UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

☒

For the fiscal year ended December 31, 2023

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

☐

For the transition period from _____ to _____

Commission File Number 1-37816

ALCOA CORP ORATION

(Exact name of registrant as specified in its charter)

Delaware	**81-1789115**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
201 Isabella Street , Suite 500 , Pittsburgh , Pennsylvania	**15212-5858**
(Address of principal executive offices)	**(Zip Code)**

(Registrant's telephone number, including area code): 412 - 315-2900

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, par value $0.01 per share	AA	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐

Emerging growth company

☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☑

The aggregate market value of the registrant's voting stock held by non-affiliates at June 30, 2023 was approximately $

6.0

billion, based on the closing price per share of Common Stock on June 30, 2023 of $33.93 as reported on the New York Stock Exchange.

As of February 16, 2024, there were

179,558,990

shares of the registrant's common stock, par value $0.01 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III of this Form 10-K incorporates by reference certain information from the registrant's Definitive Proxy Statement for its 2024 Annual Meeting of Stockholders to be filed pursuant to Regulation 14A.

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Note on Incorporation by Reference

In this Form 10-K, selected items of information and data are incorporated by reference to portions of Alcoa Corporation's Definitive Proxy Statement for its 2024 Annual Meeting of Stockholders (Proxy Statement), which will be filed with the Securities and Exchange Commission within 120 days after the end of Alcoa Corporation's fiscal year ended December 31, 2023. Unless otherwise provided herein, any reference in this Form 10-K to disclosures in the Proxy Statement shall constitute incorporation by reference of only that specific disclosure into this Form 10-K.

PART I

Item 1. Business.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts)

The Company

Alcoa Corporation, a Delaware corporation (the Company), is active in all aspects of the upstream aluminum industry with bauxite mining, alumina refining, and aluminum smelting and casting. The Company has direct and indirect ownership of 27 locations across nine countries on six continents.

The Company's operations in 2023 comprised two reportable business segments: Alumina and Aluminum. The Alumina segment primarily consists of a series of affiliated operating entities held in Alcoa World Alumina and Chemicals, a global, unincorporated joint venture between Alcoa and Alumina Limited (described below). The Aluminum segment consists of the Company's aluminum smelting and casting operations along with most of the Company's energy production assets.

Aluminum, as an element, is abundant in the earth's crust, but a multi-step process is required to manufacture finished aluminum metal. Aluminum metal is produced by refining alumina oxide from bauxite into alumina, which is then smelted into aluminum and can be cast into many shapes and forms.

Alcoa smelts and casts aluminum in various shapes and sizes for global customers, including developing and creating various alloy combinations for specific applications.

Aluminum metal is a commodity traded on the London Metal Exchange (LME) and priced daily. Additionally, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the prices of both aluminum and alumina are subject to significant volatility and, therefore, influence the operating results of Alcoa.

Alcoa Corporation became an independent, publicly traded company on November 1, 2016, following its separation (the Separation Transaction) from its former parent company, Alcoa Inc. References herein to "ParentCo" refer to Alcoa Inc. and its consolidated subsidiaries through October 31, 2016, at which time it was renamed Arconic Inc. (Arconic) and since has been subsequently renamed Howmet Aerospace Inc.

Business Strategy

Alcoa's business strategy is designed to create shareholder value while aligning with our purpose, vision, and values.

In the near term, the Company has an acute focus on the strategic priority of *reducing complexity* and developing a portfolio of mining, refining, and smelting assets that is profitable, safe, stable, low cost, low carbon emitting, and supported by a strong balance sheet. To achieve this, Alcoa is prioritizing maintaining a lean overhead structure, operating with excellence, and actively managing our asset portfolio. In 2019, the Company announced a five-year strategic portfolio review of its smelting and refining capacity to improve cost positioning, or curtail, close, or divest 1.5 million and 4 million metric tons of smelting and refining capacity, respectively. Through January 2024, Alcoa continued to make progress on the portfolio review completing its review of refining capacity and reaching approximately 93 percent of its target for smelting capacity. This focus on operational stability and portfolio transformation results in a reduction in complexity and improved cash generation to support the Company's capital allocation framework.

At the same time, Alcoa maintains two additional strategic priorities for creating value into the long term: *advance sustainably and drive returns*. To advance sustainably, the Company seeks to increase value from a leading sustainability position, which includes the industry's most comprehensive suite of products made with lower carbon emissions. The Sustana™ brand, includes EcoDura™ aluminum (recycled content), EcoLum™ aluminum (low carbon), and EcoSource™ alumina (also low carbon). These products create a differentiated position for Alcoa, serve growing markets focused on lowering carbon emissions, and provide competitive advantages that the Company can build on. Additionally, the Company has the goal of being the lowest emitter of carbon dioxide among all global aluminum companies, per ton of emissions in both smelting and refining, and aims to move its aluminum asset portfolio to a first quartile cost position relative to other aluminum producers upon completion of our portfolio review. In 2023, Alcoa exceeded its target of 85 percent of its smelting portfolio being powered by renewable energy, attaining 87 percent. Renewable energy is derived from natural processes that are replenished constantly, such as sunlight, wind, and hydropower.

The third strategic priority is *drive returns*. To do so, the Company is developing targeted growth opportunities that leverage its competitive advantages to meet the evolving demands of stakeholders and customers and create lasting sources of value. Through active research and development projects, Alcoa is seeking to innovate breakthrough technologies to revolutionize its impact and that of its customers. These have the potential to drive value by reducing costs, improving efficiency, and reducing greenhouse gas emissions in both alumina refining and aluminum smelting. The roadmap of technologies under development includes:

- The ELYSIS™ partnership uses an aluminum smelting technology that eliminates direct greenhouse gas emissions from the traditional smelting process, instead emitting pure oxygen as a byproduct. The research and development program is being ramped up to commercial scale and commercial-grade research and development scale quantities of aluminum produced by ELYSIS have been sold for use by top-tier brands including Apple Inc. and Audi AG.
- The ASTRAEA™ process is a proprietary technology under development that can purify post-consumer aluminum scrap, regardless of alloy combination, and beneficiate it up to high purity levels that exceed what is produced at most primary aluminum smelters operating today, permitting use in high tolerance applications, such as aerospace.
- The Refinery of the Future initiative aims to achieve alumina refining with no direct greenhouse gas emissions through adapting various processes and new technologies under development for alumina refining. The various components of this initiative are in early research stages.

To enable these strategic priorities, the Company strives to have a performance culture with an action orientation that delivers results, straightforward communication, empowered employees, and aligned goals.

See Part II Item 7 of this Form 10-K in Management's Discussion and Analysis of Financial Condition and Results of Operations under caption Business Update for more information.

Joint Ventures

Alcoa World Alumina and Chemicals (AWAC)

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited, a company incorporated under the laws of the Commonwealth of Australia and listed on the Australian Securities Exchange. AWAC consists of a number of affiliated entities that own, operate, or have an interest in bauxite mines and alumina refineries, as well as an aluminum smelter, in seven countries. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these entities, directly or indirectly, with such entities being consolidated by Alcoa Corporation for financial reporting purposes. The scope of AWAC generally includes the mining of bauxite and other aluminous ores; the refining, production, and sale of smelter grade and non-metallurgical alumina; and the production of certain primary aluminum products.

Alcoa provides the operating management for AWAC, which is subject to direction provided by the Strategic Council of AWAC. The Strategic Council consists of five members, three of whom are appointed by Alcoa (of which one is the Chair) and two of whom are appointed by Alumina Limited (of which one is the Deputy Chair). Matters are decided by a majority vote with certain matters requiring approval by at least 80% of the members, including: changes to the scope of AWAC; changes in the dividend policy; equity calls in aggregate greater than $1,000 in any year; sales of all or a majority of the AWAC assets; loans from AWAC companies to Alcoa or Alumina Limited; certain acquisitions, divestitures, expansions, curtailments or closures; certain related-party transactions; financial derivatives, hedges or swap transactions; a decision by AWAC entities to file for insolvency; and changes to pricing formula in certain offtake agreements which may be entered into between AWAC entities and Alcoa or Alumina Limited.

AWAC Operations

AWAC entities' assets include the following interests:

- 100% of the bauxite mining, alumina refining, and aluminum smelting operations of Alcoa's affiliate, Alcoa of Australia Limited (AofA);
- 100% of the Juruti bauxite deposit and mine in Brazil;
- 45% interest in Halco (Mining) Inc., a bauxite consortium that owns a 51% interest in Compagnie des Bauxites de Guinée (CBG), a bauxite mine in Guinea;
- 39.96% interest in the São Luís refinery in Brazil;
- 55% interest in the Portland, Australia smelter that AWAC manages on behalf of the joint venture partners;
- 25.1% interest in the mine and refinery in Ras Al Khair, Saudi Arabia;
- 100% of the refinery and alumina-based chemicals assets at San Ciprián, Spain;

- 100% of Alcoa Steamship Company LLC, a company that procures ocean freight and commercial shipping services for Alcoa in the ordinary course of business;
- 100% of the refinery assets at the closed facility in Point Comfort, Texas, United States; and,
- 100% interest in various assets formerly used for mining and refining in the Republic of Suriname (Suriname).

Exclusivity

Under the terms of their joint venture agreements, Alcoa and Alumina Limited have agreed that, subject to certain exceptions, AWAC is their exclusive vehicle for their investments, operations or participation in the bauxite and alumina business, and they will not compete with AWAC in those businesses. In the event of a change of control of either Alcoa or Alumina Limited, this exclusivity and non-compete restriction will terminate, and the partners will then have opportunities to unilaterally pursue bauxite or alumina projects outside of or within AWAC, subject to certain conditions provided in the Amended and Restated Charter of the Strategic Council.

Equity Calls

The cash flow of AWAC and borrowings are the preferred sources of funding for the needs of AWAC. An equity call can be made on 30 days' notice, subject to certain limitations, in the event the aggregate annual capital budget of AWAC requires an equity contribution from Alcoa and Alumina Limited.

Dividend Policy

AWAC will generally be required to distribute at least 50% of the prior calendar quarter's net income of each AWAC entity, and certain AWAC entities will also be required to pay a distribution every three months equal to the amount of available cash above specified thresholds and subject to the forecast cash needs of the AWAC entity.

Leveraging Policy

Debt of AWAC is subject to a limit of 30% of total capital (defined as the sum of debt (net of cash) plus any noncontrolling interest plus shareholder equity). The AWAC joint venture has raised a limited amount of debt to fund growth projects as permitted under Alcoa's revolving credit line and in accordance with the joint venture partnership agreements.

Saudi Arabia Joint Venture

In December 2009, Alcoa entered into a joint venture with the Saudi Arabian Mining Company (Ma'aden), which was formed by the government of Saudi Arabia to develop its mineral resources and create a fully integrated aluminum complex in Saudi Arabia. Ma'aden is listed on the Saudi Stock Exchange (Tadawul). The joint venture complex includes a bauxite mine with estimated capacity of 5 million dry metric tons per year; an alumina refinery with a capacity of 1.8 million metric tons per year (mtpy); and an aluminum smelter with a capacity of 804,000 mtpy.

The joint venture is currently comprised of two entities: the Ma'aden Bauxite and Alumina Company (MBAC) and the Ma'aden Aluminium Company (MAC). Ma'aden owns a 74.9% interest in the MBAC and MAC joint venture. Alcoa owns a 25.1% interest in MAC, which holds the smelter; AWAC holds a 25.1% interest in MBAC, which holds the mine and refinery. The refinery and smelter are located within the Ras Al Khair industrial zone on the east coast of Saudi Arabia.

Pursuant to the joint venture agreement between Alcoa and Ma'aden, Alcoa is permitted to sell all of its shares in both MBAC and MAC collectively, for which Ma'aden has a right of first refusal. In addition, upon the occurrence of an unremedied event of default by Alcoa, Ma'aden may purchase, or, upon the occurrence of an unremedied event of default by Ma'aden, Alcoa may sell, its interest in the joint venture for consideration that varies depending on the time of the default.

ELYSIS

ELYSIS Limited Partnership is between wholly-owned subsidiaries of Alcoa (48.235%) and Rio Tinto Alcan Inc. (Rio Tinto) (48.235%), respectively, and Investissement Québec (3.53%), a company wholly-owned by the Government of Québec, Canada. The purpose of ELYSIS is to advance larger scale development and commercialization of its patent-protected technology that eliminates direct greenhouse gas emissions from the traditional aluminum smelting process and, in the production of aluminum, instead emits oxygen. Alcoa first developed the inert anode technology for the aluminum smelting process that served as the basis for the formation of ELYSIS in 2018. Development scale quantities of aluminum produced by ELYSIS have been sold for commercial purposes, including to RONAL Group for the wheels for the Audi eTron GT. ELYSIS has also supplied metal to Apple Inc., a non-equity investor in the technology, for use in some of its products such as the 16-inch MacBook Pro and the iPhone SE.

Others

The Company is party to several other joint ventures and consortia. See additional details within each business segment discussion below.

The Aluminerie de Bécancour Inc. (ABI) smelter is a joint venture between Alcoa and Rio Tinto located in Bécancour, Québec. Alcoa owns 74.95% of the joint venture through its 50% equity investment in Pechiney Reynolds Quebec, Inc., which owns a 50.1% share of the smelter, and two wholly-owned Canadian subsidiaries, which own 49.9% of the smelter. Rio Tinto owns the remaining 25.05% interest in the joint venture through its 50% ownership in Pechiney Reynolds Quebec, Inc.

CBG is a joint venture between Boké Investment Company (51%) and the Government of Guinea (49%) for the operation of a bauxite mine in the Boké region of Guinea. Boké Investment Company is owned 100% by Halco (Mining) Inc.; AWA LLC holds a 45% interest in Halco. AWA LLC is part of the AWAC group of companies and is ultimately owned 60% by Alcoa and 40% by Alumina Limited.

On April 30, 2022, Alcoa completed the sale of its investment in Mineração Rio Do Norte (MRN) for proceeds of $10. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. In addition, the Company entered into several bauxite offtake agreements with South32 Minerals S.A. (South32). to provide bauxite supply for existing long-term supply contracts.

Alumar is an unincorporated joint venture for the operation of a refinery, smelter, and casthouse in Brazil. The refinery is owned by AWAB (39.96%), Rio Tinto (10%), Alcoa Alumínio (14.04%), and South32 (36%). AWAB is part of the AWAC group of companies and is ultimately owned 60% by Alcoa and 40% by Alumina Limited. With respect to Rio Tinto and South32, the named company or an affiliate thereof holds the interest. The smelter and casthouse are owned by Alcoa Alumínio (60%) and South32 (40%).

Strathcona calciner is a joint venture between affiliates of Alcoa and Rio Tinto. Calcined coke is used as a raw material in aluminum smelting. The calciner is owned by Alcoa (39%) and Rio Tinto (61%).

Hydropower

Machadinho Hydro Power Plant (HPP) is a consortium located on the Pelotas River in southern Brazil in which the Company has a 27.3% ownership interest through Alcoa Alumínio. The remaining ownership interests are held by unrelated third parties.

Barra Grande HPP is a joint venture located on the Pelotas River in southern Brazil in which the Company has a 42.2% ownership interest through Alcoa Alumínio. The remaining ownership interests are held by unrelated third parties.

Estreito HPP is a consortium between Alcoa Alumínio, through Estreito Energia S.A. (25.5%) and unrelated third parties located on the Tocantins River, northern Brazil.

Serra do Facão HPP is a joint venture between Alcoa Alumínio (35%) and unrelated third parties located on the Sao Marcos River, central Brazil.

Manicouagan Power Limited Partnership (Manicouagan) is a joint venture between affiliates of Alcoa and Hydro-Québec. Manicouagan owns and operates the 335 megawatt McCormick hydroelectric project, which is located on the Manicouagan River in the Province of Québec, Canada. Alcoa owns 40% of the joint venture.

Alumina

This segment consists of the Company's worldwide refining system, including the mining of bauxite, which is then refined into alumina, a compound of aluminum and oxygen that is the raw material used by smelters to produce aluminum metal. Bauxite is the principal raw material used to produce alumina and contains various aluminum hydroxide minerals, the most important of which are gibbsite and boehmite. Bauxite is refined into alumina using the Bayer process. The Company obtains bauxite from its own resources, including those belonging to AWAC, as well as through long-term and short-term contracts and mining leases. Tons of bauxite are reported on a zero-moisture basis in millions of dry metric tons (mdmt) unless otherwise stated.

Alcoa's alumina sales are made to customers globally and are typically priced by reference to published spot market prices. The Company produces smelter grade alumina and non-metallurgical grade alumina. The Company's largest customer for smelter grade alumina is its own aluminum smelters, which in 2023 accounted for approximately 32 percent of its total alumina shipments. A small portion of the alumina (non-metallurgical grade) is sold to third-party customers who process it into industrial chemical products. This segment also includes AWAC's 25.1% share of MBAC.

In 2023, Alcoa-operated mines, mines operated by partnerships in which Alcoa, including AWAC, has equity interests, and bauxite offtake agreements supplied 83 percent of volume to Alcoa refineries and the remaining 17 percent was sold to third-party customers. Alcoa-operated mines produced 36.3 mdmt of bauxite and mines operated by partnerships produced 4.7 mdmt of bauxite on a proportional equity basis, for a total Company bauxite production of 41.0 mdmt.

On April 30, 2022, Alcoa completed the sale of its investment in MRN. The Company entered into several bauxite offtake agreements with South32 to provide bauxite supply for existing long-term supply contracts.

Based on the terms of its bauxite supply contracts, the amount of bauxite AWAC purchases from its minority-owned joint ventures, MRN (until its sale in April 2022) and CBG, differ from its proportional equity in those mines. Therefore, in 2023, Alcoa had access to 45.2 mdmt of production from its portfolio of bauxite interests and bauxite offtake and supply agreements and sold 7.6 mdmt of bauxite to third parties; 37.6 mdmt of bauxite was delivered to Alcoa refineries.

