

Submission to the Ministry for the Environment on

“UPDATING THE NEW ZEALAND EMISSIONS TRADING SCHEME 1991 REGIME DISCUSSION PAPER (MARCH 2012)”

INTRODUCTION

1. Straterra¹ welcomes the opportunity to submit on the Ministry for the Environment’s consultation paper on the New Zealand Emissions Trading Scheme. We confine our analysis to the implications of proposed changes to the ETS for the New Zealand minerals sector, and, indirectly, the national economy.
2. It is noted that producers such as Solid Energy, OceanaGold, and Newmont Waihi Gold are significant greenhouse gas emitters, and exporters. For them, liquid fossil fuels are a process input into minerals extraction - e.g. excavators, hauling trucks, ore crushing equipment – rather than a transport fuel in the traditional sense. As well, underground coal mines face fugitive emissions of methane. Many such mining companies are, therefore, emissions-intensive, trade-exposed businesses. However, they are not regarded as such in New Zealand’s ETS regime, unlike other EITE businesses, a matter we have raised in a previous submission², and do again in this submission. Case studies on the economic impact in New Zealand of the minerals sector are provided in **Appendix 1**.
3. Straterra broadly supports the Business New Zealand submission, which analyses in some detail the economic issues arising from the proposed changes to the ETS.

EXECUTIVE SUMMARY

4. The Ministry’s proposals for amending the NZ ETS will largely fail to achieve the Government’s objectives of fair participation in the global response on climate change issues, and preventing unnecessary harm to the national economy.
5. The lack of a comprehensive, operating, international agreement on emissions reductions, with little prospect of one until 2020 at the earliest, provides a strong policy imperative to keep the NZ ETS as flexible as possible. Against that, the proposals for change are overly specific.

¹ Straterra Inc. offers a collective voice for the NZ resource sector. Straterra represents 90% by value of NZ minerals production, exploration, services and support, research, and ancillary services (excluding oil and gas)
<http://www.straterra.co.nz/Industry+Links>

² Straterra submission to the ETS Review Panel April 2011
http://www.straterra.co.nz/uploads/files/ets_review_-_members.pdf

6. Phasing out the one-for-two emissions unit surrendering obligation, and the price cap of \$25 a tonne of carbon dioxide equivalent by 2015, are an incremental improvement on 2013 but do not go nearly far enough. The moves bear no relationship with the international setting, and offer no flexibility in relation to how that may evolve.
7. Straterra calls for caution on introducing a “cap-and-auction” scheme of New Zealand emissions units (NZUs), ostensibly to reduce New Zealand’s reliance on international units, and increase economic welfare. From the material provided, this proposal lacks an adequate rationale. We believe it should be dropped, as an unnecessary intervention in international carbon markets. If, however, it does proceed, it will need to be carefully scoped, developed and implemented.
8. The issue of fugitive emissions of methane, particularly from underground coal mines, has not been adequately recognised to date in the ETS. It should be zero-rated to allow miners to focus on the health & safety aspects of methane management.
9. The Government has previously refused to acknowledge that some mining activities are EITE activities (**para. 2** of our submission). This is inequitable treatment of a sector, compared to other EITE activities qualifying for up to 90% free allocation of emissions units, and is in contradiction with the Government’s economic policy. We advocate once more for fair and reasonable treatment of the mineral sector.

DISCUSSION

General considerations

10. Straterra agrees with the Minister for Climate Change Issues that the Government’s objectives for the New Zealand Emissions Trading Scheme (ETS) “remain valid”³: to do our “fair share” in the global climate change response; reduce emissions in the most cost-effective manner; and ensure “the long-term resilience of the New Zealand economy at least cost”. We agree there is a “fine balance”⁴ to be struck when achieving these objectives, however, note that many of the proposed changes do not achieve that balance.
11. We also agree with principles governing proposals for amendments to the Climate Change Response Act 2002, set out in the Cabinet paper, in particular, to “ensure that the ETS is flexible enough to cater for a range of international outcomes in the period 2013 to 2020; and in

³ Cabinet paper on proposed changes to the Climate Change Response Act 2002, Para. 19

<http://www.climatechange.govt.nz/consultation/ets/index.html>

⁴ Minister’s foreword to the consultation paper

particular can more precisely deliver whatever level of international emissions reduction effort New Zealand may wish to demonstrate in this period” (Para. 5).

