PEPANZ
PETROLEUM EXPLORATION & PRODUCTION ASSOCIATION OF NEW ZEALAND

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11 October 2018

Crown Minerals (Petroleum) Amendment Bill

Secretariat
Environment Committee
Parliament Buildings
Wellington

PEPANZ Submission on the Crown Minerals (Petroleum) Amendment Bill

Introduction

This document constitutes the Petroleum Exploration and Production Association of New Zealand's (PEPANZ) submission in respect of the Crown Minerals (Petroleum) Amendment Bill, for which submissions close on 11 October 2018.

Established in 1972, we are the industry association of the upstream oil and gas sector. We proudly represent the companies that explore for, and produce, New Zealand's oil and gas resources. Our Members produce an estimated 95 percent of New Zealand's petroleum. We also represent more than 50 associate member companies who provide a wide range of goods and services to the industry.

New Zealand's oil and gas industry attracts a wide range of views. That is why we are committed to leading an open, honest and transparent discussion about the role of oil and gas as part of our energy mix.

This submission outlines our reasons for opposing this Bill, and includes two appendices.

- Appendix One outlines the benefits of the sector.
- Appendix Two includes independent research which "corrects the record" in relation to statements made about the policy.

Beyond what is covered in this submission, there are many other aspects of this bill's policy that we would like to comment on, but the very short two-week consultation period has made it impossible for us to do so. With adequate time we would have also addressed in more depth:

- Unintended flow-on effects to the onshore petroleum sector,
- The broader economic effects of the decision what the Regulatory Impact Statements covers,
- Consequence to the downstream energy sector, and
- Implications for shipping emissions from increased reliance on imports.

Executive Summary

PEPANZ submits that the Bill should be rejected in its entirety. We wish to be speak to the committee in support of our submission.

Our objections and comments on the Bill are summarised as:

1. **The policy process and bill has been rushed in its development and its shortened Parliamentary consultation period is not warranted.**

   The stated reasoning for the truncated select committee process is to allow the 2018 Block Offer to proceed in early 2019, but the oil and gas industry would prefer a further delay to the already postponed Block Offer 2018 if that is what is required to allow a regular process under normal timeframes. The Government's delays to Block Offer 2018 should not be used as a reason to truncate an important process to the detriment of industry and other interested groups.

2. **The policy process was inadequate and was not consulted on.**

   The policy was unexpected and was not subject to any consultation. It was not subject to a sound policy development process and there is:

   - no clearly articulated problem definition,
   - no 'intervention logic' to demonstrate how the policy would achieve the stated goal of "addressing climate change",
   - no evidence of options analysis,
   - no analysis to show that the benefits outweigh the costs,
   - no assessment of the parties to bear costs and the expected beneficiaries,
   - no consideration of the options-value foregone through the intervention, and
   - no evidence of consideration of unintended consequences.

3. **The Bill is based on illogical premises, so will fail to deliver its stated purpose.**

   The Parliamentary website states that the "Bill aims to reduce fossil fuel use". However, the Bill itself does not state this as its purpose and does nothing to "reduce fossil fuel use". The effect of the policy merely changes where the oil and natural gas New Zealand needs will be produced; in effect, anywhere but New Zealand.

4. **The Bill is the wrong tool for the stated purpose of the Bill.**

   The most efficient way to reduce carbon emissions is through market-led *demand-side* interventions, such as carbon taxes and emissions trading schemes. In a globally traded, demand-driven commodity market for oil and gas, a *supply-side* intervention such as a ban will not achieve its goals and has significant risks of unintended consequences.

5. **The Bill will be costly for the Government, the industry, and ultimately New Zealand, with no environmental benefits.**

   The Ministry of Business, Innovation and Employment (MBIE) provided advice to the Green Party during the coalition negotiations in 2017 on "the economic costs, including to employment, of... no new offshore oil drilling…" and estimated the cost to be $6.2 billion[1]. MBIE prepared a Regulatory Impact Statement (RIS) *after* the announcement of the decision. The report showed that the main quantified cost will be financial losses to the Crown, and the most likely scenario would result in the Crown losing out on $7.9 billion of taxes and royalties out to the year 2050 (at a 3% discount rate).

[1] http://www.ssc.govt.nz/sites/all/files/gfi-responses-green-dec17.pdf (page 92 of the PDF).

The economic costs to the wider economy and New Zealanders were not assessed, but will be amplified.

6. **The Bill will have the opposite effect to its stated goal.**

   From the RIS, it is clear the costs of the policy are significant yet deliver potentially *zero tangible benefits* and likely even lead to *an increase in global emissions*.

7. **The Bill will reduce the resilience of New Zealand's energy supply and increase overall costs.**

   The RIS states that "The reduction in the availability of a reliable and flexible source of energy may have a negative impact on both energy security and affordability"[2]. This means the policy can directly harm the 395,000 industrial, commercial and residential users of natural gas and LPG[3]. The RIS also notes that electricity security and affordability may also be compromised[4]. It is noteworthy that Genesis Energy has recently stated that the Government's policy introduces "significant uncertainty over gas supplies in the 2030's it becomes much harder to remove coal from the electricity system"[5].

8. **The Bill and its passage will reinforce the adverse impact on NZ international reputation and increase the sovereign risk for investors.**

   Unexpected, arbitrary and unilateral decisions such as the decision to cease issuing new offshore exploration permits is extremely damaging to investor confidence as such decisions undermine confidence that the Government is predictable and follows due process. For a capital-importing nation dependent on international investment, this is very damaging.

9. **The Bill imposes an unexpected ban on petroleum activities on conservation land and in doing so has a greater scope than required to give effect to the decision.**

   The Bill will place new restrictions on permit holders who wish to access conservation land within the onshore Taranaki region. Specifically, new onshore petroleum exploration permit holders will be able to access conservation land only for minimum impact activities. Seismic surveying and petroleum exploration are not classified as minimum impact activities and would therefore be prohibited by the legislation. We note that, despite its name, not all conservation land has actual conservation values. This new policy has also been introduced and included in this bill without any public consultation.

10. **The Bill overrides statutory consultation requirements regarding the Petroleum Programme.**

    The Crown Minerals Act requires that, before amending the secondary legislation Petroleum Programme[6], the Minister must give notice and invite submissions for 40 working days. However, the Bill will override this consultation requirement "if the change is consequential on the amendments made to this Act by the Amendment Act". It is unclear what the Government considers to be in scope of 'consequential amendments' and we do not consider this overriding of consultation to be appropriate.

[2] Page 29, Regulatory Impact Statement.
[3] http://www.gasnz.org.nz/nz-gas-industry
[4] Page 5, Regulatory Impact Statement.
[5] Comments made the company's AGM on 10 October 2018.
https://gesakentico.blob.core.windows.net/sitecontent/genesis/media/new-library-(dec-2017)/about_us/investor/pdfs/2018/shareholder%20meeting/genesis-2018-annual-shareholder-meeting-chief-executive-address.pdf
[6] The Petroleum Programme is a critical piece of secondary legislation that specifies how the Minister interprets the Crown Minerals Act.

The Bill should be rejected

1. We recommend that this bill is rejected in its entirety and not passed. This is because of the manifestly poor policy process, lack of supporting analysis, significant adverse economic effects, minimal benefits and risk of serious unintended consequences.
2. We recommend that, should concerns remain about the role of oil and gas in a lower emissions economy, the Government run a best practice policy process to validate those concerns and to develop appropriate and effective policy interventions (if any).
3. If the Environment Committee intends to progress the Bill, we recommend that it seeks a mandate from the Business Committee, House of Representatives or other relevant authorities to run a regular legislative process under normal timeframes. With a report-back to the House of Representatives due by 29 October 2018, there is inadequate time for due consideration of submissions by officials and the committee. Only after oral hearings and evidence are heard from all submitter can officials begin preparing the Departmental Report, and after receipt of that report the Committee will have only several days to consider it. With such little time for careful deliberation and decision-making, we have no confidence that this process can deliver natural justice. Hurried legislation is rarely sound legislation.
4. The stated reasoning for the truncated select committee process is to allow the 2018 Block Offer to proceed in early 2019, but the oil and gas industry would prefer a further delay to the already postponed Block Offer 2018 if that is what is required to allow a regular process under normal timeframes. The Government's delays to Block Offer 2018 should not be used as a reason to truncate an important process to the detriment of industry and other interested groups.
5. Although not stated by the Government, if the reason for a truncated process is instead related to the Crown's perception of its legal risk, we note the Bill in Clause 26 already contemplates that Greymouth Petroleum's action against the legislation will be heard by the High Court under the law as it stands today before the amendment is made. Accordingly, legal risk cannot be a reason for a truncated process as the bill does not change the Crown's legal exposure. Accordingly, we see no reason that a truncated process is required and request that the report-back period is extended to enable comprehensive consideration of the consequences of this legislation. The Business Committee declined our written request of 1 October 2018 requesting a more standard process.
6. We wish to be heard in support of our submission.

The Bill will not achieve the objective of the underlying policy

The apparent intention of the policy and the lack of supporting analysis

7. As covered in the Explanatory Note of the legislation, the Crown Minerals (Petroleum) Amendment Bill provides that—
    - new petroleum prospecting, exploration, and mining permits will be available only in the onshore Taranaki region (which is defined in the Bill); and
    - new onshore petroleum exploration permit holders will be able to access conservation land only for minimum impact activities, but will still be able to carry out activities below that land in accordance with section 57 of the CMA; and
    - future offshore petroleum mining permits may be granted only as a subsequent right to offshore petroleum exploration permits that existed before the Bill comes into force.

8. The Parliamentary website states that the "Bill aims to reduce fossil fuel use" and that "The Crown Minerals (Petroleum) Amendment Bill marks another step in the Government's long-term plans for

addressing climate change" [7]. That is, the mechanistic change to the permit regime is intended to address climate change.

9. The Prime Minister's announcement on 12 April 2018 said "The Coalition Government is taking an important step to address climate change"[8].

10. From these statements, it is clear that climate change was the nominal motivating concern that led to the policy being announced. However, despite that intended outcome, , the Bill does nothing to reduce the uses of oil and natural gas that have emissions. Instead, the effect of the policy merely changes *where* the oil and natural gas that New Zealand needs will be produced; in effect, anywhere but New Zealand. The Bill also does not address the emissions from other fossil fuels nor does it account for the uses of fossil fuels which do not involve the release of emissions.

11. The Government has produced no evidence to show that the policy will achieve the goal. Specifically, there is:

    - no clearly articulated problem definition,
    - no 'intervention logic' to demonstrate how the policy would achieve the goal of "addressing climate change",
    - no evidence of options analysis,
    - no attempt at any form of analysis to show that the benefits outweigh the costs,
    - no consideration of the options-value foregone through the intervention,
    - no assessment of the parties to bear costs and the expected beneficiaries, and
    - no evidence of consideration of unintended consequences.

12. Without asking those questions and seeking robust answers, how can the Government or communities have any confidence that the policy will achieve its desired outcome?

The wrong policy tool

13. The most efficient way to reduce carbon emissions is through market-led *demand-side* interventions such as carbon taxes and emissions trading schemes. In a globally traded, demand-driven commodity market for oil and gas, a *supply-side* intervention such as a ban is will not achieve its goals and has significant risks of unintended consequences.

14. We note that the Productivity Commission's Low Emissions Economy report of August 2018 lends no support to supply-side interventions in the upstream oil and gas sector. If such interventions had any real merit, we are confident that the Productivity Commission would have duly considered it in its 620-page report.

15. We have seen statements in defence of the ban saying, "stopping burning fossil fuels is widely accepted as a way to reduce emissions", but a ban on new exploration does nothing to reduce consumption of fossil fuel products. Put simply, it is the wrong tool for the right job.

The policy has significant costs and downsides

16. MBIE provided advice to the Green Party during the coalition negotiations in 2017 on "the economic costs, including to employment, of... no new offshore oil drilling…" and estimated the cost to be $ 6.2 billion[9]. However, as consideration of the ban progressed amongst Government parties, no further official analysis of costs and benefits was sought. Ultimately, MBIE prepared a Regulatory Impact Statement (RIS) *after the announcement*.

