

FW: Catch up regarding strategic plans - Beetaloo [SEC=OFFICIAL]

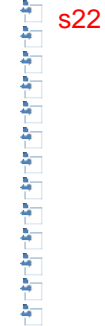
Wednesday, 23 September 2020 3:02 PM

Meeting Date: 23/09/2020 3:00 PM

Link to Outlook Item: [click here](#)

Invitation Message

Participants



Notes

Intro by S :

s47C

Important industry activity, want an update from companies

s47C

s47C

- 47G(1)(b)
 - 47G(1)(b)

- APPEA: any guidance given around evacuation pathway for gas? East or North?
 - s47C
- Pangea: Body of knowledge? Is there a precedent/analogue?
 - Feedback from industry is important
 - Work undertaken by Deloitte and KPMG
 - GBA data, SREBA data, and Barkly regional deal
 - Precedent: critical minerals strategy - semi-analogous, Development pathways
 - Qld Northern Minerals doc - public facing doc that we will produce
 - s47C

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- Pangea: the level of effort is commensurate to the value of the country
 - Qatar is expanding LNG. The Beetaloo will not be developed for domestic supply alone
 - Beetaloo is the only basin that is big enough to be a potential rival to Qatar's expansion
 - Body of knowledge - read closely the GBA report - very accurate
 - Challenge - putting together the inter-relationships to get us to first production in the next couple of years. We need to bring these together faster.
 - What is the critical path? Pangea sees it as the SREBA - limits production starting
 - Until your over the appraisal hump there is no need to discuss what common-use infrastructure you need
 - Most likely there will be more than one sweet spot for extraction

47G(1)(b)

DEPARTMENT OF THE ENVIRONMENT AND ENERGY

MB19-000879

To: Minister for Energy and Emissions Reduction

MEETING WITH EMPIRE ENERGY

Timing: For meeting on Tuesday, 10 September 2019, 8:15am in the Minister's Office.

Meeting with: s22 (Pacific Road Group) and s22, Empire Energy Group).

Prior meetings: No prior meetings.

Proposed note taker: Nil.

What we want: to hear about Empire Energy's proposal for gas development in the Northern Territory gas market and any investment opportunities it is pursuing.

What they want: Mr s22 may wish to discuss Empire Energy's plans for their properties in the Northern Territory and the "delays in Darwin". Empire Energy is interested in the McArthur and Beetaloo gas basins.

Issues and Sensitivities:

- In 2018, the Northern Territory Government lifted the moratorium on fracking in the Territory making the region an attractive prospect for energy companies.
- Empire Energy has become the first junior company to have environmental management plans (EMP) in the Beetaloo and McArthur Basins accepted for assessment by the Northern Territory Government since the lift of the fracking moratorium.
- s47G(1)(a)
- s47G(1)(a)

Consultation: YES – Energy Division, Environmental Standards Division

Attachments

- A:** Talking points
B: Background
C: Biographies

Clearing Officer: Sent: 06/09/2019	Paul Johnson	Principal Advisor	Ph: 02 62759020
Contact Officer:	s22		

ATTACHMENT A – TALKING POINTS

- Thank you for taking the time to meet me today.
 - Do you have any representatives presenting at the Showcase this afternoon?
- I understand that Empire Energy is the first small company to successfully engage with the regulatory approvals processes to secure environmental management plans in the Beetaloo and MacArthur basins.
 - Can you share what you think were the key things that have made you so successful in negotiating bureaucratic processes and do you have any suggestions for other small companies?
- As you are aware, the Beetaloo Sub-basin is a key initiative for the Government.
 - What activities are Empire Energy involved in in the Beetaloo?
- *What would you consider to be the challenges facing smaller companies in the oil and gas industry in the Northern Territory?*

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ATTACHMENT B – BACKGROUND

Empire Energy Limited (ASX:EEG)

- Empire Energy Group Limited is an ASX listed company that is a conventional oil and natural gas producer with operations in Appalachia (New York and Pennsylvania) and the Mid Continent region (Kansas and Oklahoma) in the United States of America.
- In Australia, the company is focusing on the Beetaloo and McArthur gas basins in the Northern Territory.
- Empire Energy has become the first junior company to have environmental management plans (EMP) in the Beetaloo and McArthur Basins accepted for assessment by the Northern Territory Government since the lifting of the fracking moratorium.
- It has over 14.5 million acres in the McArthur & Beetaloo Basins, Northern Territory, both of which are considered highly prospective for large shale oil and gas resources.
- Work undertaken by Empire Energy over the past 5 years demonstrates that the Central Trough of the McArthur Basin, of which the Company holds around 80%, is highly prospective, with key similarities to those extending through Oman, Siberia and Southern China and which contain resources of billions of barrels of oil equivalent.
- ~~s47G(1)(a)~~
 - s47G(1)(a)

s22

s22

- s47G(1)(a)

s22

s22

Pacific Road Group

- **s22** Pacific Road Group, an investment bank focusing on resources and infrastructure transactions in 1986.
- In 2007 **s22** Pacific Road Capital Management which is managing the US\$320 million Pacific Road Resources Fund. The Fund invests in mining projects, related infrastructure and services businesses, as a direct investor or joint venture partner.

Beetaloo Sub-basin funding

- The Government announced in the April 2019 Budget an \$8.4 million commitment to accelerate the development of the Beetaloo Sub-basin. This comprises three elements:
 - \$1.5 million to undertake a feasibility study to examine gas exploration areas in the Beetaloo Sub-basin which may be accelerated to market to increase the availability of gas into the domestic market sooner.
 - \$5.0 million to conduct additional environmental work complementary to the work stream under the existing Geological and Bioregional Assessment Program. This supports the NT accelerating the strategic regional environmental and baseline assessment (SREBA) which is critical to future development and production of gas.
 - \$1.9 million to develop a Beetaloo Aboriginal economic development strategy to examine how best to leverage economic development for the Aboriginal communities through increased gas activity in the Beetaloo Sub-basin.

Feasibility study

- The feasibility study is intended to:
 - assess which gas projects in the Beetaloo Sub-basin may be accelerated to increase the availability of gas into the domestic market sooner;
 - explore issues hindering the exploration and development of gas resources, and identify priority areas for consideration after implementation of the recommendations from the Scientific Inquiry into Hydraulic Fracturing Report (the Inquiry);
 - investigate options to promote a balance between gas flows to Darwin for export or use in downstream gas industries, and increasing gas flows to the east coast gas market.

