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Submission on *A Minerals and Petroleum Resource Strategy for Aotearoa New Zealand 2019-2029*
Ministry of Business, Innovation and Employment
Submitted by email to resource.markets.policy@mbie.govt.nz

PEPANZ Submission: A Mineral and Petroleum Resources Strategy for Aotearoa New Zealand 2019-2029

Executive Summary

On the sequencing of the Resource Strategy and Tranche Two of the Crown Minerals Act

i. We support a strategic approach to petroleum and minerals management in New Zealand, and understood from the Minister and officials that the proposed Resource Strategy would "underpin" amendments to the Crown Minerals Act 1991.

ii. We were therefore surprised that the cabinet paper "*Crown Minerals Act 1991 Review Tranche Two – Terms of Reference*"[1] has already set a non-exhaustive list of issues in the Terms of Reference for Tranche Two, in advance of the Resource Strategy being finalised. The process, as now revealed, unfortunately reduces confidence in the significance and weight of the Resource Strategy.

The document, in relation to fuel minerals, should be governed by Energy Trilemma framework

iii. Fundamentally, the Energy Trilemma is the best framework for considering energy trade-offs (between sustainability, equity and security) and this should be used in the Strategy. The focus on the "transition to a low carbon economy" in the principles section seems too narrow, given the focus elsewhere on a "Productive, Sustainable, and Inclusive Economy". We prefer this latter focus given the term 'sustainable' includes environmental concepts such as low emissions without excluding the importance of being productive.

The Vision should better define "value"

iv. The proposed term "value" in the vision statement is currently undefined, and we prefer that it" be made explicit with reference to economic benefits, provision of essential minerals, and energy security.

The Strategy should acknowledge the long-term role of petroleum

v. The Resources Strategy should acknowledge that oil and natural gas have a long term role in the global energy mix as well as through their petrochemical uses. Natural gas in particular is

[1] This Cabinet paper was pro-actively released in September 2019 and can be found at https://www.mbie.govt.nz/assets/crown-minerals-act-1991-review-tranche-two-terms-of-reference.pdf

expected to see significant growth in coming decades due to its role in reducing emissions compared to coal and liquid hydrocarbon sources.

The scope should not preclude the Crown Minerals (Petroleum) Amendment Act 2018.

vi. We do not support that the scope artificially precludes consideration of the Crown Minerals (Petroleum) Amendment Act 2018. The proposed vision of a sector that "delivers value for New Zealanders" is unlikely to be achieved with about 99.99% of the New Zealand jurisdiction (including the exclusive economic zone) unavailable for permitting.

The No New Mines on Conservation Land 'policy' should be abandoned

vii. The No New Mines on Conservation Land 'policy' should be abandoned. It was announced unilaterally in the complete absence of consultation; official advice and analysis, or being present in manifestos or inter-party agreements. This policy has affected the petroleum sector through restricting the land that is available for permits within the Taranaki region despite not being enacted in any legislation.

Legislation should be enabling of technology including carbon capture and storage

viii. Adaptability to new technologies is important, and Government should ensure that the regulatory settings are amenable to new technologies that can compete on their merits. Specifically, lower-emission technologies such as carbon capture and storage and hydrogen should be a level playing field without unreasonable regulatory barriers. The Strategy should promote the development of a regulatory framework to regulate and enable carbon capture (CCS) and storage in New Zealand.

Domestic production should be preferred to imports

ix. New Zealand requires minerals and petroleum, and we should look to produce these domestically where it is economically efficient to do so. We therefore recommend a new principle be included to this effect.

Climate change should not be described as an "existential threat"

x. The description of climate change as an "existential threat" is alarmist, inappropriate, unprofessional and is not supported by evidence from the Intergovernmental Panel on Climate Change.

Other

xi. We make a number of comments on specific principles in paras 13 -18.

xii. We make a number of detailed comments in paras 40 – 47.

Introduction

1. The Petroleum Exploration and Production Association of New Zealand ("PEPANZ") represents private sector companies holding petroleum exploration and mining permits, service companies and individuals working in the industry.
2. This document constitutes PEPANZ's submission to the Ministry of Business, Innovation and Employment on the draft *Mineral and Petroleum Resources Strategy for Aotearoa New Zealand 2019-2029*, which closes for consultation on 20 September 2019.
3. We have seen a report produced by Enerlytica (an independent energy sector research house) dated 13 September 2019 and titled "Tunnel vision – Extractives sector regulatory reform" which we found to be a useful contribution to the discussion. Enerlytica has provided its consent to include its report with this submission, attached as **Appendix Three**.

Submission

The Strategy should reflect the Energy Trilemma

4. Fundamentally, the proposed Resource Strategy should set a clear goal against which all subsequent actions must align (and can be later judged), and it should be informed by an adequate range of criteria. A Strategy serves as the prevailing guide and must be tangible and realistic. When it comes to energy, the dominant and most useful framework is the World Energy Council's energy trilemma, which dictates that policies and actions must have due regard to the three points of sustainability, equity, and security. These three points should be key criteria for decision making.

5. The proposed Resources Strategy predominantly focusses on the sustainability factor with inadequate consideration of the importance of security of supply and equity (including access to affordable energy). It therefore provides an imbalanced and poor defined vision that will not support positive outcomes for energy in New Zealand.

6. In the pursuit of sustainability and climate change mitigation, it seemingly seeks to minimise the development of fuel minerals in New Zealand, without engaging with the compelling thesis that supply-side interventions are very inefficient at reducing emissions. Indeed, it appears to perpetuate the poor analysis of the Crown Minerals (Petroleum) Amendment Act 2018 which nominally sought to reduce emissions by heavily constraining the issuance of new petroleum exploration permits.

7. The final paragraph of the section on Principles[2] states "*While this Strategy is a living document it will be formally reviewed every five years to ensure that it remains relevant, and continues to meet the needs and ambitions of New Zealanders in the transition to a low carbon economy.*" The focus on the "transition to a low carbon economy" seems too narrow, given the focus elsewhere on a "Productive, Sustainable, and Inclusive Economy". We prefer a focus on the broader concept of the "Productive, Sustainable, and Inclusive Economy", as the term 'sustainable' includes environmental concepts such as low emissions without excluding the importance of being productive.

8. The current exclusionary wording ignores the reality that future use of petroleum resource is required in order to enable large scale renewables uptake whilst maintaining security of supply.

On the sequencing of the Resource Strategy and the Tranche Two review of the Crown Minerals Act

9. We support a strategic approach to petroleum and minerals management in New Zealand, and understood from the Minister and officials that the proposed Resource Strategy would "underpin" amendments to the Crown Minerals Act 1991. Specifically, the proposed Resource Strategy states under its Purpose section that "*The Government is currently undertaking a review of the CMA to make sure it is fit for purpose to meet the needs of New Zealanders. This Strategy will inform this review and any amendments made to the CMA as a result of the review will ultimately support the vision of this Strategy. The Resource Strategy will be used to inform a review of the Crown Minerals Act 1991*" (page 21).

10. We were therefore surprised that the cabinet paper "*Crown Minerals Act 1991 Review Tranche Two – Terms of Reference*"[3] has already set a non-exhaustive list of issues in the Terms of Reference for Tranche Two, in advance of the Resource Strategy being finalised[4]. This

[2] Page 10.

[3] This Cabinet paper was pro-actively released in September 2019 and can be found at https://www.mbie.govt.nz/assets/crown-minerals-act-1991-review-tranche-two-terms-of-reference.pdf

[4] Para 30 of the Cabinet paper states: "The principles, objectives and outcomes proposed for inclusion in the ToR can be found below. Note that they will only apply to Tranche Two, not the sector as a whole. Note the forthcoming Petroleum and Minerals Resource Strategy may articulate principles, objectives and outcomes for wider application across the petroleum and minerals sector."

contradicts the core purpose of the Resource Strategy. Even though the Cabinet paper states that the Strategy will shape *other decisions across the petroleum and minerals sector*, our view is that CMA Tranche Two reforms are by far the most significant upcoming regulatory change for the sector. That is, if the Resources Strategy will not in fact govern CMA Tranche Two, what material policies *does* it govern? The process, as now revealed, unfortunately reduces confidence in the significance and weight of the Resource Strategy.

11. It is inaccurate to refer to proposed "Tranche Two" as being a second phase of a "two stage legislative review". "Tranche One" was simply a label given to a rushed bill which gave effect to the exploration announcement of 12 April 2018 which itself was of questionable legality and self-evidently lacking any policy base.

On the scope precluding revisiting the Crown Minerals (Petroleum) Amendment Act 2018

12. We do not support that the scope artificially precludes consideration of the Crown Minerals (Petroleum) Amendment Act 2018. The proposed vision of a sector that "delivers value for New Zealanders" is unlikely to be achieved with about 99.99% of the New Zealand jurisdiction (including the exclusive economic zone) unavailable for permitting.

13. As expanded on later in this submission, the admirable goal of "understanding… the complete stock of New Zealand's resources [to] enable better nationwide spatial planning" is fundamentally compromised by an arbitrary ban on new exploration and cannot be meaningfully engaged with.

14. If the Government is serious about achieving the goals of the strategy and delivering a "Productive, Sustainable, and Inclusive Economy", then all current policies and settings should be open for review. Excluding a key aspect of the regulatory landscape makes little sense from a public policy perspective. For reference, our submission on the Crown Minerals (Petroleum) Amendment Bill can be found online at https://www.pepanz.com/dmsdocument/90.

Comments on the Vision

15. The Resource Strategy proposes a 'vision statement', which currently reads: "A world-leading minerals and petroleum sector that delivers value for New Zealanders, both now and in the future, in an environmentally and socially responsible way".

16. The proposed term "value" is currently undefined in the vision statement, and we prefer that it" be made explicit with reference to economic benefits, provision of essential minerals, and energy security.

