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Joint Standing Committee on Northern Australia
https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Northern_Australia/Industries

30 January 2026

Dear Committee Chair;

Re: Preparing for emerging industries across Northern Australia

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and downstream processing industries. The aluminium industry has been operating in Australia since 1955, and over the decades has been a significant contributor to the nation's economy. Earnings for Australian exports of aluminium, alumina and bauxite are expected[1] to rise from $18 billion in 2025–26 to $19 billion in 2026–27. More than $14B of this comes from the alumina and aluminium industries, as value adding mineral processing sectors. The industry includes six bauxite mines which collectively produce over 100 Mt per annum, making Australia one of the world's largest producers of bauxite. Australia is the world's largest exporter of alumina with five alumina refineries producing around 18 Mt per annum of alumina. Australia is the seventh largest producer of aluminium, with four aluminium smelters and additional downstream processing industries including more than 20 extrusion presses. Aluminium is Australia's top manufacturing export. The industry directly employs more than 21,000 people, including 6,600 full time equivalent contractors. It also indirectly supports a further 55,000 families predominantly in regional Australia.

The Council welcomes the opportunity to make a submission to the Joint Standing Committee on Northern Australia, noting that the aluminium sector is relevant to most terms of reference including but not limited to:

a. The global transition to net zero and furthering renewable energy, decarbonisation and carbon abatement;
b. Developing the critical minerals industry;
c. Supporting the development of export industries;
e. Supporting the defence industry;
f. Supporting infrastructure;
h. Training, attracting and retaining a skilled workforce;
i. Empowering and upskilling local First Nations people; and
j. Barge landings and marine access for remote communities.

The Council's submission provides context for the industry in Northern Australia, while addressing the matters of interest to the Committee. As the Committee considers how to prepare Australia for emerging industries, retaining existing industrial capabilities will be vital.

The Council would welcome the opportunity to appear at one of the Public Hearings, should the Committee have any questions.

Kind regards,

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[1] https://www.industry.gov.au/sites/default/files/2025-06/resources-and-energy-quarterly-june-2025.pdf

1. Aluminium Industry Context

Aluminium is one of the commodities most widely used in the global transition to a clean energy future[2]. It is also recognised for its importance to economic development. Aluminium use is highly correlated with GDP, so as countries urbanise, per capita use of aluminium increases. It is expected that, by 2050, global demand for aluminium will nearly double[3]. While an increasing proportion will be met through recycled aluminium, there will remain a need for increased production of primary aluminium requiring a comparable increase in global bauxite mining and alumina refining rates.

Australia has a large resource and industrial base and has great potential for conversion to zero- and low-emissions industrial production including for export, with economic benefits to match. While industrial production is a major contributor to Australia's overall emissions, both directly and via consumed electricity, Australia's green industry ambition is linked to opportunities created by the global transition to net zero. Yet, as the Council has maintained throughout our dialogue with Government, the future of the industry in Australia cannot be taken for granted[4]. As articulated in recent work[5] undertaken by the Council, key risks include high energy costs combined with a high cost to decarbonise industrial processes, proactive industry policy among competitor nations, as well as regulatory complexity and uncertainty.

Without mining, the world cannot reach net zero by 2050, and the minerals required to achieve our decarbonisation goals are of such magnitude that we will need more mining, not less. While seeking to maintain Australia's highest ESG standards, global demand for minerals such as aluminium will continue to be met from elsewhere if not provided by Australia. Most of the world's bauxite comes from surface mines in tropical and sub-tropical areas, where bauxite typically occurs in extensive, relatively thin near-surface layers, normally beneath a few metres of overburden. Because bauxite deposits often cover a very large area, bauxite mining involves disturbance of comparatively large land areas compared to the mining of other minerals, although for a shorter time. Australian bauxite deposits have high grades and are shallow and relatively easy to mine. Bauxite mining is well suited to progressive rehabilitation.

Australia is one of the very few countries with bauxite mining, alumina refining, aluminium smelting and aluminium extrusion industries, making aluminium one of the few commodities in which the raw materials are mined and are processed all the way to a consumer product right here in Australia. However, the existing industry remains vulnerable to both domestic policy and geopolitical risk. This may increase the net global impact of mining, compared with continued development in Australia. While Australia has been the world's largest producer of bauxite and has 22% of global reserves, Guinea has 27% of global reserves and is now the world's largest producer and exporter of bauxite, principally to China. Whilst Western world production has been falling, China has secured its supply of bauxite by significant investment in bauxite mines in Guinea and has constructed low-cost alumina refineries on its coast to reduce freight costs. Indonesia is also increasing capacity across bauxite, alumina and aluminium. Recent analysis[6] undertaken by the Council found that Indonesia can approve and build an integrated bauxite mine and alumina refinery faster than Australia can approve a bauxite mine. Australia's mineral exports, such as bauxite and alumina, rely on bulk freight which has also undergone a step change in its volatility, exposing the industry to vulnerabilities. The long term future for the sector in Australia is positive, but it is under near term stress.

Australia's existing aluminium industry is already predominantly located in regional Australia (Figure 1) with three existing and three potential bauxite mines; two alumina refineries, one aluminium smelter and a high purity alumina plant all located in Northern Australia. The majority of the industry's employees live in the regions in which they work and there is often intergenerational employment at sites.

