

Submission on the New Zealand Productivity Commission Report

Low-emission economy NZ - DRAFT April 2018

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30 May 2018

SUBMISSION

I commend the New Zealand Productivity Commission on its report *Low-emission economy NZ - DRAFT April 2018*. Given the terms of reference, including the exclusions imposed on the inquiry, the Draft Report is comprehensive and thorough. The majority of the well-considered recommendations should go a long way towards reducing greenhouse gases.

Hybrid Emissions Pricing Scheme

The Draft Report makes the following Recommendation R4.1 on page 416:

“The Government should reform the NZ Emissions Trading Scheme rather than replace it with a carbon tax. The reforms should provide a good balance between control over unit supply (ie, an effective emissions cap) and protection against excessive volatility in the price of emission units. The reforms should also provide the institutional and regulatory underpinnings for a credible and efficient market in emission units, as well as transparency and forward guidance to incentivise long-term investments in lower emissions.”

There are clear cut and distinctive advantages and disadvantages of a pure Carbon Tax versus a pure Emissions Trading Scheme (ETS) which are addressed in the preamble and findings that precede R4.1. Given the combination of the preamble and findings followed by the wording of R4.1, the intent of R4.1 seems to seek the advantages of both a Carbon Tax and an ETS. Such a scheme would be a hybrid scheme as described in the public literature and recommended by a number of sources^{1,2}. The devil of implementation of a hybrid scheme lies within the details. For example, a hybrid scheme can be an ETS which not only caps a limit on emissions, but also sets a minimum price cap which effectively results in a minimum carbon tax².

I recommend that New Zealand adopts a Hybrid Emissions Pricing Scheme with a cap on emissions and a minimum cap on carbon pricing with full Government control over the auction process.

Impact of Peak Oil

A number of recommendations in the Draft Report are predicated on the expectation of a business as usual scenario during a transition phase through to 2050 and there is an implicit assumption that potential disruptions can and will be mitigated. This is understandable given that the primary purpose of the report on page iii is to provide guidance on how to “manage a transition to a lower net emissions economy, while still maintaining or improving incomes and wellbeing”. The restrictions of the Terms of Reference imposed on the Draft Report may have resulted in an omission to address the impact of peak oil, an omission which is a major flaw of the report. Chapman (2014) summarises the debate about peak oil as follows³:

“Up until recently Peak Oil was a major discussion point crossing from academic research into mainstream journalism, yet it now attracts far less interest. This paper evaluates the reasons for this and on-going relevance of Peak Oil, considering variations in predictive dates for the phenomenon supported by technological, economic and political issues. Using data from agencies, the validity of each position is assessed looking at reserves, industrial developments and alternative fuels. The complicating issue of demand is also considered. The conclusions are that, supported by commercial interests, an unsubstantiated belief in market and technical solutions, and a narrow paradigmatic focus, critics of Peak

Oil theory have used unreliable reserve data, optimistic assumptions about utilisation of unconventional supplies and unrealistic predictions for alternative energy production to discredit the evidence that the resource-limited peak in the world's production of conventional oil has arrived, diverting discussion from what should be a serious topic for energy policy: how we respond to decreasing supplies of one of our most important energy sources.”

Chapman concludes:

“...the evidence is that conventional oil production has peaked and prices will rise, though this is unlikely to benignly encourage a shift to new fuels. ... Rather than continuing to argue for or against the topic, Peak Oil should be acknowledged as part of a complex energy situation with the realisation that cheap fuel is no longer available and we now face circumstances where prices will increase and high energy-based growth will be limited. ...Like the oil crisis of the 1970s, this is a situation of great importance that requires leadership, discussion and analysis on a global level. Many aspects of modern life will be impacted by conventional oil output falling and co-ordinated action between diverse agents will be required.”

A transition from a fossil fuel based economy to one that is in turn reliant on renewable energy will be necessary regardless of the impact of climate change and the need to reduce greenhouse gases. A transition from fossil fuels to renewable energy will of course reduce greenhouse gas emissions, but a major problem is that such a transition will require use of fossil fuels to set up new infrastructure, plant, machinery, vehicles etc. (embodied energy) at the very same time as the need to reduce greenhouse gas emissions. In order to satisfy both requirements, use of fossil fuels will therefore need to be diverted from that of consumption to that of investment. Expectations that business as usual can and will continue during a transition from fossil fuels to renewable energy are unrealistic.