The Company primarily sells alumina through contracts containing two pricing components: (1) the API price basis and (2) a negotiated adjustment basis that takes into account various factors, including freight, quality, customer location, and market conditions, as well as through fixed price spot sales. In 2023, approximately 95 percent of the Company's smelter grade alumina shipments to third parties were sold on an adjusted API price or fixed price spot basis.

Beginning in January 2023, financial information for the activities of the bauxite mines and the alumina refineries was combined into the Alumina segment and the Company began reporting its financial results in the following two segments: (i) Alumina and (ii) Aluminum. Accordingly, segment information for all prior periods presented was updated to reflect the new segment structure in Quarterly Report on Form 10-Q and Annual Report on Form 10-K filings.

Information regarding the Company's bauxite mining properties and bauxite mineral resources and reserves is included in Part 1 Item 2 of this Form 10-K.

Alcoa's alumina refining facilities and its worldwide alumina capacity stated in metric tons per year (mtpy) as of December 31, 2023 are shown in the following table:

Country	Facility	Nameplate Capacity[1] (000 mtpy)	Alcoa Corporation Consolidated Capacity[1] (000 mtpy)
Australia (AofA)	Kwinana	2,190	2,190
	Pinjarra	4,700	4,700
	Wagerup	2,879	2,879
Brazil	Poços de Caldas	390	390
	São Luís (Alumar)	3,860	2,084
Spain	San Ciprián	1,600	1,600
TOTAL		15,619	13,843

Equity Interests:

Country	Facility	Nameplate Capacity[1] (000 mtpy)	Alcoa Corporation Consolidated Capacity[1] (000 mtpy)
Saudi Arabia	Ras Al Khair (MBAC)	1,800	452

(1) Nameplate Capacity is an estimate based on design capacity and normal operating efficiencies and does not necessarily represent maximum possible production. Alcoa Corporation Consolidated Capacity represents our share of production from these facilities. For facilities wholly-owned by AWAC, Alcoa takes 100% of the production.

As of December 31, 2023, Alcoa had approximately 1,452,000 mtpy of idle capacity relative to total Alcoa consolidated capacity of 13,843,000 mtpy. Idle capacity of 800,000 mtpy at the San Ciprián refinery is due to the partial curtailment of the refinery in 2022, 438,000 mtpy of idle capacity at the Kwinana refinery is due to the partial curtailment in 2023, and 214,000 mtpy of idle capacity at the Poços de Caldas facility is a result of the previous full curtailment of the Poços de Caldas smelter.

In October 2019, the Company announced a five-year review of our production assets that includes a range of potential outcomes for these facilities to improve cost positioning, including curtailment, closure, or divestiture. The review includes 4 million metric tons of global refining capacity, of which 2,305,000 mtpy of capacity has been permanently closed since the announced review. In January 2024, the Company announced an additional curtailment of 2,190,000 mpty of capacity through the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production by decreasing process flows and taking offline one of five digesters in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. While the supply of natural gas improved in April 2023, the Company kept the one digester offline due to the prolonged annual mine plan approvals process.

In 2022, production at the San Ciprián refinery was reduced to approximately 50 percent of the 1.6 million metric tons of annual capacity to mitigate the financial impact of high natural gas costs. In December 2023, the Company initiated engagement with government stakeholders and workers' representatives to discuss ongoing financial difficulties at the San Ciprián operations, identify all potential forms of relief, and work collaboratively on a long-term solution.

Aluminum

This segment currently consists of (i) the Company's worldwide smelting and casthouse system and (ii) a portfolio of energy assets in Brazil, Canada, and the United States. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value add ingot products (e.g., foundry, billet, rod, and slab). The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum segment (Baie-Comeau (Canada) smelter and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segment (Brazilian refineries). This segment also includes Alcoa's 25.1% share of MAC, the smelting joint venture company in Saudi Arabia.

Smelting and Casting Operations

Contracts for primary aluminum vary widely in duration, from multi-year supply contracts to spot purchases. Pricing for primary aluminum products is typically comprised of three components: (i) the published LME aluminum price for commodity grade P1020 aluminum, (ii) the published regional premium applicable to the delivery locale, and (iii) a negotiated product premium that accounts for factors such as shape and alloy.

Alcoa's primary aluminum facilities and its global smelting capacity stated in metric tons per year (mtpy) as of December 31, 2023 are shown in the following table:

Country	Facility	Nameplate Capacity[1] (000 mtpy)	Alcoa Corporation Consolidated Capacity[1] (000 mtpy)
Australia	Portland	358	197
Brazil	Poços de Caldas[2]	N/A	N/A
	São Luís (Alumar)	447	268
Canada	Baie Comeau, Québec	324	324
	Bécancour, Québec	467	350
	Deschambault, Québec	287	287
Iceland	Fjarðaál	351	351
Norway	Lista	95	95
	Mosjøen	200	200
Spain	San Ciprián	228	228
United States	Massena West, NY	130	130
	Evansville, IN (Warrick)	215	215
TOTAL		3,102	2,645

Equity Interests:

Country	Facility	Nameplate Capacity[1] (000 mtpy)	Alcoa Corporation Consolidated Capacity[1] (000 mtpy)
Saudi Arabia	Ras Al Khair (MAC)	804	202

(1) Nameplate Capacity is an estimate based on design capacity and normal operating efficiencies and does not necessarily represent maximum possible production. Alcoa Corporation's consolidated capacity is its share of Nameplate Capacity based on its ownership interest in the respective smelter.

(2) The Poços de Caldas facility is a casthouse and does not include a smelter.

The Company's five-year review of our production assets first announced in October 2019 includes 1.5 million metric tons of smelting capacity. The portfolio review includes evaluations to improve cost positioning, including curtailments, closures, or divestitures. As of December 31, 2023, the Company had approximately 465,000 mtpy of idle smelting capacity relative to total Alcoa consolidated capacity of 2,645,000 mtpy. The idle capacity includes 228,000 mtpy of idle capacity at the San Ciprián smelter, 84,000 mtpy of idle capacity at the Alumar smelter, 80,000 mtpy of idle capacity at the Warrick smelter, 42,000 mtpy of idle capacity at the Portland smelter, and 31,000 mtpy of idle capacity at the Lista smelter.

During the fourth quarter of 2023, Alcoa began the restart of 54,000 mtpy of capacity at its Warrick Operations site (Indiana) that was curtailed in July 2022 due to operational challenges related to labor shortages in the region. The Company also approved the permanent closure of 54,000 mtpy of previously curtailed capacity (which had not operated since 2016) to prepare the site for future capital investments for improved casting capabilities.

During 2023, the Company continued the controlled pace for the restart of the Alumar smelter in São Luís, Brazil. The site was operating at approximately 69 percent of the site's total annual capacity of 268,000 mtpy (Alcoa share) as of December 31, 2023.

In the fourth quarter of 2023, Alcoa began the restart of 16,000 mtpy of previously curtailed capacity at the Portland smelter. The smelter had previously been operating at approximately 75 percent of the site's total annual capacity of 197,000 mtpy (Alcoa share) since March 2023 due to instability and challenges related to the production of rodded anodes. The site was operating at approximately 79 percent of its capacity as of December 31, 2023.

The Company announced the closure of the previously curtailed Intalco aluminum smelter (279,000 mtpy) after evaluating various options for the asset in March 2023. The facility has been fully curtailed since 2020.

The San Ciprián smelter was curtailed in January 2022, as a result of an agreement with the workers' representatives in December 2021. In February 2023, under the terms of an amended viability agreement, Alcoa agreed to a phased restart of the smelter beginning in January 2024, to operate an initial complement of approximately 6 percent of total pots, to restart all pots by October 1, 2025 and to maintain 75 percent of the annual capacity of 228 kmt from October 1, 2025 until the end of 2026. In December 2023, the Company initiated engagement with government stakeholders and workers' representatives to discuss ongoing financial difficulties at the San Ciprián operations, identify all potential forms of relief, and work collaboratively on a long-term solution. In January 2024, the Company began the restart process for the initial complement of pots in accordance with terms of the viability agreement while the discussions on future solutions progress.

Energy Facilities and Sources

In 2023, energy comprised approximately 25% of the Company's total alumina refining production costs and electric power comprised approximately 23% of the Company's primary aluminum production costs.

Electricity markets are regional and are limited by physical and regulatory constraints, including the physical inability to transport electricity efficiently over long distances, the design of the electric grid, including interconnections, and the regulatory structure imposed by various federal and state entities.

Electricity contracts may be short-term (real-time or day ahead) or years in duration, and contracts can be executed for immediate delivery or years in advance. Pricing may be fixed, indexed to an underlying fuel source or other index such as LME, cost-based, or based on regional market pricing. In 2023, Alcoa generated approximately 9% of the power used at its smelters worldwide and generally purchased the remainder under long-term arrangements.

The following table sets forth the electricity generation capacity and 2023 generation of facilities in which Alcoa Corporation has an ownership interest. See also the Joint Ventures section above.

Country	Facility	Alcoa Corporation Consolidated Capacity (MW)	2023 Generation (MWh)
Brazil	Barra Grande	150	1,315,097
	Estreito	155	1,360,074
	Machadinho	126	1,057,770
	Serra do Facão	60	525,600
Canada	Manicouagan	133	1,161,190
United States	Warrick	657	3,640,522
TOTAL		**1,281**	**9,060,253**

The figures in this table are presented in megawatts (MW) and megawatt hours (MWh), respectively.

Each facility listed above generates hydroelectric power except the Warrick facility, which generates substantially all of the power used by the Warrick smelting facility from the co-located Warrick power plant using coal reserves from the Alcoa-owned Liberty Mine and coal purchased from third parties at nearby coal reserves. Liberty Mine has a production capacity of approximately 0.8 million tons per year. During 2023, approximately 33% of the generation from the Warrick power plant was sold into the market under its current operating permits. Alcoa Power Generating Inc., a subsidiary of the Company, also owns certain Federal Energy Regulatory Commission (FERC)-regulated transmission assets in Indiana, Tennessee, New York, and Washington.

The consolidated capacity of the Brazilian energy facilities shown above in MW is the assured energy, representing approximately 53% of hydropower plant nominal capacity. The Brazilian hydroelectric facilities produce energy which is transmitted across the national grid to Alcoa's refineries in Brazil and the excess generation capacity is sold into the market.

Below is an overview of our external energy for our smelters and refineries.

	External Energy Source	
Region	**Electricity**	**Natural Gas**
North America	*Québec, Canada* Alcoa's smelter located in Baie-Comeau, Quebec, purchases approximately 25 percent of its electricity needs from Manicouagan Power Limited Partnership. Otherwise, all electricity consumed by the three smelters in Québec is purchased under contracts with Hydro-Québec that expire on December 31, 2029. *Massena, New York (Massena West)* The Massena West smelter in New York receives power from the New York Power Authority (NYPA) pursuant to a contract between Alcoa and NYPA that expires in March 2026.	Alcoa generally procures natural gas on a competitive bid basis from a variety of sources, including natural gas producers and independent gas marketers. Contract pricing for gas is typically based on a published industry index such as the New York Mercantile Exchange (NYMEX).
Australia	*Portland* This smelter purchases power from the National Electricity Market (NEM) variable spot market in the state of Victoria. During 2021, the smelter entered into fixed-for-floating swap contracts with AGL Hydro Partnership, Origin Energy Electricity Limited, and Alinta Energy CEA Trading Pty Ltd, for a combined 515 MW. In addition, in November 2021 the Portland Aluminium joint venture announced the restart of 35,000 mtpy of idle capacity (19,000 mtpy Alcoa share), and the smelter entered into an additional fixed-for-floating swap contract with AGL Hydro Partnership for 72 MW. These swap contracts for a combined 587 MW expire on June 30, 2026. In August 2023, the smelter entered into a nine-year fixed-for-floating swap contract with AGL Hydro Partnership for 300 MW effective July 1, 2026, when current contracts end. Each of these swap contracts manage exposure to the variable energy rates from the NEM spot market.	*Western Australia* AofA uses gas to co-generate steam and electricity for its alumina refining processes at the Kwinana, Pinjarra and Wagerup refineries, and to fuel the calcination furnaces at each site. In 2015, AofA secured a significant portion of gas supplies to 2032. In 2020 and 2022, AofA contracted for additional gas supplies starting in 2024. On a combined basis, AofA's gas supply arrangements are expected to cover approximately 80 percent of the refineries' gas requirements through 2027, with decreasing percentages thereafter through 2032. On January 8, 2024, the Company announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The Company is evaluating alternatives to resell, swap or redeploy the gas secured for the Kwinana refinery when fully curtailed.

	External Energy Source	
Region	**Electricity**	**Natural Gas**
Europe	*San Ciprián, Spain* The San Ciprián smelter was fully curtailed in January 2022 pursuant to the agreement reached with the workers' representatives on December 29, 2021. The smelter purchased its reduced electricity requirements under a bilateral spot power contract that expired on June 30, 2022. In February 2023, the Company reached an updated viability agreement with the workers' representatives to commence the restart process in phases beginning in January 2024. In anticipation of the phased restart beginning in 2024, Alcoa entered into two long-term power purchase agreements (PPAs) with renewable energy providers in 2022 for up to 75 percent of the smelter's future power needs. In 2023, relevant authorities denied some permits related to the development of windfarms included in the PPAs and the PPAs are now expected to supply up to 50 percent of the smelter's future power needs at its full capacity. The supply of energy will continue to depend on the permitting and development of the remaining windfarms included in the PPAs. As the Company engages stakeholders for a long-term solution for San Ciprián operations, it also continues discussions with other generators to secure long-term power. *Lista and Mosjøen, Norway* Beginning in 2017, Alcoa entered into several long-term power purchase agreements, which secured approximately 50 percent of the necessary power for the Norwegian smelters for the period of 2020 to 2035. In 2023, approximately 25 percent of the necessary power at the Mosjøen smelter was purchased at spot rates. Beginning in 2022, the Company acted to mitigate spot energy pricing at the Lista smelter which was partially curtailed in August 2022. In July 2022, the Company entered into a fixed price power agreement effective for the fourth quarter of 2022 through December 31, 2023. In February 2023, the agreement was amended with improved fixed pricing and lower volume commitments. During 2023, the Company amended an existing long-term power agreement to fix the price for 2024 for a portion of the smelter's power requirements and entered into additional fixed price contracts for nearly all of the remaining power requirements for the smelter for 2024. Financial compensation of the indirect carbon emissions costs passed through in the electricity bill is received in accordance with EU Commission Guidelines and the Norwegian compensation regime. *Iceland* Landsvirkjun, the Icelandic national power company, supplies competitively priced electricity from a hydroelectric facility to Alcoa's Fjarðaál smelter under a 40-year power contract, which will expire in 2047 with a price renegotiation effective from 2028.	*Spain* The San Ciprián refinery has been operating at 50 percent of its capacity since the third quarter of 2022. In January 2022, Naturgy terminated its contract supplying 50 percent of the refinery's natural gas demand until June 2022 and 25 percent from July to December 2022. Subsequent to February 2022, the Company has access to adequate supply at spot gas rates.

	External Energy Source	
Region	**Electricity**	**Natural Gas**
South America	*Alumar* The Alumar smelter was operating at 69 percent of the site's total annual capacity of 268 kmt (Alcoa share) as of December 31, 2023, following the restart that was announced in September 2021. Alcoa entered into several short-term power purchase agreements which secured substantially all of the necessary power for its share of the Alumar smelter for the restart period in 2022 through the end of 2023. Alcoa also entered into multiple long-term power purchase agreements which collectively secured all of the necessary power for its share of the Alumar smelter for the period of 2024 through 2038. All short- and long-term power secured is from renewable sources.	

Sources and Availability of Raw Materials

The Company believes that the raw materials necessary to its business are and will continue to be available and that the sources and availability of such raw materials are currently adequate. Generally, materials are purchased from third-party suppliers under competitively priced supply contracts or bidding arrangements. Substantially all of the raw materials required to manufacture our products are available from more than one supplier. Some sources of these raw materials are located in countries that may be subject to unstable political and economic conditions, which could disrupt supply or affect the price of these materials.

Certain raw materials, such as caustic soda and calcined petroleum coke, may be subject to significant price volatility which could impact our financial results.

Alcoa sources bauxite from its own resources, including AWAC entities, and believes its present sources of bauxite on a global basis are sufficient to meet the forecasted requirements of its alumina refining operations for the foreseeable future.

Certain alumina refineries generate electricity through the digestor process that meets or exceeds their power needs, while others purchase electricity from third-party suppliers.

For each metric ton (mt) of alumina produced, Alcoa consumes the following amounts of the identified raw material inputs (approximate range across relevant facilities):

Raw Material	Units	Consumption per mt of Alumina
Bauxite	mt	2.2 – 4.1
Caustic soda	kg	60 – 100
Electricity	kWh	170 to 320 total consumed
Fuel oil and natural gas	GJ	6 – 13.8
Lime (CaO)	kg	6 – 60

For each metric ton of aluminum produced, Alcoa consumes the following amounts of the identified raw material inputs (approximate range across relevant facilities):

Raw Material	Units	Consumption per mt of Primary Aluminum
Alumina	mt	1.91 – 1.94
Aluminum fluoride	kg	11.2 – 20.9
Calcined petroleum coke	mt	0.32 – 0.39
Cathode blocks	mt	0.004 – 0.009
Electricity	kWh	13.27 – 16.78
Liquid pitch	mt	0.08 – 0.10
Natural gas	mcf	2.0 – 5.6

Certain aluminum we produce includes alloying materials. Because of the number of different types of elements that can be used to produce various alloys, providing a range of such elements would not be meaningful. With the exception of a very small number of internally used products, Alcoa produces its aluminum alloys in adherence to an Aluminum Association (of which Alcoa is an active member) standard, which uses a specific designation system to identify alloy types. In general, each alloy type has a major alloying element other than aluminum but will also include lesser amounts of other constituents.

