



MC Resources Australia Pty Ltd

**Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation
in Western Australia**

16 March 2018

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1. EXECUTIVE SUMMARY

Fracking is safe. The risks of Hydraulic Stimulation (fracking) of oil and gas are well understood and can be adequately managed through good regulation.

In our EP 371 permits in the Kimberley Buru Energy and Mitsubishi undertook Hydraulic Stimulation operations in 2015 at the Valhalla North-1 and Asgard-1 wells in TGS15:

- The Hydraulic Stimulation operations were conducted safely and did not have any detectable impact on the environment.
- This TGS15 program was undertaken with the informed support of the local Traditional Owners. Job opportunities were provided to 33 people from the local community with over 14,000 hours worked during the program. A further 15 people receiving training and were certified in a range of relevant operations.

The development of the unconventional gas resources that would involve Hydraulic Stimulation at the Valhalla Gas discoveries will be undertaken in stages. Three stages of development - appraisal, pilot and full field development (200 TJ/day) are provided as an approximate guide of how these gas resources might be developed.

The total number of wells required for these scenarios up to full development (200 TJ/day) would total approximately 170 wells over 20 years. Multi well drilling pads (at least 10 wells per pad) will be used to significantly reduce the surface footprint of the development. **The total surface area impacted for the field including the full field development scenarios would be approximately 20 well sites.**

The regulatory framework for oil and gas in WA is sound and fit for purpose.

- Many of the concerns raised about hydraulic fracturing are relevant to all petroleum exploration and drilling activities. They are well recognised by the industry and managed by adhering to high-quality well construction and best practice in operations.
- The regulatory framework for the industry in WA has developed over 60 years and since 2011 been subject to independent review, a whole of government inter-agency assessment and a Parliamentary Inquiry in relation to the use of hydraulic fracturing.
- The current regulatory framework provides substantial protection for the environment and includes stringent checks and regulatory oversight.

The future regulatory framework specific to Hydraulic Stimulation should not be exceptional, it should be evidence based. Regulatory processes should not impose a burden on the regulator or operator that is disproportionate to the HSE risk associated with the activity – i.e. timeframes and management plans associated with Hydraulic Fracturing should be commensurate with the scale of the activity and the environmental risks involved, just like any other part of the oil and gas industry. Stakeholder consultations should also reflect the scale and risk of the activity and should focus on those people and communities directly involved.

Unconventional Natural Gas from the Valhalla region can be safely produced for the benefit of the community in Western Australia. **Significant employment and social benefits would flow to the local communities from this project, in particular the Noonkanbah community.**

As a result of the current Government's Moratorium on Hydraulic Stimulation, investment to further appraise and develop the Valhalla gas resource is currently suspended. This has impacted on job opportunities in the economically disadvantaged Noonkanbah community.

2. INTRODUCTION

2.1. MC Resources Australia Pty Ltd

Mitsubishi Corporation (MC) is a global integrated business enterprise that develops and operates businesses across virtually every industry including industrial finance, energy, metals, machinery, chemicals, and daily living essentials. MC manufactures and markets a wide range of products, including energy, metals, machinery, chemicals and living essentials through our domestic and overseas network. MC is also involved in diverse businesses by actively investing in areas such as natural resources development and infrastructure, and is engaged in finance businesses. MC is also engaged in businesses such as creating new business models in the fields of new energy and the environment, and new technology-related businesses.

With over 200 offices and subsidiaries in approximately 90 countries worldwide and a network of over 600 group companies, MC employs a multinational workforce of over 65,000 people.

Mitsubishi Corporation participates in the Australian upstream energy sector by way of the North West Shelf Venture, Wheatstone LNG Project, and the onshore Canning Basin (as MC Resources Australia Pty Ltd - MCRA).

This submission focusses on Mitsubishi Corporation's experience as a Joint Venture partner with Buru Energy, exploring and appraising the Laurel Formation in both the Yulleroo and Asgard/Valhalla fields of the Canning Basin, and more recently as Operator of the Asgard/Valhalla fields (through our subsidiary Diamond Resources (Canning) Pty Ltd).

2.2. EP 371

The onshore Canning Basin is an early Ordovician to early Cretaceous geological basin that covers approximately 430,000 km² in the West Kimberley region of WA.