Additional environmental work

- The Australian Government's Geological and Bioregional Assessments (GBA) program was allocated an additional \$5.0 million for five new environmental activities in the Beetaloo Sub-basin.

These activities support the delivery of the Beetaloo Sub-basin assessment in the Northern Territory, and the Northern Territory Government's Strategic Regional and Environmental Baseline Assessment (SREBA).

Beetaloo Aboriginal economic development strategy

- The Australian Government is investing \$1.9 million to support development of the Beetaloo Aboriginal economic development strategy.
- The strategy will identify how increased gas activity in the Beetaloo Sub-basin can provide economic benefits for Aboriginal peoples in the Barkly region and the Northern Territory.

The strategy will be developed in consultation with Indigenous stakeholders in the Barkly region.

Background

- In 2018, Wood Mackenzie considered prospects for NT fracking production to be weak in the short to medium term due to infrastructure and cost constraints. They noted potential for a pilot project in the mid-2020s, using existing infrastructure, but considered development is more likely in the early to mid-2030s.
- The NT Government expects exploration to re-commence from late July 2019, and that production could start at a small scale in 2025, depending on the industry's assessment of commercial viability as a result of exploration.

Gas Prices

- Manufacturers, depending on size, can either contract directly from the wholesale market for gas supply or engage with energy retailers to secure contracts.
- In its April 2019 interim report, the ACCC reports that gas commodity offers for 2019 were in the \$9 - \$11 per gigajoule range.
- Recent reports indicate a number of large gas users have signed supply agreements for between \$8-9 per gigajoule.
- The latest ACCC netback price series (as at 1 July 2019) shows:
 - The average expected netback price over the 2020 calendar year is \$7.88 per gigajoule.

Gas market transparency measures

- In December 2018, COAG Energy Council tasked officials with consulting on a package of transparency measures for the gas market.
- Formal consultation on a draft package commenced on 8 August 2019 through the release of a COAG Regulation Impact Statement for consultation.
- Submissions close 12 September 2019.
 - Outcomes from this process will feed into developing a final package which is expected to be brought for Energy Council endorsement by April 2020.

Gas transportation reforms

- On 19 December 2018 Energy Council Minister's agreed to the Terms of Reference for a Regulatory Impact Statement (RIS) process on gas pipeline regulation which is underway.

- The purpose of the RIS is to evaluate existing forms of regulation and coverage tests, and consider options for improvement.
- Recent COAG Energy Council gas transportation reforms include:
 - New rules to help shippers negotiate fairer terms and conditions for gas transportation. They commenced on 1 August 2017 and require pipeline companies to provide more information to the market and establish binding arbitration to resolve contract negotiation disputes (including disputes about prices).
 - Under these new rules one arbitration has occurred, this was between Hydro Tasmania and the Tasmanian Gas Pipeline.
- Capacity trading reforms commenced 1 March 2019. These reforms establish:
 - standard operational agreements as a basis for trading spare pipeline capacity;
 - a capacity trading platform that will allow shippers to trade secondary capacity;
 - a day-ahead auction for contracted but un-nominated capacity; and
 - a reporting framework for secondary capacity trades that includes publishing prices and other related information on secondary trades.

Australian Domestic Gas Security Mechanism

- The ADGSM has been in place since 1 July 2017. It is intended to ensure there is a sufficient supply of natural gas to meet the forecast needs of east coast gas users.
- The Minister for Resources and Northern Australia is responsible for making the decision as to whether a shortfall exists.
- Between 1 July and 1 October the Minister can issue a notification of intent to make a determination for the following year.
 - This period allows for information gathering and analysis to test the likelihood of the next year experiencing a gas shortfall, and the extent to which LNG exports contribute to this shortfall.
 - The Minister may request advice from the AEMO and the ACCC on the likelihood of a shortfall in the domestic market, and request information from LNG projects on their gas production outlook and planned export volumes (both contracted and spot).
 - Between 1 September and 1 November after considering the information gathered, the Minister can issue a Determination of whether the following year will be a “shortfall year”.
- If the domestic market is found to be in shortfall, export permissions will be required by all Australian LNG exporters. There are two types of export permissions:
 - Unlimited Volume permissions - would be granted to LNG exporters associated with an LNG project that is physically unconnected to the part of the Australian domestic gas market that is experiencing a shortfall. This will not restrict the volume of gas that an LNG project can export.
 - Allowable Volume permissions - may be granted to all LNG projects connected to the parts of the Australian domestic gas market experiencing a shortfall. This will specify the volume in tonnes of LNG that each project is allowed to export for the specified time period.

Heads of Agreement

- In 2018, Former Prime Minister Turnbull signed the Heads of Agreement with LNG producers.
- Under the Heads of Agreement with the Australian Government, Queensland LNG producers have agreed to offer uncontracted gas to the domestic market in the event of any supply shortfalls in 2019 and 2020 on reasonable terms.

MB19-000879

ATTACHMENT C – BIOGRAPHIES

s22

s22



Australian Government

Department of Industry, Science, Energy and Resources

PDR Ref: MB20-004080

EVENT SUMMARY

<Minister for Energy and Emissions Reduction>

Empire Energy Carpentaria-1 Site Visit

Event and purpose	Empire Energy Group is hosting a site visit to their well, Carpentaria-1, in Beetaloo Sub-basin, NT
Date	16/10/2020
Time	10.30 am (Arrival on site)
Location	Carpentaria-1 Site Beetaloo Sub-basin, NT
Speakers	
Key message(s)	<ul style="list-style-type: none"> • The Beetaloo Basin is a world-class resource that has the potential to drive significant development in the Northern Territory. • The Liberal National Government is investing \$28.3 million to develop five strategic Basin plans, with the Beetaloo Basin in the Northern Territory to be the first to be completed in coming months. • Developing the Beetaloo Basin can contribute to the Government's gas-fired recovery to support Australia's economic recovery from COVID-19.
Issues/sensitivities	<ul style="list-style-type: none"> • Empire Energy are the first junior player to receive the NT's consent to explore for gas in the Beetaloo since the lift of the fracking moratorium. • In October 2020, Empire announced it has found liquids-rich gas at its Carpentaria-1 well. • s47G(1)(a)
See attachments:	Talking points and Factsheet on Beetaloo are included in this pack. A media release has been prepared for this site visit