Competition

Alcoa is subject to highly competitive conditions in all aspects of the aluminum supply chain in which it competes. With our business segments operating in close proximity to our broad, worldwide customer base, we endeavor to meet customer demand in key markets in North America, South America, Europe, the Middle East, Australia, and China.

We compete with a variety of both U.S. and non-U.S. companies in all major markets across the aluminum supply chain. Competitors include bauxite miners who supply to the third-party bauxite market, alumina suppliers, refiners and producers, commodity traders, aluminum producers, and producers of alternative materials such as steel, titanium, copper, carbon fiber, composites, plastic, and glass.

With the Sustana brand, including EcoDura aluminum (recycled content), EcoLum aluminum (low carbon), and EcoSource alumina (also low carbon), the Company is well positioned to compete with others in offering products to help customers achieve their decarbonization goals.

Alumina

We are the world's largest alumina producer outside of China. The alumina market is global and highly competitive, with many active suppliers, producers, and commodity traders. The majority of our product is sold in the form of smelter grade alumina. Our main competitors in the third-party alumina market are Aluminum Corporation of China, South32, Hangzhou Jinjiang Group, Rio Tinto, and Norsk Hydro ASA. In recent years, there has been significant growth in alumina refining in China and Indonesia.

Key factors influencing competition in the alumina market include cost position, price, reliability of bauxite supply, quality, and proximity to customers and end markets. We had an average cost position in the first quartile of global alumina production in 2023. Increased production costs in 2023 caused by lower bauxite grade in Australia, the San Ciprián refinery curtailment, and operational issues in Brazil could place Alumina in the second quartile in 2024. Our refineries are strategically located near low-cost bauxite mines, which provide a long-term supply of bauxite to our refineries. Our alumina refineries include sophisticated refining technology to maximize efficiency with the bauxite grades from these internal mines.

We are among the world's largest bauxite miners. The majority of bauxite mined globally is converted to alumina for the production of aluminum. In 2023, Alcoa-operated mines, mines operated by partnerships, and bauxite offtake agreements supplied approximately 83% of volume to Alcoa refineries and approximately 17% of Alcoa's bauxite shipments were sold to third-party customers.

Our principal competitors in the third-party bauxite market include Rio Tinto and multiple suppliers from Guinea, Australia, and Brazil, among other countries. We compete largely based on bauxite quality, price, and logistics, as well as strategically located long-term bauxite resources in Brazil and Guinea, which is home to the world's largest reserves of high-quality metallurgical grade bauxite.

Aluminum

In our Aluminum segment, competition is dependent upon the type of product we are selling.

The market for primary aluminum is global, and demand for aluminum varies widely from region to region. We compete with commodity traders, such as Glencore, Trafigura, J. Aron and Gerald Group, and aluminum producers, such as Emirates Global Aluminum, Norsk Hydro ASA, Rio Tinto, Century Aluminum and Vedanta Aluminum Ltd.

Several of the most critical competitive factors in our industry are product quality, production costs (including source, reliability of supply, and cost of energy), price, access and proximity to raw materials, customers and end markets, timeliness of delivery, customer service (including technical support), product innovation, and breadth of offerings. Where aluminum products compete with other materials, the characteristics of aluminum are also a significant factor, particularly its light weight, strength, and recyclability.

The strength of our position in the primary aluminum market is largely attributable to: our integrated supply chain; long-term energy arrangements; the ability of our casthouses to provide customers with a diverse product portfolio in terms of shapes and alloys; and our decreasing demand for fossil fuels, as approximately 87% of the aluminum smelting portfolio operated by the Company was powered by renewable (primarily hydropower) energy sources in 2023. The Company intends to continue to focus on optimizing capacity utilization.

Patents, Trade Secrets and Trademarks

The Company believes that its domestic and international patent, trade secret and trademark assets provide it with a competitive advantage. The Company's rights under its intellectual property, as well as the technology and products made and sold under them, are important to the Company as a whole and, to varying degrees, important to each business segment. Alcoa's business as a whole is not, however, materially dependent on any single patent, trade secret or trademark. As a result of product development and technological advancement, the Company continues to pursue patent protection in jurisdictions throughout the world. As of December 31, 2023, Alcoa's worldwide patent portfolio consisted of approximately 420 granted patents and approximately 170 pending patent applications. The Company also has a number of domestic and international registered trademarks that have significant recognition within the markets that are served, including the name "Alcoa" and the Alcoa symbol. Patents may exist for 20 years from filing date, and trademarks may have an indefinite life based upon continued use.

Government Regulations and Environmental Matters

Alcoa's global operations subject it to compliance with various types of government laws, regulations, permits, and other requirements which often provide discretion to government authorities and could be interpreted, applied, or modified in ways to make the Company's operations or compliance activities more costly. These laws and regulations include those relating to safety and health, environmental protection and compliance, tailings management, data privacy and security, anti-corruption, human rights, competition, and trade, such as tariffs or other import or export restrictions that may increase the cost of raw material or cross-border shipments and impact our ability to do business with certain countries or individuals. Though we cannot predict the collective potential adverse impact of the expanding body of laws, regulations, and interpretations, we believe that we are in compliance with such laws and regulations in all material respects and do not expect that continued compliance with such regulations will have a material effect upon capital expenditures, earnings, or our competitive position. For a discussion of the risks associated with certain applicable laws and regulations, see Part I Item 1A of this Form 10-K.

Environmental

Alcoa is subject to extensive federal, state/provincial, and local environmental laws and regulations and other requirements, in the U.S. and abroad, including those relating to the release or discharge of materials into the air, water and soil, waste management, pollution prevention measures, the generation, storage, handling, use, transportation and disposal of hazardous materials, and the exposure of persons to hazardous materials.

Alcoa is committed to the Global Industry Standard on Tailings Management (GISTM), an integrated approach to the management and operations of our tailings storage facilities to enhance the safety of these facilities. In August 2023, Alcoa's impoundments with very high or extreme consequence classification were audited by an independent third party and assessed as in conformance with GISTM as required by the International Council on Mining and Metals Conformance Protocol. This represents the first phase of implementation with lower consequence impoundment conformance required by August 2025.

Additionally, we are and may become subject to various laws and regulations related to the disclosures of emissions, the impact of climate change to our business, and plans to reduce such emissions. Recent laws and regulations pertaining to climate change and greenhouse gas emissions have been implemented or are being considered. We continue to monitor the development and implementation of such laws and regulations and continue to assess the extent of potential disclosures or other reporting requirements.

We maintain remediation and reclamation plans for various sites, and we manage environmental assessments and cleanups at approximately 60 locations, which include currently owned or operated facilities and adjoining properties, previously owned or operated facilities and adjoining properties, and waste sites, such as U.S. Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites. In 2023, capital expenditures for new or expanded facilities for environmental control were approximately $126 and approximately $180 is expected in 2024. See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies for additional information.

Safety and Health

We are subject to a broad range of foreign, federal, state, and local laws and regulations relating to occupational health and safety, and our safety program includes measures required for compliance. We have incurred, and will continue to incur, capital expenditures to meet our health and safety compliance requirements, as well as to continually improve our safety systems.

For a discussion of the risks associated with certain applicable laws and regulations, see Part I Item 1A of this Form 10-K.

Human Capital Resources

Our core values – Act with Integrity, Operate with Excellence, Care for People, and Lead with Courage – guide us as a company, including our approach to human capital management. We believe that our people are our greatest asset. The success and growth of our business depend in large part on our ability to attract, develop, and retain a diverse population of talented, qualified, and highly skilled employees at all levels of our organization, including the individuals who comprise our global workforce, our executive officers and other key personnel.

Our Company policies, including the Code of Conduct and Ethics, Harassment and Bullying Free Workplace Policy, and EHS Vision, Values, Mission, and Policy, support our mission to advance our Company culture and core values. Alcoa maintains a Human Rights Policy that applies globally to the Company, its partnerships, and other business associates, which incorporates international human rights principles encompassed in the Universal Declaration of Human Rights, the International Labor Organization's Declaration on Fundamental Principles and Rights at Work, the United Nations Global Compact, and the United Nations Guiding Principles on Business and Human Rights.

Employees

As of December 31, 2023, Alcoa had approximately 13,600 employees in 17 countries. Approximately 10,000 of our global employees are covered by collective bargaining agreements with certain unions and varying expiration dates, including approximately 1,000 employees in the U.S., 2,000 employees in Europe, 1,400 employees in Canada, 2,800 employees in South America, and 2,800 employees in Australia. Approximately 900 U.S. employees are covered by a collective bargaining agreement in place with the United Steelworkers (USW). There are also U.S. collective bargaining agreements in place, with varying expiration dates, with the International Association of Machinists and Aerospace Workers (IAM) and the International Brotherhood of Electric Workers (IBEW).

Safety and Health

The safety and health of our employees, contractors, temporary workers, and visitors are top priorities and key to our ability to attract and retain talent. We aspire to work safely, all the time, everywhere. We strive to foster a culture of hazard and risk awareness, the effective understanding and use of our safe systems of work, proactive incident reporting, and knowledge sharing.

Our safety programs and systems are designed to prevent loss of life and serious injury at our locations and include rigorous safety standards and controls, periodic risk-based audits, a formal and standardized process for investigating fatal and serious injury incidents (including potential incidents), management of critical risks and safety hazards, and efforts to eliminate hazards or implement controls to prevent and mitigate risks. We have operating standards based on human performance, which teach employees how to anticipate and recognize situations where errors are likely to occur, which help enable us to predict, reduce, manage, and prevent fatalities and injuries.

We strive to maintain a culture of speaking up, where incidents are reported and ideas are shared. We integrate our temporary workers, contractors, and visitors into our safety programs and data.

Inclusion, Diversity, and Equity

Alcoa's vision is to provide trusting workplaces that are safe, respectful, and inclusive and that reflect the communities in which we operate. Our aim is to build a more inclusive culture where inclusion, diversity, and equity (IDE) is embedded in our actions and employees feel valued, empowered, and respected.

As of December 31, 2023, women comprised approximately 19 percent of our global workforce. We also recognize the benefits and importance of diversity among our senior management. Of the seven Executive Officers, 43 percent are women and 14 percent are racially/ethnically diverse.

In 2023, we continued our IDE strategic efforts with leadership from our new Global Head of IDE and four inclusion groups: AWARE – Alcoans working actively for racial-ethnic equality; EAGLE, our LGBT+ Equality inclusion group; AWN – Alcoa Women's Network; and ABLE - Alcoans moving beyond limited expectations.

Available Information

The Company's internet website address is www.alcoa.com. Alcoa makes available free of charge on or through its website its Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports as soon as reasonably practicable after the Company electronically files such material with, or furnishes it to, the Securities and Exchange Commission (the SEC). These documents can be accessed on the investor relations portion of our website www.alcoa.com/investors. This information can also be found on the SEC's internet website, www.sec.gov. The information on the Company's website is included as an inactive textual reference only and is not a part of, or incorporated by reference in, this Annual Report on Form 10-K.

Dissemination of Company Information

Alcoa Corporation intends to make future announcements regarding Company developments and financial performance through its website, www.alcoa.com, as well as through press releases, filings with the SEC, conference calls, and webcasts.

Information about our Executive Officers

The names, ages, positions, and areas of responsibility of the executive officers of the Company as of the filing date of this Form 10-K are listed below.

William F. Oplinger, 57, has served as President and Chief Executive Officer of Alcoa Corporation since September 24, 2023. Mr. Oplinger served as Executive Vice President and Chief Operations Officer of the Company from February 2023 until his appointment as President and Chief Executive Officer. From November 2016 through January 2023, Mr. Oplinger was Executive Vice President and Chief Financial Officer of the Company. Prior to this, Mr. Oplinger served as Executive Vice President and Chief Financial Officer of ParentCo from April 1, 2013 to November 2016. Mr. Oplinger joined ParentCo in 2000, and through 2013 held key corporate positions in financial analysis and planning and also served as Director of Investor Relations. Mr. Oplinger also held principal positions in the ParentCo's Global Primary Products division, including as Controller, Operational Excellence Director, Chief Financial Officer, and Chief Operating Officer.

Molly S. Beerman, 60, has served as Executive Vice President and Chief Financial Officer of Alcoa Corporation since February 1, 2023. Prior to this, Ms. Beerman was Senior Vice President and Controller of the Company from November 2019 through January 2023 and Vice President and Controller from December 2016 through October 2019. Ms. Beerman was Director, Global Shared Services Strategy and Solutions from November to December 2016. In 2016, Ms. Beerman held a consulting role with the Finance Department of ParentCo. From 2012 to 2015, Ms. Beerman served as Vice President, Finance and Administration for a non-profit organization focused on community issues. Prior to that, Ms. Beerman was employed by ParentCo from 2001 to 2012, having held several roles in the finance function and eventually becoming the director of global procurement center of excellence from 2008 to 2012. Ms. Beerman is a certified public accountant.

Renato Bacchi, 47, has served as Executive Vice President and Chief Commercial Officer of Alcoa Corporation since August 1, 2023. He leads the Company's sales and trading, marketing, supply chain, commercial operations, procurement, and transformation and oversees the Company's global energy assets and innovation and technology programs. Mr. Bacchi was Executive Vice President and Chief Strategy and Innovation Officer of Alcoa Corporation from February 2023 to August 2023. Previously, he was Executive Vice President and Chief Strategy Officer from February 2022 through January 2023, Senior Vice President and Treasurer from November 2019 through January 2022, and Vice President and Treasurer from November 2016 through October 2019. Prior to the Separation Transaction, Mr. Bacchi served as the Assistant Treasurer of ParentCo from October 2014 through October 2016 and the Director, Corporate Treasury from 2012 to 2014. Prior to this time, Mr. Bacchi held various roles of increasing responsibility in areas including finance, strategy, procurement, energy and sales. Mr. Bacchi joined ParentCo in Brazil in 1997.

Nicol A. Gagstetter, 45, has served as Executive Vice President and Chief External Affairs Officer of Alcoa Corporation since October 1, 2023. Ms. Gagstetter is responsible for global external affairs, communications, and sustainability, and she oversees the Alcoa Foundation. Ms. Gagstetter was the Global Head of Environment and Social, Copper Industrial Assets at Glencore International AG, a commodity trading and mining company, from August 2021 through September 2023. Previously, she held a variety of progressive leadership roles and positions across external affairs, sustainability, and marketing in Rio Tinto's Commercial, Minerals, and Copper groups from 2008 to 2021.

Andrew J. A. Hastings, 49, has served as Executive Vice President and General Counsel of Alcoa Corporation since September 1, 2023. Mr. Hastings has overall responsibility for the Company's global legal, compliance, governance, and security matters. Prior to joining the Company, Mr. Hastings was Senior Vice President and General Counsel at Lundin Mining Corporation, a mine owner and operator, from February 2019 through August 2023. Previously, Mr. Hastings held progressive legal and commercial roles at Barrick Gold Corporation, a mining company, most recently as Vice President, Joint Venture Governance from May 2018 to February 2019.

Tammi A. Jones, 44, has served as Executive Vice President and Chief Human Resources Officer of Alcoa Corporation since April 1, 2020. Ms. Jones oversees all aspects of human resources management, including talent and recruitment, compensation and benefits, diversity, inclusion, and equity, training and development, and labor relations. Ms. Jones served as Vice President, Compensation and Benefits of Alcoa Corporation from January 2019 through March 2020 and was the Director, Organizational Effectiveness from April 2017 to December 2018. From April 2015 through March 2017, Ms. Jones served as Human Resources Director, Aluminum (at ParentCo until the Separation Transaction), and she served as Human Resources Director for ParentCo Wheels and Transportation Products from April 2013 to April 2015. Ms. Jones joined ParentCo in 2006 and held a variety of human resource positions at ParentCo, including Human Resources Director, Europe Building & Construction and Human Resources Director, UK and Ireland in ParentCo's Building and Construction Systems division.

Matthew T. Reed, 51, has served as Executive Vice President and Chief Operations Officer of Alcoa Corporation since January 1, 2024. Mr. Reed is responsible for the daily operations of the Company's global bauxite, alumina, and aluminum assets. Mr. Reed was previously Vice President Operations, Australia and President, Alcoa of Australia from June 2023, when he joined the Company, through December 2023. Prior to joining Alcoa, Mr. Reed was the Operations Executive (Chief Operations Officer) of OZ Minerals Limited, a mining company based in South Australia, from September 2021 through May 2023. He was General Manager, Projects at OZ Minerals Limited from January 2021 through August 2021. Previously, Mr. Reed was the Executive Managing Director (Chief Operating Officer) at SIMEC Mining, a mining company based in South Australia, from September 2017 through December 2020.

Item 1A. Risk Factors.

There are inherent risks associated with Alcoa's business and industry. In addition to the factors discussed elsewhere in this report, the following risks and uncertainties could have a material adverse effect on our business, financial condition, or results of operations, including causing Alcoa's actual results to differ materially from those projected in any forward-looking statements. Although the risks are organized by heading, and each risk is described separately, many of the risks are interrelated. You should not interpret the disclosure of any risk factor to imply that the risk has not already materialized. While we believe we have identified and discussed below the key risk factors affecting our business, there may be additional risks and uncertainties that are not presently known to Alcoa or that Alcoa currently deems immaterial that also may materially adversely affect us in future periods. See Part II Item 7 of this Form 10-K in Management's Discussion and Analysis of Financial Condition and Results of Operations under the caption Forward-Looking Statements.

Industry and Global Market Risks

The aluminum industry and aluminum end-use markets are highly cyclical and are influenced by several factors, including global economic conditions, the Chinese market, and overall consumer confidence.

