

SUBMISSION

The following is extracted from the document titled,

Funding to accelerate exploration and appraisal activities in the
Beetaloo sub-basin (Last updated 08 June 2021)

which I understand includes the material into which the Senate Environment and Communications
References Committee is inquiring.

EXTRACT

Overview

The Beetaloo Cooperative Drilling Program is a component of the [Beetaloo Strategic Basin Plan](#) delivered under the Australian Government's broader Gas-fired recovery plan. The program aims to accelerate exploration efforts by the end of 2022. The objectives of the program are to:

- accelerate exploration and appraisal activities for prospective petroleum resources in the Beetaloo sub-basin
- incentivise drilling in the Beetaloo sub-basin to deliver approximately 10 additional wells to build a comprehensive understanding of the resources.

The intended longer-term outcomes of the program are:

- accelerated development of the Beetaloo sub-basin as a potential world-class gas province and aid commercial investment decisions
- maximising the downstream value of the gas industry for the Northern Territory and contributing to gas security across Australia in line with the broader gas strategy.

The Australian Government has announced a total of \$50 million over 2 years from 2021–22 to 2022–23 for the program. Allocation of the funding will be subject to demand. The grant amount will be up to 25% of eligible project expenditure.

- The minimum grant amount is \$750,000.
- The maximum grant amount is capped at \$7.5 million per well. You can apply for up to 3 wells.

END of EXTRACT

Discussion

I have interrogated the following documents for material which refers to the development of the Beetaloo resource and from which the effectiveness of allocating \$50 million of Federal Government money to part-fund acceleration of the drilling program can be examined.

1. DeLoitte's Report on the Development of the Beetaloo Sub-basin
For the Commonwealth Department of Industry, Science, Energy and Resources November 2020
2. ACIL Allen Consulting Final Report to SCIENTIFIC INQUIRY INTO HYDRAULIC FRACTURING IN THE NORTHERN TERRITORY October 2017
3. <https://falconoilandgas/beetaloo-australia/> (downloaded 28 June 2021)
4. FINAL REPORT: SCIENTIFIC INQUIRY INTO HYDRAULIC FRACTURING IN THE NORTHERN TERRITORY
5. Bettaloo Strategic Basin Plan January 2021

Funding Announcement

I have some initial comments on the document announcing the funding..

- a) The \$50 million announcement is for “funding over 2 years from 2021–22 to 2022–23.” It is not stated if the money is committed or spent in that timeframe. Elsewhere a project aim of accelerated exploration by the end of 2022 is stated, which implies that the money is expected to be spent by 2022. Normal practice would be payment on receipt of phase related invoices providing evidence that the aim of accelerated development is being achieved.
- b) The detail indicates an objective of 10 additional wells. It is not stated if these additional wells are expected to be planned, drilled, fracked, tested, analysed and completed in that timeframe.
- c) An additional factor is minimum grants of \$750,000 and maximum grants of \$7.5 million per well with a limit of three wells (presumably per applicant), up to 25% of eligible project expenditure
- d) The conditions for maximum and minimum grants open up the theoretical possibility of the number of separate grants in the range of a maximum of 67 that is $50/0.75$ and a minimum of 2 grants each for 3 wells, that is $50/7.5/3$.

I have had some experience with development projects, including R&D Grants and while I accept that the purpose of R&D is to generate new knowledge, I also hold to the principal that spending of public money has to be traceable to clear objectives and accountable against measureable outcomes, preferably phased. To that end I regard R&D management as a subset of Project Management. Some application of management principles would improve the clarity of the objective(s) and how the parties involved will know when the objectives are being achieved.

Referring to the extract above from the Funding Announcement, the mixture of aims and objectives and absence of a definition of responsibilities of participants in what is described as a cooperative program, leads me to the conclusion that the use of the R&D Grants scheme as a vehicle for government funded intervention in exploration of the Beetaloo Basin would require substantial administration by government and applicants both before and during implementation In terms of the total financial commitment by all participants value for money outcomes are not likely to be achieved.

Reference Documents

I would like now to turn to the reference documents and try and distil a coherent picture of the Beetaloo gas prospect. Included are:

- Exploration and Appraisal
- Commercial viability
- The Way Ahead?

Exploration and Appraisal

The Beetaloo Strategic Basin Plan calls for an accelerated program as in the Table 1 below. I interpret the time to production start up as 10-11 years for the current time line and 7-9 years for the proposed accelerated time-line.

	Exploration	Appraisal	Production Start up
Current Timeline	2-3	4	4
Accelerated Timeline	1-2	2-3	4

Table 1
Accelerated program as per Beetaloo Strategic Basin Plan

Another version of that process was included in a presentation by Santos to the Katherine community on 29 September 2014.