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[7] https://www.parliament.nz/en/get-involved/topics/all-current-topics/bill-aims-to-reduce-fossil-fuel-use/
[8] https://www.beehive.govt.nz/release/planning-future-no-new-offshore-oil-and-gas-exploration-permits
[9] http://www.ssc.govt.nz/sites/all/files/gfi-responses-green-dec17.pdf (page 92 of the PDF).

17. Before covering the analysis in the RIS, it is noteworthy that it was endorsed by the Treasury and later by Woodward Partners (as expanded on below).

18. The Treasury conducted quality assurance of the RIS, and said lack of consultation means it "is not possible to be confident that all potential impacts have been identified". However, in terms of the core analysis, Treasury supported MBIE's work saying that:

> The RIS comprehensively sets out the current state, how it is expected to develop without further intervention and under different policy scenarios and explores how and why the options meet the assessment criteria. Limitations and uncertainties in the modelling, and the assumptions used to inform it, are carefully explained[10].

19. New Zealand energy analyst John Kidd, a Director of Woodward Partners, wrote that:

> …the methodology MBIE has opted for in quantifying the value layers it has defined is robust and would stand up to testing in a commercial setting [emphasis added][11].

20. Mr Kidd does however point out that the analysis only covers the direct financial loss to the Crown and not the broader economic benefits, and states:

> Why MBIE did not extend its analysis to account for these impacts is unclear, however not doing so in our view represents a major methodology shortcoming, the result of which is likely to materially understate the impact of the decision to the wider economy in key macroeconomic values including balance of payments, employment, non-E&P direct taxation, indirect (principally GST) taxation and, in particular as a compound of these, GDP. [emphasis added][12]

21. From the RIS, it is clear the costs of the policy are significant yet deliver potentially *zero tangible benefits* and likely even *increase global emissions*. The main quantified cost will be financial loss to the Crown. A range of scenarios were modelled, and the most likely scenario sees the Crown lose out on $7.9 billion of taxes and royalties out to the year 2050 (modelled with a 3% discount rate).

22. Other costs, as set out in the RIS, which are not quantified, can be grouped as:

- likely increase in global greenhouse gas emissions,
- economic losses in Taranaki and New Zealand as a whole,
- risks to the resilience of energy supply and affordability,
- reduced investment confidence because of increased sovereign/political risk,
- foregone geoscience information and its contribution to the wider academic study and practical application in natural hazard identification.

23. PEPANZ has commissioned the New Zealand Institute of Economic Research to assess the broader effects throughout the New Zealand economy, and we will base this on the scenarios developed by MBIE in its RIS. Ideally PEPANZ would have provided this as part of the hearing but due to the truncated process we have not been able to progress this in time.

24. The only tangible benefit identified is a reduction in *domestic* fugitive greenhouse gas emissions, but as noted above this is likely to be offset by increases in international emissions. Fugitive emissions (essentially these are minor releases of gas) from oil, gas, and coal production in New Zealand account for less than two percent of the domestic emissions profile.

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[10] Page 8, Regulatory Impact Statement. https://www.mbie.govt.nz/info-services/sectors-industries/natural-resources/oil-and-gas/overview-crown-minerals-act-regime/pdf-document-library/regulatory-impact-statement-proposed-changes-to-the-crown-minerals-amendment-act-1991.pdf

[11] Woodward Partners Sector Research, 25 September 2018.

[12] iBid.

25. The RIS also covers nontangible benefits such as demonstrating "global leadership in emissions reductions and efforts to tackle climate change". There is no analysis to support the idea that this policy will actually tackle climate change.

Resilience of energy supply and cost of energy

26. The RIS states that "The reduction in the availability of a reliable and flexible source of energy may have a negative impact on both energy security and affordability"[13]. This means the policy can directly harm the 395,000 industrial, commercial and residential users of natural gas and LPG[14]. In addition to higher costs, these consumers may face significant capital costs if they need to replace gas infrastructure, equipment and appliances with electric equivalents.

27. The RIS notes that electricity security and affordability may also be compromised[15]. We agree, on the basis that natural gas provides affordable and reliable supply (to cover shortfalls in generation from hydro, wind, and solar). Indeed, the peaking capability offered from New Zealand fossil fuels is a direct enabler of the high level of renewable electricity which the country generates.

28. The Productivity Commission also observed that replacing gas with renewable in electricity generation "Under current technology and technology costs, reducing emissions from electricity generation will likely entail an increase in wholesale electricity prices."[16]

29. The Chief Executive of Genesis Energy has said the exploration policy will, perversely, disincentive the shift away from coal in electricity generation:

> ... I want to take this opportunity to point out the risks with the Government's intent to ban further Oil and Gas exploration. While, as already stated the ban would not affect our Kupe operations and future development, our view is that by introducing significant uncertainty over gas supplies in the 2030's it becomes much harder to remove coal from the electricity system. We made a commitment to try and remove coal by 2030 in February, on the basis Gas would exist as a lower emission alternative fuel supply.
>
> Importing gas as an alternative to local production will be technically possible as LNG import terminals are becoming cheaper, however importing LNG into New Zealand will add incremental costs and, furthermore, make investments in gas storage harder to justify due to uncertain return profiles. Genesis believes in supporting the country's pathway to a lower carbon future however also believes greater policy alignment is going to be required to ensure the number of unintended consequences for New Zealand as a whole are kept to a minimum [emphasis added][17].

Direct economic consequences

30. Government ministers have maintained that this announcement is part of a "careful, long-term plan for a managed transition[18]" and that "It shouldn't cost the economy"[19]. Closer inspection brings this into question.

Effects on speculative prospectors

31. There has been a grave, although not well-publicised, economic impact on multi-client seismic surveyors which have acquired prospecting data over large offshore areas to licence to explorers. These prospectors undertook activities on the basis that future exploration permits can be sought, based on the

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[13] Page 29, Regulatory Impact Statement.
[14] Number sourced from http://www.gasnz.org.nz/nz-gas-industry
[15] Page 5, Regulatory Impact Statement.
[16] Page 400, *Low-emissions economy – Final report*, August 2018, Productivity Commission.
[17] Comments made the company's AGM on 10 October 2018. https://gesakentico.blob.core.windows.net/sitecontent/genesis/media/new-library-(dec-2017)/about_us/investor/pdfs/2018/shareholder%20meeting/genesis-2018-annual-shareholder-meeting-chief-executive-address.pdf
[18] Minister of Energy and Resources. https://www.interest.co.nz/opinion/93493/energy-and-resources-minister-megan-woods-takes-challenge-provide-more-detail-what
[19] Radio New Zealand. Guyon Espiner interview with Acting Prime Minister Hon Kelvin Davis on 17 April.

Petroleum Programme stating that normally a block offer will offer exploration acreage over areas that were surveyed by a multiclient seismic surveyor[20]. However, the unexpected announcement has meant that those speculative prospectors have invested significant capital (which we understand to exceed one hundred million dollars) but have overnight lost the ability to licence that data.

32. Even though existing exploration permits are not technically affected by this legislation, the sovereign risk and adverse signal to investors will likely serve to curtail work programmes, as has been experienced by some operators already.

Effects on current exploration permits

33. We have heard Ministerial statements about exploration being viable for many decades perhaps even into the 2060s[21]. These statements are not accurate.

34. All 30 current petroleum exploration permits (21 of which are offshore) expire by 2030, and before they expire, those permits have 'drop commitments' specified in their work programmes within the next 6-42 months. If the exploration permits were all dropped at their next major work programme milestone[22] (for example because of difficulty raising capital in the new policy environment with heightened sovereign risk), there would be zero permits left by April 2021.

35. Although the Minister of Energy and Resources has stated that the Crown would assess applications to change conditions to defer work programmes[23], this would just be exercising existing ministerial discretion. We do not consider that this provides the necessary relief or certainty, and we prefer amendments to the Petroleum Programme to widen the considerations for changing conditions.

36. Since 2006, 75 exploration wells have been drilled in New Zealand of which 42 were in Taranaki (approximately half on which were offshore). Despite significant capital investment, none were a commercial success. Given recent drilling success rates of the chances of making a commercial discovery is probably <10%.

37. This brings us to the point frequently made by supporters of the ban on new exploration, that:

> 100,000 km^2 is currently permitted and with a 10-15% probability of exploration success that means 10,000-15,000 km^2 could eventually be brought into production, which is 10-times as much as is currently in production.[24]

38. This estimation put forward by th has nothing to do with how the oil and gas sector assesses what is likely to be developed. The amount of acreage is not relevant *it is the quality and location of the acreage that counts*. Oil and gas fields are not like forestry acreage. To say that exploration of the 100,000 square kilometres would yield "10 times as much as is currently in production" is not reasonable, nor is it based on any method or best practice used in the worldwide petroleum industry as a means of assessing exploration prospectivity or attractiveness.

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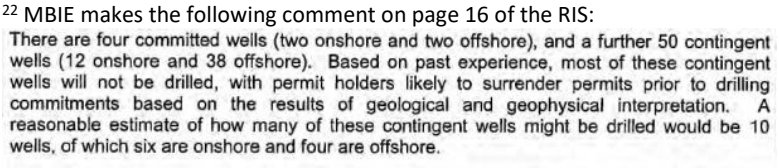
[20] Clause 7.3 Petroleum Programme 2013. "There will usually be an annual Petroleum Exploration Permit Round. This will normally consist of a competitive tender for a number of exploration permits. The Minister will normally seek nominations from interested parties on areas for inclusion in upcoming Permit Rounds. Areas where prospecting under prospecting permits has been undertaken will normally be included in upcoming Permit Rounds where requested by interested parties."

[21] https://www.radionz.co.nz/news/political/367220/official-oil-and-gas-analysis-is-flimsy-peters

[22] MBIE makes the following comment on page 16 of the RIS:


There are four committed wells (two onshore and two offshore), and a further 50 contingent wells (12 onshore and 38 offshore). Based on past experience, most of these contingent wells will not be drilled, with permit holders likely to surrender permits prior to drilling commitments based on the results of geological and geophysical interpretation. A reasonable estimate of how many of these contingent wells might be drilled would be 10 wells, of which six are onshore and four are offshore.

[23] https://www.stuff.co.nz/business/107341590/government-set-to-give-oil-industry-breathing-space-over-permits-potentially-boosting-exploration

[24] Hon Dr Megan Woods, *Q&A* on TVNZ.

39. Oil and gas exploration, with its long lead times and significant capital and operating costs, requires stable settings for investments to be made, especially in frontier basins with modest geological prospectivity such as New Zealand. Unexpected, arbitrary and unilateral decisions such as the decision of 12 April 2018 to cease issuing new offshore exploration acreage is extremely damaging to investor confidence as such decisions undermine confidence that the Government follows due process.

Effects on the onshore petroleum sector

40. The broader decision to cease issuing new offshore exploration permits will have a detrimental effect on the onshore sector, even though the Bill will enable permits to be granted in the onshore Taranaki region. This is because:
    - heightened sovereign risk makes it more difficult to attract investors and partners,
    - as the contractor and support services for the offshore petroleum sector diminishes with the decline of new offshore exploration, the onshore sector will in turn lose access to contractors, and
    - the uncertainty about whether onshore permits will be available after 2020[25] reduces the ability to plan for the medium to long term.

Potential unintended consequences

41. The Government's exploration announcement reduces the likelihood of gas displacing higher-emitting coal, as it means current users of industrial coal for thermal heat have much less certainty of gas supply going forward. That uncertainty reduces their likelihood of investing the capital costs to switch to lower-emissions gas-fired plants.