BACKGROUND

About the host organisation

- Empire Energy Group Limited is an ASX listed conventional oil and natural gas producer. It has operations in Beetaloo and McArthur gas basins in the Northern Territory and in Appalachia (New York and Pennsylvania) in the United States of America.
 - Empire announced on 30 September 2019 that it had sold its Kansas oil and gas assets for US\$19.25 million to further reduce its debt so it is better financially placed to focus "on the core Northern Territory assets".
- It has almost 60,000 square kilometres of exploration tenements in the McArthur & Beetaloo Basins, Northern Territory, both of which are considered highly prospective for large shale oil and gas resources.
- In September 2019, Empire Energy received the NT Government's consent to join Santos and Origin Energy to find gas in the Beetaloo Sub-basin. This included consent for its seismic program and its environmental management plans.
 - It is the first junior company to reach this stage in the Beetaloo.
- Empire Energy plans to drill two wells 85km south-west of Borroloola, of which the Carpentaria-1 well is the first.

About the site

- In September 2020, Empire Energy mobilised a drill rig to its Carpentaria-1 well and approximately 2,900 metres will be drilled, logged, cored, cased and suspended.
- In October 2020, Empire Energy announced that its first well had found liquids-rich gas across a thick section of shale, at a shallower depth than expected. It stated that this was encouraging for future commercial production scenarios and the shallower depth means that development costs of future drilling costs will be reduced.

Empire Energy's views

- On 9 October 2020, representatives from the department met with Empire Energy's s22 and s22, to understand the progress of Empire's Carpentaria-1 drilling program and the challenges the company has faced.
- s22 s47G(1)(a)
 - s47G(1)(a)

- s47G(1)(a)

Talking Points

- Thank you for taking the time to meet me today and showing me Carpentaria-1 well.
 - Could you share with me the results of the recent well drilling?
- As you are aware, the Beetaloo Sub-basin is a key initiative for the Government.
 - What is your strategy in the Beetaloo Sub-basin?
 - What other activities are Empire Energy involved in in the Beetaloo and the region?
- As a junior oil and gas exploration company, what do you see as the major challenges in Beetaloo Sub-basin and in Northern Territory?
- I'm interested to hear your thoughts on some of the Gas-fired Recovery measures which the Prime Minister, Minister Pitt and I recently announced, in particular:
 - the **National Gas Infrastructure Plan**, which will identify the infrastructure gaps and opportunities that need to be addressed.
 - the **Beetaloo Strategic Basin Plan** and possible options to accelerating exploration and appraisal activities the plan will identify.

Factsheet on Beetaloo

- The Beetaloo Sub-basin lies within the larger McArthur Basin and spans approximately 30,000 square kilometres.
- The Beetaloo Sub-basin incorporates both the Katherine-Daly and Barkly Regions of the Northern Territory.

Reserves & stats

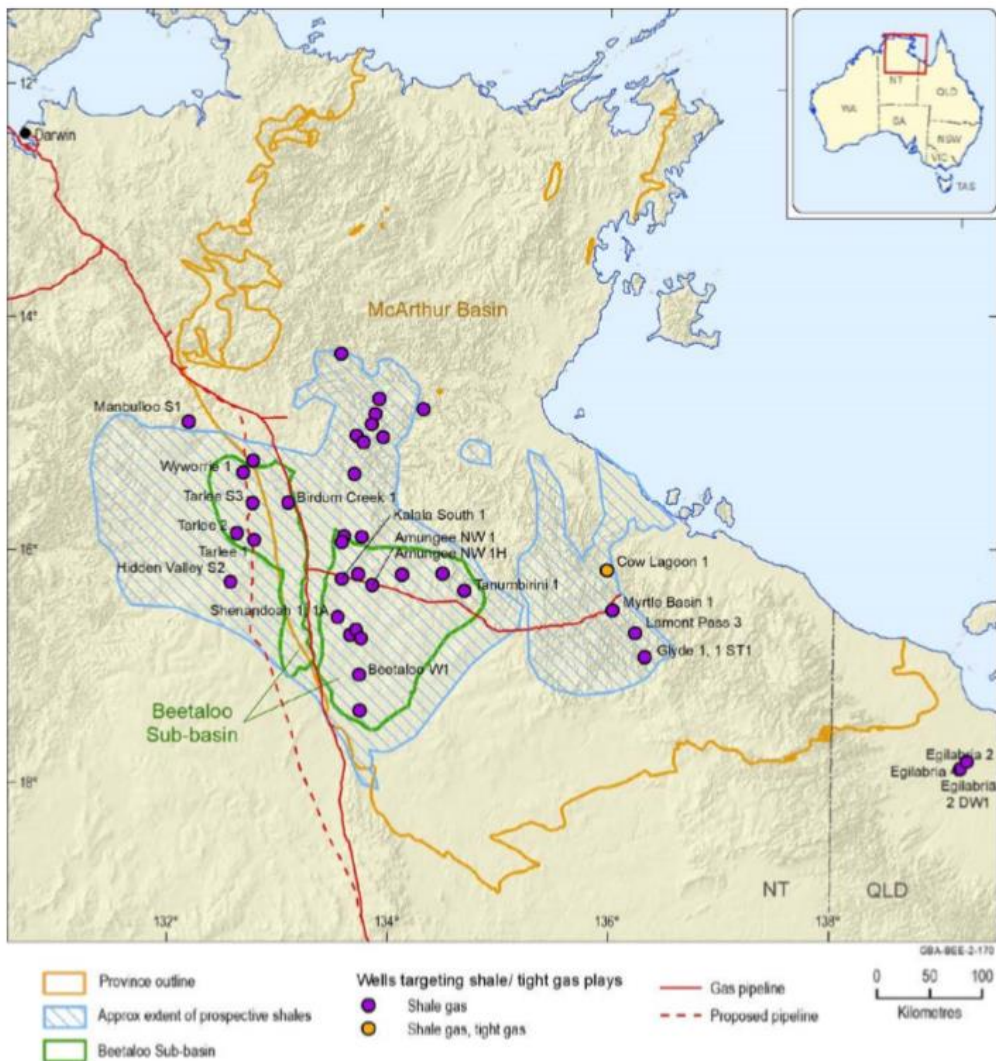
- It is estimated that the Beetaloo Sub-basin contains approximately 70 per cent of the Territory's prospective shale gas resources and has been responsible for around 50 per cent of the total \$505 million of exploration investment in the NT since 2010.
- Results to date below highlight the presence of potentially significant petroleum resources in the Beetaloo Sub-basin and surrounds. However the full extent of these resources is still poorly understood and quantified, and any estimates of potential resources have a high degree of uncertainty associated with them.
- To date, **no reserves** have been booked for any petroleum resource type for the Beetaloo Sub-basin
- Origin Energy reported **2C Contingent Resources** of 6.6 trillion cubic feet (Tcf) for the "B shale" unit of the Amungee Member over an area of 1968 km², across permits EP76, EP98 and EP117 in the Beetaloo Sub-basin in 2017.
 - It is important to note these 2C Contingent Resources have been reported based on the results from one well, assuming homogeneity in the geological characteristics of the play across the entire region.
- A range of regional-scale **prospective resource** estimates have been published for shale gas in the Velkerri and Kyalla formations in the greater McArthur Basin, including the Beetaloo Sub-basin.
 - Empire Energy reported an unrisksed P50 prospective resource estimate of 11.1 Tcf for the Velkerrie, Kyalla, Barney Creek and Wollongorang formations in the greater McArthur Basin (Empire Energy, 2018).
 - Falcon Oil and Gas (2017) estimated 496 Tcf in the Beetaloo Sub-basin Middle Velkerri B shale. 85 Tcf of this is estimated to be technically recoverable, assuming a 16 per cent recovery factor (prospective area 16,145 km²) (Falcon Oil and Gas, 2017).
 - The Northern Territory Geological Survey estimated the following in-place resources in the Beetaloo and Broadmere sub-basins (Weatherford Laboratories, 2017; Revie, 2017c, 2017b):
 - Amungee Member gas-in-place of 202 Tcf (P50¹) (range: 293 Tcf (P10) to 118 Tcf (P90))
 - Amungee Member oil-in-place of 94 MMbbl (P50) (range: 128 MMbbl (P10) to 72 MMbbl (P90)) and