12. In that light, it is unfortunate that the consultation paper, and the Cabinet paper, present proposed changes to the ETS that are extremely specific when compared to the high level of uncertainty and unpredictability surrounding the global climate change response.
13. It is almost certain – Straterra believes – that if New Zealand adopts the proposals as written, the result will be policy failure, sooner or later⁵, and a consequent increase in risk of unnecessary harm to the national economy, and no commensurate advantage in terms of doing our “fair share”.

The international context

14. At a high level, the international context must stand centre stage. We agree in principle with Hon Tim Groser’s long-standing view that: “In climate change policy, everything flows from the international framework down to the domestic.”⁶
15. That is all very well; however, if the international framework is uncertain, how would that “flow” to the domestic in any sensible or rational way? What we have - the Minister advises - is “a period of uncertainty while a new comprehensive agreement on climate change is developed”⁷.
16. That is a strong argument to revisit, and not simply “[take] into account”, “the commitments the Government has previously made”⁸, among other matters when amending the ETS.
17. For instance, the situation at the time of the signing of Kyoto Protocol on 11 December 1997 has since changed materially. In 1997 and for some time afterwards it was assumed by some, including the then government, that the KP would be the first step towards a more comprehensive and binding international response to climate change⁹. Only a wild optimist would now describe it as such. The US and Australia were going to join the KP at some point.

⁵ It is acknowledged that at low international carbon prices, the effect of proposed changes to the ETS will not have major impacts on mining companies (and other business). If, however, carbon prices rise, and because a substantial proportion of NZ’s international trade competitors continue to face no carbon price for time to come, mining companies will be adversely affected, and could go out of business or move offshore.

⁶ Hon Tim Groser’s speech to Climate Change Iwi Leaders Group 11 April 2012

<http://www.beehive.govt.nz/speech/speech-climate-change-iwi-leaders-group-national-hui>

⁷ Minister’s foreword to updating the NZ ETS – A consultation document

<http://climatechange.govt.nz/consultation/ets/consultation-ets-changes.pdf>

⁸ Ibid.

⁹ Hon Pete Hodgson speech 9 August 2001 <http://www.scoop.co.nz/stories/PA0108/S00199.htm>

They did not. New Zealand was going to be a net seller of emissions¹⁰. That has not happened. If the present looks unsatisfactory, the future of the KP must be considered uncertain.

18. The ratifying Annex I countries and the US, which accounted for two-thirds of global emissions in 1990¹¹, are projected to account for only 20% of global greenhouse gas emissions by 2030, making the KP largely irrelevant, with China alone projected to account for 40% by that date. Canada left the KP after the Durban COP¹². Notionally, there is a Commitment Period 2 of uncertain duration¹³, to follow CP1 (2008-2012), with some countries having announced they would withdraw from the KP before CP2, and no guarantee or expectation of a CP3¹⁴. The Durban Platform for Enhanced Action process for negotiating an international agreement is due to be completed by 2015, with commitments for emissions reductions due to enter into force by 2020. By any measure, this is a shaky scenario, offering little prospect of significant or predictable international action before 2020¹⁵.

19. Any analysis of the global climate change response should include changes in the context in which previous commitments by New Zealand were made. Perhaps, New Zealand should continue after all to work towards developing and meeting KP commitments during CP2. But on the information provided to submitters, it is impossible to know if this is the best course.

20. The leitmotif of our submission is this – that the ETS must be agile and responsive in view of the uncertain and unpredictable international negotiations context, and that policies for amendment of the ETS need to be so framed and developed. Our recommendations are aimed at achieving that.

21. We now consider matters of detail raised in the consultation paper and the Cabinet paper, and then raise matters specific to the mineral sector on which Straterra has submitted previously.

