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Professor Ross Garnaut
Garnaut Climate Change Review
Level 2, 1 Treasury Place
Melbourne VIC 3002

Dear Professor Garnaut

**Australian Aluminium Council submission in response to the
Garnaut Climate Change Review Emissions Trading Scheme
Discussion Paper**

The Australian Aluminium Council (AAC) welcomes the opportunity to comment on the Garnaut Climate Change Review's Emissions Trading Scheme (ETS) Discussion Paper and to also comment on other issues of concern to the AAC in the development of an efficient Australian climate change mitigation response.

The Australian aluminium industry is described in the Annex to this submission.

The AAC is a member of the Australian Industry Greenhouse Network (AIGN) and shares the general views expressed in the AIGN submission made in response to the Discussion Paper. However, there are a number of specific points of detail that we wish to address further, particularly in respect of the treatment of emissions-intensive trade-exposed industries, such as alumina refining and aluminium smelting.

An Australian Emissions Trading Scheme

The aluminium industry supports the Australian Government's decision to introduce a national market-based ETS to address the challenges of climate change whilst recognising the importance of avoiding outcomes that result in emissions and production transferring internationally for no environmental gain.

Critical elements in establishing an Australian ETS that are "make or break" issues for the aluminium industry include:

- **Maintaining the international competitiveness of Australian emissions-intensive trade-exposed (EITE) industries, in the absence of a comprehensive international carbon signal;**
- **An allocation of permits covering direct and indirect emissions for both existing and new investments in emissions-intensive trade-exposed industries;**
- **permit security over an investment-relevant time frame that must be retained while key international competitors do not face a similar carbon cost;**
- **a practical, "best in class" benchmarking approach to ensuring best practice technology and performance is achieved by the industry;**
- **ensuring an effective market-based ETS is not damaged by other policy interventions such as renewable energy targets – and that steps taken to avoid prejudice to emissions-intensive trade-exposed industries are not negated by such policies now or in the future.**

Resolving the above will be critical for retaining competitive and robust Australian alumina and aluminium industries in the absence of a global ETS as well as retaining the opportunity to realise further investment and growth of the industry.

Treatment of emission intensive trade exposed industries

The AAC supports the allocation of permits for existing operations and new investment in trade exposed emissions intensive industries, for as long as is necessary, to offset the erosion of international competitiveness that would result from the introduction of an Australian ETS in the absence of a global carbon constraint.

The approach taken to address the allocation of permits for EITEs must be designed in compliance with WTO principles and Australian trade obligations.

A central issue will be the determination of industries that would be defined as emissions-intensive trade-exposed industries during the transitional period before a global scheme becomes operational. Criteria could include the following tests:

- emissions-intensive?
 - long life assets with limited short-medium term opportunities for capital stock turnover and introduction of new technology?
 - exposed to international trade from countries not subject to a carbon price?
 - large scale operations essential to achieve international unit cost levels?
 - capacity to pass on increased costs not borne by international competitors?
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Permit security for emissions-intensive trade-exposed industries

The security of EITE permit allocation will be critical to investment decision-making by the Australian aluminium industry. The risk of EITE permit allocations being withdrawn before our major international competitors face comparable carbon constraints would significantly discourage new and sustaining investment and job creation in Australian industry. This applies equally to the initial allocation of permits and any periodic review of permit allocation.

In 2007 the main competitors to the Australian aluminium industry were China (over 30% of world supply), North America (14 %), Russia (10%), Western Europe (10%), the Middle East (5% and growing) and Southern Africa. It would be essential for these major producers to be subject to a similar carbon constraint before EITE status is removed from the Australian aluminium industry.

Investment decisions on new production capacity (greenfields/brownfields) are based on 25 to 30 year investment timeframes; companies may not see significant returns from these capital intensive projects until 15–20 years after the decision to invest. It is essential that permit certainty is provided for new projects for at least 20 years from the start of production.