[2] https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action
[3] International Aluminium Institute High Substitution Scenario
[4] https://news.alcoa.com/press-releases/press-release-details/2024/Alcoa-announces-curtailment-of-Kwinana-Alumina-Refinery-in-Western-Australia/default.aspx
[5] https://aluminium.org.au/wp-content/uploads/2025/10/251024-Securing-a-Level-Playing-Field.pdf
[6] https://aluminium.org.au/wp-content/uploads/2024/10/241010-AAC-Upstream-Vulterabilities-Report-FINAL.pdf

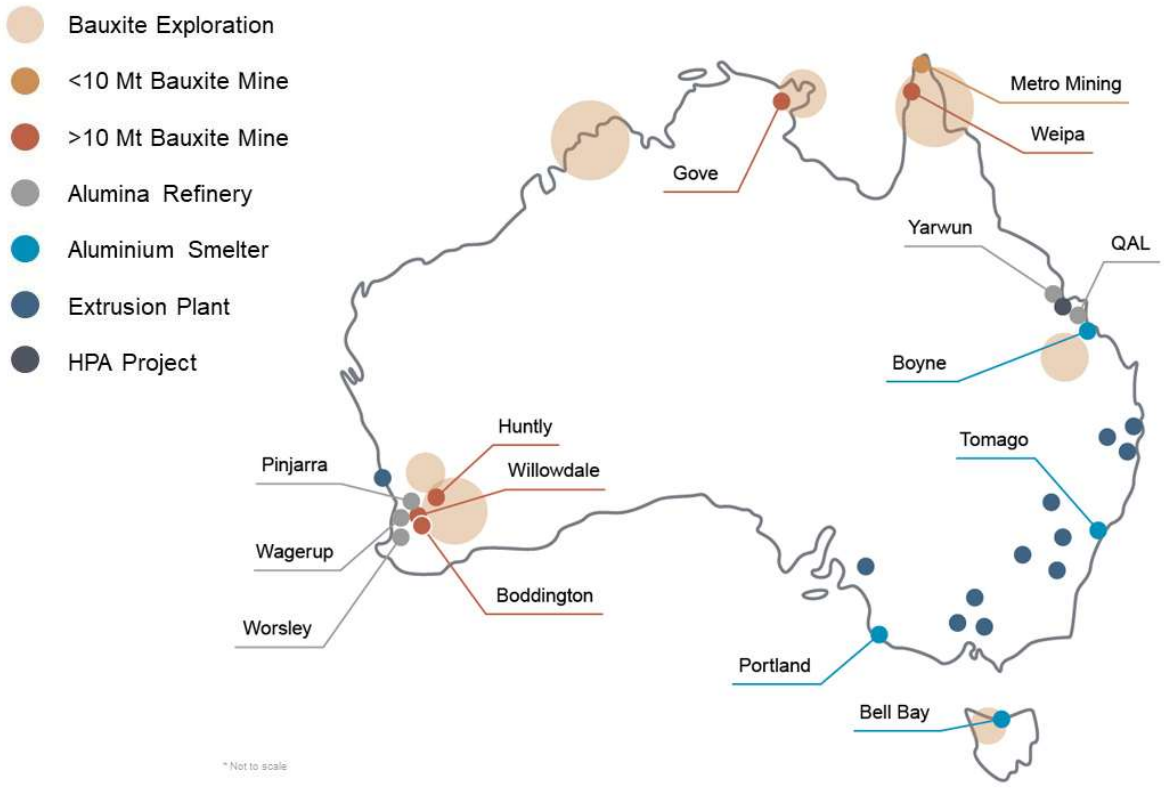

Figure 1. Aluminium Operations in Regional Australia

2. Response to Specific Terms of Reference

a. The global transition to net zero and furthering renewable energy, decarbonisation and carbon abatement

In 2022 the Mission Possible Partnership, in collaboration with the International Aluminium Institute, released Making Net Zero Aluminium Possible: A Transition Strategy for a 1.5°C-compliant Aluminium Sector[7] (the Strategy). The release of the Strategy was supported by the Council and its members. This work brought together companies across the global industry, including those operating across the value chain in Australia. The Strategy recognised that it is possible to meet rising aluminium demand, reduce emissions from the sector to net zero by 2050, and align with a 1.5°C target. The Strategy also highlighted that a global investment of approximately US$1 trillion will be required for the aluminium sector transition, including significant investment to supply the required zero-emissions electricity. Considering the size of the Australian aluminium industry (~3% of the global industry), this equates to an investment of US$30bn to deliver the same outcome. The Strategy outlines not only actions the industry needs to take, but also actions required by Governments to support this. In particular, developing policy that is predictable, stable and transparent to enable businesses to confidently plan for the substantial investment that comes with a commitment to decarbonisation. Governments also have a vital role to play designing markets to support the transition, particularly for the energy and electricity sectors.

The Australian Renewable Energy Agency (ARENA), in consultation with Alcoa, Rio Tinto and South32, has published a Roadmap for Decarbonising Australian Alumina[8]. The Roadmap identifies four key themes for decarbonisation that could transform the way alumina refineries consume and use energy by enabling the uptake of renewables and removing the use of fossil fuels. It also provides a framework for future policy and investment decisions and serves as a call to action to collaboratively transition the sector into an industry at the forefront of the transition to net zero.