17. The proposed term "world-leading" is unclear, and needs explanation. New Zealand is a small country that typically adopts international technology and practice. The vision should be tangible, realistic and achievable, and the proposed phrase "world-leading" may stretch plausibility. We note that in 2014 the Environmental Protection Authority, adopted the vision of being a "world-leading environmental regulator", but this was eventually dropped as being unrealistic. Overall, we would prefer the phrase "successful minerals and petroleum sector" rather than "world-leading".

Comments on the Principles

18. Principle 5 states "*Support a circular economy by meeting resource needs through resource efficiency, recycling and reuse.*" The phrase "where practicable" should be added to the end of this sentence, to recognise that there can be limits to recycling and reuse

19. Principle 6 states "*Actions taken within the mineral and petroleum sector should align with the strategic direction of other related sectors and Government strategies.*" We express some discomfort with this sentiment. Although petroleum operators certainly comply with law and

work to be socially responsible, they may not necessarily, as independent actors, act in line with the strategic direction of others such as the Government or other sectors.

20. Principle 11 states that "*The Crown makes decisions based on the best evidence, and* accounting *for the foreseeable need for minerals and petroleum, both now and for future generations*". We support this, as evidence-driven policy is crucial. We support robust policy development processes and impact analysis so that the benefits and costs of potential decisions can be understood before those decisions are made.

21. Principle 14 states "*Strive to implement industry best practice in operations*", yet Principle 15 states that industry should "*Seek innovative ways to improve the resource efficiency of extraction operations*" (emphasis added). These two principles are somewhat in tension, in that "best practice" is about using the best tried and true approaches, whereas being "innovative" is about pushing boundaries and finding new ways of doing things. We would recommend that this point be considered and that consistent terms be used. Our preference is for "good practice", which is the term used and defined in the Crown Minerals Act 1991 (and further defined in Clause 1.3(12) of the Petroleum Programme 2013).

22. Principle 16 states "*Engage with stakeholders and implement management systems to understand and manage impacts, and realise opportunities for redress where needed*." The term redress is inappropriate and promotes a view, absent any justification, that serious wrongs or grievances exist necessitating compensation. This type of language is out of step and lacks objectivity. We suggest aligning it with standard terms found in the Resource Management Act such as avoiding, remedying or mitigating effects.

Other potential principles

23. The Resources Strategy should acknowledge the following points.

Oil and natural gas has a long term role

i. Oil and natural gas have a long-term role in the global energy mix as well as through their petrochemical uses. Natural gas in particular is expected to see significant growth in coming decades due to its role in reducing emissions compared to coal and liquid hydrocarbon sources. Although the strategy acknowledges that "worldwide demand for these minerals [cobalt and lithium] is projected to increase dramatically", there is no mention of oil or natural gas and this is unreasonable, naïve, and disconnected from global realities. **Appendix One** provides further information on the long-term role of petroleum.

ii. We consider the growing demand for natural gas, and stable demand for oil, should be explicitly acknowledged so as to guide policies that enable continued development and issuance of permits, even if only in the onshore Taranaki region under current legislative settings.

iii. We note the Australian National Resources Statement[5] has a positive view of natural gas and the economic benefits from production in Australia.

Natural gas supports affordable electricity

iv. Natural gas plays a critical role in backing up renewable generation, and ensures that electricity remains affordable. This is important not only from an economic and social well-being perspective, but promotes electrification of energy. As summarised by Simon Coates of Concept Consulting, "Lower cost electricity facilitates the far bigger prize of decarbonising process heat and decarbonising transport."[6]

v. A recent report by the New Zealand Initiative considered the difficulties of completely replacing hydrocarbons in our electricity system, and found that "Tackling it could add

[5] https://www.industry.gov.au/data-and-publications/australias-national-resources-statement

[6] "Govt open to changing goalposts on 100% renewable target – Shaw", New Zealand Herald 6 March 2019

more than $800 million to the annual cost of electricity. The higher cost of electricity under such a scenario would delay the transition from fossil fuels to electricity. Perversely, this could increase overall carbon emissions."[7]

vi. The Interim Climate Change Committee also recognised the importance of affordable electricity to promote broader decarbonisation in its *Accelerating Electrification* report.[8]

Global context must be considered

vii. The global context is important and New Zealand must consider its mineral and petroleum resources in this light. This is because resource markets are global, with multinational companies and the trade of goods being integral to the market. New Zealand cannot reasonably have a narrow parochial focus, thereby ignoring the growing global demand for minerals and petroleum (and derivative products such as methanol).

Only global action can meaningfully lower emissions

viii. Although a low emissions future is desirable, global action is required to achieve this and New Zealand should make decisions about emissions policy in line with trade competitors and with the risk of 'carbon leakage'[9] in mind (i.e. to ensure global and not just domestic emission reductions).

Legislation should be enabling of technology

ix. Adaptability to new technologies is important, and Government should ensure that the regulatory settings are amenable to new technologies that can compete on their merits. Specifically, lower-emission technologies such as carbon capture and storage and hydrogen should be a level playing field without unreasonable regulatory barriers. This should flow into an action area to ensure that the regulatory regimes are fit for purpose, and we address CCS again in that section.

Domestic production should be preferred to imports

x. New Zealand requires minerals and petroleum, and we should look to produce these domestically where it is economically efficient to do so. We therefore recommend a new principle be included: "*Given that petroleum and mineral resources will continue to be fundamental to our living standards, ensure that our requirements are met as much as possible from local sources, minimising the need to import these resources from countries whose environmental, regulatory and climate change positions may be worse than our own.*"

xi. New Zealand is dominated by "light hydrocarbons" due to the predominant coaly source rocks. These lighter hydrocarbons are far less carbon/water/energy intensive than the heavier Middle-Eastern crudes, Canadian oil sands, and Venezuelan bitumen (which together comprise most of the yet-to-produce hydrocarbons). Hence with a relatively stable/growing long lived need for oil in the mix we risk forcing production to those heavier oils. NZ also currently uses 700,000 barrels a week of heavy high-sulphur Middle-Eastern crude that could be replaced if a large enough New Zealand discovery is made.

[7] New Zealand Initiative media release "New report: Pricing carbon properly key to successful renewables policy", 27 March 2019. https://nzinitiative.org.nz/ reports-and-media/media/media-release-new-reportpricing-carbon-properly-key-to-successful-renewablespolicy/

[8] https://www.iccc.mfe.govt.nz/assets/PDF_Library/daed426432/FINAL-ICCC-Electricity-report.pdf

[9] Whereby for example policy settings in New Zealand could drive a particular industry e.g. methanol manufacture to close, only to be replaced by a higher-carbon intensity replacement facility internationally e.g. coal-based methanol production).

Multilateral political agreement is important

xii. Multilateral political agreement on key policy settings is important for the sector, so as to minimise sovereign risk[10].

Attracting investment is important

xiii. New Zealand should ensure it is a globally attractive investment destination with competitive business settings. This is because foreign investment is important for developing resources and New Zealand must compete for international capital.

Description of the Crown Minerals (Petroleum) Amendment Act 2018.

24. Page 27 states "On 12 April 2018, the Government took an important step towards addressing climate change and creating a clean, green and sustainable future for New Zealand: it announced that there would be no further offshore oil and gas exploration permits granted."

25. This description contradicts MBIE's official advice in the Regulatory Impact Statement, which stated that most likely global emissions would increase as a result of the policy. If that view has changed, the reasons and logic should be explained.

26. The description of the policy as "clean, green and sustainable" is not the type of objective language that we would expect in a publication from a government department. It lacks specificity or any policy grounding.

27. Page 27 states that "This announcement did not however, impact existing rights". We disagree with that description, as the policy had grave effects on multi-client seismic surveyors which acquired prospecting data over large offshore areas to licence to explorers (we understand that several of those companies spent more than $100 million). These prospectors undertook activities on the basis that future exploration permits can be sought, based on the Petroleum Programme stating in Clause 7.3 that usually a block offer will offer exploration acreage over areas that were surveyed by a multiclient seismic surveyor[11]. That is to say, seismic prospectors arguably had a legitimate expectation about issuance of exploration permits over surveyed areas and that was fatally compromised on 12 April 2018.

28. Seismic surveyors conducted operations with that expectation, also guided by the statutory provision in the Petroleum Programme which 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".

29. The 12 April 2018 announcement was objectively contrary to the purpose of the CMA. It is therefore difficult to understand how that announcement could legitimately form the basis of a Strategy at this point.

Comments on the description of climate change as an "existential threat"

30. Page 22 states "We need to take action against the existential threat of climate change". The term "existential threat" is alarmist, inappropriate, and unwarranted and concerningly reflects a bias at odds with objective professional policy development practice Certainly, climate change poses significant challenges, but nowhere does the Intergovernmental Panel on Climate Change – the authority on the matter – refer to it as being an "existential threat". For the sake of credibility and objectivity, this language must be changed. This is also relevant to the same

[10] The petroleum and mineral sectors operate on a long term basis and benefit from stable and predictable policy settings.

[11] 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.

expression used in the Ministerial foreword. If officials disagree with our view, we ask that sound references be cited to defend the use of this term.

31. The term "existential" means a danger to existence, and would clearly be the sole priority. The Government's own goal is for net-zero emissions to be reached domestically is in 2050, and not as soon as possible, which itself demonstrates that the matter is not truly existential.

Comments on *No New Mines on Conservation Land*

32. We take this opportunity to critique the "No New Mines on Conservation Land" objective, which is addressed on page 27 of the proposed Strategy. As stated in the Resource Strategy, on 8 November 2017 the Government made the surprise announcement in the Speech from the Throne that there would be no new mines on conservation land. This policy arose in the complete absence of:
    - consultation;
    - official advice;
    - any policy analysis relating to the problem definition and intervention logic;
    - presence in Government parties' election manifestos; and
    - reference in the Confidence and supply agreement or the Coalition agreement.
33. It represents a very poor approach to public policy, and has also affected the petroleum sector through restricting the land that is available for permits within the Taranaki region despite not being enacted in any legislation.