This depiction, with a preparation date of May 2014, indicates 9-12 years to commencement of 20 years of production. By those figures, Santos would be halfway plus or minus a year through Development and Appraisal.

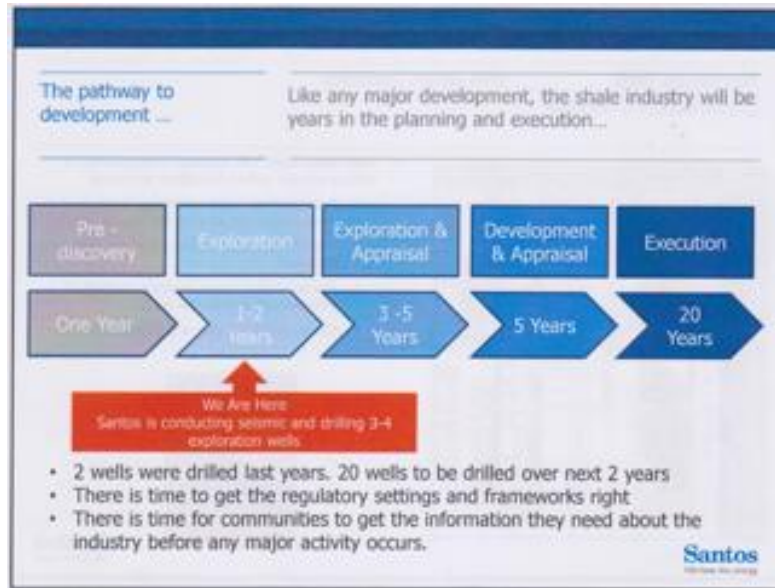


Figure 3 from SANTOS Presentation to Katherine Community on 29 September 2014

The timescale depicted has not been realised. There is no suggestion that that reflects onto the capability and reputation of the company. It is more likely that the constraints of the operational environment on such large scale projects as the Beetaloo Basin development, are obscured by the highly simplified representations of the process. The result can be over optimistic expectations.

For realistic time scales I turn to the material provided to the to shareholders and the London Stock Exchange by Falcon Oil & Gas. Origin Energy is their joint venture partner in the Beetaloo Exploration project. The complete document is available on the home page of Falcon Oil and Gas and recounts that company's association with Beetaloo since August 2014.

I have not attempted a précis of the information. However I draw attention to the elements of the Work Program, as well as to the capital management decisions. These indicate that Origin as the operator in the Joint Venture has a high level of awareness of the risks in exploration and appraisal of the Beetaloo prospect.

The overriding risk is that the project will not proceed to Production.

I take the Stage 3 Work Program as illustrating this attention to detail. The Stage 3 objective is to achieve production flow rates by hydraulic fracture stimulation of two hydraulic wells targeting one or more of the three plays:

- Velkerri B shale gas play
- Kyalla shale and liquids rich gas plays
- Velkerri shale liquids rich gas play

A drilling contract was announced in January 2019 and progressed until March 2020 when the health risks associated with Covid 19 led to a decision to temporarily pause activities. Operations were recommenced in September 2020. In June 2021 Falcon announced the commencement of the 2021 Work Program with the objective of conducting extended production testing of Kyalla 117 in the liquids rich gas play.

In April 2020 a revised capital management agreement brought about the combination of the Stage 2 and 3 approvals so as to expedite transition into Production, if proven commercial. The capital expenditure of the stages is A\$263.8 million.

My reading of the program suggests to me that Origin had struck a fine balance between management of risk and that there is no potential for accelerated exploration and appraisal.

Notably, the Falcon information concluded with an extensive caveat;

This information is based on current expectations that are subject to significant risks and uncertainties that are difficult to predict

This extract is followed by an exhaustive list of all the things that can go wrong or more correctly, of the things they know at the time of writing that can go wrong. As the recently deceased Donald Rumsfeld used to say,

There are also unknown unknowns—the ones we don't know we don't know.

The Way Ahead?

As well as the caveat in the Falcon document, the reports by DeLoitte and ACIL Allen Consulting include with similar warnings to the effect that the exploration phase is exactly that, "discovery of what is not known, but needs to be known" before the next phase can be undertaken with reduced risk. Or the risk may be so high that there is no next phase, and the venture does not proceed to commercial development. I do not attempt to repeat their analyses. The known risks to commercial viability extend far beyond the Beetaloo Basin and include:

- Irreducible cost of extraction to wellhead
- Availability of drilling equipment and the necessary skilled operators to meet peak demand
- Less oil and gas than predicted at production rate and duration
- Markets, local, national, and international; including prices, volume and seasonality.
- International exchange rates
- Transport to markets; pipelines, including capital investment to meet demand and carriage charges and liquefaction (LNG).
- Higher than predicted abandonment and reclamation costs
- Negotiation of access agreement with Native Title land holders.
- Government subsidies.
- Management failure –anywhere in the industry, including the regulatory authority.