“Cap-and-auction” scheme for NZUs

22. The consultation paper asserts “the current design of the ETS provides participants with limited access to NZUs and they are required to purchase international units in order to meet their

¹⁰ Hon Pete Hodgson press release 24 February 2002 <http://www.beehive.govt.nz/node/13090>

¹¹ European Commission Institute for Environment and Sustainability press release 21 September 2011 http://ec.europa.eu/dgs/jrc/downloads/jrc_20110921_newsrelease_co2_en.pdf

¹² BBC on Canada’s leaving the Kyoto Protocol <http://www.bbc.co.uk/news/world-us-canada-16151310>

¹³ UNFCCC decision on second commitment period for the Kyoto Protocol http://unfccc.int/files/meetings/durban_nov_2011/decisions/application/pdf/awgkp_outcome.pdf

¹⁴ IISD report December 2011 http://www.iisd.org/pdf/2011/assessing_the_outcomes_cop17.pdf

¹⁵ It is acknowledged that this level of commitment is better than no commitment, however, our concern here is with the functioning of the ETS at the present time and in the near and medium term.

surrender obligations under the ETS. This presents a real risk that New Zealand will end up holding more international units in order to meet their surrender obligations under the ETS". It then asserts New Zealand may end up with "surplus units" having no value because of the "uncertainty regarding future international agreements"¹⁶. Auctioning would avoid "excessive purchasing of international units and unnecessary offshore cash flows".

23. These assertions are elaborated on in the Cabinet paper, which raise more questions than answers on the problem definition, and on how the proposed solution, a cap-and auction scheme, would work. We now explore that in more detail:

24. Para. 48 says: "While the Government supplies NZUs to the market in the form of allocations, such as to forestry or industry, if ETS participant's demand exceeds this then they have to purchase overseas units to make up the shortfall ... it was originally envisaged that there would be a continuing international framework beyond CP1 and that the Government would be able to sell any surplus units to achieve its emission reduction target." Missing from this analysis is that foresters have been withholding NZUs from sale, because of low carbon prices, and to manage future harvesting liabilities.

25. Contrast Para. 51: "In recent months, the price of overseas units has fallen considerably due to over-supply ... It is likely that the price of overseas units will remain low in the period to 2015. Beyond 2015 ... there is greater market uncertainty," with Para. 52: "ETS participants may not be able to buy all the overseas units they need to meet their ETS obligations due to a lack of supply and/or could face significant price volatility", and with Para. 53: "the Government may not be able to sell surplus units due to international perception ... or due to the risk that an uncertain international market means there are few buyers". **In other words, no one knows what will happen to the international carbon market.** We contend that if there is no KP post-2017, there would be no need to buy or sell overseas units after that date, and, therefore, no need for a cap-and-auction scheme to incentivise more purchasing of NZUs after that date. If there is a KP post-2017, there will still be an international carbon price, and, therefore, the Government's concerns would melt away.

26. Para. 55 says: "The more NZUs auctioned, the fewer overseas units are likely to be surrendered. This would reduce the loss of economic welfare by reducing the amount of overseas purchasing". That assertion would only hold if there is no loss of economic welfare in New

¹⁶ For example, the Kyoto Protocol's CP2 could end in 2017 (or earlier), with no CP3 to follow, and no broad-based international agreement entering into force until 2020 or beyond.

Zealand occurring as a result of the ETS, or changes to the ETS. That assumption needs to be tested, especially as a previous report¹⁷ to inform government policy took as its premise that “New Zealand signing up to Kyoto and any subsequent international agreement results in a net welfare loss”.

27. Para. 55 further says, the cap-and-auction scheme would “provide greater flexibility to achieve any desired level of ambition through adjustments to the amount of NZUs auctioned”. That possibility is provided for in Para. 59, bullet point 4, proposing a “limit, if any, on the amount of eligible overseas units an ETS participant can surrender”, as one of the matters for the Minister to “have regard to” when determining the cap on the number of NZUs auctioned. That could raise the New Zealand carbon price to more than the international price, if New Zealand emitters are forced to buy NZUs. What would the Government hope to achieve with such an outcome? What are the risks of this approach? From the Cabinet paper, we do not know.

28. To conclude: on the information provided, there appears to be no problem to solve, and, even if there were a problem, it is not clear it is adequately understood by officials, or that a cap-and-auction scheme is the best solution. Straterra suggests that international carbon markets appear to be developing, and functioning, and should be left to operate without unnecessary interference, to avoid the possibility of unintended or undesirable consequences.