Comments on Action Areas

34. Before commenting on the proposed action areas in the draft strategy, we recommend two new actions be incorporated, to:
    - develop a regulatory framework to regulate and enable carbon capture (CCS) and storage in New Zealand; and
    - to support research into CCS opportunities in New Zealand.
35. *Opportunity 1* in the strategy on the Low Carbon Future specifically states we "will also require clean technologies", and CCS is a key technology for reducing emissions.
36. Although CCS is not specifically prohibited in New Zealand, there is no legislation that sets out an enabling CCS regime or specific consenting process. This uncertain and ill-defined framework means that CCS operators could theoretically apply for consents, but detailed reports advise that the Resource Management Act is not equipped to deal with the nuances of CCS. **Appendix Two** expands on these regulatory issues.

Action Area 2 - secure affordable resources to meet our mineral and energy needs

37. We strongly support the goals of Action Area 2, which relate to securing affordable resources to meet our mineral and energy needs. However, that goal is fundamentally not supported by existing Government policies and commitments which run contrary to it. Although we support the goal of understanding the country's strategic resources, this cannot meaningfully be done under current settings.
38. If the Crown and explorers had *already* adequately identified petroleum and mineral potential, a strategy to balance resource extraction with other societal goals could be developed. However, the Crown does *not* fully understand the country's resource potential and has locked away vast areas (outside onshore Taranaki for petroleum, and conservation land for all minerals), yet now wishes to better understand where minerals are.
39. Specific reference is made to it being "important that we build this knowledge base as it informs many of the choices we will confront in future. For example, understanding of the complete stock of New Zealand's resources will enable better nationwide spatial planning, so mining of available deposits can occur where it has minimal negative impact."

40. In principle we could support the concept of spatial planning, but arbitrary and blunt bans for petroleum and conservation land[12] have been made without any understanding of the relevant resource or conservation values. This approach runs *directly* contrary to the stated ambition of spatial planning (which is meant to be strategic and based on informed analysis).

41. Reference is made to understanding "the current and future market for our resources, both domestically and internationally". Any such understanding must take into account the growing demand for natural gas (45% by 2040 according to the IEA) and the associated LNG export opportunities, but the Resource Strategy makes no mention of this whatsoever.

Clean-tech is a flawed concept

42. We do not support the phrase "clean tech" being used. The very concept is flawed because all the electric technologies are manufactured from mined minerals including petroleum, and the mining machinery itself is mostly powered by diesel. The mining of those minerals involves environmental effects and emission of greenhouse gases. To describe electric vehicles and solar panels as "clean tech" to the exclusion of petroleum is unreasonable, especially given there are many non-combustible uses of petroleum and petroleum can be used in conjunction with CCS. We suggest the focus should be on emissions regardless of source.

Detailed comments

43. Page 4 refers to the content of clean-tech minerals and the inputs of cobalt, nickel and lithium into batteries and wind turbines. It would be remiss to not point out that these technologies also require significant amount of petroleum products, and indeed, wind turbines face interesting lubrication challenges with oil needed throughout the assets' life.

44. Page 5 states that "*This Strategy is a first step towards transitioning our minerals and petroleum sector to a more socially and environmentally responsible sector that better supports our future.*" This statement implies that the sector has not conducted itself adequately in relation to social and environmental responsibility to date, and that it does not support the country's future. We strongly disagree with this implication. Once again this displays a disturbing drafting bias and is at odds with the evidence of a highly socially and environmentally responsible sector. If there is evidence to the contrary, demanding substantive improvement by the industry in terms of social or environmental compliance , then this should be cited.

45. Page 12 states "*Oil and gas provided around 53% of our energy needs in 2017. As we transition to a carbon neutral economy, their contribution to our energy needs will diminish, but there will be some uses that will not be replaced.*" We strongly agree that some uses of oil and gas will not be replaced, and we note forecasts from the IEA showing steady use of most fossil fuels, with significant increases in natural gas demand. Even with relative increases in the level of renewables, the absolute numbers show a strong future for fossil fuels. However, this important acknowledgement does not adequately flow through into the actual Strategy or action areas.

46. Page 13 states, under the heading 'Oil and Gas', that "*Since its discovery in 1969, it has played a huge role in New Zealand.*" We presume 1969 refers to the Maui discovery, but the sector has operated before then, and indeed the Kapuni gas-condensate field was discovered in 1959 and the pipeline network was established in 1970. Again, this causes concern, at a fundamental level, as to the diligence with which this document was prepared.

47. Page 14 covers a number of regulatory agencies. To demonstrate that emissions are priced and managed in New Zealand, it would be appropriate to have the Emissions Trading Scheme and Environmental Protection Authority presented there. We note that DOC can play an important regulatory role.

[12] We add that it is already well-known that the best acreage for petroleum is offshore and the best acreage for rare earth minerals is on West Coast Conservation estate.

48. Page 15, in the Land Access section, states that "Schedule 4 of the CMA prohibits land access for listed conservation land". This is an incorrect description of the legislation – Schedule 4 prohibits the Crown granting access for specified activities but it is not a blanket ban (this is specified in section 61(1A) of the CMA.

49. Page 15 refers to "Other Appraisals" but presumably this should read "Other Approvals". It then goes on, in that section, to incorrectly state that "*Discharge management consent (Maritime Transport Act)*" may be needed. We are unaware of any such consent existing. Discharge consents are managed by the Environmental Protection Authority or Regional Council depending on the jurisdiction. What *is* managed under the Maritime Transport Act are Oil Spill Contingency Plans under Marine Protection Rule Part 131.

50. The language is inconsistent – several different expressions are used in reference to emission goals: low emissions, net zero, carbon neutral[13]. We prefer 'low emissions' as the general phrase.

List of typographic and other errors

51. Page 15 has an error under Natural Capital where it states "environment effects" instead of "environmental effects".

52. Page 20 states that "there are several Government work streams/strategies interact with this Strategy", but a "that" is missing before the word "interact".

53. Page 20 twice states "complimentary" when it means "complementary".

54. Page 20 refers to the "Crown Minerals (Petroleum) Amendment Act 2019" but the year should state 2018.

55. Pages 25 and 26 refers to the Crown Minerals (Petroleum) Bill 2018, but the word "Bill" should be placed with "Act".

56. Page 23 states "In the context of the minerals and petroleum sector, the regulatory system balances impacts across the four capitals to ensure that mining activity contributes to wellbeing. It is important however that this regulatory system is efficient and effective." The word "however" contrasts the new sentence from the preceding one when in reality the two sentences are together consistent, and should be deleted.

57. Page 24 on "Guiding Principles" appears to be nearly identical duplication of the principles listed on page 10.

58. Throughout the document reference is made to the Crown Minerals (Petroleum) Amendment Act 2018 ending the granting of "offshore" petroleum exploration permits but in reality this applied to all offshore and all onshore areas except a small area in the region of Taranaki. Reference to only "offshore" does not represent the situation accurately and must be corrected.

[13] We note also our remarks on the Climate Change Response (Zero Carbon) Amendment Bill and the suitability of the name, noting that the Paris Agreement is about net-zero emissions (i.e. not absolute zero), and the targets relate not just to carbon but to other greenhouse gases as well.

Appendix One: Why we consider petroleum has a long-term role which should be acknowledged in the strategy

Energy use

Petroleum provide over half of New Zealand's total energy needs and are predicted to still account for more than half of all global energy consumption in 2040[14]. PEPANZ acknowledges and supports the worldwide push to transition to a lower-emissions future. That is a worthy goal, but one that has to recognise the realities of the journey ahead of us and that natural gas has significantly lower emissions than some other traditional energy sources such as coal.

Contrary to the view that oil and gas is a sunset industry, demand for petroleum is projected to increase significantly in the decades ahead as global demand for most sources of energy continues to increase, and alternatives are still maturing, particularly at the commercial scale.

A recent report by the International Energy Agency predicts demand for natural gas will increase by 45 percent by 2040[15]. Natural gas is displacing higher emissions energy sources and is accordingly in high demand. Related to energy demand, the strategy correctly observes that "*To meet the needs of this growing population we will* require… *more energy"*. This is true domestically, but even more so internationally given the major issues of energy poverty. Although there is relative growth in renewable electricity production, this is unlikely to be able to meet demand in a reliable and affordable way. Use of hydrocarbons will remain critical, and natural gas is the cleanest burning and lowest emission option hydrocarbon. New Zealand should acknowledge this and look to take advantage of the opportunity to export natural gas overseas.

In New Zealand, oil and gas have a wide variety of uses including transport (road, rail, air and ship), power generation, and manufacturing. Almost 400,000 households schools, hospitals, businesses and community facilities also also directly use natural gas or LPG for heating and cooking.

Non-energy use

Many uses of natural gas do not involve burning it. In fact, around 28% of natural gas use in New Zealand is for non-energy use.[16]

Natural gas is used as feedstock to make fertiliser and a range of chemical products including ammonia, hydrogen and methanol.

Other uses of natural gas include producing paper, plastics, medical gasses and low emission technologies such as wind turbines and electric cars. In many cases there is no substitute for natural gas, and if New Zealand did not manufacture these products they would need to be imported, creating a likely increase in global emissions.

The document states that "…oil and gas has a role in providing us with the secure and affordable energy we need to run our economy as we transition to a net zero carbon economy." We agree that oil and gas will have a key role in the transition, but also that it can and should have an enduring role in the destination. A net zero carbon economy means lower emissions with offsetting or emissions capture – it does not require zero use of oil and gas.

[14] International Energy Agency – World Energy Outlook 2017 https://www.iea.org/weo2017/
[15] iBid
[16] *Energy in New Zealand*, Ministry of Business, Innovation and Employment (2018).