Indirect Emissions

To effectively address the competitiveness situation, EITE industries must receive permits equivalent to the emissions they emit directly plus permits equivalent to the emissions they are responsible for as indirect emissions. These indirect emissions should be subject to verification via contractual arrangements in relation to the level of “pass through” – or, in the absence of specified contractual provisions, be subject to a calculation of the number of permits needed to offset the estimated cost increases that has been passed through to the customer.

In the case of aluminium, the ETS exposure will be dominated by the impact from indirect emissions which account for in excess of 85% of total emissions.

Most of the aluminium industry in Australia, particularly smelting, but also some alumina refineries, currently relies on energy from third party providers. Aluminium smelters are also exposed to indirect emissions from inputs of alumina, currently equal to an average across the Australian industry of 1.5 tonnes CO₂-e.

In this regard the indirect emissions component must account for any specific contract arrangements between the EITE and the alumina and energy suppliers. This is because different suppliers will have different emission intensities and some contracts may bind an EITE to a particular supplier.

Permit allocation based on a national or state average CO₂-e emissions intensity could significantly disadvantage some companies and must be avoided.

The allocation of permits to EITEs must apply to both existing facilities and new or expanded facilities. The same logic that seeks to secure existing facilities applies to investment in new or expanded facilities; new investment in the Australian aluminium industry can only occur if international competitiveness is not jeopardised.

Best in Class Technology

It is appropriate to ensure EITEs use the best available technology to minimise greenhouse gas emissions. However, there are significant limitations in what technology

can be applied on a site by site basis. For example, an aluminium smelter built in the 1960s may not be able to achieve the emissions intensity performance of a smelter built in the 1980s. The vintage of a facility also potentially restricts the technology that can be deployed in refurbishment programs.

Best available technology should be determined by a “best in class” approach where the emissions efficiency of a facility is considered with respect to local power options, the age of the facility and its various technical limitations.

Setting an emissions budget

The AAC is concerned at suggestions of setting a specific Australian emissions budget out 40 years into the future (to 2050), given the level of uncertainty relating to future international actions and technological advances.

The AAC would be more comfortable with a firm budget, comprising of the sum of annual targets, for Australian emissions out to 2025 (ie the first 15 years of the ETS) with upper and lower ‘gateways’ for a further 15 years – and for rolling firm budgets/gateways to be extended out every five years.

New investment in emissions intensive trade exposed industries

The AAC supports the exclusion of new trade exposed emission intensive projects from the Australian emissions budget until a global agreement is realised or until specific sectors face a similar carbon constraint in the majority of competing supply locations.

Linkage of the Australian ETS to other emissions trading schemes

The AAC is concerned that linking, will result in Australia “importing” the emission price and volatility of the dominant scheme (ie the EU ETS) which may have significant economic consequences for Australia, particularly in the early formative years of the scheme.

While endorsing linkage in principle and recommending provision be made to enable linkage in the future to schemes compatible with our ET objectives/criteria, Australia should adopt a cautious approach, delaying a decision on any linkages to other (dominant) schemes for the first five years of trading to allow market experience (here and overseas) to mature.

Mechanisms under the Kyoto Protocol should be available to Australian firms to reduce the cost of emission reductions in the same manner as they are available to other Annex I Parties.

Price Caps

The AAC suggests a price cap in the initial phases of the ETS could avoid unintended permit price trajectories destabilising the immature national emissions market – with the opportunity for the Government to remove the cap when the evidence demonstrates that the market has stabilised in a range that does not continuously see the cap as the default price. The design should allow for movements in the cap level on three to five year notice.

Banking and borrowing

In the initial phases of the ETS, it is suggested that only limited banking and borrowing be allowed to enable firms to accommodate emission fluctuations (over and under) and avoid permit over- and under-outcomes as trading skills are developed within the emissions market.

Auction design and permit release

The AAC supports the comments by the AIGN on auction design and permit release, noting the need for separate rules for emissions-intensive trade-exposed industries.

Appendix 3 of the Discussion Paper

The AAC has reviewed the economic underpinning contained in Appendix 3 with keen interest.

We would note that the analysis describes the broad macroeconomic results for the economy. However, we recognise the importance of taking this analysis down to the microeconomic level and examining the implications and impacts at the sector and company levels.