I recommend that the Final Report addresses issues of peak oil and allied contingency planning.

Government Support for Renewable Energy

Although New Zealand needs to phase out use of fossil fuel based generation of electricity by 2050, recommendations R12.1 to R12.4 for the Electricity Authority on page 433 do not include the need and urgency for Government to invest in renewable energy projects in its programme of works. The Draft Report states on page 321 that "if reducing emissions from electricity generation significantly increases the costs of electricity, this could delay the electrification of other sectors where the reductions are potentially larger." An Emissions Pricing Scheme can provide Government with revenue¹ and this revenue can be used by Government to invest in renewable energy projects to maintain stable electricity prices. A 2017 survey by Carl and Fedor which tracks current global carbon revenues has established that Cap-and-trade systems (ETS) earmark 70% of revenues for “green” spending⁴. The New Zealand Government can and should follow suit by either investing directly in renewable energy projects or by subsidising smaller scale renewable energy projects initiated by City Councils, community groups, or individuals.

I recommend that Government invests revenue generated by an adopted Emissions Pricing Scheme in renewable energy projects.

Meeting Peak Electricity Demand

The Draft Report states on page 294 that “Electric vehicles are one of New Zealand’s most promising mitigation opportunities.” An assumed 100% fleet of electric vehicles in New Zealand by 2050 would require substantial additional electricity generation. The Draft Report addresses ways of reducing demand for electricity in a number of sectors in the economy and mentions on page 333 that the Comalco smelter plant at Tiwai Point could be “incentivised” to help smooth demand peaks and reduce the need for on-call thermal generation. According to the Draft Report on page Comalco currently uses 570 MW of electricity⁵ which is about 15% of current peak hydro electricity output. This level of continuous consumption of electricity begs the question of whether Comalco’s continued use of electricity should take

priority over New Zealand's need for additional electricity during the transition phase from fossil fuels to renewable energy. A comprehensive study of peak demand and risk should include not only "incentivisation" to help smooth demand peaks but also address the issue of whether Comalco should continue to use such a large percentage of New Zealand's hydroelectricity output.

In a submission to the Commerce Committee, The New Zealand Aluminium Smelters Limited (NZAS) wrote the following statement to Jonathon Young, Chairperson, Commerce Committee, on 12 March 2013⁶:

"New Zealand Aluminium Smelters Limited (NZAS) welcomes the invitation to make a submission to the Commerce Committee's consideration of the petition of Eric Roy MP requesting that "the House encourage the Government to see Meridian and Rio Tinto renegotiate a viable power supply contract to save Tiwai Point aluminium smelter, and note that 3,110 people have signed postcards supporting this request.

... During the 1960s, the New Zealand government granted the then owners of the Tiwai Point smelter, Comalco, 99 year water rights in order to develop both the Manapouri Power station and the NZAS smelter. Due to financing difficulties, Comalco could not finance both the Manapouri power station and the NZAS smelter. In order to keep the option alive, the Holyoake Government of the day acted to accept the water rights back from Comalco and in return finance and build the Manapouri power station. The Government also committed to provide to Comalco a 93 year power deal (until 2060) to supply affordable power to the smelter. In return, Comalco agreed that the power price structure would cover the operating costs of the Manapouri Power Station, pay back the capital cost of construction and provide a premium.

In short, Manapouri was built for a specific purpose – to provide long-term affordable power to the smelter, and the power station was paid for by the smelter owners, not the New Zealand tax payer. If the smelter had never existed, the power station would also not exist today."

The above statement that the Manapouri Power Station was paid for by NZAS as an argument for NZAS to continue using electricity generated by the Manapouri Power Station is fallacious. It is equivalent to a tenant claiming the right to continue renting a property because the landlord pays down a mortgage on the property from the rent received. Ownership and control of electricity generated from the Manapouri Power Station belongs to New Zealanders and not NZAS.

I recommend that Government carries out a study of the impact of Comalco continuing its current consumption of electricity when additional electricity will be needed by electric vehicles and electrification of the city to city New Zealand railway network.

Electrification of City to City Railway Network

The Draft Report addresses electrification of the North Island Main Trunk line and the advantages of doing so on page 310, but does not include a recommendation to electrify New Zealand's city to city railway network. The Draft Report assumes and endorses that market place forces alone will result a major transition from fossil fuelled vehicles to EVs by 2050. A major uptake of EVs is technically feasible, but is not necessarily viable given the high private costs of purchasing EVs and replacement of their batteries, whereas an essential electrification of New Zealand's railway network is both technically feasible and viable provided Government undertakes the commitment to do so.