[7] https://missionpossiblepartnership.org/wp-content/uploads/2022/10/Making-1.5-Aligned-Aluminium-possible.pdf
[8] https://arena.gov.au/assets/2022/11/roadmap-for-decarbonising-australian-alumina-refining-report.pdf

Replacing carbon anodes with non-reactive or inert anodes would remove both the carbon dioxide and PFCs emitted during the smelting process (about 95% of the scope 1 emissions associated with a smelter). However, inert anodes could potentially increase the voltage requirements of a smelter, so are best applied in conjunction with low or zero carbon electricity, to ensure the reductions are not offset with increased indirect emissions. Additionally, retrofitting of this, or any other new technology, in Australia's aluminium smelting industry would require substantial capital investment and could only be undertaken when combined with internationally competitive long-term electricity contracts. Australian smelter operators Rio Tinto and Alcoa are involved in a joint venture with Apple and the Government of Quebec, with funding assistance of the Federal Government in Canada on the Elysis[9] process which would remove the use of carbon in the direct smelting process. The Mission Possible Strategy[7] indicates that technologies, such as inert anodes are not expected to be ready for large-scale deployment before 2030.

In 2024, Scope 1 and 2 emissions from Australia's integrated aluminium industry (bauxite, alumina and aluminium) were about 30t CO2-e, which was almost 7% of Australia's national emissions (Figure 2). Energy typically accounts for 30-40% of the industries' cost base, and therefore energy efficiency is a key focus for these processes.

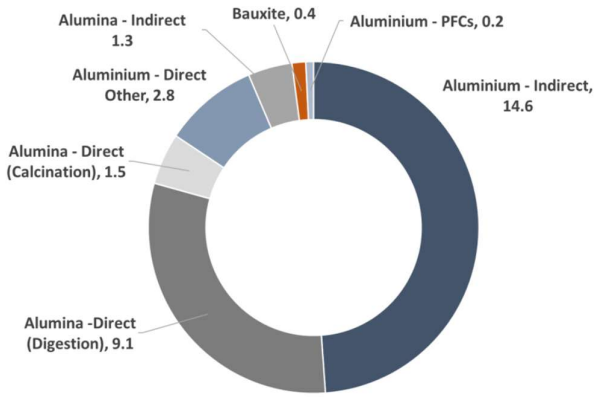

Figure 2. 2024 Industry Emissions (Mt CO_2-e)

Globally, there is a focus across industry to find solutions for the technology challenges required to decarbonise, including the use of hydrogen based technologies. There is an opportunity for Australia to lead the world in development and implementation of these technologies, capitalising on Australia's national advantages, providing jobs and value to the economy. The Council has produced a series of five detailed factsheets to help articulate the technology pathways:

1. Australia's role in a global aluminium decarbonisation pathway;
2. How Australian bauxite will help meet global demand for aluminium;
3. Australia's role in developing low carbon alumina refining technologies for the world;
4. The role of Australia's aluminium smelters in providing baseload stability in a decarbonising grid; and
5. Decarbonisation of Australia's electricity supply, which the Council sees as the single biggest opportunity to decarbonise the vertically integrated domestic aluminium industry.

The Council updates these factsheets annually; reflecting not only progress in decarbonisation in the industry; but also updating the industry's views of the evolution of decarbonisation technologies, based on research undertaken in Australia and through global partnerships. A summary of key Australian aluminium industry initiatives is provided in Table 1, many of which are occurring already in northern Australia.

Table 1 Key Australian Aluminium Industry Initiatives

[9] https://www.riotinto.com/en/news/releases/2025/elysis-achieves-breakthrough-with-commercial-size-cell

Activity	Link
Affreightment Carbon Reduction	https://www.combinationcarriers.com/insights-and-news/2022/1/4/kcc-and-south32-conclude-first-sustainability-linked-contract-of-affreightment
ARENA Roadmap for Alumina	https://arena.gov.au/knowledge-bank/a-roadmap-for-decarbonising-australian-alumina-refining/
Electric Calcination Study	https://arena.gov.au/projects/alcoa-renewable-powered-electric-calcination-pilot/
Gladstone Renewable Request for Proposals / PPAs	https://www.riotinto.com/news/releases/2022/Rio-Tinto-calls-for-proposals-for-large-scale-wind-and-solar-power-in-Queensland https://www.riotinto.com/en/news/releases/2024/rio-tinto-to-drive-development-of-australias-largest-solar-farm-at-gladstone https://www.riotinto.com/en/news/releases/2024/rio-tinto-signs-australias-biggest-renewable-power-deal-as-it-works-to-repower-its-gladstone-operations
HILT CRC	https://hiltcrc.com.au/
Hydrogen Calcination Study	https://arena.gov.au/projects/rio-tinto-pacific-operations-hydrogen-program/
Hydrogen Pilot Plant	https://www.riotinto.com/news/releases/2021/Rio-Tinto-and-Sumitomo-to-assess-hydrogen-pilot-plant-at-Gladstones-Yarwun-alumina-refinery
Mission Possible Partnership	https://missionpossiblepartnership.org/wp-content/uploads/2022/10/Making-1.5-Aligned-Aluminium-possible.pdf
Refinery of the Future	https://www.alcoa.com/global/en/stories/releases?id=2021/11/alcoa-to-design-an-alumina-refinery-of-the-future
Rio Tinto and GMG	https://graphenemg.com/gmg-riotinto-energysavings-battery/
Spinifex Wind Farm (Portland)	https://arena.gov.au/news/offshore-wind-could-power-portland-aluminium-smelter/ https://www.spinifexoffshore.com.au/#/
Tomago Aluminium Renewable Future	https://www.tomago.com.au/tomago-aluminium-future-renewable-energy-needs/
Weipa Solar and Battery Capacity	https://www.riotinto.com/news/releases/2021/Rio-Tinto-to-triple-Weipa-solar-capacity-and-add-battery-storage-to-help-power-operations https://www.riotinto.com/en/news/releases/2023/rio-tinto-approves-new-solar-farm-and-battery-storage-to-power-its-amrun-bauxite-operations-on-cape-york
Worsley Boiler Conversion	https://www.south32.net/news-media/latest-news/worsley-alumina-converts-first-boiler-from-coal-to-natural-gas
Yarwun Hydrogen Calcination Pilot Demonstration Program	https://www.riotinto.com/en/news/releases/2023/rio-tinto-and-sumitomo-to-build-gladstone-hydrogen-pilot-plant-to-trial-lower-carbon-alumina-refining https://arena.gov.au/projects/yarwun-hydrogen-calcination-pilot-demonstration-program/

