ingraffea 2012; Osborn et al 2011; Jackson et al 2013). Hunter (2011), in her review of DMP's regulations, argues that there have only been small companies who have explored and drilled wells in the Perth and Canning Basins, and subsequently may not possess corporate knowledge of well design enjoyed by larger global operators. DMP must ensure best practice is followed to maintain integrity of wells. Further, the collection of baseline data and ongoing monitoring of water quality would assist in identifying the impacts of unconventional gas development activity on water sources.

The implications of potential water contamination through fracking would be devastating for Yawuru. The wetlands in Roebuck Bay (Ramsar Wetland of International Importance), Roebuck Plains Pastoral Station and Yawuru recreational activities and traditional food sources on nearby country could be threatened. Yawuru considers water sites on country to be 'living waters', which are permanent springs and manifestations of *Bugarrigarra* (Yawuru RNTBC 2011). Many Yawuru water sites are inhabited by powerful snake-like spiritual beings (Yawuru RNTBC 2011). Contaminated waters as a result of fracking would impact upon the sustainability and cultural integrity of water sites and therefore impinge on Yawuru's fundamental native title rights and responsibility to look after country. Water resources are fundamental to native title interests and the practice of culture; therefore, specific conditions regarding their exploitation and management must involve Yawuru.

Yawuru seek answers to the following questions relating to surface and groundwater contamination:

- *What types of metals and substances embedded within source rock are released during the fracking process in addition to the desired gas resource? What are the potential impacts of these substances being released? Are they harmful to human health and the environment?*
- *How will DMP mitigate environmental risks around produced water and what other domestic and international best practices could DMP draw upon for managing produced water?*
- *Why hasn't WA developed standards or a reference document for produced water disposal and wastewater treatment?*
- *If evaporation ponds for produced water from fracking practices are banned in Queensland and NSW, why are they being proposed for WA?*
- *Is there a requirement for DMP or independent bodies to conduct baseline surveys for monitoring surface and ground water quality? How will the impacts of fracking and unconventional gas development be assessed as against pre-fracking conditions? If so, would these be available to the public?*
- *How can the long-term impacts of fracking on groundwater be assessed?*
- *How will DMP address the public's and other stakeholders' lack of information and misinformation around fracking?*
- *What are the implications of stray gases and uncontrolled migration of hydrocarbons during the fracking process for water sources? What tools would DMP use to prevent the hazard of stray gases and uncontrolled migration of gases, fluids and hydrocarbons?*
- *How can DMP guarantee that human error will not have unexpected consequences or create serious hazards in relation to unconventional gas activities?*

Subsurface Ecology

Yawuru perceive that there is a lack of understanding within the public, industry and other stakeholders of the complexity of the subsurface ecology as it relates to shale and tight gas resources within the Canning Basin and in Australia more generally. Usually the risk to groundwater ecology is low to moderate but because of the lack of information on "deep stratigraphy, faults, discontinuities, stress distribution and deep hydrogeological processes", there is high uncertainty about the impacts (Cook, Beck, Brereton, Clark, Fisher, Kentish, Toomey and Williams 2013:130-131). Without this understanding, there is the possibility that fracking operations would interfere with aquifers and aquatards, causing water contamination, change of water quality, and change of aquifer discharge and recharge flow regimes (Warner et al 2012 cited in Cook et al 2013:113; Osborn et al 2011).

At a recent briefing, DMP officials informed Yawuru that companies already exploring for unconventional gas on Yawuru land are yet to fully understand the nature of the rock formations in the area, and that fracking may not necessarily be appropriate to extract the gas in the area. This raises concerns for Yawuru, because without comprehensive scientific understanding of the geology and subsurface ecology, DMP cannot ensure that fracking and exploration activities on Yawuru land are safe and that waste waters would not contaminate or seriously disrupt hydrological systems.

A precautionary approach needs to be taken; hence, Yawuru submits that more public information on the subsurface ecology of the region – as well as broader environmental and scientific studies about fracking impacts and risks – is required prior to further exploration and development. A recent report by the Australian Centre of Learned Academies (ACOLA) also calls for “spatially adequate and explicit ecological hydrological and geological data” as part of strategic environmental assessments. Moreover, regional biophysical planning and cumulative risk assessment prior to gas development is required to assess risks to landscapes and mitigate regional environmental impacts (Cook et al 2013:23,111).