Phase out of the one-for-two surrendering obligation

29. At issue is the lack of action internationally on reducing emissions, which exposes export-led New Zealand businesses to risks¹⁸. In particular, New Zealand’s marginal costs of abatement have been estimated to be orders of magnitude higher than the US, the European Union, China and India¹⁹. Put simply, if the Government uncritically strengthens the ETS, in an attempt to incentivise a transition to a lower-carbon economy, the result could be unnecessary harm to some sectors of the economy, while providing less opportunity for growth with overseas investment potential diverted from New Zealand. The result would be failure to meet any of the ETS objectives.

¹⁷ NZIER and Infometrics (2009) Economic modelling of New Zealand climate change policy <http://www.climatechange.govt.nz/emissions-trading-scheme/building/reports/economic-modelling/economic-modelling-of-new-zealand-climate-change-policy.pdf>

¹⁸ Note New Zealand’s relatively high trade/GDP ratio, and high marginal costs of abatement because of the structure of our economy, as discussed in the Straterra submission to the ETS Review Panel http://www.straterra.co.nz/uploads/files/ets_review_-_members.pdf

¹⁹ Covec (2010) Carbon price forecasts <http://www.pce.parliament.nz/assets/Uploads/Covec-Final-Report-19-07-10.pdf>

30. We are, therefore, concerned over the proposal to phase out the one-for-two obligation by 2015 (Paras. 78-81 of the Cabinet paper). Certainly, this is an improvement on a phase-out date by 2013 but not by much, because the main risk of carbon leakage is from reduced long-term investment.
31. The Minister's assertion - "this proposal ... signals our determination to balance short-term business and household costs with incentives to reduce emissions in the long term" (Para. 81) - is based, presumably, on the rationale presented in the NZ ETS Review Panel's report to the Government of June 2011.²⁰
32. Specifically, the Panel's report concludes in its Para 83: "to strike the right balance between managing these short-term competitiveness concerns and providing long-term certainty, the Panel recommends the transition phase measures be extended and phased out smoothly from 2013 over a relatively short timeframe." By this is meant in preceding paragraphs a balance between submitters to the Panel in favour of a longer transition period, and those against. Predictably, the submitters seeking the shortest response were the ones who do not run businesses, as opposed to the submitters seeking a longer transition.
33. Straterra believes it is poor policy-making to adopt, with no further analysis, the middle position of polarised views. Refer to **paras. 42-43** for a fuller explanation of this position.
34. At issue is that New Zealand has very little control over the international scene, however, we do have control over our own situation. As discussed, Straterra believes New Zealand needs an ETS that is agile and responsive to the international scene, in the face of uncertainty and unpredictability.
35. In contrast, the committing of relevant sectors to a full price obligation by 2015 is not agile or responsive – it is a bizarre attempt to impose "certainty" on New Zealand emitters, while taking no consideration of the international scene, where we are unlikely to see any concerted action before 2020, and while taking no consideration of New Zealand's much higher marginal costs of abatement (**para. 29**).

²⁰ NZ ETS Review Panel Report to the New Zealand Government (2011) Doing Our Fair Share
<http://www.climatechange.govt.nz/emissions-trading-scheme/ets-review-2011/review-report.pdf>

Phase-out of the fixed price option

36. The arguments outlined above on the proposal to phase out the one-for-two surrendering obligation by 2015 apply also to the proposed phase-out of the \$25 per t CO₂e price cap by 2015 (Paras. 82-87 of the Cabinet paper).

Fugitive emissions of methane

37. Fugitive emissions of methane (FE) occur in coal mining, in particular, underground coal mining. It is worthy of separate consideration because of the issues that FE present, e.g. management of FE for health & safety in a mine, measurement of FE, the feasibility or otherwise of capturing FE. For the mining industry, H & S is a paramount concern, and management of FE should focus on that, without the burden of managing for mixed objectives. For that reason, we propose the Government zero-rate FE.