I recommend that Government electrify the city to city New Zealand railway network.

References

1. Partnership for Market Readiness (PMR) and International Carbon Action Partnership (ICAP). 2016. *Emissions Trading in Practice: A Handbook on Design and Implementation*. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO.
2. PricewaterhouseCoopers. *Carbon Taxes vs Carbon Trading: Pros, cons and the case for a hybrid approach*. March 2009.
3. Chapman, I. The end of Peak Oil? Why this topic is still relevant despite recent denials. *Energy Policy* Vol. 64, 2014, pp. 93-101.
4. Carl, J. and D. Fedor. Tracking global carbon revenues: A survey of carbon taxes versus cap-and-trade in the real world. *Energy Policy* Vol. 96, 2016, pp. 50-77.
5. https://en.wikipedia.org/wiki/Tiwai_Point_Aluminium_Smelter
6. Letter of submission from New Zealand Aluminium Smelters Limited to Jonathon Young, Chairperson, Commerce Committee dated 12 March 2013. (Copy of letter is appended)



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Clerk of the Committee
Commerce Committee
Bowen House
Parliament Buildings
Wellington
Via email: edward.siebert@parliament.govt.nz

12 March 2013

Attn: Jonathon Young, Chairperson, Commerce Committee

Dear Sir

New Zealand Aluminium Smelter submission to Commerce Committee

New Zealand Aluminium Smelters Limited (NZAS) welcomes the invitation to make a submission to the Commerce Committee's consideration of the petition of Eric Roy MP requesting that "the House encourage the Government to see Meridian and Rio Tinto renegotiate a viable power supply contract to save Tiwai Point aluminium smelter, and note that 3,110 people have signed postcards supporting this request".

This submission sets out the background to the 40 year symbiotic relationship between NZAS and the Manapouri power station, NZAS's role in the Southland community and the New Zealand economy, the challenging economic factors affecting the viability of the smelter and how a renegotiated electricity contract is a critical element in the pathway back to viability.

At the time of writing (8 March 2013), NZAS is still in commercial negotiations with Meridian in respect of the electricity contract. Thus, we are unable to comment directly on the detail of those discussions. However, we hope our submission will provide members of the Commerce Committee with information that may assist them in their consideration of the matter. None of the information we have provided is confidential.

Context

NZAS is New Zealand's only aluminium smelter and is located on Tiwai Peninsula, across the harbour from Bluff, Southland. NZAS is 79.36 per cent owned by Pacific Aluminium¹ and 20.64 per cent owned by Japan's Sumitomo Chemical Company Limited. NZAS is a tolling plant, producing primary aluminium in the form of ingot, billet, and rolling block. The plant is supplied with alumina from several refineries in Australia. Around 90 per cent of the aluminium produced at NZAS is exported.

In the 1960s, Tiwai Point was chosen as the location for an aluminium smelter for a number of reasons. Aluminium smelting requires a large and very reliable power source to continually supply electricity to reduction cells, and Tiwai Point's proximity to the then proposed Manapouri Power Station made it an attractive location. In addition, Tiwai Point was close to the deep sea port of Bluff and the well-established infrastructure of Invercargill. The smelter commenced operations in 1971.

¹ This 79.36% interest in NZAS continues to be held by Rio Tinto Alcan (New Zealand) Limited. In October 2011, Rio Tinto announced that, following a strategic review, Rio Tinto was transferring its interest in NZAS and five assets in Australia to a new business unit (Pacific Aluminium) to be managed and reported separately from the Rio Tinto Alcan product group prior to divestment. See Rio Tinto's news release "Rio Tinto streamlines Aluminium product group", dated 17 October 2011 (the **Rio Tinto October 2011 news release**).

During the 1960s, the New Zealand government granted the then owners of the Tiwai Point smelter, Comalco, 99 year water rights in order to develop both the Manapouri Power station and the NZAS smelter. Due to financing difficulties, Comalco could not finance both the Manapouri power station and the NZAS smelter. In order to keep the option alive, the Holyoake Government of the day acted to accept the water rights back from Comalco and in return finance and build the Manapouri power station. The Government also committed to provide to Comalco a 93 year power deal (until 2060) to supply affordable power to the smelter. In return, Comalco agreed that the power price structure would cover the operating costs of the Manapouri Power Station, pay back the capital cost of construction and provide a premium.

