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ABOUT THIS REPORT

THIS REPORT IS PRODUCED ANNUALLY AND COVERS ALUMINA’S ENVIRONMENTAL, SOCIAL AND GOVERNANCE PERFORMANCE FOR THE CALENDAR YEAR 1 JANUARY 2021 TO 31 DECEMBER 2021.

Alumina Limited is engaged in a global joint venture (JV) with Alcoa Corporation who are the manager and operator of our joint Alcoa World Alumina and Chemicals (AWAC) operations. This report should be read in conjunction with the Data Pack.
This report is focused on the sustainability impacts of Alumina as a business, and the impacts of the AWAC joint venture business and operations.

This includes assets wholly owned by AWAC and assets in which AWAC holds less than 100% equity interest, but which are managed by Alcoa. AWAC also holds a non-operator interest in the Ma’aden alumina refinery and bauxite mine, MRN bauxite mine* in Brazil, and CBG bauxite mine in Guinea; these sites are excluded from performance information in this report. A map of all AWAC operations and facilities (both AWAC operated and non-AWAC operated) can be found on page 8, and detailed ownership information on page 23.

For the purposes of this report, references to ‘AWAC’ describe:
· the physical assets, interests and operations that form the basis of the joint venture (e.g. AWAC’s Huntly bauxite mine)
· the outcomes and performance levels from the operation of these assets (e.g. AWAC’s production levels, revenue, emissions, resource usage, market position)
· the governance procedures and frameworks that determine the strategic directions, investments and acquisitions of the enterprise (e.g. the AWAC Strategic Council).

The material topics, structure and preliminary content of this report were reviewed by the Sustainability Committee of Alumina’s Board, and the final content was approved by the Alumina CEO.

This report references the Global Reporting Initiative (GRI) Standards 2021, (see index page 62), and the Sustainability Accounting Standards Board (SASB) Metals & Mining Standard (see index page 67). We have also drawn on elements of the International Integrated Reporting Framework. Alumina’s previous Sustainability Report was released on 30 August 2021.

Report data and limitations
All financial data in this report is expressed in US dollars, and environmental data is metric. Restatements of data from our 2020 report are noted where applicable.

All data pertaining to Alumina Limited has been prepared by our own organisation. Disclosures of management approach for AWAC operations are directly based on Alcoa’s 2021 Sustainability Report, which is overseen by senior leaders of Alcoa. As Alumina is the non-operating JV partner in AWAC, we are dependent on Alcoa to provide AWAC performance data for this report. Alcoa obtained limited assurance over its 2021 Sustainability Report, including over some of the metrics included in this report. The assurance statement can be seen on page 181 of Alcoa’s report. The apportionment of AWAC data in this report (as outlined below) has been subject to management review, but not external assurance.

Unless otherwise noted, data presented about AWAC is generally on a ‘full facility’ basis. The most common bases for reporting are:
· Full facility basis: 100% of the ownership of AWAC facilities (i.e. it would also include the equity interest of minority owners of the Alumar Refinery, and the Portland Smelter)
· AWAC/equity basis: proportionate equity ownership of AWAC facilities (i.e. excludes the equity interest of minority owners of the Alumar Refinery, and the Portland Smelter)
· Alumina Limited basis: 40% equity share of AWAC/equity basis
· Alcoa-wide basis: As the AWAC assets are a subset of Alcoa’s business operations, in some instances it is not feasible to separate out AWAC-specific information. We have indicated in footnotes throughout where data refers to the whole of Alcoa (AWAC plus non-AWAC), rather than to AWAC.
CHAIRMAN AND CEO OVERVIEW

WELCOME TO ALUMINA LIMITED’S 2021 SUSTAINABILITY UPDATE. 2021 WAS AN IMPORTANT YEAR FOR ALUMINA LIMITED, AS THE AWAC JOINT VENTURE MADE FURTHER STRIDES TOWARDS ITS DECARBONISATION STRATEGY.
Overview

A highlight for 2021 was the Board approval of Alumina Limited’s Net Zero Statement, which notes that Alumina Limited will, through working with the AWAC joint venture, strive for AWAC to reduce its direct and indirect emissions (Scope 1 and 2) by 45% by 2030 (from a 2010 baseline), and to net zero by 2050. To form the foundation of its decarbonisation strategy, AWAC announced that it was investing in R&D for two key technologies, Mechanical Vapour Recompression (MVR) and Electric Calcination (EC), which would be the catalyst for decarbonising AWAC’s alumina refineries.

At the beginning of 2021, Alumina Limited formed its ESG Team to report to the Sustainability Committee, which itself was established in 2020. The establishment of the ESG Team emphasises the importance of sustainability at Alumina Limited. The Team and the Sustainability Committee have focused on executing an evolving annual workplan, covering an array of issues, which includes:

- human rights
- impoundment management
- benchmarking of TCFD disclosures and recommendations
- performance of AWAC’s facilities from an ESG point of view
- researching decarbonisation initiatives throughout the aluminium value chain
- the inaugural ESG Roadshow.

Alumina’s ESG Team, and where appropriate the Sustainability Committee, regularly undertakes training and attends conferences in order to improve internal knowledge, as well as participating in industry associations and engaging with investors and stakeholders to understand perspective on issues. These activities help the Team and Committee anticipate where potential future sources of interest may arise in respect of sustainability issues, and respond accordingly. The Team and Committee are assisted in executing their responsibilities by engaging independent external experts in fields such as climate change, impoundment management, sustainability disclosure and governance.

From our dialogue with stakeholders, we understood the importance of Alumina Limited complying with and completing the recommendations of the Task Force on Climate-related Financial Disclosure (TCFD). Since 2019, Alumina Limited has been updating its disclosures in-line with the TCFD recommendation. For the 2021 Sustainability Update, we are pleased to present a completed qualitative picture of these disclosures. Undertaking these recommendations has been an important step in understanding in particular AWAC’s resilience to climate change. These disclosures are not static, and we will look to incrementally improve these disclosures as new material information comes to our attention.

As it stands today, AWAC sits in the first quartile for global alumina refinery emissions intensity, as its primary source of fuel is natural gas, as compared to coal which is the dominant fuel source for most non-AWAC alumina refineries globally. We know that maintaining first quartile leadership is an important aspect of resilience, and mitigating against potential climate-change transitional risks. Alumina Limited now has an aspiration to continue to improve AWAC’s emissions profile to net zero by 2050. Decarbonising AWAC will be a significant challenge. However, AWAC has demonstrated over the past 60 years that it is capable of meeting significant sustainability challenges, such as being a steward of Western Australia’s Jarrah Forest, and developing the Juruti mine in the Amazon region.

Performance

All safety related incidents are investigated and where applicable, new controls and processes are developed to eliminate hazards and mitigate the risk of any similar event occurring. During 2021, there were no fatalities at AWAC managed facilities.

In terms of AWAC’s key sustainability measures, AWAC’s alumina refining emissions intensity remained flat at 0.516 tonnes of GHG per tonne of alumina production, whilst the Portland Smelter’s emissions intensity decreased five percent to 13.1 tonnes of GHG per tonne of production due to mainly electricity grid greening. AWAC’s absolute emissions decreased five per cent to 11.5Mt of GHG on a full-facility basis, due to improvements from the Portland Smelter, but also as a result of reduced alumina production. On an equity basis, AWAC’s emissions amounted to 8.8Mt of GHG, which represents a 44% decrease compared to the 2010 baseline of 15.8Mt of GHG.

More detailed information is available in the various sections of this report. We trust that this report provides relevant insight into key sustainability matters for Alumina Limited and the AWAC joint venture. We are aiming to progress our sustainability reporting and welcome your feedback.

W Peter Day
Chairman

Mike Ferraro
Chief Executive Officer

ALUMINA LIMITED
SUSTAINABILITY UPDATE 2021

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Feature – Aluminium beverage cans

AWAC

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Data tables

The data tables are available in an excel spreadsheet to assist users in data extraction and analysis. Please visit the Alumina Limited website to download files.

W Peter Day
Chairman

Mike Ferraro
Chief Executive Officer
Alumina Limited provides investors with unique access to some of the world’s highest quality alumina assets. We are a leading Australian company listed on the Australian Securities Exchange (ASX) and traded on the OTC Markets in the United States. Our sole investment is a 40% share in the Alcoa World Alumina and Chemicals (AWAC) joint venture. The remaining 60% of AWAC is owned by our partner, Alcoa Corporation.

Alumina’s purpose is to deliver long-term value to our stakeholders through our investment in AWAC. Sustainability is fundamental to that purpose: aluminium has an important role to play in a net-zero carbon, circular economy, and by responsibly managing our sustainability impacts, AWAC is well positioned to deliver on that market demand.

Our role as co-owner of the AWAC joint venture is to be an active investor. We monitor and engage with Alcoa to help maximise AWAC’s performance, manage long-term risks and optimise the value we deliver to our shareholders.

To do this, Alumina commissions independent research to understand long-term risks and opportunities and we have regular conversations with our partner on AWAC.

We work with Alcoa to review AWAC’s long-term sustainability strategies and objectives, and assess its performance in human rights, environmental and labour practices. For over 60 years, the JV has focused on of environmental, social and governance topics to maintain AWAC’s social license to operate.

AWAC is one of the world’s largest producers of alumina. Its assets include low-cost, long-life bauxite mines and alumina refineries in Australia, Brazil and Spain, and a 55% interest in the Portland aluminium smelter in Victoria, Australia. Alcoa is the operator of all these AWAC assets. AWAC also has non-operator interests in Brazil*, Saudi Arabia and Guinea. For further detail of AWAC entities and interests, see page 23.

AWAC also has continued responsibility for the rehabilitation of four closed sites in Australia, Suriname and the USA (see page 55). AWAC is structured as an unincorporated joint venture based on Agreements between Alumina Limited and Alcoa Corporation. AWAC’s headquarters are Alcoa’s headquarters in Pittsburgh, Pennsylvania, USA.

* The AWAC interest in the MRN bauxite mine in Brazil was divested during 2022.
AWAC employed 6,197 personnel across its global operations, including employees that have roles that include both AWAC and non-AWAC-related work.

AWAC’s products – bauxite, alumina and aluminium – are sold globally. AWAC has major customers in Argentina, Asia, and the Middle East, and Alcoa itself is also a major buyer for its smelting operations. Some bauxite is sold to China. AWAC maintains a spread of customers across a portfolio of countries and regions to minimise concentration risk.

1. Excludes alumina production from the Ras Al-Khair refinery.
2. MRN has been subsequently sold during 2022.
THE ALUMINIUM VALUE CHAIN

Suppliers and inputs

- Long life tenements
- Energy, water & other
- Labour

Bauxite

AWAC operations

- Exploration & drilling
- Mining
- Crushing
- Rail / Conveyor

Bauxite mine

Alumina operations

- Milling
- Digestion
- Clarification
- Precipitation
- Calcination
- Storage

Alumina refinery

Aluminium operations

- Electrolysis
- Casting
- Storage

Aluminium smelter

3rd Party customers & markets

- Bauxite
- Smelter grade alumina
- Chemical grade alumina
- Aluminium

COMMODITY MARKETS

Material issues:

- Occupational health and safety
- Local commitment with communities
- Waste, tailings & residue management
- Rehabilitation
- Land management & biodiversity
- Social licence
- Water stewardship
- Waste, tailings & residue management
- Energy efficiency and greenhouse emissions
- Water stewardship
- Local commitment with communities
- Occupational health and safety
- Facilities closure
- Occupational health and safety
- Climate change
- Facilities closure

• Electricity & transmission
• Anodes & other
• Labour

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HOW WE CREATE VALUE

**AWAC Joint Venture**

**Alumina Limited**

Owes 40% of AWAC.

We offer investors a unique relatively undiluted exposure to the alumina market.

**Alcoa**

Owes 60% of AWAC.

Manager & day-to-day operator of AWAC’s global operations.

**AWAC**

The joint venture’s ability to create value is a result of the interrelationship between its capital pillars.

For example, AWAC’s foundations began with pioneer geologists exploring the Darling Ranges. With seed capital, the support of the government and the community, AWAC has been able to employ locals, mine its long term bauxite tenement, be a cornerstone customer for the WA gas industry, produce high quality alumina, pay royalties and taxes, and return capital to shareholders.

At the end of a mine pit or an asset’s life, we focus on rehabilitating the area to the highest standard, ensuring no net loss of biodiversity.

**Alumina Limited shareholders**

Ownership, representation, and engagement.

2 out of 5 representatives on AWAC strategic council.

- Proportional representation on boards of AWAC entities.
- Site visits to engage at operational level.

**Dividends**

Declared quarterly.

**Capital**

Shareholder equity low leverage.

**Financial capital**

Strong balance sheet & returns to shareholders.

**Dividends**

Capital

**Outcomes**

- Financial capital
- Natural capital
- Social capital
- Intellectual & human capital
- Manufactured capital
- Governance

**Inputs**

- Access to capital
- Low cost refineries generally in close proximity to bauxite reserves & energy Portland smelter.
- Bauxite, smelter & chemical grade alumina, aluminium.
- Land rehabilitation at end of life.
- Low cost refineries generally in close proximity to bauxite reserves & energy Portland smelter.
- Bauxite, smelter & chemical grade alumina, aluminium.

**Capital pillars**

- Manufacturing: Portland smelter & energy.
- Close proximity to bauxite reserves.
- Low cost refineries.
- Intellectual & human capital.
- Industry knowledge, training, technical contractors, safe, healthy workplaces, experts.
- Industry knowledge, insights, continuous improvement. Quality, well trained people.
- Contributions to social infrastructure and community programs.
- Site visits to engage at operational level.

**Alumina Limited operations**

Direct exposure into the world’s largest 3rd party alumina exporter.

Focused team with the right experience independent research & analysis to inform our engagement.

Educate & update the market on developments in the aluminium supply chain. Engage with stakeholders.

**Quality reports and information**

**Governance**

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ALUMINA HAS A FOCUSED SET OF DIRECT STAKEHOLDERS, AND A BROADER SET OF INDIRECT STAKEHOLDERS THROUGH AWAC. THE INTERESTS OF BOTH SETS ARE CONSIDERED IN ESTABLISHING OUR MATERIAL TOPICS.
Alumina Limited and AWAC stakeholders

We engage with our direct and indirect stakeholders as follows:

- **Shareholders**
- **Employees**
- **Suppliers**
- **Government & regulators**
- **Local communities**
- **Investment community**
- **Lenders**
- **Customers**
- **Non-government organisations**
- **AWAC**
- **Alumina Limited**

**Investment community**

- **Institutional investors**
- **Retail shareholders**
- **Fund managers and analysts**
- **Ratings agencies**
- **Financial markets**

**Government and regulators**

- **Government**
- **Industry associations**

**Employees**

- Given the small size of our team, interaction is direct and constant

**Our joint venture partner, Alcoa**

- Formal and informal pathways including AWAC Strategic Council, AWAC entity representation, direct engagement (see page 19)

**No critical concerns from stakeholders were communicated to Alumina during 2021.**

For more detail on how Alcoa engages with its stakeholders, see the Alcoa Sustainability Report page 32.
AWAC’s stakeholders

AWAC’s stakeholders, as defined by Alcoa, include anyone or organisation that directly impacts, or is impacted by, its activities. These are set out in the diagram on the previous page.

AWAC has formalised and contractual channels of engagement for stakeholders, which include customers, suppliers, governments, employees and stockholders. Interaction with community groups and NGOs occurs more informally, guided by Alcoa’s Stakeholder Engagement Framework. Alcoa utilises the framework to gather feedback from communities where they operate to manage risks and opportunities associated with community rights and interests. More detail on the framework is provided on page 49.

Our sustainability context

We acknowledge the UN Sustainable Development Goals as an articulation of the world’s most pressing sustainability challenges. As part of its role as an active investor, Alumina also keeps track of trends specifically influencing our industry.

• The world is working to combat climate change. Net zero commitments – and action – are now an expectation of our stakeholders as we transition to a zero-carbon economy. Aluminium is currently an emissions-intensive product, but one that has a key role in that transition (see page 20).

• Biodiversity loss is occurring and there is recognition that this is an issue of increasing significance. The launch of the Taskforce for Nature-related Financial Disclosures has increased investor attention to this topic. As outlined in Alcoa’s global Biodiversity Policy, minimising environmental impacts and promoting sustainable land use is an equally important part of the sustainability strategy. For decades, we have continued to follow and develop best-in-class science-based rehabilitation practices to protect critical biodiversity.

• Less than 4% of our bauxite mineral lease has been disturbed to date.

• Less than 8% of our bauxite mineral lease is expected to be disturbed over the life of our operations.

• 77% of all areas cleared for our mining have already been rehabilitated.

• Moving towards a circular economy will be a critical means to combat climate change, biodiversity loss and waste. While there are moves towards a circular economy, the majority of production continues to be linear. Aluminium, as an endlessly recyclable commodity, is a natural fit for the circular economy. However, mining also generates significant waste that is challenging to repurpose.

• Stable access to water is critical to mining operations, but water scarcity can lead to conflicts with local communities and ecosystem disruptions. There is increasing focus on use of water and management of waste water.

• Social expectations are growing in relation to companies’ responsibility for the end of life of mine sites, that they will have ongoing social, economic and biodiversity value, that communities will be supported through the transition, and that they can expect multi-generational benefits.

• There is increased attention on miners’ relationships with indigenous peoples, including impacts on cultural heritage, as well as opportunities for economic empowerment and self-determination.

• The minerals industry has been traditionally male-dominated, and despite moves to improve diversity and inclusion, there has been increased awareness of incidents of sexual harassment, racism and bullying.

• The minerals industry is facing challenges with talent attraction and retention. Alongside COVID-19 related travel restrictions and ‘the great resignation’, the number of graduates in relevant disciplines is declining and there are shortages in specialist roles.

• Interest in companies environmental, social and governance (ESG) performance continues to increase, with investors looking for actions to back up commitments, and reliable data to avoid claims of ‘greenwashing’.

• COVID-19 has continued to have implications for the health and safety of AWAC employees, as well as supply chain and logistics.

• Supply chains have also been impacted by labour shortages, competing demand, natural disasters and geopolitics, including the Russia-Ukraine conflict.

• The minerals industry is a particular focus of calls for transparency on the flow of financial benefits from the industry, including through taxation.
Our material topics

Alumina last conducted a comprehensive materiality assessment in 2018, guided principally by the Global Reporting Initiatives Standards 2016 (GRI). The assessment was updated in 2019 based on desktop analysis and Alcoa's own 2019 materiality assessments of its bauxite and alumina divisions. With the endorsement of the Alumina Executive team and Sustainability Committee, these topics (shown in the table to the right) form the basis for this report.

Alcoa will undertake its next materiality assessment in 2022, and Alumina intends to leverage this, together with its own independent research and stakeholder engagement, to provide a comprehensive materiality update for our 2022 report.

All the topics in the table to the right are material for AWAC. In the ‘AWAC’ section of this report (pages 43 and 71), we describe how Alcoa manages these topics, and 2021 performance. These topics are also the subject of engagement between Alumina and Alcoa, described on page 17.

We have indicated with an Δ symbol those topics that are also material to Alumina Limited itself. In the ‘Alumina’ section of this report (page 15 to 21), we describe how Alumina manages these topics in respect of our own operations.

As part of our last materiality assessment, we mapped the material topics to the UN Sustainable Development Goals (SDGs), applying two lenses: linkage between the material topics and the SDG targets; and a qualitative assessment of potential positive and negative impacts of our operations on the SDGs. The goals identified are included in the diagram below and continue to provide context for our activities and ambition.

The definition and boundaries of our material topics are outlined on page 71 and on the material topics tab of the Sustainability Data Pack located on the Company website.
THE FOLLOWING CHAPTERS ADDRESS TOPICS THAT ARE MATERIAL FOR ALUMINA ITSELF AND DESCRIBES HOW WE MANAGE THEM.
GOVERNANCE

Our role is to provide informed guidance to AWAC while protecting the interests of our shareholders and stakeholders. Fulfilling this role well depends on strong and ethical governance practices, supported by an experienced leadership team that is aligned to our values and principles.

As a key topic, governance is addressed across various sections of this report:

- This chapter covers Alumina’s governance structures and process, including governance of sustainability.
- The next chapter covers our formal and informal engagement with Alcoa on the governance of AWAC.
- ‘AWAC governance’ (page 45) details Alcoa’s approach to governance, as operator of AWAC.

Board of Directors

The principal role of Alumina’s Board of Directors is to protect and further the interests of its shareholders. We have a focused Board of independent Directors that bring a relevant combination of functional skills and international experience from the industry.

Alumina Board structure

<table>
<thead>
<tr>
<th>Board of Directors structure</th>
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</thead>
<tbody>
<tr>
<td>Audit and Risk Management Committee</td>
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<tr>
<td>Compensation Committee</td>
</tr>
</tbody>
</table>

At the start of 2021, the Board of Alumina comprised six Non-Executive Directors and the CEO. In May 2021, Ms Emma Stein resigned as a Non-Executive Director following approximately 10 years of dedicated service. This change has reduced female representation on the Board from 50% to 40% of Non-Executive Directors and from 43% to 33% of the total Board.

In 2021, in response to the recommendations of a 2019 external review, the Board undertook training in ESG matters including climate change, international policy developments, decarbonisation solutions, impoundment standards and compliance, and modern slavery and human rights.

In 2021 the Board undertook an annual self-assessment process that links outcomes to key performance criteria contained in the relevant Board and Committee Charters. This allows us to track and improve the performance of our Board each year.

Governance of sustainability

Our Board has ultimate responsibility over all sustainability matters at Alumina. In 2020, Alumina’s sustainability governance and strategy was strengthened by the formation of a Sustainability Committee of the Board. All members of the Board sit on this committee.