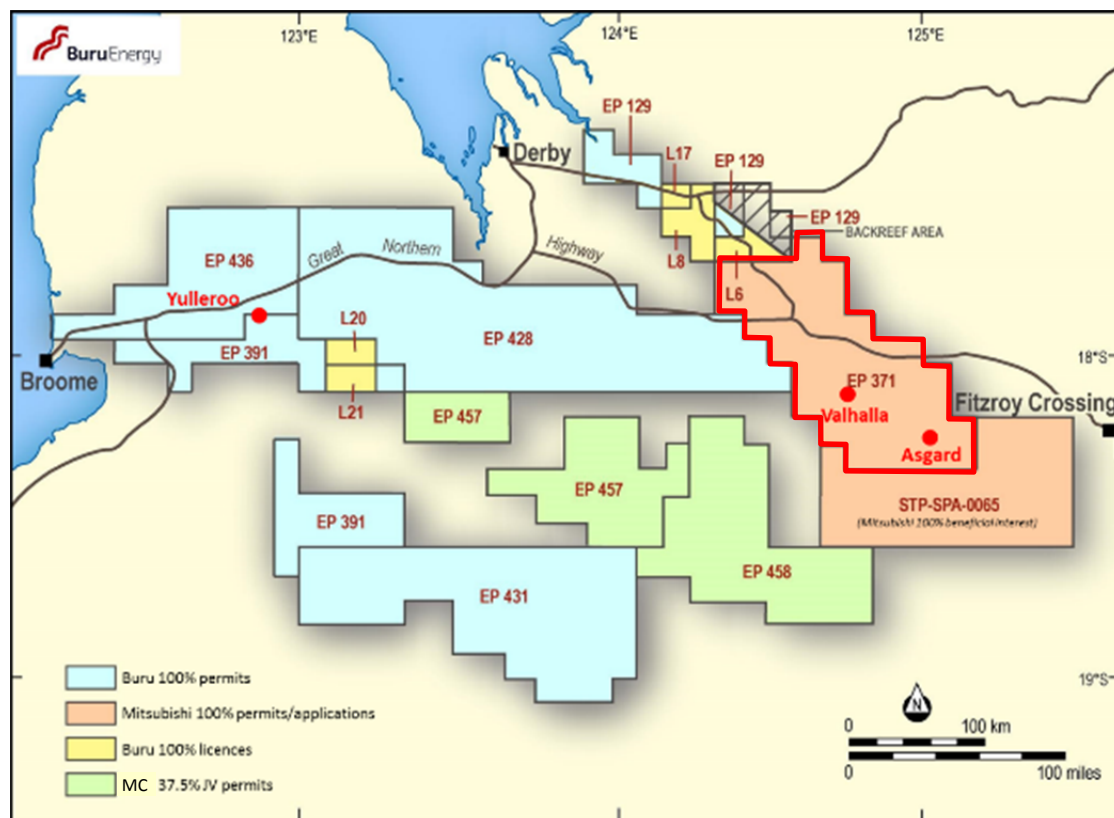


Figure 1: MC's EP 371 Permit in relation to onshore acreage in the Canning Basin. (From Buru Energy, 2018)

Mitsubishi Corporation currently holds and is Operator of the Valhalla and Asgard gas discoveries (Valhalla gas Province) in Exploration Permit EP 371. Permit EP 371 covers an area of approximately 3,660km², approximately 250km east of Broome. Buru Energy operated the permit in a 50:50 joint venture with Mitsubishi Corporation between 2011 and mid-2017.

The Canning Basin hosts a large unconventional (tight) wet gas accumulation within the Carboniferous age Laurel Formation. Two areas of the basin have seen the most intensive appraisal of the tight gas resource, including drilling and Hydraulic Stimulation: the eastern side of the basin in the Asgard/Valhalla region (EP 371 held by Mitsubishi Corporation's subsidiaries (50%) Diamond Gas Canning Pty Ltd and (50%) Diamond Gas Fitzroy Pty Ltd) and the Yulleroo region near Broome (EP 391/EP 436 held 100% by Buru Energy).

2.3. Valhalla Gas Province

The Laurel Formation is characterised by a thick section of gas above a notional reservoir floor of 4,000m depth. The Buru Energy – Mitsubishi Corporation joint venture, with Buru Energy as Operator has undertaken considerable exploration and appraisal of the Laurel Formation gas in EP 371, commencing in 2011 with the drilling of the Valhalla-2 well, followed by the drilling of the Valhalla North-1 and Asgard-1 wells in 2012.