Mining should be treated as an EITE sector

38. As stated in Straterra's submission²¹ to the ETS Review Panel, we believe that some mining in New Zealand would qualify as an EITE sector. We reproduce material from that submission, and comment on the ETS Review Panel's report, which, in general, we find deficient in its analysis, insofar as our interests are concerned.

39. As a result of specific features of the current Act, and the broad definition of the concept of an "activity", there are no mining companies eligible for allocation in New Zealand. Were these features changed, as they should be to achieve fair, equitable and economically-rational outcomes from the allocation regime, mining companies would be able to assess their emissions intensity in a manner equivalent to other sectors. As a result of that process, some mining companies would be eligible for allocation. Specifically, these factors are:

a) *Liquid fossil fuels*: For mining, LFF are a process input, not a transport fuel in the traditional sense (**para. 2**). LFF should be considered, therefore, as part of the assessment of emissions intensity of mining;

b) In the event that our proposal in **para. 37** is not adopted, *fugitive emissions* should be made eligible for allocation, as logically consistent with (a) above, as part of the assessment of emissions intensity of mining;

²¹ Op. cit.

c) *Activity definition*: Mining is a complex process by which raw materials are extracted at a site, processed via physical and/or chemical means, and transformed into saleable products. The concept of an “activity” does not currently allow for the inclusion of the mining process itself within the scope of the activity. Thus, even if LFF (and FE) were considered as recommended in (a) and (b), mining companies would still fail to qualify for allocation.

40. The ETS Review Panel report acknowledged the above argument (Para. 129 of the report), however, stated in Para. 130: “Other submitters ... cautioned against further expansion of the sources of emissions eligible for allocation, citing the availability of abatement options, the importance of a strong carbon price signal to incentivise domestic emission reductions, and the ultimate cost to the taxpayer of increased allocation and a slower transition to a low-carbon economy.” Straterra contends that in the case of mining that there are no ready abatement options, that a strong carbon price signal is only desirable in the context of significant global action (to avoid “carbon leakage”), and, that being the case, **there is no evidence to support the assertion of increased costs to the tax payer if mining were included as an EITE sector.**

41. In our submission to the Panel, we argued the levels of free allocation, of 60% and 90%, respectively, for moderately and highly emissions-intensive activities, should be reviewed. These levels, and the thresholds for classifying moderate and high, 800t CO₂e and 1600t CO₂e per \$1m of revenue respectively, were drawn from a scheme designed in Australia for Australian conditions, but not implemented or tested in that country. We contended that it is possible that these levels of allocation, and the allocation thresholds, are not correctly positioned to achieve the purpose of allocation. We argued that analysis of New Zealand conditions is required, against the purpose of allocation.²²

42. That analysis was carried out, to a degree, in the Panel’s report (Paras. 111-121, Figure 3.3). The Panel concluded that no change was necessary, applying its method of steering a middle path between polarised views (cf. **paras. 32-33**), rather than considering the purpose of allocation. We are deeply concerned by this approach.

²² To provide background on this anomaly, we inherited this situation when we picked up the features of the CPRS, as they stood at the time. Then Prime Minister Kevin Rudd’s concept was that mining companies should not get allocation, hence the way the concept of activity was defined. For this, and many other reasons, the CPRS and Rudd were thrown out. Therefore, not only is there no reason for New Zealand to pick up features of the CPRS that have no application or relevance to New Zealand, it is our contention that this particular feature of the CPRS would never have survived in Australia had the CPRS been implemented there.

43. As an analogy, the Panel's approach is like a review of the income tax system concluding that the system should not be changed because it steers a middle path between submissions in favour of rich people paying more tax, and submissions to the contrary. To be clear: this is a facile and obsolete approach to policy-making, when there are other approaches. The Panel's report needs to be considered in that light. Therefore, the 60% and 90% levels of allocation, and the thresholds for awarding them, should be revisited with a more responsible and robust analysis.