42. Other unintended emission increases from the ban on new exploration could include:
    - increased shipping emissions from importing more fuel from overseas (petrol, marine diesel and jet fuel), to replace former proximate domestic production, with greater transport distances,
    - as natural gas reserves are depleted, coal may be used as the next most cost-effective domestic replacement which doubles the emissions per unit of energy generated,
    - Increased electricity prices resulting from the policy makes it even less economic for direct users of fossil fuels to switch to what is already ~85% renewable electricity[26],
    - carbon leakage occurs whereby petrochemical firms (such as those involved in methanol production) relocate from New Zealand and use higher emission sources e.g. coal instead of gas, and
    - carbon leakage occurs whereby exploration and production activities no longer take place in New Zealand and instead happens overseas

On carbon leakage

43. PEPANZ agrees that New Zealand should pursue economically efficient emission reductions in line with the actions of New Zealand's trade competitors. This is to:
    - maintain the international competitiveness of New Zealand firms,
    - recognise the global nature of the energy and hydrocarbon markets, and
    - manage risks of carbon leakage.

[25] Para 30 of the Cabinet Paper of 3 September 2018 says that onshore block offers would be held until 2020 and that may not be held after that date.

[26] As covered earlier in this submission, the Productivity Commission says its Low Emissions Economy report (Finding 13.3) that "Under current technology and technology costs, reducing emissions from electricity generation will likely entail an increase in wholesale electricity prices. Rising electricity prices, if substantial, could dissuade adoption of emissions reducing technology in process heat and in transport, as well as increasing costs throughout the economy". https://www.productivity.govt.nz/sites/default/files/Productivity%20Commission_Low-emissions%20economy_Final%20Report_FINAL_2.pdf

44. In the case of methanol production which provides export revenues to New Zealand, if it is not made in New Zealand the most likely scenario is that production will simply shift to China, especially with demand growth of over 7% per year[27]. This is because in the Asian market, Chinese production of methanol from coal is the next cheapest on the cost curve after New Zealand's methanol production. Therefore the likely result of this policy is that global emissions will increase.

45. We have seen commentary suggesting that methanol production would not be able to shift to China because China has an emissions trading scheme, but we point out however that the Chinese scheme only covers electricity generation and does not apply to petrochemical production. In relation to New Zealand oils, we note their light-sweet characteristics which require less refining and therefore ultimately produce less emissions when manufacturing final petroleum products. If New Zealand produces less, (keeping in mind that New Zealand only produces 0.014% of global oil) we would expect demand to be met with heavier crudes from overseas. That would slightly increase the total global greenhouse gas emissions from oil production.

46. The bottom of the 'supply stack' is oil sands in Canada and heavy high sulphur oils from places like Venezuela. The longer we can delay the use of these difficult oils, the greater the chance that technologies will develop that mean those heaver oils are not needed or their emissions reduced. Until then, producing new light oils and gas is positive for total global emissions.

Comments on the ban on access to conservation land for petroleum activities

47. The Bill will also place restrictions on permit holders who wish to access conservation land within the onshore Taranaki region. Specifically, new onshore petroleum exploration permit holders will be able to access conservation land only for minimum impact activities, but will still be able to carry out activities below that land in accordance with section 57 of the CMA. Seismic surveying and petroleum exploration are not classified as minimum impact activities, and would therefore prohibited by the legislation. The "minimal impact' requirement is in effect a ban.

48. This policy goes beyond the scope of the decision announced on 12 April 2018. This clause in the Bill is the first time we have seen a ban contemplated on petroleum exploration on conservation land. We wish to express our concern about this process - with only two weeks to submit, we have not had the time to duly consider the impacts of this unexpected policy and possible unintended consequences.

49. We note that the Government made the unexpected announcement in the Speech from the Throne in November 2017 that "there will be no new mines on conservation land". It appears that the policy in this current Bill is giving effect to that in relation to the petroleum sector, but with no forewarning and in a way that prejudges a forthcoming discussion document. On 26 May 2018 it was announced that the Conservation Minister and Energy and Resources Minister would consult on proposals to enact the policy of new no mines on conservation land through a discussion document to be released in September 2018 (which has not been released and we understand has been delayed). We strongly consider that no decisions on the petroleum sector's access to conservation land should be made before that process is undertaken and completed.

50. In principle, we would oppose this policy of restricting access to conservation land. Despite the name of the estate, not all conservation land has high conservation values. Conservation land includes paddocks and carparks for example. We consider that access to land should be assessed on an effects-basis and that arbitrary bans prevent activity without an informed trade-off being made. A generic ban on access means forgoing unknown economic values to preserve unknown conservation values, and in the absence of a case-by-case assessment, it is not possible to judge if that is appropriate.

[27] Page 2, Sector Research – Energy Research. 26 June 2018.

51. Should the ban on access to conservation land proceed, we request an exclusion in the legislation to authorise seismic surveys because of their minimal effects.

Comments on overriding consultation requirements on consequential changes to the Petroleum Programme.

52. The Crown Minerals Act requires that, before amending the Petroleum Programme[28], the Minister must give notice and invite submissions for 40 working days. However, Clause 27 of the Bill would insert New Part 2 in Schedule 1 of the Act to override this consultation requirement "if the change is consequential on the amendments made to this Act by the Amendment Act".

53. We are concerned by this removal of consultation. We do not understand what is considered by the Government to be in scope of 'consequential amendments', and with scope-creep already identified in this Bill we are concerned about what further changes may be made without consultation. Understanding the likely consequential amendments would require a detailed assessment of the Petroleum Programme *and for that assessment we simply do not have time within this truncated process.*

On the idea of 'leadership'

54. Justification for the policy suggests New Zealand acts early and bans new exploration to demonstrate 'leadership'. PEPANZ asks whether it is realistic to expect other nations to follow this. Does the New Zealand Government really expect military and economic Western powers such as the United States to give up its recently earned position of being a net-energy exporter? Will the major oil reserve holders, such as Russia, Saudi Arabia and Venezuela, stop exploring for hydrocarbons if demand for their products is still there? PEPANZ think the logical and rational answer to that question is no. To cease new activity here transfers economic and geopolitical power to other nations.

55. If New Zealand ceases new exploration permits it joins Belize, Costa Rica and France; none of which have a significant oil and gas producing sector. Unlike those countries, New Zealand is an island nation whose domestic oil and gas industry is material to its economy and resilience of energy supply. Anything New Zealand does not produce domestically must be imported via ship – we cannot rely on pipelines from neighbouring countries.

56. Effectively addressing climate change requires "the rest of the world to act"[29], and at this stage we cannot be sure of genuine and comprehensive global action. We note that the Ministry of Foreign Affairs' views were not sought on this and they offered no advice on this[30]. In the event of inadequate global action, if New Zealand's climate policies are too ambitious or if we act too early, the ultimate outcome is to materially weaken the economy for little global benefit, enter path dependency and forego options which have value.

57. Ultimately, the cost and efficiency of new energy solutions (and therefore the pace of the transition) is driven by global, not domestic action. Acting earlier and at a faster pace than trade-competitors will add costs unless there is a future where energy is as reliable, but cheaper than current sources. Put another way, foreclosure of one option pushes you to the next more costly option on the supply curve and is therefore more expensive by comparison.

[28] The Petroleum Programme is a critical piece of secondary legislation that specifies how the Minister interprets the Crown Minerals Act.
[29] The Ministry for the Environment makes this point in its recent discussion document *Climate Your Say: Consultation on the Zero Carbon Bill*.
[30] This was confirmed by MFAT in an OIA response on 30 April 2018.

The policy process was flawed

58. We maintain that this policy was unexpected. We hold this view for a number of important reasons:

- The policy to ban new offshore exploration permits was not policy of the Labour Party or of New Zealand First in their election manifestos (although it was Green party policy).
- The Leader of the Labour Party was specifically asked in the 2017 election campaign debates by Guyon Espiner "Will you commit to the Green idea of no new deep-sea oil and gas drilling?" and Ms Ardern replied "No".[31]
- The Coalition and Confidence and Supply Agreements did not contemplate such a decision.
- At the Petroleum Conference on 27 March 2018, the Minister of Energy and Resources stated "We are a Government that listens, then acts. That consults widely, thinks through issues deeply and seeks to forge consensus on how we can take New Zealand forward together". From this speech, delegates felt strongly that this meant the Government would engage the sector in decisions about its future, and were surprised at the announcement of the ban on new exploration permits on 12 April 2018.
- The Petroleum Programme specifically requires the Minister of Energy and Resources to minimise "sovereign risk", which the Programme defines as "the risk that the government may unexpectedly change significant aspects of its policy and investment regime and the legal rights applying to investors to the detriment of investors".

59. Since the announcement on 12 April 2018, PEPANZ has learnt the following about the process:

- A spokesman for the Prime Minister said "The decision on future oil and gas block offers was a political decision made by the Government parties"[32].
- "There was no Cabinet decision"[33] and the policy was taken agreement and instead was taken as a simple oral item for noting[34].
- There was no prior consultation with affected parties such as the oil and gas industry or the communities of Taranaki.
- There was no attempt at analysing whether the policy would achieve the intended outcomes, and there was no attempt at quantifying the costs and benefits. Although MBIE officials provided some information, no analysis on the efficacy of a ban was sought, and most advice was provided in a flurry in the several days leading up to the announcement. That advice was wholly unsupportive of the policy.
- The RIS and Cabinet paper were prepared after the announcement was made.
- The Government used urgency to table the Bill and to refer it to a non-standard select committee for only two weeks' consultation. We note that Standing Order 188 specifically states that Crown minerals policy is in the domain of the Economic Development, Science and Innovation committee but instead the Government referred the Bill to the Environment Committee. We cannot understand why it would be appropriate for a Committee without the relevant experience of working on Crown Minerals policy to consider this Bill. We have observed that the Environment Committee has a Government majority whereas the Economic Development, Science and Innovation Committee faces is tied between Government parties and the opposition.

[31] http://www.scoop.co.nz/stories/PO1709/S00203/jacinda-ardern-refuses-to-stop-deep-sea-oil-drilling.htm
[32] https://www.stuff.co.nz/dominion-post/business/104447116/No-Cabinet-paper-written-no-Cabinet-decision-made-in-political-decision-to-ban-new-oil-exploration
[33] iBid
[34] Although it has been typical for the Minister of Energy and Resources to take a proposal to release an annual petroleum Block Offer as an oral item, that was because Block Offers have been an annual business-as-usual process since 2012. In our view, to cite the precedent of oral items as a reason for similarly taking the policy to ban all new offshore exploration permits is entirely unreasonable. That is because a ban on new permits has significant consequences for the economy and energy security; it should have been subject to full and proper discussion at Cabinet.

60. We consider that, if the Government had concerns about the role of the oil and gas sector in a lower emissions economy, several steps would have been much more appropriate. Best Practice in policy development dictates that such a policy be developed over time with a number of stages, including:
    - policy development and options analysis from officials,
    - a discussion document and consultation,
    - public workshops,
    - an exposure draft of proposed legislation, and
    - a reasonable period of select committee consultation on final legislative proposals.

61. In relation to consultation, we note that the failure to abide by the Cabinet Manual, section 5.22, which states:

> A key consideration in developing workable and effective policy is assessing the need for, and the timing of, consultation with... relevant stakeholder groups. Departments should bear in mind that consultation may be undertaken face-to-face, using discussion documents, or using digital consultation tools...[35]

62. Further, the CabGuide[36] refers to the Department of Internal Affairs' *Good Practice Participate* guideline which was not followed. That guideline:

> ...is a set of documents that guides public servants on how to involve community, voluntary, iwi and Māori organisations in decisions that affect them and the people and communities they serve.[37]

63. PEPANZ considers that a key benefit of adequate consultation is to ensure all relevant information and expertise informs policy development. We note the Legislation Design and Advisory Committee's *Legislation Guidelines*[38] which notes the risk of poorly designed policy*:*

> Poorly designed legislation will often not achieve its goals. Even if the main goals are delivered, legislation that gives rise to significant unintended consequences or fails to adapt to meet society's needs over time may impose unnecessary costs and undermine wider government aims for society.

64. If the Government still considered banning new exploration permit was appropriate, it should have referred the question to the Interim Climate Change Committee to get objective and impartial advice on how oil and gas would fit into the low emissions economy[39]. We note that when the Climate Change Minister announced the appointment of the Interim Climate Change Committee, he said that it was intended "to take the politics out of politically charged issues" and to get "impartial and objective advice"[40]. Indeed, we consider that this decision has politicised the climate change policy debate just at the time when cross-party consensus is critical with the establishment of the Zero Carbon legislation and Climate Change Commission.