In some industry sectors, there will be an expansion of activities and emissions will continue to grow (for example, alumina).

At the company or individual facility level (some firms are single facility operations), the ability to reduce output (and hence emissions) to levels below existing production levels may have severe financial consequences for the company. Unit costs of production could rise to a level that causes the loss of market competitiveness.

It should not be assumed that an individual facility, built to operate at 100% capacity, can continue as a profitable venture at various production levels below this optimum – the importance of economies of scale to maintain commercial viability must be recognised. The likely outcome at the sector level for realising a fall of say 15% in activity, is not for a smooth across the board reduction, but that the highest cost operation will be forced to close; this may not be the plant with the highest emission intensity nor the least efficient plant, but will reflect the economic circumstances facing the different operators – and a case of who blinks first.

An example of the difficulty for plant operations can be seen from the recent South African (ESKOM) decision to mandate an emergency 10 per cent reduction in power consumption by many large industrial users. Despite contract conditions for supply, and respecting the emergency situation faced by the country, BHP Billiton reduced its demand by the requested 10 per cent at the three aluminium smelters that it operates. However, BHP Billiton has indicated that this operating methodology (to deal with a longer-term reduction in power) is unsustainable – and now plans to take the bulk of the power reduction at one smelter.

Renewable Energy Targets (RETs)

The AAC is concerned that the economic viability and efficiency of the proposed ETS could be threatened by renewable energy targets (both existing and proposed) – and the AAC wishes to see the economic impact of the proposed 45,000 GWh RET identified within the economic modelling being undertaken for the ETS.

During the 2007 federal election the Australian Labor Party and now Federal Government announced a 20 per cent renewable energy target to be reached by 2020. The initiative seeks to bring together a patchwork of schemes operating at federal and state levels within the electricity sector.

This renewable energy intervention requires an increase in the existing MRET programme, set at 9,500GWh per annum to be achieved by 2010, to ramp up to

45,000GWh/annum by 2020. The required escalation in the penalty level (currently \$40/MWh) to pull-forward the required capacity to meet this increased target is expected to dramatically increase the cost of electricity in Australia.

The Australian aluminium industry recognises the importance of incentives for the development and deployment of practical renewable energy technology – the implementation of an ETS, is in itself, a stimulant for the broader adoption of renewable energy technology.

However, a renewable energy target cuts across the market-based approach to the management, and achievement, of emission reduction targets being realised in an economically efficient (least cost) manner.

Enforced consumption of high cost renewable energy “pulled’ into the market by market regulation is contrary to the operation of a competitive, efficient market economy - and contrary to the long struggle to reform the Australian electricity market.

Furthermore, the existing – and the proposed expanded – renewable energy target will damage the competitive situation of emissions-intensive trade-exposed industries and a similar approach for maintaining competitiveness (to that being considered for EITE industries under the ETS) is required to address this serious issue

Mandatory adoption of renewable energy technology represents a significant additional cost for companies that rely on large amounts of energy and where international competitive pressures limit the ability to pass these costs onto consumers.

Consideration must be given to the impact on international competitiveness from this measure in the same way as the Rudd Government has acknowledged the problem facing Australian emissions-intensive trade exposed industries from national ETS in advance of global action.

The potential for an increased renewable energy target to further undermine international competitiveness could be avoided by adopting a similar approach to that proposed for the ETS, whereby large trade-exposed electricity users are allocated RET permits to avoid an adverse impact on their international competitiveness. Similar tests to determine eligibility for permit allocation under the ETS could be established, substituting electricity-intensive for emissions-intensive.

The AAC thanks, in advance, the Garnaut Climate Change Review team for their consideration of the issues addressed above – and would be pleased to discuss these and any other matters that the Review team wishes to raise.

Yours sincerely

Ron Knapp
Executive Director

The Australian aluminium industry

The industry mines bauxite ore and, through significant processing stages, value-adds to the resource through transformation into alumina and aluminium.