b. Developing the critical minerals industry;

Bauxite, Alumina and Aluminium as Critical Minerals

Critical minerals are essential to modern and advanced technologies, including computers, heavy industry, defence, and renewable energy. However, these commodities are exposed to risks of supply chain disruption or bottlenecks, a feature which makes them 'critical'. Different countries use different approaches to define critical minerals or 'criticality'. These include an assessment of economic importance weighted against a measure of vulnerability.

Often, vulnerability relates not just to the source of a mineral's primary ore or its global distribution but also factors related to the supply chain, such as processing locations. Other assessments may recognise vulnerability as it relates to specific uses, such as defence. Each country has its own needs and vulnerabilities, and therefore, their critical minerals lists may vary.

In Australia, aluminium[10] is not included as a critical mineral as the supply chain was not deemed to be sufficiently "vulnerable" during the last assessment in December 2023. The Critical Minerals Strategy[11] indicates that list should be reviewed at least every 3 years, as recommended by the Critical Minerals Strategy (p. 44). The Critical Minerals list is due to be updated in 2026, however, the Minister for Resources is also able to review and update the list to reflect 'global strategic, technological, economic or policy changes', as was the case when nickel was added in February 2024[12].

Bauxite, alumina and aluminium but are included on some State critical minerals lists, such as in Queensland. Aluminium is included as a Federal Strategic Material, but this listing lacks any other supporting policy framework. Australia's failure to address this is a lost opportunity in its policy setting framework.

The Government should, as a priority, review the Critical Minerals strategy to address the changing geo strategic risks and align with global definitions and the needs of our strategic trading partners. Australia is now increasingly out of step with our peers. The new strategy should be stratified to address the different phases of critical mineral production in Australia. This would acknowledge the different policy measures including funding, strategic reserves and any export restrictions on the different minerals. Bauxite, alumina and aluminium should be included as critical minerals, noting their importance to not only the energy transition and sovereign capability, but for defence, trade and geopolitical reasons.

Indonesian Government Approach – Nickel and Bauxite

Following the implementation of the export ban on nickel ore, and the jump start this policy provided to the Indonesian domestic nickel processing industry, the Indonesian government banned bauxite exports in December 2023. This fundamentally changed the bauxite and alumina sector and, within a year, Indonesia flipped from being an exporter of raw bauxite a net exporter of alumina.

At the opening of a new plant in 2024, President Joko Widodo said: "The construction of this smelter is our effort to prepare Indonesia to transform into an industrial country, by processing our own natural resources and no longer exporting raw materials. Let's stop exporting raw materials and process them ourselves because the added value will be enjoyed by our community, our country,". In his remarks, the President also highlighted Indonesia's success in increasing the added value of products such as nickel. Before 2020, raw nickel exports only generated US$1.4 to 2 billion, but after the implementation of the policy of stopping raw material exports, the added value jumped to US$34.8 billion in 2023.

Mirroring its success in the nickel sector, the Indonesian Government now provides a variety of incentives to attract investment into bauxite, alumina and aluminium. These incentives include tax breaks, import duty exemptions for machinery and equipment, and streamlined licensing processes. Additionally, the government offers infrastructure support, such as access to reliable electricity supply and industrial parks dedicated to the aluminium industry. The rapid expansion being observed in alumina and aluminium mirrors Indonesia's successful strategy in nickel, where it leveraged similar policies to become the world's dominant supplier.

According to the 2024 US Geological Survey[13], Indonesia has resources of 1 billion tonnes of bauxite. In 2024, Indonesia was the world's 9th largest producer of bauxite and 7th largest producer of alumina[14], with capacity of around 1.3 Mt alumina in 2024.

[10] Elemental name, does not expressly include bauxite or alumina
[11] https://www.industry.gov.au/publications/critical-minerals-strategy-2023-2030
[12] https://www.minister.industry.gov.au/ministers/king/media-releases/nickel-placed-critical-minerals-list
[13] https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-bauxite-alumina.pdf
[14] https://aluminium.org.au/wp-content/uploads/2025/04/J008227-AAC-TRADE-AND-COMPETITIVENESS-FACTSHEET-APRIL-2025_FINAL_WEB.pdf - data sourced from Department of Industry, Science and Resources.

