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24/6/2021

**New Zealand Oil & Gas Submission on Gas Market Settings Investigation Consultation Paper**

Dear Sir,

## 1. INTRODUCTION

**1.1.** New Zealand Oil & Gas ("NZOG") is an oil and gas exploration and production company that has been listed on the New Zealand Stock Exchange since the 1980s [1]. We are an active participant in the energy industry in New Zealand and work closely with the Gas Industry Company ("GIC"), the Business Energy Council ("BEC") and Energy Resources Aotearoa ("ERA").

**1.2.** We thank you for the opportunity to provide a submission to the GIC on its Gas Market Settings Investigation Consultation Paper and applaud the GIC for producing such a thorough document.

**1.3.** A key theme in our submission is that the current government's inward looking, narrow thinking is not the way to contribute to solving a global issue. New Zealand's commercial and industrial sector is suffering as we stumble forward on our current path, at the same time as global emissions will continue to increase.

## 2. SUMMARY

### 2.1. Consultation paper on the right track

At its core we believe that the GIC consultation paper is a well thought through document and, in general, we support the themes. However, we suggest that the consultation paper would benefit from lifting its gaze to look at other countries for workable examples of economically rational and balanced ways of navigating the transition to a low carbon economy. The current government is making a habit of picking what it believes are winners. We, as experts in this industry, can show leadership by shining a light on viable options of realistic economically rational pathways to a low carbon future that is in step with global thinking.

### 2.2. An inconvenient truth: gas is here to stay, what are other countries doing to make it work?

As requested, we have used the template supplied with the consultation paper, however, we feel it instructive to summarise the key points of our submission, as follows:

- New Zealand needs gas as a clean burning, lower emission fuel to mitigate hydrological risk.
- Experts agree [2,3] that this must continue as we transition to a lower carbon future.
- Burning coal is an unacceptable answer to a problem caused by the gas exploration ban.
- Capital will only be deployed on developing gas reserves if there is certainty of a return.
- If gas development was allowed to continue, we believe the market is there to buy it.
- In addition to a gas supply problem, New Zealand has a gas storage and $CO_2$ disposal problem.
- Other countries have renewable energy, gas production and development, LNG projects, Carbon Capture and Storage and hydrogen all co-existing, so why can't we?
- New Zealand produced gas could help reduce global emissions from coal.
- There is a route through these issues, if the political, technical, and commercial will is there.

[1] New Zealand Oil & Gas Limited 2020 Annual Report
[2] CCC Advice to New Zealand Government on its first three emissions budgets and direction for its emissions reduction plan 2022 – 2025
[3] Business NZ Energy Council: New Zealand Energy Scenarios; Navigating our flight path to 2060

2.3. Our submission will expand on the above points and outline ways that New Zealand can look to other countries' approaches to solving similar problems., however in summary, we provide the following suggestions.

**Work Streams / Policy Suggestions**

| | Short term actions | Medium/Longer term actions |
|---|---|---|
| **Gas Industry** | • Work together with government, gas producers and end users, to make best use of New Zealand's scarce gas resource.<br>• Work with government to investigate how other countries are using gas as a transition fuel.<br>• Investigate the viability of Carbon Capture and Storage (CCS) in New Zealand.<br>• Investigate how CCS and hydrogen could be brought into the energy mix and work with a true ETS.<br>• Investigate methanol as an energy storage medium in place of coal. | • Build out gas storage capacity to enable New Zealand to manage dry year risk. and/or<br>• Develop a Floating Storage Regasification Unit import capacity.<br>• Implement and manage a shared CCS project. |
| **Government** | • Work with industry and end users on a fully integrated energy strategy<br>• Re-introduce Priority in Time exploration permitting in onshore Taranaki.<br>• Provide significant incentives to drill exploration wells in onshore Taranaki for gas that can be delivered quickly (i.e., within 24 months).<br>• Capital write off and uplift for short term development projects. | • Implement a true ETS with international (certified) Carbon Credits.<br>• Include CCS in the ETS framework.<br>• Provide research funding to CCS and/or join Australian government sponsored research initiatives.<br>• Underwrite 10 years of LNG import into New Zealand.<br>• Reverse the offshore exploration ban with proviso that any developments need to have a pathway to carbon neutrality. |

## 3. SUBMISSION

### 3.1. Question 1: Do you agree with our characterisation of the current role of gas in New Zealand?

New Zealand Oil & Gas broadly agrees with the consultation paper's characterisation of the role of gas in New Zealand. We agree the market, commercial and regulatory settings for gas for the most part work well and are manageable and that gas:

- is a clean burning direct fuel source;
- supports electricity security of supply; and,
- provides energy choice for consumers.