¹ Statistics of rock samples. P10 means 10th percentile, P50 means 50th percentile and P90 means 90th percentile.

- Kyalla Formation oil-in-place of 772 MMbbl (P50) of oil-in-place (range: 1163 MMbbl (P10) to 414 MMbbl (P90)).

What's happened on the exploration front so far and which companies are involved

- Santos, Origin Energy, Falcon Oil and Gas and Pangaea Resources are all investigating key unconventional targets in the Beetaloo.
- Exploration for hydrocarbons in the greater McArthur Basin began in the 1960s, with the Beetaloo Sub-basin becoming the focus of exploration during the mid-2000s.
- In total, more than 30 petroleum wells have been drilled in the Beetaloo Sub-basin and surrounding areas of the greater McArthur Basin since the 1960s (See Figure 1 below).
 - Approximately half of these wells have been drilled in the last ten years.
 - Nineteen of these wells are located within the Beetaloo Sub-basin outline as defined by the Northern Territory Geological Survey.
 - Five wells are located within the western sub-basin (Birdum Creek 1, Tarlee 1-3, Wyworrie 1) and
 - 14 are located within the eastern sub-basin (Amungee NW1, Balmain 1, Beetaloo W1, Burdo 1, Chanin 1, Elliot 1, Kalala 1, Jamison 1, Mason 1, McManus 1, Ronald 1, Shenandoah 1, Shortland 1, Tanumbirini 1).
 - In the Mid-2000s Shenandoah 1 well was drilled by Sweetpea Petroleum and it was deepened by Falcon Oil and Gas in 2011 and re-named Shenandoah 1A
 - In 2013, seven petroleum wells around the western part of Beetaloo were drilled by Pangaea Resources
 - In 2014, Tanumbirini 1 well was drilled by Santos and Tamboran Resources
 - In 2015, Kalala South 1, Beetaloo W1, Amungee NW 1H wells were drilled by Origin Energy and Falcon Oil and Gas.
- In September 2016, the Northern Territory Government implemented a moratorium on hydraulic fracturing of unconventional gas reservoirs until a comprehensive independent scientific inquiry into the impacts of hydraulic fracturing was completed.
- In March 2018, the Scientific Inquiry into Hydraulic Fracturing final report was handed to the NT government, which accepted all 135 recommendations in April 2018.
- In September 2019, Empire Energy has received the NT Government's consent to join Santos and Origin Energy to find gas in the Beetaloo Sub-basin.
- In early 2020 Origin Energy, Santos and Empire deferred drilling activities in the Beetaloo Sub-basin as a result of COVID-19.
- In September 2020, Empire Energy mobilised a drill rig to its Carpentaria-1 well and recommenced drilling earlier than expected. Approximately 2,900 metres will be drilled, logged, cored, cased and suspended.
- In October 2020, Empire Energy announced that its first well had found liquids-rich gas across a thick section of shale, at a shallower depth than expected. It stated that this was encouraging for future commercial production scenarios and the shallower depth means that development costs of future drilling costs will be reduced.



Map 1: Wells targeting shale and/or tight gas plays in the Beetaloo Sub-basin and adjacent areas of the greater McArthur Basin (GBA Stage 2: Petroleum prospectivity technical appendix)

State & Federal support to date

Australian Government

- The Australian Government announced an \$8.4 million commitment in the April 2019 Budget to accelerate the development of the Beetaloo Sub-basin. This comprises three elements:
 - \$1.5 million to undertake a feasibility study to examine gas exploration areas in the Beetaloo Sub-basin which may be accelerated to market to increase the availability of gas into the domestic market sooner.
 - \$5.0 million to conduct additional environmental work complementary to the work stream under the existing Geological and Bioregional Assessment Program.
 - \$1.9 million to develop a Beetaloo Aboriginal economic development strategy to examine how best to leverage economic development for the Aboriginal communities through increased gas activity in the Beetaloo Sub-basin.