Production is energy intensive and the sector operates in a highly competitive global market place. Export sales account for about 80% of Australian alumina and aluminium production. Our competitors include China, India, South Africa, Middle East, Brazil, Europe, Russia, Canada and USA.

Aluminium metal is traded on the London Metal Exchange (LME) which sets a global reference price against which aluminium is marketed around the world; alumina contract prices are normally set as a percentage of the aluminium metal price as quoted by the LME.

Australia was the world's leading producer of smelter grade alumina at 18.4 million tonnes in 2006 – with a projected 20 million tonnes production rate by the end of 2007 as current projects ramp up to full production. However, it is anticipated that China's alumina production will have eclipsed Australia in 2007. Aluminium production (1.94 million tonnes) remains at record levels.

Ensuring the industry is able to continue to operate in Australia, and grow, creates significant benefits to the Australian economy and its people. High regional benefits are generated by the industry through the location of the major facilities away from capital cities.

The Australian aluminium industry provided full-time employment in 2006 for over 20,000 persons within the industry, which when flow on employment is considered, represents an employment reach of around 60,000 Australian jobs.

The industry

- has very high value to the Australian economy;
- makes a significant contribution to the Australian workforce, particularly in regional areas;
- has no control over internationally set alumina and aluminium prices;
- relies heavily on export markets;
- has very limited power supply options within Australia;
- has long lead times to change energy supply options; and
- has long life assets.

Greenhouse Performance

The Australian Aluminium industry has not waited for emissions trading to respond to climate change and has made significant abatement gains and greenhouse gas emission reductions. For example direct emissions per unit of production are down 59% since 1990.

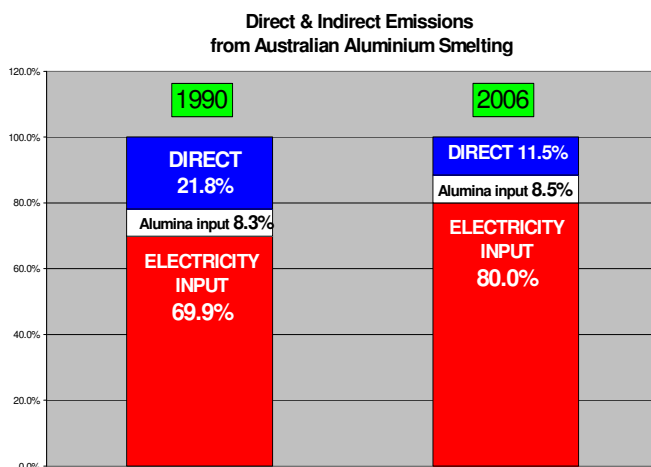
As an inaugural GH Challenge member, the aluminium industry recognised the issue of climate change and took early action to reduce CO₂-e emissions. The greenhouse gas

intensity of Australian aluminium smelting has fallen sharply over time, reflecting advances in emission controls and investment in efficiency technology.

With a production increase of 56 per cent since 1990, the changes in direct emissions per unit of production are impressive: falling from 5.05 tonnes of CO₂-e per tonne of metal produced in 1990 to 2.04 tonnes of CO₂-e per tonne of metal in 2006 – a reduction of 59 per cent.

Indirect emissions from electricity and alumina consumption in the aluminium smelting process have risen in absolute terms, reflecting growth in production. Importantly, indirect emissions growth has been at a rate well below the increase in production.

Indirect emissions from the consumption of electricity by Australian aluminium smelters are the dominant emissions for the industry – seven times greater than direct emissions – accounting for 80% of total emissions attributable to aluminium production. Indirect emissions from the alumina consumption account for a further 8.5% of total emissions ... leaving just 11.5% of total emissions attributable to direct emissions generated inside the smelter gate and falling within the control of the smelter operator.