Indonesia's alumina refining sector is witnessing unprecedented development activity with at least three new alumina refineries to begin operations in 2025, and at least three additional refineries are expected by the end of 2027. These expansions will increase Indonesia's processing capacity more than 500% within five years[15]

The smelting landscape is similarly transformative with two aluminium smelters already operational and four additional smelters are expected to come online by 2030, according to Goldman Sachs. Tsingshan's first aluminium smelter was commissioned in 2023, with a significantly larger facility scheduled to begin production in 2026.

There are a range of forecasts for Indonesia's alumina capacity by 2030 (Figure 3), ranging from around 6 Mt per annum to 25 Mt[16] per annum (if all 11 projects either under construction or potential) were constructed. Assuming most global growth comes from Indonesia 6Mt would see it move to 5th in global ranks whereas 25 Mt would see it overtake Australia and be second only to China.

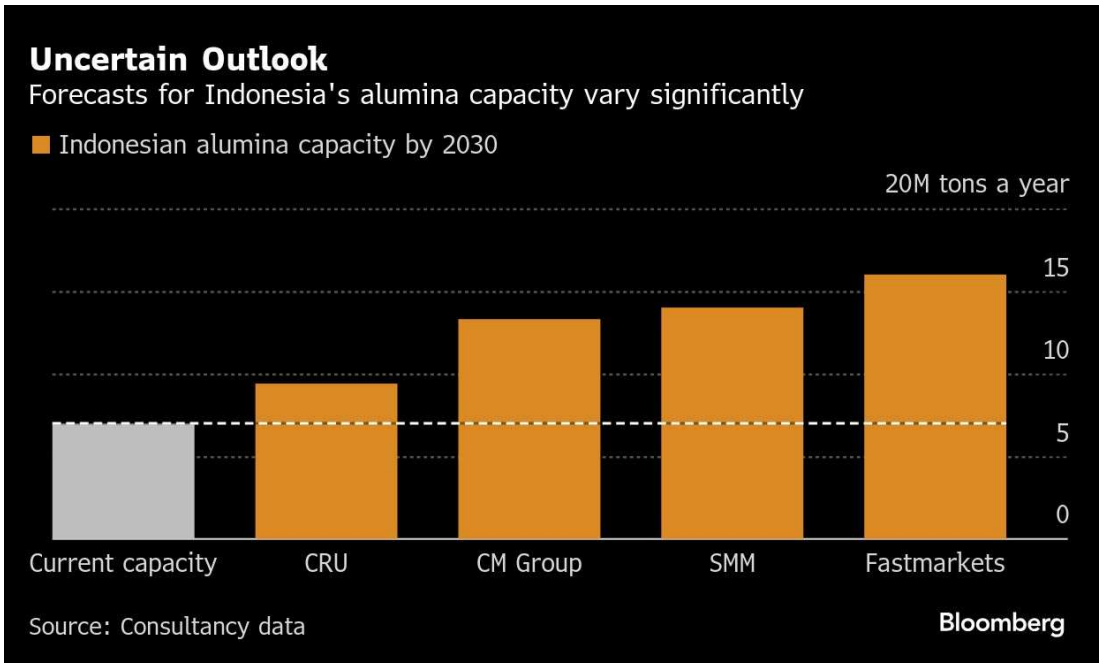

Figure 3 Indonesian Alumina Supply Forecasts to 2030[17]

Industry experts project that global alumina markets could transition from current relative tightness to potential oversupply by 2026-2027 as the first wave of Indonesian projects reach full production. This shifting market balance will likely create downward pressure on prices, particularly during periods when global aluminium demand growth fails to keep pace with alumina supply expansion. If that happens, the alumina market could tip from tight supply into surplus within two years.

Indonesia's geographic proximity to major Asian markets may also create regional price differentials that favour Indonesian producers. Transportation cost advantages could allow Indonesian suppliers to offer more competitive pricing compared to Australian or Atlantic Basin producers, potentially creating segmented pricing structures in global markets. These regional differentials could force higher-cost, geographically disadvantaged producers to accept price discounts to maintain market share, further compressing margins and challenging their long-term viability.

[15] https://discoveryalert.com.au/news/chinese-tycoons-transforming-indonesia-aluminum-industry-2025/
[16] https://www.metal.com/en/newscontent/103308422
[17] https://www.mining.com/web/chinese-tycoons-are-turning-indonesia-into-an-aluminum-giant/

The entrance of significant new low-cost capacity will likely reshape the global alumina cost curve, creating pressure on higher-cost producers. Facilities in the upper quartiles of the cost curve will face increasing margin pressure, potentially forcing rationalization of less competitive operations in established mining jurisdictions.

The Council first publicly called upon the Government to include bauxite, alumina and aluminium on the Critical Minerals list in early 2023[18]. By mid-2023, the Council was drawing attention to the increased risk from Indonesia and, in 2024[19], the Council undertook a comparison of costs and delays impacting Australia's upstream bauxite and alumina sectors[20] due to increased geopolitical risk combined with rising costs and prolonged regulatory approvals; particularly compared to growth in Indonesia.