The nature of the industries in which our customers operate causes demand for our products to be cyclical, creating potential uncertainty regarding future profitability. The demand for aluminum is sensitive to, and impacted by, demand for the finished goods manufactured by our customers in industries, such as the commercial construction, transportation, and automotive industries, which may change as a result of factors beyond our control. The demand for aluminum is also highly correlated to economic growth, and we could be adversely affected by large or sudden shifts in the global inventory of aluminum and the resulting market price impacts.

We believe the long-term prospects for aluminum and aluminum products are positive; however, we are unable to predict the future course of industry variables or the strength of the global economy and the effects of government intervention. Our business, financial condition, and results of operations may be materially affected by the conditions in the global economy generally, including inflationary and recessionary conditions, and in global capital markets, including in the end markets and geographic regions in which we and our customers operate. Many of the markets in which our customers participate are also cyclical in nature and experience significant fluctuations in demand for their products based on economic and geopolitical conditions, consumer demand, raw material and energy costs, foreign exchange rates, and government actions. Many of these factors are beyond our control.

The Chinese market is a significant source of global demand for, and supply of, commodities, including aluminum. Chinese production rates of aluminum, both from new construction and installed smelting capacity, can fluctuate based on Chinese government policy, such as the level of enforcement of production capacity limits and/or licenses and environmental policies. In addition, industry overcapacity, a sustained slowdown in Chinese aluminum demand, or a significant slowdown in other markets, that is not offset by decreases in supply of aluminum or increased aluminum demand in emerging economies, such as India, Brazil, and several Southeast Asian countries, could have an adverse effect on the global supply and demand for aluminum and aluminum prices. Also, changes in the aluminum market can cause changes in the alumina and bauxite markets, which could also materially affect our business, financial condition, or results of operations. As a result of these factors, our profitability is subject to significant fluctuation.

A decline in consumer and business confidence and spending, severe reductions in the availability and cost of credit, and volatility in the capital and credit markets could adversely affect the business and economic environment in which we operate and the profitability of our business. We are also exposed to risks associated with the creditworthiness of our suppliers and customers. If the availability of credit to fund or support the continuation and expansion of our customers' business operations is curtailed or if the cost of that credit is increased, the resulting inability of our customers or of their customers to either access credit or absorb the increased cost of that credit could adversely affect our business by reducing our sales or by increasing our exposure to losses from uncollectible customer accounts. These conditions and a disruption of the credit markets could also result in financial instability of some of our suppliers and customers. The consequences of such adverse effects could include the interruption of production at the facilities of our customers, the reduction, delay or cancellation of customer orders, delays or interruptions of the supply of raw materials we purchase, and bankruptcy of customers, suppliers, or other creditors. Any of these events could adversely affect our business, financial condition, and results of operations.

We have in the past and could in the future be materially adversely affected by volatility and declines in aluminum and alumina demand and prices, including global, regional, and product-specific prices, or by significant changes in production costs which are linked to LME or other commodities.

The overall price of primary aluminum consists of several components: (i) the underlying base metal component, which is typically based on quoted prices from the LME; (ii) the regional premium, which comprises the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and (iii) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., foundry, billet, slab, rod, etc.) and/or alloy. Each of the above three components has its own drivers of variability.

The LME price volatility is typically driven by macroeconomic factors (including geopolitical instability), global supply and demand of aluminum (including expectations for growth, contraction, and the level of global inventories), and trading activity of financial investors. In 2023, LME cash prices reached a high of $2,636 per metric ton in January 2023 and a low of $2,069 per metric ton in August 2023.

While global inventories remained consistent in 2023, high inventories could lead to a reduction in the price of aluminum and declines in the LME price have had a negative impact on our business, financial condition, and results of operations. Similarly, it is possible that persistently high inventories of Russian origin aluminum stocks in LME warehouses could have a negative impact on LME pricing. Regional premiums tend to vary based on the supply of and demand for metal in a particular region, associated transportation costs, and import tariffs. Product premiums generally are a function of supply and demand for a given primary aluminum shape and alloy combination in a particular region. Periods of industry overcapacity may also result in a weak aluminum pricing environment.

A sustained weak LME aluminum pricing environment, deterioration in LME aluminum prices, or a decrease in regional premiums or product premiums could have a material adverse effect on our business, financial condition, or results of operations. Similarly, our operating results are affected by significant changes in key costs of production that are commodity or LME-linked.

Most of our alumina contracts contain two pricing components: (1) the API price basis and (2) a negotiated adjustment basis that takes into account various factors, including freight, quality, customer location, and market conditions. Because the API component can exhibit significant volatility due to market exposure, revenues associated with our alumina operations are exposed to market pricing.

Market-driven balancing of global aluminum supply and demand may be disrupted by non-market forces.

In response to market-driven factors relating to the global supply and demand of aluminum and alumina, including energy prices and environmental policies, other industry producers have independently undertaken to reduce or increase production. Changes in production may be delayed or impaired by the ability to secure, or the terms of long-term contracts, to buy energy or raw materials.

The impact of non-market forces on global aluminum industry capacity, such as political instability or pressures or governmental policies in certain countries relating to employment, the environment, or maintaining or further developing industry self-sufficiency, may affect overall supply and demand in the aluminum industry. For example, the ongoing active conflict between Russia and Ukraine could adversely impact macroeconomic conditions and result in heightened economic sanctions from the U.S. and the international community in a manner that adversely affects our industry. The disruption of the market-driven balancing of the global supply and demand of aluminum, a resulting weak pricing environment and margin compression may adversely affect our business, financial condition, and results of operations.

Our participation in increasingly competitive and complex global markets exposes us to risks, including legal and regulatory risks and changes in conditions beyond our control, that could adversely affect our business, financial condition, or results of operations.

We have operations or activities in numerous countries and regions outside the United States, including Australia, Brazil, Canada, Europe, Guinea, and Saudi Arabia. The risks associated with the Company's global operations include:

- Geopolitical risks, such as political instability, coups d'états, civil unrest, strikes and work stoppages, expropriation, nationalization of properties by a government, imposition of sanctions, changes to import or export regulations and fees, renegotiation, revocation or nullification of existing agreements, leases, licenses, and permits, and changes to mining royalty rules or laws;
- Economic and commercial instability risks, including those caused by sovereign and private debt default, corruption, and changes in local government laws, regulations, and policies, such as those related to tariffs and trade barriers, trade tensions, taxation, exchange controls, employment regulations, and repatriation of earnings;
- Weakening macroeconomic conditions;
- Decreasing manufacturing activity, especially in the global automotive sector;
- War or terrorist activities;
- Major public health issues, such as a pandemic or epidemic, which could cause disruptions in our operations, supply chain, or workforce;
- Information systems failures or disruptions, including due to cyber attacks;
- Difficulties enforcing intellectual property and contractual rights, or limitations in the protection of technology, data, and intellectual property, in certain jurisdictions; and,
- Unexpected events, accidents, or environmental incidents, including natural disasters.

We have experienced some of these events, and while the impact of any of the foregoing factors is difficult to predict, any one or more of them could adversely affect our business, financial condition, or results of operations. Existing insurance arrangements may not provide sufficient coverage or reimbursement for significant costs that may arise from such events.

Unexpected or uncontrollable events or circumstances in any of the foreign markets in which we operate, including actions by foreign governments such as changes in foreign policy or fiscal regimes, termination of our leases or agreements with such foreign governments, increased government regulation, or forced curtailment or continuation of operations, could materially and adversely affect our business, financial condition, or results of operations.

We have in the past been and may in the future be unable to obtain, maintain, or renew permits or approvals necessary for our mining operations, which could materially adversely affect our operations and profitability.

Our mining operations are subject to extensive permitting and approval requirements. These include permits and approvals issued by various government agencies and regulatory bodies at the federal, state, and local levels of governments in the countries in which we operate. The permitting and approval rules are complex, are often subject to interpretations by regulators, which may change over time, and may be impacted by heightened levels of regulatory oversight and stakeholder focus on addressing environmental and social impacts of mining activities.

Changing expectations and increased information required by regulators has in the past and could in the future make our ability to comply with the applicable requirements more difficult, inhibit or delay our ability to timely obtain the necessary approvals, if at all, result in approvals being conditioned in a manner that may restrict the Company's ability to efficiently and economically conduct its mining activities, require us to adjust our mining plans, or preclude the continuation of certain ongoing operations and mining activities or the development of future mining operations. Failure to obtain, maintain, or renew permits or approvals, or permitting or approval delays, restrictions, or conditions has in the past and may in the future impact the quality of the bauxite we are able to mine and could increase our costs and affect our ability to efficiently and economically conduct our operations, potentially having a materially adverse impact on our results of operations and profitability.

In addition, the permitting processes, restrictions, and requirements imposed by conditional permits or approvals, and associated costs and liabilities, have in the past and may in the future be extensive, which can delay or prevent commencing or continuing exploration or production operations. This has in the past adversely affected and could in the future adversely affect the Company's mining operations and production, as well as our refining and smelting operations, and has in the past and could in the future require us to curtail, close, or otherwise modify our production, operations, and sites. In addition, these processes, restrictions, and requirements have in the past resulted and could in the future result in the Company's mining permits being rescinded or modified, or adjustment to our mining plans, to mitigate against adverse impacts to sites within or near our mining areas that have environmental, biodiversity, or cultural significance. Such actions have in the past had and could in the future have a material adverse impact on our results of operations and profitability. For example, the Company seeks annual approvals from the Western Australia government for rolling five-year mine plans to maintain operations at the Huntly and Willowdale bauxite mines. This statutory annual mine approvals process

for the Company's 2023-2027 Mining and Management Program (MMP) took longer than it had taken historically due to increased requirements and expectations from stakeholders with respect to certain environmental matters. As a result of the prolonged approval process, the Company began mining lower grade bauxite in April 2023, which impacted the Company's refineries by increasing the use of caustic, energy, and bauxite and decreasing alumina output. The Company's 2023-2027 MMP was approved in December 2023, and in connection with such approval, the Company is subject to certain new requirements to address key environmental factors, such as enhanced protections for drinking water, increased distances from reservoirs, biodiversity, and accelerated forest rehabilitation. The new requirements will require an acceleration of cash spend of approximately $40 over the next three and half years from asset retirement obligations already recorded.

Our operations and profitability have in the past and could in the future be impacted by rising energy costs and interruptions or uncertainty in energy supplies.

Our refineries and smelters consume substantial amounts of natural gas and electricity in the production of alumina and aluminum. The prices for and availability of energy have in the past and could in the future be impacted by volatile market conditions resulting from factors beyond our control such as weather, political, regulatory, and economic conditions. For example, in 2023, the Company announced its engagement with the regional and national governments in Spain to discuss sustained and ongoing losses at the San Ciprián refinery and smelter operations, partly driven by the long-term cost of energy and delays in permitting and development of cost competitive and renewable energy supplies.

Though we have ownership in certain hydroelectricity assets, we also rely on third parties for our supply of energy resources consumed in the manufacture of our products. Energy supply contracts for our operations vary in length and market exposure, and we could be, and have been, negatively impacted by:

- Significant increases in LME prices, or spot electricity, fuel oil and/or natural gas prices;
- Unavailability of or interruptions or uncertainty in energy supply or unplanned outages due to political instability, droughts, hurricanes, wildfires, other natural disasters, equipment failure, or other causes;
- Unavailability of long-term energy from renewable sources in particular locations or at competitive rates;
- Curtailment of one or more refineries or smelters due to the inability to extend energy contracts upon expiration or negotiate new arrangements on cost-effective terms, the unavailability of energy at competitive rates; and,
- Curtailment of one or more facilities due to high energy costs that render their continued operation uneconomic, discontinuation of power supply interruptibility rights granted to us under a regulatory regime in the country in which the facility is located, or due to a determination that energy arrangements do not comply with applicable laws, thus rendering the operations that had been relying on such country's energy framework uneconomic.

Events, such as those listed above, have in the past and could in the future result in high energy costs, the disruption of an energy source, finding a replacement energy source at a higher cost, the requirement to repay all or a portion of the benefit we received under a power supply interruptibility regime, or the requirement to remedy any non-compliance of an energy framework to comply with applicable laws. These events have disrupted our operations and resulted in production curtailments that could have a material adverse effect on our business, financial condition or results of operations.

Our operations and profitability have been and could continue to be adversely affected by unfavorable changes in the cost, quality, or availability of raw materials or other key inputs, or by disruptions in the supply chain.

Our business, financial condition, and results of operations have been and could continue to be negatively affected by unfavorable changes in the cost, quality, or availability of energy, raw materials, including carbon products, caustic soda, and other key inputs, such as bauxite, as well as freight costs associated with transportation of raw materials and key inputs to refining and smelting locations. We may not be able to fully offset the effects of higher raw material or energy costs through price increases, productivity improvements, cost reduction programs, or reductions or curtailments to production at our operations. A decrease in the quality of raw materials or key inputs has in the past and could continue to cause increased production costs, which also has in the past and could continue to result in lower production volumes. For example, the Company is currently mining and processing lower grade bauxite in Western Australia, which has caused increased production costs. Changes in the costs of bauxite, alumina, energy and other inputs during a particular period may not be adequate to offset concurrent sharper decreases in the price of alumina or aluminum and could have a material adverse effect on our operating results.

In addition, due to global supply chain disruptions, we may not be able to obtain sufficient supply of our raw materials, energy, or other key inputs in a timely manner, including due to shortages, inflationary cost pressures, or transportation delays, which could cause disruption in our operations or production curtailments. Though we have been able to source our raw materials and other key inputs in adequate amounts from other suppliers or our own stockpiles to date, there can be no guarantee that our operations or profitability will not be adversely affected in the future. Our suppliers, vendors, and customers could experience similar constraints that could impact our operations and profitability.

Business Strategy Risks

We have incurred, and may incur in the future, significant costs associated with our strategy to be a lower cost, competitive, and integrated aluminum production business and we may not be able to realize the anticipated benefits from announced plans, programs, initiatives relating to our portfolio, capital investments, and developing technologies.

We are executing a strategy to be a low cost, competitive, and integrated aluminum production business by implementing productivity and cost-reduction initiatives, optimizing our portfolio of assets, and investing in technology to advance our climate-related ambitions. We have been taking decisive actions to lower the cost base of our operations through procurement strategies for raw materials, labor productivity, improving operating performance, deploying Company-wide business process models, and reducing overhead costs. In 2019, the Company announced a five-year strategic portfolio review of smelting and refining capacity to improve cost positioning, including curtailment, closure or divestiture of 1.5 and 4 million metric tons of smelting and refining capacity, respectively. Through January 2024, Alcoa completed its review of refining capacity and reached approximately 93 percent of its target for smelting capacity. The strategic portfolio review is continuing. Though we have made progress on this strategy, we may not be able to realize the expected benefits or cost savings from this strategy.

We have taken actions and may continue to plan and execute other actions to grow or streamline our portfolio. There is no assurance that anticipated benefits of our strategic actions will be realized. With respect to portfolio optimization actions such as divestitures, curtailments, closures, and restarts, we may face barriers to exit from unprofitable businesses or operations, including high exit costs or objections from various stakeholders, the lack of availability of buyers willing to purchase such assets at prices acceptable to us, delays due to any regulatory approvals or government intervention, continuing environmental obligations, and third parties unwilling to release us from guarantees or other credit support provided in connection with the sale of assets. In addition, we may retain liabilities from such transactions, have ongoing indemnification obligations, and incur unforeseen liabilities for divested entities if a buyer fails to honor all commitments.

Our business operations are capital intensive, and portfolio optimization actions such as the curtailment or closure of operations or facilities may include significant costs and charges, including asset impairment or restructuring charges and other measures. There can be no assurance that such actions will be undertaken or completed in their entirety as planned at the anticipated cost or will result in being beneficial to the Company. The effect of closures, curtailments, and divestitures over time will reduce the Company's cash flow and earnings capacity and result in a less diversified portfolio of businesses, and we will have a greater dependency on remaining businesses for our financial results. Additionally, curtailing certain existing facilities, whether temporarily or permanently, may require us to incur curtailment and carrying costs related to those facilities, as well as further increased costs should production be resumed at any curtailed facility, which could have an adverse effect on our business, financial results, and results of operations.

Our announced multi-year portfolio review of Company assets includes evaluating our portfolio to assess each facility's strategic benefits, competitiveness, and viability. The aim of this review, which is expected to be complete in 2024, is for the Company to be a low cost first quartile producer across our alumina and aluminum segments, and have up to 85% of smelting production from renewable energy sources. Our announced roadmap of technologies under development to support our long-term goal of being one of the lowest carbon-producing alumina refineries and aluminum smelters includes investments to develop, implement, and commercialize new technologies to reduce carbon emissions in the aluminum production process. We may not be able to implement, fully or in a cost-effective or timely way, the actions necessary to achieve this strategy and goal, which actions could include capturing, maintaining and/or expanding margins from new products, continued product innovation investment in research and development projects and new technologies, successful deployment and commercialization of effective new technologies, and cost-effective long-term energy solutions. We may not achieve the expected results from technology innovation or other benefits, including certain emissions or environmental-related goals, or expected profitability associated with this strategy. In addition, even if we are able to cost effectively develop our technologies, alternatives to technologies may be more acceptable to the market. Executing these actions also diverts senior management time and resources from our regular business operations, each of which could adversely affect the Company's business, financial condition, and results of operations.

Joint ventures, other strategic alliances, and strategic business transactions may not achieve intended results. We may experience operational challenges in integrating or segregating assets for such a venture or transaction, and such a venture or transaction could increase the number of our outstanding shares or amount of outstanding debt and affect our financial position.