Overall, the emissions intensity (including direct emissions and indirect emissions from both electricity and alumina inputs) of Australia's aluminium smelters in 2006 has improved 23 per cent since 1990. Our electricity performance can be seen in a global comparison:

Table 1: Regional Average Electricity Use for Primary Aluminium Production (kWh/tonne)

	2006
Africa and South Asia	14 622
North America	15 452
Latin America	15 030
Asia	15 103
Europe	15 387
Oceania	14 854
Weighted average	15 194

Source: International Aluminium Institute Electrical Power Used in Aluminium Production ES002 21 December 2007

Table 2: Regional Average Energy Use of Metallurgical Alumina Production (GJ/tonne)

	2006
Africa and South Asia	14.5
North America	11.9
Latin America	11.2
Europe	13.1
East Asia and Oceania	11.8
Weighted average	12.0

Source: International Aluminium Institute Electrical Power Used in Metallurgical Alumina Production ES012 21 December 2007

Growth in the alumina refining sector has been even higher than in aluminium smelting with a 64% increase in production from 1990 levels. During this period, growth in total industry CO₂-e emissions was only 29% higher, reflecting a 21% improvement in emissions intensity.

Table 3: Key Characteristics Comparison 1990:2006

Australian Alumina	2006	Variation on 1990
Production	18.4 Mt	+ 64%
Share of global production	28%	
Alumina export tonnage	14.7 Mt	+ 68%
Alumina export value	\$5.99 billion	+ 101%
Total alumina ghg emissions	13.9 MtCO _{2-e}	+ 29%
Per unit ghg emissions	0.75 t CO _{2-e} /t	- 21%
Australian Aluminium		
Production	1.94 Mt	+ 56%
Share of global production	5.8%	
Aluminium export tonnage	1.62 Mt	+ 73%
Aluminium export value	\$5.46 billion	+ 173%
Total direct ghg emissions	4.0 MtCO _{2-e}	- 37%
Per unit direct ghg emissions	2.1 tCO _{2-e} /t	- 59%
Total indirect ghg emissions from electricity	27.4 MtCO _{2-e}	+ 37%
Per unit indirect ghg emissions from electricity	14.2 tCO _{2-e} /t	- 12%
Total indirect ghg emissions from alumina	2.9 MtCO _{2-e}	+ 23%
Per unit indirect ghg emissions from alumina	1.5 tCO _{2-e} /t	- 21%
Total aluminium ghg emissions	31.4MtCO _{2-e}	+ 20%

Source: Australian Aluminium Council Sustainability Report 2006. Note: In the Report, indirect emissions from the alumina consumed in the smelting process are not included to avoid double counting these emissions.

The available data indicate that the Australian alumina and aluminium industry is a world-leading performer in greenhouse gas performance. For example, several large gas-powered Australian alumina refineries produce less than half the amount of greenhouse gases per tonne of alumina in comparison to Chinese alumina refineries. Energy intensity in Australia is also enhanced by the higher quality bauxite being processed.

The Australian aluminium industry is fully engaged with international actions under the voluntary global sustainability initiative of the International Aluminium Institute – and is a direct industry contributor to the work of the Aluminium Task Force under the Asia Pacific Partnership for Clean Development and Climate where the capacity for industry to address regional emissions is available and tangible. We are working in close

collaboration with our industry counterparts in China to achieve improved environmental outcomes within the industry.

In the absence of a global ETS, any leakage of existing or new investment to countries such as China, South Africa or the Middle East would both harm the Australian economy and, in many cases, be environmentally detrimental. Climate change is a truly global challenge and maintaining production and investment in countries with modern emission controls, relatively high greenhouse efficiency, a history of environmental improvement and a strong desire to achieve even more must be a sustainability priority.