Appendix Two: Issues that current legislation poses for Carbon Capture and Storage in New Zealand

In *Carbon Capture and Storage: Designing the Legal and Regulatory Framework for New Zealand*[17] Barry Barton of Waikato University states CCS "is probably not actually possible at all under the existing law".

The Productivity Commission's *Low Emissions Economy*[18] report considers that the current law "*is not set up to deal with the complexities of CCS, and acts as a barrier to the uptake of these technologies*" (page 449).

The Productivity Commission's *Low Emissions Economy* report and the Waikato University paper both recommend a bespoke CCS Act.

The main comments of the Productivity Commission and University of Waikato include the following.

i. CCS is a 'removal activity' under the Climate Change Response Act ("ETS Act"). That means the removing entity (i.e. an operator of a suitable geological formation) could receive 1 ETS credit for every tonne of CO2 removed and stored (s64(1), CCRA).

ii. However, that only applies where the capture and storage is related to a given operator's activities. So, if an operator were to store carbon on behalf of a third party, then that operator could not currently claim ETS credits.

iii. One of the Commission's recommendations (R14.7) is to change the ETS Act so that an entity performing CCS (including capture) can receive ETS credits, regardless of whether or not that entity was the source of the CO_2.

iv. Like the Commission's R14.7 recommendation, the University paper recommends that the definition of 'removal activity' be wider than currently stated for CCS, i.e. that CCS be a removal activity "*whether or not the CO2 is from an activity that is required to surrender units*".

v. The Commission considers that the combined effect of the RMA, EEZ Act and Crown Minerals Act is not capable of delivering the legal framework required for CCS. In particular, the RMA was singled out for not being fit-for-purpose for CCS. For example, the RMA is not equipped to deal with the long-term liability required for CCS operations.

vi. The University paper aligns with the Commission's findings on the RMA, stating "*The overall consequence appears to be that the positive effect of CCS on climate change cannot be taken into account (it is not a renewable energy project), but its possible negative effects on the environment more broadly can be. This could make it practically impossible to get consent for a CCS project…*"

vii. To deal with this issue, the Commission recommends (R14.6) that a whole new piece of legislation, a CCS Act, be drafted to regulate CCS.

viii. The University paper also considers that a new CCS Act is the preferred option. To clarify the interplay between any new CCS Act and current regimes like the RMA and EEZ Acts, the paper states (emphasis added) "*We conclude that new legislation should be enacted that specifically regulates the injection of CO2 for permanent sequestration, any subsequent leakage or migration, and exploration for storage formations. We propose that those matters will be removed from control under the RMA and EEZ Act, and will not require permits under them*" (Executive summary, page vii)

[17] https://www.waikato.ac.nz/__data/assets/pdf_file/0011/179570/University-of-Waikato-CCS-Report-2013-web.pdf

[18] https://www.productivity.govt.nz/sites/default/files/Productivity%20Commission_Low-emissions%20economy_Final%20Report_FINAL_2.pdf

ix. The University paper (page 57) recommends any new CCS Act apply only to the injection and storage aspects of CCS operations, but other CCS activities will likely still be covered by the RMA.

x. The University paper (page 49) concludes that permits for CCS cannot be issued under the Crown Minerals Act, as CCS is outside the definition of 'mining'. The University notes that the CMA does not prohibit CCS.

Appendix Three: Enerlytica "Tunnel vision – Extractives sector regulatory reform"

Important note. This Appendix is comprised of independent research prepared by Enerlytica for its clients. Enerlytica has provided its consent to including its report with this submission.

13 September 2019

enerlytica
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Tunnel vision

Pages: 15

Extractives sector regulatory reform

- **Government positioning statements infer major institutional change ahead for NZ extractive and energy sectors** – The Government has issued two documents which confirm a likely reset of the legislative framework under which the NZ minerals and petroleum sectors operate. The documents are together pitched as "Stage 2" of a full review of the Crown Minerals Act (CMA). The reality however is that there was no "Stage 1" – not unless the 2018 CMA amendment to make legal the Government's 12 April 2018 so-called 'offshore exploration ban' announcement is counted. Unlike that process, the new phase is squarely principles-focused and, if implemented to its stated objective, will serve to completely recast existing frameworks.

- **Confused, disparate, unbalanced public policy and process** – The terms of reference for the review signal an intention to replace the CMA's current emphasis on economic development with as-yet undefined principles of sustainability, fairness and wellbeing. The narrative suggests not so much a tilting of emphasis away from the CMA's existing purpose of maximising the economic benefits to the Crown as owner of the resource as inferring a jettisoning of it. In our view the strategy document lacks balance by ignoring almost entirely two of the three fundamental dimensions that the sector typically looks to in framing its planning. The focus on Sustainability is absolute, while consideration of Security and Affordability is almost entirely absent.

- **Security of supply under threat – both physical and economic** – Events in domestic energy markets over the past 18 months have demonstrated the importance of resource security and affordability to NZ Inc. Compared to two years ago, year-to-date wholesale electricity and gas prices are each >70% higher. Over the same time, domestic emissions have spiked due to local market hydro and gas shortages that required Genesis as the market's marginal generator to import large quantities of high-cost Indonesian coal to bolster supply. While the Government has dismissed this as a short-term aberration, we are much more cautious. The focus of our concern is the gas market where a physical shortage is already clearly evident. While the shock absorber for the shortage is currently a low profile Methanex, we expect that imbalance to re-centre towards electricity generators within the next few weeks. Irrespective of which user is short, the direction of travel signalled in the initial burst of CMA release material will serve in our view only to deter the investment that is required to stabilise the market. The exploration ban has already inflicted major collateral damage to NZ's international reputation among investors and in our view the signalling from the Resources Strategy in its proposed form would only add to this sentiment. The read-through for NZ Inc is of reduced self-sufficiency in domestic energy and a much greater risk of ongoing energy shortages. In tandem with this is high energy prices and an increased risk of major industrial users exiting the NZ market ahead of when they otherwise would.

Resources Strategy and CMA review

On 27 August MBIE released a draft of the Government's resources strategy (Strategy) which is pitched as "*the Government's long term vision for the petroleum and minerals sector in New Zealand*". This was followed by the release late last week of a 12 August Cabinet paper from Energy and Resources Minister Hon Dr Megan Woods which sought and received Cabinet approval to terms of reference for "*the second stage of a two-stage legislative* review" of the Crown Minerals Act (CMA).

The two documents together serve as a position statement of the Government's intended direction of travel towards reforming the CMA and signal what appears a likely recast of the Act. As the CMA defines the fundamental rules of engagement for participants in the NZ extractives sector by prescribing the legislative framework under which permits to prospect, explore and mine minerals and petroleum in NZ are granted and maintained, the significance of the two documents cannot be understated.

The draft Strategy can be found here.

The Cabinet paper can be found here.

The Government has opened the draft Strategy for consultation and is seeking public submissions before 20 September. The Cabinet paper states that a discussion document will be released in early October. We will not be submitting on either document. In this report however we offer our take on the Strategy and its potential implications, particularly given the additional detail provided in the Cabinet paper.

Our review

In this note we offer our take on the papers and the policy development process they infer. In doing so we have opted to look past factual inaccuracies in the papers (eg that oil and gas was first discovered in NZ in 1969 when first commercial production in fact dates back to 1865) and differences in interpretation (eg the likelihood as proposed in the Strategy of developing a large parcel of central North Island land between Taupo and Rotorua into an open pit lithium mining operation) to focus on process and principles.

In our discussion we refer to past analyses that addressed what we regarded as incorrect statements that followed the Government's 12 April 2018 announcement that it would with immediate effect stop issuing any new offshore oil and gas exploration permits – which was subsequently extended via the Crown Minerals (Petroleum) Amendment Act 2018 to also include all onshore acreage except for the Taranaki Basin (note for convenience in this report we refer to the policy as 'the exploration ban'). We also issued a post-release analysis of the Regulatory Impact Statement (RIS) that fronted the Cabinet policy paper that led to the eventual CMA amendment. We recommend a review of these analyses if further background or detail of those arguments is sought:

#letsdowhat? End to new offshore exploration permits

Correcting the Record 1

Correcting the Record 2

Offshore Exploration Ban - Cabinet Paper & RIS Reviews – Parallel Universes

Policy development inversion. Again.

The policy and legislative process the Government opted for in announcing and then implementing the first 'stage' of the CMA review, which comprised the shock announcement of the exploration ban, was heavily criticised by stakeholders across the spectrum. The Government's (in our view then and still now, spurious) reasoning at the time was that the truncated select committee and legislative processes were necessary to enable Block Offer 2018 to proceed.

While the Government had after the fact signalled a further and fuller review of the CMA, the hope was that the policy process would be more considered, open and consultative. On the basis of the process set out in the Strategy and Cabinet paper however it does not appear this will be the case.

The Strategy says "*The Government is currently undertaking a review of the CMA to make sure it is fit for purpose to meet the needs of New Zealanders. This Strategy will inform this review and any amendments made to the CMA as a result of the review will ultimately support the vision of this Strategy. The Resource Strategy will be used to inform a review of the Crown Minerals Act 1991. The review of the legislation is to ensure it is fit for purpose to meet the needs of all New Zealanders and a discussion document is due to be released in late 2019*."

This approach would in our view be a sensible one as it would first establish the overall vision and direction for the sector which could be used to define the detail of a CMA review.

The papers however indicate the Government is pursuing an approach that is the opposite of that it has described. With Cabinet having agreed terms of reference for the review in early August, it is the Strategy that is being 'informed' by the prescription detail of the CMA review, and not vice versa.