The 2024 CM Group Report[21] highlighted that while Indonesian refineries are set to expand alumina capacity by 2030, Australia faces mounting challenges, including rising capital, labour, and energy costs, compounded by lengthy regulatory approvals; and that increased production from these new Indonesian refineries would force Australia's refineries up the cost curve. Since the CM Group report was released a year ago, growth forecasts in Indonesia have become more aggressive and the risk of the market being long in alumina, risking price collapse, have grown substantially.

The Council has repeatedly called upon the Government to review the Critical Minerals strategy list to address the changing geo strategic risks and align with global definitions and the needs of our strategic trading partners. Australia is now increasingly out of step with our peers. The new strategy should be stratified to address the distinct phases of critical mineral production in Australia. This would acknowledge the different policy measures including funding, reserves and any export restrictions on the different minerals. The Council has also requested that bauxite and alumina be eligible for the Critical Mineral Production Tax Incentive[22].

The current inclusion of aluminium on Australia's Strategic Mineral List acknowledges the metal's importance in the transition to net zero but does not come with any policy support. The Strategic Minerals list is a 'watchlist' of minerals that would meet the criteria for being a Critical Mineral but are not currently considered vulnerable to disruption. In October 2024[23], the Council said that it did not want bauxite, alumina and aluminium to become the new nickel, acknowledging that the Government's decision to move it to the Critical Minerals list in February 2024 was too little too late. Since then, the threat has only grown, but the Government has taken no action to address the risk.

Opportunities for new Critical Minerals

The strong existing vertically integrated aluminium industry, with a regional manufacturing base in Australia, enables existing industry to be leveraged to create new manufacturing opportunities. Strengthening our national manufacturing capabilities now will put Australia in the strongest possible position to meet these future forecasts for not only traditional commodities such as bauxite, alumina and aluminium, but also other emerging aluminium related commodities like gallium, vanadium, high purity alumina (HPA), aluminium fluoride, aluminium alloys and aluminium salts, noting that these are already classified as critical minerals in Australia and some are also included in the strategic reserve.

Gallium

Gallium is naturally present in bauxite, the raw material used in the production of alumina, and can be extracted during the refining process. Gallium is a critical mineral essential to technology, especially the semiconductor

[18] https://aluminium.org.au/news/aac-submission-on-australias-critical-minerals-strategy/ and https://aluminium.org.au/news/incoming-president-of-the-australian-aluminium-council-calls-for-bauxite-alumina-and-aluminium-to-be-formally-recognised-as-critical-minerals-in-australia/

[19] https://aluminium.org.au/news/australian-aluminium-council-renews-call-for-inclusion-of-bauxite-alumina-and-aluminium-on-critical-minerals-listing/

[20] https://aluminium.org.au/wp-content/uploads/2024/10/241010-AAC-Upstream-Vulterabilities-Report-FINAL.pdf

[21] https://aluminium.org.au/wp-content/uploads/2024/10/241010-AAC-Upstream-Vulterabilities-Report-FINAL.pdf

[22] https://www.industry.gov.au/mining-oil-and-gas/minerals/critical-minerals/critical-minerals-production-tax-incentive

[23] https://aluminium.org.au/wp-content/uploads/2024/10/AAC-Media-Release-Inclusion-of-Bauxite-Alumina-and-Aluminium-on-Critical-Minerals-Listing-No-embargo-wording-1.pdf

industry and defence sectors and is recognized as vital to national security by the United States, Australia and Japan. Globally, gallium production is concentrated from a single source, and market controls have heightened interest in establishing and securing alternate supply chains.

In 2025, the Australian and United States Governments[24] announced a package of support to advance the development of a gallium plant to be co-located at Alcoa's Wagerup alumina refinery in Western Australia. While this plant is not located in Northern Australia, it confirms the opportunity this may present in Australia.

Fluorine

While the majority of Australia's aluminium supply chain is vertically integrated, like many manufacturing processes, it relies on critical inputs including a range of feed materials, which are needed to sustain this value chain. An example is aluminium fluoride, which is essential for aluminium smelting. It is analogous to AdBlue[25] for diesel. No aluminium fluoride is produced in Australia, so Australian aluminium smelters are entirely reliant on imported aluminium fluoride. In fact, Australia is the largest producer of primary aluminium metal that does not produce any aluminium fluoride.

ABx subsidiary ALCORE Limited (Alcore) is proposing to build a $16.4M aluminium smelter bath recycling plant in Bell Bay, Tasmania. The plant is proposed to transform 1,600 tonnes per year of an aluminium smelter by-product into hydrogen fluoride, the precursor chemical for all fluorochemicals including aluminium fluoride. The potential to establish domestic aluminium fluoride production will help protect the aluminium industry from supply chain disruption and increase Australia's manufacturing resilience and capability. This increase in the security of supply for Australian aluminium smelters will also create highly skilled manufacturing jobs, and the production of aluminium fluoride from aluminium smelter bath is an excellent illustration of the circular economy.

Fluorine is also an essential for the conversion of rare earth oxides to rare earth metals, so the production of hydrogen fluoride in Australia will support the production of rare earth metals in Australia. Iluka Resources is conducting a ~$15m study[26] into the production of rare earth metals at its Eneabba rare earths refinery that is under construction.

c. Supporting the development of export industries;

j. Barge landings and marine access for remote communities

Australia's bauxite production is around 100 Mt per annum, of which 40% is exported and 60% is value added domestically[27]. In 2024, Australia produced 17.5 Mt of alumina, of which around 85% is exported, making Australia the world's largest exporter of alumina.