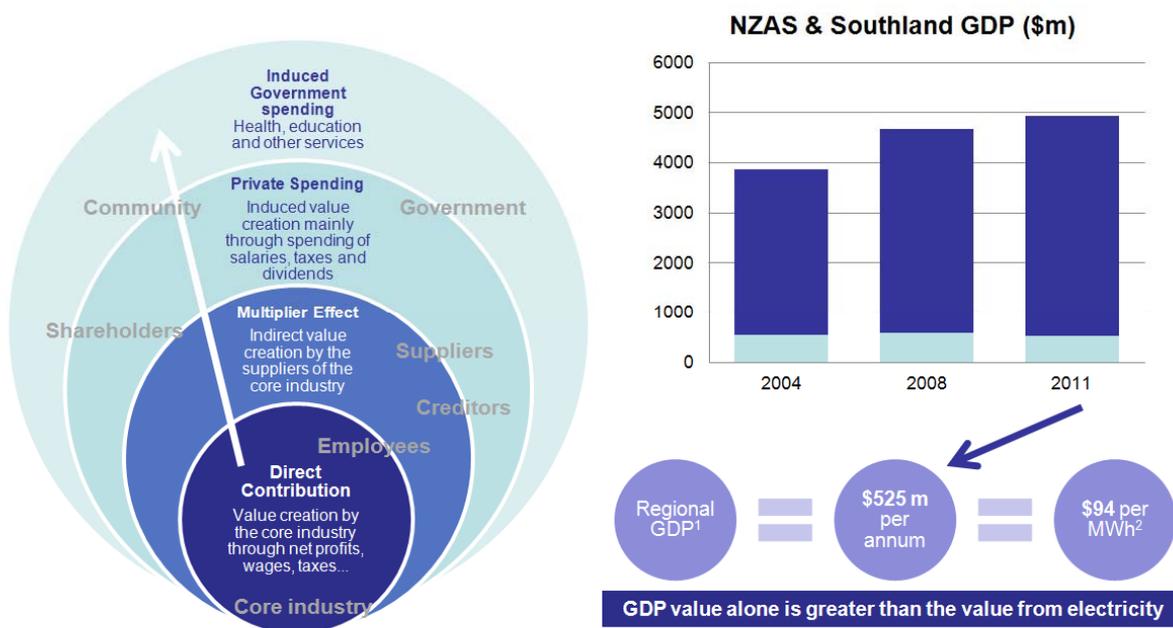
In short, Manapouri was built for a specific purpose – to provide long-term affordable power to the smelter, and the power station was paid for by the smelter owners, not the New Zealand tax payer. If the smelter had never existed, the power station would also not exist today.

Contribution to the Southland Community

NZAS contributes \$525 million to the Southland economy (10.5 per cent of Southland's GDP), 3,200 full time equivalent jobs and \$1,600 million in Southland regional sales (Figure 1). Export revenue is typically around \$1 billion each year. In addition to the financial contribution to the Southland economy, NZAS also contributes directly to the Southland community through a number of community projects and initiatives (details in Appendix 1).

Figure 1. Economic contribution of NZAS to Southland economy

The economic impact of the smelter on Southland goes further than just the direct contribution



¹ Infometrics, "Estimation of the Economic & Social Impacts of the Tiwai Point Aluminium Smelter to the Southland Economy, draft report to Venture Southland, Draft May 2012

² Values per MWh based on 630 MW supply to NZAS. This is greater than the average price paid by NZAS in 2011 of NZ\$. All values in \$NZ.

Potential impacts of NZAS closure

According to an independent economic study², closure of NZAS would have the following effects:

- A loss of \$464 million a year to the Southland economy (nine percent of the total regional GDP) which rises to \$525 million if demand-driven expenditure by central government on health and education is also included (this would then represent ten and a half percent of regional GDP).
- A direct loss of around 2,400 full time equivalent jobs, as well as up to 800 government-funded jobs in health and education (3,200 jobs displaced in total), taking into account all of the goods and services from industries that supply the smelter and the output from the industries that supply

² May 2012, *Estimation of the Economic and Social Impacts of the Tiwai Point Aluminium Smelter on the Southland Economy*, a report to Venture Southland prepared by Infometrics Ltd, p.1

goods and services to households that spend income earned at the smelter and supplying industries.