We participate in joint ventures, have formed strategic alliances, and may enter into other similar arrangements in the future. For example, AWAC is an unincorporated global joint venture between Alcoa and Alumina Limited. AWAC consists of a number of affiliated entities, which own, operate, or have an interest in, bauxite mines and alumina refineries, as well as an aluminum smelter, in seven countries. In addition, Alcoa is minority owner of a joint venture with the Saudi Arabian Mining Company (Ma'aden). Although the Company has, in connection with these and our other existing joint ventures and strategic alliances, sought to protect our interests, joint ventures and strategic alliances inherently involve special risks. Whether or not the Company holds majority interests or

maintains operational control in such arrangements, our joint venture and other business partners may take certain actions and positions, or experience difficulties, that may negatively impact the Company and/or its reputation, such as:

- Advancing economic, political, social, or business interests or goals that are inconsistent with, or opposed to those of, the Company and our stakeholders;
- Exercising veto rights to block actions that we believe to be in our or the joint venture's or strategic alliance's best interests;
- Taking action contrary to our policies or objectives with respect to our investments; and,
- As a result of financial or other difficulties, be unable or unwilling to fulfill their obligations under the joint venture, strategic alliance, or other agreements, such as contributing capital to expansion or maintenance projects.

We continuously evaluate and may in the future enter into additional strategic business transactions. Any such transactions could happen at any time, could be material to our business, and could take any number of forms, including, for example, an acquisition, merger, sale or distribution of certain assets, refinancing, or other recapitalization or material strategic transaction. There can be no assurance that our joint ventures, strategic alliances, or additional strategic business transactions will be beneficial to us, whether due to the above-described risks, unfavorable global economic conditions, increases in costs, foreign currency fluctuations, political risks, government interventions, retained liabilities, indemnification obligations, or other factors. Evaluating potential transactions and integrating completed ones may divert the attention of our management from ordinary operating matters. In addition, to the extent we consummate an agreement for the sale and disposition of an asset or asset group we may experience operational difficulties segregating them from our retained assets and operations, which could impact the execution or timing of such dispositions and could result in disruptions to our operations and/or claims for damages, among other things.

If we engage in a strategic transaction, we may require additional financing that could result in an increase in the number of our outstanding shares of stock or the aggregate amount and/or cost of our debt, which may result in an adverse impact to our credit ratings or adversely impact our business, financial condition, or results of operations. The number of shares of our stock or the aggregate principal amount of our debt that we may issue in connection with such a transaction could be significant.

Global Operational Risks

Our global operations expose us to risks related to economic, political, and social conditions, including the impact of trade policies and adverse industry publicity, which may negatively impact our business and our ability to operate in certain locations.

We are subject to risks associated with doing business internationally, including foreign or domestic government fiscal and political crises, political and economic disputes and sanctions, social requirements and conditions, and adverse industry publicity. These factors, among others, bring uncertainty to the markets in which we compete, and may adversely affect our business, financial condition, and results of operations.

In addition, we operate in communities around the world, and social issues in the communities where we operate have affected and could continue to affect our ability to maintain our social license to operate; furthermore, incidents related to our industry have generated and could continue to generate negative publicity and impact the social acceptability of our operations in such locations, including by damaging our reputation, our relationships with stakeholders, and our competitive position. Growing expectations of hosting communities as well as increasing social activism pose additional challenges to us maintaining our social license to operate and expanding our business. For example, community and stakeholder concerns in Juruti, Brazil have affected our ability to access certain mining areas at times. In certain jurisdictions, there are increasing regulatory developments to protect minority groups, such as Indigenous people in Australia. This could have an adverse effect on our ability to secure expansions to our operations at all or in the expected timeframe, could significantly increase our cost of doing business, and could disrupt our operations.

In the United States, in recent years, the U.S. government has taken actions with respect to the implementation of significant changes to certain trade policies, including import tariffs and quotas, modifications to international trade policy, the withdrawal from or renegotiation of certain trade agreements, and other changes that have affected U.S. trade relations with other countries, any of which may require us to significantly modify our current business practices or may otherwise materially and adversely affect our business or those of our customers. The U.S. government continues to review trade policies and negotiate new agreements with countries globally that could impact the Company. For example, the U.S. government is negotiating agreements with countries in relation to the tariffs initially applied under Section 232 of the Trade Expansion Act of 1962 (Section 232) in 2018. In 2021, the U.S. and European Union (EU) reached agreement whereby the U.S. lifted the Section 232 duties and applied a tariff-rate-quota allowing duty-free importation of aluminum from the EU based on historical volumes, and the EU suspended its retaliatory tariffs that had been in place on certain U.S. products. The U.S. and EU began discussions in 2022 on a Global Arrangement on Sustainable Steel and Aluminum and the parties continue negotiations for a high-level framework. To the extent that further agreements are reached on a broader range of imports, or these tariffs and other trade actions result in a decrease in international demand for aluminum produced in the United States or otherwise negatively impact demand for our products, our business may be adversely impacted, and could further exacerbate aluminum and alumina price volatility and overall market uncertainty.

We are exposed to fluctuations in foreign currency exchange rates and interest rates, as well as inflation and other economic factors in the countries in which we operate.

Economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, competitive factors in the countries in which we operate, and volatility or deterioration in the global economic and financial environment, have in the past and could in the future affect our business, financial condition, and results of operations. Changes in the valuation of the U.S. dollar against other currencies, particularly the Australian dollar, Brazilian real, Canadian dollar, euro, and Norwegian kroner, which are the currencies of certain countries in which we have operations, may affect our profitability, as some important inputs are purchased in other currencies, while our products are generally sold in U.S. dollars. As the U.S. dollar strengthens, the cost curve shifts down for smelters outside the United States, but costs for our U.S. smelting portfolio may not decline.

Changes in tax laws or exposure to additional tax liabilities could affect our future profitability.

We are subject to income taxes in both the United States and various non-U.S. jurisdictions. Changes in foreign and domestic tax laws, regulations, or policies, or their interpretation and application by regulatory bodies, or exposure to additional tax liabilities could affect our future profitability. For example, in October 2021, a new framework for international tax was agreed to by 137 member countries and jurisdictions of the Organisation for Economic Co-operation and Development (OECD), including the two-pillar solution for a global minimum level of taxation. While the future of Pillar One remains uncertain, it is likely that the global minimum tax under Pillar Two will be fully effective in the countries in which we operate by January 1, 2025. We are continuing to evaluate the Pillar Two Framework and its potential impact on future periods.

Our domestic and international tax liabilities are dependent upon the distribution of profits among the different jurisdictions in which we operate. Our tax expense includes estimates of additional tax that may be incurred for tax exposures and reflects various estimates and assumptions. The assumptions include assessments of future earnings of the Company that could impact the valuation of our deferred tax assets. Our future results of operations could be adversely affected by changes in the effective tax rate as a result of a change in the mix of earnings in countries with differing statutory tax rates, changes in the overall profitability of the Company, changes in tax legislation and rates, changes in generally accepted accounting principles, and changes in the valuation of deferred tax assets and liabilities. Significant changes to tax laws or regulations and the positions of taxing authorities could have a substantial impact, positive or negative, on our effective tax rate, cash tax expenditures and cash flows, and deferred tax assets and liabilities. For example, in December 2023, the U.S. Treasury Department clarified that commercial grade aluminum can qualify for Section 45X of the Advanced Manufacturing Tax Credit, enacted as part of the Inflation Reduction Act (IRA). Section 45X provides a tax credit for certain costs incurred in the production of critical minerals, including aluminum. In the fourth quarter of 2023, the Company recorded a full year benefit of $36 related to its Massena West (New York) smelter and its Warrick smelter.

We are subject to tax audits by various tax authorities in many jurisdictions, such as Australia, Brazil, Canada, and Norway. For example, in July 2020, AofA received Notices of Assessment (the Notices) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The Notices asserted claims for income tax payable by AofA of approximately $145 (A$214), exclusive of interest and penalties. The Notices also included claims for compounded interest on the tax amount totaling approximately $481 (A$707). In accordance with the ATO's dispute resolution practices, AofA paid 50% of the assessed income tax amount exclusive of interest and any penalties to the ATO during the third quarter of 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the 50% payment would be refunded. The ATO has also issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment, proposing penalties of approximately $87 (A$128). AofA disagrees with the ATO's proposed position on penalties and submitted a response to the position paper in the fourth quarter of 2020. After the ATO completes its review of AofA's response, the ATO could issue a penalty assessment. The Company does not agree with the ATO's positions, and AofA will continue to defend this matter in the Australian Courts. We regularly assess the potential outcomes of examinations by tax authorities in determining the adequacy of our provision for income taxes. The results of tax audits and examinations of previously filed tax returns or related litigation and continuing assessments of our tax exposures could materially affect our financial results. See Part II Item 8 of this Form 10-K in Notes Q and S to the Consolidated Financial Statements under captions Unrecognized Tax Benefits and Contingencies, respectively.

We face significant competition globally within and beyond the aluminum industry, which may have an adverse effect on profitability.

We compete with a variety of both U.S. and non-U.S. aluminum industry competitors as well as with producers of other materials, such as steel, titanium, plastics, composites, ceramics, and glass, among others. Use of such materials could reduce the demand for aluminum products, which may reduce our profitability and cash flow. Factors affecting our ability to compete include increased competition from overseas producers, our competitors' pricing strategies, the introduction or advancement of new technologies and equipment by our competitors or our customers, changes in our customers' strategy or material requirements, and our ability to maintain the cost-efficiency of our facilities. Certain competitors possess financial, technical and management resources to develop and market products that may compete favorably against our products, and consolidation among our competitors may also allow them to compete more effectively. In addition, our competitive position depends, in part, on our ability to operate as an integrated aluminum value chain, leverage innovation expertise across businesses and key end markets, and access an economical power supply to sustain our operations in various countries. See Business—Competition.

We may not be able to obtain or maintain adequate insurance coverage.

We maintain various forms of insurance, including insurance covering claims related to our properties and risks associated with our operations. Our existing property and liability insurance coverages contain exclusions and limitations on coverage. In connection with renewals of insurance, we have experienced, or could experience in the future, additional exclusions and limitations on coverage, significantly increased self-insured retentions and deductibles, and significantly higher premiums. We may not be able to procure adequate insurance coverage for certain risks, if at all, and existing insurance arrangements may not provide sufficient coverage or reimbursement for significant costs that may arise. As a result, in the future our insurance coverage may not cover claims to the extent that it has in the past and the costs that we incur to procure insurance may increase significantly, either of which could have an adverse effect on our results of operations.

Our business, financial condition and results of operations could be adversely affected by disruptions in the global economy caused by ongoing regional conflicts.

The global economy has been negatively impacted by ongoing regional conflicts, such as the conflict between Russia and Ukraine and the conflict in the Middle East. Such adverse and uncertain economic conditions have exacerbated supply chain disruptions and increased our costs for energy, particularly in Spain, and for certain raw materials. In 2022, in response to the conflict between Russia and Ukraine, we ceased purchasing raw materials from and selling our products to Russian businesses. Furthermore, governments in the U.S., United Kingdom and European Union have each imposed export controls on certain products and financial and economic sanctions on certain industry sectors and parties in Russia. To date, these actions and other ongoing regional conflicts and responses have not had a material adverse impact on the Company's business, but they could have material negative impacts if the conflicts continue and global sales of our products are affected.

Increased trade barriers or restrictions on global trade, or retaliatory measures taken in response, as well as the destabilizing effects of regional conflict, could also adversely affect our business, financial condition and results of operations by limiting sales, restricting access to required raw materials, or raising costs thereof. Destabilizing effects that these ongoing regional conflicts may pose for the global oil and natural gas markets could also adversely impact our operations by further increasing our energy costs. In addition, further escalation of geopolitical tensions related to such conflicts could result in loss of property, cyber attacks, additional supply disruptions, an inability to obtain key supplies and materials, reduced production and sales, and/or operational curtailments, and adversely affect our business and our supply chain.

Legal and Regulatory Risks

We may be exposed to significant legal proceedings, investigations, or changes in foreign and/or U.S. federal, state, or local laws, regulations, or policies.

Our results of operations or liquidity in a particular period could be affected by new or increasingly stringent laws, regulatory requirements or interpretations, or outcomes of significant legal proceedings or investigations adverse to the Company. We may become subject to unexpected or rising costs associated with business operations, compliance measures, or provision of health or welfare benefits to employees due to changes in laws, regulations, or policies. We are also subject to a variety of legal and compliance risks, including, among other things, potential claims relating to health and safety, environmental matters, intellectual property rights, product liability, data privacy, taxes and compliance with U.S. and foreign export, anti-bribery, and competition laws, and sales and trading practices. We could be subject to fines, penalties, interest, or damages (in certain cases, treble damages). In addition, if we violate the terms of our agreements with governmental authorities, we may face additional monetary sanctions and other remedies as a court deems appropriate.

While we believe we have adopted appropriate risk management and compliance programs to address and reduce these risks, the global and diverse nature of our operations means that these risks continue to exist, and additional legal proceedings and contingencies may arise from time to time. In addition, various factors or developments can lead the Company to change current estimates of liabilities or make estimates for matters previously not susceptible of reasonable estimates, such as a significant judicial ruling, judgment, or settlement, or significant regulatory developments or changes in applicable law. A future adverse ruling or settlement or unfavorable changes in laws, regulations or policies, or other contingencies that the Company cannot predict with certainty could have a material adverse effect on our results of operations or cash flows in a particular period. See Part I Item 3 of this Form 10-K and Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies.

Climate change, climate change legislation or regulations, and efforts to reduce greenhouse gases (GHG) and build operational resilience to extreme weather conditions may adversely impact our operations and markets.

Energy is a significant input in a number of our operations and there is growing recognition that consumption of energy derived from fossil fuels is a contributor to climate change. Several governments or regulatory bodies in areas where we operate, such as in the United States, Asia, Brazil, Canada, and the EU, have introduced or are contemplating legislative and regulatory change in response to the potential impacts of climate change, which could result in changes to the margins of GHG intensive assets and energy-intensive assets. These regulatory mechanisms relating to carbon may be either voluntary or legislated and the inconsistency of associated regulations may impact our operations directly or indirectly through customers or our supply chain. Assessments of the potential impact of future climate change legislation, regulation, and international treaties and accords are uncertain, given the wide scope of potential regulatory change in countries in which we operate and the diversity in the scope and development of such regulations. For example, in 2021, the European Commission proposed a Carbon Border Adjustment Mechanism (CBAM) as a levy on carbon-intensive imports, which was provisionally approved in December 2022. In October 2023, the CBAM entered into application of its transitional phase, which will apply to aluminum, with the first reporting period for importers ending January 31, 2024, and full implementation of CBAM will begin on January 1, 2026. We may realize increased capital expenditures, costs, or taxes resulting from required compliance with revised or new legislation or regulations, including costs to purchase or profits from sales of allowances or credits under a carbon credit/pricing or “cap and trade” system, increased insurance premiums and deductibles as new actuarial tables are developed to reshape coverage, a change in competitive position relative to industry peers, and changes to profit or loss arising from increased or decreased demand for goods produced by the Company and, indirectly, from changes in costs of goods sold.

Though we are investing in technology to reduce the production of greenhouse gases in the manufacture of our products, such as our ELYSIS partnership aluminum smelting technology and other technologies that are designed to limit the production of carbon in alumina refining, in certain aspects of our operations, our ability to reduce our GHG emissions is also dependent on the actions of third parties, especially energy providers, and our ability to make significant changes in our GHG emissions. As a result, we could face additional costs associated with any new regulation of GHG emissions, and our ability to modify our operations to avoid these costs may be limited in the near term.

In addition, regulations to combat climate change could impact the competitiveness of the Company, including the attractiveness of the locations of some of the Company’s assets. The global focus on climate is raising awareness in all countries, such as the agreement at the 26th United Nations Climate Change Conference of the Parties (COP26) by many governments of countries where the Company operates to combat deforestation, which could adversely affect our ability to mine and operate in sensitive areas like the Jarrah Forest and the Amazon.

The potential physical impacts of climate change or extreme weather conditions on the Company's operations are highly uncertain and will be particular to the geographic circumstances. These may include changes in rainfall patterns, wildfires, heat waves, shortages of water or other natural resources, changing sea levels, changing storm patterns, flooding, increased frequency and intensities of storms, and changing temperature levels. Any of these may disrupt our operations, hinder transportation of products to us or of our products to customers, interrupt energy supplies, prevent access to our facilities, negatively impact our suppliers' or customers' operations and their ability to fulfill contractual obligations to us, and/or cause damage to our facilities, all of which may increase our costs, reduce production, and adversely affect our business, financial condition, or results of operations. Measures to mitigate or adapt our assets, including current operations, closed or curtailed locations, and impoundment structures, to the potential physical climate-related risks may increase costs. In addition, we rely on our customers and suppliers to assess their own potential physical impacts of climate change and implement appropriate mitigation or adaptation actions. Thus, we may not be able to influence the resiliency of our suppliers or customers to potential physical impacts of climate change.

We may not achieve our strategies or expectations relating to environmental, social, and governance considerations, which could expose us to potential liabilities, increased costs, reputational harm, and other adverse effects on our business.

We have established strategies and expectations relating to certain environmental, social, and governance considerations, including regarding reducing GHG emissions, reducing water usage, reducing waste, improving safety performance, and managing social risks across our operations. These strategies and expectations reflect our current plans and aspirations, and there is no guarantee that they will be achieved. Our ability to achieve any such strategies or expectations is subject to numerous factors and conditions, some of which are outside of our control. Examples of such factors include, but are not limited to, evolving legal, regulatory, and other standards, processes, and assumptions, the pace of scientific and technological developments, increased costs, the availability of requisite suppliers, energy sources, or financing, and changes in carbon markets. Failures or delays (whether actual or perceived) in achieving our strategies or expectations related to these matters could expose us to potential liabilities, increased costs, reputational harm, and other adverse effects on our business.

Furthermore, many governments, regulators, investors, employees, customers, media outlets, and other stakeholders are increasingly focused on environmental, social, and governance considerations relating to businesses, including climate change and GHG emissions, human capital, and diversity, equity and inclusion. Our business may face increased scrutiny from such stakeholders and if our strategies relating to environmental, social, and governance considerations do not meet stakeholder expectations and standards, which continue to evolve and may differ across jurisdictions in which we operate, our business, financial condition, results of operations, and reputation could be adversely impacted. Similarly, our failure or perceived failure to pursue or fulfill our strategies and expectations; comply with federal, state, regional, or international ethical, environmental, or other standards, regulations, or expectations; adhere to public statements; satisfy reporting standards; or meet evolving and varied stakeholder expectations within the timelines we announce, or at all, could have adverse operational, reputational, financial, and legal impacts.

