AUSTRALIAN ALUMINIUM COUNCIL LTD

Vulnerabilities & Opportunities in Australia's Upstream Aluminum Sectors

October 2024

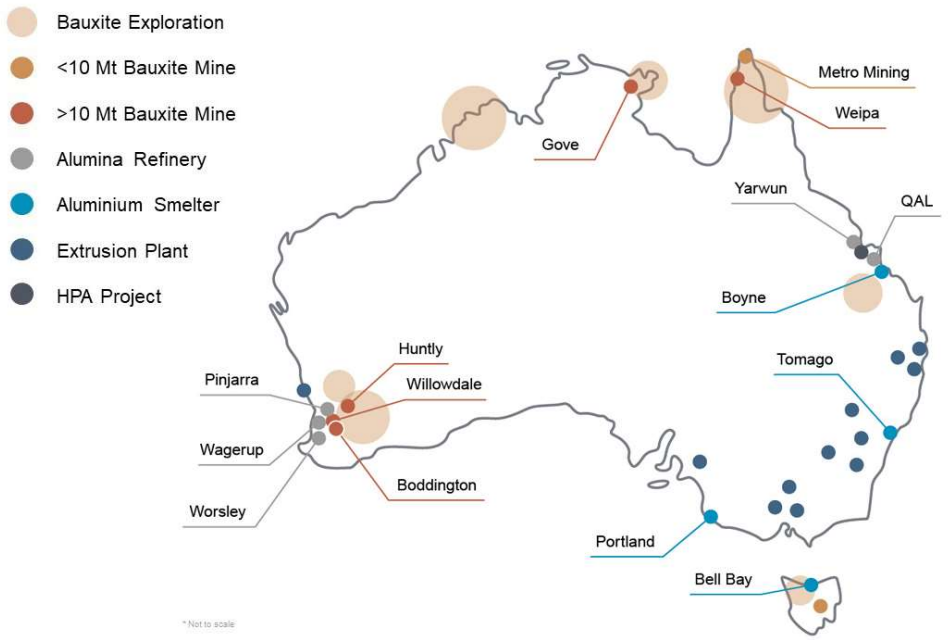
Vulnerabilities & Opportunities in Australia's Upstream Aluminium Sectors

- Global demand for aluminium is forecast to remain strong
  - Australia should be well positioned to take advantage of the opportunities this will present, across the sector.
  - Growth opportunities in the bauxite market over the last decade have largely been taken up by Guinea, not Australia.
- Australia's mine to refinery model relies on vertically integrated and predictable domestic bauxite supply.
  - This model is undermined by high compliance costs and delays in decision making impacting bauxite mines, which impacts competitiveness of alumina refineries.
- Delays in approvals processes are forecast to be the single largest contributor to additional refining costs over the next five years.
  - On the current trajectory, Australian refineries are likely to move substantially further up the global cost curve.
  - Any alumina refining capacity displaced from Australia is likely to migrate to Indonesia where policies are framed to attract, retain and grow mining and mineral processing.
- A constructive framework would signal to the world that Australia's aluminium sector is open for business and position it strongly to play its role in the clean energy transition. This includes:
  - Immediately include bauxite, alumina, and aluminium on Australia's Critical Minerals list, recognising the vulnerability of the integrated sector and its importance to both domestic and global supply chains.
  - Streamline environmental approvals for bauxite mines and alumina refineries, balancing environmental protection with commercial realities and economic benefits.
  - Support the aluminium sector's pivotal role in the global green economy, as Australia's alumina and aluminium play a key role in the transition to a sustainable, low-carbon future.