“Certainly in the short term, before other industries expanded or new industries established themselves, there would be a marked increase in unemployment and a substantial reduction in the [Southland] region’s GDP if NZAS [the smelter] were to close,” the report states.³

Closing the smelter would also deprive Southland’s port, South Port, of \$1.2 million in annual revenue which, according to South Port’s chief executive, Mark O’Connor, would have a significant impact on the port’s viability.

The long term fundamentals of aluminium are sound

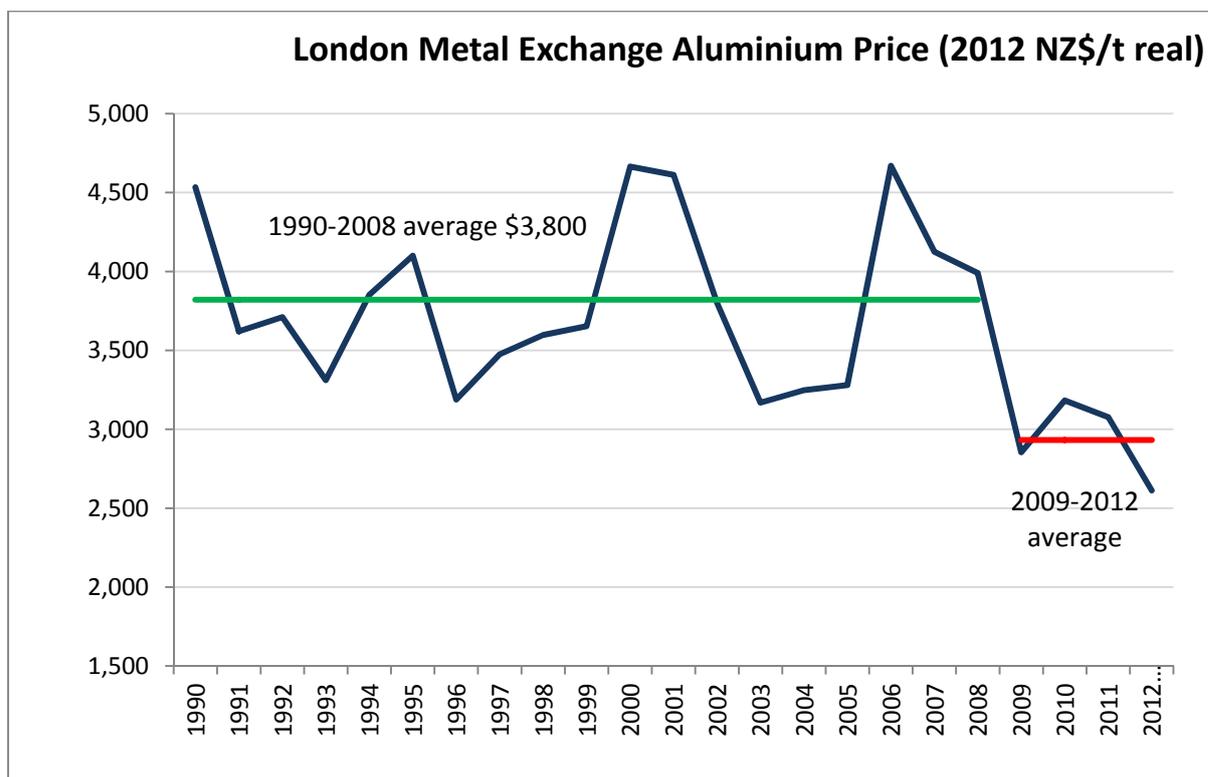
Aluminium metal has a strong future in a carbon constrained world. It has a greenhouse positive lifecycle because of its light weight and its ability to be repeatedly and economically recycled. Forecasts indicate that there will be considerable global demand for aluminium as its use increases with urbanisation. However, the question is who is going to make this aluminium? Hydro power should position New Zealand well as a global aluminium exporter, but the high cost of power at NZAS, compared to other smelters, may limit or eliminate this opportunity going forward.

However, the aluminium industry has fundamentally shifted in the medium term

While the industry is always cyclical, we believe the aluminium price is oscillating around a new mid-point which is significantly lower than recent averages. Currently, the market for aluminium is chronically over-supplied. Global inventory levels of aluminium increased in the global financial crisis and have not reduced. The main pressure is supply-side driven – from new low cost smelters and the industry’s slowness to reduce higher cost capacity. Industry fundamentals have changed. China now accounts for around 50% of global production and when combined with the Middle East and India accounts for two thirds of world production. Western China is expanding its aluminium production at an unprecedented rate. The European debt crisis has also had an adverse impact on demand.