Although evidence for a major tight gas resource in the onshore Canning Basin was present in wells drilled as early as the 1960's, the recognition of these potential resources was a result of the resurgence of exploration in the Canning Basin in 2006 driven by Buru Energy's predecessor, ARC Energy. From that time, exploration was focussed on the Laurel Formation within the Fitzroy Trough. Four key wells were drilled in 2007 and 2008, each of which penetrated significant tight gas columns (up to 1500 metres of continuous mud gas shows) in the Laurel Formation in three widely spaced locations within the Fitzroy Trough. These and subsequent wells included the Yulleroo wells and Valhalla-1/ST1 and Valhalla-2 in EP 371 on the north-eastern flank of the Fitzroy Trough. The Buru Energy and Mitsubishi Corporation joint venture has safely drilled four key wells on the eastern side of the basin that have delineated the tight gas resource. Two of those wells were safely hydraulically stimulated in 2015, and subsequently flow tested. During the program, Hydraulic Stimulation of seven zones in Asgard-1 and four zones in Valhalla North-1 was undertaken over a period of around two weeks. Following the Hydraulic Stimulation operations, well intervention and flowback operations were undertaken to test the response of the wells to the stimulation.

3. ENVIRONMENTAL IMPACTS

The environmental impacts of the 2015 Valhalla North and Asgard program are reported in a submission to this Inquiry by the program's operator Buru Energy Limited ¹. The key aspects of that document are covered below.

Prior to Buru Energy's 2015 frac program, robust monitoring programs were designed in consultation with relevant government departments and independent specialists advising Traditional Owners. These monitoring programs covered several environmental values/factors including water quality and quantity, air quality and emissions, and impacts associated with seismicity and characterisation of flowback water. Results of these monitoring programs are presented in the following Sections. No environmental impacts off the ~3 ha well sites were detected. ²

On behalf of the joint venture, Buru Energy also undertook a number of beneficial programs ³ including studies on the greater bilby (in collaboration with Murdoch University), hydrogeological studies, refining seismic survey techniques to minimise ground disturbance, and training of Traditional Owner Environmental Cadets in Conservation and Land Management.

The panel is referred to Buru Energy submission Sections 3.2, 3.3, and 3.4, where Land Impacts, Air Impacts, and Risk to Groundwater Quality are discussed. Referral will also be made to Sections 3.5 (Risks to surface water), 3.7 (Impacts on Groundwater) and 3.9.3 (Seismicity).

Buru Energy has not detected any impacts to surface water or groundwater off the well sites as a result of the 2015 frac program ⁴. Subsequently Buru Energy's section on groundwater considers the (low) risks to water resources.

Buru Energy implemented a comprehensive groundwater monitoring program for the 2015 frac program ⁵. The groundwater monitoring program included monitoring of reference (control) and surveillance (impact) bores before, during and after the frac program in a Before-After-Control-Impact (BACI) design. **The monitoring program demonstrated that there were no impacts of Hydraulic Stimulation on groundwater.**

Chemicals are identified as a potential source of risk to groundwater. **The frac fluid used by Buru Energy for the 2015 program was non-toxic so the potential for contamination is low in the highly unlikely event the frac fluid came into contact with an environmental receptor** ⁶.

Overall Risk to Groundwater ⁷

During the 2015 frac program, a robust and comprehensive groundwater monitoring program was undertaken to ensure any impacts to groundwater as a result of Hydraulic Stimulation were detected. Results before, during and after Hydraulic Stimulation were made available on Buru Energy's website with no impacts detected.

¹ Section 3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

² Section 3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

³ Section 3.1 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

⁴ Section 3.4 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

⁵ Section 3.4.3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

⁶ Section 3.4.4 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

⁷ Section 3.4.12 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

Overall Risk to Surface Water⁸

The risk to surface water associated with Hydraulic Stimulation in the Canning Basin is considered low. Surface water is not proposed to be extracted for Hydraulic Stimulation activities. Given the volumes of fluid stored on site, the containment measures in place and the distance of well sites from surface water bodies, Hydraulic Stimulation activities (and the associated gas field) will pose a negligible risk to surface water in the region.

Impacts on Groundwater Quantity⁹

2015 Frac Program¹⁰

All water used during the 2015 frac program was licenced in accordance with the Rights in Water and Irrigation Act 1914 as administered by DWER. DWER allocates water use via licences within the sustainable volume available for a groundwater resource. DWER have determined that the Canning-Kimberley groundwater area, which includes the Liveringa Aquifer, has an allocated limit of over 300,000 ML/year, of which <10% is currently allocated to various users.