Sustainability governance structure

Areas of responsibility/oversight

<table>
<thead>
<tr>
<th>Governance and reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management accountabilities.</td>
</tr>
<tr>
<td>Reporting including internal reporting, sustainability reporting, TCFD, accounting (AASB/SASB), training, safety, community, indigenous peoples.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metrics and targets</th>
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<tbody>
<tr>
<td>Including assessment, analysis &amp; suitability (quantitative and qualitative).</td>
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</table>

<table>
<thead>
<tr>
<th>Risk management</th>
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</thead>
<tbody>
<tr>
<td>Including sustainability materiality assessment, sustainability risk identification &amp; assessment, mitigation, management &amp; monitoring.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including sustainability roadmap, business impact, opportunities &amp; investment e.g. assessing energy and GHG abatement options/opportunities such as hydrogen.</td>
</tr>
</tbody>
</table>
The Sustainability Committee Charter sets out the roles and responsibilities of the committee. It meets at least quarterly to assist and provide recommendations to the Board in relation to ESG matters including setting and reviewing relevant strategies, policies and position statements. The committee also monitors performance, including reviewing reports of non-compliances on human rights, environmental, labour or anti-corruption grounds.

The Sustainability Committee met four times during 2021. Key areas of focus included:
- Climate change strategy, performance and targets (see further page 28)
- The Aluminium Stewardship Initiative
- Human rights, modern slavery, and indigenous peoples/First Nations Peoples
- Site closure matters.

Our other Board Committees also consider ESG matters where relevant; for example, the Audit and Risk Management Committee assess potential sustainability risks and opportunities for shareholders through the Risk Management Framework.

Executive-level responsibility for sustainability topics sits with our CEO, who is briefed monthly on key metrics and current issues.

In response to the growing importance of sustainability topics, Alumina has increased the internal resources devoted to this area. In January 2021, we established an expanded multidisciplinary ESG Team of four, led by our General Counsel. This includes specialisms in markets and strategy (with a focus on energy and climate transition pathways), governance, human rights, indigenous peoples, metrics, disclosure and external affairs.

**Business integrity**

**Why this matters**

Alumina’s reputation and social licence to operate depends on maintaining transparency and acting in accordance with our values.

**How we manage this**

In all our actions and operations, we hold ourselves to the highest level of ethics and transparency. This includes the disclosure of associated processes, performance and business risks to shareholders.

Our values of Respect, Integrity, Honesty, Personal Commitment, and High Performance underpin all that we do. Our values can be found on our website [www.aluminalimited.com/code-of-conduct](http://www.aluminalimited.com/code-of-conduct).

Alumina’s policies, strategies and codes provide the framework for us to translate our values into practice. These include policies in relation to ethics, sustainability topics and Board performance, all of which can be found on our website.

Alumina has a whistleblower politics which outlines the process by which whistleblowers can report any illegal, unethical or improper conduct, and the protections (including statutory legal protections) from any reprisal or detrimental action that are available to whistleblowers. Refer to [www.aluminalimited.com/whistleblower-policy-serious-complaints](http://www.aluminalimited.com/whistleblower-policy-serious-complaints).

As a joint venture partner, Alumina shares in both the successes and failures of AWAC, but as a non-operator we do not control AWAC’s performance. Our engagement with our partner Alcoa is our sole means of managing the risks and opportunities at AWAC for the benefit of Alumina’s shareholders.

Alumina engages with Alcoa and AWAC via several formal and informal channels throughout the year, as outlined in the diagram below.
Government compliance and engagement

Why this matters
As AWAC’s operations cover a broad range of legal, regulatory and political systems, it is essential that Alumina remain abreast of relevant regulations.

How we manage this
We seek to inform discussion around the regulation of our industry through participation in industry associations, with a focus on energy and greenhouse gas policies. Alumina is a member of the following organisations:

- Aluminium Stewardship Initiative (General Supporter)
- Australian Aluminium Council
- International Aluminium Institute
- Manufacturing Australia.

These platforms help us to stay abreast of changes to regulation and policy within our industry. They also help us to expand and challenge our thinking through exposure to other organisations’ views and approaches to a broad range of issues. Our participation in these forums enables collaboration on ESG and other matters that are important to our industry, catalysing opportunities for innovation.

There were no known instances of non-compliance with laws and regulation during the reporting period.

Alumina is not required to report under the Modern Slavery Act 2018, but Alcoa of Australia (the entity covering AWAC’s Australian operations) annually submits a statement on behalf of the joint venture (see further page 48).

In line with Alumina’s Code of Conduct and Anti-Corruption Policy, Alumina does not donate to any political party or aligned interest group.

AWAC compliance sits with Alcoa as the AWAC operator (see page 43). The primary mechanism for Alumina to oversee and monitor AWAC compliance is through our participation in the boards of the AWAC entities and via the Strategic Council.

Economic contribution and tax transparency

Why this matters
AWAC operations create value in a number of locations around the globe. Transparency about the flow of benefits, including our approach to tax, and amounts paid, is important to maintaining trust and social license to operate.

Economic contribution
In 2021, Alumina reported a strong result of $187.6 million dollars (net profit after tax) and distributed fully franked dividends to shareholders of US6.2 cents, representing an average dividend yield of 7.3% over the last five years. Our financial performance reflects the resilience and quality of the AWAC asset base and its ability to deliver strong returns throughout the cycle.

Tax transparency
We manage our tax requirements by carefully following our financial and ethical policies and guidelines. For details of Alumina’s income tax payments during FY21, please refer to the 2021 Annual Report, page 81. We monitor AWAC tax payments primarily through our participation in the boards of the AWAC entities (see page 19).

As previously reported, the Australian Taxation Office (ATO) has undertaken a transfer pricing examination in respect of certain historical third-party alumina sales made by Alcoa of Australia Limited over a 20 year period. The results and implications of this examination are discussed in the Alumina Limited 2021 Annual Report in note 2d.
The Strategic Council is AWAC’s leading governing body, and the principal forum for Alumina to provide direction and counsel to the AWAC entities on strategic and policy matters, including sustainability matters. The Council has five members, with representation proportional to ownership interests. Alcoa provides the Chair and Alumina the Deputy Chair. Decisions are made by simple majority except for certain matters which require a ‘super-majority’ vote of at least 80% of the members appointed to the Strategic Council.

The Council meets bi-annually and acts as a consultative forum more than a decision-making body. Discussion focuses on substantive questions of strategy or policy (for example investment and divestment). A key function is to assess and update AWAC’s risk management system and the risks facing each of AWAC’s enterprises. These are reviewed based on impact vs. likelihood and vulnerability vs. velocity, if not mitigated by the appropriate controls. As the operator, Alcoa is responsible for communicating, delegating and following up on actions resulting from Strategic Council meetings.

### Strategic Council

<table>
<thead>
<tr>
<th>Position</th>
<th>Held in 2021 by</th>
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</thead>
<tbody>
<tr>
<td>Chief Executive Officer</td>
<td>Roy Harvey (Chair)</td>
</tr>
<tr>
<td>Chief Financial Officer</td>
<td>William Oplinger</td>
</tr>
<tr>
<td>Chief Operating Officer</td>
<td>John Slaven</td>
</tr>
</tbody>
</table>

Alumina participates in quarterly meetings of the Alcoa of Australia board, discussing entity-level performance, and governance and compliance matters including risk management and ESG topics. Similarly, we attend annual meetings of the board of Alcoa World Alumina Brasil.

### Site visits

Alumina normally aims to send representatives to a selection of AWAC operations on an annual basis to engage with site management, review operations and hold meetings with representatives of local communities. These visits help us build relationships with key managers and to deepen our understanding of operations. Site visits were interrupted by COVID-19 in 2021.

### AWAC entity representation

Alumina is entitled to representation in proportion to its ownership interest on the board of each entity in the AWAC structure and is currently represented on the boards of Alcoa of Australia Ltd (AofA), AWA Saudi Limited and Alcoa World Alumina LLC (AWA LLC). Each board generally comprises two Alumina and three Alcoa members; we are represented by our CEO and CFO.

Alumina participates in quarterly meetings of the Alcoa of Australia board, discussing entity-level performance, and governance and compliance matters including risk management and ESG topics. Similarly, we attend annual meetings of the board of Alcoa World Alumina Brasil.

### Direct engagement

In addition to the mechanisms above, Alumina engages directly with Alcoa through various formal and informal channels:

- A monthly meeting with the Alcoa Chief Operations Officer, attended by several executives from both organisations. These meetings have a strong focus on operations, and cover ESG topics including environmental impacts and health and safety. They are primarily an opportunity for Alumina to gather information and ask questions.
- A monthly meeting with Alcoa’s Chief Commercial Officer, attended by several Alumina employees. These meetings focus on the sale of our commodities, and the cost of key inputs (chiefly caustic soda and energy). These discussions also are primarily an opportunity for Alumina to gather information and inform our view of markets, risks and exposures.
- Alumina’s ESG Team meet quarterly with senior Alcoa sustainability representatives. The standing agenda for this meeting includes tracking key metrics and strategies for our material topics, climate plans and actions, and any common questions in relation to external affairs issues.
- The CEO of Alumina speaks regularly with the CEOs of Alcoa Corporation and Alcoa of Australia to discuss current topics.
- Issue-specific engagement directly between the most relevant personnel from each organisation, including on sustainability.
OUR APPROACH TO SUSTAINABILITY

Aluminium is pivotal to a decarbonised world

AWAC aims to meet growing demand by providing the market with sustainably sourced aluminium. Aluminium has a key role to play in the transition to a low-carbon, circular economy. It is lightweight, ductile, malleable and conductive, with a corrosive-resistant oxide layer. Its applications are numerous, from construction and transport through to electricity transmission, and it is infinitely recyclable. These characteristics have always led aluminium to be held in high regard with consumers and will drive increased demand as the economy decarbonises.

In the medium to long term, Alumina anticipates increased demand for aluminium as a requirement to produce clean energy technologies from solar panels and wind turbines to electric vehicles. At the same time, the market will increasingly be looking for sustainably sourced aluminium. AWAC is well placed to meet that demand, with a 60-year history of ESG management, combined with a focus on the future and innovation.

Alumina engages with AWAC on all its material sustainability topics (see page 17). Areas of particular focus where we have conducted independent research include climate risk and tailings facilities.

Climate risk
Why this matters
Climate change is a systemic and material risk that will pose challenges in the future management of AWAC operations regarding energy usage, GHG emissions, carbon pricing policies and regulations and market demand. Additionally, the impacts of climate change will create a number of physical and transitional risks that AWAC will need to manage. However, decarbonisation presents significant opportunities for AWAC.

How we manage this
Please refer to “Alumina Limited’s approach to climate change risks and opportunities” see page 22.

Tailings
Why this matters
AWAC’s operations generate hazardous waste which is contained in tailing facilities, residue storage areas and other impoundments. The responsible management of tailings facilities continues to be a focus for our investors and other stakeholders, following major incidents involving other mining operators in recent years. Mismanagement of tailings facilities or unanticipated structural failure or over-topping caused by extreme weather events could result in injury or loss of life, damage to the environment or property, which in turn pose a reputational risk for Alumina, even as the non-operator. This risk applies to both operational sites and those in closure.

How we manage this
Our executive team and Board take seriously their due diligence responsibilities in relation to tailings. Tailings dam safety management is a standing agenda item for each Alumina board meeting. Alumina engages third-party experts to conduct detailed technical and management system reviews on an ongoing basis.

In response to the Investor Mining and Tailings Safety Initiative, a listing of AWAC impoundments can be found on the Alcoa and Alumina Limited websites.
The Alumina team is small but encompasses a mix of diverse experience and viewpoints. This unique package of skills enables us to bring robust oversight and challenge to the AWAC joint venture.

The Alumina Limited team

Our small team of 14 employees combines insight from a range of backgrounds to provide informed oversight of AWAC. This includes an understanding of markets, unique insight into business strategy, sustainability understanding, and a combination of legal, financial and regulatory expertise. Given the central importance of our relationship with our joint venture partner, communication skills are also critical.

One team member is located in Brazil, acting on behalf of Alumina as an officer on two Brazilian registered companies in which AWAC holds an interest.

We value the wellbeing of our people, as outlined in our Environment Health and Safety Policy. As an office-based business, incidents are rare. When site visits are required, we conduct advance checks of health and safety requirements and personal safety issues and provide access to emergency assistance. During the reporting period, Alumina reported no work-related injuries or hazards.

Diversity and inclusion

Why this matters

To effectively fulfil our role of bringing robust challenge to the AWAC JV, we need access to diverse viewpoints, and that means having diversity in our board and employees.

How we manage this

Alumina Limited’s Diversity Policy sets out measurable objectives to create a workplace that promotes and supports equal opportunity, diversity and inclusion across a range of dimensions. It focuses on recruitment and provision of work/life balance as well as board diversity.

To further our commitment in 2021, we introduced the following diversity objectives:

- Set a target for the Company’s Board of Directors of 40:40:20 (being a target minimum of 40% male and female respectively, with 20% open), recognising the limitations posed by the small size of our Board.
- Have flexible and part-time work arrangements where employees can balance work/life commitments and pursue career development.
- Aim to maintain engagement scores for identified employee groups that are not less than the whole-of-company engagement scores.
- Implement leadership programs that assist in the development of a diverse pool of skilled and experienced employees, and that prepare them for senior management.

Although we have achieved these objectives, our diversity is constrained in practice due to our size, low turnover, and operating in a historically male-dominated industry. As of 31 December 2021, 24% of Alumina Limited’s fourteen employees were women, a slight improvement from the prior year. Further information about Board composition can be found on page 16.

Executive remuneration

Why this matters

Remuneration is an important factor in helping us to attract and retain the right executive talent to contribute to Alumina’s success and incentivize our team to deliver strong performance in line with our values.

How we manage this

Our remuneration structures are designed to reflect the unique nature of the company as a non-operator, the role of the management team in the joint venture and their focus on long-term value creation for shareholders. These structures also make provision for the cyclical nature of this capital-intensive industry, where the underlying price of alumina is a direct determinant of performance. The process for determining remuneration, and stakeholder involvement in the remuneration process, can be found in further detail in Alumina’s 2021 Remuneration Report, which is located in Alumina Limited’s 2021 Annual Report. The FY21 Remuneration Report reviews Alumina’s remuneration strategy, policy and outcomes, including full details of the CEO and Senior Executives’ objectives, and an assessment of performance against those objectives. The report can be found on page 50 of the 2021 Annual Report.
ALUMINA LIMITED’S APPROACH TO CLIMATE CHANGE RISKS AND OPPORTUNITIES

Introduction
Alumina Limited, through its interest in AWAC, an energy and emissions-intensive business, has a role to play in seeking to reduce emissions and build resilience to climate change impacts. As a listed company, we also believe that we have an obligation to stakeholders to continuously improve our disclosures in respect of climate change, and to actively work within the AWAC joint venture to reduce AWAC’s carbon footprint.

Alumina Limited has been an early promoter of carbon disclosures. Alumina Limited commenced reporting on sustainability performance in 2008 and issued its first sustainability update informed by GRI standards in 2011. Alumina Limited first participated in the Carbon Disclosure Project (CDP) in 2010. As ESG issues have evolved, and stakeholders have become more sophisticated, Alumina Limited has focussed on improving is sustainability disclosures.

In 2017, the Task Force on Climate-related Disclosures (TCFD) released disclosure recommendations to support stakeholders in making informed, and efficient-capital allocation decisions. It is recommended that TCFD disclosures are provided for the following core elements:

· Governance: board oversight, management’s role in assessing & managing climate-related risks
· Strategy: actual & potential impacts of climate-related risks and opportunities
· Risk management: identification, assessment and management of climate-related risks
· Metrics & targets: disclosure of metrics & targets used to assess and manage climate-related risks.

Disclaimer
These TCFD disclosures have been prepared by Alumina Limited as a guide to the possible effect of climate-change on the joint venture. This section may contain forward-looking statements, and should be read in conjunction with the Disclaimer on page 73 of the Sustainability Update. Any forward-looking statements contained in this Sustainability Update are not guarantees of future performance.

There may be future events that we have discussed that may not eventuate, and there may be events that we have not anticipated or disclosed in this report.

Core elements of recommended Climate-related Financial Disclosures

Governance
The organisation’s governance around climate-related risks and opportunities.

Strategy
The actual and potential impacts of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning.

Risk Management
The process used by the organisation to identify, assess, and manage climate-related risks.

Metrics and Targets
The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

Over the past three years, Alumina has had a goal of incrementally including elements of the disclosures recommended by the Task Force on Climate-related Disclosures (TCFD) in our Sustainability Updates. In this edition of the Sustainability Update, we have now included the complete set of TCFD disclosures, which complements our “net zero by 2050” statement, and accompanying decarbonisation strategy.
The current portfolio of assets

Below is a summary of AWAC key assets. AWAC’s most significant business is the process and sale of alumina oxide, known as alumina. This represents the lion’s share of AWAC’s revenue, as well as approximately 74% of the total emissions of the portfolio. Hence, a major focus of this report is the decarbonisation of AWAC’s alumina business, and to a lesser extent AWAC’s aluminium business.

<table>
<thead>
<tr>
<th>Assets/Energy</th>
<th>Australia</th>
<th>Alumina Refining</th>
<th>Alumina Smelting</th>
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<tbody>
<tr>
<td>Bauxite Mining</td>
<td>Huntly, Willowdale, Brazil</td>
<td>Pinjarra (Natural gas), Kwinana (Natural gas), Wagerup (Natural gas)</td>
<td>Alumar, 39.96% ownership (Fuel oil/coal)</td>
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<tr>
<td>Alumina Refining</td>
<td>Juruti</td>
<td>Spain San Ciprian (Natural gas)</td>
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<tr>
<td>Alumina Smelting</td>
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<td>Australia Portland, 55% ownership (Electricity, primarily sourced from brown coal, but transitioning to renewables)</td>
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**Production 2021 (Mt)**
- Bauxite: 40.5 million bone dry tonnes of bauxite, the majority of which is sold internally and converted into alumina.
- Alumina: 12.6 million tonnes of alumina, includes smelter grade alumina and non-metallurgical alumina.
- Aluminium: 0.151 million tonnes of aluminium.

**Emissions 2021 (Mt)**
- CO₂e (equity basis): 3% of total scope 1 & 2 emissions
- CO₂e (full facility basis): 2.0 Mt of CO₂e (equity basis) 23% of total scope 1 & 2 emissions
- CO₂e (full facility basis): 3.6 Mt of CO₂e (full facility basis)

**Energy consumption 2021 (GJ/tonne of production)**
- 0.08
- 9.49
- 55.49

**Sales 2021**
- US$0.2 billion (3rd party sales, inclusive of freight. Includes bauxite sourced from CBG and MRN).
- US$4.2 billion (Includes sales to AWAC’s share of the Portland Smelter).
- US$0.4 billion

**Assets outside of scope (and AWAC ownership %)**
- Non-operated JVs: MRN (Brazil), 9.62%; CBG (Guinea), 22.95%; Ma’aden (Saudi Arabia), 25.1%
- Non-operated JVs: Ma’aden (Saudi Arabia), 25.1%

**Process description**
- Mining generates a relatively modest level of emissions. The main source of emissions is the consumption of diesel fuel for haul trucks and equipment, and electricity for mine sites. AWAC’s mines generally have a low amount of top soil and overburden between the surface and the ore body, and therefore requiring less energy for extraction.
- Bauxite is converted into alumina (aluminium oxide) through the Bayer process. Emissions are created during the digestion (~70% of emissions) and calcination (~30% of emissions) processes. For the digestion process, energy (from any source) is required to generate steam (between ~150-250 degrees Celsius, depending on bauxite quality and other factors). For calcination, energy is required to create heat at ~1,000 degrees Celsius to dry the alumina hydrate. Some electricity is also used for the plant and equipment on site, as well as administrative offices.
- aluminium is converted into aluminium through the Hall-Héroult process. Emissions come from the chemical reaction (anode preparation and consumption) and the electricity used to create current for the reaction. Smelters that use exclusively renewable electricity will have a lower carbon footprint than smelters that rely on electricity generated from fossil fuels.

1. The AWAC interest in the MRN bauxite mine in Brazil was divested during 2022.
A higher quality portfolio significantly reduces emissions

Since 2010 AWAC has sought to improve the quality of its portfolio of assets and reduce its reliance on coal and oil as an energy source. This has enabled AWAC to achieve significant reductions in its carbon emissions. A number of less competitive assets reliant on high emission fuels were closed or curtailed in the middle of the last decade as the commodity cycle moved against aluminium and its main inputs, alumina and bauxite. The Point Henry smelter and its associated Anglesea coal-fired power station were closed, reducing consumption of electricity generated from brown coal, and the Suralco and Point Comfort refineries were curtailed and later closed, reducing consumption of fuel oil and natural gas respectively. In 2010, AWAC’s most inefficient assets contributed relatively more to its total portfolio emissions. Reducing the output of these assets has resulted in highly significant reduction of emissions over the current portfolio, and improved financial performance owing to the better energy efficiency and greater competitiveness of the remaining core assets.

AWAC’s historical emissions

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<tbody>
<tr>
<td>CO2e</td>
<td>16.4</td>
<td>16.5</td>
<td>16.4</td>
<td>16.1</td>
<td>14.4</td>
<td>11.5</td>
<td>9.9</td>
<td>8.7</td>
<td>9.2</td>
<td>9.1</td>
<td>8.8</td>
<td>8.8</td>
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Divestments, fuel substitution, renewals uptake and general efficiencies contribute

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<tbody>
<tr>
<td>CO2e</td>
<td>15.8</td>
<td>7.3</td>
<td>8.3</td>
<td>8.9</td>
<td>1.3</td>
<td>6.8</td>
<td>6.6</td>
<td>6.3</td>
<td>6.5</td>
<td>6.6</td>
<td>6.5</td>
<td>6.5</td>
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</table>

Event timeline:
- Jamalco refinery divested
- Point Henry smelter closure
- Suralco refinery curtailment
- Point Comfort refinery curtailment
- Alumar refinery ramp up
- San Ciprian refinery switches to natural gas
- Victoria (i.e. Portland) transitioning to renewables

* Scope 1 & 2 emissions. AWAC’s equity share of facilities
Refining cost and emissions leadership

AWAC’s portfolio of refineries is one of a handful of alumina refiners in the first quartile for both emissions intensity and cost position. AWAC has a credible plan to maintain leadership in emissions intensity. Please note that the size of the bubble represents the relative share of global alumina production.

Global emissions intensity & cash cost: Relative emissions intensity & cost position of alumina refineries

Approximate source of AWAC’s Scope 1 and 2 emissions

The chart shows the approximate source of AWAC’s emissions by activity and fuel source.

Source: CRU, July 2022. Please note that this chart represents a historical summary of AWAC’s emissions and costs, and its future position can be influenced by the actions of AWAC or other competitors.
Decarbonisation strategy

AWAC's indicative decarbonisation roadmap.