The low US dollar means the industry in Australia and New Zealand is doing it tougher than during the global financial crisis (Figure 2). The situation in the Australian aluminium sector has been publicised. While the \$NZ is not as high as the \$A, there are challenges with operating in New Zealand, in particular, the high power prices, which are amongst the highest for an aluminium smelter outside China, coupled with a low metal price.

Figure 2. Aluminium price (1990-2012)

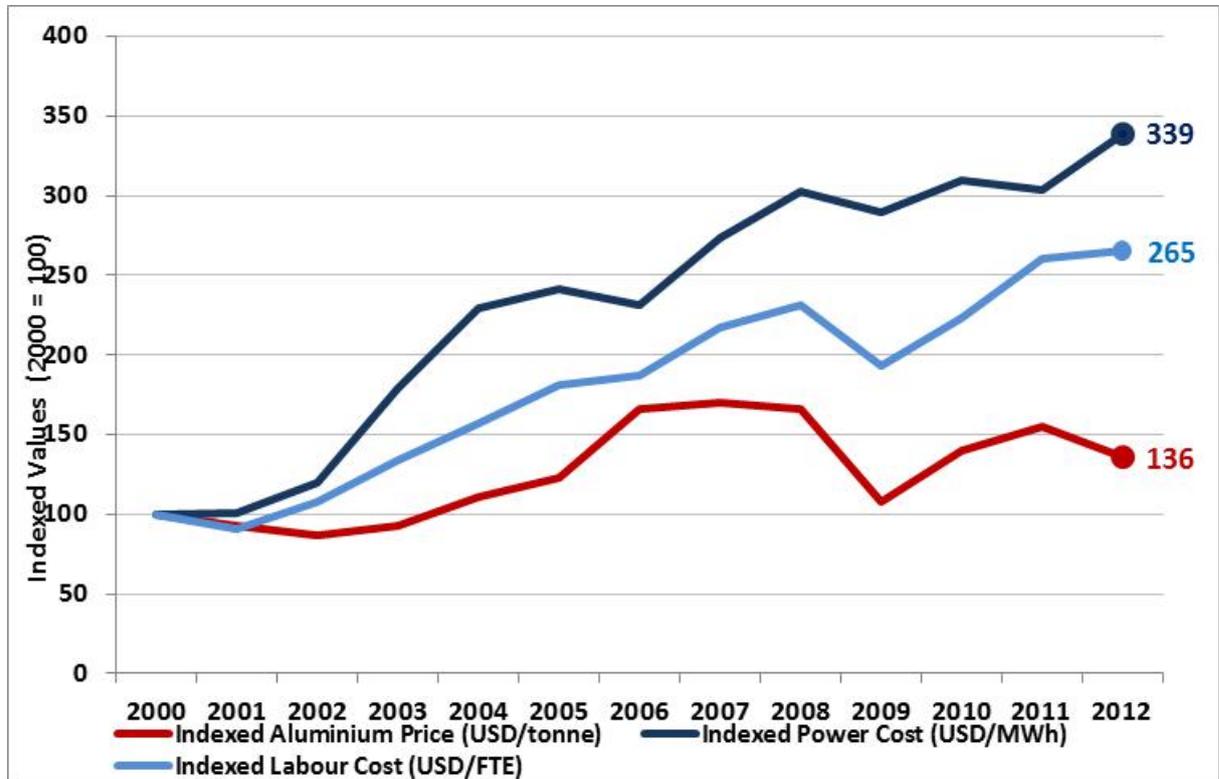


³ *Ibid.*

NZAS is under considerable financial pressure

Since 2000, NZAS' power costs have more than trebled and labour costs have more than doubled (Figure 3).

Figure 3. NZAS indexed cost break down (2000-2012)