We are subject to a broad range of health, safety and environmental laws, regulations, and other requirements in the jurisdictions in which we operate that may expose us to substantial claims, costs, and liabilities.

Our operations worldwide are subject to numerous complex and increasingly stringent federal, state, local and foreign laws, regulations, policies, and permitting, licensing, and other requirements, including those related to health, safety, environmental, and waste management and disposal matters, which may expose us to substantial claims, costs, and liabilities. We may be subject to fines, penalties, and other damages, such as natural resource or community damages and the costs associated with the investigation and cleanup of soil, surface water, groundwater, and other media under laws such as CERCLA (commonly known as Superfund) or similar U.S. and foreign regulations. These laws, regulations, policies, and permitting, licensing, and other requirements could change or could be, and have been, applied or interpreted in ways that could (i) require us to enjoin, curtail, close or otherwise modify our operations and sites, including the implementation of corrective measures, the installation of additional equipment or structures, or the undertaking of other remedial actions, or (ii) subject us to enforcement risk or impose on or require us to incur additional capital expenditures, compliance or other costs, fines, penalties, or damages, any of which could adversely affect our results of operations, cash flows and financial condition, and the trading price of our common stock.

The costs of complying with such laws, regulations, policies, and other requirements, including participation in assessments, remediation activities, and cleanups of sites, as well as internal voluntary programs, are significant and will continue to be so for the foreseeable future. Environmental laws may impose cleanup liability on owners and occupiers of contaminated property, including previously owned, non-operational, or divested properties, regardless of whether the owners and occupiers caused the contamination or whether the activity that caused the contamination was lawful at the time it was conducted. As a result, we may be subject to claims arising from current or former conditions at sites that we own or operate currently, as well as at sites that we owned or operated in the past, and at contaminated sites that have always been owned or operated by third parties, regardless of whether we caused the contamination or whether the activity that caused the contamination was lawful at the time it was conducted. Liability may be without regard to fault and may be joint and several, so that we may be held responsible for more than our share of the contamination or other damages, or even for the entire share.

In addition, because environmental laws, regulations, policies, and other requirements are constantly evolving, we will continue to incur costs to maintain compliance and such costs could increase materially and prove to be more limiting and costly than we anticipate. Evolving standards and expectations can result in increased litigation and/or increased costs, all of which can have a material and adverse effect on our business operations, earnings, and cash flows. Future compliance with environmental, health and safety legislation and other regulatory requirements or expectations may prove to be more limiting and costly than we anticipate and may disrupt our business operations and require significant expenditures. Our business, financial condition, or results of operations in a particular period could be materially affected by certain health, safety, or environmental matters, including remediation costs and damages related to certain sites.

Our operations include impoundment structures, which could impact the environment or cause exposure to hazardous substances or other damage, which could result in material liabilities to us.

Some of our operations generate hazardous waste and other byproducts, which we contain in tailing facilities, residue storage areas, and other structural impoundments that are subject to extensive regulation and increasingly strict industry standards. Failure of storage areas caused by extreme weather events, erosion, or unanticipated structural failure of impoundments could result in severe, and in some cases catastrophic, damage to the environment, natural resources, or property, or personal injury and loss of life. The impact that our operations may have on the environment, as well as exposures to hazardous substances or wastes associated with our operations, could result in significant costs, civil or criminal damages, fines or penalties, and enforcement actions issued by regulatory or judicial authorities enjoining, curtailing, or closing operations or requiring corrective measures, any of which could have a material adverse effect on Alcoa.

Available Capital and Credit-Related Risks

Our business and growth prospects may be negatively impacted by limits on our ability to fund capital expenditures.

We require substantial capital to invest in growth opportunities and to maintain and prolong the life and capacity of our existing facilities. Our ability to generate cash flows is affected by many factors, including market and pricing conditions. Insufficient cash generation or capital project overruns may negatively impact our ability to fund as planned our sustaining and return-seeking capital projects, and such postponement in funding capital expenditures or inadequate funding to complete projects could result in operational issues. For 2024, we project capital expenditures of $550, of which $460 is for sustaining capital projects and $90 is for return-seeking capital projects. If our technology research and development projects prove feasible with an acceptable expected rate of return, our capital expenditures for return-seeking projects would increase significantly over the next several years. To the extent our access to competitive financial, credit, capital, and/or banking markets becomes impaired, our operations, financial results, and cash flows could be adversely impacted. We may also need to address commercial, political, and social issues in relation to capital expenditures in certain of the jurisdictions in which we operate. If our interest in our joint ventures is diluted or we lose key concessions, our growth could be constrained. Any of the foregoing could have a material adverse effect on our business, results of operations, financial condition, and prospects.

Deterioration in our credit profile or increases in interest rates could increase our costs of borrowing money and limit our access to the capital markets and commercial credit.

The major credit rating agencies evaluate our creditworthiness and issue specified credit ratings. These ratings are based on a number of factors, including our financial strength and financial policies as well as our strategies, operations, and execution of announced actions. These credit ratings are limited in scope and do not address all material risks related to an investment in us, but rather reflect only the view of each rating agency at the time its rating is issued. Nonetheless, the credit ratings we receive impact our borrowing costs as well as our access to sources of capital on terms advantageous to our business. Failure to obtain or maintain sufficiently high credit ratings could adversely affect our interest rates in financings, our liquidity, or our competitive position, and could also restrict our access to capital markets. In addition, our credit ratings could be lowered or withdrawn entirely by a rating agency if, in its judgment, the circumstances warrant. If a rating agency were to downgrade our rating, our borrowing costs could increase, our funding sources could decrease, and we would need to rely on our cash flows from operations. As a result of these factors, a downgrade of our credit ratings could have a materially adverse impact on our future operations, cash flows, and financial position.

Our indebtedness restricts our current and future operations, which could adversely affect our ability to respond to changes in our business and manage our operations, and failure to comply with the agreements relating to our outstanding indebtedness, including due to events beyond our control, could result in an event of default that could materially and adversely affect our business, financial condition, results of operations, or cash flows.

Alcoa and Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa, are party to a revolving credit agreement with a syndicate of lenders and issuers named therein (as subsequently amended, the Amended Revolving Credit Facility). Alcoa and ANHBV are also party to a revolving credit agreement available to be drawn in Japanese yen (as subsequently amended, the Amended Japanese Yen Revolving Credit Facility). The terms of the Amended Revolving Credit Facility, Amended Japanese Yen Revolving Credit Facility, and the indentures governing our outstanding notes contain covenants that could impose significant operating and financial restrictions on us upon non-compliance with them, including on our ability to, among other things:

- Make investments, loans, advances, and acquisitions;
- Amend certain material documents;
- Dispose of assets;
- Incur or guarantee additional debt and issue certain disqualified equity interests and preferred stock;
- Make certain restricted payments, including limiting the amount of dividends on equity securities and payments to redeem, repurchase or retire equity securities or other indebtedness;
- Engage in transactions with affiliates;
- Materially alter the business we conduct;
- Enter into certain restrictive agreements;
- Create liens on assets to secure lenders and issuers;
- Consolidate, merge, sell or otherwise dispose of all or substantially all of Alcoa's, ANHBV's or a subsidiary guarantor's assets; and,
- Take any actions that would reduce our ownership of AWAC entities below an agreed level.

The Amended Revolving Credit Facility requires us to comply with financial covenants which includes maintaining an interest expense coverage ratio of not less than 3.00 to 1.00 for the 2024 fiscal year, and a debt to capitalization ratio not to exceed .60 to 1.00. As of January 1, 2025, the minimum interest coverage ratio requirement will revert to 4.00 to 1.00. The results of the calculation of these ratios, when considering the Company's existing debt obligations, affects and could restrict the amount of additional borrowing capacity under the Company's Amended Revolving Credit Facility or other credit facilities, and ANHBV's ability to make restricted payments, to make investments and to incur indebtedness.

In addition, obligations under the Amended Revolving Credit Facility are secured by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities.

The Amended Japanese Yen Revolving Credit Facility includes covenants that are substantially the same as those included in the Amended Revolving Credit Facility. In addition, obligations under the Amended Japanese Revolving Credit Facility are secured by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities.

Our ability to comply with these agreements may be affected by events beyond our control, including prevailing economic, financial, and industry conditions. These covenants could have an adverse effect on our business by limiting our ability to take advantage of financing, merger and acquisition, or other opportunities. The breach of any of these covenants or restrictions could result in a default under the Amended Revolving Credit Facility, the Amended Japanese Yen Revolving Credit Facility, or the indentures governing our notes and other outstanding indebtedness, including such indebtedness for which the Company is a guarantor.

See Part II Item 7 of this Form 10-K in Management's Discussion and Analysis of Financial Condition and Results of Operations under caption Liquidity and Capital Resources – Financing Activities for more information on the restrictive covenants in the Company's revolving credit facilities.

If an event of default were to occur under any of the agreements relating to our outstanding indebtedness, including the Amended Revolving Credit Facility, the Amended Japanese Yen Revolving Credit Facility, and the indenture governing our notes, we may not be able to incur additional indebtedness under the Amended Revolving Credit Facility or the Amended Japanese Yen Revolving Credit Facility and the holders of the defaulted debt could cause all amounts outstanding with respect to that debt to be due and

payable immediately. We cannot assure that our assets or cash flow would be sufficient to fully repay borrowings under our outstanding debt instruments if accelerated upon an event of default, which could have a material adverse effect on our ability to continue to operate as a going concern. Further, if we are unable to repay, refinance, or restructure our secured indebtedness, the holders of such indebtedness could proceed against the collateral securing that indebtedness. In addition, any event of default or declaration of acceleration under one debt instrument also could result in an event of default under one or more of our other debt instruments.

We cannot guarantee that we will continue to return capital to our stockholders through the payment of cash dividends and/or the repurchase of our common stock. The reduction or discontinuation of the payment of cash dividends to our stockholders or the repurchase of our shares of common stock could adversely affect the market price or liquidity of our shares.

In October 2021, the Company's Board of Directors initiated a quarterly cash dividend program, at $0.10 per share and authorized a $500 common stock repurchase program, which was fully used with the completion of $150 in repurchases during the third quarter of 2022. In July 2022, the Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the July 2022 authorization). This common stock repurchase authorization does not have a predetermined expiration date. As of December 31, 2023, $500 remained available for repurchase pursuant to this authorization. The Company is under no obligation to pay any cash dividends to stockholders or to repurchase our outstanding shares of common stock at any particular price or at all, and the payment of dividends and/or repurchases of stock may be limited, suspended, or discontinued at any time in our discretion and without notice. The Company set each of the current dividend and July 2022 authorizations at a level it believes is sustainable throughout the commodity cycle, based on our current financial position and reasonable expectations of cash flow. In addition, as described elsewhere in this "Risk Factors" section, the Company's Amended Revolving Credit Facility and Amended Japanese Yen Revolving Credit Facility (as defined below) could inhibit the Company's ability to make certain restricted payments, including the amount of dividends and payments to redeem, repurchase, or retire equity securities or other indebtedness, if the Company does not maintain certain financial ratios.

The Company intends to pay dividends on a quarterly basis. Dividends on Alcoa Corporation common stock are subject to authorization by the Company's Board of Directors. The payment, amount, and timing of dividends, if any, depends upon matters deemed relevant by the Company's Board of Directors, such as Alcoa Corporation's financial position, results of operations, cash flows, capital requirements, business condition, future prospects, any limitations imposed by law, credit agreements or senior securities, and other factors deemed relevant and appropriate.

Declines in asset values or increases in liabilities, including liabilities associated with benefit plans or taxes, can reduce stockholders' equity. A deficit in stockholders' equity could limit our ability under Delaware law to pay dividends and repurchase shares in the future.

The reduction, suspension, or elimination of our cash dividend or our common stock repurchase program could adversely affect the market price of our stock and/or significantly increase its trading price volatility. The payment of any future dividends and the existence of a common stock repurchase program could cause our stock price to be higher than it would otherwise be and could potentially reduce the market liquidity for our stock. Additionally, any future payment of dividends or repurchases of our common stock could negatively impact our financial position and our ability to fund ordinary and existing operations, capital expenditures, the payment of taxes, and growth or other opportunities.

Cybersecurity Risks

Cyber attacks, security breaches, system failures, software or application vulnerabilities, or other cyber incidents may threaten the integrity of our information technology infrastructure and other sensitive business information, disrupt our operations and business processes, expose us to potential liability, and result in reputational harm and other negative consequences that could have a material adverse effect on our business, financial condition, and results of operations.

We depend on information and communications technology, networks, software, and related systems to operate our business, including production controls and operating systems at our facilities and systems for recording and processing transactions, interfacing with customers, financial reporting, and protecting the personal data of our employees and other confidential information. Our global operations require increased reliance on technology, which expose us to risks of theft of proprietary information, including trade secrets and other intellectual property that could have a material adverse effect on our business, financial condition, and results of operations. The protection of such information, as well as sensitive customer information, personal data of our employees, and other confidential information, is critical to us. We face global cybersecurity threats, which may range from uncoordinated individual attempts to sophisticated and targeted measures, known as advanced persistent threats, directed at the Company. In addition, a greater number of our employees are working remotely since the COVID-19 pandemic, which has generally increased cybersecurity vulnerabilities and risk to our information technologies systems.

Cyber attacks and other cyber incidents are becoming more frequent and sophisticated, are constantly evolving, and are being made by groups and individuals with significant resources and a wide range of expertise and motives. Cyber attacks and security breaches may include, but are not limited to, unauthorized attempts to access information or digital infrastructure, efforts to direct payments to fictitious parties, viruses, ransomware, malicious codes, hacking, phishing (including through social engineering), denial of service, human error, and other electronic security breaches, any of which could have a material adverse effect on our business, financial condition, and results of operations. As techniques used in cyber attacks change frequently and may not be immediately detectable, we may be unable to anticipate or detect these techniques, such as use of a zero-day exploit or unknown malware, immediately identify the scope and impact of an incident, contain the incident within our systems, or implement preventative or remediation measures., which may have a material adverse effect on our business, financial condition, and results of operations. In addition, we utilize third-party vendors for certain software applications, storage systems, and cloud computing services. Cyber attacks, security breaches, or other incidents on the information technology systems of our service providers or business partners could materially impact us. We have in the past experienced attempts and incidents by external parties to penetrate our and our service providers or business partners networks and systems. Such attempts and incidents to date have not had a material adverse effect on our business, financial condition, or results of operations

We continue to assess potential cyber threats and invest in our information technology infrastructure to address these threats, including by monitoring networks and systems, training employees on cyber threats, and enhancing security policies of the Company and its third-party providers. While the Company continually works to strengthen our systems and security measures, safeguard information, and mitigate potential risks, there is no assurance that such actions will be sufficient to prevent or timely detect cyber attacks or security breaches. Some intrusions could manipulate or improperly use our systems or networks, disclose, or compromise confidential or protected information, destroy, or corrupt data, or otherwise disrupt our operations, and because of any of these things could have a material adverse effect on our business, financial condition, and results of operations.

In addition, some cybersecurity incidents could negatively impact our reputation and competitive position, and could result in litigation with third parties, regulatory action, loss of business, theft of assets, and significant remediation costs, and because of any of these things, have a material adverse effect on our financial condition and results of operations. Such security breaches could also result in a violation of applicable U.S. and international privacy and other laws, and subject us to litigation and governmental investigations and proceedings, any of which could result in our exposure to material civil or criminal liability. For example, the European Union's General Data Privacy Regulation subjects companies to a range of compliance obligations regarding the handling of personal data. In the event our operations are found to be in violation of the GDPR's requirements, we may be subject to significant civil penalties, business disruption and reputational harm, any of which could have a material adverse effect on our business, financial condition, or results of operations. Some cyber attacks or breaches could require significant management attention and resources and result in the diminution of the value of our investment in research and development, which could have a material adverse effect on our business, financial condition, or results of operations.

Though we have disaster recovery and business continuity plans in place, if our information technology systems, or those of our third-party providers, are damaged, breached, interrupted, or cease to function properly for any reason, and, if the disaster recovery and business continuity plans do not effectively resolve the incident on a timely basis, we may suffer interruptions in our ability to manage or conduct business and we may be exposed to reputational, competitive and business harm as well as litigation and regulatory action, which may materially and adversely impact our business, financial condition, or results of operations.

Labor- and Pension-Related Risks

Union or workforce disputes or arrangements and other employee relations issues, as well as labor market conditions, could adversely affect our business, financial condition, or results of operations.

A significant portion of our employees are represented by labor unions or worker groups in a number of countries under various collective bargaining agreements or similar arrangements with varying durations and expiration dates.

We may not be able to satisfactorily renegotiate our agreements when they expire. In addition, existing arrangements may not prevent strikes, work stoppages, work slowdowns, union organizing campaigns, or lockouts at our facilities in the future. We may also be subject to general country strikes or work stoppages unrelated to our business or collective bargaining agreements. A labor dispute or work stoppage of employees could have a material adverse effect on production at one or more of our facilities, and depending on the length of work stoppage, on our business, financial condition, or results of operations. Additionally, in the current competitive labor market, if we lose critical or a significant number of workers to attrition, it may be difficult or costly to find and recruit replacement employees, which could have a material adverse effect on our business, financial condition, and results of operations.

A decline in the liability discount rate, lower-than-expected investment return on pension assets and other factors could affect our business, financial condition, results of operations, or amount of pension funding contributions in future periods.