<table>
<thead>
<tr>
<th>Decarbonisation enablers</th>
<th>Alumina Refining</th>
<th>Aluminium Smelting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology/Catalyst</strong></td>
<td>Mechanical Vapour Recompression for digestion</td>
<td>Electric calcination</td>
</tr>
<tr>
<td><strong>Energy Requirement</strong></td>
<td>Cost competitive renewable energy generation</td>
<td>Government policies supporting investment in abatement and R&amp;D</td>
</tr>
</tbody>
</table>

Alumina Limited has announced that it will, through working with the AWAC joint venture, strive for AWAC to reduce its direct and indirect emission (scope 1 and 2) by 45% by 2030 from a 2010 baseline, and to net zero by 2050.

AWAC’s ability to reach net zero is contingent on certain factors, including:
- Advancements in technologies to commercial viability, such as Mechanical Vapour Recompression (MVR) and Electric Calcination (EC) which AWAC is evaluating;
- The ability of AWAC’s aluminium smelter to use inert anode technology, such as ELYSIS which our JV partner Alcoa is developing with its partners;
- The availability of cost competitive renewable energy generation, which will be required to power new technologies and displace fossil fuels; and
- Government policy settings that support investment in decarbonisation and options to offset remaining emissions.

Alumina Refining

To facilitate the decarbonisation of AWAC’s refineries, AWAC is conducting R&D on two particular types of technology, MVR and EC. These technologies have not been applied to an alumina refinery, and will require investment this decade to prove their capability and commerciality. If MVR is able to be retrofitted to our refineries, then it provides AWAC with a number of advantages. These include improved energy efficiency, reduced water usage (eliminates up to 35% of freshwater use), and the ability for digestion to be emissions free if the electricity is contracted with a green power purchase agreement. MVR is also able to capture and recycle the waste steam from EC, saving 100% of the water content from the original feedstock.

AWAC’s refineries could also reduce emissions through actions such as fuel switches, electric boilers, or green hydrogen. AWAC’s mining fleet could reduce emissions through electrification using battery storage or green hydrogen.

AWAC’s refineries predominantly use natural gas, whilst the Portland smelter utilises electricity from the Victorian electricity grid. In order to decarbonise, AWAC will likely be further reliant on green electricity in the jurisdictions where its assets are located, as MVR and EC will utilise green electricity to substitute heat generated by burning of fossil fuels. This will require continued investment from generators and governments in low-cost renewable generation technology.

Inert anode technology is the first industrial process that could emit pure oxygen, and when combined with renewable electricity, produce carbon free aluminium. An example of this is Elysis, which is being developed in a joint venture between Alcoa and Rio Tinto. The process is being ramped up to industrial-sized scale through additional development work.

2. Inert anode technology is the first industrial process that could emit pure oxygen, and when combined with renewable electricity, produce carbon free aluminium. An example of this is Elysis, which is being developed in a joint venture between Alcoa and Rio Tinto. The process is being ramped up to industrial-sized scale through additional development work.
Recommendations and supporting recommended disclosures

<table>
<thead>
<tr>
<th>1. GOVERNANCE</th>
<th>2. STRATEGY</th>
<th>3. RISK MANAGEMENT</th>
<th>4. METRICS AND TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure the organisation’s governance around climate-related risks and opportunities.</td>
<td>Disclosure the actual and potential impacts of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning where such information is material.</td>
<td>Disclosure how the organisation identifies, assesses, and manages climate-related risks.</td>
<td>Disclosure the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.</td>
</tr>
</tbody>
</table>

### 1. GOVERNANCE

**1.a** Describe the board’s oversight of climate-related risks and opportunities.  
**Read more here**

**1.b** Describe management’s role in assessing and managing climate-related risks and opportunities.  
**Read more here**

### 2. STRATEGY

**2.a** Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.  
**Read more here**

**2.b** Describe the impact of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning.  
**Read more here**

**2.c** Describe the resilience of the organisation’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.  
**Read more here**

### 3. RISK MANAGEMENT

**3.a** Describe the organisation’s processes for identifying and assessing climate-related risks.  
**Read more here**

**3.b** Describe the organisation’s processes for managing climate-related risks.  
**Read more here**

**3.c** Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation’s overall risk management.  
**Read more here**

### 4. METRICS AND TARGETS

**4.a** Describe the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.  
**Read more here**

**4.b** Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.  
**Read more here**

**4.c** Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.  
**Read more here**

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**ALUMINA LIMITED**  
**SUSTAINABILITY UPDATE 2021**
1. Governance

1a. The Board’s oversight of climate-related risks and opportunities.

Alumina’s Board has ultimate responsibility over climate-related risks and opportunities. This responsibility is effectively managed through the Sustainability Committee and the Audit and Risk Management Committee (ARMC). The ARMC and the Sustainability Committee meet four times per year. Currently, all members of the Board are on the Sustainability Committee and the ARMC.

The ARMC oversees management’s development of a Risk Management Strategy (RMS) that sets out how they will identify, mitigate, manage and monitor risks. In respect of Climate Change Risk, the CEO and the ESG Team are responsible for developing their RMS. The ESG Team report back to the ARMC through the Risk Appetite Statement (which contains tolerances for certain climate change risks).

The Sustainability Committee oversees management’s execution of the workplan, which includes work associated with climate change.

The Board of Directors and the Sustainability Committee

Our Board has ultimate responsibility over all sustainability matters at Alumina Limited and are involved in the development and integration of Alumina Limited’s values, policies, and goals. Effective governance is key to driving improvement in any area of business.

The Sustainability Committee Charter sets out the roles and responsibilities of the committee. It meets at least quarterly to assist and provide recommendations to the Board in relation to ESG matters including:

- reviewing and approving relevant sustainability strategies, policies and position statements including on climate change
- considering community, climate change and broader sustainability concerns
- monitoring performance against targets
- reviewing and providing advice on proposed long-term targets and aspirations
- reviewing and approving sustainability reports.

The Board of Directors and the Audit and Risk Management Committee

Our Board has ultimate responsibility over audit and risk management matters at Alumina Limited. The Audit and Risk Management Committee (ARMC) acts as the delegate of the Board in these matters, which include:

- overseeing and reviewing the Company’s risk management framework and the effectiveness of its risk management, by:
  - assessing the Company’s exposure to business risks including the strategies in place for managing key risks
  - reviewing and ratifying management’s actions in the identification, evaluation, management, monitoring and reporting of material risks
  - monitoring management’s performance against the Company’s Risk Management Framework (RMF)
- review any material risk incidents.

Alumina Limited maintains a formal RMF, which is overseen by the ARMC. The RMF contains the following elements:

- Risk management policy, which is approved initially and reviewed annually by the ARMC, as the delegate of the Board of Directors
- Procedural document
- Risk management strategy, which explains how Alumina identifies, mitigates, manages, monitors, reports its material risks
- Risk appetite statement, which contains risk appetite & tolerance statements that are approved and monitored by the ARMC
- Risk profile, which captures the material risks of Alumina, and for each risk provides a description, an allocated risk owner, appropriate risk management strategy, controls, a forward action plan, and an inherent / residual risk rating based on probability and impact of a risk eventuating.
1b. Management’s role in assessing and managing climate-related risks and opportunities.

Alumina Limited’s role in the AWAC joint venture

As the non-operating/minor partner, Alumina Limited is restricted to the rights afforded to it under the AWAC joint venture agreements, and this is similar in respect of assessing and managing climate-related risks and opportunities. The joint venture rights are summarised in the joint venture agreements, which are frequent formal interactions with Alcoa. Under the joint venture agreement, Alumina Limited is entitled to:

- Two out of five members of AWAC’s Strategic Council. The Strategic Council is the principal forum for Alcoa and Alumina Limited to provide direction and counsel to the AWAC entities in respect of strategic and policy matters.

Management is informed and monitors climate-related risks through:

- Independent assessment of climate-related risks assessment, and associated research (including completion of training and attendance at conferences)
- Formal quarterly meetings with representatives from Alcoa’s sustainability management to discuss a range of ESG matters, including climate change, and other ad-hoc meetings to discuss specific climate-related topics
- Review of periodic climate-related data (e.g. emissions) from Alcoa and other information requested in respect of specific climate-related issues.

Relevant climate-related information (e.g. The annual sustainability update, and progress against targets) is formally reported by the ARMC via the Risk Appetite Statement.

2. Strategy

2a. Climate-related risks and opportunities the organisation has identified over the short, medium and long term.

Background to climate-related risk and opportunity assessment

In 2021, Alumina Limited independently conducted a qualitative assessment of climate-related risks and opportunities for our business in alignment with the recommendations of the TCFD. We identified 28 risks and 5 opportunities and assessed these against three climate change scenarios consistent with RCP (Representative Concentration Pathway) 4.5 and RCP 8.5. We have not presented RCP 4.5 in the table below as the study did not indicate any notably different impacts from the extreme scenarios, which showed the same directional impacts but to a more pronounced extent.

The following tables present the material inherent (i.e. prior to any adaptation and mitigation actions undertaken by Alumina Limited or AWAC) climate-related risks and opportunities for our business, from Alumina Limited’s perspective. Other risks analysed, but deemed to be less material, included those arising from higher annual rainfall, increased intensity and duration of extreme heat, sea level rise and unsuccessful investment, as well as opportunities such as carbon market participation. The impacts shown reflect the most extreme scenario for stress testing purposes. For transition risks and opportunities, this is RCP 2.6 and for physical risks and opportunities this is RCP 8.5. We have not presented RCP 4.5 in the table below as the study did not indicate any notably different impacts from the extreme scenarios, which showed the same directional impacts but to a more pronounced extent.

Climate-related risks and opportunities

- Independent assessment of climate-related risks assessment, and associated research (including completion of training and attendance at conferences)
- Formal quarterly meetings with representatives from Alcoa’s sustainability management to discuss a range of ESG matters, including climate change, and other ad-hoc meetings to discuss specific climate-related topics
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### Physical Risks*

<table>
<thead>
<tr>
<th>Risk</th>
<th>Name</th>
<th>Description</th>
<th>Short term impact</th>
<th>Medium term impact</th>
<th>Long term impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute; Chronic</td>
<td>Flooding: tailings &amp; dam design Higher rainfall: tailings &amp; dam design</td>
<td>Increased frequency and severity of extreme precipitation events and higher annual rainfall across some sites (e.g., in South America) may result in more stringent tailings and water dam design criteria which may result in capital expenditure to meet the new criteria</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td></td>
<td>Flooding: discharge Higher rainfall: discharge</td>
<td>Increased frequency and severity of extreme precipitation events and higher annual rainfall across some sites (e.g., in South America) may cause water management structures to fail resulting in significant capital and operational expenditure as well as lower revenue due to site shut down</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td>Acute</td>
<td>Flooding: dam failure</td>
<td>Increased frequency and severity of extreme precipitation events may cause water management systems to exceed capacity resulting in discharge which may result in additional capital and operational expenditure</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td></td>
<td>Bushfires: production/logistics delay</td>
<td>Increased frequency and severity of bushfires may cause disruptions resulting in loss of revenue from down time and additional capital and operational expenditure</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td></td>
<td>Cyclone: production/logistics delay</td>
<td>Increased frequency and severity of high wind events may cause disruptions resulting in loss of revenue from down time and additional operational expenditure</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td>Chronic</td>
<td>Lower rainfall: water stress/quality</td>
<td>Increased average temperatures, lower annual rainfall and increased frequency and period of drought may increase water stress at our water-intensive alumina refining operations which may result in lower revenue due to production ramp downs and additional capital and operational expenditure</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
<tr>
<td></td>
<td>Conflict: water security</td>
<td>Conflict over water resources arising from physical risks of climate change may impact on our social licence to operate</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
<td>![Grey Circle]</td>
</tr>
</tbody>
</table>

*This analysis was qualitative in nature. The impact is directional and limited to relative magnitude. There are inherent limitations with scenario analysis given it is forward-looking and encompasses many unknowns. This analysis is based on assumptions we made which may or may not prove to be correct. Additionally, there may be factors we have not considered as part of this analysis.
## Transition Risks*

<table>
<thead>
<tr>
<th>Risk</th>
<th>Name</th>
<th>Description</th>
<th>Short term impact</th>
<th>Medium term impact</th>
<th>Long term impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and legal</td>
<td>Regulatory standards</td>
<td>Higher standards and increased regulatory scrutiny may impact on our ability to obtain licences and increase operational expenditure</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td></td>
<td>Carbon pricing</td>
<td>Exposure to carbon pricing may increase operational expenditure and may result in higher costs for purchased goods and services if passed on by suppliers</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td></td>
<td>Policy uncertainty</td>
<td>Policy uncertainty may limit our capacity to prepare for a structured transition resulting in increased costs and disruption to the business</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td>Market</td>
<td>Material substitution</td>
<td>Materials substitution in key markets (e.g. automotive, construction, packaging, power infrastructure) may have adverse impacts on revenue</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td></td>
<td>Substitution of primary production</td>
<td>Decreased demand from substitution of primary production with secondary production</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td>Technology</td>
<td>Changing customer preferences</td>
<td>Failure to respond to customer preferences and demand for low carbon branded aluminium products may have adverse impacts on revenue</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td></td>
<td>Transitioning technology</td>
<td>Transitioning to lower-emission technology may result in increased capital and operational expenditure</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
<tr>
<td>Reputation</td>
<td>Reputation: inaction</td>
<td>Reputational damage due to inaction on climate change may impact our capacity to secure capital, cost of capital, insurance and approvals, and affect ability to retain or attract skilled staff</td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
<td><img src="#" alt="Grey circles" /></td>
</tr>
</tbody>
</table>

* This analysis was qualitative in nature. The impact is directional and limited to relative magnitude. There are inherent limitations with scenario analysis given it is forward-looking and encompasses many unknowns. This analysis is based on assumptions we made which may or may not prove to be correct. Additionally, there may be factors we have not considered as part of this analysis.
<table>
<thead>
<tr>
<th>Risk and services</th>
<th>Description</th>
<th>Short term impact</th>
<th>Medium term impact</th>
<th>Long term impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products and services</td>
<td>Increased demand from expansion of low-carbon branded aluminium products to capitalise on customer demand for “green metals”</td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
</tr>
<tr>
<td>Markets</td>
<td>Increased demand from technology shifts as part of the clean energy transition and product substitution towards aluminium</td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
</tr>
<tr>
<td>Energy source</td>
<td>Increased uptake of lower-emission sources of energy may reduce operational expenditure</td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
</tr>
<tr>
<td>Resilience to physical climate risks</td>
<td>Increased resilience to physical climate-related risks may minimise disruptions to operations and lower expenditure</td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
<td><img src="#" alt="Green circle" /></td>
</tr>
</tbody>
</table>

* This analysis was qualitative in nature. The impact is directional and limited to relative magnitude. There are inherent limitations with scenario analysis given it is forward-looking and encompasses many unknowns. This analysis is based on assumptions we made which may or may not prove to be correct. Additionally, there may be factors we have not considered as part of this analysis.

**Green circles** reflect potential positive impacts. The greater the size of the bubble, the greater the potential impact. We will refine these risks as material information comes to our attention.
2b. The impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.

As described in section 1b, Alumina Limited is the non-operating and minor partner of the AWAC joint venture, and its powers, including the ability to influence decarbonisation, are limited to the scope described in the AWAC joint venture agreements in respect of capital expenditure, acquisitions, and divestments/curtailments. As such, Alumina Limited can influence, but not control AWAC’s climate-related strategy.

Products and services
AWAC provides its low-carbon alumina brand EcoSource, which has no more than 0.6 metric tonnes of CO₂e per tonne of smelter grade alumina. There is also potential that secondary products can be derived from AWAC’s bauxite residue.

Supply chain and/or value chain
AWAC is still in the process of analysing its supply and value chain, in particular the impact of upstream and downstream Scope 3 emissions.

Adaptation and mitigation activities
Adaptation and mitigation activities are discussed in section 4a of this report.

Over the coming years, AWAC will embark on an R&D program to assess MVR and EC. If technical and commercial studies are successful for MVR and EC, then installation of pilot modules will proceed at the Wagerup and Pinjarra refineries respectively. For MVR, the Australian Renewable Energy Agency (ARENA) contributed support of A$11.3 million. For the EC project, the Australian Renewable Energy Agency (ARENA) contributed support of A$8.6 million, whilst West Australia’s Clean Energy Future Fund (CEFF) contributed A$1.7 million.

Financial planning process (operating costs and revenues, capital expenditures and capital allocation, acquisitions or divestments, access to capital)
To the extent that a climate-related issue would fall under the scope of the joint venture agreement, and is required to be approved by Alumina Limited, Alumina Limited applies its Investment Approval Framework (IAF) to determine the appropriateness and prioritisation of the project compared to a number of factors including Alumina Limited’s long-term strategy, and also with consideration of risks such as climate change, carbon price, social/community, reputational and environmental risks. The IAF also allows for scenario analysis of a range of factors including cost and price assumptions.

Alcoa and Alumina Limited both have net zero by 2050 ambitions. The priority for AWAC is decarbonising its refineries through technologically and commercially suitable solutions. The current focus is on research and development for MVR and EC. Only once a project has been approved and funding has been committed in accordance with the joint venture agreements, it would be incorporated into internal financial forecasts, and where relevant disclosed to shareholders. Alumina Limited would also include relevant cash flows (capital expenditure, and corresponding operating costs and revenue) in its internal corporate valuation model.
2c. The resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

The scenario processes

In order to test the resilience of AWAC’s strategy to transitional risks under a 2°C, Alumina Limited engaged a consultant with economic, commodity and climate-change experience. The use of the consultant’s inputs was maximised to promote independence; hence the views of the consultant may differ to Alumina Limited’s internal views.

We also undertook a scenario at a 1.5°C warming scenario, however the results were broadly consistent with the 2°C scenario.

Methodology

A dynamic model was created with annual forecasts out to 2050. Key inputs into the model included asset level forecasts (production, costs, emissions profiles, fuel mix) GDP, carbon price and metal demand.

The model derives costs curves (including the impact of a carbon price), emissions intensity curves, demand/supply, and alumina/aluminium prices.

Limitations

Scenario testing utilises modelling to help inform our understanding of an outcome. Models employ a finite selection of data, and cannot account for every input or event and it is possible that assumptions may not eventuate. Models may not be able to respond to “sudden shocks” to certain assumption. We do not know all plans of peers, and many plans have not been finalised or achieved final investment decision. Also, it is not possible to model all producers’ behaviour and how a particular producer may respond to an event (e.g. what carbon price would incentivise a producer to decarbonise).

Key assumptions of the consultant

<table>
<thead>
<tr>
<th>Key driver</th>
<th>Assumption^</th>
<th>2 degrees case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The base is calculated from committed and funded reduction activities, resulting in ~2.5-2.7°C warming compared to pre-industrial levels. Under a base case, decarbonisation is muted.</td>
<td>Accelerated energy transition, which results in greater demand for commodities, such as aluminium and in-turn alumina. Higher carbon prices mean that secondary aluminium will continue to grow in popularity.</td>
</tr>
<tr>
<td>GDP annual growth</td>
<td>China: ~3-6%</td>
<td>China: ~3-6%</td>
</tr>
<tr>
<td></td>
<td>India: ~4-7%</td>
<td>India: ~4-7%</td>
</tr>
<tr>
<td></td>
<td>RoW (“Rest of World”): ~1.5-3%</td>
<td>RoW: ~1.5-3%</td>
</tr>
<tr>
<td>Aluminium demand growth to 2050 (&quot;CAGR&quot;, cumulative annual growth rate) to 2050</td>
<td>Total: 1.3%</td>
<td>Total: 1.7%</td>
</tr>
<tr>
<td></td>
<td>Primary: 0.6%</td>
<td>Primary: 0.8%</td>
</tr>
<tr>
<td></td>
<td>Secondary: 2.9%</td>
<td>Secondary: 3.6%</td>
</tr>
<tr>
<td>Aluminium demand growth to 2050 (CAGR)</td>
<td>0.5%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Energy mix/grid emissions intensity</td>
<td>In-line with jurisdictional forecasts</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>Incremental step changes have been modelled by country/grid/technology/locale of plant etc.</td>
<td></td>
</tr>
</tbody>
</table>
Potential impact on AWAC and resilience of strategy

The results of the scenario testing indicate that AWAC’s strategy should be generally resilient under a 2°C degree scenario. As explained earlier, AWAC has a decarbonisation strategy that is aimed at electrifying its refineries in order to economically switch from fossil fuels to renewable electricity. However, being a low-cost and low-emissions alumina producer puts AWAC in a strong position to begin with relative to peers. AWAC is in this enviable position as the bulk of its refining capacity in Western Australia is adjacent to long life bauxite mines, and close to relatively low-cost natural gas transmission.

A general observation that we have around the aluminium industry is that whilst many producers have net zero aspirations, decarbonisation strategies rely on commercialisation of technology which is currently not utilised at scale in the production of alumina or aluminium (for example hydrogen, and inert anodes).

Commercialisation of such technologies may take some time, and deployment of such technologies will take longer, and hence there is uncertainty involved in the decarbonisation pathway of the aluminium value chain.

Primary aluminium, and consequently alumina, are expected to be in strong demand for this decade, which will put upward pressure on prices of these two commodities. In future decades, under lower emissions scenarios, there may be an increased preference for lower energy intensity secondary aluminium at the expense of primary aluminium. Carbon prices are likely to result in higher aluminium and alumina prices, whereby low-cost alumina producers like AWAC are likely to see margin expansion due to lower carbon liabilities.

The findings below summarise the direction/qualitative impact on AWAC’s resilience associated with the scenario testing.

<table>
<thead>
<tr>
<th>Summary of directional/qualitative findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scale identifies indicative impact to AWAC (&quot;resilience&quot;) as a result of a 2°C scenario relative to the Base Case</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential impact on AWAC (Delta from the Base Case to 2° degree scenario)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium term impact (2024-34)</td>
</tr>
<tr>
<td>High Negative Impact</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Policy &amp; legal</td>
</tr>
<tr>
<td>Carbon Pricing</td>
</tr>
<tr>
<td>Technology</td>
</tr>
<tr>
<td>Changing customer preferences</td>
</tr>
<tr>
<td>Market</td>
</tr>
<tr>
<td>Material substitution</td>
</tr>
<tr>
<td>Substitution of primary production</td>
</tr>
<tr>
<td>Products &amp; services</td>
</tr>
<tr>
<td>Low-carbon alumina &amp; aluminium</td>
</tr>
<tr>
<td>Markets</td>
</tr>
<tr>
<td>Technology shifts &amp; product demand</td>
</tr>
</tbody>
</table>
3. Risk management

3a. The organisation’s processes for identifying and assessing climate-related risks.