Also of significance to the emergence of a way ahead are the following factors.

Liquid hydrocarbons

I note the reference in ACIL Allen to the potential of the presence of liquids in the hydrocarbons recovered from Beetaloo wells to alter the balance between costs and price, effectively subsidising the gas production cost with the higher returns from liquids. The attention being paid by Falcon/Origin to this prospect in Kyalla 117 N2 emphasises how critical the better returns available in the market place and lower transport costs could be.

Climate Change & Renewables

The responses to the increase in global temperature and consequent changes in the environment have to include the reduction in green house gases (GHG) in the atmosphere. Basically methane is stored energy from the sun formed during the Carboniferous and Permian eras, 360 to 270 million years ago. When burnt to recover the energy a by product is carbon dioxide, a greenhouse gas. As well, either naturally or as fugitive gas, methane is also released. Methane is a green house and is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere.

"Methane OUT, Renewables IN" is fine as a slogan but like the rendition of the exploration, appraisal, and production process for shale gas exploitation in four phases, the transition path from fossil fuels to renewables abounds in unknown-unknowns. And in time it will be littered with failed experiments. Hydrogen may be one such failed attempt to convert energy from the sun into portable energy for applications to transport and moveable equipments. And in the same space, there are other competing developments such as Artificial Intelligence and Autonomous Vehicles.

In a similar vein, there is a competition in the area of battery technology as technologies vie for dominance in provision of mains independent power; dominance once held by liquid fuels. Battery suppliers must find profitable application which provide answers to questions such as; fixed installation or mobile, power density, number of charge/discharge cycles versus lifetime, minimal charging times for the long distance travel application.

There are competitions for dominance in all these interrelated areas. Many of the possible solutions will fall by the wayside before the winners are established and a new era of stability ensues. In this current phase governments would be advised to avoid picking winners and if they do intervene, put the money into infrastructure.

Environmental, Social and Governance (ESG)

I first heard of the concept of decision making based on environmental and social effects as well as economic considerations as "Triple Bottom Line accounting" in the mid-1990's. The term disappeared from my radar for a few years until the concept emerged at one of the regular Davos Summits. Given that Davos is associated with economic management its emergence there surprised me and I did not observe follow up until

recently when the concept appeared on the agenda of company annual general meetings. It now travels under the acronym ESG standing for Environmental, Social and Governance.

The drivers of this reappearance of broader considerations beyond economic factors in decision making can be attributed to:

- Shareholders who will sell their shares if the boards fail to adopt ESG principles,
- Banks that will withhold finance from companies that are ESG non-compliant
- Insurance Industry that they will not insure activities that could invite litigation
- Governments that they are considering import duties on products originating from ESG non-compliant companies.

I am reasonably familiar with the recommendations of the Pepper Inquiry and it seems to me that they embody ESG principles. It may be that the NT government has been gifted a pioneering role in incorporating ESG principles into governance practice.

Summary

I analysed the reference document relating to accelerated exploration of the Beetaloo Basin gas prospect using the vehicle of the R&D Grants scheme.

I found that that document is lacking in detail, and includes a set of selection criteria which do not converge. The document sets an unrealistic time scale, does not include any measure of success and is “not fit for purpose.”

I examined the information available on exploration for shale gas.

I found that the four stage depiction of the program from Exploration to Production, as used by the industry in its presentations and the government for its Beetaloo Strategic Basin Plan is oversimplified in that it makes no mention of planning, regulatory approvals and approvals by company boards of program expenditure. Unrealistic expectations are easily developed and once established are only eradicated by real-world experience which has to account for actions of managements, regulators and boards.

I turned to that real-world and examined the record of information to the London Stock Exchange of Falcon Oil and GAS, Origin’s Joint Venture partner. This record is continuous since 2014 and shows an enterprise-wide set of responsibilities, authorities and operations which comprise the set of activities which while integrated, retain flexibility to reset the balance between risk, cost, performance and program timescale.

I discussed the way ahead in response to Climate Change.

Some of the hurdles are familiar, others are novel. However their numbers are legion and rising and are so varied that restricting global temperature rise to 1.5 degrees by 2050 requires something better than sub-optimal programs such as accelerate exploration and appraisal activities for prospective petroleum resources in the Beetaloo sub-basin.

I did not discuss the negotiation of access agreement with Native Title land holders which I have included in the list of known risks. That issue must be resolved in the national response to the Uluru Statement from the Heart.