Our results of operations may be negatively affected by the amount of expense we record for our pension and other postretirement benefit plans, reductions in the fair value of plan assets, and other factors. We calculate income or expense for our plans using actuarial valuations in accordance with accounting principles generally accepted in the United States of America (GAAP).

These valuations reflect assumptions about financial market and other economic conditions, which may change based on changes in key economic indicators. The most significant year-end assumptions used by the Company to estimate pension or other postretirement benefit income or expense for the following year are the discount rate applied to plan liabilities and the expected long-term rate of return on plan assets. In addition, the Company is required to make an annual measurement of plan assets and liabilities, which may result in a significant charge to stockholders' equity. See Part II Item 7 of this Form 10-K in Management's Discussion and Analysis of Financial Condition and Results of Operations under caption Critical Accounting Policies and Estimates—Pension and Other Postretirement Benefits and Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements. Although GAAP expense and pension funding contributions are impacted by different regulations and requirements, the key economic factors that affect GAAP expense would also likely affect the amount of cash or securities we would contribute to the pension plans.

Potential pension contributions include both mandatory amounts required under federal law and discretionary contributions to improve the plans' funded status. While the Company took several actions in recent years to improve the funded status of its pension plans and adjust its asset allocation to reduce variance risk, declines in the discount rate or lower-than-expected investment returns on plan assets could have a material negative effect on our cash flows. Adverse capital market conditions could result in reductions in the fair value of plan assets and increase our liabilities related to such plans, adversely affecting our liquidity and results of operations.

Item 1B. Unresolved Staff Comments.

None.

Item 1C. Cybersecurity.

Risk Management and Strategy

The Company's processes for assessing, identifying, and managing material risks from cybersecurity threats are integrated into our overall Enterprise Risk Management (ERM) process. As part of the ERM, the Company focuses on developing multi-layered, collaborative processes to identify, monitor, and manage risks from cybersecurity threats. Risks are grouped into categories that management can then assess, monitor, and prioritize based on the likelihood of an occurrence, level of impact, and mitigating factors.

Our various cybersecurity risk management processes apply to various functions, including but not limited to, third-party suppliers and vulnerability management. We employ processes and technologies to bring visibility to, and protect against, cybersecurity risk, to include real time monitoring of network traffic. The Company also has a comprehensive body of policies and standards for assessing, identifying, and managing material risks from cybersecurity threats, including an incident response plan, business continuity plan, crisis management plan, as well as disaster recovery mechanisms, which are tested and updated. Additionally, the Company employs staff that are specifically dedicated to raising cybersecurity awareness and training within the organization.

The Company engages third party assessors, consultants, and auditors to assist in assessing, identifying, and managing risk from cybersecurity threats. Third parties assist the Company by (i) providing regular penetration testing and vulnerability assessments; (ii) assessing and maintaining our formal incident response policies, including through the use of tabletop testing; and (iii) providing multiple sources of threat intelligence information that are fed directly into our technical security platforms, including ongoing network monitoring. The Company also has a comprehensive third party information security audit program in place.

Alcoa has implemented processes designed to identify and mitigate cybersecurity threats associated with our use of third-party service providers. Such providers are subject to a security risk assessment prior to engagement to determine if they meet defined levels of security capabilities. Our master services agreements with third party service providers generally carry a number of security requirements, including audit rights for the Company. After engagement, third party service providers are subject to regular audits in which contract owners within Information Technology Automated Solutions (ITAS) validate that any certifications a vendor had upon engagement are maintained throughout the life of the agreement.

We have in the past experienced attempts and incidents by external parties to penetrate our, our service providers', and our business partners' networks and systems. Such attempts and incidents to date have not had a material adverse effect on our business, financial condition, or results of operations. See Part I Item 1A of this Form 10-K for more information on risks.

Governance

The Alcoa Board of Directors (Board), in coordination with the Audit Committee, is responsible for the oversight of our cybersecurity risk management program. The Audit Committee and the Board receive regular updates regarding the state of the Company's cybersecurity program, cybersecurity developments, and emerging threats. The Chief Information Security Officer (CISO) and the Chief Information Officer (CIO) regularly update the Audit Committee and the Board regarding the Company's strategy to mitigate cybersecurity risks, which includes regular vulnerability assessments and employee training on cybersecurity matters. Alcoa's CISO is responsible for maintaining identified material cybersecurity risks within the Company's ERM platform. On a quarterly basis, the CISO reviews and updates risks, as well as the control procedures in place. These risks are regularly reported to the Audit Committee and Board.

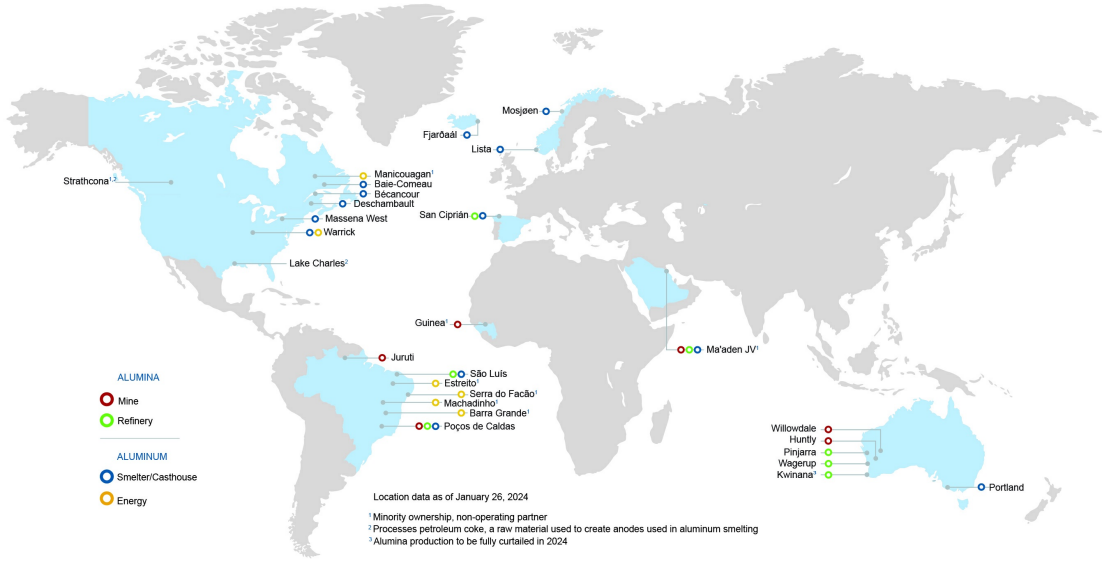
Alcoa's CISO has twenty-five years of experience in Information Technology, carries multiple certifications in information security, and has extensive cybersecurity risk management experience in manufacturing organizations. The CISO closely collaborates with the CIO and Chief Financial Officer (CFO) in managing material risks from cybersecurity threats. Alcoa also maintains an information security steering committee, which oversees current and emerging cybersecurity risks to the Company. The steering committee is comprised of a cross-functional team of leaders from across Alcoa's business groups, including the CISO and CIO.

The Company has established comprehensive incident response plans that set forth the processes through which cybersecurity incidents are managed, including how management is informed of cybersecurity incidents. As part of these plans, incidents are evaluated, classified, and elevated to an executive team which includes the CISO and executives on the Crisis Response Team. Once elevated, these executives are ultimately responsible for the management, mitigation, and remediation of incidents.

Item 2. Properties.

Alcoa Corporation's principal executive office, located at 201 Isabella Street, Suite 500, Pittsburgh, Pennsylvania 15212-5858, is leased. Alcoa also leases several office facilities and sites, both domestically and internationally. In addition, Alcoa owns or has an ownership interest in its production sites, both domestically and internationally. Alcoa owns active mines and plants classified under the Alumina and Aluminum segments of its business. These include facilities and assets around the world used for Alcoa's bauxite mining and alumina refining, aluminum smelting and casting production, and energy generation. Capacity and utilization of these facilities varies by segment and the level of demand for each product. See Part I Item 1 of this Form 10-K for additional information, including the ownership, capacity, and utilization of these facilities, used in the Alumina and Aluminum segments. A discussion of our bauxite mining properties is below.

The following map shows the locations of our operations as of December 31, 2023:



Alcoa Locations and Properties.

Although Alcoa's facilities vary in terms of age and condition, management believes that its facilities are suitable and generally adequate to support the current and projected operations of the business. See Part II Item 8 of this Form 10-K in Notes B and K to the Consolidated Financial Statements for more information on properties, plants, and equipment.

Bauxite Mining Properties

Alcoa has access to large bauxite deposit areas with mining rights that extend, in many cases, more than 15 years from the date of this Form 10-K. The Company obtains bauxite from its own resources and from those belonging to AWAC, located in the countries listed in the table below, as well as pursuant to both long-term and short-term contracts and mining leases. Tons of bauxite are reported on a zero-moisture basis in millions of dry metric tons (mdmt) unless otherwise stated.

As of December 31, 2023, the Company's individually material mining properties, as determined in accordance with subpart 1300 of Regulation S-K, are our bauxite mining properties in the Darling Range of Western Australia (Darling Range) and Juruti, Brazil (Juruti).

As used in this Form 10-K, the terms “mineral resource,” “measured mineral resource,” “indicated mineral resource,” “inferred mineral resource,” “mineral reserve,” “proven mineral reserve” and “probable mineral reserve” are defined and used in accordance with subpart 1300 of Regulation S-K. Under subpart 1300 of Regulation S-K, mineral resources may not be classified as “mineral reserves” unless the determination has been made by a qualified person (as defined under subpart 1300 of Regulation S-K) that the mineral resources can be the basis of an economically viable project. Part or all of the mineral deposits (including any mineral resources) in these categories may never be converted into mineral reserves. Further, except for the portion of mineral resources classified as mineral reserves, mineral resources do not have demonstrated economic value. Estimates of inferred mineral resources have too high of a degree of uncertainty as to their existence and may not be converted to a mineral reserve. Therefore, it should not be assumed that all or any part of an inferred mineral resource exists, that it can be the basis of an economically viable project, or that it will ever be upgraded to a higher category. Likewise, it should not be assumed that all or any part of measured or indicated mineral resources will ever be converted to mineral reserves. Management relies on estimates of our recoverable mineral reserves, which estimation is complex due to geological characteristics of the properties and the number of assumptions made and variable factors, some of which are beyond our control.

The following table shows the AWAC and/or Alcoa share (proportion) of annual production tonnage at each of our bauxite mining properties and in the aggregate for each of the last three fiscal years.

Summary of Attributable Annual Bauxite Production (mdmt) for the years ended December 31, 2023, 2022, and 2021, respectively:

Country	Property (Region)	2023	2022	2021
Australia	Darling Range (Western Australia, WA)	30.9	31.4	34.7
Brazil	Juruti (Pará State)	5.0	4.9	5.8
Brazil	Trombetas (Pará State)[(1)]	—	0.5	2.0
Brazil	Poços de Caldas (Minas Gerais)	0.4	0.4	0.4
Guinea	Boké (Sangaredi)	3.6	3.6	3.5
Saudi Arabia	Al Ba’itha (Al Qassim)	1.1	1.3	1.2
		41.0	42.1	47.6

(1) Amounts shown for the years ended December 31, 2022 and 2021, represent production prior to the Company’s sale of its interest in the MRN mine in April 2022. Related mining operations were not material to the Company’s business or financial condition after consideration of both quantitative and qualitative factors assessed in the context of the Company’s overall business and financial condition.

The following tables summarize certain information regarding our bauxite mining properties. The information that follows relating to Darling Range and Juruti is derived, for the most part, from the technical report summaries relating to such properties prepared in compliance with Item 601(b)(96) and subpart 1300 of Regulation S-K. Portions of the following information are based on assumptions, qualifications, and procedures that are not fully described herein. Reference should be made to the full text of the Technical Report Summary for Darling Range, Western Australia, dated February 21, 2024, with an effective date of December 31, 2023, filed as Exhibit 96.1 to this Form 10-K (the Darling Range TRS), and the Technical Report Summary for Juruti, Brazil, dated February 24, 2022, with an effective date of December 31, 2021, incorporated by reference as Exhibit 96.2 to this Form 10-K (the Juruti TRS), which are incorporated by reference herein.

Bauxite Interests and Operators:

Property (Region)	Access/Transportation	Operator	Owners' Mining Rights[1]	Expiration Date of Mining Rights	Titles, Rights, Leases or Options	Area (hectares)
Darling Range[2] (WA)	Accessed by road. Ore transported via long-distance conveyor and rail to refineries.	AofA	100%	2045	Mining lease from the WA Government. ML1SA.	702,261
Juruti[3] (Pará State)	Accessed by road from Juruti town, by boat along the Amazon River, or by air from Juruti Airport. Ore transported from the mine to Juruti port by company-operated rail.	AWAB	100%	2100[4]	Mining licenses from the Government of Brazil and Pará. Mining rights do not have a legal expiration date. Operating licenses for the mine, washing plant, and exploration are in the process of being renewed.	227,276
Poços de Caldas (Minas Gerais)	Accessed by road. Ore transported from the mine to the refinery by road.	Alcoa Alumínio	100%	2031[4]	Mining licenses from the Government of Brazil and Minas Gerais. Company claims and third-party leases. Operation licenses were renewed and unified and now expires in 2032.	7,424
Boké (Sangaredi)	Accessed by road from Sangaredi and public airports. Ore transported by company-operated rail to Kamsar port.	CBG	22.95%	2038	Mining lease from Government of Guinea. The lease is renewable in 25-year increments. CBG's rights are specified within the Basic Agreement and Amendment 1 to the Basic Agreement with the Government of Guinea.	293,900
Al Ba'itha (Al Qassim)	Accessed by road. Ore is transported to the refinery by rail and truck.	MBAC	25.1%	2037	Mining lease granted to Ma'aden by Kingdom of Saudi Arabia Ministry of Petroleum and Mineral Resources, with a duration of 30 years. Exclusive rights to utilize bauxite and annexed minerals.	14,776

(1) Owners' Mining Rights reflects AWAC's and/or Alcoa's ownership interest(s) in the properties and related share (proportion) of the mineral resources and reserves and annual production.

(2) For more information, see Individual Property Disclosure—Darling Range below.

(3) For more information, see Individual Property Disclosure—Juruti below.

(4) Brazilian mineral legislation does not limit the duration of mining concessions; rather, the concession remains in force until the deposit is exhausted. These concessions may be extended later or expire earlier than estimated, based on the rate at which these deposits are exhausted and on obtaining any additional governmental approval, as necessary.

Bauxite Mine Types and Facilities:

Property (Region)	Development Stage	Type of Mine and Mineralization	Processing Plant	Other Facilities
Darling Range[1] (WA)	Production/ Operating	Open-cut mines. Bauxite is lateritic formed through weathering of Archean granites and gneisses	N/A Ore crushing only.	Administrative buildings and workshops, crushers, long-distance conveyors. Power supplied from natural gas.
Juruti[2] (Pará State)	Production/ Operating	Open-cut mines. Bauxite is lateritic formed through weathering of Cretaceous Alter do Chao Formation sedimentary sequence.	Fixed plant for ore crushing and washing.	Mine: Administrative buildings and workshops, water supply pumps and pipeline from Juruti Grande, ore stockpiles, railroad, tailings thickening and settling ponds. Port: Administrative buildings, port control, ore stockpiles, rail siding, and ship loader. Power supplied by thermoelectric units at the mine and port.
Poços de Caldas (Minas Gerais)	Production/ Operating	Open-cut mines. Bauxite derived from the weathering of nepheline syenite and phonolite.	N/A Run of mine (ROM) trucked to refinery stockpiles.	Mining offices and services are located at the refinery. Power supplied by commercial grid.
Boké (Sangaredi)	Production/ Operating	Open-cut mines: The bauxite deposits within the CBG lease are of two general types. TYPE 1: In-situ laterization of Ordovician and Devonian plateau sediments locally intruded by dolerite dikes and sills. TYPE 2: Sangaredi type deposits are derived from clastic deposition of material eroded from the TYPE 1 laterite deposits and possibly some of the protoliths from the TYPE 1 plateaus deposits.	N/A Ore crushed and dried at Kamsar port facilities.	Mine: Administrative buildings, workshops, and water/power supply are in Sangaredi. Port: Administrative buildings, port control, ore stockpiles, ore drying facilities, rail siding, and ship loader. Power supplied by fuel oil generators at the mine and port.
Al Ba'itha (Al Qassim)	Production/ Operating	Open-cut mine. Bauxite occurs as a paleolaterite profile developed at an angular unconformity between underlying late Triassic to early Cretaceous sediments (parent rock sequence Biyadh Formation) and the overlying late Cretaceous Wasia Formation (overburden sequence).	Fixed plant for ore crushing and train loading	The mine includes fixed plants for crushing and train loading; workshops and ancillary services; power plant; and water supply. There is a company village with supporting facilities

(1) For more information, see Individual Property Disclosure—Darling Range Mines below.

(2) For more information, see Individual Property Disclosure—Juruti below.

Bauxite Mineral Resources and Mineral Reserves

In accordance with subpart 1300 of Regulation S-K, management engaged SLR International Corporation as the qualified persons to prepare technical report summaries for the disclosure of mineral resources and reserves at Darling Range and Juruti. The tables shown below of resources and reserves by mining property were prepared using the results of the procedures performed by the qualified persons, which have no affiliation with or interest in Alcoa or our mining properties.