3.1.1. We further agree that natural gas could have various roles as New Zealand transitions to a low carbon economy, including:

- supporting and complementing the renewable electricity sector;
- continuing to provide energy-intensive industries with relatively low greenhouse gas emissions energy where renewable fuels are currently unavailable or impractical; and,
- direct use where it is more efficient and/or has a lower carbon footprint than alternatives.

3.1.2. The above describes the current situation, but we see the role of gas being diminished by the current government's policy settings, which is at odds with the scientific and economic thinking of most of the developed world. Therefore, we feel it is instructive to widen the aperture of the lens to look at how the rest of the world looks at gas' role in the energy transition.

3.1.3. In it is simplest sense, gas is globally viewed as a significant transition fuel towards a low carbon future [4]. In many nations worldwide, gas is viewed as the affordable and reliable, and relatively low carbon emitting energy source: fulfilling two of the key elements of the energy trilemma.

3.1.4. Conversion of coal fired power plants to cheap shale gas is the reason that the United States is the only G20 nation to meet its Kyoto Protocol target, despite not being a signatory to the deal. It achieved this based on the economic and productivity benefits alone!

3.1.5. Globally, energy demand is increasing as the developing world is lifted out of energy poverty, albeit the IEA still predicts that 650 million people are still projected to remain without electricity in 2030 [5]. Globally, most of that demand is being met by coal, and even the most optimistic assessments of future energy sources do not see coal use being eliminated. China is by far the largest coal consumer, with coal providing 62% of Chinas primary energy and China consuming as much coal as the rest of the world combined [6].

3.1.6. By switching from coal to gas countries' carbon emissions are reducing; in the USA alone in 2019 coal-fired power generation fell by an estimated 18%, the largest year-on-year decline on record, and related emissions dropped by 190 million metric tons – equivalent to the amount of carbon sequestered by nearly 250 million acres of U.S. forests in one year [7].

3.1.7. In addition, many technologically advanced economies are pursuing Carbon Capture and Storage ("CCS") as part of the solution to their power supply concerns with currently 37 projects around the world actively capturing and/or injecting carbon dioxide [8,9] .

3.1.8. The current government's policy settings have resulted in a climate of uncertainty for investors that has resulted in a huge reduction in badly needed exploration drilling [10]. Coupled with low hydro levels, this has resulted in massively increased levels of coal exports being the main lever for avoiding power blackouts [11]. This is in parallel with the electricity sector being "rescued" by downstream gas users curtailing economic production to help keep the lights on [12]. This just does not make any rational sense.

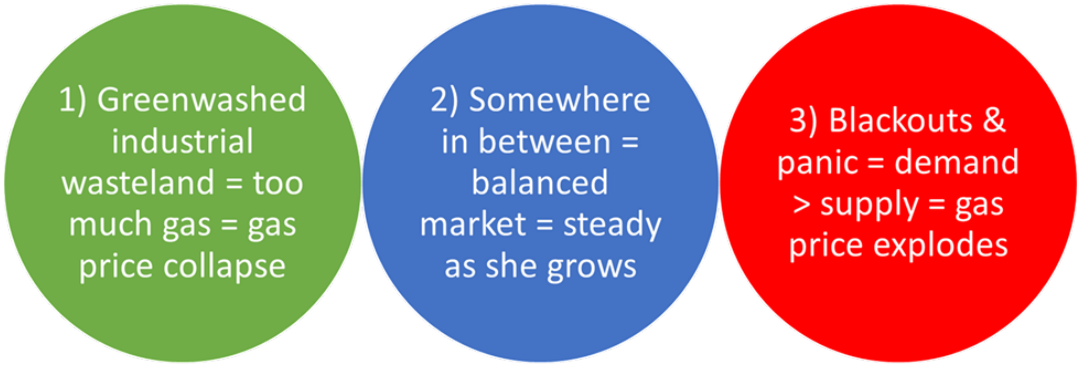
### 3.2. Question 2: Do you have any comments in relation to the gas supply and demand outlook?