Risk or Opportunity ? Australia's Integrated Value Chain

An efficient and effective regulatory process is required to capitalise on Australia's natural advantages from mine to market

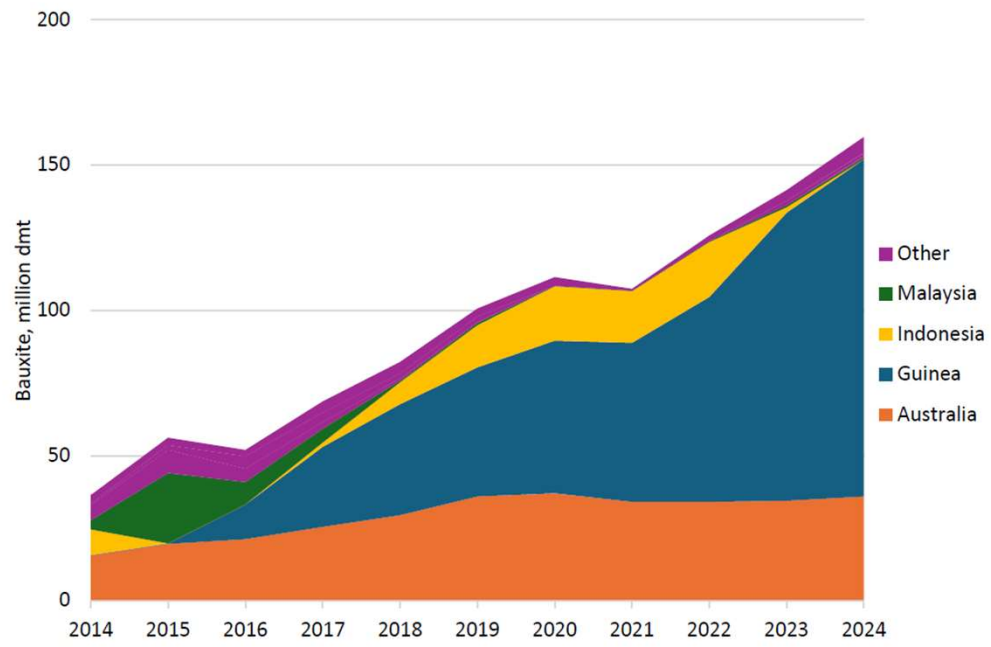
- For almost 70 years Australia's alumina refineries have relied on vertical integration supplied by domestic bauxite mines
- Alumina refineries are uniquely designed to process particular types of bauxite
- Any impact in ability to supply bauxite domestically immediately threatens vertical integration and alumina production



There are opportunities for Australia to meet global demand

But this demand will be met from elsewhere, if not provided by Australia. Australia has not materially increased global bauxite exports for last decade

Figure 5-4 *Historical Bauxite Import into China by Country*



Source: CM Group, China Customs

- China has self-imposed a cap on aluminium and alumina production – and is expected to hit those caps in 2024
- Australia has strategic advantage to supply domestic and global alumina refineries due to both bauxite reverses and global location
- Australia has resources but currently no substantial plans for growth in bauxite or alumina
- But needs to continue to be able to access bauxite – including approvals for new and expanding mines