65. Brian Fallow considered that:

> It [the decision to ban new offshore exploration] is utterly at odds with the careful, consultative, consensus-seeking approach being pursued over the larger climate agenda[41].

66. In contrast to the process for ceasing to offer new offshore exploration permits, we suggest the Government's process on the Zero Carbon Bill is a far better model. That process was informed by official

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[35] https://dpmc.govt.nz/sites/default/files/2017-06/cabinet-manual-2017.pdf
[36] https://dpmc.govt.nz/publications/cabinet-paper-consultation-interest-groups
[37] https://www.dia.govt.nz/Engagement-and-consultation
[38] http://www.ldac.org.nz/assets/Uploads/Legislation-Guidelines-2018-edition.pdf
[39] The draft Cabinet paper of 26 March contemplated this approach, but this was ultimately rejected.
[40] Written notes from the launch of the Committee at the Beehive theatrette.
[41] *Exploration ban a pointless, self-righteous policy:* https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12035925

advice, expert economic analysis, a discussion document for consultation on the policy thinking, and a yet-to-run select committee process with submissions on the draft legislation.

The Just Transition

67. Government ministers have maintained that this announcement is part of a "careful, long-term plan for a managed transition"[42] and that it is intended to avoid economic shocks in the future. In reality, the announcement is:
    - not careful because it was rushed through without Cabinet consideration or official advice,
    - not long-term because the end of granting offshore exploration permits was immediate and will take full effect in a few years,
    - not part of a plan because it is not addressing demand, and
    - not part of a managed transition as there is an absence of broader strategies for transition – except the two publicly stated goals of carbon neutrality by 2050, and 100% renewable electricity by 2035.

68. We submit that the announcement has been a shock to the industry and New Zealand businesses in general. This policy has been presented as if it is helping communities by signalling a gradual winddown. However, the announcement is not necessary to begin transition planning. With appropriate consultation with relevant parties it would be possible to establish a Just Transition plan while still enabling new exploration.

69. We do not accept the characterisation of this as being a "Just Transition". That term was developed by the International Labour Organisation and is a noble concept that revolves around dialogue and agreement between Government, industry and workers to reach agreement on a goal and plans. We note that the Just Transition Unit was established in MBIE *after the decision.*

70. The International Labour Organisation's conference[43] concludes that a Just Transition must be based upon "Strong social consensus on the goal and pathways" and "Adequate, informed and ongoing consultation" should take place with "all relevant stakeholders" [44].

On the alleged diminishing interest in Block Offers

71. We have heard comments dismissing recent Block Offers, such as the Prime Minister saying in October 2017 that "Those Block Offers and their popularity have diminished over time. It's become less economic, particularly for offshore"[45]. It is strictly true that the last two years have seen lower uptake of new permits, but that was a global phenomenon with low oil prices and that negative view does not account for the natural commodity cycles.

72. With prices increasing and growth in supply lower than growth in demand, we would expect to see an uptake in interest. This increased interest is exactly what was revealed through OIA requests which disclosed that MBIE's internal analysis showed that Block Offer 2018 was looking to be potentially the *most successful ever* with a total of 38 area nominations possible (23 nominated and 15 implied). The previous highest year was 2013 with 19 nominations.

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[42] Hon Dr Megan Woods. https://www.interest.co.nz/opinion/93493/energy-and-resources-minister-megan-woods-takes-challenge-provide-more-detail-what

[43] International Labour Conference 12 Provisional Record 102nd Session, Geneva, June 2013. *Fifth item on the agenda: Sustainable development, decent work and green jobs.*

[44] iBid, Conclusion 13(a).

[45] https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11960620

Appendices:

Appendix One: The role of hydrocarbons now and in the future.

Appendix Two: Woodward Partners “Correcting the Record” editions from 25 May 2018 and 26 June 2018 Sector Research – Energy Sector.

Appendix One: The role of hydrocarbons now and in the future

Contribution of the New Zealand oil and gas sector

1. The oil and gas industry has played a major role in the New Zealand economy over many decades, providing a substantial contribution to the economy and energy security of this island nation. To give a sense of the sector's contribution we note the following key facts:
    - The upstream oil and gas sector contributes over $2.5 billion to New Zealand's Gross Domestic Product (GDP), the Government collects approximately $500 million in royalties and income tax from the sector annually, and oil exports are worth approximately $1.5 billion per annum.
    - Offshore oil and gas is the largest contributor to New Zealand's marine economy, representing 48 percent of the marine economy in 2013. Offshore oil and gas contribute more to New Zealand's GDP than shipping, fisheries and aquaculture combined.
    - The industry generates over 11,000 jobs nationally, and many of these jobs are highly skilled and specialised. Oil and gas workers earn twice the national average salary and create seven times the average value earned per annum, money that is spent in local communities.
    - Gas is also an essential feedstock for many industrial activities, such as methanol production and urea fertiliser for agriculture, industries that wouldn't exist without a ready supply of natural gas.
    - Gas also supports a range of economic activities that require heat, such as furnaces, milk drying, timber processing and steel production.
    - New Zealand's oil and gas production is concentrated in Taranaki. The contribution the sector has made to that region has been immense – accounting for 30 percent of Taranaki's GDP and two percent of regional employment.
    - Oil and gas is one of the key reasons Taranaki has the highest regional GDP per person in New Zealand, at over $76,000, compared to a national average of $53,000[46].
    - In terms of emissions, New Zealand contributes 0.17% of global emissions[47], and fugitive emissions from NZ oil, gas and coal production are only 2% of this country's emissions profile. That means that producing oil and gas in NZ only contributes less than 0.0034% of global emissions.

The sector's role in the energy transition

2. We acknowledge the drive to lowering carbon emissions, and we support policies that efficiently achieve that goal. New Zealand oil and gas has a crucial role in helping the country achieve a low emissions future both domestically and globally. That is because:
    - natural gas can displace coal and so plays a role as a low emissions fuel;
    - natural gas is the most efficient source for the production of hydrogen if that becomes viable in New Zealand;
    - New Zealand natural gas ensures our largely renewable electricity is affordable by providing for peak and intermittent electricity;
    - production and sale of oil and gas provides revenue and royalties to maintain the Crown's finances and which help to underpin economic and social well-being as the transition (with its associated costs and impacts) takes place.

[46] https://www.mbie.govt.nz/info-services/sectors-industries/regions-cities/research/regional-economic-activity-tools/documents-image-library/2016-regional-reports/taranaki-region.pdf

[47] New Zealand's Greenhouse Gas Inventory 1990–2015, page 5. Available at: http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/final_corrected_Greenhouse%20Snapshot%202017_Sept% 202017.pdf

The sector's role in the 'destination'

3. Even in a low-emissions future, oil and gas will have an important role. The International Energy Agency looks at energy scenarios out to 2040. Oil and gas are still expected to supply half of the world's energy needs by 2040 – around the same proportion as now.[48] Oil demand is expected to grow till 2040, albeit at a steadily decreasing rate of growth, while natural gas usage is expected to grow by 45% under the International Energy Agency's base case New Policies Scenario[49]. Demand for oil and gas is likely to continue to grow beyond 2040 as well.

4. It is worth reflecting on the need to continue to lift global living standards, especially in developing countries by eliminating energy poverty. In Western nations it is easy to take accessible and reliable energy for granted, but this is still simply not the case for billions of people around the world. Consider the three billion people who still use wood, coal or animal dung to cook and heat their homes, and the corresponding impacts on human health and the environment. This energy poverty causes a poverty trap where people are forced to spend many hours gathering fuels for cooking. Oil and natural gas can alleviate that energy poverty efficiently and effectively.

5. Oil and gas may be used in certain different or reduced ways, but many essential goods and services require hydrocarbons either as feedstock or fuel for which there are simply not economic or technically feasible replacements. To simply imagine or hope for alternatives that may or may not eventuate is neither sensible nor prudent.

6. Veteran New Zealand energy commentator Gavin Evans wrote about the role of hydrocarbons in the future, saying[50]:

> No one in the world is predicting the end of hydrocarbon use – not the Intergovernmental Panel on Climate Change nor the International Energy Agency. We will use less for transport, but we will continue to need coal for making steel and oil and gas for all those handy products we use in our computers, aircraft, buses, trains, solar panels and wind turbines.
>
> ...With the global population forecast to increase by a third by 2050, the agency is concerned that supplies of all lower-emitting options are not increasing fast enough.

7. The challenge is therefore *not* to fully phase out the use of oil and gas per se (although some phase-down is expected with the growth of renewables). Instead, the task and challenge is lower net emissions through: improved management of fugitive emissions, offsets, and bio and geo sequestration and other technological developments.

8. It is crucial to keep in mind that hydrocarbons in themselves are not the problem when it comes to greenhouse gas emissions – the issue is the carbon emissions resulting from burning them, and of course not all petroleum is burned. If the emissions can be captured or offset, the issue is addressed.

9. We also note that investment in significant new gas projects is on the rise globally. Recent announcements on a large Liquified Natural Gas plant to be built in Canada, to export gas to Asian markets, shows how other countries such as Canada will continue to get the economic benefits of rising global gas demand while New Zealand misses out.

[48] International Energy Agency World Energy Outlook: https://www.iea.org/weo/
[49] iBid.
[50] https://www.newsroom.co.nz/2018/04/16/105198/a-symbolic-beheading-of-the-oil-and-gas-industry 17 April 2018.

Appendix Two: Woodward Partners "Correcting the Record" editions from 25 May 2018 and 26 June 2018 Sector Research – Energy Sector

Important note. This Appendix is comprised of independent research prepared by Woodward Partners and provided to clients of its *New Zealand | Energy* multi-client service. Woodward Partners has provided its consent to including these reports with this submission.

Correcting the Record

Debunking oil and gas myths

- **Facts, please** – The government's 12 April announcement of its decision to stop issuing new offshore oil and gas exploration acreage has attracted much political, media and public comment. There have been a number of cases where statements from public figures have misrepresented facts, which has served to misinform the debate. This note responds to requests from clients who have asked us to identify, explain and correct these instances. The timing coincides with the Prime Minister's visit to New Plymouth today to meet union, local government and business interests. It also precedes another interview with the Minister of Energy and Resources on Newshub Nation tomorrow.

- **The myths** – We identify a list of 10 misstatements for correction:

  1. "The reality is that we don't export gas from New Zealand."
  2. "Methanol is a commodity with its price pegged to international gas prices."
  3. "Methanol is a low-value commodity and exports are of debatable value to the NZ economy."
  4. "If Methanex was to shut down then remaining reserves would almost double and gas would flow to higher-value economic activity."
  5. "One of the things Methanex is heavily dependent on in deciding whether to continue operating in Taranaki is extension of a gas permit in Taranaki next year."
  6. "There are no near-term implications of the decision on investment."
  7. "Because business users pay more for gas in NZ than they do in Australia and the US then NZ gas would be too expensive to develop as LNG for export."
  8. "Industry is saying there are trillions of cubic metres of gas reserves in the field off the Canterbury Coast."
  9. "100,000 km^2 of acreage is currently permitted and with a 10-15% probability of exploration success that means 10,000-15,000 km^2 could be brought into production, which is 10-times as much as is currently in production."
  10. "Carbon leakage applies only to gas because it is only half the emissions. It doesn't apply to oil because our oil has the same level of emissions as oil from other parts of the world."

- **OIA material likely to make for sobering read** – Responses to Official Information Act requests government agencies have received is expected to see a mass-release of information on 1 June, unless extended. We are expecting that material to show that little due diligence and preparatory analysis was undertaken before the decision was made. We will be particularly looking for (1) details of cost/benefit analyses that contributed to the decision (2) Ministry for the Environment advice regarding the expected climate change benefits of the policy and (3) advice regarding the risk of judicial review and of parties taking legal action against the Crown seeking damages.