Alumina Limited’s general approach to risk management


Alumina Limited maintains a formal Risk Management Framework (RMF), which is overseen by the Audit and Risk Management Committee (ARMC). The key elements of the RMF are described in sections 1a and 1b of this report.

Alumina Limited’s specific process for identifying and assessing climate-related risks

Climate-related risks are identified and assessed in a manner which follows Alumina Limited’s general approach to risk management.

As noted in the Annual Report, Alumina Limited has a specific “Climate Change Risk”. The ESG Team, led by the Chief Executive Officer and the General Counsel are joint owners of this risk. Thus, the ESG Team is responsible for identifying and assessing climate-related risks.

The relative significance and magnitude of climate-related risks is discussed throughout the annual RMF process, when developing the annual work plans for the ESG Team, and the project whereby we identified climate-related risks and opportunities as described in section 2a of this report. Emerging regulatory requirements related to climate change (e.g. limits on emissions) are considered in Alumina Limited’s RMF, along with the other physical and transitional risks noted in section 2a of this report.

3b. The organisation’s processes for managing climate-related risks.

Process for climate-related risk prioritisation and management

Alumina Limited’s ESG Team is responsible for managing climate-related risks. As noted in section 1b, Alumina Limited is not the manager of the joint venture, so is restricted to managing climate-related risks in accordance with the joint venture agreement, and influencing our joint partner.

As described in section 2b and 4a of this report, the risks of highest priority are transitional risks in the medium term, and impoundments in respect of physical risks. These risks are reflected in Alumina Limited’s RMF, along with the other physical and transitional risks noted in section 2a of this report. Emerging regulatory requirements related to climate change (e.g. limits on emissions) are considered in Alumina Limited’s RMF, along with the other physical and transitional risks noted in section 2a of this report.

For ESG Risks in general, including Climate Change risk, Alumina Limited’s materiality assessment involves the following:

- Consideration of material risks identified by Alcoa
- Comprehensive materiality assessment (approximately every three years) guided by Global Reporting Initiative (GRI) Standards
- Engaging with internal and external stakeholders annually
- Consideration of industry issues and trends, including from discussions with a number of industry associations.

Materiality

In accordance with Alumina Limited’s Risk Management Framework, materiality isn’t necessarily prescriptive, however we use an array of possible conventions to determine what may be material (e.g. financial metrics, qualitative indicators). Climate Change is a material risk for Alumina Limited.

Recent examples of climate-related risk management prioritisation

Alumina Limited believes that the key to mitigating the transitional risks described in section 2b and 4a is reducing the carbon footprint of AWAC, and maintaining its position as a leader in emissions intensity. Having a low emissions intensity, and actively pursuing improvements, insulates AWAC from risks such as “policy & legal”, “market”, “technology”, and “reputation”.

As discussed in the introduction, AWAC has historically reduced high emission intensity and high-cost assets through mitigation (closure) or transfer (sale). Decisions to close assets are never easy, and are undertaken with consideration of many factors, including market conditions, age of plant, available inputs (e.g. bauxite, energy).

In terms of physical risks, Alumina Limited reviews AWAC’s impoundment management. AWAC has committed to conform to with the ICMM’s Global Industry Standard on Tailings.

3c. The processes for identifying, assessing, and managing climate related risks are integrated into the organisation’s overall risk management.

The process for identifying, assessing and managing climate-related risks is embedded within Alumina Limited’s RMF. There are specific Risk profiles for ESG and Climate Change Risks, as well as climate-related metrics in Alumina Limited’s Risk Appetite Statement. Climate Risk is also considered in the IAF. Climate change is effectively managed through the ESG Team.
4. Metrics and targets

4a. The metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.

Metrics used by Alumina Limited to assess, measure and manage climate risks and opportunities

Alumina Limited concentrates on an array of metrics to assess, measure and manage climate risks and opportunities. These key metrics have generally been published in our sustainability updates for some time.

Metrics are not specifically incorporated into remuneration, however elements of the sustainability work program are included in the Short-Term Incentive (STI) scorecard, as described in the Remuneration Report included in the Alumina Limited Annual Report of 2021 [www.aluminalimited.com/annual-reports].

The adaptation and mitigation activities listed are just indicative courses of action that may be taken to reduce risks. Unless otherwise stated, the project or CAPEX may not have been approved or committed.
### Examples of potential adaptation and mitigation activities

<table>
<thead>
<tr>
<th>Metric</th>
<th>Units</th>
<th>Description &amp; importance</th>
<th>Potential risks &amp; opportunities</th>
<th>Potential adaptation &amp; mitigation activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy intensity</td>
<td>Gigajoule (GJ) of energy required</td>
<td>As AWAC’s energy is currently derived from fossil fuels, improving energy intensity through efficiency can help reduce consumption of fossil fuels, and consequently reduce AWAC’s emissions. Using less energy is preferable also as it reduces production costs.</td>
<td>Risks: • Acute &amp; chronic physical risks (listed in section 2a) may manifest as a result of industry in general not reducing GHG emissions. • All transitional risks (listed in section 2a) may manifest.</td>
<td>Refining: • Mechanical Vapour Recompression</td>
</tr>
<tr>
<td>Direct energy consumption</td>
<td>Gigajoules (GJ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect energy consumption</td>
<td>Gigajoules (GJ) of electricity &amp; steam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of renewable energy</td>
<td>Renewable electricity (GJ) divided by total electricity (GJ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Greenhouse gas (GHG) emissions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refinery greenhouse gas intensity</td>
<td>Tonnes of GHG (scope 1 &amp; 2) per tonne of alumina production</td>
<td>Additionally, fuel switches, electrification of refineries provide the potential to use alternate sources of energy (e.g. electricity generated from renewables).</td>
<td>Opportunities: • All opportunities (listed in section 2a) may eventuate as a result of AWAC decarbonising.</td>
<td></td>
</tr>
<tr>
<td>Smelter greenhouse gas intensity</td>
<td>Tonnes of GHG per tonne (scope 1 &amp; 2) of alumina production</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse gas emissions</td>
<td>Tonnes CO₂-e (scope 1, 2 &amp; 3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshwater intensity</td>
<td>Cubic metres/tonne of production</td>
<td>AWAC’s refineries (and Junalus), are reliant on water for operations. Reducing and recycling water are preferable to freshwater use, particularly in water scarce areas such as the Darling Ranges.</td>
<td>Risks: • Lower rainfall: water stress/quality • Water security • Regulatory standards • Reputation: inaction</td>
<td>Refining: • Mechanical Vapour Recompression • Press filtration (deployed at Pinjarra &amp; Kwinana)</td>
</tr>
<tr>
<td>Freshwater withdrawal</td>
<td>Millions of cubic metres</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total water-use intensity</td>
<td>Cubic meters of water per metric ton of alumina produced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(water stress areas)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Waste management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bauxite residue storage efficiency</td>
<td>Square metres of land required per thousand tonnes of alumina produced</td>
<td>Critically, AWAC’s operations rely on impoundments to manage waste from the refining process, and to a lesser extent tailings. Reducing or recycling refinery waste (e.g. water) helps reduce waste that needs to be managed, for example in residue storage areas (RSAs).</td>
<td>Risks: • Flooding: tailings &amp; dam design • Higher rainfall: tailings &amp; dam design • Flooding: dam failure • Lower rainfall: water stress/quality • Conflict: water security • Regulatory standards • Reputation: inaction</td>
<td>Refining: • Mechanical Vapour Recompression • Press filtration (deployed at Pinjarra &amp; Kwinana)</td>
</tr>
<tr>
<td>Bauxite residue intensity</td>
<td>Tonnes per tonnes of alumina produced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landfilled waste</td>
<td>Tonnes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five-year disturbance to rehabilitation ratio</td>
<td>Disturbance excludes long-term infrastructure</td>
<td>AWAC’s bauxite mines disturb land. AWAC’s mines generally have shallow top soil, overburden covering the ore body. After bauxite has been extracted, rehabilitation can occur quickly to return the area to its natural state. Vegetation is vital to absorb GHG, limit erosion &amp; flooding.</td>
<td>Risks: • Acute &amp; chronic physical risks (listed in section 2a) may manifest as a result of industry in general not reducing GHG emissions. • Regulatory standards • Reputation: inaction</td>
<td>Mining: • Comprehensive rehabilitation plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALUMINA LIMITED SUSTAINABILITY UPDATE 2021**
4b. Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.

Greenhouse gas emissions

AWAC has been disclosing its scope 1 & 2 greenhouse gas emissions since 2010, and its scope 3 emissions since 2017. The risks climate-related risks associated with greenhouse gas emissions were briefly described in section 4a.

<table>
<thead>
<tr>
<th>2021 GHG emissions</th>
<th>Million tonnes CO₂-e* (Full Facility Basis)</th>
<th>Million tonnes CO₂-e (Equity Basis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 (direct)</td>
<td>7.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Scope 2 (indirect)</td>
<td>3.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Total (Scope 1 &amp; 2)</td>
<td>11.5</td>
<td>8.8</td>
</tr>
<tr>
<td>Scope 3^</td>
<td>40.9</td>
<td></td>
</tr>
</tbody>
</table>

* Utilises Greenhouse Gas Protocol developed by the World Resources Institute and World Business Council for Sustainable Development to establish boundaries for calculations and accounts for mergers, acquisitions, divestitures, startups, curtailments and closures of operating facilities. The Intergovernmental Panel on Climate Change Guidelines and country-specific databases, such as the U.S. Environmental Protection Agency’s Emissions & Generation Resource Integrated Database, continue to serve as our source of data for GHG applicable emission factors.

^ Scope 3 has been calculated on an Alcoa control basis. Hence it excludes the scope 3 emissions associated with smelting of AWAC alumina in Alcoa smelters.

Key industry specific GHG efficiency ratios

The key aluminium industry specific GHG efficiency ratios are:

<table>
<thead>
<tr>
<th>2021 GHG emissions*</th>
<th>Units</th>
<th>Tonnes CO₂-e Per unit of production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refinery greenhouse gas intensity</td>
<td>Tonnes of GHG (scope 1 &amp; 2) per tonne of alumina production</td>
<td>0.516</td>
</tr>
<tr>
<td>Smelter greenhouse gas intensity</td>
<td>Tonnes of GHG per tonne (scope 1 &amp; 2) of aluminium production</td>
<td>13.10</td>
</tr>
<tr>
<td>Combined smelter and refinery</td>
<td>Tonnes of GHG per tonne of production (Calculated as smelting intensity + (1.9 x refining intensity))</td>
<td>14.080</td>
</tr>
</tbody>
</table>
### Greenhouse gas emissions (scope 1 & 2)

**Million tonnes of CO₂e**

- **2010 Baseline:** 15.8 Mt

#### Historical emissions

- **2010 Baseline:** 15.8 Mt
- **2011:** 15.8 Mt
- **2012:** 15.8 Mt
- **2013:** 15.8 Mt
- **2014:** 15.8 Mt
- **2015:** 15.8 Mt
- **2016:** 15.8 Mt
- **2017:** 15.8 Mt
- **2018:** 15.8 Mt
- **2019:** 15.8 Mt
- **2020:** 15.8 Mt

**2030 Target**

- **2025 Target:** 8.7 Mt (4% reduction)
- **2030 Target:** 5.3 Mt (15% reduction)

#### Historical adjustments

- Historical emissions have been adjusted to remove the Clarendon Refinery, which was sold in 2014.

### Bauxite residue storage efficiency

Square metres of land required per thousand tonnes of alumina produced

- **2015 Baseline:** 53
- **2016:** 51
- **2017:** 50
- **2018:** 48
- **2019:** 47
- **2020:** 46
- **2021:** 45

**2030 Target**

- **2025 Target:** 48
- **2030 Target:** 45

### Refinery GHG intensity

**Tonnes of GHG per tonne of alumina production**

- **2015 Baseline:** 0.54
- **2016:** 0.536
- **2017:** 0.531
- **2018:** 0.521
- **2019:** 0.518
- **2020:** 0.515
- **2021:** 0.516

**2025 Target**

- **2025 Target:** 0.516 (4% reduction)

**2030 Target**

- **2030 Target:** 0.506 (12% reduction)

### Landfilled waste

**Tonnes**

- **2015 Baseline:** 14,137
- **2016:** 6,353
- **2017:** 4,540
- **2018:** 6,124
- **2019:** 5,682
- **2020:** 4,324
- **2021:** 3,297

**2025 Target**

- **2025 Target:** 6,124 (15% reduction)

**2030 Target**

- **2030 Target:** 4,324 (25% reduction)

### Mine disturbance ratio

**Ratio of active mining disturbance (excluding long-term infrastructure) to mine rehabilitation**

- **2018 (2018–2014):** 1.02
- **2019 (2019–2015):** 0.97
- **2020 (2020–2016):** 0.92
- **2021 (2021–2017):** 0.82

**Target**

- **Target:** (Less than 1)

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**4c. The targets used by the organization to manage climate-related risks and opportunities and performance against targets.**
ALUMINIUM BEVERAGE CANS — SUPPORTING A CIRCULAR ECONOMY

Compared with glass and plastic (polyethylene terephthalate – PET) bottles, aluminium cans are the most recycled single-use beverage container globally, which makes them the best solution for a circular economy today.

According to a study commissioned by International Aluminium Institute (IAI), which assessed data collected from Brazil, China, Europe, Japan and the USA, the recycling rate of aluminium cans is 71%, on average 34 percentage points higher than glass and PET.

Furthermore, 98% of recycled aluminium cans are recycled into products that are recycled again, compared with 60% for glass and 20% for PET.

Once the aluminium can is collected for recycling, 90% of the metal is retained through the combined recycling process (sorting, reprocessing and thermal processing). Aluminium losses could be further reduced by implementing efficient deposit return systems in some of the key areas.

Losses in sorting, reprocessing & thermal processing (excluding collection)

<table>
<thead>
<tr>
<th>Material</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium cans</td>
<td>10%</td>
</tr>
<tr>
<td>Glass</td>
<td>33%</td>
</tr>
<tr>
<td>PET</td>
<td>34%</td>
</tr>
</tbody>
</table>

Recycling rates (weighted average)

- Aluminium cans: 71%
- Glass: 34%
- PET: 40%

2 out of 3 cans recycled

One out of three aluminium cans is back on the shelf in as little as 60 days, and one other gets recycled into other highly recyclable products.

However, there is still more to do to reach full circularity potentials for all three materials. In 2019, about 0.8 million tonnes of aluminium cans, 32.2 million tonnes of glass bottles and 3.3 million tonnes of PET bottles ended up in landfills in Europe, China, USA, Japan and Brazil combined because they were not collected for recycling.
THIS SECTION OF THE REPORT ADDRESSES HOW ALCOA, AS OPERATOR OF AWAC, MANAGES TOPICS THAT ALUMINA HAS IDENTIFIED AS MATERIAL.

Alcoa’s management approach is consistent across all its operations and is not differentiated for AWAC. However, where relevant, we have identified any aspects that are specific to AWAC. Further detail on Alcoa’s approach and performance can be found in its 2021 Sustainability Report.

Performance data in these chapters and in the Data Pack relate to AWAC only, on a ‘full facility’ basis, except where otherwise noted.
AWAC PERFORMANCE SNAPSHOT 2021

<table>
<thead>
<tr>
<th>Metric</th>
<th>2021</th>
<th>% change from 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue ($ million)</td>
<td>5,224.1</td>
<td>20.7%</td>
</tr>
<tr>
<td>Bauxite mined (million tonnes on wet basis^)</td>
<td>44.7</td>
<td>(0.7%)</td>
</tr>
<tr>
<td>Alumina produced (million tonnes)</td>
<td>12.6</td>
<td>(1.6%)</td>
</tr>
<tr>
<td>Aluminium produced ('000 tonnes)</td>
<td>151.0</td>
<td>(5.6%)</td>
</tr>
<tr>
<td>GHG (CO₂-e '000 tonnes)</td>
<td>8.80</td>
<td>(3.3%)</td>
</tr>
<tr>
<td>GHG intensity (per tonne of production)</td>
<td>14.1</td>
<td>(4.7%)</td>
</tr>
<tr>
<td>Energy intensity (Gj per tonne of production)</td>
<td>73.50</td>
<td>0.8%</td>
</tr>
<tr>
<td>Freshwater intensity (per tonne of Aluminium production)†</td>
<td>4.35</td>
<td>1.4%</td>
</tr>
<tr>
<td>Full facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>6,197</td>
<td>10.7%</td>
</tr>
<tr>
<td>Lost work days~</td>
<td>0.3</td>
<td>(12.8%)</td>
</tr>
<tr>
<td>Days away`</td>
<td>0.65</td>
<td>(12.6%)</td>
</tr>
<tr>
<td>Total Recordable Injury Rate</td>
<td>1.14</td>
<td>(13.7%)</td>
</tr>
</tbody>
</table>

^ Including moisture content (as opposed to ‘bone dry’ weight).
† Alcoa calculates intensity measures based on unit of aluminium production. To adjust for the alumina part of the value chain, refining is included at a ratio of 1.9 metric tons of alumina produced to 1.0 metric tons of aluminium produced.
~ The number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers.
` The number of recordable injuries and illnesses per 100 full-time employees resulting in a day away from work.

AWAC’S APPROACH TO SUSTAINABILITY

AWAC’s commitment to sustainability flows from its core business commitments.

In 2021, Alcoa announced a new corporate purpose: To turn raw potential into real progress, and vision: To reinvent the aluminium industry for a sustainable future. Alcoa’s three Strategic Priorities which apply to AWAC are to: reduce complexity, drive returns and advance sustainably.

These strategic priorities are supported through the three pillars of Alcoa’s sustainability strategy, which are outlined below:

- Creating sustainable value
- Enhancing product value
- Improving our footprint

Creating sustainable value
Sustain operations, preserve the license to operate and grow assets, creating sustainable value for the communities in which it operates.

AWAC actively participates in the communities where it operates, and wants those communities to succeed. AWAC views its presence as an opportunity to help develop and enable economic activity, and to create environmental practices and social programs that are sustainable, remaining well after its role ends. Simultaneously, being a good neighbour enables AWAC’s operations to grow and create additional value.

In 2021, AWAC launched a new social management system called SP360. It outlines a structured approach to minimise or avoid adverse impacts and create an environment where stakeholders that are directly or indirectly affected by AWAC’s operations can benefit. Refer to the Alcoa Sustainability Report for more information. AWAC locations also use the Alcoa Stakeholder Engagement Framework to work with stakeholders to identify local opportunities to contribute to the community.

Enhancing product value
Enhance the value of AWAC’s products through differentiation to improve profitability.

The global markets in which we compete are increasingly affected by significant challenges, including population growth, urbanisation, climate change and resource scarcity. Inherently sustainable, aluminium helps AWAC customers address these challenges and capture the opportunities they present.

Aluminium enables safer and more energy-efficient buildings, more fuel-efficient cars, trucks and airplanes, and sustainable food and beverage packaging. It is also infinitely recyclable, reducing energy and resource consumption.

In 2021, AWAC made its first sale of EcoSource™ alumina, which is the world’s first low carbon smelter-grade alumina with carbon emissions that are better than 90 percent of the global industry and part of its Sustana™ line of products. Alcoa continued to pursue Aluminium Stewardship Initiative (ASI) certification to both the Performance and Chain of Custody standards. The certification covers a wide range of indicators across the
entire value chain in the areas of governance, environmental management and social responsibility. It is the most comprehensive third-party system to verify responsible production in the aluminium industry. At the end of 2021, AWAC had 10 operating locations certified to the Performance Standard and nine operating locations certified to the Chain of Custody Standard. This allows AWAC to globally market and sell ASI-certified products in all three of its segments.

**Improving our footprint**

Reduce risk, minimise negative environmental impacts, and improve health and safety performance.

Despite technological and process advancements, primary aluminium production remains energy- and resource-intensive and also impacts the natural and workplace environments. AWAC’s ambitious 2025 and 2030 targets for greenhouse gas emissions, waste, water, mine rehabilitation, diversity and inclusion, safety and health, and social management are guiding its efforts.

AWAC also serves as a steward of the land, operating in a manner that focuses on minimising its impacts and maximising ongoing sustainable use. Biodiversity management plans, industry-leading mining and mine rehabilitation processes, and asset management that covers a facility’s entire life cycle helps us optimise our land and facility management and support our social license to operate.

AWAC’s focus on reducing its environmental footprint enables it to reduce its operational costs and future liabilities, such as landfill remediation.

**Strategic long-term goals**

Helping guide AWAC’s sustainability strategy is a set of long-term sustainability goals, which address key material issues for AWAC and its stakeholders covering the environment, employees and the communities in which it operates:

**Align greenhouse gas (GHG) (direct + indirect) emissions reduction targets with the below 2°C decarbonisation path.**

- From a 2015 baseline, reduce the intensity of total water use from water-scarce locations by 5% by 2025 and 10% by 2030.
- From a 2015 baseline, reduce landfilled waste by 15% by 2025 and 25% by 2030.
- From a 2015 baseline, reduce bauxite residue land requirements per metric ton of alumina produced by 15% by 2030.

**Maintain a corporate-wide running five-year average ratio of 1:1 or better for active mining disturbance (excluding long-term infrastructure) to mine rehabilitation.**

**Zero fatalities and serious injuries (life-threatening or life-altering injuries and illnesses).**

**Attain an inclusive everyone culture that reflects the diversity of the communities in which it operates.**

**By 2022, implement a social management system at all locations, including the definition of performance metrics and long-term goals to be accomplished by 2025 and 2030 (completed, see page 43)**
AWAC's social licence to operate is dependent on robust governance structures and processes. AWAC’s approach to sustainability builds on a solid foundation of purpose, vision and values.

This section provides an overview of Alcoa’s governance functions, as operator of AWAC. See page 16 for information about Alumina’s governance structures, and page 17 for information about how Alumina engages with Alcoa.