Water use during the 2015 frac program was well below allocation limits, with around 12 ML used at Asgard-1 and around 9 ML at Valhalla North-1. Less water was used as the initial estimates were highly conservative, fewer zones were fraced than initially proposed, the volume of water used for each frac was less than anticipated, and the program was undertaken close to the wet season and so less dust suppression was required. Water use during the 2015 frac program represented a negligible portion of the Canning Basin allocation limit (<0.01%) and is far less than water used by other sectors in the region including communities, pastoralists and other industrial users.

Groundwater Drawdown¹¹

Groundwater drawdown was monitored prior to, during and after the frac program. During the sampling period, water levels in each of the bores monitored varied within about 30 cm which was within the range of seasonal variation. **There was no evidence of groundwater drawdown or a cone of depression forming** at either the Asgard-1 or Valhalla North-1 well sites during the 2015 frac program due to groundwater extraction. **There was therefore no evidence of ground water extraction having an impact on groundwater resources of the Liveringa Aquifer.**

Micro-Seismicity¹²

Background Micro-seismic Activity in the Canning Basin¹³

To understand background micro-seismic activity in the Canning Basin, a micro-seismic monitoring program was implemented at the Asgard/Valhalla and Yulleroo sites by Hasting Micro-Seismic Consulting leading up to the 2015 frac program. The Canning Basin was determined to be “seismically quiet” with 19 regional and seven local events detected by the two arrays, none of which were related to petroleum

⁸ Section 3.5.3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

⁹ Section 3.7 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

¹⁰ Section 3.7.1 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

¹¹ Section 3.7.2 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

¹² Section 3.9.3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

¹³ Section 3.9.3.1 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

activities. The main seismic events detected were associated with blasting activities at Ellendale diamond mine when that was in operation.

Micro-seismic Monitoring During Fracking¹⁴

A micro-seismic array was also deployed in the weeks leading up to, and during the Buru Energy-Mitsubishi frac program at Asgard 1 and Valhalla North-1 in 2015. This array was set up to monitor the extent and direction of the induced fractures and respond to potential induced seismicity.

During the 2015 frac program, between 0 and 860 micro-seismic events were detected from each zone stimulated with detections of micro-seismic activity much greater at the Valhalla North-1 well than the Asgard-1 well. **The recorded micro-seismic events were of insufficient magnitude to be felt at surface and did not exceed the threshold that might cause any hazard to the well or at the surface.**

¹⁴ Section 3.9.3.2 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

4. FUTURE DEVELOPMENT SCENARIOS

Future appraisal and development activities in the Valhalla region of EP 371 would proceed in a staged manner to take into account the uncertainty associated with the development of the Natural Gas resources. Prior to a full development of the gas resources at the Valhalla region, a further stage of appraisal activities and a pilot phase development stage is expected to be undertaken.

The scale of each of the pilot and full development stages must take into consideration the size of the local markets for gas for each stage. Additionally, the proportion of that market which can be secured as customers as well as economic transportation (pipeline or trucked LNG) to connect the production to these end users will determine the actual scale. The following three scenarios; appraisal (1-4 wells), pilot (10 TJ/day) and full field development (200 TJ/day) are provided as an approximate guide of how these gas resources might be developed.

Where possible for the hydraulic stimulation activities the existing ponds would be utilised and flow back water reused to minimise impact.

4.1. Appraisal Stage Scenario

The objective of the Appraisal Stage is further evaluation of geology, well deliverability performance (ideally the quantified 90-day flow rates) and cost performance.

The Appraisal Stage scenario could involve between one to four additional wells. It has yet to be determined if each new well will require an additional well pad or will be drilled from existing pads.

This stage would take place during the dry season over a one to three year period. Once completed rehabilitation work will then be undertaken. This involves wells to be plugged and abandoned, well pads reclaimed and any pipelines decommissioned.

Summary of Appraisal Phase

Period of operations	Between one to three years
Total gas produced	0.01-0.4 PJ
Total wells	Between 1 to 4 new wells
Total new drilling pads	Up to 4 well pads
Total project footprint	Between 0-25 hectare

4.2. Pilot Development Stage Scenario

The objective of the Pilot Stage is longer term evaluation and demonstration of both the well deliverability performance and cost performance to assess the viability the full development phase investment.