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Fact checking

A feature of the public discussion and debate that has followed the government announcing that it will no longer offer new offshore oil and gas exploration acreage to the market has seen a number of incorrect assertions and comments made regarding technical and commercial aspects of the oil and gas sector. We have referred to but not identified a number of these instances in past notes (in particular see our 13 April *letsdowhat? End to New Offshore Exploration Permits* and subsequent *NZ Energy Weekly* editions). This note responds to client demand for greater detail and explanation and to correct what we consider as the most significant errors, misstatements and misrepresentations to have been made to date.

Raw data

The Minister for Energy and Resources Hon Dr Megan Woods (Minister) has given extended interviews to a number of agencies. Although in large part these interviews have served simply to repeat the government's sales pitch for the policy, they also include a number of comments and assertions that we regard as either incorrect or misleading in the context that they were intended.

Among business columnists to have covered the story the strong majority of comment and opinion expressed towards the policy change has been negative, with the notable exception of Rod Oram.

Figure 1: Ministerial interviews & opinion pieces

Platform	Programme	Interviewee / author
TVNZ	Q&A	Hon Dr Megan Woods, Minister for Energy and Resources
Radio NZ	Morning Report	Hon Dr Megan Woods, Minister for Energy and Resources
Radio NZ	Morning Report	Hon Kelvin Davis, Acting Prime Minister
Newshub	AM Show	Hon Dr Megan Woods, Minister for Energy and Resources
interest.co.nz	Video	Hon Dr Megan Woods, Minister for Energy and Resources
interest.co.nz	Opinion	Hon Dr Megan Woods, Minister for Energy and Resources

Source: Woodward Partners

Figure 2: Business & energy media opinion editorials

Journalist	Media / Agency	Piece
Fran O'Sullivan	NZME	Jacinda Ardern's exploration ban short-sighted
Pattrick Smellie	Business Desk	Labour-led Government shows Its green credentials
Brian Fallow	NZME	Exploration ban a pointless, self-righteous policy
Rod Oram	Newsroom Radio NZ	Shedding light on the gas sector's claims Business commentator Rod Oram
Gavin Evans	Energy News	A symbolic beheading of the oil and gas industry
Jenée Tibshraeny	interest.co.nz	The missing facts

Source: Woodward Partners

Some of the initial misstatements have been repeated and re-emphasised by others in their public discussion of the policy, hence serving to compound the initial misstatement. This includes by the Minister who in her own opinion piece directly referenced what are in our view errors and evidence-absent assertions made in an earlier piece by Rod Oram.

Correcting the record

1. "The reality is that we don't export gas from New Zealand"
– Hon Dr Megan Woods, Radio NZ interview

The reality is that we do export gas from New Zealand. Exported gas accounts for more than half of New Zealand gas production, either directly (as methanol) or indirectly (as import-displaced urea). When running at high capacity, at current market pricing the end-product value of exported gas would approximate $1.5 bln – therefore broadly comparable in scale to the export value of NZ's wine industry.

2. Methanol is a commodity with its price pegged to international gas prices
– Rod Oram, Newsroom and Radio NZ

Methanol pricing is strongly correlated to oil prices – not gas prices. The difference is critical as it is the gas-oil arbitrage that methanol producers create value from. This is because methanol is both a substitute and/or additive for a wide variety of oil-rich applications, principally in the chemicals and transport sectors. Higher oil prices provide an increasing incentive for liquid fuel users to substitute away from traditional oil-based fuels in favour of cleaner-burning gas-based alternatives, including methanol. Including a higher proportion of gas-based product such as methanol into the NZ fuel pool would back-out imported refined oil products and yield material economic and environmental benefits.

3. Methanol is a low-value commodity and exports are of debatable value to the NZ economy
– Rod Oram, Newsroom and Radio NZ

At a broad level, Methanex suffers from a lack of general public understanding of and appreciation for the scale and importance of its role in the NZ energy mix and its direct and indirect role in the regional and national economy. Past independent research has concluded that Methanex adds $440m pa to Taranaki GDP and $650m pa to national GDP and that it supports 1,200 direct and indirect employees. This compares to the contribution of the much higher profile Tiwai Point aluminium smelter for which similar research has concluded a GDP contribution of $525m pa.

The labelling of methanol as a "low-value commodity" is without any supporting explanation or context thus it is difficult to comprehend on what basis Mr Oram is making the assertion.

Mr Oram's interview remarks play on methanol's chemical membership as a simple alcohol, with the term 'simple' seemingly stretched to infer 'low-value'. This does not do justice to the complexity of methanol manufacture and the myriad of applications that it supports and enables.

Methanol is used as a precursor to other widely-used chemical derivatives including formaldehyde and acetic acid which are used to produce a vast array of everyday products such as resins, building materials, plastics and pharmaceuticals. The strongest growth market is methanol-to-olefins (MTO) where methanol is used to produce plastics and other petrochemicals. As a clean-burning, biodegradable fuel methanol is also increasingly used as

an additive and in some cases full substitute for heavier hydrocarbons in transport applications that range from petrol in cars to heavy fuel oil in ships. It is also a key process component in the manufacture of biodiesel, including in Z Energy's new Zbiod plant at Wiri. Methanex itself operates a fleet of large methanol-powered tankers that it uses to carry methanol from Port Taranaki to markets in Asia.

Methanol manufacture involves a highly complex three-stage process involving (1) steam reformation, (2) compression and synthesis and (3) distillation. Gas is used as both a base feedstock and fuel in very large quantities, equivalent to 38-39 GJ/t. With methanol prices widely quoted on financial markets the high-level economics of methanol manufacture can be deduced with reasonable confidence. At a current Asian contract price benchmark of US$460/t the gas-value equates to ~$15/GJ, which is approximately triple the value of the raw material (i.e. natural gas) that feeds into the methanol production process and is broadly comparable to the netback achievable on gas-fired peaking electricity generation – another value-add gas application.

At a macro level, the export value of produced methanol is $1.0-$1.5 bln pa, which goes directly to the credit of NZ's balance of trade.

4. If Methanex was to shut down then remaining reserves would almost double and gas would flow to higher-value economic activity

– Rod Oram, Newsroom and Radio NZ

Taranaki is a gas-condensate province (i.e. producers generally receive a raw well stream of wet gas) meaning that gas management is fundamental to field operations and economics. If Methanex was not a buyer of large volumes of gas then that gas would otherwise not be monetised within the existing market – in overly-simplistic terms, gas would either need to be flared (which is generally not now permitted at scale) or reinjected (at significant capital cost).

At high operating capacity the revenue value of wholesale gas sold to Methanex is worth ~$500m pa to producers – more than sufficient to fund the operating backbone of most of the major asset owners. Additional to this are substantial revenue benefits that producers realise from liquids stripping that results from being able to produce on a production profile that is – at least in part due to Methanex – far flatter and higher than would be the case if Methanex was not in the market.

If Methanex exited NZ then the economics of Taranaki E&P would suffer both immediately and significantly. Irrespective of potential reserve outcomes, the likely result would be that remaining gas users would be asked to pay much higher prices to cover the loss of Methanex to the system and the funding coverage of producer cost bases that Methanex provides.

Mr Oram's assertion that, due to Methanex accounting for nearly half of gas market demand, its departure would leave "nearly double" the reserves for other "higher value" users highlights a nuance of reserves methodology that is often misunderstood by those outside the sector: that reserve estimates are fundamentally an economic test. While of course true that there is a physical aspect to estimates, it is the commercial viability of any physical endowment that determines the extent of a reserves estimate. If Methanex was to exit the market in full or even in part it is likely that, all else being equal, reserve estimates would decrease materially. This is because demonstrating a tangible market for produced gas is a central aspect of the reserves test and the elimination of nearly half of all gas market demand would negatively impact field economics and, therefore, reserves.

5. One of the things Methanex is heavily dependent on in deciding whether to continue operating in Taranaki is the extension of a gas permit in Taranaki next year.
– Hon Dr Megan Woods, Q&A

Methanex does not hold any ownership interest in any exploration or production permit in NZ. No-one we have spoken to in the industry has any concept of what the Minister was referring to with this statement.

6. There are no near-term implications of the decision on investment.
– multiple Ministers commenting on the decision

The assertion here is that as the policy forms part of a "long-term, managed transition" to fit with the government's net-zero GHG emissions by 2050 target and as there is no change to the rights of existing permit holders, there are therefore no implications for nearer-term investment decisions.

The reality is that investors and, therefore, companies will apply a different lens to investment decisions than they did before 12 April 2018.

Upstream E&P investment decisions require the allocation of substantial capital. Decisions over the allocation of that capital rely on assessments by international oil companies which take a global view to screening investment capital. Investment decisions distil to assessments for each of below-ground risk (geology, probability of success etc) and above-ground risk (market risk, country risk, project risk etc). The position taken by government will materially and negatively affect company assessments of above-ground risk as it will bring rise to concerns over longer-term sovereign risk that previously did not feature as major barriers in decision making.

Changes in screening assessments may not initially be obvious as they involve foregone benefits from not exercising options that would otherwise have been NZ-positive projects. TSX-listed company TAG Oil, which has producing assets based entirely in the onshore Taranaki region (and therefore supposedly unaffected by the policy change) has already said that investors who may have been interested in onshore Taranaki are now taking that interest elsewhere. NZX-listed NZ Oil and Gas has also said that it will now look at jurisdictions other than NZ for new opportunities.

Reaction is not confined to the upstream sector. Methanex and Ballance Agri-Nutrients, which together account for half of total normal-year gas market demand, have expressed concern over the implications of the ban on their long-term viability. However the implications in each case are very much earlier than the government's 2050 goalpost.

In the case of Methanex, there are two layers of implication:

1. **Stay-in-business investment cycles** – Methanex is required to refurbish and recertify each of its three plants every 4-5 years. Each decision is thought to require a typical investment of US$50-$100m. Forward gas availability is one of the key project risks with each turnaround investment decision. The likelihood of lower E&P activity levels that the policy change infer compared to what would have been the case without it increases the risk that Methanex may not be able to procure the future gas it requires to operate at high capacity. The recent announcing of oil and gas reserves and the large downgrade to NZ's biggest gas field at Pohokura (see our 22 May 2018 report *Oil, Gas & LPG Reserves: First Take on 2018 Oil and Gas Reserves Reporting*) is an aspect of increasing concern leading into Methanex's next round of Motunui turnaround decision making in 2020-21. Substantial E&P investment will be required to support Methanex continuing to operate its three plants at high capacity.

2. **CO_2 capture** – CO_2 is a byproduct of the methanol production process and Methanex's two NZ sites are together among the most GHG-intensive operations in NZ. Methanex is known to have been investigating the feasibility of ancillary CO_2 recovery at Motunui to reclaim and reuse CO_2 during the methanol process to increase plant efficiency, potentially by as much as 10%. The capital profile of the project would be substantial at ~$100m and would require continued plant operation at high capacity through multiple turnaround cycles to achieve payback. As the ban will serve to reduce the expected operating lives of the plants the payback window is likely now to be too uncertain to justify the investment. The result is that CO_2 emissions will be materially higher across Methanex's future operating life.

In the case of Ballance, which has been considering a major ~$1 bln rebuild of its Kapuni ammonia-urea plant, the implications are also very much more immediate. As with methanol, gas is the primary feedstock in the production of urea and any suggestion of tighter gas availability and/or higher pricing is of direct relevance to its own decision making. NZ currently imports two-thirds of its annual urea requirements from the Middle East. The new plant would likely double existing domestic production capacity and as a result deliver substantial industry and macroeconomic benefits in backing out imported production with domestically-produced product.

7. Because business users pay more for gas in NZ than they do in Australia and the US then NZ gas would be too expensive to develop as LNG for export

– Rod Oram, Newsroom and Radio NZ

A cornerstone of Rod Oram's argument in rebutting the E&P industry's investment case for investing in NZ E&P is an assertion that because domgas prices that commercial users pay in NZ (which he says equate to US$26.20/GJ) are much higher than equivalent prices in the US (US$9.20/GJ) and Australia (US$15.60/GJ) then NZ gas would be too expensive to develop into export LNG if there was a major discovery.

There are two fundamental flaws in this assertion.