3.2.1. New Zealand Oil & Gas broadly agrees with the consultation paper's characterisation of the gas supply and demand outlook. We particularly agree with the statement that *"gas production cannot happen without significant ongoing investments. Even known reserves require continual investment to maintain field deliverability."* Similarly, the time needed to bring gas to market seems about right to us. Of course, all of this assumes that the commercial settings are right for companies to make investment decisions on bringing the gas onstream.

[4] BP Energy Outlook 2020
[5] International Energy Agency 2020 Access to electricity Report
[6] International Journal of Environmental Science and Development, Vol 8, No 11, Nov 17
[7] Rhodium Group REsearch into US Emissions
[8] US DOE Worldwide CCS Database
[9] International CCUS Development Efforts
[10] New Zealand Oil & Gas Drops Last South Island Exploration Permit
[11] Coal statistics | Ministry of Business, Innovation & Employment (mbie.govt.nz)
[12] Genesis Methanex deal shows importance of methanex to New Zealands energy system

### 3.3. Question 3: Do you agree with our characterisation of the commercial outlook for gas?

3.3.1. We are in general agreement with the Commercial outlook for gas as outlined in Section 3.2 of the consultation paper. In our view, if we were to characterise what the future commercial outlook scenarios could look like we would do so as shown below.




3.3.2. We believe that the current policy settings, government signals to the gas market and very tight energy dynamics are such that there is a probabilistic fog has settled over the investment criteria that gas developers use to determine whether they should make multi-million-dollar investment decisions on commencing to bring new gas to market.

3.3.3. It is well known that we are currently close to Scenario 3, with only coal imports and Tiwai and Methanex's cutting of production "saving the day" and keeping the lights on. This is in combination with New Zealand burning more coal in the first three months of 2021 (i.e., Summer!) than all of 2016 and 2017 combined, with a total of 10.35 PJ of energy from Indonesian coal imports [13]. To March this year 44% of Genesis total electricity generation came from coal, more coal was burned in that quarter than each of 2016, 2017 and 2018. In addition, the spot price for gas is such that several major gas buyers are considering withdrawing from the market [14].

3.3.4. We therefore agree with the GIC's postulation that New Zealand is close to a tipping point beyond which major gas buyers could withdraw from the market completely, and the country would see gas supply outstrip demand, making infrastructure very expensive to maintain and cause further issues with deliverability.

3.3.5. Whilst the former might be the goal of the current government it does not fit with the CCC's assumptions and advice of securing a reliable, affordable supply of energy to mitigate dry year risk [15] and it would come at an incredible price to GDP, jobs, and wellbeing of citizens.

3.3.6. We note that the consultation paper does not go into any detail on the Government's proposed "Energy Battery Project" putatively selected for Lake Onslow. Under any reasonable assumption, including whether Lake Onslow goes ahead or not, it will not be a quick fix to a current problem, nor as was heard at the recent "Downstream Conference" will it be something that will be economically rational as it will neither be simple to build or be able to be deployed

[13] New Zealand Energy Quarterly March 2021
[14] Refining New Zealand Investor Presentation
[15] Climate Change Commission Final Advice to Government on Emissions reduction Plan

in consecutive dry years. We need to be thinking smarter about solutions for the issue we face now, not looking to solving the same old problem, by doing the same old things.

3.3.7. We believe there is a middle ground, where prices are realistic, energy supply is ensured, and emissions are reduced.

### 3.4. Question 4: Have we captured the issues fairly and accurately? Have we missed anything?

3.4.1. We believe that the commercial outlook for gas is very poor and confused, and a line can be directly drawn to the offshore exploration ban that occurred in 2018. The consultation paper falls short of addressing the elephant in the room of the 2018 ban.