RECOMMENDATIONS

44. Straterra recommends the Government to:

- a) Note Straterra's support of the retention of the **objectives** of the NZ ETS;
- b) Note Straterra's support of Para. 5 of the Cabinet paper outlining principles for policy proposals to ensure **flexibility** of the ETS;
- c) Note the Government's **policy proposals** are, in general, overly specific, in the context of ongoing uncertainty in, and unpredictability of the global climate change response, and will fail to underpin Recs. (a) and (b);
- d) Revamp the policy proposals to produce an **agile and responsive ETS** to international developments, and to address squarely the lack of certainty in, or predictability of international climate change negotiations, for consistency with Recs. (a), (b) and (c);
- e) Rescind the proposal to develop a **cap-and-auction scheme** for NZUs, as unnecessary and undesirable, in the face of uncertainty in and unpredictability of the global climate change response.
- f) If, however, the Government does not adopt Rec. (e), direct officials to invite Straterra to **participate in further consultation** on scoping, developing, and implementing a cap-and-auction scheme;
- g) Rescind the proposal to phase out the **one-for-two emissions unit surrendering obligation by 2015** because it take no account of international uncertainty in, and unpredictability of the global climate change response;
- h) Replace the proposal referred to in Rec. (g) with a proposal to **phase out** the one-for-two obligation in response only to a **trigger event**, e.g. when 60% of global emissions are subject to binding commitments and action for reducing emissions;

- i) Adopt the approach taken in Recs. (g) and (h) in relation to the phase-out of the \$25 per tonne of CO₂e **price cap**;
- j) Note the lack of domestic action, broadly speaking, being taken by our key **competitors** in international trade;
- k) Zero-rate fugitive emissions of methane from coal mines, to allow mining companies to focus on managing FE for health & safety;
- l) Note the current **allocation regime** will fail to achieve its stated purpose in relation to mining, and that amendments to this regime are both necessary and desirable for this purpose to be achieved;
- m) Review in a robust way the **60% and 90% free allocation thresholds**;
- n) Define the concept of “**activity**” to enable mining to include all processes from uplift of material from the mine face, to transformation into a saleable product, to ensure parity of treatment with other EITE industries, and to ensure the goals of allocation are met;
- o) Within the above, include liquid fossil fuels in the assessment of the emissions intensity of mining; and
- p) Within the above, if Rec. (k) is not adopted, include fugitive emissions of methane in the assessment of the emissions intensity of mining.

APPENDIX 1: CASE STUDIES OF THE ECONOMIC CONTRIBUTION OF MINERALS

Newmont Waihi Gold Ltd²³

NWG operates the Martha Mine (an open pit gold mine), and the Favona and Trio underground mines at Waihi, Coromandel. NWG is looking to expand its operations at Waihi to ensure a mine life out to 2020 based around underground mining.

NWG currently spends around \$180 million a year, 80% of which is spent within New Zealand. Around 350 FTE are directly employed (including contractors). Over the past five years NWG has spent \$239 million in capital investment (e.g., on equipment and facilities), and \$694 million in operational expenditures (e.g., on wages and supplies).

²³ Newmont Waihi Gold <http://www.marthamine.co.nz/>

In addition to mining, NWG undertakes mineral exploration, mostly within the Waikato region. These activities inject some \$10 million a year into the New Zealand economy.

The Martha mine open pit attracts some 40,000 visitors a year to Waihi, pop. 4700. The township has built around the open pit, a further example of economic activity generated by the mine.

The Hauraki Goldfield, which includes the Coromandel Peninsula and extends as far south as Te Puke, is the most prospective area in New Zealand for the discovery of gold-silver deposits. NWG is currently investigating underground mining proposals near its current operations, including under the township of Waihi, where the company has identified an ore body containing potentially \$1 billion of recoverable ore.

OceanaGold Ltd²⁴

OGL produces some 260,000 oz. of gold a year, earning revenue of around \$400 million a year, from its mines at Macraes, and Reefton.

Macraes employs 550 people (450 staff, 100 contractors). Around 50% of this number lives in Dunedin, one-third in Palmerston, and the rest in Oamaru and nearby. Adding the indirect economic activity arising from Macraes brings jobs to 1000-1500 people. Current resources provide a mine life to 2020, with the potential to extend that, if new resources are developed.