Firstly, the prices quoted are not gas prices for business users. The prices have been lifted from MBIE's international comparison tables here, which presents prices for residential customers in NZ and the US (note there are no prices for Australia – Mr Oram looks to have simply taken the OECD average and called it Australia). Residential gas prices in NZ are of no relevance whatsoever to the potential attractiveness of NZ-produced gas for LNG export.

Secondly, which is materially the same as the first point, even if the gas prices Mr Oram references were correctly presented they would be of no relevance to whether a LNG export development might or might not be economic case in the event of frontier exploration success. Apart from the resource itself, the key price/value driver that a successful explorer would look to when assessing the viability of a liquefaction business case would be the gas netback achievable on LNG sales. That calculation relies on one generic calculation: gas price achievable at destination less pipeline, regasification, and waterborne transportation costs. Domestic NZ gas prices are of no relevance to this calculation.

For what are broadly similar reasons Mr Oram's reference to NZ being a high-cost market to develop gas versus 'competitors' such as US shale gas is also misguided. While it would be undeniably expensive to develop LNG in NZ, for a myriad of reasons including scale (discrete conventional reservoirs offering lower per-unit development and operating costs than pervasive tight formations), proximity to Asian seaborne markets (US shale faces much longer export distances than Asia/Pac-originated product) and geopolitics (diversity of buying bases across different suppliers is favoured) compound to mean that contrasting development costs to US shale is not meaningful.

The central point is that E&P investors take an infinitely more scientific approach to investment decision making than what Mr Oram is suggesting.

That the Minister in her opinion piece is publicly highlighting Mr Oram's logic as an endorsement of the policy is itself concerning in reflecting the same lack of understanding of E&P economics.

8. Industry is saying there are trillions of cubic metres of gas reserves in the field off the Canterbury Coast
– Hon Dr Megan Woods, Newshub interview

The reference is to the Barque prospect within the Clipper permit. No reserves have been declared because Barque is not a gas field - it is an undrilled prospect. Clipper operator NZ Oil & Gas has estimated Barque's potential unrisked petroleum-in-place at 11 tcf of gas and 1.5 bln bbls of liquids. As a frontier exploration prospect the probability of success of a well at Barque is ~15%.

9. 100,000 km^2 is currently permitted and with a 10-15% probability of exploration success that means 10,000-15,000 km^2 could eventually be brought into production, which is 10-times as much as is currently in production.
– Hon Dr Megan Woods, Q&A interview and others

The Minister has repeated this logic in a number of interviews and forums. Success in oil and gas exploration is not a function of drilling-out an acreage superset on the (false) assumption that an assumed percentage of that superset will yield production. Again, E&P investors take an infinitely more scientific approach than what the Minister is suggesting.

10. "Carbon leakage applies only to gas because it is only half the emissions. It doesn't apply to oil because our oil has the same level of emissions as oil from other parts of the world."
– Hon Dr Megan Woods, Radio NZ interview

Carbon leakage occurs when, due to the cost of climate policies incurred in one country, production is transferred to another country where there are softer emission constraints.

The Minister's assertion that carbon leakage applies only to gas and not to oil is perplexing. The decision to stop issuing new exploration acreage will very likely result in indigenous oil production falling more quickly than would have been the case had the status quo continued. The policy however will have no effect on NZ demand for refined oil products such as petrol, diesel and aviation fuel. With demand unaffected NZ's net imports of crude will need to increase to meet lower NZ production. While it is true that nearly all NZ-produced crude is exported to international markets, it is also the case that NZ-produced crude is materially lighter in specification than crude Refining NZ accepts to produce refined oil products for on-sale into the NZ market.

With lower exports of light-sweet product the overall GHG-intensity of the global crude pool is likely to increase (albeit only very slightly given NZ's small production base) as heavier crude varietals are drawn on to fill the gap left by lower NZ production. All else equal this will see global emissions increase. Whether or not this is to the benefit or detriment of NZ would depend on a variety of different factors, however the fundamental point – being a relocation of production from NZ to other nations with laxer climate change standards – is the very definition of carbon leakage.

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Sector Research
Energy Sector

26 June 2018

Correcting the Record II

Debunking (more) oil and gas myths

- **Now a series** – This note presents a second edition of our *Correcting the Record* series which, like the first edition, serves to address what we consider as misstatements and/or inconsistencies made in public statements during the course of the debate since the Government's 12 April announcement that it will no longer issue any new offshore oil and gas exploration permits. To a large extent this second edition corrects and/or challenges statements made by Minister of Energy and Resources Dr Megan Woods during her 14 June appearance before the Economic Development, Science and Innovation Select Committee. We remain apolitical in the debate and have no interest in challenging political positionings and assertions – a task that we consider best left to politicians and the industry. We are however firmly of the view that the public debate over what represents a fundamental reversal of longstanding energy policy should be one that is informed by facts, evidence and consistency. Where the debate is misinformed or misdirected by what we consider to be incorrect, misleading or inconsistent statements, we will continue to call them out.

- **The new myths**:

  1. "Saying that by shutting down the NZ oil and gas sector will see local production relocate to somewhere like China where 'dirty coal' would instead be used is an outdated argument."
  2. "China's cap-and-trade emissions trading system means that it is not possible for production to relocate from NZ to China. Any relocation would represent a substitution – and not addition – of emissions."
  3. "Climate change was a consideration the Government took into account in its decision not to issue any new offshore oil and gas exploration permits."
  4. "Stopping burning fossil fuels is widely accepted as a way to reduce emissions"
  5. "The oil and gas industry has gone from being a $300m industry to a $10m industry over the last few years"
  6. "There is no evidence that burning of fossil fuels can be done without releasing carbon emissions."
  7. "New Zealand has 10.5 years of gas reserves remaining which is consistent with the last two decades during which coverage has varied between 9 and 11 years"
  8. "It was not possible to do a cost-benefit analysis because existing permits are unaffected by the decision."
  9. "MBIE provided 13 pieces of advice that contributed to the decision."
  10. "In February MBIE provided a comprehensive briefing that gave all possible scenarios along a continuum."

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Correcting the record, again

Our 25 May 2018 note *Correcting the Record - Debunking Oil and Gas Myths* challenged a number of what we considered as either incorrect, misleading or inconsistent public statements made following the Government's 12 April announcement that it will no longer issue any new offshore oil and gas exploration permits.

The 12 April announcement has continued to attract significant public and media debate fuelled by business sector unease at the way in which the Government reached and communicated the decision and the relative absence of facts and evidence supporting the decision.

An appearance on 14 June by Energy and Resources Minister Dr Megan Woods to front the Economic Development, Science and Innovation (EDS&I) Select Committee also saw a number of further statements made that we consider as either incorrect, misleading or inconsistent with previously stated positions. This note serves to address another 10 of what we consider the most material of those instances.

1. Saying that by shutting down the NZ oil and gas sector will see local production relocate to somewhere like China where 'dirty coal' would instead be used is an outdated argument.
– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

It is very difficult to follow the Minister's logic in this line of argument and we suspect there may be more deflection than conviction behind it.

The Minister said during the Select Committee hearing that the disagrees with MBIE's advice on the point that concluded it likely that production would relocate to more emissions-intensive countries, such as China. Our view very much aligns with that of MBIE's.

To illustrate requires a brief explanation of the Asia-Pacific methanol market. Globally methanol continues to see rapid growth of >7% pa – far higher than for most other hydrocarbon products, particularly oil. Much of this growth is being seen in China where methanol-to-olefins (MTO – producing ethylene and propylene) and fuel blending (into the petrol pool) are driving demand growth at a rate well ahead of the global average. In part this has reflected a deliberate strategy by some large energy-consuming nations, and particularly China, to lighten its oil pool by replacing refined oil products (particularly gasoline) with gas-based alternatives such as methanol.

Chinese methanol production capacity has gown rapidly to meet this as planning authorities target meeting half of domestic demand from domestic sources, however as China does not have large indigenous gas reserves it has had to rely on coal as the primary fuel for most of its new capacity additions. Coal is a relatively expensive option for producing methanol with the result that Chinese capacity tends to lie towards the top of the industry cost curve. With production headroom available Chinese capacity therefore serves as the marginal tonne called on when production that ranks as cheaper on the cost curve is not produced. NZ ranks more favourably on that curve than marginal Chinese production any reduction in NZ production would very likely be filled by Chinese swing capacity.

With coal-based methanol manufacture generating at least double (and in the worst cases with older plants, closer to quadruple) the GHG emissions of gas-based methanol there would in our view be no doubt that substituting NZ (gas-based) methanol production with Chinese product would result in higher global GHG emissions.

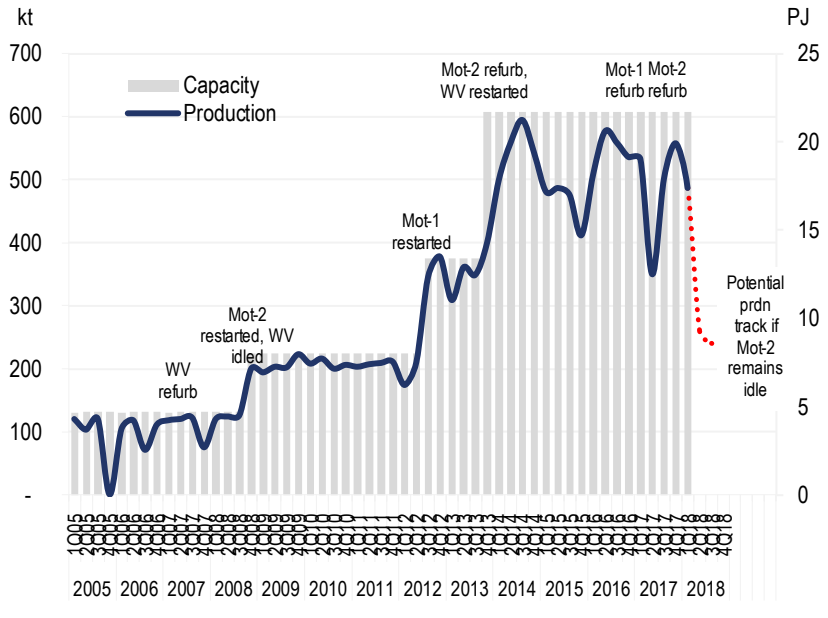
It is worth noting that this dynamic is not just one of future scenarios and hypotheticals. The current outage of Pohokura's offshore wells and subsequent downgrade by Methanex of its NZ production outlook for 3Q 2018 (see our 5 June 2018 *NZ Energy Weekly* for detail) means that 250-300kt per quarter of NZ-origined production is currently being lost from the global methanol pool – production that would have been destined for Asian markets. For Methanex as the world's largest producer of methanol, the impact represents a material short-term loss of market share. To the point: it will be domestic Chinese (coal-based) capacity that will respond to meet that foregone production.

The argument dismissed by the Minister as out of date is therefore anything but – in fact with the situation currently at Pohokura it could not be more current.

On a related note, we would emphasise that the current situation at Pohokura is one that is materially under-appreciated for its significance. The simple current reality is that NZ's largest gas field, which normally meets 35-40% of gas market demand, has suffered a major unscheduled part-outage with no external visibility as to when a return to normal service can be expected. The loss to supply-side capacity of ~100 TJ/day equates to a run rate of ~35 PJ pa or 15-20% of total market size. This represents a loss to gas security margins of a scale that would in other circumstances attract heavy scrutiny – perhaps not unlike what occurred when the Maui pipeline ruptured in 2011 when industrial and commercial gas users across the spectrum were required to reduce demand. The 'crisis' as it became rightly labelled at that time became very heated in both public and political circles as headlines of widespread milk-dumping by Fonterra at its North Island dairy factories, cancellation of elective surgeries in Auckland hospitals and even idle crematoriums grabbed headlines.

The incident rightly brought a spotlight to energy security, which this outage should also be doing. That the same alarm hasn't been seen on this occasion is because this time the impact is essentially being absorbed by just one gas user: Methanex. While both Methanex and Pohokura's owners have been fortunate with timing in that the outage has come while Methanex has been undertaking a major turnaround of one of its Motunui plants, that project is now thought to be complete and Methanex able to bring both Motunui plants back fully online at high rating. The Pohokura outage is however preventing that from happening (each Motunui plant also requires ~100 TJ/day) making for ~2.5 kt/day of lost methanol production for a revenue impact for Methanex of ~$2m/day. For each week that Pohokura remains constrained (noting it has already been ~13 weeks) the foregone revenue impact to Methanex is $10-15m.