The Alcoa Board of Directors has adopted corporate governance guidelines and board committee charters to promote the effective functioning of the board, its committees and its overall corporate governance practices. Information about AWAC governance can be found on the Alcoa website.

AWAC’s corporate values govern the way its people act, operate and interact with customers, communities and each other. In 2021, to align with the new purpose and vision, a new value, Lead with Purpose, was added to the three existing values – Act with Integrity, Operate with Excellence, Care for People.

In 2021, AWAC’s governance of sustainability was strengthened by a Sustainability Governance Board comprised of Alcoa Executive Team members. This is to ensure that sustainability priorities are appropriately integrated within the enterprise strategy and drive sustainable business growth and value creation. The Sustainability Governance Board approves sustainability strategies, evaluates results toward targets and manages sustainability risks.

Also in 2021, AWAC began implementing Operations Risk Management (ORM) in addition to Enterprise Risk Management (ERM). This combination means there are comprehensive processes in place to identify and evaluate a broad spectrum of risks across all aspects of AWAC. The sustainability materiality assessment is linked to the corporate risk management process, and is used to inform the corporate ERM process. The Alcoa Board of Directors maintains overall oversight of risk management processes, and the Company’s management reports periodically on specific risks.

**Business integrity**

**Why this matters**

AWAC’s stakeholders need to have confidence that high levels of ethics and transparency are applied to its actions and decisions, and that these are taken in accordance with its values.

**How this is managed**

Alcoa’s Ethics and Compliance (E&C) department manages its corporate policy and procedure governance process. In 2021, Alcoa implemented an annual review process for all corporate policies and procedures, in response to a 2020 review of E&C processes.

Ethical behaviour and business integrity is communicated to AWAC employees via multiple channels including a quarterly internal newsletter, and a global network of Integrity Champions is another means to communicate and reinforce ethical behaviour at each of the AWAC locations.

Alcoa’s Code of Conduct applies to all AWAC staff, and sets the expectations for professional conduct. It details the parameters within which the organisation operates, defining AWAC’s culture and values. The Code of Conduct is provided in eight languages and made available to each employee, along with broader policies relating to AWAC, through the company intranet. All employees complete Code of Conduct training annually.

All salaried employees also complete anti-bribery training and the annual Business Conduct Survey, with a combined completion rate of 91%. Employees whose specific roles put them at a higher risk complete two further virtual courses: Anti-corruption and Respect in the workplace. Respect in the workplace training covers expectations for leaders, including the need to address inappropriate behaviour.

**Reporting and investigating**

Alcoa’s stakeholders and employees can communicate critical concerns to Alcoa’s Board of Directors through a variety of channels including by phone or mail, through stockholder engagement, and through union representation or work councils.

An independent and confidential Integrity Line is available to both internal and external stakeholders to raise questions or report concerns. It is accessible in multiple languages, 24 hours a day, seven days a week, and is widely publicised internally and externally. Reports from the Integrity Line go to the E&C department.

In 2021, the Integrity Line fielded 185 submissions. Of these, 28% resulted in disciplinary action, and 7% were inquiries or other matters that did not require investigation or substantial follow-up. The majority of submissions (74%) were employment related, with the remainder related to business integrity, health and safety, trade, human rights and general inquiries.

Other governance policies that drive ethical and responsible business practice at AWAC include:

- Alcoa’s Corporate Governance Guidelines
- Anti-Corruption Policy
- Human Rights Policy
- International Trade Compliance Policy

**Tracking and auditing**

Each year, AWAC locations worldwide use the Alcoa Self-Assessment Tool (ASAT) to validate that internal controls are in place and functioning as designed to protect the company from risks, including ethics and compliance. An updated process will be deployed in 2022, focused on reducing complexity and duplication of compliance efforts, improving end-to-end risk assessment and monitoring and simplifying maintenance of the control compliance environment.

Alcoa’s internal audit team also evaluates E&C implementation and effectiveness as part of its standard audit protocols when conducting full audits of AWAC locations.

**Anti-corruption program**

Alcoa takes a strong stance against bribery, consistent with the anti-bribery laws around the world that apply to it. Alcoa’s anti-corruption program is tailored to its risk profile to meet or exceed applicable law and is supplemented by the hallmarks of an effective compliance program as articulated by the US Department of Justice.

For more information, see Alcoa Sustainability Report page 20.
**Government compliance and engagement**

**Why this matters**
Effective and transparent engagement with relevant governments and regulators enables AWAC to understand current and emerging regulatory and policy impacts. Compliance protects the business from regulatory risks and ensures AWAC positively contributes to the communities in which it operates by meeting relevant requirements in all the geographies where AWAC operates.

**How this is managed**
AWAC actively engages in regulatory processes at all levels of government, through advocacy via regional aluminium associations and industry partners on shared issues, and through direct communication with community stakeholders. All government engagement conducted by AWAC is guided by the Alcoa Stakeholder Engagement Framework. Recent engagement has focused on tax transparency, environmental assessments and strategies, mine rights and rehabilitation, and water quality and energy supply. Through Alcoa, AWAC engages with stakeholders including elected officials, government agencies and NGOs, to ensure fair and effective policies and regulations.

Alcoa’s Political Contributions Policy prohibits any direct donations to the election campaigns opposing a ballot or referendum vote that can exceptions may be made, such as favouring or opposing a ballot or referendum vote that can or other items of value for political purposes. Recent exceptions may be made, such as favouring or opposing a ballot or referendum vote that can or other items of value for political purposes. Rare exceptions may be made, such as favouring or opposing a ballot or referendum vote that can or other items of value for political purposes.

**Why this matters**
Alcoa is a signatory to the Extractive Industries Transparency Initiative (EITI), and supports enhancing the transparency of mineral revenues. Engaging with governments that implement EITI’s principles helps to ensure that mining revenues are used appropriately to address a host country’s and host community’s social needs. In Australia, Alcoa is a signatory to the government’s Volunteer Tax Transparency Code. AWAC is committed to complying with the spirit as well as the letter of the tax laws and regulations in the jurisdictions in which it has a tax presence. It has procedures to ensure senior management understand the tax consequences of all material company transactions, audit settlements and other material tax matters globally. AWAC’s tax strategy applies to all corporate taxes, including corporate income tax, value-added tax, sales tax and property tax.

Alcoa’s tax professionals partner with its businesses and resource units to satisfy all tax obligations; develop and implement tax strategies; mitigate tax risk; and develop sustainable arms-length pricing on intercompany transactions.

**For more information, see Alcoa Sustainability Report page 56.**

**Why this matters**
AWAC creates value in several geographies, which requires that it also contributes to these communities through taxation. Tax transparency helps AWAC to build trust with local communities and governments in these locations and clearly identify the economic benefit flowing from AWAC’s operations.

**How this is managed**
AWAC, via Alcoa, maintains membership of and participates in a range of organisations that drive collaboration and engagement on issues important to the aluminium and mining industries:
- Australian Aluminium Council
- Aluminium Stewardship Initiative
- Brazilian Aluminium Association
- Brazilian Council for Sustainable Development
- Center for Climate and Energy Solutions
- Eurometax
- European Aluminium
- International Aluminium Institute
- ICMM
- The Aluminum Association.

As a member of the International Council on Mining & Metals (ICMM) since 2019, Alcoa is required to meet a range of social, environmental and governance requirements. For Alumina’s direct memberships, see page 18.

**For more information, see Alumina’s Online Privacy Notice.**

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**Industry relations**

**Why this matters**
Membership of industry associations provides AWAC with access to shared knowledge and resources, and a channel to collectively advocate on behalf of the industry to promote leading practices and innovations.

**How this is managed**
AWAC is committed to protecting data privacy for all stakeholders including employees, customers and third-party vendors. The risk-based privacy strategy uses appropriate collection, use and storage of personal and sensitive information in accordance with legal requirements, regulations and contractual obligations. The global privacy program ensures compliance with privacy laws in other regions and countries where AWAC does business.

AWAC complies with the US-EU Privacy Shield Framework regarding the collection, use, and retention of Personal Data transferred from European Union member countries (see www.privacyshield.gov/list). For more information, see Alcoa’s Online Privacy Notice.
Supply chain

Why this matters
AWAC’s sustainability approach covers the entire life cycle of a product, which means seeking suppliers that share its commitment to sustainability, and ongoing engagement.

How this is managed
Alcoa’s Supplier Standards are an integral part of doing business with AWAC. AWAC’s approach to responsible sourcing includes identifying, integrating and managing ESG requirements and risks (including human rights) into its procurement practices and supplier management. Supported by data and tools, ESG becomes part of category strategies, supplier tenders, supplier selection process, contract Key Performance Indicators, supplier performance management and monitoring.

In 2021, the responsible sourcing program was expanded to include ESG risk screening of AWAC’s entire supply base, integrating risk-based decision criteria to determine where suppliers require further assessment, monitoring, or audit. The program is supported by the following KPIs:

- ESG risk screening of all of our suppliers and business partners
- Further due diligence through assessment of all high-risk suppliers
- Percentage of suppliers improving their ESG maturity rating on year
- An average Alcoa supplier ESG maturity rating compared to the EcoVadis benchmark

The Supplier Sustainability Program consists of a three-component framework: assess, audit, and advance.

Assess
Suppliers are screened and assessed through three program partners:

- EcoVadis: All potential and current suppliers are screened for ESG risk using the EcoVadis IQ platform.
- Descartes MK Denied Party Screening: Any supplier on the US Denied Parties List is denied from working with Alcoa.
- Trace International TRAC Program: Trace International supports AWAC with due diligence related to bribery and corruption, trade compliance, child and slave labor, criminal history, human trafficking and conflict minerals. TRAC screens suppliers against watch lists and for international sanctions, criminal acts and bankruptcy. This program involves suppliers with an Alcoa expenditure higher than US$50,000 per year that are based in a high-risk country and all suppliers with an Alcoa expenditure above US$1 million per year.

Audit
Suppliers with an overall ESG risk rating of high, strategic suppliers and higher-spend suppliers are all required to complete further due diligence by undertaking an audit that uses the EcoVadis Ratings Assessment Audit. Of the 2,246 suppliers with an Alcoa expenditure above US$1 million per year that are based in a high-risk country and all suppliers with an Alcoa expenditure above US$1 million per year.

Advance
The EcoVadis platform provides feedback on improvement areas, which is used to create improvement plans, set key performance objectives and develop strategic partnerships to manage risk and create long-term value.

Performance over 2021
In 2021, 11,603 suppliers (95% of Alcoa’s global supply base spend) were assessed in the EcoVadis Ratings Assessment Audit. Of these suppliers, 98% met Alcoa’s minimum requirements. The average overall score was 48.1 out of 100, which is 10% above the EcoVadis benchmark of 43.7. Of the 2,246 (100%) suppliers screened of the Australian operations, only one supplier to the Australian operations was identified as requiring a corrective action plan. They have since developed a corrective action plan and are now undergoing reassessment.

Alcoa was awarded Gold supplier classification from EcoVadis for the 2020/2021 reporting period, putting it in the top 5% of companies in its industry and a leader in the sustainability categories of environment, labour practices, fair business practices and sustainable procurement.

Supply Chain Inclusion and Diversity
In 2021, Alcoa launched its Supply Chain Inclusion and Diversity Strategy to create and support a supply chain that reflects the diversity of the communities in which they operate. The strategy works to build awareness, both internally and externally, of the benefits of a more inclusive and diverse supply chain through its Supplier Standards, spend analytics and first global Supplier Inclusion and Diversity Survey.

Coordinated with the release of AWAC’s updated Supplier Standards, the survey asked suppliers about their own approaches to inclusion and diversity, including policies and programs, and to voluntarily disclose the diversity of their ownership structure and internal workforce. Alcoa analysed the survey results to determine trends and opportunities based upon global operating regions and supplier commodity. In addition to increasing awareness, AWAC is educating its suppliers on inclusion and diversity.

To support local spend, Alcoa developed a Local and Indigenous Procurement Policy for the Australian region in 2020. This was expanded to a South American Policy in 2021. These policies provide guidance on what defines a local supplier and an acknowledgement and commitment to the Traditional Owners of the land on which AWAC’s operations are located, in accordance with Alcoa’s Indigenous Peoples Policy and Australian Reconciliation Action Plan.

A procurement tool is used to track local spend by amount and proximity of suppliers. This localised data allows AWAC to identify opportunities to increase its spend with local suppliers and also helps them analyse the environmental impact of transporting products from suppliers to AWAC facilities.

Specific actions in 2021 included partnering with Supply Nation, a leading database of verified Indigenous Australian businesses, and with the Federation of Industries of the State of Maranhão (FIEMA) in Brazil, which facilitates member access to local suppliers and works to develop the local supplier base. 

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Further information on how AWAC delivers on ethical and responsible procurement practices can be found in the following Alcoa policies and procedures:

- Supplier Standards
- Ethics and Compliance
- Human Rights Policy (discussed further below)

Alcoa's Global Supplier Sustainability Program and approach to anti-bribery due diligence provide the foundation of its responsible sourcing requirements that are essential to operating and maintaining certifications from the Aluminium Stewardship Initiative.

### Modern slavery and human rights

#### Why this matters
Respect for human rights and the interests, cultures, customs and values of employees and communities is embedded in AWAC's values and vital for AWAC's social licence to operate.

#### How this is managed
AWAC's Human Rights Policy prohibits the use of all forms of forced labour, including prison labour, indentured labour, bonded labour, military labour, slave labour and any form of human trafficking. It incorporates AWAC's commitment to support the United Nations Guiding Principles for Business and Human Rights and the International Labour Organisation Core Conventions, and supports IOMM Principle 3: Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities. The policy operates in conjunction with the following:

- **Code of Conduct** and employee training, both of which cover human rights
- **Indigenous Peoples Policy**
- **Social Policy**
- **Supplier Standards**, which explicitly indicate respect of human rights
- Internal and third-party supplier assessment programs for new and existing suppliers
- **Equal Employment Opportunity Policy**
- **Harassment and Bullying Free Workplace Policy**
- **Integrity Line** for employees, suppliers and the general public to report potential violations or concerns.

The Alcoa Human Rights Council is sponsored by the President and CEO and has representatives from each region and key functions and external interactions. The council meets monthly and provides feedback to the sponsors twice a year to keep the Executive Team informed on human rights activities.

In 2021, the council focused on developing a Human Rights Management Standard to operationalise the Human Rights Policy and define clear roles and responsibilities for different layers of the organisation. The council developed a three-year implementation plan for the Standard to ensure that the right level of due diligence is applied across all company functions and external interactions.

Stakeholder engagement is a key part of Alcoa's human rights due diligence process, where individuals are given the opportunity to provide input on their relationship with the company and the functioning of established grievance mechanisms. Any stakeholder can raise issues or lodge a grievance using Alcoa's confidential Integrity Line.

Over the last three years, human rights impact assessments (HRIs) were conducted at 17 of Alcoa's 19 locations worldwide. Identified risks and impacts for all of AWAC locations are addressed in an action plan that is overseen by the Human Rights Council.

### Commitments and progress in 2021

- **Alcoa of Australia** delivered its 2021 Modern Slavery Statement in accordance with the reporting requirements of Australia’s Modern Slavery Act.
- **Alcoa** applied to join the Voluntary Principles on Security and Human Rights in 2021 and received confirmation of acceptance in March 2022.
- **Recognised Human Rights Day** with internal communications to raise awareness among AWAC employees.
- **Consulted with local Aboriginal organisations and community groups in Australia to develop Alcoa’s second Reconciliation Action Plan (RAP)** which is expected to launch in mid 2022.
- **Alcoa and ACORJUVE signed a Protocol of Intent with the general purpose of**

**For information on how AWAC protect the rights of Indigenous Peoples, see page 49 of this report.**

**For additional information on how AWAC manages human rights, see the Alcoa 2021 Sustainability Report pages 73-80.**
AWAC's sustainability strategy includes a goal to create value for the communities where it operates, stimulating economic activity to improve the quality of life for its employees and neighbours. It does this through jobs, local procurement, paying taxes and investing in local communities.

Local commitment with communities

Why this matters
AWAC's operations can have both positive and negative impacts on local communities, both during operations and long after operations cease. It is critical to AWAC's social licence to operate to work closely with these communities to understand and respond to their interests.

How this is managed
AWAC's value-creation efforts with local and regional stakeholders are guided by its Values, Ethics and Compliance Program, Human Rights Policy and the Alcoa Stakeholder Engagement Framework. Interactions are also informed by the Alcoa Social Policy and Indigenous Peoples Policy. Social performance is also guided by the ASI Performance Standard.

In 2021, AWAC launched a comprehensive social performance management system (SPMS), called SP360. This will be implemented across the business to help ensure that policies and standards are in place at all Alcoa-managed locations to support effective engagement with communities and manage social risks. AWAC is working to embed social performance into core business processes. This includes providing regional and location-specific support to implement the system.

SP360 includes defining performance metrics and long-term goals to be accomplished by 2025 and 2030. These will measure progress across a range of socioeconomic indicators relevant to our interactions with host communities.

SP360 aligns to international best practices and maps the standard requirements to AWAC's sustainable development goals. It is designed to meet the expectations both of AWAC communities and international organizations, such as ASI and ICMM.

SP360 comprises four standards:
1. Social Performance Management
2. Indigenous and Land-Connected Peoples
3. Cultural Heritage Management
4. Human Rights Management

Implementation of SP360 has been prioritised for AWAC's mining communities, specifically in Western Australia and Jurutí, Brazil. The rollout will continue in 2022 to incorporate all locations.

Mining partnerships for development
The Alcoa Foundation and local operations partner with numerous non-governmental and community-based organizations on social, environmental and economic development activities in host communities. The Foundation’s strategic themes are:
- Contributing to biodiversity conservation through the support of initiatives focused on protection and restoration of high-impact areas
- Supporting research, mitigation and adaptation to climate change programs

AWAC recognises and respects the diversity, cultures, customs and values of Indigenous and other Land-Connected Peoples where it operates, and acknowledges their needs, concerns and aspirations regarding their heritage and traditions. AWAC acknowledges that some of its operations are located on the homelands of Indigenous and Land-Connected Peoples and that, over the long history of AWAC’s operations and through generations representing varying and increasing levels of cultural awareness, AWAC has affected the rights and lives of these people in ways we might not fully appreciate or understand.

AWAC works to maintain transparent and regular communications with local communities to foster a mutual understanding of issues, concerns and opportunities.

AWAC locations use the Alcoa Stakeholder Engagement Framework to manage risks and opportunities associated with community rights and interests, as well as to obtain feedback from communities. The framework provides a systematic process to ensure active interaction with stakeholders to achieve mutual success.

Key community interests and priorities include:

- Economic opportunities, fair wages and infrastructure development
- Environment: Access to water, local air quality and waste management
- Social and cultural: Education, healthcare and protection of sacred places
- Indigenous peoples

AWAC recognises and respects the diversity, cultures, customs and values of Indigenous and other Land-Connected Peoples where it operates, and acknowledges their needs, concerns and aspirations regarding their heritage and traditions. AWAC acknowledges that some of its operations are located on the homelands of Indigenous and Land-Connected Peoples and that, over the long history of AWAC’s operations and through generations representing varying and increasing levels of cultural awareness, AWAC has affected the rights and lives of these people in ways we might not fully appreciate or understand.

AWAC locations with the most direct impact on Indigenous and Land-Connected Peoples are operations in Western Australia and Juruti mine in Brazil, which are located on lands of significance to Indigenous or Traditional Communities.

AWAC’s Indigenous Peoples Policy sets out its company-wide commitment to Indigenous and Land-Connected Peoples. This is supported by a global Indigenous and Land-Connected Peoples Standard and a Cultural Heritage Management Standard. These will be fully implemented at all locations by the end of 2022. AWAC will use these standards to drive consistency in its approach and strengthen its practices to work more constructively with Indigenous and Land-Connected Peoples in alignment with ICMM's Indigenous Peoples and Mining Position Statement.

AWAC is also committed to acting in accordance with all applicable laws and regulations, the principle of free, prior and informed consent, and other tenets of the International Labour Organisation’s Indigenous and Tribal Peoples Convention and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Wherever possible, Alcoa will seek to establish support for new activities from affected indigenous communities through collaborative accommodation of each other’s interests and formal agreements.
Performance over 2021
In 2021, AWAC continued to support its host communities in their recovery from the pandemic. There were focused efforts on supporting local organisations that were providing critical services in each community, including medical and personal protective equipment, mental health and economic counselling and resources to support virtual learning.

AWAC engaged a third party to conduct a community perception survey for its Western Australia bauxite and alumina operations. Approximately 800 community members were randomly surveyed across five geographic areas aligned to its operating locations plus the nearby state capital city of Perth. The survey followed similar work conducted in 2019.

The research suggested that while AWAC has a strong reputation and social license in Western Australia, community and stakeholder expectations for the extractives sector are evolving, both locally and globally. This includes increasing community concerns about impacts on the environment and nearby communities and competing land uses.

AWAC consulted with local Aboriginal organisations and community groups in 2021 to develop its second Reconciliation Action Plan (RAP). Focus areas are cultural awareness training for all AWAC employees and economic opportunities through employment and purchasing agreements with Aboriginal-owned businesses. AWAC released the RAP in June 2022.

The following key issues were raised by, or discussed with, stakeholders in 2021:

<table>
<thead>
<tr>
<th>Location</th>
<th>Issue</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglesea, Victoria</td>
<td>Filling the mine void</td>
<td>Please refer to the Alumina Limited Sustainability Data Pack for details</td>
</tr>
<tr>
<td>Kwinana, Australia</td>
<td>Kwinana air quality buffer</td>
<td></td>
</tr>
<tr>
<td>Pinjarra and Huntly, Australia</td>
<td>Environmental approvals</td>
<td></td>
</tr>
<tr>
<td>Portland, Victoria, Australia</td>
<td>Koala population</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy contract</td>
<td></td>
</tr>
<tr>
<td>Wagerup, Western Australia</td>
<td>Loss of material from a refinery tank</td>
<td></td>
</tr>
<tr>
<td>Juruti, Brazil</td>
<td>Mining and community relations activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase in rainwater during the wet season</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Association of Communities of the Juruti Velho Region (ACORJUVE)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curumucuri Settlement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prudente access roads</td>
<td></td>
</tr>
</tbody>
</table>

Economic contribution
Why this matters
Creating sustainable value for the communities where AWAC operates is one of the three pillars of Alcoa’s sustainability strategy.