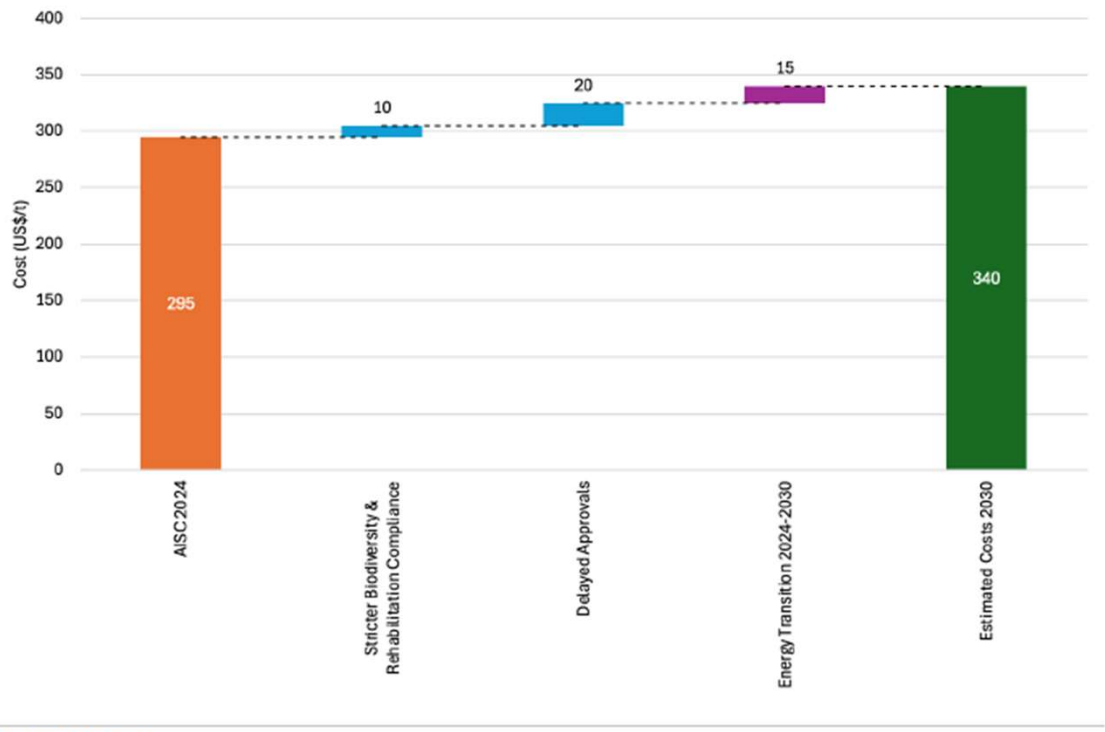
Source: CM Group, 2024

Australia's alumina refineries have historically been competitive

But this is now threatened by costs not borne by international competitors

- Delayed approvals processes at bauxite mines are the biggest source of cost increases at alumina refineries
- Australia has world class biodiversity and rehabilitation management – but high associated compliance costs
- High energy and capital costs

Figure 6-2 *Increases to WA Refining Production Costs 2024-2030*



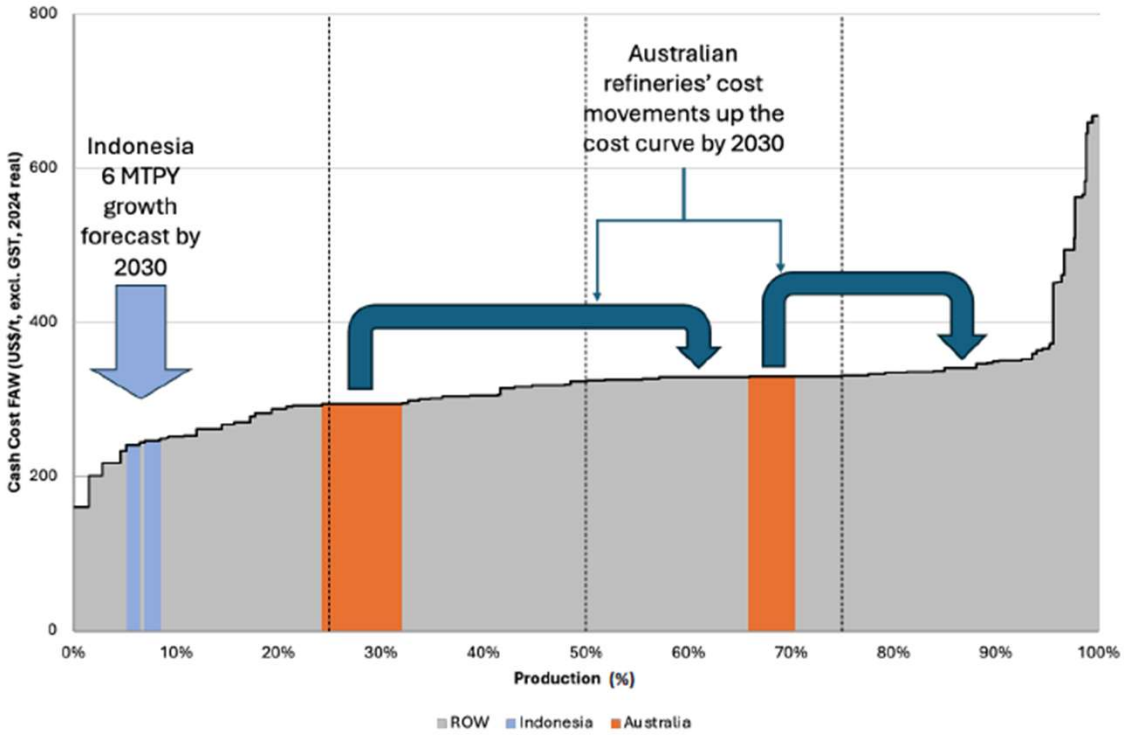
Source CM Group

By contrast, Indonesia is developing low cost refining capacity

Without action, Australia's alumina refineries become decreasingly uncompetitive, putting viability and jobs at risk