Issues of process aside, the Cabinet paper states that the review will be wide-ranging and cover eight key areas:

1. Fundamental role of the CMA and the purpose statement;
2. Land access arrangements;
3. Non-interference provisions;
4. Liability and financial assurance;
5. Compliance tools;
6. Iwi engagement and community participation;
7. Petroleum permitting; and
8. Technical amendments

In terms of potential change magnitude, 1 is by far the most significant. Items 2-8 relate largely to issues of implementation and execution on specific policy matters, although item 7 is perhaps the most far-reaching given the extent of potential impact that a simple reference to "petroleum permitting" might imply.

Vision?

Current purpose statement

Currently the purpose statement of the CMA focuses on economic development and requires the Crown "… *to promote prospecting for, exploration for, and mining of Crown owned minerals for the benefit of New Zealand*."

The current Minerals Programme, which sets out how the Minister and officials will implement the CMA, tellingly states:

"***Interpretation of 'for the benefit of New Zealand'***

(6) The Minister sees "for the benefit of New Zealand" as the overarching objective of the purpose statement and as the touchstone for interpreting the rest of the purpose statement and the provisions of the Act governing various activities and processes. The Minister considers that, within the context and mandate of the Act, "the benefit of New Zealand" is best achieved by increasing New Zealand's economic wealth through maximising the economic recovery of New Zealand's Crown-owned mineral resources.

(7) Other important components of "the benefit of New Zealand", including environmental considerations, are covered in other legislation, as noted in clause 1.4."

The key points are (1) an unequivocal existing emphasis on economic development underpinned by resource recovery maximisation; and (2) that "*benefit to New Zealand*" extends to include environmental and other factors which operators must adhere to and are covered by separate legislation. That suite includes at least 10 other pieces of legislation including the Resource Management Act, Climate Change Response Act, the Conservation Act, Hazardous Substances and New Organisms Act and the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act.

Direction of proposed changes to purpose statement

In her Cabinet paper Dr Woods states that "*The use of the term 'promote' and the interpretation of 'for the benefit of New Zealand' may have to be addressed in light of changing government priorities. I intend to consider whether the CMA should incorporate other broader wellbeing considerations …*".

The paper goes on to say "*that reviewing the fundamental role of the CMA presents risks to the overall timeline, however, this risk will depend on the scale of the options considered including:*

- *(smaller scale) a change in the word "promote" in the purpose statement only; or*
- *(larger scale) a change in the word "promote" in the purpose statement alongside changes to the allocation criteria of permits to include environmental considerations for example*."

The Strategy gives a clearer indication of the intended direction of the review scoped in the Cabinet paper, stating a vision of "*A world-leading minerals and petroleum sector that delivers value for New Zealanders, both now and in the future, in an environmentally and socially responsible way*."

Clearly the critical term in this passage is that of 'value'. Its use in the statement is vague and on its own in our view carries no meaning. Just as it could be interpreted to mean economic value (in the context of receiving value by way of employment, income, taxes and royalties for the benefit of New Zealanders, which is essentially the objective of the CMA in its current form), it could also be interpreted as simply part of the reference to environmental and social requisites in the same sentence (in the context of receiving value by way of environmental and social responsibility for the benefit of New Zealanders). The language of the Cabinet paper suggests in our view that it is very likely to be the later.

Also clear from the Minister's messaging is an intention to reduce the current weighting that economic development carries within the CMA in favour of environmental and social factors. This is articulated in the Strategy which emphasises climate change as a key priority – to the extent that in the section titled "*Why we need a Strategy*?" The opening bolded sentence reads "*We are in a moment in history where the New Zealand economy must transition in response to climate change*". The reasoning then highlights three main reasons for a strategy being required:

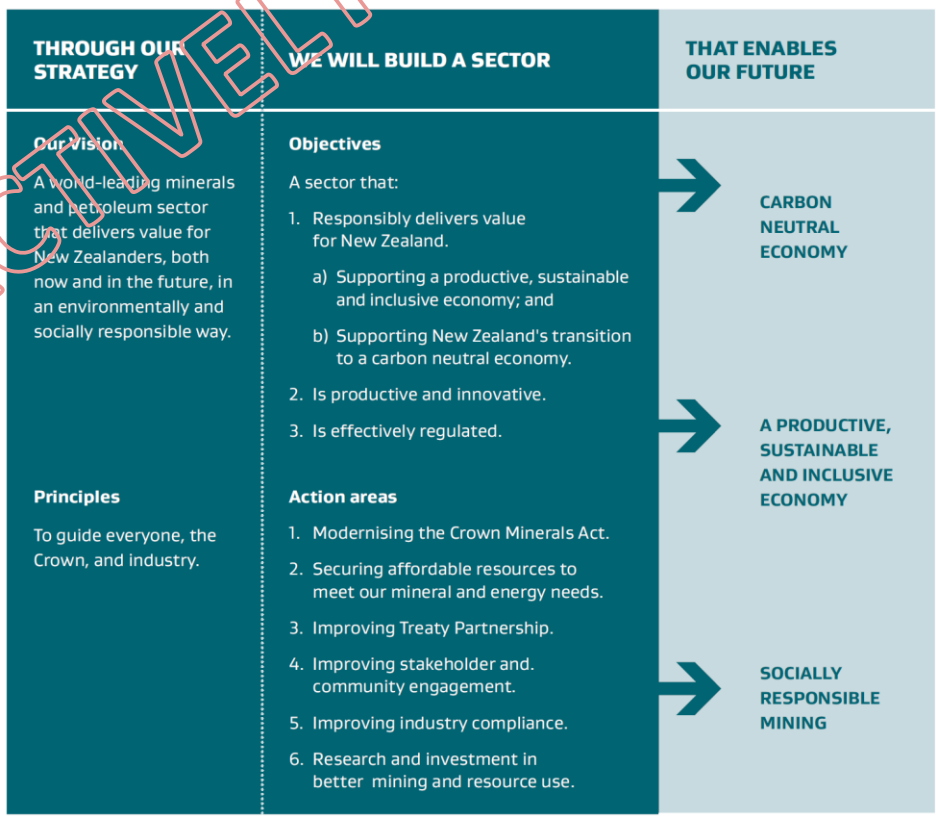
1. **Low carbon economy** – Emphasising emission reduction and low emission technologies such as EVs and solar panels and production of "clean tech" minerals such as cobalt and lithium.

2. **Growing a productive, sustainable and inclusive economy** – Emphasising the role of the minerals and petroleum sectors to meet the needs of population growth.

3. **Social responsibility** – Emphasising themes of corporate social responsibility and social licence to operate.

The Strategy goes on to define three "Objectives" and six "Action areas":

"The plan"



Source: Draft Resources Strategy

Much of the rest of the 42-page Strategy document comprises background and context information that will be of little interest to those with an existing knowledge of the sector. Three specific aspects that we consider worth noting:

- **No revisit of 'the offshore exploration ban'** – Both the Strategy and the Cabinet paper explicitly state that the ban on issuing any new non-onshore Taranaki Basin exploration acreage will not form part of the CMA review and will not be revisited.

- **No new mining on conservation land** – The papers state that the Government intends to still implement its November 2017 announcement of its intention to prohibit any new mining on conservation land.

- **Crown principles** – The Strategy specifies a list of 16 "Guiding principles" to guide action from stakeholders involved in the sector. The list is broadly unsurprising however included on it are six notable commitments made by the Crown. The first two of these are boilerplate but the last four will be sure to attract much scepticism given the events of 2018:

    7. *The Crown honours its duty towards Māori as a Treaty partner, adheres to the Principles of the Treaty of Waitangi and its duty to meet settlement commitments.*
    8. *The Crown receives a fair financial return for its minerals and petroleum.*
    9. *The Crown regulates in a way that is fair, transparent, reasonable and proportionate.*
    10. *The Crown honours the rights of current permit holders to continue production or exploration activities under existing permits.*
    11. *The Crown makes decisions based on the best evidence, and accounting for the foreseeable need for minerals and petroleum, both now and for future generations.*
    12. *The Crown proactively engages and consults with relevant stakeholders and decisions are communicated in a clear and transparent way*.

Our take: Tunnel vision

While only the start of the policy process, the narrative contained within the Strategy and Cabinet paper represents what we view as potentially fundamental and far-reaching change. To those in industry who had viewed the exploration ban as a one-off ad-hoc intervention, the documents will come as another major surprise. For those including us who viewed it as only the first step within a broader future programme to reduce the existing operating mandate of the extractives sector, the extent of the change signalled is we think still deeper than many will have expected.

The positioning signals to us an intention to remove the principle of economic development and benefit as the foundation on which the CMA has stood since its inception and replace it with an emphasis on 'wellbeing' defined by principles of environmental and social sustainability. The gravity and potential implications of this shift should not in our view be underestimated, to the extent that recasting the Act's purpose to such fundamental effect would effectively mean that the Act as it is currently recognised would effectively cease to exist in its incumbent form.

Removing economic development as the CMA's central pillar and replacing it with social policy objectives sends a clear and unambiguous signal to investors who allocate capital to the extractives sector – particularly if purpose and principles are vague and/or poorly defined. The very purpose of the CMA is to promote the development of the Crown mineral estate, leaving other matters to the other pieces of legislation we have noted. Any activity undertaken by minerals sector participants is already subject to separate specific law requiring operators to meet environmental and sustainability standards.

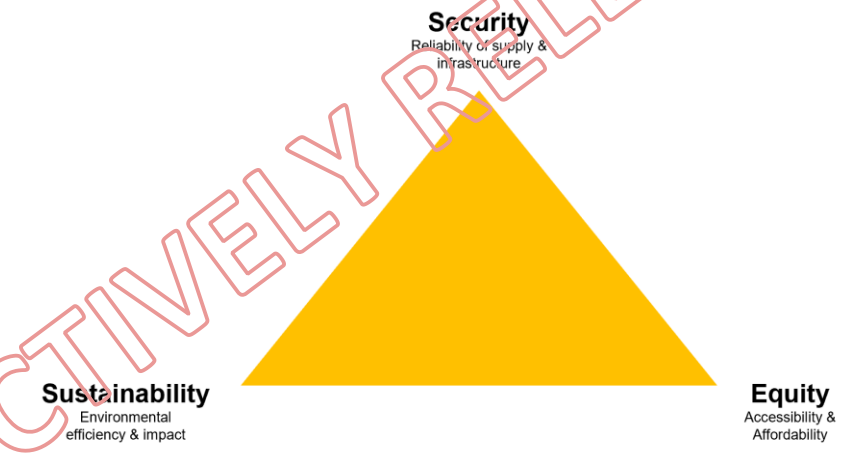
The 'Resources Trilemma'

In our view, the review process the Government has launched lacks balance and if carried out to its proposed method and extent poses a significant risk to the security of domestic resources (including energy) supply.