The basis of a pilot phase is to supply the local regional gas demand. Our target would be 10 TJ/day of gas supply. The transportation options are potentially via a small regional pipeline and/or small scale trucked LNG supply system. The current total average daily demand for natural gas in the Kimberley region is gas fired power generation in the four major towns in the region (Broome, Derby, Fitzroy Crossing and Halls Creek) of approximately 10 TJ/day. Over 20 years this would require 73 PJ of gas. This gas is currently trucked as LNG from Karratha.

Supplying 100% of the current demand for gas for the electricity needs of four towns in the Kimberley (Broome, Derby, Fitzroy Crossing and Halls Creek) for twenty years would require less than eight wells over 20 years from a single well pad (total wellsite surface area = 6.25 hectares).

Summary of Pilot Production Stage

Period of production (Years)	10 years	20 years
Average Daily Production (TJ/day)	10 TJ/day	10 TJ/day
Total Gas Produced (PJ)	36.5 PJ	73 PJ
Total # of Wells required	4	8
# of Drilling Pads required	1	1
Drilling phase surface footprint (Hectares)	Approx. 10 Hectares	Approx. 10 Hectares

4.3. Full Development Stage

Full Development Stage for the Valhalla gas resources would require new pipeline infrastructure to be built from the Valhalla region to the Pilbara, thereby connecting the field to domestic customers in the Pilbara and South West WA.

The Western Australia Domestic Gas average daily gas demand is approximately 1050 TJ/day. (REF AEMO statement of gas opportunities 2017). The full development phase would be sized to strike the balance of economic scale to underpin the investment in the 500+ km pipeline and ability to secure new offtake agreements from domestic gas customers. The scenario is an average daily supply of 200 TJ/day for 20 years, supplying approximately 20% of Western Australia's domestic gas requirements. The gas resource required would be 1460 PJ.

Summary of Full Development Stage

Period of production (Years)	20 years
Average Daily Production (TJ/day)	200 TJ/day
Total Gas Produced (PJ)	1460 PJ
Total # of Wells required	160
# of Drilling Pads required	16
Drilling phase surface footprint (Hectares)	Approx. 150 Hectare

4.4. Development Approach

The development of the Valhalla gas resource is expected to utilise multiple horizontal wells drilled from a single well pad (Figure 2). For the scenarios provided here, a notional design is used in the development stages with a single 250m x 250m wellsite (approx. 6.25 ha) that would accommodate ten wells each. Each wellsite would accommodate the drilling rig, the ten petroleum wells, the frac spread and associated services.

Each well is drilled to the required vertical depth (approx. 3,000m) and then deviated to drill horizontally along the geological formation for the required distance, which may be between one and four kilometres. Valhalla development wells will likely include two nominal 1,500m horizontal sections. After each well is completed, the rig is moved a short distance along the well pad and the next well is drilled.

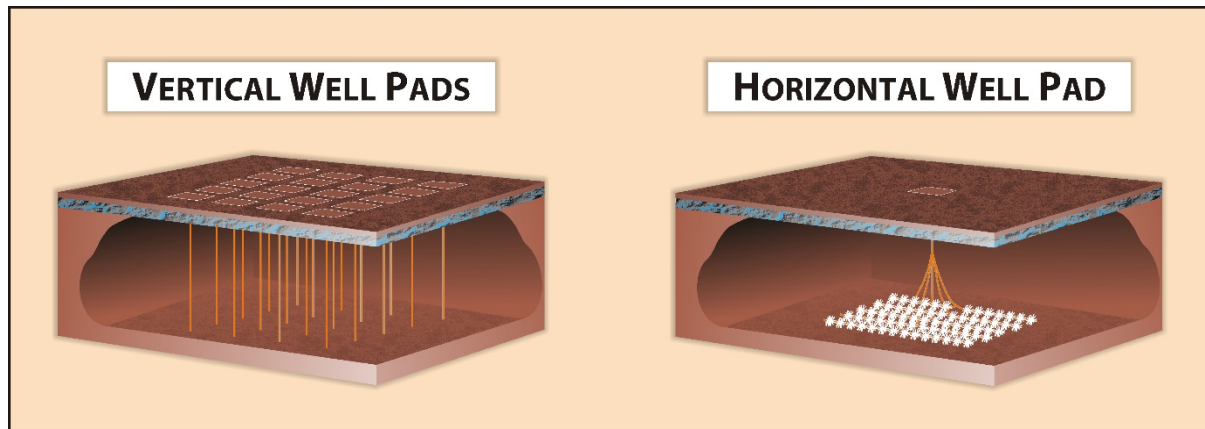


Figure 2: Difference in development footprint using vertical wells (L) and horizontal drilling from a single well pad (R).