- The feasibility study is being finalised and we have provided you with the latest draft of this report in MS20-003683.
- The Australian Government's Geological and Bioregional Assessments (GBA) program was allocated an additional \$5.0 million for five new environmental activities in the Beetaloo Sub-basin.
 - Stage 2 report (geological and environmental baseline assessments) was finalised in May 2020.
 - Stage 3 report (impact analysis and management) is currently being conducted.
- These activities support the delivery of the Beetaloo Sub-basin assessment in the Northern Territory, and the Northern Territory Government's Strategic Regional and Environmental Baseline Assessment (SREBA).
- The Australian Government is investing \$1.9 million to support development of the Beetaloo Aboriginal economic development strategy.
 - The strategy and the work plan was completed in July 2020.
 - The strategy was developed by the Department of Infrastructure, Transport, Regional Development and Communications in consultation with Indigenous stakeholders in the Barkly region.

Northern Territory

- The Northern Territory Government implemented a moratorium on hydraulic fracturing of unconventional gas reservoirs in September 2016 until a comprehensive independent scientific inquiry into the impacts of hydraulic fracturing was completed.
- The Scientific Inquiry into Hydraulic Fracturing final report was handed to the government and released to the public in March 2018.
 - Its conclusion was that risk is inherent in all development and that the onshore shale gas industry is no exception. However, if all recommendations made in the Final Report were implemented in full, the Inquiry Panel found that the risk could be mitigated or reduced, and in some cases eliminated altogether.
- In April 2018, The Northern Territory Government announced it would support all 135 recommendations in the Scientific Inquiry into Hydraulic Fracking and lifted the moratorium.
- The Northern Territory Gas Strategy 2019 outlines a vision that 'By 2030, the Territory is a world class gas production, manufacturing and services hub'.
 - The strategy includes a five-point plan to achieve this vision.
 - Expand the world-scale Darwin LNG export hub
 - Grow the Northern Territory's service and supply industry
 - Establish gas-based processing and manufacturing
 - Grow local research, innovation and training capacity
 - Contribute to Australia's energy security
 - Additionally, the Northern Territory Economic Development Framework has identified the energy and minerals sector as one of the NT's five key economic growth sectors.

Community concerns and support to date

- Early drilling and development activities for the Beetaloo Sub-basin are currently concentrated near to the communities of Daly Waters, Larrimah and Elliot
 - Daly Waters is a small town in the boundaries of the Sub-basin, with a residential population of 9.
 - Larrimah has a residential population of 47 (194 when including surrounding areas).
 - Being highly remote and with limited human capital resources, these localities currently have limited economic capabilities.
- Established infrastructure and services in these towns caters predominantly to tourists and transport services, including accommodation, fuel and meals.
- These communities show a common experience of lower educational outcomes, limited population growth, and high levels of disadvantage.
- The Department's feasibility study highlighted that operators in the Beetaloo Sub-basin have made extensive investment in the establishment and maintenance of a social licence to operate.
- The Northern Land Council (NLC) is currently the Prescribed Body Corporate (PBC) under the Native Title Act. The NLC provides support to traditional owners in negotiations and gaining informed consent through establishment of an Indigenous Land Use Agreement (ILUA). The NLC fulfils a specific, legislated role in facilitating relationships and agreements between developers and the Native Title holders.
- Recent media suggests that some Native Title holders exhibit strong negative views of unconventional gas development and are actively seeking to replace the NLC as the PBC. The media report that traditional owners do not feel sufficiently consulted or fully understand the nature of the developments being proposed by operators.
- There remains broad public concern over fracking, including isolated incidences of anti-fracking protests within the NT. Anti-fracking activists have a heavy presence in the Beetaloo region.

Key points around the Strategic Basin Plan

- As part of the Gas Fired Recovery agenda, the Minister for Resources, Water and Northern Australia is leading development of a Strategic Basin Plan for the Beetaloo sub-basin.
- Given the unknown status of the recoverable resources in the Beetaloo, the immediate focus of the Beetaloo's Strategic Basin Plan will be accelerating exploration and appraisal activities. The Plan will outline what actions the Australian Government could take forward to accelerate the exploration process, and create mechanisms to support development once commercial viability is established.

LIST OF ATTENDEES

s22



PROTECTED: CABINET

DEPARTMENT OF INDUSTRY, SCIENCE, ENERGY AND RESOURCES

MB21-000230

To: Minister for Energy and Emissions Reduction

MEETING BRIEF: EMPIRE ENERGY – (s22)

Timing: For meeting on Wednesday, 10 March 2021

Meeting with: s22 from Empire Energy

Prior meetings: You met with s22 on 16 October 2020 at Empire Energy’s Carpentaria-1 Beetaloo sub-basin site (**MB20-004080** refers).

Proposed note taker: TBD

What we want: To identify practically implementable solutions that improve the operating conditions for onshore Northern Territory (NT) gas operators.

s47G(1)(a)

Issues and Sensitivities:

s47G(1)(a)

3. s47B(a)

4. s47C

Clearing Officer: Sent: 9/3/2021	Bruce Murphy	A/g General Manager, Gas Taskforce Branch	s22
Contact Officer:	s22		

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a. s47C

5. s47C

- a. Resourcing was also provided to the Department under the Beetaloo Strategic Plan to continue working with the NT Government and gas operators to identify and address practical impediments to exploration and development.

6. s47C

Consultation: Resources, State Deals.

Attachments

- A:** Talking points
B: Background
C1: Letter from Empire Energy – January 29th
C2: Joint response letter to Empire Energy
D: Biography

PROTECTED: CABINET

ATTACHMENT A

Talking Points

- Thank you for expressing your support for the \$224 million Beetaloo Strategic Basin Plan, released in January 2021.
 - We are pleased that you share our enthusiasm that the Beetaloo has enormous potential for Australia's energy security and economic development.
 - I share your interest in seeing the most efficient and effective regulatory regime for onshore gas in the Northern Territory. I understand the links between this and production costs.
 - The Australian Government is working with the NT Government to deliver a more efficient regulatory environment in a number of ways, including:
 - Negotiation of a Bilateral Energy and Emissions Reduction Agreement, which will have a clear focus on collaboration to drive development in the Beetaloo, and reducing red and green tape.
 - Establishing new bilateral environmental assessment agreements, and working towards single touch environmental approvals.
 - Reinvigorating the existing Memorandum of Understanding on Gas Industry Development with the NT Government and working with gas operators to address practical barriers to exploration and appraisal.
 - Thank you for your in-depth analysis regarding the complications of navigating the regulatory environment as an onshore gas operator in the NT.
 - s47B(a)
-
- As a government, we are considering options to best support Traditional Owners within the Beetaloo and ensure the NLC is positioned to deliver for Traditional Owners.
 - Regarding your specific request for information on the Aboriginal Information Program, I understand that the NLC is continuing to work with the CSIRO on communication materials in languages of local Aboriginal communities. I understand that the Australian Petroleum Production and Exploration Association has been heavily engaged in this process.