Additionally, there may be lessons to be learned from innovative developments in the bauxite mining and export industry. For example, Metro Mining's adoption of a transhipping export model, enabled by the purpose-built offshore transhipping terminal, *Ikamba*, represents a material and novel shift in the way bauxite is exported from Northern Australia[28]. This approach departs from traditional port-based bulk export infrastructure and introduces a lower capital, flexible, lower-impact, and highly scalable solution that is particularly well suited to smaller scale resources in remote regions.

The use of *Ikamba* allows bauxite to be loaded offshore from barges into large ocean-going vessels, eliminating the requirement for deep-water ports, extensive dredging, or permanent wharf infrastructure. This transhipping model fundamentally changes the export paradigm by decoupling mine viability from proximity to established ports. As a

[24] https://news.alcoa.com/press-releases/press-release-details/2025/GOVERNMENTS-ANNOUNCE-SUPPORT-FOR-ALCOAS-GALLIUM-CRITICAL-MINERAL-DEVELOPMENT-PROJECT-IN-WESTERN-AUSTRALIA/default.aspx

[25] https://minister.dcceew.gov.au/bowen/media-releases/securing-supply-diesel-exhaust-fluid-keep-australia-moving

[26] https://www.iluka.com/media/5x4fkb2s/230822-h1-2023-results-presentation_vf.pdf

[27] https://aluminium.org.au/sustainability-main/sustainability/

[28] https://metromining.com.au/wp-content/uploads/2025/06/CR_AH_MMI_20240704_1ef0c9734c904dac9e85df8d80e59d791.pdf

result, resources projects in Northern Australia that were previously constrained by capital-intensive infrastructure requirements and minimum scale can be developed and exported efficiently.

By avoiding the construction of fixed port facilities, Metro Mining's transhipping process materially reduces upfront capital expenditure and long-term maintenance obligations. The mobile nature of *Ikamba* and its supporting tug and barge fleet also lowers development risk by allowing export capacity to be scaled progressively with production ramp-up, rather than requiring full infrastructure commitment at project inception. This flexibility enhances project economics and improves resilience to market fluctuations.

The transhipping process offers a significantly reduced environmental footprint compared to conventional port developments. The avoidance of large-scale dredging and shoreline modification minimises impacts on marine and coastal ecosystems, which in turn can streamline environmental approvals and reduce long-term rehabilitation liabilities. These attributes are increasingly material in the Northern Australian regulatory and social-licence context.

Ikamba provides operational adaptability that is not achievable with fixed infrastructure. Export capacity can be scaled, relocated, or redeployed as required, supporting both production variability and potential future resource developments. This flexibility positions Metro Mining to respond efficiently to changes in demand, shipping markets, or mine life extensions.

Collectively, Metro Mining's transhipping process and the deployment of *Ikamba* establish a new benchmark for bulk commodity exports in Northern Australia. The model demonstrates that large-scale, reliable bauxite exports can be achieved through innovative maritime logistics rather than traditional port construction. This represents a material shift in export methodology and provides a replicable framework for future bauxite and other bulk commodity developments across remote regions of Australia.

e. Supporting the defence industry;

The aluminium industry supports Australia's defence industry in two key ways. Firstly, as an integrated mine to market supply of this mineral which is critical for defence (see Section b) including established supply chains for finished aluminium to key regional locations such as Cairns and Darwin.

Secondly, there may be opportunities for post mining, refining or smelting infrastructure to be used by the defence industry in Northern Australia. For example, Rio Tinto[29] is currently planning for the bauxite mining operations in the Gove Peninsula to cease later this decade.

With appropriate planning and collaboration, decommissioned infrastructure such as deep water ports and airports can become cornerstones of new regional economies, powering energy transitions, supporting industry and creating long term jobs, and underpin Australia's defence force logistics. For example, ports could support maritime services, aquaculture, tourism or energy logistics – offering jobs and regional stability. With careful planning, the skilled workers and contractors from the existing industry may be able to transition to new defence opportunities.

For this opportunity to be realised would need to be developed on a case by case basis, to explore ways to explore ways to retain and adapt heavy infrastructure (eg export facilities for new maritime and landside users), but if successful could be used to support diversifying economies and sustain jobs. Aligned with the National Defence Strategic Review[30] , future defence projects could use existing roads, transmission lines, and water supplies, which would reduce resources and waste and provide the enabling infrastructure to support sustained operations in northern Australia.

The infrastructure from mines, smelters, refineries can be a regional asset after closure but would require coordinated planning for clear pathways for infrastructure handover, liability and future use. This would also require partnership with Traditional Owners to ensure cultural values are respected and shared

[29] https://www.riotinto.com/en/operations/anz/gove
[30] https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review

f. Supporting infrastructure;

Australia's planning and approvals processes are taking too long, for both infrastructure projects but also for other approvals such as new and expanded mines. In 2024, the Council undertook a comparison of costs and delays impacting Australia's upstream bauxite and alumina sectors[31] due to increased geopolitical risk combined with rising costs and prolonged regulatory approvals. This found that one of the greatest cost increases expected over the next five years will come from delays in environmental approvals, limiting access to bauxite for our alumina refineries. Indonesia can approve and build an integrated bauxite mine and alumina refinery faster than Australia can approve a bauxite mine. The report highlighted the need for a streamlined regulatory process to unlock the potential of Australia's bauxite resources. While Indonesian refineries are set to expand alumina capacity by 6Mt over the next five years, Australia faces mounting challenges, including rising capital, labour, and energy costs, compounded by lengthy regulatory approvals (Figure 4).