Our take is that a "Resources Strategy" is useful as a concept, however it must take a whole-of-economy approach and account for the various needs that NZ Inc has of the extractives sector. A model we think would be useful to frame such a Strategy around is that of the Energy Trilemma model developed by the World Energy Council which benchmarks countries on energy sustainability based on dimensions of energy security, energy equity (accessibility and affordability) and environmental sustainability. See here for more detail.

The Minister is a supporter of the Trilemma and has referred to it in a number of past speeches on the energy and resources portfolio.

'The Resources Trilemma'



Source: adapted from World Energy Council/Oliver Wyman Energy Trilemma

NZ has ranked consistently strong on the Energy Trilemma with top quartile rankings across all three dimensions. In the 2019 update released this week, NZ ranked 10th out of 128 countries, which was down two places on last year due to a weaker Security score partly offset by a stronger Sustainability ranking.

Turning the lens to resources, our central concern against the Trilemma is that the direction indicated in the Strategy and Cabinet paper is overly weighted in favour of Sustainability and significantly understates the importance of Security and Equity. At the centre of this concern is that NZ Inc is already a major net-importer of mineral and petroleum resource commodities and products. Moreover the balance of trade on fuel products has fallen sharply over the past decade as indigenous crude oil, LPG and coal production has progressively declined which has been met by higher imports of each. The past 12-18 months has seen a period of particular deterioration as domestic gas supply disruptions have impacted the petrochemical and generation sectors, resulting in a sharp fall in methanol exports and the import of large volumes of coal from Indonesia to meet domestic hydro and thermal fuel shortages. The flow-on impact of this has been a sharp increase in domestic energy prices which are now being relayed downstream to the account of end users. While it is off-contract industrial and commercial users that are suffering first, it is inevitable that households will follow.

In the discussion that follows we speak to the three threads of a Resources Trilemma and the concerns we have with how the Strategy and CMA review impact on the outlook for the domestic resources and, therefore, energy sector.

1. Sustainability

The Strategy is heavily weighted in favour of sustainability with the actions proposed asserted as a direct response to the threat of climate change. It says "*This Strategy enables the changes intended by the Climate Change Response (Zero Carbon) Amendment Bill and complements improvements to the Emissions Trading Scheme and the Taranaki 2050 roadmap*."

The discussion tabled in the Strategy takes the same (in our view) erroneous logic trail the Government took in justifying the exploration ban by conflating both demand-side and supply-side factors to support a conclusion that advancing the wind-down of the indigenous minerals and petroleum sectors will reduce emissions. The Strategy spends two pages (pps 11-12) profiling the major demand-side end use applications for mineral and petroleum products but does not explain how reducing minerals and petroleum sector supply-side activity will contribute towards reducing emissions generated by these applications. This absence of reconciliation is not trivial – in fact we see it as personifying the flawed nature of the wider national debate on reducing global emissions. At its simplest, the vast majority of emissions are released when resources are consumed, not when they are produced.

The same flaw is further reinforced when the Strategy reaffirms the rationale for the exploration ban, saying "*This is a key step towards transitioning to a low emissions economy which is an aim of this Strategy*." While this is consistent with the messaging promoted by the Government when it announced the ban, it is in our view fundamentally incorrect. As we said in our *Correcting the Record 2* piece, "*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.*

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."

Notably, this also reflected MBIE's view in the only piece of advice it was asked to provide on the exploration ban when it said that while the policy could see a reduction in fugitive emissions (explained below) associated with the domestic production of oil and gas, its wider effect would likely be to *increase* global emissions due to carbon leakage and domestic fuel substitution. Also notable is that neither the Productivity Commission nor the Interim Independent Climate Change Commission (ICCC) have in any of their voluminous reporting identified the ban as an effective policy to reduce emissions.

Fugitive emissions

Fugitive emissions are released during and after the oil and gas production process as a result of system losses such as pipeline leaks and wellhead flaring. This is distinct from emissions released when gas is combusted at the point of end use, which is instead attributed to the energy sector in CO_2e accounts.

Fugitive emissions from oil and gas production totalled 1.2mt in 2017, equivalent to 1.5% of total gross CO_2e emissions. Minerals sector emissions (largely coal mining) accounted for a further 0.6mt or 0.7% of total gross emissions, which is similar in magnitude to aluminium production (the Tiwai Point aluminium smelter) and indeed geothermal electricity production (which also has a material fugitive emission component).

Meanwhile, energy sector emissions accounted for 40.7% of gross emissions. Of this, road transport accounted for 17.9%. Indigenous emissions generated by mineral and petroleum mining activities are therefore only a small fraction (1/18th) of emissions generated by those end users that combust what the sector produces.

The central point is that targeting the extractives sector in the pursuit of emissions reduction resulting from the consumption of resources is flawed as a concept. If emissions reduction as a component of sustainability is indeed the policy objective then the Government would receive a far higher return on regulatory investment by focussing on the consumptive end of the economy. This is a first principle that has repeatedly been made to the Government by its various advisors, but apparently has yet to resonate. The action being taken to address the supply-side is more likely than not to increase global emissions, while at the same time progress towards addressing the demand side where the overwhelming majority of emissions are produced remains extremely slow.

2. Security; and 3. Equity

Security refers to the domestic economy's ability to ensure that resources are available to meet demand ahead of those resources being required for domestic consumption. When resources are not available as they are needed, a supply shortage or even shock can result with negative consequences for micro and macroeconomic performance.

Equity in a NZ context refers to the access to and affordability of indigenous resources. Where there is a supply shortage, access and affordability would each deteriorate.

Its physical location and long supply chain means that NZ is more exposed than most other developed nations to domestic supply shortfalls. In cases where there is international fungibility imported goods can replace local supply without any physical disruption occurring (a Security issue), although shifting exposure to international pricing could result in price increases (a Equity issue). There are many existing examples where imported minerals and petroleum products supplement or substitute for local supply including refined oil products, crude oil, LPG, cement, phosphate and coal. Even where fungibility is relatively efficient significant physical and/or economic disruption can still follow. This has proven the case during the past 18 months with disruptions to domestic gas supply that has exposed the reliability of local thermal fuel (Security) and delivered large and ongoing increases to energy prices (Equity).

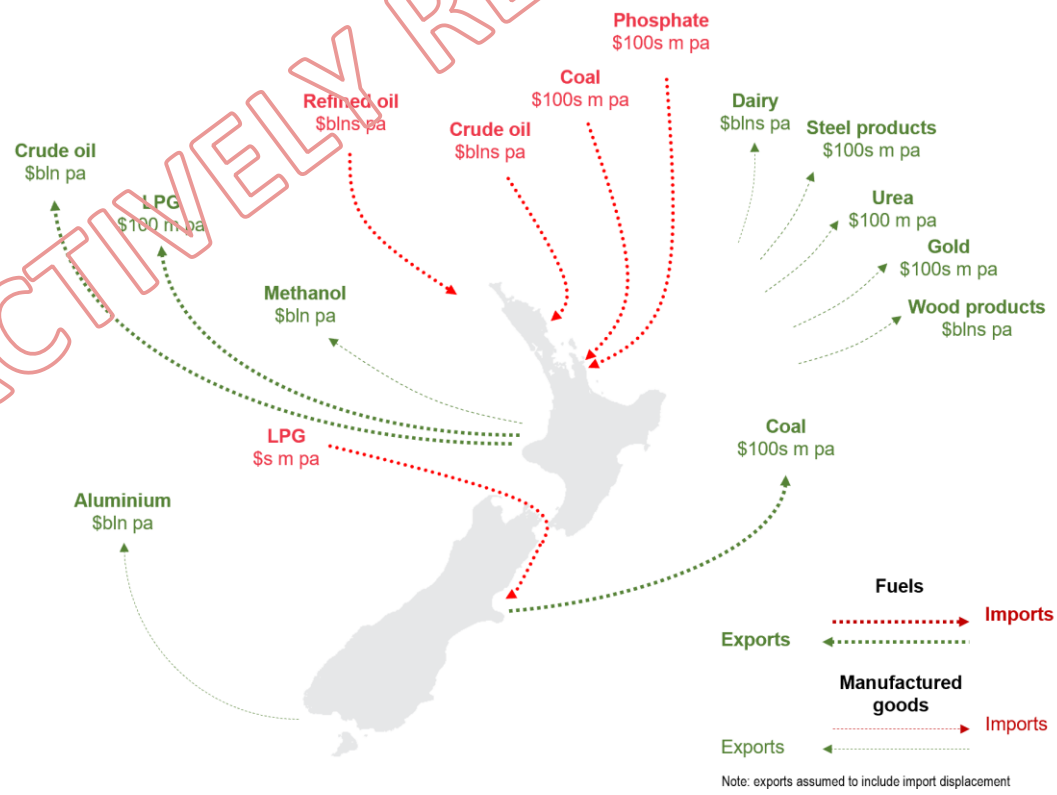
In its preamble the Strategy notes the export values of the minerals and petroleum sectors, however this is presented only on a gross basis which in our view heavily understates the true underlying value of the domestic extractives sector to NZ's external account. We see two missing layers:

1. **Direct import substitution** – Where export commodities directly offset imported equivalents. In our view the most tangible example is that which occurred during 2018-19 when Genesis was forced to turn to import markets to fill for domestic gas and coal shortages, at very substantial additional cost to the domestic energy sector and also a very negative emissions outcome. We discuss this case in more detail separately below. Another is LPG which is a commodity that is generic, fungible and directly substitutable with imports. NZ is broadly self-sufficient in LPG however domestic production has for some years been in decline which is shifting the sector more towards a net-import balance. Due to international pricing and freight differentials, landed import product is much more expensive than domestic product. The accelerated decline of domestic LPG supply that further disincentives on the extractive sector would likely bring would have no impact on emissions (as product would still be imported to meet demand) but would increase imports materially leading to a deterioration in NZ's current account which accounting for gross exports alone would not reflect. Furthermore, for consumers it would deliver a significant increase to

the domestic cost of their energy. There is a similar equation for urea production, where NZ is only around one-third self-sufficient via production from NZ's only ammonia-urea plant at Kapuni. If that plant was to close due to an inability to contract economic gas supply due to a supply shortfall, fertiliser companies would simply increase their seaborne imports to fill for lost domestic production, at substantial additional micro and macroeconomic cost.