Current technology allows up to 40 wells to be drilled for a single pad¹⁵. For our development scenarios, we assume up to 10 dual horizontal wells will be drilled from a single pad. As noted in the 2015 WA Parliamentary Inquiry Report, the use of multi-well pad technology reduces the surface footprint of gas-fields, thereby minimising the environmental impact of hydraulic fracturing¹⁶.

Once the wells on each well pad are completed and producing gas, the size of the well pad can be reduced to a much smaller area around the well head (approx. 3 ha). An illustration of a completed well pad during the production phase is provided in Figure 3 below.



Source: MEG Energy¹⁷

Figure 3: Example well site during the production phase.

¹⁵ Pittsburgh Post-Gazette (2018). These days, oil and gas companies are super-sizing their well pads. 15 January 2018. Available at: <http://www.post-gazette.com/powersource/companies/2018/01/15/These-days-oil-and-gas-companies-are-super-sizing-their-well-pads/stories/201801140023>

¹⁶ Finding 1 of Report 42 of the Standing Committee on Environment and Public Affairs. Implications for Western Australia of Hydraulic Fracturing for Unconventional Gas. November 2015.

¹⁷ MEG Energy (2018). Corporate Responsibility – Environment – Land. Accessed 12 March 2018. Available at: <http://megenergy.com/corporate-responsibility/environment/land>

Production of gas and liquids from each well site will be processed at a central processing facility. The central processing facility is assumed to have surface area of around 300m x 300m (9 ha).

Where possible, the existing ponds would be utilised for hydraulic fracturing activities and flow back water reused to minimise environmental impact. Results of the 2015 frac program demonstrated that flowback water will be suitable for reuse in subsequent hydraulic stimulations.



Figure 8: Hydraulic Stimulation operation at Asgard-1 (August 2015).

5. HERITAGE AND COMMUNITY

5.1. Local Community Engagement

Since MCRA's entry into the Canning Basins with Buru Energy Limited in 2010, the joint venture has:

- Employed local people and used local contractors where possible and financially supported local sporting and community clubs.
- Closely consulted with the local landholders, including Traditional Owners and Pastoralists.
- For the gas exploration involving hydraulic stimulation, undertaken extensive consultation with relevant Traditional Owners including providing independent specialist advice in relation to the proposed operations.¹⁸
- We have spent significant time and money to identify and engage with directly affected stakeholders. We have consulted with them and made sure that they have access to impartial information, scientific evidence and independent advice.

5.2. Asgard and Valhalla (EP 371) Community Traditional Owners Engagement

Noonkanbah

The Noonkanbah community includes members of the Yungngora and Warlangurru Native Title groups. The Yungngora group have Native Title over Noonkanbah Pastoral Station where Asgard-1 is located while the Warlangurru group have a Native Title claim in the region where the Valhalla wells are located.

In 2015, the Buru Energy/ Mitsubishi Corporation JV hydraulically stimulated the Asgard-1 and Valhalla North-1 wells on EP 371. The hydraulic stimulation program was undertaken with the full support of the Noonkanbah community (Yungngora and Warlangurru) Native Title groups. Leading up to and during the program, Buru Energy worked closely with the community to ensure the economic, environmental, social and cultural objectives of the Native Title Parties in relation to the project were met.

The engagement was extended to include:

- The JV providing funding so that the TO's could undertake their own independent specialist review of the proposed operations in 2013 and 2014¹⁹
- Training and employment opportunities were provided during operations with 32 qualifications awarded and over 14,000 hours of paid employment provided to 33 workers from the community²⁰
- An environmental cadet program was undertaken with the Noonkanbah Rangers involved in ongoing environmental monitoring²¹
- Cultural inductions were provided by community members for all contractors working on site. Site visits were also arranged for any community members interested in going to site prior to and during operations.²²

¹⁸ Appendix 6 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

¹⁹ Appendix 6 [Noonkanbah Specialist Review] of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

²⁰ Section 6.2.3.1 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

²¹ Section 6.2.3.2 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

²² Section 6.2.2.3 of Buru Energy Submission to the Scientific Inquiry into Hydraulic Fracture Stimulation in Western Australia

Community Opinions

In September 2015, coinciding with the end of the hydraulic stimulation program, Noonkanbah community made a press release, a copy of which is included below.