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ATTACHMENT B

Background

Empire Energy Limited (ASX:EEG)

Empire Energy Group Limited is an ASX listed company that is a conventional oil and natural gas producer with operations in Appalachia (New York and Pennsylvania) and the Mid Continent region (Kansas and Oklahoma) in the United States of America.

According to Empire Energy's most recent annual report, the company recorded a US\$16 million loss for the year ending in 2019.¹

- Empire incurred a US\$7.9 million loss from impairments, depreciation, and depletion and amortisation costs.
- In the same year, Empire only received US\$5.4 million in sales revenue against US\$4.1 in production costs.

In Australia, the company is focusing on the Beetaloo and McArthur gas basins in the Northern Territory.

Empire Energy was the first junior company to have environmental management plans (EMP) in the Beetaloo and McArthur Basins accepted for assessment by the Northern Territory Government since the lifting of the fracking moratorium.

Empire holds over 14.5 million acres in the McArthur & Beetaloo Basins, Northern Territory, both of which are considered highly prospective for large shale oil and gas resources (See **Image 1** below).

On November 2019, seismic testing demonstrated that Empire has a material Velkerri Shale and Kyalla Shale resource in EP 187. And on January 2020, Empire received Ministerial consent from the NT Environment minister to drill on that respective tenement.²

The Company has recently recommenced the process of securing landholder, Traditional Owner and Government approvals to progress its Exploration Permit Applications for EP 180-3 and 188.

Regulatory Environment for Hydraulic Fracturing in the Northern Territory

The Northern Territory Government implemented a moratorium on hydraulic fracturing of unconventional gas reservoirs in September 2016 until a comprehensive independent scientific inquiry into the impacts of hydraulic fracturing was completed.

The NT's Scientific Inquiry into Hydraulic Fracturing final report concluded that risk is inherent in all development and that the onshore shale gas industry is no exception. However, if all recommendations made in the Final Report were implemented in full the Inquiry Panel found that the risk could be mitigated or reduced, and in some cases eliminated altogether.

In April 2018, The Northern Territory Government announced it would support all 135 recommendations in the Scientific Inquiry into Hydraulic Fracking and lifted the moratorium. Exploration recommenced in the Beetaloo.

- As at 26 February 2021, 63 of the recommendations have been implemented, 73 have commenced and two are yet to commence. The implementation plan focuses on

¹ See Empire Energy, Annual Report 2019, page 32

² See Empire Energy, Annual Report 2019, page 8

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strengthening regulation, ensuring industry is accountable for its practises, safeguarding water and the environment, and respecting community and culture.

- Implementation of these recommendations has imposed strict conditions on unconventional gas development. These conditions lie parallel with regulations under the EPBC that protect matters of national environmental significance.

Indigenous Engagement and Cultural Heritage Clearance Processes

To undertake any type of exploration or development activity on indigenous land in the NT, an Indigenous Land Use Agreement (ILUA) is required.

The Northern Land Council (NLC) is an independent statutory authority of the Commonwealth, responsible for assisting Aboriginal peoples in the Top End of the Northern Territory to acquire and manage their traditional lands and seas.

The NLC are responsible for consulting with Native Title holders to establish ILUAs.

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s47C

Aboriginal Information Program

Recommendation 11.6 of the Scientific Inquiry called for Government, Land Councils and the AAPA, to help implement an information program to ensure that reliable, accessible, trusted information about any onshore shale gas industry is effectively communicated to all Aboriginal people.

s47G(1)(a)

The Northern Territory Government has advised that the Land Councils are working with CSIRO to finalise communication material into languages of local Aboriginal communities, to be presented to a working group. They further advise delivery of this project has been delayed with COVID-19.

Strategic Basin Plans

A key measure under the Government's \$52.9 million Gas Fired Recovery initiative is the \$28.3 million committed in the 2020-21 Budget to establish five Strategic Basin Plans.

Strategic Basin Plans will target exploration and development activities in key locations of strategic importance.

Beetaloo Strategic Basin Plan

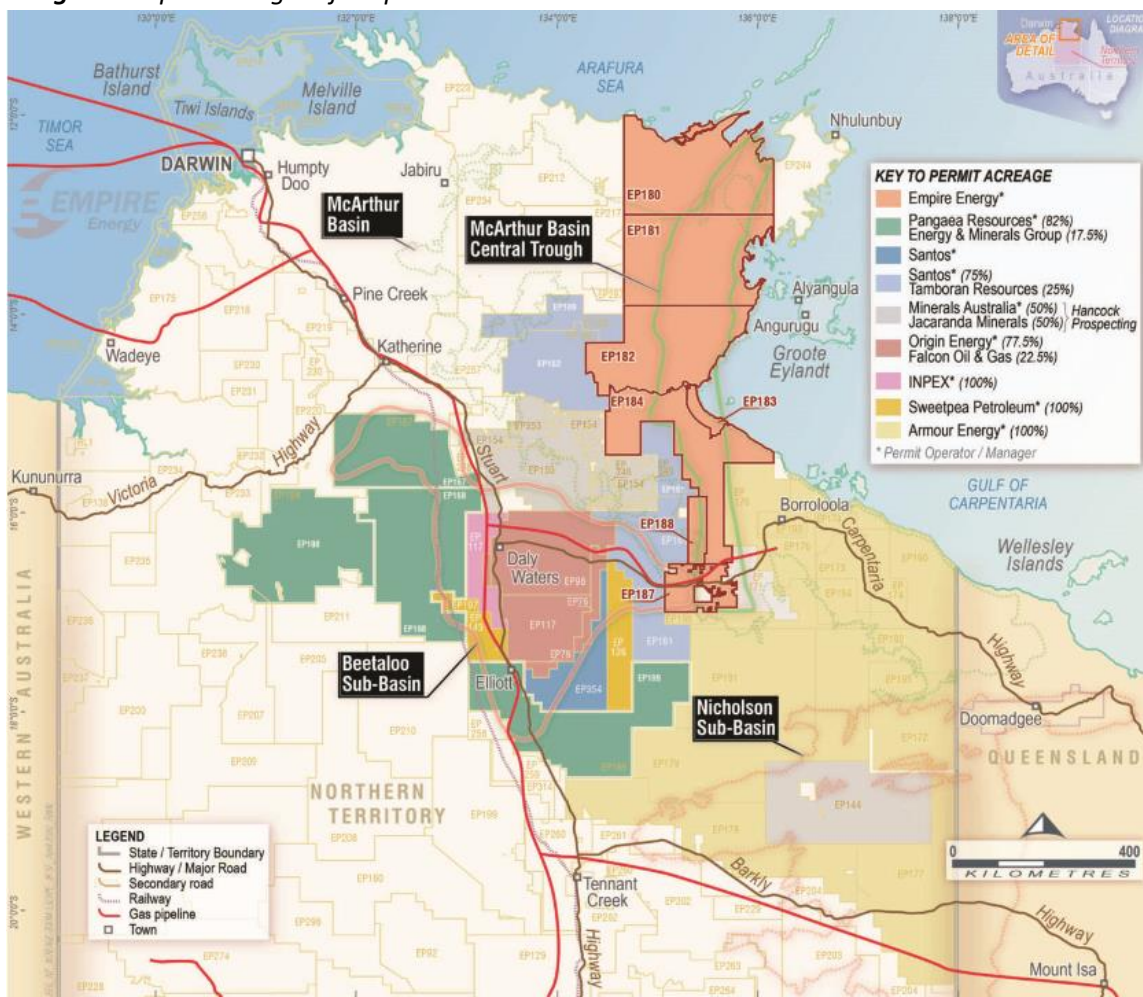
On 14 January 2021, Minister Pitt released Unlocking the Beetaloo: The Beetaloo Strategic Basin Plan. The Plan has twin objectives: to bring forward investment in the Beetaloo to 2025 or earlier and ensure development of the Beetaloo is safe, sustainable, and beneficial for local communities.