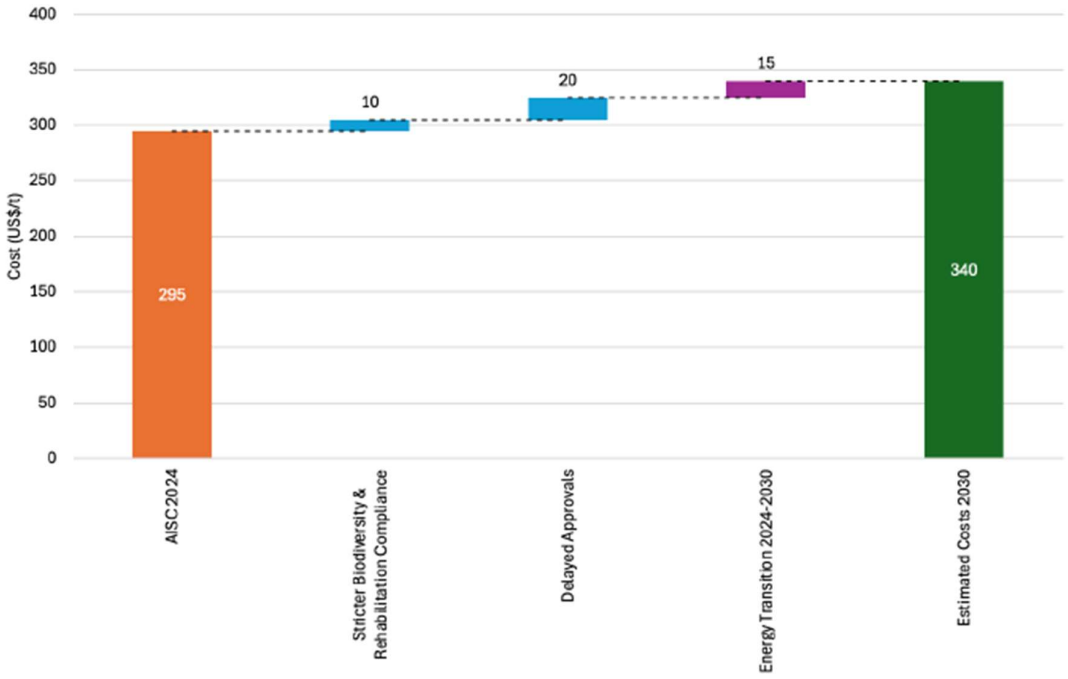

Figure 4. Increases to WA Refining Production Costs 2024-2030 (Source CM Group)[32]

A second piece of research, conducted by the Council in 2024, highlighted the industry's significant contribution to the Australian economy and the advantages of its integrated mine-to-market structure. However, the report also identifies serious vulnerabilities requiring an urgent response from government, including long and uncertain regulatory frameworks that increase upfront investment costs[33].

h. Training, attracting and retaining a skilled workforce;

i. Empowering and upskilling local First Nations people;

In regions like Cape York, bauxite mines can have indigenous participation rates of 30%[34]. In the regions in which the Council's members operate the intent is to provide financial benefits and also education, training, cultural heritage protection and employment.

There are already workforce and skills shortage across many industries and regions that will impact industry growth and the further development of advanced manufacturing. The scale of the workforce and skills required for

[31] https://aluminium.org.au/wp-content/uploads/2024/10/241010-AAC-Upstream-Vulterabilities-Report-FINAL.pdf

[32] https://aluminium.org.au/wp-content/uploads/2024/10/241010-AAC-Upstream-Vulerabilities-Report-Summary-FINAL.pdf

[33] https://aluminium.org.au/wp-content/uploads/2024/10/250204-AAC-Summary-Report-Economic-Contribution-of-the-Australian-Aluminium-Industry.pdf

[34] https://www.metromining.com.au/media/33566/metro-investor-presentation-noosa-conference-nov-2022.pdf

transformational abatement projects and new industries should not be underestimated, nor should the impacts of this on the pace of abatement. These challenges are, however, not unique to the aluminium sector and maintaining the existing assets in these regions will in fact help maintain a trained and agile workforce which can adapt to future opportunities.

Decarbonisation is an electrification story: large scale wind and solar, distributed solar, household and grid scale energy storage, increased electricity transmission and distribution, electric vehicles and the electrification of industry, in particular, mining and alumina refining. As a result, there will be significant demand for those with electrical skills including electrical discipline engineers, electricians, process control engineers and analyser technicians, electric vehicle mechanics. This demand will occur across all sectors in the economy. These skills are strongly linked to STEM subjects at high school and historically male dominated industries. These professions are likely to attract high salaries, good conditions and offer long term career prospects that are suitable for a range of employment arrangements including “Fly-In Fly-Out", regional and metro-based roles, full and part time, site, office and home based locations.

Ensuring there are enough suitably qualified workers will require the largest, and therefore most diverse, pool of talent. The promotion of STEM and the encouragement of both male and females into these careers is paramount to achieving decarbonisation. This should include re-training mature employees into these roles.