3.4.2. We believe the ban certainly becomes relevant in terms of how firms (across the wider energy system) respond to the current issues in terms of where commercial entities invest their risk capital, particular in terms of offshore exploration.

3.4.3. New Zealand Oil & Gas has direct experience of the chilling effect on investment of governmental interventionism, through our recent relinquishment of the last remaining exploration permits offshore of the east coast of the South Island: PEP 52717 ("Clipper") and PEP 55794 ("Toroa").

3.4.4. In 2018 New Zealand Oil & Gas was very close to signing a deal with a major oil and gas company, willing to invest the significant capital to drill an exploration well and hopefully unlock the riches we believe are locked within the rocks of offshore Canterbury.

3.4.5. Tragically for the people of the South Island and New Zealand, the offshore exploration ban announcement in April 2018 caused the immediate cessation of potential investment in the project, and the loss of a chance to secure future wealth for the nation through delivering cleaner energy both locally as well as to an energy hungry world.

3.4.6. Research jointly funded by government entity New Zealand Trade & Enterprise [16] demonstrated that petroleum discoveries in these exploration permits could result in massive positive impacts on the South Island and New Zealand economies, generating $15 billion in GDP, and $32 billion in royalties and taxes over its lifetime, in addition to adding 5700 jobs every year during the seven-year construction phase as well as over 2000 long term highly paid jobs. This is the equivalent of an additional 500 Canterbury dairy farms; without the thousands of cows and environmental impacts they entail.

3.4.7. It was our goal to bring ethically produced, clean burning New Zealand gas derived products (such as methanol or Liquified Natural Gas (LNG)) to the world. New Zealand exported gas products could have reduced world emissions by displacing the use of coal in other countries.

3.4.8. Current worldwide construction of coal-fuelled power stations and production of methanol from coal is truly staggering.

3.4.9. The research unit of the China State Grid Corporation forecast in July 2019 that that total coal-fired power generation capacity would peak at 1,230-1,350 gigawatts (GW), which would mean an increase in coal plant of about 200-300 GW. Essentially, while the percentage energy share from coal is expected to fall, the absolute amount of coal use will continue to rise for some time. The expected growth in coal power capacity in China alone is similar in size to the

[16] Barque Field Development Economic Impact Assessment

entire US coal fleet (of about 260 GW [17]) and larger than the entire European Union coal fleet (of about 155 GW). Note that the New Zealand Huntly power station is the largest power station in the country and was originally 1 GW. This means the Chinese fleet is equivalent to about 1000 of these "Huntlys", with expected growth of 200-300 "Huntlys" still to come.

3.4.10. China is the world's largest methanol consumer and producer, with 82% of Chinese Methanol production from Coal. China's total capacity in 2017 was 83.5 million tonnes of methanol and growing, with an 8% increase on the previous year. Capacity reached 90 million tonnes by 2019. China imported 8 million tonnes in 2017 with 1.8 million tonnes from New Zealand. Coal-based methanol emits about 3.2 times as much $CO_2$ as methanol made from natural gas. Thus, for each tonne of methanol, the coal-based process emits about 5.3 $tCO_2$, whereas the natural gas-based process emits about 1.7 $tCO_2$ over the full lifecycle.

3.4.11. As noted above, gas emits half the $CO_2$ of coal, thus by targeting New Zealand production and emissions rather than global emissions, ill-advised policy is likely to simply increase global emissions at the expense of NZ prosperity.

3.4.12. We would like the government to work more closely with all branches and elements of the entire energy supply/demand chain and to consider all limbs of the energy trilemma: Environmental Sustainability vs Energy Security vs Energy Affordability.

3.4.13. The Government focuses too heavily on Environmental Sustainability at ANY cost, and ignores the aim of securing reliable, affordable, and abundant energy for the people of New Zealand. We are currently on a dangerous path of having high energy prices, increased dry year risk and, with increasing amounts of imported coal needed to keep the lights on or having an entire industrial sector of gas users collapse, taking with it jobs and wellbeing of communities.