Bathurst Resources²⁵

The Escarpment mine proposal would employ an additional 424 FTEs on the West Coast, with \$41 million a year paid in wages during the seven years of the mine's life, and \$60 million a year in royalties and taxes. Over the life of the project, Bathurst Resources would inject an extra \$1 billion into the New Zealand economy, with more than \$100 million a year paid to staff; suppliers; contractors; port, rail and shipping companies; and the Westport community. Up to 1 million tonnes of hard coking coal a year would be mined at Escarpment.

There is an opportunity for the company to continue in the Buller coalfield, with the existing Cascade mine, and development of new exploration tenure, e.g. the former Coal Brookdale and Whareatea mine areas.

Ironsands

There are billions of tonnes of recoverable ironsands off the western coastlines of the North Island.

²⁴ OceanaGold <http://www.oceanagold.com/>

²⁵ Bathurst Resources <http://www.bathurstresources.com/>

Challenges lie ahead in proving the resource, extracting it in an economically-viable and environmentally-responsible way, and establishing overseas markets for the product, namely, titanomagnetite concentrate. The industry could create 100s or 1000s of jobs depending on the degree of onshore processing.

Trans-Tasman Resources has a published resource of more than 4.5 billion tonnes of ironsand ore, at 6.23% iron²⁶. TTR could produce 10 million tonnes of ironsand concentrate (57% iron) in the first 3-4 years of operation. Every year around 4000 ha of sea bed would be disturbed.

Lignite

New Zealand has a world class coal resource in the form of lignite in Otago and Eastern Southland coalfields totalling more than 12 billion tonnes.

Solid Energy plans to bring to and develop leading edge technologies in New Zealand to unlock the value of these lignite fields at scale to help build the country's economic prosperity and standard of living.

Proposed plans include a lignite drying and upgrading plant (currently under construction in Maitai), a coal to fertiliser project, as well as a coal to diesel project in the longer term - depending on drivers and technologies at the time. Even if all these projects go ahead, the lignite resource currently held by Solid Energy is enough to support all these industries for more than 50 years.

Development of the lignite fields and associated technologies would provide a return to the project developers and owners, a source of income for New Zealand in the form of taxes, levies and royalties, and national and regional economic development to help reduce supply shocks whilst providing major gain through employment.

Rock phosphate

New Zealand currently imports around 1 Mt (\$300 million worth) a year of rock phosphate (phosphorite), mostly from Morocco. Chatham Rock Phosphate²⁷ has a resource of 100 million tonnes, providing a supply for more than 25 years, and, possibly, as much as 100 years. CRP's licence covers 4276 km², around 0.1% of the area of the Chatham Rise.

²⁶ Trans-Tasman Resources <http://www.ttrl.co.nz/>

²⁷ Chatham Rise Phosphate <http://rockphosphate.co.nz/>

Precious and base metal seabed massive sulphides (SMS)

SMS are under investigation in the Kermadecs, by two companies, Neptune Minerals²⁸ and Nautilus Minerals, and GNS Science and NIWA, delays in permitting notwithstanding. Most of the deposits are copper and zinc, with 25% of the value being in gold²⁹. Silver, barium, iron, and manganese are among other metals in the deposits. Based on international information, there could be between 250,000 tonnes and 20Mt in each deposit, which are distributed discretely along the undersea volcanoes of the Kermadecs. There may also be resources in the parallel, non-active arc, the Colville Ridge, which is currently largely unexplored.

West Coast

The West Coast region currently produces annually around 2.7 Mt of coal and 135,000 oz. of gold with a total production value exceeding \$940 million injecting around \$614 million into the local economy. The West Coast minerals industry directly employs 2117 people and a further 2700 indirectly. On the West Coast the minerals industry supports over 10,000 people³⁰ or one-third of the West Coast population.

The West Coast minerals industry is expected to generate annual export revenue exceeding \$1 billion by the end of 2013³¹.

²⁸ Neptune Minerals <http://www.neptuneminerals.com/>

²⁹ Kenex <http://kenex.co.nz/default/default.asp>

³⁰ Based on the average West Coast household size of 2.3 people - BERL economics 2010 report "Potential Contribution of Mining to the West Coast Region"

http://www.westcoastnz.com/content/library/110222_Value_of_Minerals_to_the_West_Coast_Economy_Final_R.pdf

³¹ Minerals West Coast