AWAC operations provide local employment, support suppliers and contribute taxes.

How this is managed
AWAC aims to stimulate economic activity at the local and regional levels to enable improved quality of life for its employees and neighbours. This is done by providing stable, fair-paying jobs, procuring goods and services from local suppliers when possible, paying income and other taxes, and investing in community infrastructure and initiatives. The value created helps communities thrive and earns AWAC its license to operate in these communities. Alcoa’s economic value table is shown below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Cash (USD millions)</th>
<th>Employee volunteer hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.3</td>
<td>4,000</td>
</tr>
<tr>
<td>Europe and Africa</td>
<td>2.0</td>
<td>500</td>
</tr>
<tr>
<td>South America</td>
<td>1.0</td>
<td>900</td>
</tr>
<tr>
<td>Global outreach</td>
<td>1.3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5.6</strong></td>
<td><strong>5,400</strong></td>
</tr>
</tbody>
</table>

9. Alcoa-wide data for these regions, not AWAC-specific.
11. Alcoa-wide data for these regions, not AWAC-specific.
Mining, refining and smelting activities can impact the environment, from biodiversity to greenhouse gas emissions to water consumption. AWAC has strong measures in place to mitigate and remediate those impacts, and is now actively working towards a decarbonised future for our operations and our industry.

**Climate change and greenhouse emissions**

AWAC's approach to climate change and greenhouse emissions is discussed on pages 22-26 of this report, ‘Alumina Limited’s approach to managing climate risk and opportunities’. This includes disclosures aligned to the Task Force on Climate-related Disclosures (TCFD) through the lens of Alumina Limited, including governance, strategy, risk management and metrics, targets and year-on-year performance.

For more information on Alcoa's approach to managing climate risk and greenhouse gas emissions, see Alcoa Sustainability Report pages 125-129.

**Energy access and affordability**

**Why this matters**

Due to the energy-intensive nature of AWAC's operations, sourcing energy at a competitive price with minimal environmental impact remains a priority.

**Operational efficiency**

AWAC works to reduce the amount of energy consumed through operational efficiency and technological advances, which lower both costs and GHG emissions. All AWAC operations have short- and long-term energy reduction targets that are integrated into the overall GHG emissions reduction target.

AWAC uses a variety of approaches to improve operational energy efficiency, including:

- Benchmarking to compare its operations against industry leaders.
- Collaborations to access the expertise at various universities around the world to develop solutions to AWAC's energy challenges.
- Best practice sharing through internal Centres of Excellence and transferring various universities around the world to develop solutions to AWAC's energy challenges.
- Setting and monitoring energy efficiency targets for each location.

AWAC's refining operations have implemented significant process improvements over the past few years that focused primarily on process controls, heat transfer efficiency and maintenance improvements. AWAC's Portland smelter has realised efficiency improvements with the use of the SMART manufacturing platform, which displays process information so that employees can take action to conserve energy. AWAC is focused on identifying raw materials and design changes for the smelter that could lead to either more conductive or more efficient management of a smelting pot's heat balance.

**Energy security**

Alcoa's energy team is responsible for purchasing approximately 300 terajoules of natural gas per day (the majority of which is for AWAC's alumina refineries) and supplementing self-generated power with approximately 1 gigawatts of purchased electricity and steam for AWAC.12

In 2021, AWAC announced a collaboration with Alinta Energy on its proposed 1,000-megawatt offshore windfarm, which has the potential to convert AWAC's Portland Aluminium smelter in Australia to 100% renewable power. If approved, the windfarm could take up to 10 years to build.

**Demand response initiatives**

As renewable and intermittent energy accounts for a higher percentage of overall generation in the electricity grid, demand response will increase in importance. Demand response is a practice where customers are rewarded for adjusting their electrical load in response to a signal from a utility or the grid. By balancing electricity produced and consumed, this adjustment helps maintain stability in the electrical system and prevent blackouts and other system disruptions.
In Australia, AWAC’s Portland aluminium smelter offers emergency demand response services. These include modulation, which is a service that assists in stabilising the daily grid operations.

AWAC also has an electricity demand management program for its refineries in Western Australia. These facilities reduce their demand for electricity when supply is in shortfall, often during the hottest days of the year. This helps support efficient investment in electricity infrastructure and avoids additional costs of electricity generation to cover events that only occur a few times a year.

When higher proportions of renewable energy enter the grid, an excess of available renewable power can occur and cause negative power prices. In response, AWAC reduces self-generation and maximises its import power, reducing costs and actual net GHG emissions.

In March 2021, Alcoa announced new five-year agreements with three energy generators that commenced on 1 August 2021.

The Australian federal government and Victorian state government also have made commitments to support smelter operations in recognition of the value contribution it makes to the economy, including grid stability.

**Performance**

**Energy efficiency of AWAC assets**

Gigajoule (GJ) of energy required per tonne of production

In 2021, energy usage was marginally higher as a result of a decrease in production for AWAC’s refineries and the Portland smelter.

**AWAC assets**

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining (bauxite)</td>
<td>0.09</td>
<td>0.08</td>
</tr>
<tr>
<td>Refining (alumina)</td>
<td>8.93</td>
<td>9.03</td>
</tr>
<tr>
<td>Smelting (aluminium)</td>
<td>55.03</td>
<td>55.49</td>
</tr>
</tbody>
</table>

Indirect energy consumption by source (mines, refineries and smelters) (full facility)

<table>
<thead>
<tr>
<th>Indirect energy source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (Non-renewable)*</td>
<td>13,126,147</td>
<td>11,977,619</td>
</tr>
<tr>
<td>Electricity (Renewable)</td>
<td>6,258,299</td>
<td>6,638,306</td>
</tr>
<tr>
<td>Total electricity</td>
<td>19,384,446</td>
<td>18,615,924</td>
</tr>
<tr>
<td>Steam*</td>
<td>12,732,348</td>
<td>12,290,212</td>
</tr>
<tr>
<td>Total indirect energy</td>
<td>32,116,794</td>
<td>30,906,136</td>
</tr>
<tr>
<td>Renewables %</td>
<td>32%</td>
<td>36%</td>
</tr>
</tbody>
</table>

* There has been a reclassification Steam and non-renewable electricity for the years 2016 to 2020 as a result of improving the precision of the calculation.
Waste, tailings and residue management

Effective, safe management of waste, tailings and residue is essential to protect the environments and communities where we operate.

Impoundment management

AWAC manages impoundment facilities at active, inactive and closed sites around the world to store primarily two types of material – bauxite mine tailings and bauxite residue – both referred to generically as ‘tailings’. AWAC impoundments are designed to internal and international standards, with suitable and effective controls in place for identified risks.

In 2021, AWAC revised its mandated Global Impoundment Policy to further ensure its impoundments comply with internal standards and guidelines, the Global Industry Standard on Tailings Management or the laws and regulations of the country in which a facility is located (whichever are higher).

The first objective of the Global Industry Standard on Tailings Management is to ensure compliance of extreme and very high consequence category tailings by August 2023. Alcoa also has a strategic long-term goal to reduce bauxite residue land storage efficiency due to the deployment of press filtration*.

AWAC is gradually improving its bauxite residue storage efficiency to meet this global location focused approach, with three press filtration facilities commissioned in 2021 at Pinjarra and Kwinana and one at Alunorte.

AWAC separately monitors transformation waste, which is generated when a facility is closed or repurposed, and which may call for different solutions.

In 2021, Alcoa launched a Waste Optimisation Program led by a cross-functional group of employees. After reviewing the results of a comprehensive global waste inventory survey, the team identified nine focus material types:

- Mining
- Refining
- Smelting

The program focuses on circularity, and aims to both achieve AWAC’s sustainability goals and minimise long-term liabilities across its global locations. The focused approach is challenging AWAC to look beyond traditional land disposal practices and seek opportunities for reuse and repurposing.

AWAC assesses waste generation from its suppliers as part of its Global Supplier Sustainability Program and Supplier Standards, and also conducts assessments to confirm that third party waste transporters and facilities manage our waste adequately.

AWAC separately monitors transformation waste, which is generated when a facility is closed or repurposed, and which may call for different solutions.

Performance

Bauxite residue storage efficiency is measured using the square metres of land required per thousand tonnes of alumina produced. In 2021, this amount reduced to 45 from 46 in 2020 and achieved a 14.8% reduction against the 2015 baseline. The bauxite residue intensity is measured in tonnes per thousand of alumina produced and in 2021 reached 1.58 tonnes, an increase from 1.57 tonnes in 2020. In 2021, Alcoa generated 23.5 million metric tons of bauxite residue and recycled zero metric tons.11

AWAC is gradually improving its bauxite storage efficiency due to the deployment of press filtration*.

<table>
<thead>
<tr>
<th>Bauxite residue storage efficiency</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square metres of land required per thousand tonnes of alumina produced</td>
<td>46</td>
<td>45</td>
</tr>
</tbody>
</table>

* AWAC has commissioned two press filtration facilities, which recycle more water and enable dry stacking of bauxite on a smaller footprint of land. A facility at Kwinana was commissioned in 2016 and a facility at Pinjarra was commissioned in 2018.

Bauxite residue intensity* 2020 2021

| Tonnes per thousand of alumina produced | 1.57 | 1.58 |

* Data calculated on an Alcoa basis; however, it relates predominantly to AWAC assets as over 95% of bauxite and alumina assets in the Alcoa portfolio are owned by AWAC.
Landfilled waste (full facility)

Landfilled waste increased substantially in 2021, rising to 9,257 tonnes from 4,324 tonnes in 2020 as a result of remediated soil and additional construction waste. All wastes were episodic and should decrease in 2022 directionally towards 2020 levels. Bauxite residue, refining process waste and fly ash, are excluded from our landfilled waste data as these waste streams are managed separately through onsite storage. Overburden and rock generated from AWAC mining activities are also omitted and not considered waste because the materials are used for mine rehabilitation.

Prior to commencing new construction projects or significantly expanding existing facilities, AWAC conducts a leading practice environmental assessment to identify any potential impacts to biodiversity. This comprehensive approach allows operations and biodiversity conservation to coexist. AWAC has successfully operated mines, refineries and smelters in areas of high biodiversity. Where areas have been disturbed by bauxite mining, AWAC progressively rehabilitates the land to mitigate impacts and return it to an agreed post-mining land use. In areas of significant biodiversity value, AWAC aims to rehabilitate the land to a future use that reinstates those biodiversity values.

A list of sites within or adjacent to protected areas or areas of high biodiversity value is located in the Alumina Limited Sustainability Update Data Pack. AWAC is guided by Alcoa’s Biodiversity Policy, which encapsulates the requirements set out in its corporate Biodiversity Standard, aligned to IUCN principles. The standard requires each site to assess and identify material risks to biodiversity and implement a biodiversity action plan to manage these risks. In December 2021, the Biodiversity Policy was updated to better reflect Alcoa’s commitment to support collective efforts to halt deforestation globally.

In 2021, Alcoa explored and further developed biodiversity-related planning, monitoring and metrics through partnerships funded by Alcoa Foundation.

Biodiversity action plans

AWAC has developed and implemented biodiversity action plans at all locations operated by Alcoa. These plans:

- Inform employees and communities about the importance of biodiversity protection, and encourages their participation
- Set and report performance against site-specific targets.

Area disturbed* for mining and associated infrastructure (full facility)

In both Australia and South America, reductions in disturbance in 2021 were related to changes in mine plans.

<table>
<thead>
<tr>
<th>Region</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>822</td>
<td>472</td>
</tr>
<tr>
<td>South America</td>
<td>532</td>
<td>198</td>
</tr>
</tbody>
</table>

* Area disturbed means land used in each reported year for mining or for mining infrastructure (e.g. roads, shops, crushing equipment, conveyors). In Australia, the increase in 2019 was mostly due to clearing for long-term infrastructure associated with the next mining region at the Willowdale mine.
Facilities closure and rehabilitation

Managing facilities closure is a critical part of AWAC’s responsibility and efforts in the mining and industrial operations. It is important to ensure that AWAC’s operations have no lasting environmental impacts and that the land and assets can be restored, reused or redeveloped in consultation with local communities and relevant stakeholders.

When the decision is made to close a facility, AWAC works closely with relevant stakeholders to develop a post-operation strategy to optimise the land and assets so they can potentially be reused or redeveloped, generating jobs and a tax base for the community. Some facilities can be repurposed with few changes. Others may require remediation, major modification or demolition.

To ensure a consistent approach, Alcoa’s global Transformation Group oversees all real estate and manages all closed or curtailed operations. It also has responsibility for managing any environmental liabilities at operating and non-operating locations and ensuring that appropriate accounting reserves are established and updated as necessary.

The protection of human health and the environment are always the overarching objective of any AWAC remediation project.

First, scientific methods are used to assess the environmental conditions and then identify remedial solutions that are protective, compliant, feasible and compatible with current or likely future uses of the facility. This requires balancing multiple internal and external needs, desires and expectations while keeping good science and feasibility as key drivers in selecting a remedial approach.

As a result of a portfolio review, the following AWAC assets have been closed; 2014 – Point Henry aluminium smelter (Australia), 2015 – Anglesea Power Station (Australia), 2017 – Suralco alumina refinery (Suriname) and 2019 – Point Comfort alumina refinery (USA).

The Point Henry complex in Victoria, Australia was closed in 2014. By 2020, over 95% of the physical structure had been removed and recycled, with the remaining structures positioned to be repurposed during redevelopment. Remediation work began in 2020 and is expected to be completed by 2024. Alcoa has worked with the Victorian and local governments on the long-term use of the site, with proposed plans for a mixed-use redevelopment.

The coal-fired power station in Anglesea, Australia, closed in 2015. The grading and reclamnation of the open pit coal mine is now substantially completed, including relocation and reconstruction of a public road, and hydroseeding of 53 hectares of native grasslands. A maintenance and monitoring program will ensure the landform is safe, stable and sustainable.

The Victorian Department of Environment, Land, Water and Planning (DELWP) harvests winter water flows from the Anglesea River and stores it in one of the Anglesea site’s former ash ponds. The water is then distributed as needed over the summer to maintain the river’s flow to the Anglesea site’s former ash ponds. The Point Henry complex in Victoria, Australia was closed in 2014. By 2020, over 95% of the physical structure had been removed and recycled, with the remaining structures positioned to be repurposed during redevelopment. Remediation work began in 2020 and is expected to be completed by 2024. Alcoa has worked with the Victorian and local governments on the long-term use of the site, with proposed plans for a mixed-use redevelopment.

Rehabilitation

Planning for rehabilitations starts in the very early stages of a mine’s development, including engagement with stakeholders. In many cases, AWAC strives to return the land to its natural state. Where appropriate, and in concert with government or local communities, rehabilitation supports other productive land uses, including farming and residential, recreational, commercial or industrial developments.

Areas no longer required for operations are progressively rehabilitated. Approaches vary in response to local biophysical conditions and rehabilitation objectives.

Alcoa’s goal is to maintain a corporate-wide running five-year average ratio of 1:1 or better (meaning less than one) for active mining disturbance to rehabilitation. The Point Henry complex in Victoria, Australia was closed in 2014. By 2020, over 95% of the physical structure had been removed and recycled, with the remaining structures positioned to be repurposed during redevelopment. Remediation work began in 2020 and is expected to be completed by 2024. Alcoa has worked with the Victorian and local governments on the long-term use of the site, with proposed plans for a mixed-use redevelopment.

For more information on rehabilitation, see Alcoa 2021 Sustainability Report pages 120-123.

Closure of impoundment facilities

The appropriate management and rehabilitation of tailings storage remains a key focus. A long-term closure strategy has been developed to reduce impacts on the surrounding environment, develop aesthetics that meet stakeholder expectations, promote the reuse of bauxite residue, and minimise leachate discharge. Alcoa is also introducing closing measures earlier to allow time for the methods to be tested and is finding ways to reduce leachate discharge and treatment options.

Performance

From 2017 to 2021, Alcoa’s ratio of mining disturbance to rehabilitation was 0.82:1, i.e. more areas were rehabilitated or transferred to other land users compared to new disturbances.14

Mining Land disturbed/Land rehabilitated* Hectares

<table>
<thead>
<tr>
<th>Year</th>
<th>Open mine area</th>
<th>Area disturbed (Annual)</th>
<th>Area rehabilitated (Annual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>14,980</td>
<td>1,354</td>
<td>1,443</td>
</tr>
<tr>
<td>2021</td>
<td>14,748</td>
<td>670</td>
<td>902</td>
</tr>
</tbody>
</table>

* The values in this table include some of Alcoa’s South American operations that do not form part of AWAC operations. However, the vast majority of disturbance and subsequent rehabilitation is the result of AWAC’s mining and infrastructure activities.

Area rehabilitated* The decrease in area rehabilitated in 2021 in Australia relative to the previous year was mainly due to changes in mine plans and reduced new disturbance. In South America, areas rehabilitated returned to more typical annual rates in 2021, following handover of substantial areas to the government of Suriname in 2020.

<table>
<thead>
<tr>
<th>Region</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>675</td>
<td>614</td>
</tr>
<tr>
<td>South America</td>
<td>768</td>
<td>287</td>
</tr>
</tbody>
</table>

* Annual figures. Area rehabilitated means land returned to natural conditions or to productive use (such as farming) after mining or decommissioning of mine infrastructure in each reported year.
Water stewardship

Water is a precious, shared resource, and 50% of AWAC assets are in water-scarce locations.15,16 Water is also a critical raw material in AWAC operations, particularly for ore processing, cooling, casting, dust suppression and potable uses. Our approach to water stewardship is therefore of critical interest to our stakeholders.

AWAC’s water management priorities are outlined in Alcoa’s Water Stewardship Policy and supported by a Water and Wastewater Management Standard that is aligned to the ICMM Position Statement on Water Stewardship.

Alcoa, as manager/operator of AWAC, collect water withdrawal data using the Minerals Council of Australia’s Water Accounting Framework methodology and the ICMM Water Reporting Good Practice Guide. AWAC’s water disclosure and accounting accords with The ICMM Water Reporting Good Practice Guide. AWAC’s water disclosure and accounting accords with The ICMM Water Reporting Good Practice Guide. Water accounting processes are being updated to align with the new ICMM reporting requirements for 2023.

AWAC facilities develop location-specific water management plans that consider:

- Climate change and water stress
- Current and alternative water sources
- Water quality
- Security of water supplies
- Water reduction, substitution, reuse and recycling programs
- Risks of contamination of water resources and mitigating actions, considering local context and receiving water bodies
- Other water impacts, such as erosion, acidification and salinization.

Each location must develop an action plan for higher-risk aspects, with the plan reviewed and updated at least every five years. As part of AWAC’s long-term planning process, operations are required to maintain water use forecasts that consider relevant risks and opportunities. Water consumption impacts, both quantity and quality, are also evaluated for proposed capital projects.

Locations meeting Alcoa’s definition of water-scarce locations (applying the World Resource Institute’s Aqueduct tools) are the Alumar refinery in São Luís, Brazil, the Huntly and Willowdale mines in Western Australia, and the Kwinana, Pinjarra and Wagerup refineries, also in Western Australia. All other facilities are classified as having low-to-medium or low baseline water stress. A review of the water stress assessment is a key focus area for 2022.

Recognising water scarcity as a significant risk, Alcoa’s long-term goal is to reduce the intensity of total water use from Alcoa-defined water-scarce locations by five percent by 2025 and 10 percent by 2030, from a 2015 baseline. Within AWAC operations, the main consumptive water uses are evaporation from tanks, vents and storage, entrainment in bauxite mine tails and uses for casting. This is particularly relevant in Western Australia, where the drying climate is a challenge, and in Brazil, where water use is managed to account for high seasonal variation in rainfall.

The Alumar location in Brazil has reduced freshwater consumption by 30 percent in two years, through measures including reusing wastewater from a nearby brewery, recycling water, and storing rainwater from the wet season to reuse in the dry season. These initiatives also saved over US$90,000 in water treatment costs.

All AWAC locations look for ways to reduce consumption and discharge, use fit-for-purpose sources of water, and increase recycling and other opportunities through advanced technologies and process improvements. An innovative technology called residue filtration enables the Kwinana and Pinjarra refineries in Western Australia to reduce their combined freshwater use by up to 2.2 gigaliters per year.

AWAC locations also actively engage with government agencies and non-governmental organisations focused on water quality and conservation, with some employees serving on local water boards and committees while others volunteer for specific projects. Alcoa also provides financial support for water-based community initiatives, mainly through the Alcoa Foundation.

For more on how Alcoa manages water, see Alcoa 2021 Sustainability Report pages 151-155.

Performance

In 2021, AWAC achieved a 1% reduction in water use intensity, compared with the baseline. However, lower production at Pinjarra and Alumar refineries resulted in a higher year-on-year water use intensity.

In 2021, Alcoa had one non-compliance associated with water-quality permits, standards and regulations that resulted in a formal enforcement action.
Water withdrawal (inputs to process or storage, all locations) Million cubic metres

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface water</td>
<td>43.21</td>
<td></td>
</tr>
<tr>
<td>Groundwater</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>Seawater</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Third-party water</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

Water discharge and consumption (Outputs, all locations) Million cubic metres

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface water (discharge)</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Groundwater (Discharged water used to support environmental initiatives)</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Seawater</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.7</td>
<td></td>
</tr>
</tbody>
</table>

Consumption

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation</td>
<td>33.2</td>
<td></td>
</tr>
<tr>
<td>Entrainment</td>
<td>16.1</td>
<td></td>
</tr>
</tbody>
</table>

Total consumption      64.7 Total 59.0

Total water-use intensity (full facility) – locations in AWAC-defined water-stressed areas

Cubic meters of water per metric tonne of alumina produced

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>30.6</td>
<td>29.6</td>
</tr>
</tbody>
</table>

Air quality

Alumina refining and aluminium smelting generate hazardous emissions that need to be stringently controlled to protect the wellbeing of our employees and the communities where we operate.

AWAC defines and implements internal standards to meet or exceed all applicable air emission regulations in the jurisdictions where it operates, and to do this cost effectively.