3.4.14. Gross emissions globally will increase as we import higher emitting substitutes to our light domestic hydrocarbon resources. Employment locally will drop away as high energy prices drive value adding industries elsewhere, where goods will be made with higher emissions.

## 3.5. Question 5: What are your views on the potential solutions stakeholders have raised? Can you share any more detailed information to help inform us on how feasible or effective they might (or might not) be?

3.5.1. In general, we feel that the solutions raised by the potential stakeholders are well thought through and may be workable. The consultation paper outlines some aspects that may be beneficial but are unlikely to "move the dial" enough to solve the country's immediate and ongoing issues. These include timely release of information; contract flexibility; clarifying risks to gas supply and clarifying where "green gases" fit in the energy mix.

3.5.2. We believe the key priorities for the country are as follows: increasing policy certainty through a shared government and industry vision for our energy future; securing increased and economical gas supply; looking to other countries for joined up thinking on gas storage, carbon capture and hydrogen and government considering whether investment is needed to ensure security of supply. The following is our view on the *priority* of these possible solutions.

3.5.3. *Number 1 priority: a shared vision for our energy future bringing regulatory certainty.*
We believe that having a shared vision of the future energy strategy for $NZ^{inc}$ is the number one priority for the nation. Whilst we might not all agree with the fine details, once there is a

[17] Carbon brief: worlds coal power plants

shared vision this would have positive knock-on effects including our number two priority: increasing policy predictability. The current probabilistic fog and lack of clarity on exactly WHAT is the plan is simply resulting in companies voting with their feet and investing where there is certainty. For example, New Zealand Oil & Gas' recently proposed AU$ 120million investment in gas fields in Central Australia [18] is a good example of rational economic thinking at play. If there was more certainty in New Zealand around future gas market dynamics, more investment in developing gas reserves would eventuate.

*3.5.4. Number 2 priority: Government to stop picking winners, cement policy and look to solutions from the world.*

*3.5.4.1. Example: including Carbon mitigation technology in the ETS and gas storage*

We applaud the government for looking at hydrogen as a future fuel but question the fixation with green hydrogen which is widely considered as a very expensive option that requires low electricity prices to work [19]. If hydrogen could be secured from gas supply (blue hydrogen) combined with carbon sequestration, then this could also open another demand for gas, incentivising development of gas resource. Further, we agree with the authors that gas storage is a feasible solution to solving the conundrum of ensuring that gas supply is available at the right price and the right time. We also agree that there several mechanisms that could be deployed to incentivise investors taking the risk of making storage viable. However, the only way we see this being viable is with government support and involvement, and we simply do not see the current government supporting this solution, unless there was a way to make it entirely (or close to) carbon neutral, more on this below.

3.5.4.2. We agree with ERA that the ETS (which won the designer William Nordhaus a Noble Prize) is the key tool in unlocking technologies and pathways to a zero-carbon future. We also note from the CCC's final advice that the Commission effectively wrote off the involvement of Carbon Capture and Storage (CCS) as it is viewed by the CCC as "*an expensive, emerging technology that has not progressed beyond the concept and research stage in Aotearoa" [20].*

3.5.4.3. In our opinion the CCC's approach on CCS is extremely myopic and entirely at odds with most countries around the developed world as CCS as a technology is at least as emerging (if not more so) as biomethane or hydrogen. There are currently 37 projects around the world actively capturing and/or injecting carbon dioxide [21]. More detail can be accessed from groups like the International CCUS knowledge Centre [22] which has 76 members across 6 locations across the globe. The following are notable, and we encourage the GIC to look to this area as examples of joined up thinking between gas storage, CCS and the ETS. Such joined up thinking could encourage development of gas resources; provide security of supply via gas storage; reduce emissions via carbon capture and contribute to the generation of a hydrogen economy.