Figure 1: Methanex NZ capacity vs utilisation



Source: Methanex, Woodward Partners

More broadly, the incident highlights security of supply as an immediate issue and not just one of long-term dimensions. The government's decision to reduce the incentives to explore for and produce oil and gas in NZ will only in our view serve to increase the risk to security of forward gas supply and potentially accelerate any future decision by Methanex to withdraw from part or all of its NZ operations as a response to gas availability.

2. China's cap-and-trade emissions trading system means that it is not possible for production to relocate from NZ to China. Any relocation would represent a substitution – and not addition – of emissions.
– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

We regard the Minister's pointing to China's cap-and-trade regime as a barrier that would prevent production from relocating from NZ to China as simply a smoke screen. The Chinese scheme currently only includes the power generation sector and as such is of no relevance to the industrial sector, methanol manufacture included. Even if the scheme is extended to include methanol at some future point, the politics (including energy security, lightening the domestic oil and emissions pools and urban health benefits from lower particulates) and economics (claiming the freight component of import product) of domestic manufacture are in our view likely to see Chinese capacity remain as highly utilised as possible.

3. Climate change was a consideration the Government took into account in its decision not to issue any new offshore oil and gas exploration permits.
– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The Crown Minerals Act (CMA or Act) does not provide for climate change considerations to be given regard to in considering providing access to Crown and private land for the purposes of petroleum exploration and production. The government stating that climate change was a consideration in making its decision is prima facie inconsistent with the CMA. It is on this basis that the decision appears exposed to the risk of judicial review if any party wished to challenge it. Multi-client seismic companies are reported to be considering legal options, however whether that will progress into action remains unclear.

Despite the Minister committing (very surprisingly, in our view) to releasing legal advice she had received with the OIA release, her office did not do so. The Minister has said in other interviews that the legal advice she received ahead of the decision being announced concludes that the legal basis for the decision (being a response to climate change) lies within the CMA. We struggle to see how this can be the case. That the Minister has separately said that the government is looking to amend the CMA to accommodate the change also strongly signals the decision carries legal exposure. There is therefore an underlying contradiction in the way the Minister has positioned herself on the conclusions of the legal advice she has received. That said, it appears the government intends to remedy that exposure simply by changing the law to fit the policy decision. This would indeed resolve the issue.

4. Stopping burning fossil fuels is widely accepted as a way to reduce emissions
– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

We agree entirely with Minister's statement. Where we do not agree however is the Minister extending from this position to infer that the move to restrict oil and gas production in NZ will reduce emissions.

The government's intervention to target one part of the supply-side of the sector in an attempt to address what is fundamentally a demand-side policy problem represents what we consider to be the most egregious flaw with the policy. For reasons we also explained in our first *Correcting the Record* edition (refer #10 "*Carbon leakage applies only to gas because it is only half the emissions. It doesn't apply to oil because our oil has the same level of emissions as oil from other parts of the world*.") reducing the production of oil and gas in NZ is in our view more likely than not to result in an increase in global emissions as production is instead drawn from more emissions-intensive sources. If the policy objective is to reduce emissions then interventions must focus on reducing the demand for fossil fuels across both mobile and stationary energy formats.

5. The oil and gas industry has gone from being a $300m industry to a $10m industry over the last few years

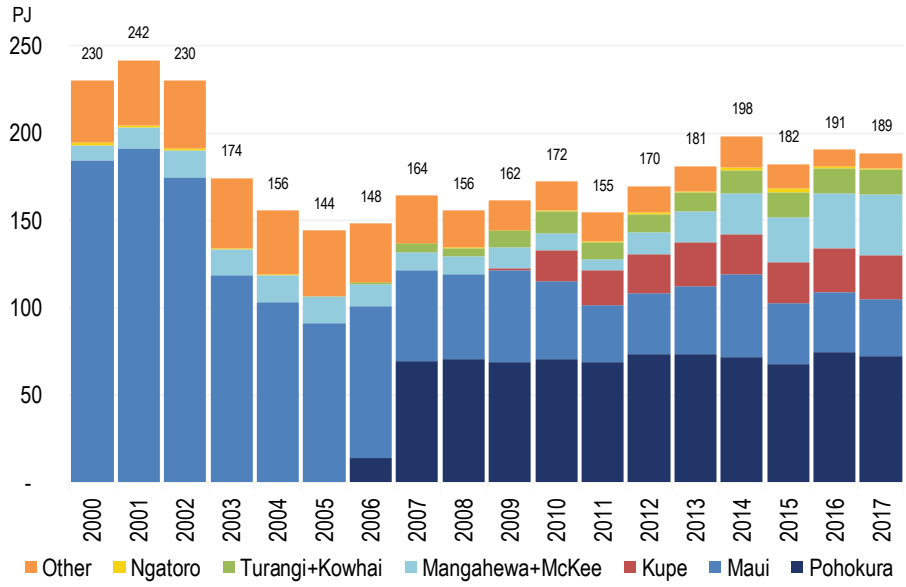
– Hon Dr Megan Woods, Parliamentary Question Time, 23 May 2018

This statement was made in responding to a question in the House from the Minister's coalition government colleague and Minister for Regional Economic Development Shane Jones who asked "*Can the Minister confirm that production in terms of gas in Taranaki has been in decline for over 8 years with absolutely no substantial or even small new discoveries*?"

The Minister's response to the question asked of her was "*Yes I can*", which is incorrect, as Figure 2 shows.

The Minister then went on to state that the industry had "*gone from being a $300 million industry to a $10 million industry over the last few years*." We cannot identify the numbers to which the Minister was referring but the magnitude of them makes us suspect they could be estimating for the trend in oil and gas exploration spend over the past few years. If so, this in no way presents a fair or objective estimate for the size or importance of the domestic gas sector, by many orders of magnitude.

Figure 2: NZ gas sector net production, 2000-2017



Source: Woodward Partners

Instead, we would propose the following headlines as far stronger scale indicators for the sector:

- Gas produced and sold to Methanex in a normal operating year would approximate $400-500m pa in value – a financial layer that we have previously noted is of critical importance to upstream gas producers in underwriting baseline E&P cost bases, to the benefit of all energy users;
- Gas production sold into the residential, commercial and industrial segments would we estimate be worth $600m pa in value;
- The energy value of gas dispatched to thermal power stations would we estimate approximate $2 bln pa;
- Royalty and tax payments made by producers to the Crown (referred to in the sector as "government take") would likely approximate $500m pa. This is despite the oil price downturn since 2014. During the peak of the cycle following the arrival to market of the Tui field in 2008 which coincided with a period of very high oil prices we estimate government take would likely have exceeded $1 bln pa.

The work that PEPANZ has commissioned from NZIER will provide a far more considered and objective measure of sector value and contribution.

6. There is no evidence that burning of fossil fuels can be done without releasing carbon emissions

– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The burning of fossil fuels without releasing greenhouse gas (GHG) emissions is technology that is both well established and increasingly mainstream.

The most mature relevant technology is steam methane reformed (SMR) hydrogen. SMR involves reacting natural gas with steam on a nickel catalyst at high temperature in a two-stage process. The first 'reforming' stage of the reaction decomposes methane to a synthesis gas of hydrogen, carbon dioxide and carbon monoxide. The second 'conversion' stage reacts carbon monoxide and water (steam) to yield carbon dioxide and hydrogen.

SMR is the exact same process used to produce methanol from natural gas at each of Methanex's three NZ plants except in the conversion stage reformed gas is instead passed over a copper catalyst to yield crude methanol. In each case the end product (hydrogen and methanol) are energy vectors, meaning that they are not energy sources (in the case of NZ-produced methanol natural gas is the energy source) but are energy carriers.

Notable is that hydrogen can also be produced via electrolysis, where electricity is applied to water to split the water into its hydrogen and oxygen constituents. While promising, particularly for NZ with its renewable electricity backbone, compared to SMR electrolysis faces significant scale challenges that have been and will remain be difficult to overcome. It is for this reason that ~95% of hydrogen produced globally is via SMR.

From a GHG perspective the key difference between SMR and electrolysis is the management of the CO_2 that is produced from each stage of the SMR process. This requires carbon capture and storage (CCS) involving sub-processes to sequester (ie recover) CO_2 produced during the reforming and conversion processes and to relay that CO_2 underground where it is stored in perpetuity in host geologic formations (geosequestration). It is common (although not in NZ) for E&P companies to direct recovered CO_2 into existing oil and/or gas fields to support enhanced oil recovery (EOR) and enhanced gas recovery (EGR) field productivity programmes. There is

no CCS currently in NZ however past research[1] has concluded there to be a number of local opportunities to utilise vacant reservoir capacity in mature fields such as Kapuni and Maui. GNS has estimated that Maui alone could offer 200-300 mt of CO_2 storage capacity – sufficient in scale to house between 3 and 4 years of all (including primary sector) NZ emissions. The Kapuni field, which produces a gas stream 40-45% rich in CO_2, is thought by GNS to present a further ~100 mt of potential storage capacity.

At the other end of the energy supply chain, produced hydrogen is used in a wide variety of mobile and stationary energy applications including to hydrogen fuel cell EVs (HFCEVs) and supply direct to household, commercial and industrial users. HFCEVs use hydrogen to power an onboard electric motor, thus there is no combustion and water is the only tailpipe emission. Stationary energy formats tend to deploy hydrogen into specific industrial and commercial applications or as a blend or in some cases substitute[2] for traditional natural gas reticulation.

Governments in other jurisdictions have been increasingly recognising the future role of hydrogen towards decarbonising their energy supply chains and in many cases have directly sponsored projects intended towards advancing the uptake of hydrogen into their economies. The closest example, both in geographic and economic (as it also also has a significant existing oil and gas sector) terms, is South Australia which in 4Q 2017 launched a "Hydrogen Roadmap[3]" as a "*statement of intent to guide the strategic development of this industry in South Australia to fulfil our ambition of becoming a zero-carbon emitting economy*". The roadmap itself provides a good account of the hydrogen supply chain.

There are various other emerging technologies that also "burn" fossil fuels without emitting GHGs, some of which are under commercial development. One such example is the Allam Cycle being developed by US-based NET Power[4]. The Allam Cycle produces zero-emission electricity from natural gas via a proprietary semi-closed-loop cycle that utilises super-critical CO_2 as the working fluid to drive the turbine. The system then recovers and feeds the exhaust CO_2 back into the combustion chamber to substitute for the airstream that conventional gas turbines require during the combustion process. The process does produce CO_2 excess to internal requirements, which can be applied towards various existing applications (eg sold to petrochemical plants as process feedstock or to oil and gas field operators for use in EOR and GOR programmes – a process that net sequesters CO_2, even taking account of the increased oil or gas production from the injection wells). Moreover, the system does not produce NO_x or SO_x, or other GHG emissions, while also having low to zero water usage. NET Power is currently completing commissioning[5] tests on a 50 MW, US$160m+ prototype plant constructed near Houston, which underpins the commercialisation of much larger (~300 MW) formats.

On economics, NET Power asserts that Allam Cycle LCOE is comparable to or better than conventional CCGT under existing carbon pricing. The Allam Cycle IP owners, 8 Rivers Capital, have also separately developed a standalone hydrogen cycle that can integrate fully with the Allam Cycle to produce hydrogen at what it claims is dramatically higher thermal conversion efficiency than conventional SMR. This also enables much more economic development of downstream products such as ammonia, urea, and other chemical products, with net zero GHG emissions during production.

The central point is that both existing and emerging technologies make it incorrect to assert that fossil fuels cannot be combusted without releasing GHG emissions.