Yawuru seek answers to the following questions relating to the ecology of the subsurface:

- *What are the effects of fracking on the subsurface ecology and hydrology of the regions in question? How can we know for sure what impacts fracking will have on the hydrology of a region?*
- *What processes and strategies of water management are in place to prevent groundwater depletion? Are these strategies integrated along with land-use planning and Environment Plans prior to the approval of gas development?*
- *How will the Department of Water and the DMP work together to ensure compliance to water management practices in relation to fracking?*
- *Given that the unconventional gas industry in Australia is still embryonic, how will DMP manage the uncertainties associated with the long term presence of hydraulic fracturing fluids underground in shale and tight formations?*

Air Pollution

Air pollution is a concern arising from fracking processes and gas production. Yawuru understands that air pollutant emissions can arise from trucks and drilling equipment, processing and transporting natural gas, chemicals from evaporation ponds (evaporative emissions) and spills and well blow-outs (Lechtenbohmer et al 2011:22). Additionally, ground-level ozone can be generated through the potential escape of volatile toxic contaminants (VOCs) such as BTEX, fugitive emissions (methane) and other hydrocarbons combined with nitrogen oxides (NOx) (diesel fuel exhausts and other equipment) (Colborn et al 2010:5). The public health implications of ground-level ozone are severe, potentially causing negative respiratory, neurological and cardiac health effects (Colborn et al 2010:5; Schmidt 2011:A352; McKenzie, Witter, Newman and Adgate 2012). In this context, Yawuru would be particularly concerned about the health and safety of Yawuru people working on-country to oversee any unconventional gas activities, such as Yawuru cultural monitors. Whilst some research around the Barnett shale in the U.S suggests ozone levels have been declining and that

there are no health effects of air quality in the region, studies from Wyoming found that oil and natural gas development are the largest sources of VOCs and nitrogen oxides (Schmidt 2011:A352). There is a need for regular monitoring of ozone, VOCs and NOx as well as collecting baseline data of air quality in order to gauge the long-term effects of unconventional gas activities on air pollution. If unconventional gas activities proceed, appropriate measures must be in place to ensure the health and safety of people on or in the vicinity of work sites.

Yawuru seek answers to the following questions relating to air pollution as a result of fracking:

- *Are there any strategies in place for monitoring air quality and mitigating air pollutant emissions?*
- *Have health impact studies been conducted to assess the human health effects of air pollution as a result of fracking?*

Public Health Concerns

Yawuru understands that specific health effects attributed to fracking are rarely documented due to previous lack of disclosure of chemicals used in fracking. It is noted that negative impacts of fracking on human health are typically caused by exposure to emissions or contaminants in the air or in water. The contamination of water can be traced back to the chemicals used in fracking, some of which are benign and others highly toxic to humans; one study found that over 25% of the chemicals can cause cancer and mutations and 37% can undermine the endocrine system affecting reproduction and development (Colborn et al 2010:9). Although industry argues that the concentrations of chemicals used in fracking and other gas activities are too low to represent a threat to human health, it is contended that some of the chemicals have negative health repercussions if ingested at any concentration (Colborn et al 2010:11). They may not be immediate health effects but delayed, chronic problems spanning generations (Colborn et al 2010:11). Secondly, negative health effects from contaminants in the air, specifically during well development, are argued in a study to constitute the greatest risk to health from gas development activities (McKenzie, Witter, Newman and Adgate 2012).

The cumulative impact of these potential health effects would be very problematic for the Yawuru community as it may compromise the health of those who live out on country and work on country, as well as those future generations who seek to live on Yawuru country. The state and health of country is strongly linked to the physical, spiritual and mental wellbeing of Yawuru community. As previously mentioned, country is a living cultural landscape where the natural environment and Yawuru cultural life are interconnected.