3.5.4.4. **Australia** in 2020 brought out the first Low Emissions Technology Statement [23] aimed at reducing emissions and strengthening the economy by combining investments in clean hydrogen, energy storage and carbon capture and storage (CSS). The Clean Energy Regulator is developing a methodology to include CCS in the future Australian Carbon Credit Units (ACCUs) system [24]. Further, Australia recently announced the top 6 of >70 applications of a $50m fund for a CCS Development fund to advance technology and pilot projects for CCS [25]

[18] NZOG Proposed Acquisition Of Central Petroleum Amadeus Basin Assets
[19] S&P Global: Green hydrogen costs need to fall over 50% to be viable:
[20] Climate Change Commission Final Advice to Government on Emissions reduction Plan
[21] US DOE Worldwide CCS Database
[22] International CCUS Development Efforts
[23] Australian Technology Investment Roadmap: First Low Emissions Technology Statement 2020
[24] Australian Clean Energy Regulation Methodology Development
[25] Australian Carbon Capture Use and Storage Development Fund grant recipients

We understand that there are more funding rounds related to the development of hubs and clusters, or the order of $100s of millions. We are also aware that ARENA (Australian Renewable Energy Agency were awarded significant funding in 2020 [26], and their mandate might change in parliament to allow CCS to be included. Finally, one of Australia's 30 Cooperative Research Centres (CRC), Future Fuels [27] is Australia's Research, Development & Demonstration (RD&D) partnership focused on enabling the decarbonisation of Australia's energy networks. The FFCRC is in its third year of a seven-year programme and works with over 100 organisations (including government, industry, and academia). The FFCRC is a collaborative and connected research community embracing industry, academia, and government to deliver the full potential of low-carbon fuels such as hydrogen in Australia's energy supply mix. The FFCRC is one of six multi-hundreds of million research centres focused on transition related technologies, included the $CO_2$CRC which is focused on CCS.

3.5.4.5. The **USA** has a very long history of using $CO_2$ for enhanced oil recovery and under the 45Q Tax provision there is a price allocation of currently US$35 per ton of $CO_2$ captured and stored. Companies are therefore incentivised to think of creative ways of removing $CO_2$ and geologically disposing of it as it impacts their bottom line: i.e., rational economic thinking impacts commercial decision making [28]. As a result, there are a huge number of CCS projects underway in the USA including fertiliser plants, cement manufacturing, conventional gas, and energy production, including one in Illinois using bioethanol (BECCS) leading to negative emissions.

3.5.4.6. **Canada** also has a long history of returning gas to the subsurface, and as a result has legislation in place to handle the associated activities. There are several commercial and research-based projects underway, including a $CO_2$ disposal/Enhanced Oil Recovery ("EOR") project that has been active since the 2000s [29]. Canada has several other CCS projects underway, including the first fully integrated coal fired power, capture, transport, and storage project [30] and the Quest project which is a commercial operation to offset emissions from tar sands [31].

3.5.4.7. In **Europe** there are number of projects underway, including in **Holland** [32] and the **UK**, which has established decarbonised industrial clusters that seek to consolidate emissions and send them to offshore storage [33]. The UK also hosts multiple CCS and hydrogen projects, including Acorn [34], which is designed to be a low-cost, low-risk CCS project that provides $CO_2$ mitigation infrastructure aimed at meeting the Scottish and UK Government's Net Zero targets. Acorn recently announced Shell, Harbour Energy and Storegga have become equal partners in the Project. The Northwest of England and North Wales are seeking to develop a similar CCS and hydrogen project called HyNet Northwest [35].

3.5.4.8. Finally, and most significantly, **Norway** has had a carbon tax since 1994 and the Sleipner gas field and CCS project has been running since 1996 to present and has disposed of over 1 million tonnes per annum against a US$50/tonne tax [36]. Statoil – now Equinor – is a world leader in this space and has several projects including the Northern Lights Commercial CCS project [37]

[26] Australian Renewable Energy Agency (ARENA) - Home
[27] Future Fuels CRC Research Program and Project Description
[28] The USA Carbon Capture Coalition
[29] Weyburn-Midale Petroleum Technology Centre.
[30] Boundary Dam Carbon Capture Project (saskpower.com).
[31] Carbon Capture Storage | CCS Technology & Methods | Shell Global
[32] Holland: CO2 reduction through storage beneath the North Sea
[33] Net Zero Teesside: UK's first decarbonised industrial cluster
[34] The Acorn CCS and Hydrogen Project
[35] HyNet North West
[36] Carbon capture and storage - Norwegianpetroleum.no (norskpetroleum.no)
[37] Northern Lights CCS Project

and the recently announced Longship project [38] aimed at developing an open access infrastructure with the intent and the capacity to store significant volumes of $CO_2$ from across the European continent.