The Plan has four key focuses and encompasses \$224 million in new funding initiatives. To accelerate development and help realise the full potential of the Beetaloo, the Australian Government is:

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- Accelerating appraisal of the gas resources, including through establishing a new grant program, the Beetaloo Cooperative Drilling Program. The program will provide \$50 million to gas operators to support \$200 million of exploration activity before 30 June 2022.
- Working closely with the Northern Territory Government and local industry in the Beetaloo to build necessary infrastructure, including by establishing a \$173.6 million Roads of Strategic Importance corridor for NT Gas Industry Roads.
- Delivering more efficient and effective regulatory processes, including enhanced regulator capability and reduced regulatory duplication.
- Ensuring the benefits from development are maximised and are realised by local communities.

• **Image 1: Map detailing major operators in Beetaloo and McArthur Basins**



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ATTACHMENT D

Biography

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Drilling activities in the Beetaloo have increased over the past year as companies test production rates and evaluate the potential commerciality of shale gas resources. In October 2020, Santos and Tamboran Resources announced a gas discovery from the Tanumbirini 1 vertical well drilled in EP 161. Gas flowed at initial rates of 1.2 million cubic feet per day from the Velkerri Formation before settling down to 0.4 million cubic feet per day⁵. Tamboran began drilling the first horizontal well in EP 161, Tanumbirini 2H, in May 2021, which will be hydraulically fracture stimulated across the Mid-Velkerri B shale before undertaking extended flow tests⁶.

Empire Energy announced a resource upgrade in February 2021 for the Velkerri Formation in EP 187 following assessment of results from the Carpentaria 1 vertical well drilled in September and October 2020. On 28 June 2021, Empire Energy announced a gas discovery from Carpentaria 1 after production testing in the Velkerri Formation flowed gas to the surface at a rate of 0.37 million cubic feet per day over a 72 hour test period, with an instantaneous peak rate of >1.6 million cubic feet per day.⁷ These initial vertical flow rates indicate potential for commercial hydrocarbon production in future horizontal wells. Empire Energy is now preparing for drilling and completion of its first horizontal appraisal well later in 2021.

Falcon Oil and Gas and Origin Energy announced in January 2021 a gas discovery in the Kyalla Formation following drilling and production testing of the Kyalla 117 N2-1H ST2 horizontal well. Gas flowed at rates of 0.4 – 0.6 million cubic feet per day over 17 hours during production testing⁸. Initial analysis suggests liquid-rich gas with <1% CO₂. Falcon Oil and Gas are planning to drill a vertical well later this year, Velkerri 76, to test the deeper Velkerri Formation.

Resource estimates and possible development of the Beetaloo

Gas resources are reported as best estimate of reserves (2P) and best estimate of contingent resources (2C) using the SPE-Petroleum Resources Management System⁹. Reserves are commercially recoverable petroleum in known accumulations, of which 2P reserves are the best estimate (the sum of Proved plus Probable Reserves). Given the stage of exploration in the Beetaloo, no 2P reserves have been established. Further appraisal activities, including production tests, will provide operators with the necessary confidence to establish 2P reserves. This is an essential step to establish commercially viable resources. Large scale investment to develop the Beetaloo is unlikely to occur before 2P reserves can be established in the Beetaloo.

Contingent resources are potentially recoverable amounts of petroleum in known accumulations, of which 2C contingent resources are the best estimate. Contingent resources are not yet considered to be commercially recoverable due to one or more technical, commercial or other factors. The Beetaloo 2C contingent resources are estimated as 6.6 Tcf for unconventional gas based on Origin and Empire's reporting. A number of companies including Santos are yet to book any resource estimates reflecting the stage of their exploration efforts. Australia's total gas production in 2018-19 was 5,498 PJ (4.89 Tcf)¹⁰. Currently no contingent resource estimates have been booked for other unconventional hydrocarbons (oil and condensate) across the Basin which reflects the very early stage of exploration.

⁵ Tamboran Resources, 2020. Tamboran Resources Ltd press release, 22 October 2020 'Positive Results of Vertical Frac and Gas Flow Tests in the Beetaloo Basin'.

⁶ Tamboran Resources, 2021. Tamboran Resources Ltd press release, 11 May 2021 'Tamboran Announces Spud of Tanumbirini #2H on EP 161'.

⁷ Empire Energy, 2021b. Strong Carpentaria-1 Flow Rates. ASX Release 20210628.