More controlled and systematic assessments and epidemiologic studies into the health impacts of fracking are required for safeguarding human health and safety. Testing of water and air prior to drilling (for baseline information against which changes can be measured) and at regular intervals during drilling would also generate useful data for public health analysis (Bamberger and Oswald

2012:68). These ought to be incorporated in the regulations, such as the submission of an independent and cumulative health impact assessment.

Many scientists and groups advocate for the 'precautionary principle', which draws upon the principle of 'first, do no harm' (Finkel and Law 2011:785) and which argues that if there is uncertainty about an action causing harm, "then in the absence of a scientific consensus" the burden of proof rests with the proponents of the activity (Bamberger and Oswald 2012:52). Yawuru support this principle. The affected community is entitled to full information on the health effects of possible gas developments in their region in advance. Understanding health risks at this embryonic stage of unconventional gas development in WA would prevent burdens on its health care institutions in the future.

Yawuru seek answers to the following questions relating to public health:

- *Given that there is a lack of consensus and information on the potential types, frequency, and severity of health impacts of fracking activities, why isn't DMP conducting comprehensive and systematic health impact studies or requiring the operators to do so?*
- *Has DMP taken preventative actions to protect the health of the population such as employing public health professionals to advise on the health effects of exploration and development activities or including a public health component to planning and negotiation processes?*

Regulation and Impact of Chemicals

DMP requires an Environment Plan from operators under its new regulations, *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012*, including chemical disclosure guidelines for all 'down-hole' petroleum and geothermal activities. Whilst Yawuru acknowledge that disclosure is a crucial step, knowledge of the potential environmental and public health impacts of the chemicals is equally, if not more, important.

Yawuru understands that DMP 'encourages' operators to carry out their own environmental risk assessments of chemicals if the operator deems a risk to be moderate to high. DMP state they are responsible for assessing products that pose unacceptable risks and impacts to the environment; however, DMP will only assess hazards and risks on a case-by-case basis (Government of Western Australia 2013b:4). Yawuru considers that this is insufficient; there needs to be an enforceable obligation on operators to undertake comprehensive risk assessments of chemicals, which should then be carefully scrutinised by DMP.

If petroleum activities are considered by DMP to have significant environmental impacts and risks, the department will table it with the Environmental Protection Authority (EPA) for environmental impact assessment under the *Environmental Protection Act 1986*. This measure falls short of the rigor and duty of care expected by the public since the criteria for this referral are limited and the experience and competency within DMP to make these judgements on environmental impacts may be lacking. The environmental impacts of unconventional petroleum activities would be more appropriately regulated if they all were to fall under the *Environmental Protection Act 1986* and be administered by the Department of Environment Regulation (DER), for example. Moreover, there is

an inherent conflict of interest in the state's regulatory mechanisms, where the department promoting investment into mining and petroleum is also charged with the responsibility to manage the environmental implications of such activities. It would be prudent for all gas development proposals to be subject to EPA and DER procedures and approval.

Moreover, an independent scientific body or post focused on unconventional gas activities would add significantly to the effectiveness, efficiency and accountability of the regulatory regime. Independent scientific experts should be appointed to an independent supervisory body and report at least annually on the environmental impacts monitored. Such a body would act as an authority to which the public could appeal. In response to uranium mining at Ranger Uranium Mine in the Northern Territory, for example, a supervising scientist was established under the Commonwealth *Environment Protection (Alligator Rivers Region) Act 1978* to research, review and advise on environmental impacts of uranium mining on the Alligator Rivers region (Ball 2012; Commonwealth of Australia 2013). A similar model needs to be introduced in relation to gas development in the Canning Basin.

Yawuru seek answers to the following questions relating to the regulation of chemicals:

- *Petroleum hydrocarbons containing benzene, toluene, ethylbenzene and xylene (BTEX) and chemicals that are likely to produce BTEX's are prohibited in fracturing stimulating fluids in Queensland (Environmental Protection Act 1994) and in NSW (Government of New South Wales 2012). Why doesn't DMP ban the use of BTEX in WA instead of merely encouraging the use of low hazard chemicals?*
- *What is the specific set of standards adopted by DMP to assess operators' development activities and 'Environment Plans'?*
- *Why isn't there an enforceable obligation for operators or independent bodies to conduct comprehensive risk assessments of chemicals followed by thorough government oversight?*
- *Given this conflict of interest and great uncertainty around the environmental implications of fracking, why aren't the EPA, DER or independent scientific supervisors more involved in regulatory processes?*