3.5.4.9. The most significant aspect of the European projects is that all of them are going ahead against a backdrop of increasing energy demand and increasing electricity generation from renewables all supported by a **continued reliance** on gas as a secure, affordable and (with CCS) more sustainable fuel for electricity [39]. Gas in Europe is not going anywhere soon.

3.5.4.10. These projects are real, they are happening, and they are now. For the CCC to summarily write off these approaches and technologies and for the government to seek to wish gas away will not reduce our emissions. We should be working collectively on future solutions not writing off a possible pathway to a zero-carbon future. If companies were given incentives (potentially through ETS credits, research funding or grants to build plant) to explore CCS options, potentially in connection with the generation of zero-emissions hydrogen, there could be a clear win-win: continued jobs, security of supply, zero emissions and, potentially, clean hydrogen for transport.

3.5.5. *Number 3 priority: exploring options for increasing gas supply.*

3.5.5.1. As noted above we agree with the assertions in section 3 of the GIC report that gas production cannot happen without significant ongoing investment, and it takes time to bring gas to market. We believe that if regulatory certainty and ETS pricing signals were clear companies who hold producing assets would be encouraged further to develop untapped resources if they knew there was a "home" for the gas.

3.5.5.2. This could be achieved through several mechanisms, with examples as follows. The government could introduce a commercial arrangement for a strategic domestic gas reserve. Western Australia aims to secure WA's long-term energy needs and ongoing economic development by ensuring that gas export project developers also make gas available for the domestic market [40]. Similarly, gas could be produced and stored in a significantly enlarged Ahuroa gas storage facility as in examples from the UK. From 1985 until very recently the Rough Gas storage facility was the largest gas storage facility in the UK and was used by market participants to store gas in the summer and deliver that gas to meet peak demand in winter. At its peak it could hold over 100 PJ of gas and deliver 1.5 PJ per day of production. This was an independently run facility regulated by legislation and allowed for a "futures" market for gas storage [41] . There is also the possibility that gas could be stored as methanol or as hydrogen that could be produced with zero emissions.

3.5.5.3. Whichever way gas supply is increased we believe that the government and industry should work together to find a way to keep supply / demand in balance and keep price levels in the "blue zone" of a balanced market (see figure from paragraph 3.3.1 above).

3.5.5.4. As it stands, with current uncertainties including multiple parallel regulatory changes; ETS price point ambiguity; CCC advice pending a government response and CCC advice differing with the government on whether the target is net carbon zero by 2050 or the government's "100% renewable electricity by 2030" target etc. etc. it is understandable that gas project developers are hesitant to progress with bringing new projects to market. The following are ways that gas developers could be encouraged to being gas resources to market.

[38] The Longship CCS project in Norway
[39] Rystad Energy Insights - May 2021
[40] Western Australian Government Domestic Gas Policy
[41] Rough Gas Storage Facility

*3.5.6. Incentivising development of 2C resources*

3.5.6.1. It is axiomatic that the best place to find hydrocarbons is where it already is known to exist. Thus, in New Zealand we know that currently producing gas fields hold a further 2,788 PJ of 2C (contingent resource) [42].

3.5.6.2. If current producers were provided with incentives to develop these 2C resources and the demand aspect of the equation taken care of then it will literally be a commercial/engineering question to get the gas out of the ground and to market in the most economical way possible.

3.5.6.3. Such incentives could be in the form of commercial security of offtake/ETS credits if $CO_2$ can be dealt with / gas could be sold to a strategic reserve and stored, potentially in conjunction with CCS or blue hydrogen production, as outlined above. However these incentives are put in place, it would need to be in a way where New Zealand benefits, most likely with government underwriting or co-funding.