2. **Indirect export support** – The domestic extractives sector supports other productive sectors downstream by supplying raw materials which manufacturers make into products for domestic and often export consumption. If suppliers of commodities were to cease operating ahead of time due to a reduced ability to access raw materials then downstream producers would suffer through having to turn to export markets to secure product, probably again at higher prices. Exposure to a longer supply chain and higher input prices would reduce the competitiveness of those producers and exporters, which could also contribute to their exit. There are many potential examples where this could materialise including steel (iron sand and coal), aluminium (electricity), methanol (gas) and dairy (coal and gas).

NZ mineral and petroleum product net export flows

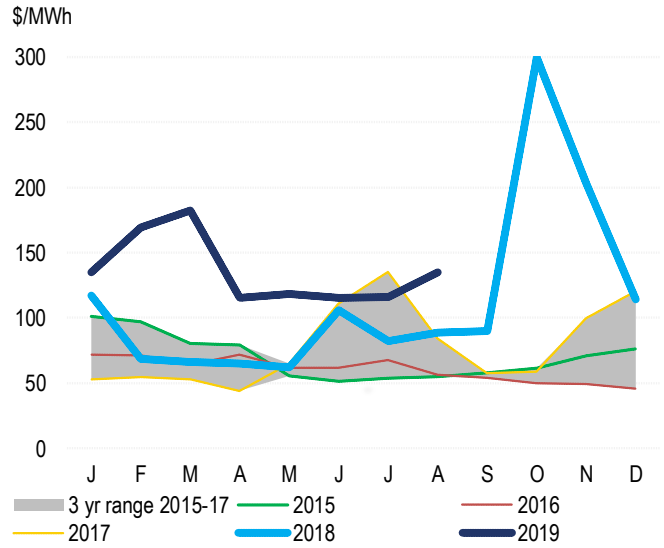


Source: Enerlytica

2018-19 indigenous gas + coal shortage

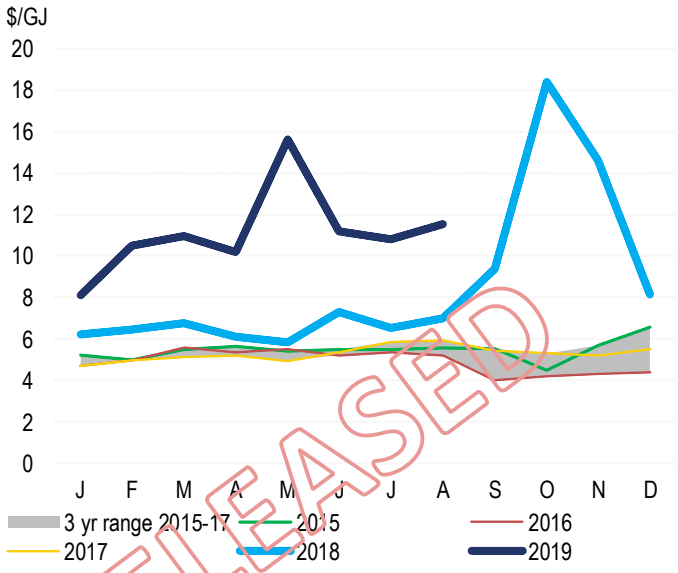
While the perception has been that the gas supply disruptions of 2018-19 were more of financial than physical significance (in other words that market 'tightness' was passed through to users by way of higher prices rather than reduced physical availability), this was not the case. A number of large gas users (Genesis Energy, NZ Steel, Fonterra and Refining NZ included) each at different levels suffered direct supply rationing. Secondary impacts have been felt across the sector with gas and electricity prices that have since trended at roughly double pre-crunch levels.

Spot OTA electricity pricing, mthly 2015-



Source: EA, Enerlytica

Spot gas pricing, mthly 2015-



Source: emsTradepoint, Enerlytica

For electricity generators the gas curtailments compounded with two distinct unfavourable hydro sequences to bring additional pressure to fuel balances. Genesis in its informal role as the market's marginal generator with its gas/coal dual-fuel Huntly Rankine units was particularly impacted as it came under pressure to meet its retail and wholesale market commitments including swaption calls. Available domestic coal was insufficient to meet potential forward demand if the sequences were to have continued and Genesis had little option but to go to the seaborne coal market to import product from Indonesia. The result was 19 import cargoes in less than six months for a total of more than 600kt of coal. Genesis was unfortunate as its seaborne buying coincided with a cyclical peak in coal prices, with the result that the fuel it procured was by domestic standards comparatively very expensive on a delivered basis. With market conditions having since turned and hydro storage having recovered to stay above average across most of the peak winter period Rankine dispatch has fallen significantly, leaving Genesis with a large Huntly stockpile topped with what constitutes expensive fuel inventory.

In the context of the Strategy however it is the emissions outcome during this period that is the sequence's most sobering aspect. With its cargoes Genesis imported more than 1.1 mt of CO_2e into NZ that would otherwise either not have been emitted (had the generation gap instead been met by renewable dispatch) or would instead have been emitted as gas at half the emissions factor of coal (had domestic gas availability been sufficient to meet the gap). The scale context of this outcome is important – the CO_2e imported with the programme is broadly equivalent to any of:

- 250,000 cars driven for one year
- The electricity consumption of 200,000 homes for one year, more than the Wellington and Kapiti regions combined
- 50,000,000 rubbish bags of household waste recycle instead of landfilled
- Sequestration by 1,300,000 acres of forest for one year, equivalent in footprint to nine times the size of Lake Taupo
- A full year of fugitive gas emissions from the domestic oil and gas sector

2018-19 aberration?

Gas and electricity market participants are currently grappling with two fundamental questions:

1. Whether the experience of 2018-19 has been as some (including the Minister) have suggested an aberration caused by successive low hydro sequences compounded by gas plant outages or whether it might as others have suggested be indicative of a 'new normal'; and

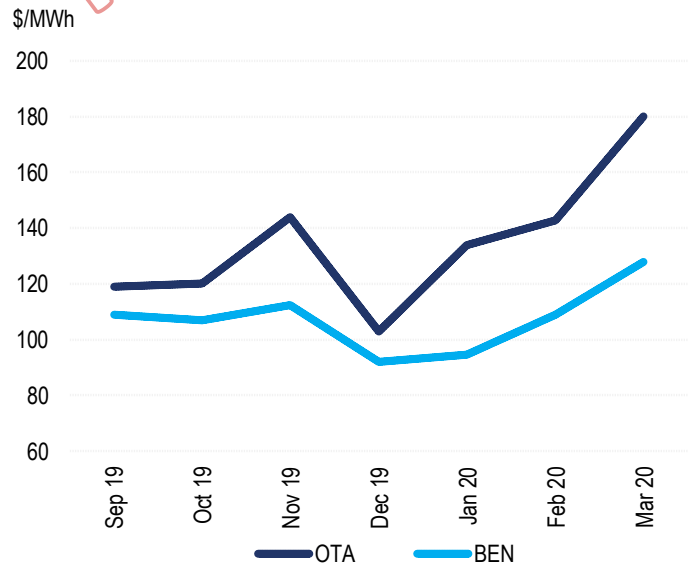
2. Whether any gas market shortage is real or is simply perceived.

Forward market electricity pricing provides a solid indication of levels at which the wholesale electricity market is expecting to transact in future periods. Inherent in this is that pricing looks beyond short-term aberrations such as weak hydro sequences and/or gas curtailments. With baseload OTA pricing out to the end of 2020 pitching at >$120/MWh the market is signalling that 2020 will remain tight. Within this, two distinct spike periods are visible: November 2019 when the Kupe field will be taken offline for a full 30-day scheduled outage and March 2020 when Pohokura will be taken offline for a full 14-day outage. Even excluding these two months infers an average OTA price of $110/MWh. Importantly, with hydro storage currently at approximately average levels, current pricing does not factor any crystallisation of the risk of future dry sequences. Longer-term (from 2021), OTA pricing is mapped to return towards a band of $90-110/MWh as new generation capacity is assumed to come onstream, supported by the higher wholesale price environment.

The key read-through is that the market is valuing generator fuel storage – in any format whether water, gas or coal – at a much higher level than has previously been the case. All storage is not created equal however and it is deep storage varietals of coal and gas that are pricing the marginal market. The carrying value of each of those is currently very expensive – coal due to its 2018-19 seaborne imports at high landed cost and gas reflecting domestic market tightness.