AWAC reports on the emissions that are material to its operations, including mercury, fluoride, nitrogen oxide, sulphur dioxide and volatile organic compounds (VOCs). AWAC also monitors carbon monoxide and particulate matter at relevant locations.

To control mercury emissions in the alumina refining process, AWAC uses industry-leading technologies developed in collaboration with leading academics and experts. One of these condenses elemental mercury from gas streams, allowing the mercury to be separated in a controlled environment so it can be safely disposed. A second technology, patented by Alcoa, stabilises the mercury during the processes where it is usually emitted. Both technologies have been effective in reducing mercury emissions.

Fugitive emissions

AWAC has measures in place to mitigate the release of fugitive emissions, such as dust, from its operations. These include watering haul roads and bauxite residue to reduce windblown dust, paying close attention to weather forecasts to inform whether additional controls are needed, and using capture and control systems when handling materials.

Performance

Emissions (full facility)

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO2</td>
<td>15,037</td>
<td>14,578</td>
</tr>
<tr>
<td>NOx</td>
<td>12,280</td>
<td>11,819</td>
</tr>
<tr>
<td>Hg</td>
<td>1,366</td>
<td>1,788</td>
</tr>
</tbody>
</table>

Mercury emissions intensity (full facility)

<table>
<thead>
<tr>
<th>Source</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grams per tonne</td>
<td>0.13</td>
<td>0.14</td>
<td>0.12</td>
<td>0.09</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Please refer to the Alumina Limited Sustainability Update Data Pack for detailed information in respect of water quality, balance and water usage in scarce locations.
AWAC’s performance depends on the skills and motivation of its people. AWAC offers an inclusive and empowering culture, provides appropriate training and development, and prioritises the health and safety of its workforce. 

**Occupational health and safety**

**Why this matters**

AWAC’s work can bring with it an inherent level of physical and mental health risks. Effectively managing these risks allows AWAC to provide employees with the confidence that their safety and wellbeing has been prioritised and preserved, and also is more likely to drive a motivated, productive culture.

AWAC strives to attain the goal of zero fatalities and zero life-threatening or life-altering injuries and illnesses. AWAC’s safety strategy centres on fatality prevention, risk management and safety leadership.

Alcoa’s corporate Environment, Health and Safety (EHS) Lead Team and EHS Council provide direction and oversight, with a strategy focused on cultivating a health and safety culture and building strong systems that equip people with the skills, knowledge, controls and protections to avoid injuries, illnesses and fatalities. The Executive team and other senior leaders regularly review corrective actions and the effectiveness of controls, share good practices and learnings, and sponsor company-wide hazard mitigation initiatives.

**Safety culture**

For AWAC, safety comes first—before production, before profit, before everything. AWAC strives for a culture of transparency, where the wellbeing of every employee, temporary worker, contractor and visitor is put before any departmental or operational consideration, where good ideas and setbacks are openly and actively shared.

AWAC’s EHS Leadership Training Program focuses on expectations and behaviours for leaders. Aligned with its Values, the training is designed to enhance and nurture EHS culture and ensure that AWAC leaders have the tools, competence and confidence to effectively manage EHS at their locations. They learn to set expectations through their visible actions and behaviours.

In 2021, all salaried employees were expected to include a safety objective in their annual performance objectives, regardless of where they worked or what job they performed. Goals commonly related to critical risk management and human performance principles, which teach employees how to anticipate and recognise situations where errors are likely to occur.

**Fatality risk management**

Each location is responsible for developing a registry of all significant safety hazards and either eliminating the hazards or implementing controls to prevent or mitigate the associated risks. In 2021, AWAC reviewed its most significant risk categories and conducted an in-depth analysis of incidents to identify improvements to its fatality risk standards and critical controls.

Supervisors and managers undertake field verifications to assess the effectiveness of the critical controls for each risk, and improvement actions must be implemented where required. In 2021, AWAC targeted improving the quality of these verifications and increasing the number of ineffective critical controls reported so that improvement actions can be implemented.

**Safety systems**

AWAC’s ISO-certified EHS management system provides a universally recognised framework for EHS risk evaluation, planning, objective setting and operational control activities at all locations, covering both employees and contractors.

AWAC continued digitising its EHS systems, workflows and technology in 2021 to better enable information self-service and effective information sharing.

An EHS management review was conducted in mid-2021 to ensure continuing suitability, adequacy and effectiveness of the EHS management systems and processes. Overall, the review found these processes to be effective, and the process outcomes and products were as expected.

**Health hazard controls and initiatives**

The health hazards inherent in AWAC’s operations include chemical, physical (noise, ergonomic, radiation, heat and vibration), biological and other types of hazards. A four-pillar framework guides AWAC’s health management strategy:

- health hazard controls to prevent occupational disease
- health status and fitness for work to ensure an employee’s health status is compatible with assigned work
- community and public health, which facilitates AWAC’s social license to operate
- personal health and wellbeing

AWAC is guided by its internal global health standards, which are often more stringent than those specified by applicable law. It proactively identifies and responds to emerging health-related trends in the industry and maintains a long-standing relationship with the Health Committee of the International Aluminium Institute.17 AWAC’s processes, procedures, equipment and technologies to mitigate health hazards inherent in its operations have been developed and improved over decades.

Voluntary programs focused on employee health and well-being and health promotion originate at the regional and location level. AWAC’s health and fitness for work programs which address the ability of employees to safely perform their assigned work activities are governed by two global occupational health standards:

- Occupational Healthcare Services Standard
- Management of Employee Medical and Exposure Records Standard
Safety performance in 2021

In 2021, AWAC had no fatalities and one serious injury. AWAC investigates, documents and reports any incident that has the potential to cause either a fatal or serious injury or illness. Risks are assessed and the hierarchy of controls is applied to eliminate the hazards and minimise risks for similar situations. AWAC’s fatal and serious injury/illness potential (FSI-P) rate in 2021 was 0.54 incidents per 100 full-time workers — a decrease of 28% compared to 2020. This is attributed to proactive, transparent reporting and improved calibration of risk perception across the company, and is a positive reflection of the healthy risk management system. The longer-term trend still indicates a positive, downward trajectory.

In 2021, Alcoa-wide, more than 1,691 corrective actions for FSI incidents were addressed and 451 fatality risks were identified, further reducing risk to employees.

Comprehensive safety data is provided in the Data Pack.

<table>
<thead>
<tr>
<th>Lost workday rate (full facility)*</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.34</td>
<td>0.30</td>
</tr>
<tr>
<td>Australia</td>
<td>0.63</td>
<td>0.73</td>
</tr>
<tr>
<td>Europe</td>
<td>0.00</td>
<td>0.16</td>
</tr>
<tr>
<td>North America</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>South America</td>
<td>0.16</td>
<td>0.05</td>
</tr>
</tbody>
</table>

* Lost workday rate represents the number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers.

<table>
<thead>
<tr>
<th>Days away, restricted and transfer rate (full facility)*</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.74</td>
<td>0.65</td>
</tr>
<tr>
<td>Australia</td>
<td>1.37</td>
<td>1.55</td>
</tr>
<tr>
<td>Europe</td>
<td>0.50</td>
<td>0.58</td>
</tr>
<tr>
<td>North America</td>
<td>5.75</td>
<td>0.00</td>
</tr>
<tr>
<td>South America</td>
<td>0.28</td>
<td>0.11</td>
</tr>
</tbody>
</table>

* Days away, restricted and transfer rate includes lost workday cases plus cases that involve days of restricted duty and job transfer per 100 full-time workers.

Health performance in 2021

Despite resources and focus being diverted to address the ongoing COVID-19 pandemic, AWAC achieved the following progress on key initiatives during 2021:

- Implemented efforts to comply with the requirements of its 2020 updated global Heat Stress Management Standard.
- Created an emerging infectious disease critical risk assessment and risk control bowtie analysis.
- Implemented efforts to close gaps against the requirements of the 2020 revised global Hazardous Materials Management standard.
- Rolled out a cross-functional global Good Work Design initiative to enable diversity, increase job satisfaction and reduce injuries.
- Achieved ongoing incremental progress in identifying and controlling noise and chemical exposures.
Coronavirus pandemic response

During 2021, AWAC adapted, scaled and tailored its pandemic response to local circumstances, building on actions taken in the previous year.

<table>
<thead>
<tr>
<th>Health and safety</th>
<th>Human resources</th>
<th>Business continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Business travel policy modifications and travel health and security support</td>
<td>• Development of Flexibility First work arrangements</td>
<td>• Continued open dialogue with authorities, associations and stakeholders</td>
</tr>
<tr>
<td>• Return-to-office planning</td>
<td>• Continued mental health awareness and education</td>
<td>• Additional controls such as testing and self-check-in apps Constant employee communications focused on preventive practices</td>
</tr>
<tr>
<td>• Vaccination efforts</td>
<td>• Continued childcare assistance</td>
<td></td>
</tr>
<tr>
<td>• Full or partial resumption of high-importance industrial hygiene and medical services</td>
<td>• Acceleration of the modernisation of training function and solutions.</td>
<td></td>
</tr>
<tr>
<td>• Quarantine and isolation for active or suspected cases.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In response to the continued impact of the pandemic across AWAC operations, AWAC has and will continue to support communities as needed.

For more information about Alcoa’s Coronavirus Pandemic Response, see the Alcoa 2021 Sustainability Report, pages 13-16.

Diversity and inclusion

AWAC seeks to provide a trusting workplace that is safe, respectful and inclusive and reflects the diversity of the communities where we operate.

AWAC’s primary focus is to drive more intentional actions to advance equity, inclusion and diversity. Recognising this will be a multi-year journey, the key focus areas are:

- continuing to strengthen its foundation, build more awareness and drive accountability
- leveraging the diverse methods that employees use to perceive and process information, which will drive innovation and a more inclusive culture
- diversifying the applicant pool
- diversifying hiring and promotions
- improving the employee experience to retain diverse employees
- managing pay equity and pay fairness across diverse employee populations.

Inclusion groups include the Alcoa Women’s Network (AWN); Employees at Alcoa for Gay, Lesbian, Bisexual and Transgender Equality (EAGLE); and Alcoans Working Actively for Racial-Ethnic Equality (AWARE). These serve as platforms for all employees to champion inclusion and diversity programs and lead allyship and learning opportunities. Alcoa launched its ‘Everyone Matters’ voluntary allyship and learning opportunities. Alcoa launched its ‘Everyone Matters’ voluntary self-identification initiative in 2021 to build a more complete picture of workforce.

In 2021, AWAC offered training in inclusion and diversity topics that included unconscious bias, how to be an ally, and microaggressions.

AWAC is committed to achieving gender balance and is working to improve pay equity. To drive accountability, accelerate actions and measure progress, a percentage of AWAC’s annual incentive compensation is linked to both achieving gender equality and diversity in leadership and increasing the hiring of women in all levels of the organisation globally. The 2021 gender equality target represented 10% of AWAC’s incentive compensation formula and included two diversity metrics focused on increasing:

- the percentage of new hires from underrepresented populations (38.06% in 2021)\(^{22}\)
- the percentage of women in its global employee population (increased from 15.6% to 17.17% in 2021)\(^{21}\)

Commitments and progress in 2021

Alcoa was recognised in 2021 for its inclusion, diversity and equity efforts when it was named to the 2021 Bloomberg Gender-Equality Index, and received a score of 95 on the Human Rights Campaign Foundation’s Corporate Equality Index 2021.

In 2021, Alcoa’s third gender pay equity analysis assessed pay equity for salaried employees following best practice methodology with a third-party consultant. The study found a 1% gender pay gap for pay within band (equal pay for same job level), which is considered pay parity.

AWAC’s approach in 2022 will continue to focus on increasing gender diversity, with a broader emphasis on improving workforce diversity of underrepresented groups related to ethnicity and disability.

For more information on diversity and inclusion, see Alcoa 2021 Sustainability Report, page 8T.
Employee development and engagement

Why this matters
AWAC is on a mission to build a stronger ‘everyone culture’ – where its Values drive everyday decisions, and employee development is seen as a catalyst for continuous improvement, increased engagement and breakthrough performance.

Talent development
People development is a fundamental enabler of AWAC’s Care for People value. In 2021, a key focus remained the People Development Process (PDP), which included educational materials for employees and supervisors to host meaningful check-in conversations. AWAC’s rounded feedback process provides a means to share diverse perspectives, enabling a more inclusive work environment.

As part of the ongoing talent and succession process, people review meetings were held within each operational location and function to create succession plans for critical roles and action plans for key talent, and develop regional/local talent agendas.

AWAC’s talent development goal in 2021 was to create a talent pipeline that is guided by four principles: [1] Plans are intended to be highly motivational. [2] Total compensation is targeted at the median of the peer group. [3] Equity-dominant and aligned with stockholders. [4] Diversified metrics: both cash incentive (IC) and long-term incentive (LTI).

Employee engagement
In April 2021, Alcoa launched its first global employee survey that will establish quantitative baselines to monitor for progress. The survey is supported by the deployment of the ACT methodology (Acknowledge, Collaborate and Take one step forward) to advance the goal of listening and creating follow-up actions in response to the survey’s feedback. All leaders were responsible for conducting a conversation with their teams, acknowledging the feedback, collaborating on focus areas and deciding how to take one step forward together. The engagement survey will be run every 18-months, with shorter pulse surveys to measure progress in specific areas. In the second half of 2021, a pulse survey on flexible work arrangements informed the approach to flexibility First, a new work model launched in 2021.

For more information, see Alcoa 2021 Sustainability Report, page 85.

Remuneration and benefits

Why this matters
Talent attraction and retention at AWAC is influenced by the provision of competitive remuneration plans to all employees. Utilising a performance-based approach to remuneration enables AWAC to attract and retain high quality, motivated leaders and employees.

Alcoa’s executive compensation philosophy that is guided by four principles:

1. Plans are intended to be highly motivational.
2. Total compensation is targeted at the median of the peer group.
3. Equity-dominant and aligned with stockholders.
4. Diversified metrics: both cash incentive (IC) and long-term incentive (LTI).

Talent acquisition and turnover
In 2021, AWAC continued to take steps to elevate its efforts in talent acquisition. AWAC significantly increased its presence in local communities and strengthened messages to the market about the opportunities available to launch and grow a career. Opportunities are promoting through a diverse range of channels focusing on local and diverse talent.

Reward, recognition and incentives
AWAC recognises its employees through a number of financial and non-financial components including short-term and long-term incentives and reward and recognition programs which are awarded based on achievement of financial and non-financial targets such as alignment to Alcoa Values. In 2021, Alcoa continued to link 30% of its annual Incentive Compensation plan to non-financial metrics focused on safety and inclusion and diversity.

Labour relations
AWAC believes in freedom of association regardless of where it operates round the globe.

Each year, AWAC negotiate labour agreements with various unions across its global operations. In 2021, Alcoa had 31 agreements covered approximately 75% of its global workforce.

AWAC employees at the San Ciprián refinery joined a strike in late 2020 in support of workers at the associated non-AWAC smelter. On 29 December 2021, Alcoa and the workers’ representatives at the Company’s San Ciprián aluminum plant in Spain reached an agreement aimed at resolving ongoing challenges that stem from exorbitant energy prices for the aluminium smelter.

Active workforce covered by labour agreements in 2021:

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>64</td>
</tr>
<tr>
<td>Brazil</td>
<td>100</td>
</tr>
<tr>
<td>Spain</td>
<td>80</td>
</tr>
</tbody>
</table>
GRI INDEX

THIS INDEX SHOWS WHERE GRI STANDARDS ARE ADDRESSED FOR ALUMINA LIMITED AND AWAC.

Note that more in-depth information on management approach for some AWAC topics may be found in the Alcoa Sustainability Report. The Sustainability Update is informed by Global Reporting Initiative (GRI) standards, but the Sustainability Update is not GRI certified.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>Alumina Limited location</th>
<th>AWAC location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General disclosures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The organization and its reporting practices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-1</td>
<td>Organizational details</td>
<td>P3</td>
<td>P3, 4, Data Pack</td>
</tr>
<tr>
<td>2-2</td>
<td>Entities included in the organization's sustainability reporting</td>
<td>P3</td>
<td>P3, 4, Data Pack</td>
</tr>
<tr>
<td>2-3</td>
<td>Reporting period, frequency and contact point</td>
<td>P3, 4</td>
<td>P3, 4</td>
</tr>
<tr>
<td>2-4</td>
<td>Restatements of information</td>
<td>Data Pack</td>
<td>Data Pack</td>
</tr>
<tr>
<td>2-5</td>
<td>External assurance</td>
<td>P4</td>
<td>P4</td>
</tr>
<tr>
<td><strong>Activities and workers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-6</td>
<td>Activities, value chain and other business relationships</td>
<td>P7-9</td>
<td>P7-9</td>
</tr>
<tr>
<td>2-7</td>
<td>Employees</td>
<td>P21</td>
<td>P8</td>
</tr>
<tr>
<td>2-8</td>
<td>Workers who are not employees</td>
<td>P21</td>
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<tr>
<td><strong>Governance</strong></td>
<td></td>
<td></td>
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<tr>
<td>2-9</td>
<td>Governance structure and composition</td>
<td>P16-17</td>
<td>P16-19, 45</td>
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<tr>
<td>2-10</td>
<td>Nomination and selection of the highest governance body</td>
<td>P16-17, 2021 CGS P13</td>
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<tr>
<td>2-11</td>
<td>Chair of the highest governance body</td>
<td>2021 CGS P8, 12</td>
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<td>2-12</td>
<td>Role of the highest governance body in overseeing the management of impacts</td>
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<td>2-14</td>
<td>Role of the highest governance body in sustainability reporting</td>
<td>P16-17</td>
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<td>2-15</td>
<td>Conflicts of interest</td>
<td>2021 CGS P4-5</td>
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<td>2-16</td>
<td>Communication of critical concerns</td>
<td>2021 CGS P5</td>
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<td>2-17</td>
<td>Collective knowledge of the highest governance body</td>
<td>2021 CGS P11</td>
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<td>Indicator</td>
<td>Description</td>
<td>Alumina Limited location</td>
<td>AWAC location</td>
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</tr>
<tr>
<td>2-19</td>
<td>Remuneration policies</td>
<td>P21</td>
<td>Alcoa 2022 Proxy statement P45</td>
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<tr>
<td>2-20</td>
<td>Process to determine remuneration</td>
<td>P21</td>
<td>P61</td>
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<td>2-21</td>
<td>Annual total compensation ratio</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Strategy, policies and practices</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2-22</td>
<td>Statement on sustainable development strategy</td>
<td>P5-6, 13-14</td>
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<td>2-23</td>
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<td>Embedding policy commitments</td>
<td>P17, throughout report</td>
<td>N/A</td>
</tr>
<tr>
<td>2-25</td>
<td>Processes to remediate negative impacts</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2-26</td>
<td>Mechanisms for seeking advice and raising concerns</td>
<td>P17, 2021 CGS P5</td>
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<tr>
<td><strong>GRI 2: General Disclosures 2021</strong></td>
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<td>2-27</td>
<td>Compliance with laws and regulations</td>
<td>P18</td>
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<td>2-28</td>
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<tr>
<td><strong>Stakeholder engagement</strong></td>
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<td>2-29</td>
<td>Approach to stakeholder engagement</td>
<td>P12</td>
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<td>Collective bargaining agreements</td>
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<tr>
<td><strong>GRI Standards Topic Specific Disclosures</strong></td>
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<tr>
<td><strong>Management approach</strong></td>
<td></td>
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<tr>
<td>201-1</td>
<td>Direct economic value generated and distributed</td>
<td>P18</td>
<td>P50</td>
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<tr>
<td>201-2</td>
<td>Financial implications and other risks and opportunities due to climate change</td>
<td>P29-32</td>
<td>P29-32</td>
</tr>
<tr>
<td>201-3</td>
<td>Defined benefit plan obligations and other retirement plans</td>
<td>N/A</td>
<td>2021 AWAC accounts P22</td>
</tr>
<tr>
<td>201-4</td>
<td>Financial assistance received from government</td>
<td>None</td>
<td>2021 AWAC accounts P30, 39</td>
</tr>
<tr>
<td>205-2</td>
<td>Communication and training about anti-corruption policies and procedures</td>
<td>2021 CGS P5</td>
<td>P45</td>
</tr>
<tr>
<td>Indicator</td>
<td>Description</td>
<td>Alumina Limited location</td>
<td>AWAC location</td>
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<td>-----------------------------------------------------------------------------</td>
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<td>----------------------</td>
</tr>
<tr>
<td>302-1</td>
<td>Energy consumption within the organisation</td>
<td>N/A</td>
<td>P23, 52, Data Pack</td>
</tr>
<tr>
<td>302-3</td>
<td>Energy intensity</td>
<td>N/A</td>
<td>P43, 52, Data Pack</td>
</tr>
<tr>
<td>302-4</td>
<td>Reduction of energy consumption</td>
<td>N/A</td>
<td>P51-52</td>
</tr>
<tr>
<td><strong>Water and effluents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>303-3</td>
<td>Water withdrawal</td>
<td>N/A</td>
<td>P56-57, Data Pack</td>
</tr>
<tr>
<td>303-4</td>
<td>Water discharge</td>
<td>N/A</td>
<td>P56-57, Data Pack</td>
</tr>
<tr>
<td>303-5</td>
<td>Water consumption</td>
<td>N/A</td>
<td>P56-57, Data Pack</td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>304-1</td>
<td>Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas</td>
<td>N/A</td>
<td>Data Pack</td>
</tr>
<tr>
<td>304-2</td>
<td>Significant impacts of activities, products, and services on biodiversity</td>
<td>N/A</td>
<td>P54-55, Data Pack</td>
</tr>
<tr>
<td>304-3</td>
<td>Habitats protected or restored</td>
<td>N/A</td>
<td>P54, Data Pack</td>
</tr>
<tr>
<td>304-4</td>
<td>IUCN Red List species and national conservation list species with habitats in areas affected by operations</td>
<td>N/A</td>
<td>P54, Data Pack</td>
</tr>
<tr>
<td>305-1</td>
<td>Direct (Scope 1) GHG emissions</td>
<td>N/A</td>
<td>P51, Data Pack</td>
</tr>
<tr>
<td>305-2</td>
<td>Energy indirect (Scope 2) GHG emissions</td>
<td>N/A</td>
<td>P51, Data Pack</td>
</tr>
<tr>
<td>305-3</td>
<td>Other indirect (Scope 3) GHG emissions</td>
<td>N/A</td>
<td>P51, Data Pack</td>
</tr>
<tr>
<td>305-4</td>
<td>GHG emissions intensity</td>
<td>N/A</td>
<td>P40, 43, 51, Data Pack</td>
</tr>
<tr>
<td>305-5</td>
<td>Reduction of GHG emissions</td>
<td>N/A</td>
<td>P24, 40, 43, 51, Data Pack</td>
</tr>
<tr>
<td>305-7</td>
<td>NOx, SOx and other significant air emissions</td>
<td>N/A</td>
<td>P57, Data Pack</td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>306-1</td>
<td>Waste generation and significant waste-related impacts</td>
<td>N/A</td>
<td>P53-54, 40, Data Pack</td>
</tr>
<tr>
<td>306-2</td>
<td>Management of significant waste related impacts</td>
<td>N/A</td>
<td>P53-54</td>
</tr>
<tr>
<td>306-3</td>
<td>Waste generated</td>
<td>N/A</td>
<td>P40, 53-54, Data Pack</td>
</tr>
<tr>
<td>306-5</td>
<td>Waste directed to disposal</td>
<td>N/A</td>
<td>P50, Data Pack</td>
</tr>
<tr>
<td>307-1</td>
<td>Non-compliance with environmental laws and regulations</td>
<td>N/A</td>
<td>P56</td>
</tr>
<tr>
<td>403-1</td>
<td>Occupational health and safety management system</td>
<td>N/A</td>
<td>P58-59</td>
</tr>
<tr>
<td>Indicator</td>
<td>Description</td>
<td>Alumina Limited location</td>
<td>AWAC location</td>
</tr>
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<td>---------------</td>
</tr>
<tr>
<td>403-2</td>
<td>Hazard identification, risk assessment, and incident investigation</td>
<td>N/A</td>
<td>PS8</td>
</tr>
<tr>
<td>403-3</td>
<td>Occupational health services</td>
<td>N/A</td>
<td>PS8</td>
</tr>
<tr>
<td>403-5</td>
<td>Worker training on occupational health and safety</td>
<td>N/A</td>
<td>PS8</td>
</tr>
<tr>
<td>403-6</td>
<td>Promotion of worker health</td>
<td>N/A</td>
<td>PS8-59</td>
</tr>
<tr>
<td>403-9</td>
<td>Work-related injuries</td>
<td>P21</td>
<td>P43, 58-59, Data Pack</td>
</tr>
<tr>
<td>403-10</td>
<td>Work-related ill health</td>
<td>N/A</td>
<td>P59-60</td>
</tr>
</tbody>
</table>