Indigenous Land Use and Management

Exploration and infrastructure relating to unconventional gas in WA already exists over lands where native title is recognised or claimed, and is likely to be proposed over more native title areas. Shale and tight gas activities and infrastructure (drilling pads, pipelines and road networks) are not well developed in Australia, and expansion of the industry would require large areas of land. This potentially involves clearing of native vegetation, increased traffic (with around 250 truck trips per day to one site during the development stage) (Broomfield 2012:xi), fragmentation of landscapes on which agricultural or pastoral activities rely, division of habitats (through roads and fencing) and reduced biodiversity (Cook et al 2013:107). These potential impacts significantly concern Yawuru, in terms of both the long-term effect on Yawuru country and interference with Yawuru people's exercise of their native title rights.

Prior to any further gas exploration or development in and around Yawuru country, it is imperative that Yawuru's current land use and plans for future land use are considered. Yawuru's use and vision for areas including Roebuck Plains Pastoral Station, the Yawuru Conservation Estate and the Marine Park, as well as the associated infrastructure, hydrology and water resources needs, would need to be carefully considered. Yawuru strive to uphold our cultural responsibility to look after country as well as balance this with appropriate and sustainable development and community wellbeing.

An independent review of DMP's regulations recommended that a land use management strategy be formed in a consultative manner with relevant stakeholders and communities (Hunter 2011). This recommendation was not agreed to by DMP (2011); the department argues that encouraging petroleum title holders to "constructively engage" with relevant stakeholders and community groups is sufficient. However, a just process for managing land use associated with unconventional gas development is critical. This would require negotiations to be undertaken with landholders – including native title holders – in good faith, strategic multiple land use agreements to be developed in consultation with all stakeholders, and processes to give effect to FPIC to be implemented.

While traditional owners' right to negotiate and other procedural rights under the *Native Title Act 1993* may apply in many cases, there is no veto right afforded to native title holders to be able to stop gas exploration and development activities. There is a requirement in the *Petroleum and Geothermal Energy Resources (Environment) Regulation 2012* for preliminary and ongoing consultation with relevant stakeholders (in the Environment Plan), however, the requirement for continued consultation after the project's completion (to manage issues relating to abandoned wells and land rehabilitation for example) is omitted. The regulations do not outline standards or guidelines for an ongoing consultation program with stakeholders; instead, regulators rely on the operators to establish those consultation standards and protocols that operators then have to meet. In this way, there is potential for operators to establish only minimal consultation processes, since there are inadequate guidelines and oversight provided. With this lack of clarity on the process of approaching traditional owners and Aboriginal interests, it is appropriate to invoke the principle of FPIC as a starting point along with other rights native title holders may possess for managing their land interests.

Yawuru seek answers to the following questions relating to indigenous land use and management:

- *How will DMP manage competing land use and land rights issues without the requirement of a process or strategy for multiple land use?*
- *Operators are required to submit to the state reports detailing preparatory consultation with stakeholders and plans for ongoing consultation. Why isn't there a requirement for consultation after the project's completion to deal with continuing problems and grievances faced by stakeholders?*
- *How will DMP ensure that operators engage in meaningful consultation processes with stakeholders, since there aren't adequate guidelines for consultation provided?*

Additional Issues

Natural Gas (Canning Basin Joint Venture) Agreement Act 2013

In June 2013 the WA parliament passed the *Natural Gas (Canning Basin Joint Venture) Agreement Act 2013*. This formalises a State Agreement between the WA Government and Buru Energy over future gas exploration and production in the Canning Basin, which includes much of Yawuru country. Buru Energy is particularly interested in developing the gas resources at its Yulleroo site on Roebuck Plains Pastoral Station, over which Yawuru holds exclusive possession native title. The Department of State Development failed to engage with Yawuru during the process of forming and finalising this State Agreement, and Yawuru first became aware of the State Agreement through an Australian Stock Exchange announcement. We continue to maintain a high level of concern around the lack of due process followed to form the State Agreement, as well as its implications for native title interests, as operators are now allowed to hold exploration permits for a much longer period of time (at least 25 years) and are exempt from the existing relinquishment obligations of 50% of the area of the permits. This potentially affects Yawuru native title rights and is very concerning for the community.