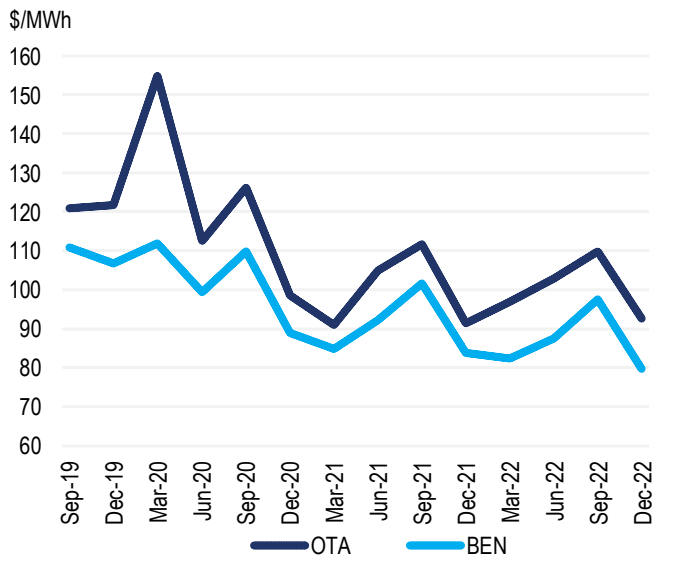
The next step is to gauge the extent to which signalling by the financial market of thermal fuel tightness via high spot prices can be traced through to tightness or shortfall in the physical market.

ASX baseload electricity futures, short-dated



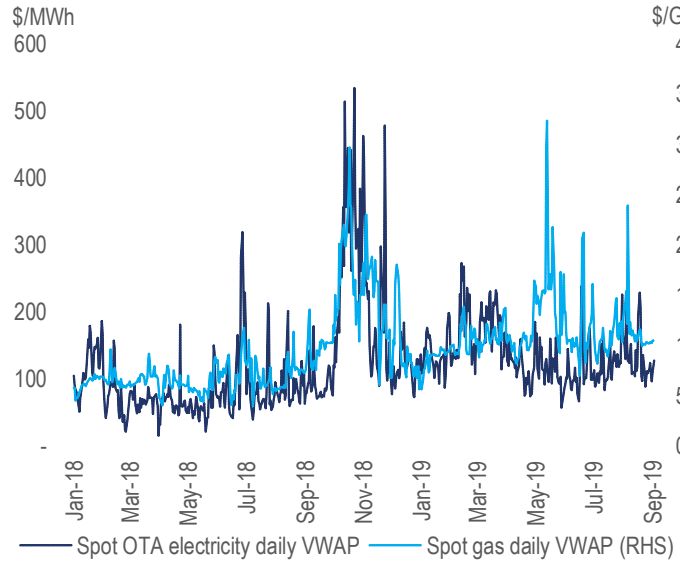
Source: EA, Enerlytica

ASX baseload electricity futures, long-dated



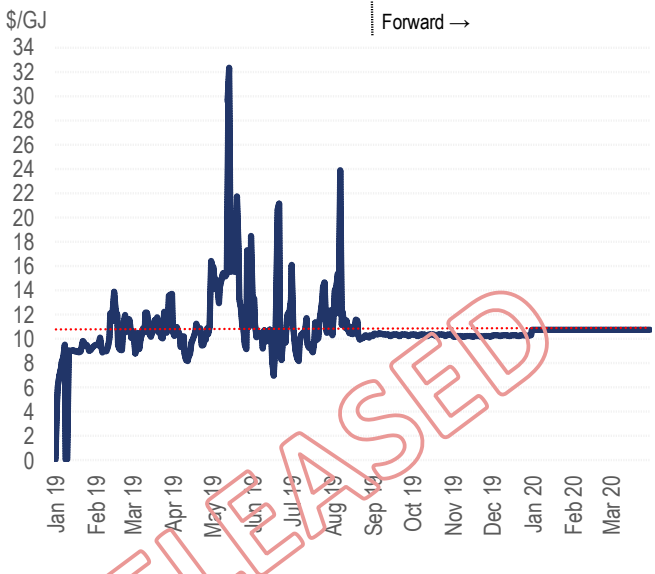
Source: EA, Enerlytica

Spot electricity prices vs spot gas prices, 2018-



Source: EA, emsTradepoint, Enerlytica

Gas forward curve



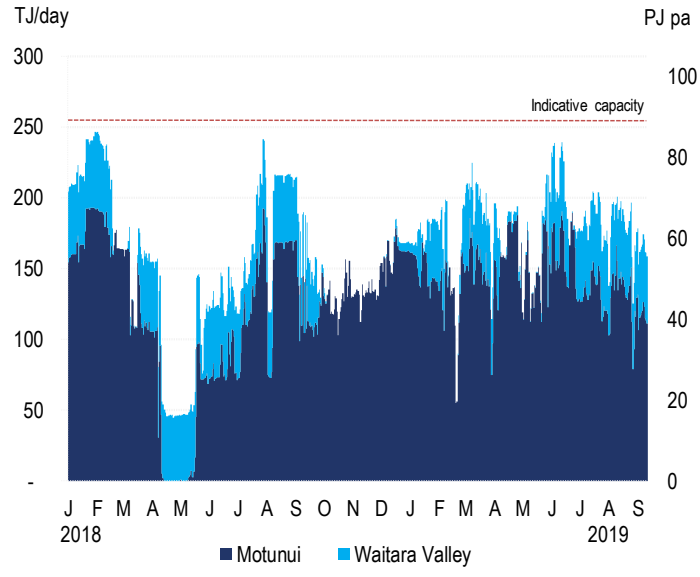
Source: emsTradepoint, Enerlytica

To the bottom line: in our view there is already clear evidence that the physical market is short. Currently at the centre of that conclusion is the GSA announced in mid-June between OMV and Contact.

That deal served to commit 40 TJ/day of Maui deliverability that would otherwise have almost certainly been sold to Methanex. System carriage statistics indicate that since mid-June (and in fact earlier) Methanex has only been able to operate its three plants at ~70% capacity when normally it would be aiming at >90%. The inference is that uncontracted gas of sufficient magnitude to meet Methanex's potential demand is not currently available.

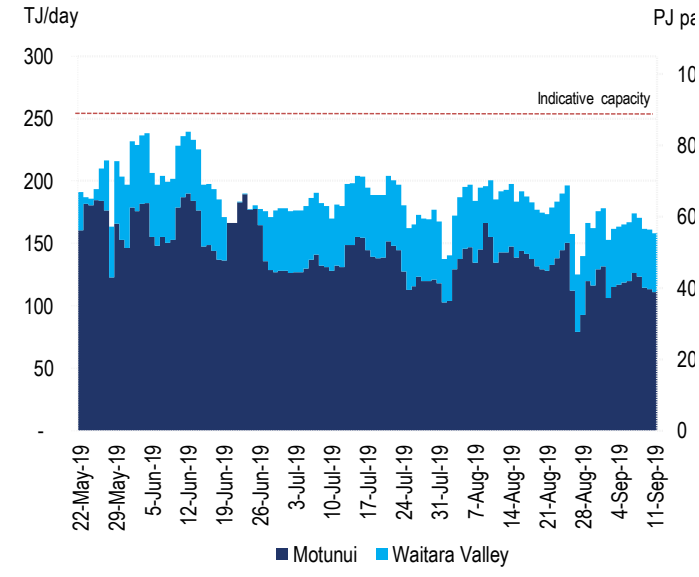
Thus, if "gas shortage" is defined as there being sufficient gas available in the system to meet market demand for it, then there is we would strongly argue a domestic market gas shortage right now.

Methanex gas deliveries, 2018-



Source: OATIS, Enerlytica

Methanex gas deliveries, since Pohokura reinstatement



Source: OATIS, Enerlytica

This situation will rebalance itself at the end of the month when the Contact-OMV deal, which is winter-only for 2019 and 2020, rolls off. From 1 October therefore the likelihood is that the 40 TJ/day would be redirected towards Methanex. While positive for Methanex, it is Contact that becomes open on the buy-side over summer – which with scheduled outages at each of Kupe and Pohokura is unlikely to offer much if any inexpensive summer gas liquidity for it to buy for reinjection into the Ahuroa gas storage facility. That balance again changes in winter 2020 when the 40 TJ/day reverts back to Contact with the likelihood that Methanex will need to again turn-down for winter. Then from 2021 the OMV-Contact deal becomes year-round (albeit largely on contingent gas) which will bring further tightness to liquidity.

Meanwhile, we expect other large gas users are struggling to secure firm gas deliverability almost irrespective of price as they find themselves exposed to this squeeze of physical market shortage (ie insufficient deliverability to meet full system demand) and commercial illiquidity (ie deliverability has either already been contracted or is subject to RCFR override) leaving little capacity available for uncontracted others to secure. It is this dynamic that underpinned our recent reference to the potential for a 'two-speed' gas market to unfold.

To rebalance the market, responses could come from either or both of the supply-side (via bringing new gas deliverability to market) or the demand-side (via further ongoing curtailments and/or exits). Added to this is the potential for change to commercial (rather than physical) market liquidity as major GSAs mature. We see firm potential for significant change on all counts over the next 1-2 years and for a range of very feasible outcomes to materialise. We will be addressing these scenarios in more detail when we launch our rolling monthly *NZ Gas Market Monitor* analysis from next month.

Ultimately however, the central point is that the gas market is already clearly short and that significant further investment required to bring new capacity to market to meet the full extent of existing market demand. A simple fact often overlooked by observers is that oil and gas producers are in the depletion business and that significant ongoing investment is usually required simply to replace production and, therefore, for reserve bases to stand still.

The flow-through to other energy users remains one of much higher energy prices. While it is off-contract industrial and commercial users that are the early victims of this, mass market customers are next. The big question is whether this equation is one of cyclical or structural proportions. The answer will only become clear once a series of major asset decisions are made over the next 2-3 years and, arguably most importantly of all, results from late-life work programmes on major gas-rich fields are in. In the meantime, the term 'fuel shortage' is not a concept of the hypothetical – it is one of current day proportions that we don't see near-term relief from for those that are exposed.

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