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[1] See:
https://www.waikato.ac.nz/__data/assets/pdf_file/0017/154520/CCS-Field-Setting-the-NZ-Scene-CCS-ELA-May-2013-Wellington-Brad-Field.pdf
http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-efficiency-environment/documents-library/ccs-docs/2009-58-CCS-Onshore-Taranaki-overview%20-PDF%204%20MB.pdf
http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-efficiency-environment/documents-library/ccs-docs/2009-61-CCS-Taranaki-reservoir-modelling%20-PDF%20910%20KB.pdf

[2] See: https://www.northerngasnetworks.co.uk/2016/07/12/watch-our-h21-leeds-city-gate-film/

[3] See: http://ourenergyplan.sa.gov.au/sites/default/files/public/basic_page_attachments/12/19/1844568320/hydrogen-roadmap-11-sept-2017.pdf

[4] Under development by 8 Rivers Capital and partners, including McDermott, Exelon, and Toshiba. See: https://www.netpower.com/.

[5] See: https://www.nature.com/articles/d41586-018-05247-1

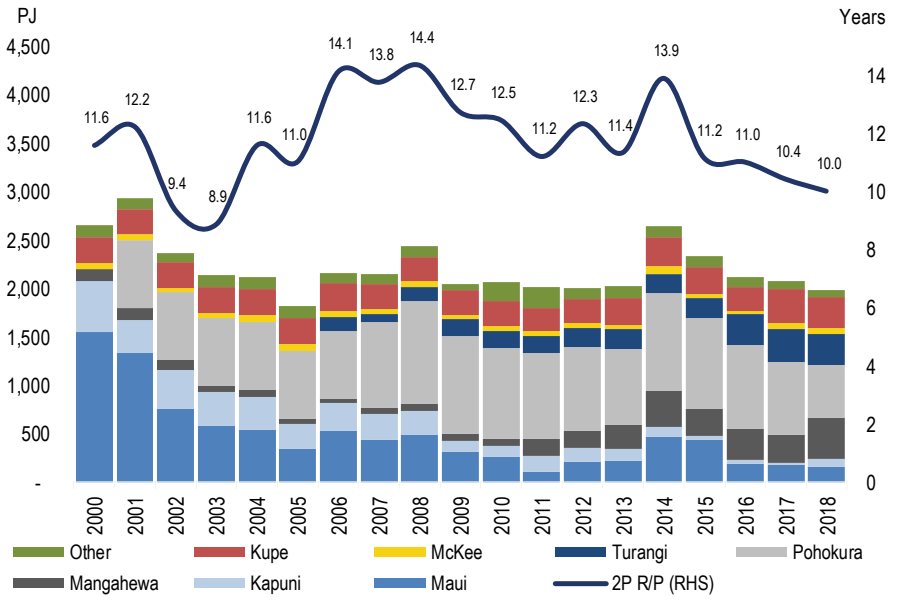
7. New Zealand has 10.5 years of gas reserves remaining which is consistent with the last two decades during which coverage has varied between 9 and 11 years

– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The 10.5 years of demand cover is a metric that has been referred to widely by the Government since MBIE released its 2018 update of oil, gas and LPG reserves. In our view however the calculation that supports this outcome applies an inconsistent treatment to LPG which serves to overstate the underlying extent of coverage.

The 10.5 years result is deduced by dividing 2P gas+LPG reserves of 1,985 PJ by 2017 net production of 189 PJ. The problem with this calculation is the inconsistent treatment of LPG across the numerator and denominator. While 2P LPG reserves of 68 PJ is included in the 2P numerator LPG demand is not included in the demand denominator. As LPG is a fully fungible product that can (and already is) imported to balance domestic demand we would argue that to be 'pure' LPG should be excluded from the calculation altogether. Taking this approach reduces the equivalent coverage calculation to 10.2 years. The weakness in this approach is that MBIE has only reported standalone 2P gas reserves since 2014 – prior to 2014 gas and LPG 2P estimates were collected and reported only on an aggregate gas+LPG basis. Nonetheless the 2018 result is the lowest on this (albeit only five year) time series, which peaked on inauguration of the time series in 2014 at 14.1 years and his since declined in every successive year its current 10.2 years.

Figure 3: Gas+LPG, 2P remaining R/P coverage, 2000-2018



Source: Woodward Partners

To provide a more meaningful long-term time series to test the Minister's assertion of broad coverage stability "over the past 20 years" requires t-1 LPG production to be added to t-1 gas production in each year. Taking this approach produces the curve shown in Figure 3. Notable from this is that:

- Cover for 2018 of 10.0 years is the lowest since 2002-03 following the Maui redetermination.
- The range over this time has been between 8.9 years in 2003 to 14.4 years in 2018 – not the "9 to 11 years" stated by the Minister.

Also worth noting is that 2017 was a relatively low demand year for the market's biggest gas user Methanex due to a major turnaround of one of its Motunui plants during the year (in 2017 Methanex produced 1.94 mt of methanol in NZ down -11.0% from 2.18 mt in 2016). Had Methanex demand in 2017 been at normal levels total gas demand in 2017 would have been 9-10 PJ higher, thus 207-208 PJ. Adjusting for this has the effect of reducing years covered to 9.5 years and therefore materially closer to the low-end of the range since 2000.

8. It was not possible to do a cost-benefit analysis because existing permits are unaffected by the decision and there are too many "unknown unknowns".

– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The Minister has been careful in how she has responded to ongoing questioning over the absence of any cost/benefit analysis by deflecting to the difficulty of using Treasury's CBAx[6] spreadsheet tool in analysing for economic costs and benefits. Using the CBAx tool requires an assumption set to drive the model – assumptions that we agree are difficult (but not impossible) to make given the uncertainty that exists over key parameters. It is this uncertainty that the Minister and her colleagues have repeatedly referred to as being the "unknown unknowns" that justify their position that it was not realistic to undertake a cost/benefit analysis of the proposal. The difficulties of shoe-horning an assumption set into the CBAx template does not absolve the obligation to provide any cost/benefit analysis. The Cabinet Manual requires that impact assessments be undertaken on major policy proposals but does not specify that CBAx should be the only such analysis undertaken.

Undertaking scenario analysis to test for the economic and financial impact of different options and outcomes without the benefit of full information is standard in both the public and private sectors. In the financial markets this type of analytical framework is known as real options analysis. It is precisely this analysis that PEPANZ has now engaged[7] the NZIER to undertake for it and in doing so take into account "*the impacts on Government royalties, exports, and industries that rely heavily on energy, as well as the regional impacts for areas like Taranaki*."

An example of this in action in the public policy space was when government agencies undertook policy costings during post-election coalition negotiations in late 2017, many of which involved taking positions on and making estimates for parameters that were either unknown or very difficult to quantify. Two such examples[8] of those released under the OIA are directly relevant to the oil and gas sector in estimating "*the economic costs, including to employment, of no new coal mines, no new offshore oil drilling, and no new fracking consents (a) for the next three years and (b) indefinitely*." MBIE's response estimated the cost of no new offshore oil drilling at $6.2 bln and the cost of no new fracking consents at $8.8 bln.

Another more recent example has been the release[9] by the Ministry for the Environment of two independent reports that estimate for the macroeconomic implications of the government's proposal to introduce a Zero Carbon Bill[10].

A comprehensive cost/benefit analysis would also have provided a platform to formally test the government's assertion that the step will deliver a reduction in emissions – a position that we fundamentally disagree with for reasons canvassed in detail in our first *Correcting the Record* edition.

The central point being that is in our view unreasonable to claim that no cost/benefit analysis could be undertaken due to an asserted lack of certainty over key inputs necessary to fill out Treasury's CBAx spreadsheet.

[6] See: https://treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/plan-investment-choices/cost-benefit-analysis-including-public-sector-discount-rates/treasurys-cbax-tool
[7] See: http://www.pepanz.com/news/nzier-commissioned-to-look-at-impacts-of-oil-and-gas-decision/
[8] See: http://www.ssc.govt.nz/sites/all/files/gfi-responses-green-dec17.pdf
[9] See: http://www.mfe.govt.nz/have-your-say-zero-carbon
[10] See our 25 June 2018 NZ Energy Weekly for full analysis of the MFE releases

9. MBIE provided 13 pieces of advice that contributed to the decision

– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The Minister said on two separate occasions during her Select Committee appearance that MBIE provided 13 pieces of advice to her ahead of the 12 April announcement, inferring that the decision making process was the natural end point to an extended policy discussion between herself and officials on the various options. Our read of the OIA release reveals only 12 pieces of advice tendered by MBIE. This infers either that (1) we are incorrect in our tally; (2) the Minister is incorrect in her tally or (3) there is a missing piece of MBIE advice that has not been released. To resolve this the Minister and/or MBIE need in our view to clarify which is the case so as to remove any doubt over whether all material covered by the OIA requests has indeed been released as it should have.

Figure 4: Advice provided to Minister of Energy & Resources released under OIA

#	Date	Title
1	27 Feb 18	Petroleum Allocation Scenarios
2	8 Mar 18	Impacts of Block Offer Options on Jobs and Industry
3	14 Mar 18	Overview of the New Zealand Oil and Gas Sector
4	15 Mar 18	Block Offer 2018 – Proposed Blocks for Consultation
5	16 Mar 18	Block Offer 2018 – Proposed Blocks for Consultation – Update
6	20 Mar 18	Background Information on Block Offer
7	6 Apr 18	Methanol Applications
8	6 Apr 18	Request for Information on Gas Permits and Renewable Consents
9	10 Apr 18	Existing Rights of Petroleum Permit Holders
10	10 Apr 18	Ban on Future Offshore Petroleum Exploration: Impact on Methanex
11	10 Apr 18	Background to Block Offer
12	10 Apr 18	New Zealand Oil & Gas Sector: Key Facts

Source: OIA releases, Woodward Partners

10. In February MBIE provided a comprehensive briefing that gave all possible scenarios along a continuum

– Hon Dr Megan Woods, EDS&I Select Committee, 14 June 2018

The specific piece of advice the Minister refers to was provided by MBIE specifically on the Block Offer 2018 process. The advice at that time was focused on seeking direction over Block Offer 2018 ahead of a customary launch at the 2018 New Zealand Petroleum Conference in March. The recency of the change in Government and compressed timeframes ahead of the Petroleum Conference appear to have encouraged MBIE to table a high-level options paper intended towards eliciting a position from the Minister. MBIE tabled seven options in the paper that represented what was effectively a full continuum of possibilities ranging from status quo through to a "permanent moratorium" on issuing any further permits. MBIE recommended option 3 where Block Offer 2018 was limited to the Taranaki Basin (onshore and offshore) as effectively a "middle ground" option that balanced continuity with providing further time to consider broader policy issues ahead of the Block Offer 2019 process. MBIE explicitly recommended against options 5, 6 and 7 (which covered temporary and permanent moratorium options) due to the "*disruptive impacts for current and future investment*, *as well as drop in exploration and future gas supply*".

The key point is that the 27 February paper did not in our view represent the “comprehensive” policy and options analysis the Minister suggested as being the anchor point from which the Government based its decision. To us the paper appears to have represented little more than an attempt by officials to elicit a high-level response from the Minister to enable them to work towards preparing for the Petroleum Conference launch only a few weeks later.

The next piece of MBIE advice, delivered on 8 March, responded to a request from the Minister’s office to understand the job implications of options 3 and 4. The next piece, delivered on 15 March, indicated that the Minister had instructed that Block Offer 2018 was to be restricted to onshore Taranaki and that she intended to refer the issue of future offshore acreage to the Interim Climate Change Commission to consider in the context of consistency with the Government’s net-zero by 2050 target.

It is clear from the OIA paperwork that MBIE officials were not made aware of the government’s decision to stop issuing any (Taranaki and beyond) new offshore exploration permits until only a few days before the 12 April announcement. This appeared to culminate in a burst of four pieces of advice on 10 April, each of which was clearly prepared under urgency. Of these only one (“Existing Rights of Petroleum Permit Holders”) dealt with policy issues.

The key point is that the string of advice the Minister cites as having informed the decision was prepared on the basis of officials not having any awareness that the decision was even an option. The only piece of policy advice that did address the decision was extremely negative in both its analysis (noting that the lack of lead time allowed for only very high-level analysis to be undertaken) and its conclusions.

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