**Training and education**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>Alumina Limited location</th>
<th>AWAC location</th>
</tr>
</thead>
<tbody>
<tr>
<td>404-1</td>
<td>Average hours of training per year per employee</td>
<td>P21</td>
<td>Alcoa 2021 Sustainability Report P89</td>
</tr>
<tr>
<td>404-3</td>
<td>Percentage of employees receiving regular performance and career development reviews</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Non-discrimination**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>Alumina Limited location</th>
<th>AWAC location</th>
</tr>
</thead>
<tbody>
<tr>
<td>406-1</td>
<td>Incidents of discrimination and corrective actions taken</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Human rights assessment**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>Alumina Limited location</th>
<th>AWAC location</th>
</tr>
</thead>
<tbody>
<tr>
<td>412-1</td>
<td>Operations that have been subject to human rights reviews or impact assessments</td>
<td>N/A</td>
<td>P48 Alcoa 2021 Sustainability Report P74</td>
</tr>
<tr>
<td>412-2</td>
<td>Employee training on human rights policies or procedures</td>
<td>N/A</td>
<td>P48 Alcoa 2021 Sustainability Report P74</td>
</tr>
<tr>
<td>412-3</td>
<td>Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening</td>
<td>N/A</td>
<td>Refer to Alcoa Supplier Standards P47, 50</td>
</tr>
<tr>
<td>413-1</td>
<td>Operations with local community engagement, impact assessments, and development programs</td>
<td>N/A</td>
<td>P49, 49-50</td>
</tr>
<tr>
<td>413-2</td>
<td>Operations with significant actual and potential negative impacts on local communities</td>
<td>N/A</td>
<td>P47</td>
</tr>
<tr>
<td>415-1</td>
<td>Political contributions</td>
<td>P18</td>
<td>P46</td>
</tr>
</tbody>
</table>
SASB INDICATORS

THE FOLLOWING TABLE OUTLINES THE SUSTAINABILITY ACCOUNTING STANDARDS BOARD (SASB) METALS AND MINING REQUIREMENTS, INCLUDING MATERIAL TOPICS AND METRICS FOR DISCLOSURE, ALONG WITH WHETHER, HOW AND WHERE WE HAVE MET REQUIREMENTS THROUGHOUT THIS REPORT.

Where we have not met requirements, this is largely because they are not relevant in an Australian context.
### Material topics and accounting metrics

<table>
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<tr>
<th>Activity metrics</th>
<th>Unit of measure</th>
<th>Code</th>
<th>Response</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of (1) metal ores and (2) finished metal products</td>
<td>Metric tons (t) saleable</td>
<td>EM-MM-000.A</td>
<td>Bauxite: 44.7 million t on a wet basis</td>
<td>P43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alumina: 12.6 million t (Full facility: 14.8 million t)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aluminium: 151 thousand t (Full facility: 290 thousand t)</td>
<td></td>
</tr>
<tr>
<td>Total number of employees, percentage contractors</td>
<td>Number, Percentage (%)</td>
<td>EM-MM-000.B</td>
<td>6,197 employees</td>
<td>P8</td>
</tr>
<tr>
<td><strong>Greenhouse gas emissions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations</td>
<td>Metric tons (t) CO2-e, Percentage (%)</td>
<td>EM-MM-110a.1</td>
<td>Scope 1: 7,707,201 tCO2-e</td>
<td>P51</td>
</tr>
<tr>
<td>Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets</td>
<td>N/A</td>
<td>EM-MM-110a.2</td>
<td>See 'Alumina Limited’s approach to climate change risks and opportunities'</td>
<td>P26, 38-40</td>
</tr>
<tr>
<td><strong>Air quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air emissions of the following pollutants:</td>
<td>Metric tons (t) E</td>
<td>EM-MM-120a.1</td>
<td>1. Not available</td>
<td>PS7</td>
</tr>
<tr>
<td>1. CO</td>
<td></td>
<td></td>
<td>2. 11,819 t</td>
<td></td>
</tr>
<tr>
<td>2. NOx (excluding N2O)</td>
<td></td>
<td></td>
<td>3. 14,578 t</td>
<td></td>
</tr>
<tr>
<td>3. SOx</td>
<td></td>
<td></td>
<td>4. Not available</td>
<td></td>
</tr>
<tr>
<td>4. Particulate matter (PM10)</td>
<td></td>
<td></td>
<td>5. 1,788 t</td>
<td></td>
</tr>
<tr>
<td>5. Mercury (Hg)</td>
<td></td>
<td></td>
<td>6. Not available</td>
<td></td>
</tr>
<tr>
<td>6. Lead (Pb)</td>
<td></td>
<td></td>
<td>7. Not available</td>
<td></td>
</tr>
<tr>
<td>7. Volatile organic compounds (VOCs)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Energy management</strong></td>
<td>Gigajoules (GJ), Percentage (%)</td>
<td>EM-MM-130a.1</td>
<td>1. Direct energy: 121,650,327 GJ Indirect energy: 30,906,136GJ (includes 12,295,212 GJ of imported steam)</td>
<td>PS2</td>
</tr>
<tr>
<td>1. Total energy consumed</td>
<td></td>
<td></td>
<td>2. Grid electricity: 18,615,924GJ (12.2% of total energy, 100% of total electricity)%</td>
<td></td>
</tr>
<tr>
<td>2. percentage grid electricity</td>
<td></td>
<td></td>
<td>3. Renewable: 36% of electricity consumed</td>
<td></td>
</tr>
<tr>
<td>3. percentage renewable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water management</strong></td>
<td>Thousand cubic meters (m³), Percentage (%)</td>
<td>EM-MM-140a.1</td>
<td>1. 29.6 million m³</td>
<td>1. P57</td>
</tr>
<tr>
<td>1. Total fresh water withdrawn</td>
<td></td>
<td></td>
<td>2. 17.8 million m³ in water stressed areas</td>
<td>2. Data Pack</td>
</tr>
<tr>
<td>2. Total fresh water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress</td>
<td>EM-MM-140a.2</td>
<td>None</td>
<td></td>
<td></td>
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<tr>
<td>Number of incidents of non-compliance associated with water quality permits, standards, and regulations</td>
<td>Number</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Material topics and accounting metrics</td>
<td>Unit of measure</td>
<td>Code</td>
<td>Response</td>
<td>Reference</td>
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<tr>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>Waste &amp; hazardous materials management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total weight of tailings waste, percentage recycled</td>
<td>Metric tons (t), Percentage (%)</td>
<td>EM-MM-150a.1</td>
<td>Not available</td>
<td>N/A</td>
</tr>
<tr>
<td>Total weight of mineral processing waste, percentage recycled</td>
<td>Metric tons (t), Percentage (%)</td>
<td>EM-MM-150a.2</td>
<td>Not available</td>
<td>N/A</td>
</tr>
<tr>
<td>Number of tailings impoundments, broken down by MSHA hazard potential</td>
<td>Number</td>
<td>EM-MM-150a.3</td>
<td>55 (AWAC), 58 (AWAC, MA’ADEN), MSHA not applicable</td>
<td>N/A</td>
</tr>
<tr>
<td>Biodiversity impacts</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Description of environmental management policies and practices for active sites</td>
<td></td>
<td>N/A</td>
<td>EM-MM-160a.1</td>
<td>See ‘Land management and biodiversity’</td>
</tr>
<tr>
<td>Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation</td>
<td>Percentage (%)</td>
<td>EM-MM-160a.2</td>
<td>Not available</td>
<td>N/A</td>
</tr>
<tr>
<td>Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat</td>
<td>Percentage (%)</td>
<td>EM-MM-160a.3</td>
<td>Not available</td>
<td>N/A</td>
</tr>
<tr>
<td>Security, human rights &amp; rights of indigenous peoples</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of (1) proved and (2) probable reserves in or near areas of conflict</td>
<td>Percentage (%)</td>
<td>EM-MM-210a.1</td>
<td>0% On a full facility basis, none of AWAC’s proved or probable reserves are in or near areas of conflict.</td>
<td>N/A</td>
</tr>
<tr>
<td>Percentage of (1) proved and (2) probable reserves in or near indigenous land</td>
<td>Percentage (%)</td>
<td>EM-MM-210a.2</td>
<td>100% LandMark’s map of indigenous lands acknowledged by governments indicates that all three of AWAC’s proved and probable reserves are near indigenous lands. They are: Juruti, Huntly and Willowdale.</td>
<td>N/A</td>
</tr>
<tr>
<td>Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict</td>
<td>N/A</td>
<td>EM-MM-210a.3</td>
<td>See ‘Local commitment with communities’ For detail on Alcoa’s engagement with indigenous rights, see its Indigenous Peoples Policy.</td>
<td>P49</td>
</tr>
<tr>
<td>Community relations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion of process to manage risks and opportunities associated with community rights and interests</td>
<td></td>
<td>N/A</td>
<td>EM-MM-210b.1</td>
<td>See ‘Local commitment with communities’</td>
</tr>
<tr>
<td>Number and duration of non-technical delays</td>
<td>Number, Days</td>
<td>EM-MM-210b.2</td>
<td>We did not experience any non-technical delays related to our mining projects.</td>
<td>N/A</td>
</tr>
<tr>
<td>Material topics and accounting metrics</td>
<td>Unit of measure</td>
<td>Code</td>
<td>Response</td>
<td>Reference</td>
</tr>
<tr>
<td>----------------------------------------</td>
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<tr>
<td><strong>Labour relations</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees</td>
<td>Percentage (%)</td>
<td>EM-MM-310a.1</td>
<td>Not available. For qualitative discussion, see ‘Labour relations’</td>
<td>P61</td>
</tr>
<tr>
<td>Number and duration of strikes and lockouts</td>
<td>Number, Days</td>
<td>EM-MM-310a.2</td>
<td>AWAC employees at the San Ciprián refinery joined a strike in late 2021.</td>
<td></td>
</tr>
<tr>
<td><strong>Workforce health &amp; safety</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1. MSHA all-incidence rate</td>
<td>Rate</td>
<td>EM-MM-320a.1</td>
<td>1. 1.14 (total recordable incident rate)</td>
<td>PS9</td>
</tr>
<tr>
<td>2. fatality rate,</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. near miss frequency rate (NMFR)</td>
<td></td>
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<tr>
<td>4. average hours of health, safety, and emergency response training for (a) full-time employees and (b) contract employees</td>
<td></td>
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</tr>
<tr>
<td><strong>Business ethics &amp; transparency</strong></td>
<td></td>
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</tr>
<tr>
<td>Description of the management system for prevention of corruption and bribery throughout the value chain</td>
<td>N/A</td>
<td>EM-MM-510a.1</td>
<td>The Alcoa Ethics and Compliance team deliver in-person training on its Code of Conduct, policies and procedures, anti-corruption principles and its expectations of supervisors. Other governance policies that drive ethical and responsible business practice at AWAC include:</td>
<td>P45-47</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Alcoa’s Corporate Governance Guidelines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Anti-Corruption Policy</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Human Rights Policy</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• International Trade Compliance Policy</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>See ‘Business integrity.’</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td>Alcoa engages with Trace International to support our due-diligence program and further manage risk in our supply chain related to anti-bribery and corruption. This program assesses suppliers with an Alcoa spend higher than US$50,000 per year that are based in a high-risk country, as well as those with an Alcoa spend above US$1 million per year but are not based in a high-risk country.</td>
<td></td>
</tr>
<tr>
<td>Production in countries that have the 20 lowest rankings in Transparency International’s Corruption Perceptions Index</td>
<td>Metric tons (t) saleable</td>
<td>EM-MM-510a.2</td>
<td>AWAC does not produce in any of the 20 lowest ranking countries in Transparency International’s Corruption Perception Index.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
## SUMMARY OF MATERIAL RISKS — AWAC

### Alumina mapping

<table>
<thead>
<tr>
<th>Examples of management</th>
<th>Relevance targets/progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business integrity</td>
<td><strong>H</strong></td>
</tr>
<tr>
<td>• Values (Act with Integrity, Operate with Excellence, Care for People)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Code of conduct, Corporate Governance Guidelines, Anti-Corruption Policy</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Ethics and Compliance Organisation, Annual Business Conduct Survey</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Required training: anti-bribery, ethics and compliance, anti-corruption, respect in the workplace</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Government compliance and engagement</td>
<td><strong>M</strong></td>
</tr>
<tr>
<td>• Industry organisation membership</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Corporate Governance Guidelines, International Trade Compliance Policy.</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Industry relations</td>
<td><strong>H</strong></td>
</tr>
<tr>
<td>• Alcoa is a member of ICMM and several other industry organisations</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Modern slavery and human rights</td>
<td><strong>M</strong></td>
</tr>
<tr>
<td>• Human Rights Policy, Code of Conduct, Supplier Standards, Integrity Line</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Commitment to UN Guiding Principles for Business &amp; Human Rights</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Third-party supplier assessment programs</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Modern slavery statement</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Alcoa of Australia Ltd</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Supply chain</td>
<td><strong>H</strong></td>
</tr>
<tr>
<td>• Supplier Standards, global Supplier Sustainability Program, partnership with EcoVadis (supplier ESG insight)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Due diligence on key suppliers, third-party supplier assessment programs</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Supply Chain Inclusion and Diversity Strategy, Local and Indigenous Procurement Policy (Australia)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• All potential and current suppliers screened for ESG risk using the EcoVadis IQ platform, with minimum maturity rating of 24.</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• 95% of Alcoa’s global supply base assessed, with 98% meeting minimum requirements</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Tax Transparency</td>
<td><strong>L</strong></td>
</tr>
<tr>
<td>• Tax transparency report (Australia)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Alumina monitor’s AWAC through Board participation</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Alcoa of Australia Tax transparency report — Alcoa Sustainability Tax transparency reports for 2020 and 2021 not yet published</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Cybersecurity</td>
<td><strong>L</strong></td>
</tr>
<tr>
<td>• Policies and procedures, Global privacy program</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Working to align global security program with ISO-27001 IS Management</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• US-EU Privacy Shield Framework (collection, use &amp; retention of Personal Data)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Local commitment with communities</td>
<td><strong>H</strong></td>
</tr>
<tr>
<td>• Social Policy, Indigenous Peoples Policy, Human Rights Policy, Alcoa Stakeholder Engagement Framework</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Social Performance Management System (SPMS)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• Reconciliation Action Plan (Australia)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• SMAS at all locations by 2022 (including definition of performance metrics, and long-term goals to be accomplished by 2025 &amp; 2030)</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>• SMAS launched in Western Australia and Juruti, Brazil</td>
<td><strong>Relevant</strong></td>
</tr>
<tr>
<td>Economic, contribution</td>
<td><strong>M</strong></td>
</tr>
<tr>
<td>• Stable, fair paying jobs, procuring goods &amp; services from local suppliers, pay income &amp; other taxes</td>
<td><strong>Relevant</strong></td>
</tr>
</tbody>
</table>

### Importance

- **H** = High
- **M** = Medium
- **L** = Low

### Climate change and greenhouse emissions

- **Relevant targets/progress**
  - Alcoa’s Climate Change Policy, decarbonisation strategy
  - Executive team oversight, integrate climate change considerations into decision-making process
  - EcoSource Alumina

- **Relevant targets/progress**
  - Net zero by 2050, refinery GHG intensity: 4% reduction by 2025 & 12% by 2030 from a 2015 baseline
  - Refinery GHG intensity 2021: 0.516, 4.4% reduction

### Land management and biodiversity

- **Relevant targets/progress**
  - Biodiversity Policy and Biodiversity action plans, Environmental impact assessments
  - Mitigation hierarchy of avoidance, minimisation, restoration, and offsets during the lifecycle of operations
  - Commitment not to explore, mine or operate in World Heritage sites and to avoid developing new operations within protected areas under International Union for Conservation of Nature (IUCN) categories

- **Relevant targets/progress**
  - Five-year average ratio of 1:1 or better for active mining disturbance (excluding long-term infrastructure) to mine rehabilitation.
  - 2021: 0.82 (i.e. better than target)
  - No net loss of biodiversity for new sites & expansions

### Air quality

- **Relevant targets/progress**
  - Internal standards that meet or exceed applicable jurisdictional regulations

- **Relevant targets/progress**
  - Focus on long-term natural gas and electricity contracts
  - Demand response initiatives for refineries and smelters

### Facilities closure

- **Facilities closure governance (remediation, restoration, and real estate stewardship)**
- **Transformation Group (responsible for managing environmental liabilities)**
- **Member of Surplus Property Roundtable; founding member of Co-operative Research Centre for Transformations in Mining Economies (Australia)**
- **Community investment through Alcoa Foundation (not part of AWAC but investing in AWAC communities)**
### People

**Occupational Health and Safety**
- EHS Lead Team, EHS Council, culture of transparency, employees encouraged to identify/report unsafe practices
- ISO-certified EHS management system, regular training, policies, audits

**Relevant targets/progress**
- Zero fatalities & serious injuries (life-threatening/altering injuries & illnesses) - 2021: Nil

**Diversity and Inclusion**
- Alcoa’s Global Inclusion & Diversity Council. Alcoa’s inclusion and diversity strategy endorsed by executive team and board, Diversifying the applicant pool hiring and promotions, Managing pay equity and pay fairness across diverse employee populations, Training (e.g. unconscious bias)

**Relevant targets/progress**
- Attain an inclusive everyone culture that reflects the diversity of the communities in which it operates.

**Labour Relations**
- Freedom of association, open and ongoing communication with active workers, dedicated HR team
- Code of conduct, ensuring employees are treated consistently worldwide

**Employee Development and Engagement**
- Employee engagement surveys, Talent acquisition and talent development, Employee training, Reward, recognition and incentives

**Executive Remuneration**
- Compensation plans for named executive officers that better reflects ESG emissions, safety, and diversity.

### Community

**Diversity and Inclusion**
- Diversity policy

**Relevant targets/progress**
- Board of Directors 40% male, 40% female, 20% open
  - 33% female directors

**Executive Development and Engagement**
- Human Rights policy
- Development and training
- Leadership programs

**Executive Remuneration**
- Remuneration Committee
- Remuneration Report
- Independent remuneration consultants

### Environment

**Climate Change**
- Adoption of the Task Force on Climate-related Financial Disclosures (TCFD)
- Governance structures, oversight of the Climate Change Policy
- Climate change Position Statement, net zero by 2050
- Monitoring climate risks & opportunities
- Support of AWAC’s decarbonisation strategy

**Relevant targets/progress**
- Compliance with TCFD in 2022
  - TCFD disclosures expanded
- 45% reduction in scope 1&2 by 2030 from a 2010 baseline (in-line with IPCC)
- Target in line with IPCC. 2021: 8.7Mt (44% reduction, equity share)

**Diversity and Inclusion**
- Diversity policy

**Relevant targets/progress**
- Board of Directors 40% male, 40% female, 20% open
  - 33% female directors

**Employee Development and Engagement**
- Human Rights policy
- Development and training
- Leadership programs

**Executive Remuneration**
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### Importance
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**Summary of Material Risks — Alumina Limited**

<table>
<thead>
<tr>
<th>Importance</th>
<th>H</th>
<th>M</th>
<th>L</th>
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</thead>
<tbody>
<tr>
<td>People</td>
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**Alumina Limited**

Sustainability Update 2021
Disclaimer

Summary information

This Sustainability Update contains summary information about the current activities of Alumina Limited (ACN 004 820 419) (Alumina) and its subsidiaries as at the date of this Sustainability Update. The information in this Sustainability Update should not be considered to be comprehensive nor to comprise all the information that a reader may require in order to make an investment decision regarding Alumina securities. This Sustainability Update should be read in conjunction with Alumina’s other periodic and continuous disclosure announcements lodged with the ASX, which are available at www.asx.com.au.

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