11 September 2015

The following is a joint statement released today by Yungngora Chairwoman, Caroline Mulligan and Koolkarriya Committee Chairman, Ronnie Lormada.

We the Yungngora People are the recognized Native Title holders for Noonkanbah Station. Our lands around Noonkanbah have been our traditional lands for many thousands of years.

Buru Energy has recently completed their fracking operation on our country. We allowed this to happen after speaking to many experts about the effect of this activity on our country and the environment. Our experts looked at Buru's plans and let us know this is a safe activity if it is done properly. We trust Buru to do this properly.

"My hope and dream for the community and for the people as well is mainly getting young people involved in the workforce, getting them involved in looking after their country and with Buru it has been a really strong start with us and for the future."

"It has been great to see our young people work closely with Buru and we have that connection."

The following is a statement from Thomas Skinner, Chairman of the Yungngora native title corporation.

We are the new generation of Aboriginal owners that speak for our country and have the support of our old people. We have set up Koolkarriya as a business council that represents the seven clan groups of our Traditional Lands. The council really connects with Buru Energy so that we can have future work and opportunity for our young people.

The reason we selected the people on the business council is so that they can feed back to their own people that they can have their own business going as well. If Buru Energy get cranked up, that is really good for us.

We really want to keep this place going. We want to keep our young people safe from alcohol and the new drugs coming into the Kimberley. This is what is killing our people. Mining is giving us job opportunities to work on our own land. We need training and job opportunities for our kids future.

A mining company like Buru Energy come in here, they give opportunity and work. We want this.

Alcohol and drugs is killing our people – not mining or oil and gas.

WE NEED THESE NEW OPPORTUNITIES.

We welcome Buru.



Furthermore, during the frac program, a videographer was on site collecting footage of the Hydraulic Stimulation operations and community engagement in the program. The footage was made into a short film on the hydraulic stimulation program called "Noonkanbah – Proper Way". The film is available via the below link:

<https://www.youtube.com/watch?v=RoQpeZBl2fg>.

6. REGULATORY

6.1. Current Regulatory Environment

The technique of hydraulic stimulation is a well completion technique and is typically the final operation in the drilling of an unconventional petroleum well.

The drilling of wells is already highly regulated in WA and has been thoroughly tested via the drilling of several hundreds of wells. In other words, WA has an effective regulatory framework.

The regulatory framework in relation to fracture stimulation within WA has been under almost continuous review since 2011 when the Hunter Review was undertaken. In 2012, new PGER (Environment) Regulations were released which provided for increased transparency and enforceability – especially with respect to water management and downhole chemical disclosure. The PGER (Resource Management and Administration) Regulations were subsequently released in 2015.

Between 2013 and 2015, a WA Parliamentary Inquiry was undertaken which concluded that hydraulic fracturing in WA poses negligible risk and with effective regulation can be undertaken safely. WA has a robust regulatory framework with the final piece of regulatory reform being the release of a whole of government framework for the regulation of tight and shale gas resources in Western Australia.

Following a change of Government in 2017, a ban in the South West and Metropolitan regions was announced with a moratorium imposed in the rest of the state pending the outcome results of an Independent Scientific Inquiry.

As a result of the current Government's Moratorium on Hydraulic Stimulation, investment to further appraise and develop the Valhalla gas resource is currently suspended. This has impacted on job opportunities for the Noonkanbah community in this economically disadvantaged region.

6.2. Proposed Improvements

West Australian Operators acknowledge the need for Government oversight and regulation in order that the community's resources can be developed in a safe, efficient, orderly and environmentally responsible manner through the entire life cycle of the project.

However, it is important that changes to the regulatory environment are made via an evidence based risk-management approach, are straightforward and practical, yet provide the community with the assurance it needs.

The future regulatory framework specific to Hydraulic Stimulation should not be exceptional, it should be scientific evidence based. Regulatory processes should not impose a burden on the regulator or operator that is disproportionate to the HSE risk associated with the activity – i.e. timeframes and management plans associated with Hydraulic Fracturing should be commensurate with the scale of the activity and the environmental risks involved, just like any other part of the oil and gas industry. Stakeholder consultations should also reflect the scale and risk of the activity and should focus on those people and communities directly involved.