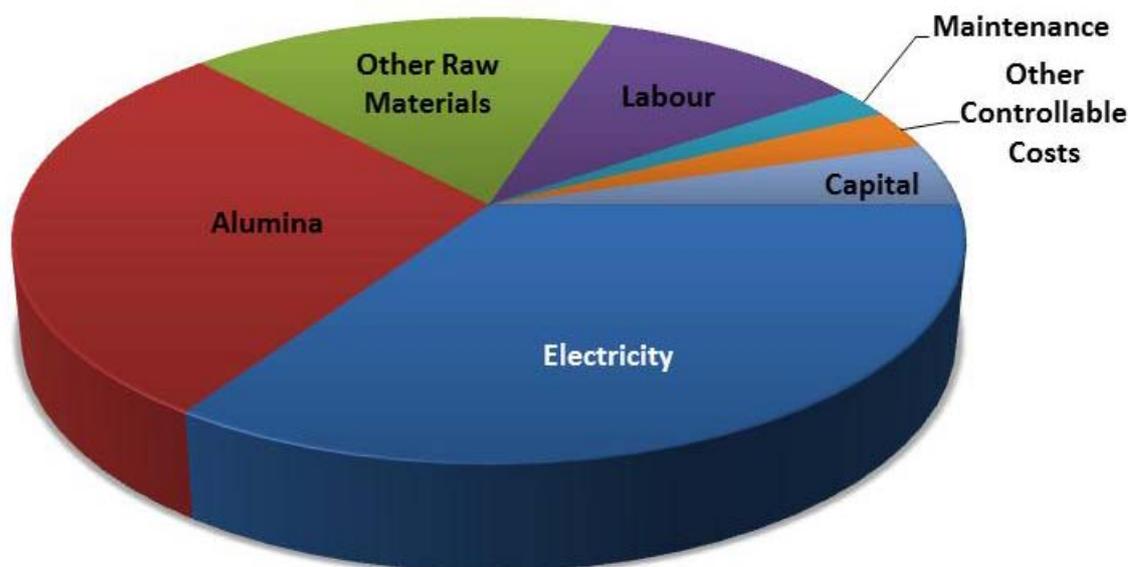


Rio Tinto announced in October 2011 that it was streamlining its aluminium product group with interests in six New Zealand and Australian assets transferred into a new business unit named Pacific Aluminium and to be managed and reported separately from Rio Tinto Alcan pending the divestment of Pacific Aluminium⁴. These assets include NZAS where, like the other assets within Pacific Aluminium, major change has been undertaken during 2012 to improve operating and financial performance and this work will continue in 2013.

While the improvements have been significant and ongoing, they were unable to bridge the gap to return NZAS to cash breakeven in 2012 on a whole of business basis. NZAS electricity cost is more than a third of its total cost structure, including alumina (Figure 4). For a typical smelter outside of China, electricity averages 25% of production cost, whereas NZAS expects electricity delivered to Tiwai Point to be more than 40% of production costs in 2013.

⁴ Rio Tinto October 2011 news release.

Figure 4. NZAS cash spend breakdown (2012)



The increase in the cost of power under the new contract with Meridian from 1 January 2013 is 14% and will increase to more than 23% on 1 April 2013⁵. This contract is one of the highest priced electricity contracts in the developed world for an aluminium smelter. In the absence of renegotiated terms, the Meridian Energy contract makes NZAS uncompetitive and financially unviable. This situation must be addressed for NZAS to remain in business. NZAS needs to be, and can be, financially viable, continuing to make a valuable contribution to Southland and the wider national economy.

The New Zealand Government has a long history of recognising the relationship between smelter and South Island generation, and the importance of ensuring that the value share between them is fair and reasonable. The Manapouri power station has been the main supplier of power to NZAS for over 40 years and the relationship between Manapouri and NZAS forms the foundation of Meridian Energy's portfolio. Over the years the value share has shifted significantly in Meridian Energy's favour, to the point where today Meridian Energy is making very substantial cash profits out of the arrangements, while the owners of NZAS are losing cash operating the smelter. This is not good business and cannot continue.

Status of Electricity Contract Negotiations

NZAS has been in discussion with Meridian Energy since July 2012 regarding its electricity contract. Eight months later we are still to reach a resolution.

Rio Tinto's recently appointed CEO, Mr Sam Walsh, has indicated an increased focus on divestment of assets such as Pacific Aluminium. While an advisory board has been appointed for Pacific Aluminium, the exact timeline and pathway for divestment has not yet been determined. It is clear however that NZAS's financial viability needs to be restored as expediently as possible if NZAS is to take its place in Pacific Aluminium. NZAS has already taken significant steps to return to viability by reducing its workforce by 100 people in 2012 and deferring maintenance and \$70 million of capital expenditure, but those measures alone have not been enough to return the smelter to viability or make it cashflow positive for its owners. A restructured electricity contract is the only way to secure the smelter's future.