*3.5.7. Exploring for new gas resources*

3.5.7.1. As noted earlier the climate for bringing in investors in high-risk / high reward offshore exploration could be gone as international oil & gas companies have been scared off investing in New Zealand as the "sovereign risk" is currently too great. However, if the offshore ban were reversed in parallel with, for example, a requirement to have net carbon developments (via CCS or such like) then the optics could change, and offshore investment could return. This would, of course, require the government to look again at the offshore ban. We are not sure the current government is prepared to do that.

3.5.7.2. If such a volte-face is too unpalatable then in parallel with encouraging development of 2C contingent resource, the government has it in its power to encourage the exploration of **onshore** gas resource. Currently there is minimal exploration effort ongoing, but the onshore Taranaki Basin holds the potential to contain 90% of the country's entire 2C resource, which remains to be developed. The Government could re-start the Priority in Time Permitting regime, allowing for the exploration of onshore resource.

3.5.7.3. Once again, the exploration for, and development of such resources could be in conjunction with offset technology requirements, or funding research and development of new energy sources. However it is achieved, as noted above, there are many examples globally of projects where gas continues to play a part in the energy mix, but offset technologies or co-enabled fuels (e.g. blue hydrogen with CCS) is developed. By literally not exploring these options, New Zealand is falling behind the rest of the developed world.

*3.5.8. Example: importing LNG*

3.5.8.1. We note the consultation paper has presented a sound preliminary analysis of LNG import options, in terms of the logistical, commercial, and economic aspects related to building LNG import capability. In general, we are in broad agreement with the concepts and prices calculated by the GIC. For example, assuming a large LNG tanker is refurbished into an FSRU (175,000$m^3$ volume), then a single cargo is ~4 PJ gas. If the FSRU is maintaining a 4 PJ reserve (stored in vessel) by the end of a calendar year, and the overall annual supply gap could be as high as the consultation paper maintains at 25 PJ/year, then, by our calculation, an operator of the FSRU-based import terminal, acting as a reseller of gas, would need to secure a gas price

[42] Energy in New Zealand 2020 (mbie.govt.nz)

of upwards of NZD$10 – 12 / GJ to break even. This depends upon several factors, including gas price secured during the northern hemisphere summer.

3.5.8.2. FSRU technology is not new or unique. We are aware that there are currently 31 FSRU units installed throughout the world and a further 8 on order and 2 speculatively ordered [43]. We do note however that of the FSRUs on order 3 FSRUs on order, cost between $150m to $340m and take a minimum of 24 months to be ready [44]. We are also aware that the current FSRUs deployed around the world feed into gas or power networks and are either partially or fully underwritten by governments [45].

3.5.8.3. Given the foregoing, whilst we feel that LNG import **could** be a possibility, the costs, political will, and joined up thinking regarding the ETS, CCS and, possibly, hydrogen generation must be considered fully if New Zealand is to make it all work.

3.5.8.4. We believe that the private sector would simply not be prepared to take on the investment risk during this period of regulatory and commercial uncertainty. Similarly, we question whether the current government has the desire or capability to see how this could all fit together. Perhaps this is a role that the GIC could step up to and lead?

### 3.6. Question 6: Are there any other potential solutions?

3.6.1. We feel that the consultation paper and our submission cover the key potential solutions.

### 3.7. Question 7: Do you agree that there is potential in a set of solutions linked to providing greater confidence to support the required investment in gas supply and flexibility, and that there is unlikely to be a single solution?

3.7.1. We absolutely agree with this assertion. We do not believe that the government's apparent blindness to gas fits with all the experts' advice here in New Zealand or beyond. We believe several options should be explored and developed. Picking winners too soon will result in creating losers out of the New Zealand public and economy.

3.7.2. We agree it is good to have a vision for a low emissions and clean future, however we need to ensure all New Zealanders' standards of living are maintained, without the wheels falling off the economy in the short to medium term.

Once again, we thank you for the opportunity to be make a submission on this important topic, and we welcome more dialogue. The industry can make a difference in this area. Now is our time.

Best regards

Andrew Jefferies
Chief Executive Office and Managing Director
New Zealand Oil & Gas

[43] FSRU Market Size and Share Report
[44] Floating Storage and Regasification Units - ExxonMobil LNG
[45] Five Solutions for the Emerging FLNG/FSRU Market