⁸ Falcon Oil and Gas, 2021. Falcon Oil and Gas Press Release, 19 January 2021 'Notification of Discovery – Kyalla 117 N2-1H ST2'.

⁹ <https://www.spe.org/industry/docs/PRMS-Guide-for-Non-Technical-Users-2007.pdf>

¹⁰ <https://www.ga.gov.au/digital-publication/aecr2021>

Estimates of hydrocarbons in place, such as oil in place and gas in place, indicate the total quantity of hydrocarbons existing originally in naturally occurring reservoirs. Table 1 contains published contingent resource estimates and regional best estimates (P50) of original hydrocarbons in place for the Beetaloo. Estimates may vary due to the information available at the time of publication and differing approaches to calculation due to the data availability over time. More recent estimates will be more accurate as there is more and better data used in their calculation. The NT Geological Survey estimates provide an overview of potential gas and oil in place across the entire Beetaloo.

Table 1 Identified contingent (2C) gas resources and original hydrocarbon in place estimates in the Beetaloo

Source	Area	Interval	Area (km ²)	Gas	Gas	Oil	Reference
				2C Resources (Tcf)	Estimated P50 original in place (Tcf)	Estimated P50 original in place (MMbbl)	
Origin Energy	EP76, EP98, EP117	Velkerri B Shale	1,968	6.6	61	-	Origin Energy (2017)
Empire Energy	EP187	Velkerri Formation	3.5	0.041	-	-	Empire Energy (2021)
NTGS	Beetaloo and Broadmere sub-basins	middle Velkerri Formation - Amungee Member	36,300	-	202	96	Weatherford Laboratories (2017)
NTGS	Beetaloo and Broadmere sub-basins	Kyalla Formation	36,300	-	-	772	Weatherford Laboratories (2017)

NTGS = Northern Territory Geological Survey. Tcf = trillion cubic feet. MMbbl = million barrels.

sections of 1-3 km⁵. The second is multistage fracking. ~~This is~~ where fracturing ~~of~~ small sections is performed sequentially. This allows a greater density of fractures. The number of individual segments used in multistage fracking in the U.S. has increased over the years. 10-12 would have been typical in the late 2000s, however by the mid-2010s as many as ~~40-100~~50 would be common, with much smaller segments⁷.

~~There are also other advances possible. 'Slickwater' fracking is the most commonly employed type. This uses water with a small amount of additives as the fracturing fluid. It~~ produces long, penetrating fractures but water's lack of viscosity makes it a poor proppant carrier. This means high pressures and large volumes are required⁸. Proppant carrying ability can be increased using gel and foam-based fluids. However, these fluids have their own issues and are not suitable for impermeable rocks⁸. Directional drilling is a recent advance. It allows directing of the well with respect to the actual stresses in the rock. This means a more favourable well-fracture orientation. Multi-branch wells are also sometimes used^{6,10}.

Hydraulic fracturing is relatively expensive and complex compared to conventional production. It also requires a much larger number of wells. Nonetheless, its widespread use in the U.S.A. has allowed hydrocarbon production there to exceed its former historic peak.

Comparison with Coal Seam Gas

In Australia, hydraulic fracturing is also used to extract coal seam gas (CSG). Only a minority of CSG wells are fracked⁶, whereas all shale gas wells are¹¹. CSG is widely produced in Queensland and accounts for all fracking there. The technique is the same as that used in shale. Targeted coal seams are usually within 1 kilometre of the surface, whereas targeted shale formations tend to be at 1.5 km or deeper¹¹. Hence, less drilling will normally be required for a CSG well. Coal seams are usually narrower than shale formations, increasing the difficulty of horizontal drilling. Several coal seams close together may be tapped from one well⁶. Use of gelling agents is more common in CSG fracking, coal being more porous. Most CSG fracking in Australia uses about 1% gel⁶.

There is a strong difference in potential for groundwater contamination. The shallow coal seams may be adjacent heavily used aquifers and have no geological barrier between them. Shale gas formations are much deeper than nearly all groundwater wells. This means that shale gas has a much lower potential for contamination from fracturing (as opposed to waste spills and so on). Water in the targeted coal seams must be pumped out prior to production. This includes both the water used for fracking and groundwater. The targeted coal seams are often fully saturated⁶. This means that CSG may produce more water than it uses. In comparison, a substantial amount of water is always lost in shale gas production.

Comparison with American operations

The main targeted formation at Beetaloo is the B-shale of the Middle Velkerri Shale. It is fairly deep for a shale target, though not exceptionally so. It is variable in depth. The Amungee NW-1H well reached a vertical depth of 2428 metres¹⁹. The Tanumbirini 1 well intersected it significantly deeper, at about 3200 metres, with the well reaching a depth of 3945 metres²⁰. This is in one of the deepest parts of the basin. Seismic surveys by Empire Energy estimate the top of the B-Shale to be at 2200



**THE HON ANGUS TAYLOR MP
MINISTER FOR ENERGY AND EMISSIONS REDUCTION**

MC21-000619

s22

Empire Energy Group Limited
Level 19 20 Bond Street
SYDNEY NSW 2000

s22

Dear s22

s47C

s22

From: s22
Sent: Tuesdav. 29 June 2021 10:49 AM
To: s22
Subject: FW: AusIndustry Inquiry re Beetaloo Cooperative Drilling Program [SEC=OFFICIAL]

From: Quinn, Daniel
Sent: Tuesday, 6 April 2021 9:37 AM
To: s22 <@empiregp.net>
Subject: RE: AusIndustry Inquiry re Beetaloo Cooperative Drilling Program [SEC=OFFICIAL]

Hi s22 ,

Someone from my team is looking into it and they (or preferably someone from AusIndustry) will be in touch later today

Thanks
Dan

OFFICIAL
OFFICIAL

From: s22 <@empiregp.net>
Sent: Saturday, 3 April 2021 5:00 PM
To: Quinn, Daniel
Subject: AusIndustry Inquiry re Beetaloo Cooperative Drilling Program

Hi Dan,

I called AusIndustry's hotline to ask about elements of our application for grant funds over a week ago and I haven't yet heard back from the relevant people (despite receiving an email that our inquiry was logged on Monday).

May I request a contact with the relevant people so that I can round off our inquiries? We are ready to submit our applications once the outstanding inquiries are resolved.

Thanks and regards,
s22

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