If the smelter cannot be part of Pacific Aluminium, its future is unclear. It's hard to see it being attractive as a purchase proposition for some other party and Rio Tinto has made it clear that NZAS is no longer

⁵ The electricity agreement between NZAS and Meridian is not an electricity supply agreement but is, instead, a financial instrument. NZAS purchases its electricity directly from the New Zealand Electricity Market (**NZEM**), paying the spot price to the New Zealand Stock Exchange which acts to clear and settle payments. To manage its exposure to the NZEM spot price, NZAS entered into the electricity agreement with Meridian with the agreement starting on 1 January 2013. The key feature is a Contract for Differences under which NZAS pays Meridian the strike price and Meridian pays NZAS the spot price, with the difference between the strike and spot prices settled monthly. In effect, NZAS is paying a contracted strike price to Meridian for almost all of its electricity consumption.

aligned with Rio Tinto's strategy⁶. Having written down the asset⁷, there will be no further material hit to Rio Tinto's financial results in the event of closure.

Conclusion

For its part, NZAS is working hard to secure an agreement with Meridian Energy. Our commitment to reaching an agreement is not simply for commercial reasons albeit any business like the smelter must be financially viable to have an assured future. For four decades, the Tiwai Point smelter has been an integral part of Southland – the region's people and its economy. For four decades, the smelter has made a significant contribution to New Zealand's export receipts.

However, that contribution cannot come at any cost. If the smelter cannot return to viability, that contribution is in jeopardy. A renegotiated electricity contract is the most critical element for that pathway back to viability. Our hope is that we can settle on an electricity contract that is good for NZAS, good for Meridian, good for Southland and good for the New Zealand economy.

We commend our submission to the Commerce Committee for its consideration.

Yours faithfully



Ryan Cavanagh
General Manager

⁶ Rio Tinto October 2011 news release.

⁷ Rio Tinto news release "Rio Tinto impairments and management changes", 17 January 2013.

Appendix 1 – NZAS Contributions in Southland Community

In addition to the financial contribution to the Southland economy, NZAS also contributes directly to the Southland community:

- NZAS has been the major sponsor of the annual NZAS Southland Science & Technology Fair since 2003. The smelter not only provides sponsorship, but also provides a number of judges, administration support and an NZAS employee is on the committee. Students ranging from years 5 to 13 are required to investigate a topic of their choice using a scientific method of hypothesis, method, test and conclusions.
- Kiwi Can is a programme run by the Foundation for Youth Development, which aims to equip young Southlanders with a sense of self-worth and self-confidence, valuable life skills, an ability to take responsibility for their actions and a 'can-do' attitude to life. NZAS has been a proud supporter of Kiwi Can since the programme first commenced in Southland in 2004.
- NZAS has been the naming sponsor of the Coastguard Bluff rescue vessel ('NZAS Rescue') since 2004. Coastguard volunteers concentrate on regular patrols at weekends to enable them to be on hand for the increasing number of recreational boat users in the area.
- Twenty-seven cultural heritage sites have been identified on land owned and managed by the smelter. They include European burials and structures, as well as Maori sites such as middens/ovens, burials and an adze workshop. Wahi tapu, wahi taoka and mahinga kai are also present on Tiwai Peninsula. A Cultural Heritage Management System Plan is in place.
- NZAS' most significant partnership is 'Kakapo Recovery' - a partnership between the Department of Conservation (DOC), Forest and Bird, and NZAS. The programme aims to protect the critically endangered kakapo, of which only 125 remain in existence - all in New Zealand. NZAS has provided over \$4 million to Kakapo Recovery since 1990. In 2004, NZAS partnered with DOC to give employees the opportunity to provide practical assistance on the kakapo inhabited islands of Whenua Hou (Codfish Island) and Anchor Island. Duties undertaken include supplementary feeding and nest minding for kakapo, and general repairs and maintenance on the islands. To date NZAS employees have volunteered 988 days of their time to carry out this valuable work.
- The educational partnership between Southland Girls' High School (SGHS) and NZAS commenced in 2008 and is designed to encourage female students to pursue careers within the engineering and science fields. The students spend seven days on site carrying out selected projects. Since the partnership began 27 students have participated in the programme. The partnership continues to go from strength to strength each year.
- NZAS donated \$750,000 to the Christchurch Earthquake appeal.
- NZAS offers scholarships to dependent children of employees, who undertake full time tertiary study outside Southland. A number of community scholarships are also offered each year.
- End of year prizes are donated to a number of NZ universities, local high schools and the Southern Institute of Technology.