Regional input into decision-making

Much of the decision-making around exploration and development for unconventional gas in regional areas of WA, such as in the Canning Basin, occurs in centralised government agencies and corporate offices in Perth. This leads to a disconnect between decision makers and affected stakeholders in regional areas – for example, native title parties, private land owners and pastoral lease holders. Those officials and authorities making decisions regarding development on regional land may not have a comprehensive understanding of the region, the interests of affected parties or culturally and ecologically significant areas. Accordingly, there is a pressing need for a regional mechanism or body to enable regional voices and perspectives to be heard and incorporated into decision-making processes. Regional stakeholders urgently require access to independent advice and resources to be able to adequately negotiate and express their interests or have a representative body to do so on their behalf.

Well abandonment

Monitoring and preventing gas migration and water contamination following the abandonment of wells is another issue requiring attention. Well abandonment usually involves filling the well with cement after production, followed by welding a cap in place and burying it (The Royal Society and The Royal Academy of Engineering 2012:27). This procedure prevents the flow of gas into water resources or up onto the surface. Well failures, however, are still possible post-well abandonment, leading to gas migration outside the cement casings. One paper noted that 269 abandoned wells out of more than 8600 in Pennsylvania demonstrated leakages of natural gas, and oil and acid mine drainage into the air, groundwater and surface water – and the subsequent plugging of these wells were funded by taxpayers (Finkel and Law 2011:784). It is noted that DMP require operators to submit a Field Abandonment Program that follows industry best practice, standards and codes for field abandonment and for well plugging and abandonment; however, these standards and codes have not been made explicit. Continual monitoring of ground gas and aquifers post-well

abandonment is necessary to detect possible well failures (The Royal Society and The Royal Academy of Engineering 2012:27); however, DMP's requirements for such monitoring are unclear.

Yawuru seek answers to the following questions relating to these additional issues:

- *What do the best practice, standards and codes of plugging and abandonment of wells require?*
- *What processes does DMP have in place for monitoring abandoned wells, ensuring there are no gas leaks or contamination of surface waters? For how long will abandoned well sites continue to be monitored?*

Conclusion and Recommendations

As highlighted throughout this submission, there is a lack of both scientific understanding and public information on fracking and on the associated environmental, social and health impacts, particularly as they relate to the Canning Basin and other areas earmarked for development in WA. Further, the limited terms of reference of this inquiry diminish the capacity for the public to gain awareness on broader issues relating to fracking.

In line with the precautionary principle, Yawuru considers that further extensive research is required into the potential impacts of fracking in WA and the ways in which fracking will be regulated. More information is necessary to ensure that fracking does not cause irreversible harm to human health, the natural environment and indigenous people's enjoyment of and connection to country. In this submission, Yawuru has therefore posed a number of questions to the Standing Committee in an attempt to draw attention to knowledge gaps and the potential inadequacies in the state's and operators' procedures. We look forward to receiving comments on these questions in the ensuing report from the Standing Committee.

As set out in this submission, free, prior and informed consent is a guiding principle for Yawuru and one that should be actively upheld in the context of proposed unconventional petroleum activities. Operators and government must obtain the free, prior and informed consent of native title holders and traditional owners before unconventional gas exploration and development – including fracking – can occur. Prior to the process of withholding or giving consent with respect to fracking, it is imperative for Yawuru to conduct a comprehensive consultation and information-sharing process within the Yawuru community.

The need for reliable information and independent expert advice for native title parties, such as Yawuru, and other regional stakeholders cannot be emphasised enough. As part of this, an independent scientific body or post – such as the supervising scientist in the Northern Territory – should be appointed for the Canning Basin. Such independent experts can act as a supervisory authority advising and reporting on environmental impacts associated with fracking. Further, there should be greater involvement of the DER and EPA in monitoring and regulating companies' operations, given the inherent conflict in DMP's industry development and regulatory roles.

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