A number of new investments have been identified for the sector in Australia:

- Bauxite: new mine in Cape York Qld around 6.5 million tonnes capacity: investment around \$0.7 – 1.0 billion.
- Alumina: three advanced projects around 6 million tonnes additional capacity; investment around \$10 – 11 billion.
two further projects under development, with around 2.2 million tonnes additional capacity: investment around \$4 billion.
- Aluminium: three advanced projects on hold pending resolution of electricity supply/pricing: around 525,000 tonnes additional capacity: investment around \$2.7 – 3.0 billion

A Key Value-adding Industry

The industry is a notable example of value adding within Australia through facilities refining bauxite into alumina and then the smelting of alumina to create aluminium. The loss of alumina refining and aluminium smelting opportunities would send Australia back down the value-adding ladder to being a bauxite quarry for the world – this is in direct contrast to the desire/intent of Australian governments and the industry. The following summarises the value adding role played by the Australian aluminium industry in 2006

Bauxite exports	5.6mt	\$131m [\$23/tonne]
Total value bauxite production	64mt	= \$1,472m
Alumina exports	14.5mt	\$5,427m [\$374/tonne]
Total value alumina production	18.4mt	= \$6,881m
Aluminium exports	1.62mt	\$4,939m [\$3,054/tonne]
Total value aluminium production	1.94mt	= \$5,924m

Source: ABARE Australian commodities vol. 14 no. 1 march quarter 2007

The Australian aluminium industry is export-focussed and trades in the global metals marketplace. The sector faces global competition from China, India, Canada, USA, Brazil, Europe, Russia, Middle East and South Africa.

This high reliance on the global market potentially exposes the industry to a significant competitive disadvantage if competitors do not face similar carbon price imposts to that resulting from an Australian ETS.

To date both Federal and State Governments within Australia have recognised the importance of a level playing field – which now needs to be carried forward as the detail of the Australian ETS policy is formulated.

During the 2007 federal election the Australian Labor Party explicitly acknowledged the importance of EITE recognition in an Australian ETS: “Labor’s Plan for a Stronger Resources Sector” committed the Rudd Government to:-

- “Ensure that Australia’s international competitiveness is not compromised by the introduction of emissions trading” and
- “Establish specific mechanisms to ensure that Australian operations of emissions intensive trade exposed firms are not disadvantaged by emissions trading.”

EITE recognition was integral to the 2007 Task Group evaluating the development of an Australian Emissions Trading Scheme (ETS) which proposed that EITEs receive a free allocation of permits to avoid prejudice to the international competitiveness of key Australian industries. Without this arrangement, global competitors not subject to a similar carbon cost would receive significant cost and market advantages which could result in growth opportunities being lost to Australia or even the closure of some Australian operations and associated job losses over the longer term.

The State based NETTS proposal also recognised the importance of maintaining competitiveness of EITEs , and proposed similar mechanisms of free allocation of permits until a level playing field existed internationally.

Alumina Refineries and Aluminium Smelters ... high energy users

Often used as a proxy for emissions intensity, energy forms a major component of the operating costs profile of both alumina refineries and aluminium smelters. Average costs estimated for the Australian industry by Commodity Research Unit (CRU) are shown in the following two tables:

Table 4: Alumina refining costs 2007 (% of site operating costs)

Bauxite	22.1%
Caustic Soda	18.3%
Labour	15.0%
Fuel*	22.0%
Power*	1.6%
Other Materials	6.6%
By-Product Credits	0.0%
Sustaining Equipment Costs	14.4%
SOC (Site Operating Costs)	100.0%

* Fuel and power costs combine to represent the total cost of energy
Data: CRU

Table 5: Aluminium smelting costs 2007 (% of site operating costs)

Alumina	43.3%
Potroom and Auxilliary Power (electricity)	19.0%
Carbon Plant + Potroom + Maintenance Labour	11.2%
Bath Materials and anode costs	9.9%
Relining Costs, repairs and maintenance	7.1%
Site Admin Costs	2.3%
Sustaining Equipment	2.6%
Casthouse Costs	4.6%
SOC (Site Operating Costs)	100.0%

Data: CRU

The amalgamated figure showing 19% of smelting costs arising from potroom and auxiliary power varies significantly based on local circumstances and can rise to more than 25% under some circumstances. Similarly, individual alumina facilities face a range of energy costs, depending on location and fuel source.

Including the energy used in the alumina refinery stage, the share of energy in aluminium operating costs rises to 29.2% - and for some individual facilities this is in the order of 35%. Energy is also the main component in anode costs.

Reference: [Australian Aluminium Council Sustainability Report 2006](#)