- Indonesia's approval timeline is months not years
- Indonesian alumina refineries use low cost coal
- Access to low labour and capital costs

Figure 8-1 *World Alumina Production Cost Curve 2024 – Potential Changes for 2030*



Source CM Group

Australia's upstream bauxite and alumina supply is under threat and the role of Government policy has never been more critical

The Australian Government should immediately prioritise bauxite, alumina and aluminium as **critical minerals**, in addition to **green metal status**, and **streamline approvals processes**.

Critical mineral status recognises the **vulnerability of the integrated sector,** dependent on domestic bauxite supply as well as signalling to **international trading partners** the value recognised by Australia.

1. **Deliver internationally competitive supplies of clean energy**;

2. Use of
   a. **Production Credits** and a
   b. **Transformational Infrastructure and Technology Fund** to enable Australia to be sufficiently competitive to be able to attract global decarbonisation investment;

3. Assign **Critical Mineral Status** to **bauxite, alumina and aluminium** value chain within **resource, environment and industry development** policies;

4. **Environmental approval processes** across the supply chain that appropriately balance the **environmental rigour and protection** with **timelines** that reflect **commercial** needs; and

5. Development of **long-term strategic partnerships** with likeminded countries.

History of Australia's Critical Mineral Lists, Strategy & Updates

2019 / 2022

- 2019 - Australia's first Critical Mineral Strategy
- 2022 - List updated to include High Purity Alumina & Silicon

December 2023

- List updated to reflect new strategy – and include fluorine, molybdenum, arsenic, selenium, tellurium (and remove helium) – to better ***align with international strategic partners***.
  - But despite being on key partners (US, EU, China, Canada) lists bauxite, alumina and aluminium are not included.
- Introduction of Strategic Materials List (including aluminium, nickel, zinc, copper, phosphorus, tin) for minerals which:
  - are important for the global transition to net zero,
  - for which Australia has geological potential for resources, and
  - are in demand from our strategic international partners.

  But where supply chains ***are not currently vulnerable enough***.

February 2024

- Nickel moves from Strategic Materials list to Critical Minerals List due to vulnerability
- Subsequent to decision announcements of suspension and closure of at least 3 Nickel facilities in Australia

Are bauxite, alumina and aluminium supply chains vulnerable enough ?

- June 2023 – US $948 M impairment at Yarwun Alumina Refinery and US$227 M impairment at QAL
- January 2024 – Curtailment of Kwinana Alumina Refinery announced (Fully curtailed H1 2024)
- July 2024 – Worsley Alumina impairs by US$554 M
- Increasing geopolitical risk impacting global and domestic supply chains

CM Group Report -
Vulnerabilities & Opportunities in Australia's Upstream Aluminum Sectors

- CM is a privately owned, independent, global commodity research company specialising across a range of base metals, minor metals and minerals industries. CM is a world leader in the global bauxite market.
- **CM provides independent advisory services, specialising in value-chain analysis across a range of base and minor metals, including aluminium.**
- CM experience and capability in the global aluminium industry span the entire value-chain; from bauxite mining through alumina and primary aluminium production, to semi-fabricated products and recycling.
- CM's experts have advised the world's largest mining houses, refiners, smelters, industry bodies, governments, NGOs and many other groups associated with the industry.
- CM group has their own models, based on market research and conditions, which were used to prepare this report.

In June 2024 Australian Aluminium Council commissioned CM Group to prepare a report into ***Vulnerabilities & Opportunities in Australia's Upstream Aluminum Sectors (published September 2024)***