Summary of Attributable Bauxite Mineral Resources Exclusive of Mineral Reserves at December 31, 2023:

	Measured			Indicated			Measured + Indicated			Inferred		
Property (Region)	Tonnage (mdmt)[1]	Alumina (%)	Silica (%)	Tonnage (mdmt)[1]	Alumina (%)	Silica (%)	Tonnage (mdmt)[1]	Alumina (%)	Silica (%)	Tonnage (mdmt)[1]	Alumina (%)	Silica (%)
Darling Range (WA)[2]	93.0	30.4	1.5	105.4	30.8	1.3	198.4	30.6	1.4	106.9	32.3	1.2
Juruti (Pará State)[3]	5.7	44.5	5.3	58.5	45.3	4.4	64.2	45.3	4.5	563.6	45.7	4.7
Poços de Caldas (Minas Gerais)[4]	2.4	39.0	4.7	10.6	37.1	5.6	13.1	37.4	5.5	21.4	35.2	5.9
Boké (Sangaredi)[5]	—	—	—	1,350.7	46.6	2.3	1,350.7	46.6	2.3	168.1	45.8	2.4
Al Ba'itha (Al Qassim)[6]	—	—	—	—	—	—	—	—	—	0.7	48.3	11.7

(1) This table shows only the AWAC and/or Alcoa share (proportion) of mineral resources. The reference point for the mineral resource is the in situ predicted dry tonnage and grade of material to be delivered to the refinery stockpile following the application of mining design parameters. Metallurgical recovery factors are not applicable to the mineral resource estimate as the Darling Range operations do not include a conventional processing plant, only crushing. The metallurgical recovery of the three refineries (Kwinana, Pinjarra, and Wagerup) are beyond the boundaries of the mining operations. Certain totals may not sum due to rounding.

(2) Alumina for the Darling Range is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Further, mineral resources are estimated using a reasonable market expectation of arms-length sales of bauxite from Darling Range, approximately $21 per ton. Darling Range mineral resources are estimated at a ≥ 27.5% $A.Al_2O_3$ and ≤3.5% $R.SiO_2$ cut-off grade and at a minimum mining thickness of 1.5 m.

(3) Alumina for Juruti is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Juruti mineral resources are estimated at a pit discard cut-off value based on a benefit calculation that determines whether a block is economically viable and has a minimum thickness of 1 meter (m). Further, mineral resources are estimated using a long-term bauxite price of approximately $35 (wet-base) per ton, representing a 30% increase over the mineral reserve bauxite price.

(4) Alumina for Poços de Caldas is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Poços de Caldas mineral resources are estimated at a pit discard cut-off value based on a benefit calculation that determines whether a block is economically viable.

(5) Alumina for Boké is stated as Total Alumina (as $T.Al_2O_3$) and Silica is stated as Total Silica (as $T.SiO_2$). Boké resources are estimated at a ≥ 41% $T.Al_2O_3$ and ≤10% $T.SiO_2$ cut-off grade. Tonnage reported on a 3% moisture basis.

(6) Alumina for Al Ba'itha is stated as Total Available Alumina (as TAA) and Silica is stated as Total Silica (as $T.SiO_2$). Al Ba'itha mineral resources are estimated at a ≥ 40% TAA cut-off grade and a minimum mining thickness of 1.0 m.

The following table shows only the AWAC and/or Alcoa share (proportion) of mineral reserves. These estimates are periodically updated to reflect past bauxite production, updated mine plans, new exploration information, and other geologic or mining data. Given the Company's extensive bauxite resources, the abundant supply of bauxite globally, and the length of the Company's rights to bauxite, it is not cost-effective to establish bauxite reserves that reflect the total size of the bauxite resources available to the Company. Certain totals may not sum due to rounding.

Summary of Attributable Bauxite Mineral Reserves at December 31, 2023:

	Proven			Probable			Total		
Property (Region)	**Tonnage** (mdmt)[1]	**Alumina** (%)	**Silica** (%)	**Tonnage** (mdmt)[1]	**Alumina** (%)	**Silica** (%)	**Tonnage** (mdmt)[1]	**Alumina** (%)	**Silica** (%)
Darling Range[2]	48.0	29.1	1.6	296.0	31.9	1.3	344.1	31.5	1.3
Juruti (Pará State)[3]	46.2	47.6	3.5	34.7	46.3	3.5	80.9	47.1	3.5
Poços de Caldas (Minas Gerais)[4]	0.9	41.1	3.4	1.8	38.9	3.9	2.7	39.6	3.8
Boké (Sangaredi)[5]	76.5	47.0	1.9	3.8	48.9	2.5	80.3	47.1	1.9
Al Ba'itha (Al Qassim)[6]	16.3	50.0	8.2	30.9	46.8	10.3	47.3	47.9	9.6

(1) This table shows only the AWAC and/or Alcoa share (proportion) of mineral reserves. The reference point for the mineral reserve is the refinery processing plant gate, with crushing, washing (as applicable), and transportation being the only process employed. Metallurgical recovery factors are not applicable to the mineral reserve estimate as the Darling Range operations do not include a conventional processing plant, only crushing. The metallurgical recovery of the three refineries (Kwinana, Pinjarra, and Wagerup) are beyond the boundaries of the mining operations. Certain totals may not sum due to rounding.

(2) Alumina for the Darling Range is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Darling Range mineral reserves are estimated at variable cut-off grades, dependent on operating costs and ore quality for blending to meet refinery target grades. Mineral reserves are estimated using a reasonable market expectation of arms-length sales of bauxite from Darling Range, approximately $21 per ton.

(3) Alumina for Juruti is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Juruti mineral reserves are estimated at a pit discard cut-off value based on a benefit calculation that determines whether a block is economically viable. Further, mineral reserves are estimated using a one-year weighted average bauxite price of approximately $27 per ton, based on contractual agreements with an Alumina segment refinery.

(4) Alumina for Poços de Caldas is stated as Available Alumina (as $A.Al_2O_3$) and Silica is stated as Reactive Silica (as $R.SiO_2$). Poços de Caldas mineral reserves are estimated at a pit discard cut-off value based on a benefit calculation that determines whether a block is economically viable.

(5) Alumina for Boké is stated as Total Alumina (as $T.Al_2O_3$) and Silica is stated as Total Silica (as $T.SiO_2$). Boké reserves are estimated at a ≥ 45% $T.Al_2O_3$ and ≤10% $T.SiO_2$ cut-off grade. Tonnage reported on a 3% moisture basis.

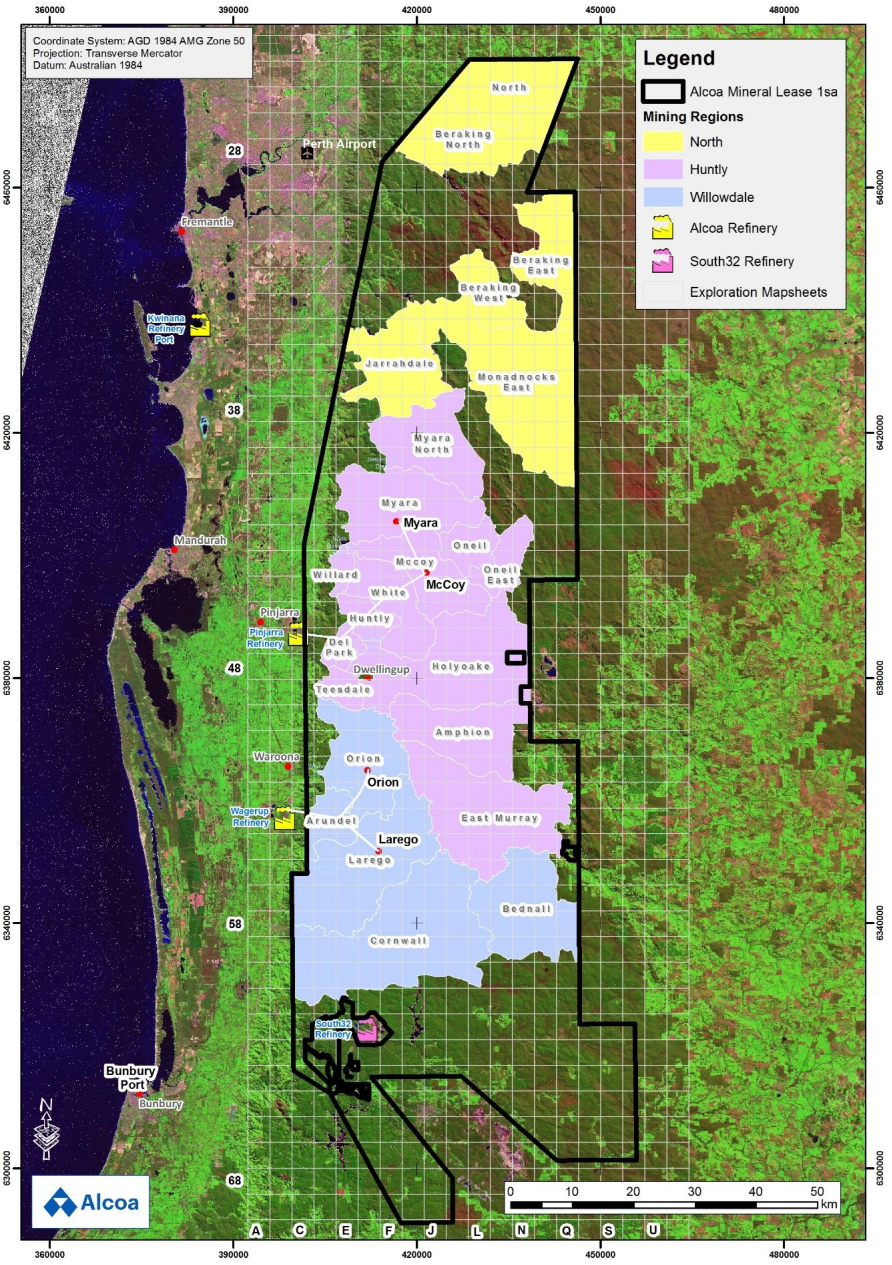
(6) Alumina for Al Ba'itha is stated as Total Available Alumina (as TAA) and Silica is stated as Total Silica (as $T.SiO_2$). Al Ba'itha mineral reserves are estimated at a ≥ 40% TAA cut-off grade.

Individual Property Disclosure—Darling Range

Property Location and Description

The Darling Range bauxite deposits comprise the mining centers of (i) Huntly, located approximately 80 kilometers (km) to the southeast of Perth and 30 km northeast of Pinjarra, Western Australia, Australia, and (ii) Willowdale, located approximately 100 km south-southeast of Perth and 20 km southeast of Waroona, Western Australia, Australia. The Huntly and Willowdale mining centers/regions are separate open pit, surface mines and are both located within Mining Lease ML1SA. Darling Range is owned and operated by Alcoa through AofA.

All spatial data used for mineral resource and reserve estimation are reported using a local grid based on Australian Map Grid 1984 system (Zone 50) and using the Australian Geodetic Datum 1984 coordinate set. The approximate coordinates of the mining areas are 410,000 m East and 6,390,000 m North (Huntly) and 410,000 m East and 6,365,000 m North (Willowdale).



Darling Range Location, Lease Area, Mining Centers, and Mining Regions

Refer to the Darling Range TRS in Sections 2.0 through 5.0 for more information on the Darling Range mining centers – their history, location, accessibility, and other relevant details.

Infrastructure

The figure above illustrates the relative location of each of the individual mining areas within the Huntly and Willowdale centers. These areas include, but are not limited to, Myara, Larego, Orion, and Arundel.

Mining infrastructure in the Darling Range is generally concentrated in the Myara area in the northwest of the Huntly mining center, and at the Larego area (20 km southeast of the Wagerup refinery) in the center of the Willowdale mining center. Both infrastructure areas include:

- Ore crushing and handling facilities;
- Ore stockpile stacker/reclaimer;
- Maintenance facilities;
- Sampling stations;
- Site offices including a production tracking room;
- Haul road networks;
- Overland conveyors, as illustrated on the above map;
- Water supplies consisting of abstraction from licensed surface water sources supplemented with treated wastewater from vehicle washdowns, stormwater runoff, and maintenance workshops; and,
- Power supply lines direct from certain of the Company's refineries.

Personnel are sourced from the area around Perth, Western Australia, which benefits from a skilled workforce due to the relatively large number of operating mines in the region.

Huntly is accessible from the South Western Highway via Del Park Road, which connects the town of North Dandalup in the north with Dwellingup in the south. From Del Park Road, a 3 km road following the route of the bauxite conveyor to the Pinjarra refinery provides access to the Huntly site administration offices. Willowdale is similarly accessible, 19 km from the South Western Highway via Willowdale Road, a road to the south of Waroona. There are several airstrips in the region, although the closest major airport is in Perth, approximately 70 km north of North Dandalup. The nearest commercial port is at the Kwinana refinery, approximately 40 km south of Perth.

While an extensive haul road network and overland conveyors transport crushed bauxite from the main mining hub to the Wagerup and Pinjarra refineries, bauxite is also transferred to the Kwinana refinery via the Kwinana freight railway system, using the Kwinana–Mundijong line.

Alcoa's Darling Range mining operations do not produce mine waste in the same manner as conventional mining operations and waste dumps are not constructed.

Alcoa's Darling Range facilities are in a well-maintained condition. Net book value of these facilities as of December 31, 2023 of $517 is included in Properties, plants, and equipment, net on the Consolidated Balance Sheet.

Refer to the Darling Range TRS in Sections 14.0 and 15.0 for more information on the surface infrastructure and facilities of the Darling Range.

Land Tenure and Permitting

Bauxite occurrences were first recorded in the Darling Range in 1902, with studies and exploration subsequently conducted by the Geological Survey of Western Australia until the 1950s. Commercial exploration took place from 1957 by Western Mining Corporation Ltd (later Western Australia NL, or WANL), across a large portion of southwest Western Australia within a Special Mineral Lease (ML1SA) granted in 1961. Commercial mining first took place within the Darling Range in 1963 at the former Jarrahdale mining center with WANL having joined with Alcoa. The Huntly and Willowdale mines commenced commercial production in 1972 and 1984, respectively. Huntly currently supplies bauxite to the Kwinana and Pinjarra refineries (approximately 25 Mtpa), while Willowdale supplies the Wagerup refinery (approximately 10 Mtpa).

The ML1SA lease allows for exploration and mining of bauxite within the tenement boundaries. ML1SA was granted in 1961, by the State Government of Western Australia under the Alumina Refinery Agreement Act, 1961 (the Act 1961), for four 21-year periods, and the current lease expires on September 24, 2045. The State Government concession agreement includes the provision for conditional renewal beyond 2045. Alcoa pays rent for each square mile of ML1SA in accordance with the Act 1961, providing exclusive rights to explore for and mine bauxite on all Crown Land within the ML1SA. The current lease covers an area of 702,261 hectares (ha).

There are certain annual requirements to maintain the existing permits and approvals associated with ML1SA, including:

- Submission of annual mine plans for mining associated with the Wagerup refinery;
- Maintain public Completion Criteria documentation for its bauxite mining operations;
- Annual submission and approval of Mining and Management Programs (MMPs) that include five-year mining schedules;
- Annual reporting of bauxite processed and any non-compliances to maintain environmental operational licenses; and,
- Maintain compliance with environmental protection orders.

The ML1SA area includes sub-lease arrangements made between Alcoa and the Worsley Alumina joint venture participants (the Worsley Participants). The agreements, made in August 2001 and September 2016, provide bauxite mining concessions to the Worsley Participants. No mineral resources or mineral reserves attributable to the Darling Range mining areas have been declared within these sub-lease areas.

Constraints on mining activities within the ML1SA concession are in place, among others, which prevent mining within: 200 m of the top water level margin of any water reservoirs; Serpentine Pipehead Dam Catchment; 10 m of a Black Cockatoo nesting tree or Black Cockatoo significant tree; National Parks; Aboriginal Heritage Sites; Old Growth Forest; formal Conservation Areas; and 50 m of granite outcrop (greater than 1 ha), and Mining Avoidance Zones (MAZ) around the Western Australian forest towns of Dwellingup and Jarrahdale. Mineral resources and mineral reserves have not been defined in these restricted areas.

Additionally, the 2023-2027 MMP requires additional constraints including: a reduction in mining activities inside higher risk areas within drinking water catchments; no new pit clearing in areas with an average pit slope greater than 16 percent within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level); an acceleration of forest rehabilitation and a reduction in open mining areas; and a maximum annual clearing footprint of 800 ha.

Mining on a day-only basis is conducted in “noise zones” where noise from the mining operations will potentially exceed allowable levels. The operation actively seeks to maintain lower noise levels than those mandated, thus mining in these areas is undertaken by contract miners on day shifts only.

The Company has all environmental permits and operating licenses required for current mining activities. Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa’s Environmental Management System and reported within the Annual Environmental Review report.

Refer to the Darling Range TRS in Section 3.0 for more information on Land Permitting and Tenure for the Darling Range.

Geology and Exploration

The Darling Range comprises a low incised plateau formed by uplift along the north-south trending Darling Fault, a major structural lineament that extends for over 250 km, from Bindoon in the north to Collie in the south. Bauxite deposits have been identified throughout the Darling Range and generally occur as erratically distributed alumina-rich lenses. Lateralization and subsequent periodic activity of the Darling Fault has resulted in the current landform of scarps and deeply incised valleys on the western edge of the Darling Range.

Systematic exploration for bauxite within the region commenced in the 1960s and is currently conducted on a continuous basis to maintain sufficient mineral resources and mineral reserves to meet refinery supply. Current mine plans include further exploration throughout all areas where Alcoa has mining permits to sustain future production.

Refer to the Darling Range TRS in Sections 6.0 through 11.0 for more information on the geology, mineralization, and exploration history of the Darling Range, including Quality Assurance / Quality Control (QA/QC) procedures and data used in the current mineral resource estimate.

Mining and Processing

The Huntly and Willowdale mines employ conventional open pit surface mining practices and equipment. Following definition of mineral reserve blocks, vegetation is cleared after which Alcoa operations commence stripping topsoil and secondary overburden removal using small excavators, scrapers, and trucks. Soil is stockpiled at the site, away from the proposed pit, for rehabilitation

purposes. After completion of mining, overburden is progressively backfilled into adjacent exhausted pits, topsoiled, and rehabilitated by re-establishment of native vegetation, creating a stable post-mining landform that replicates the pre-existing environment.

The process plant for the Darling Range operations consists of two separate crushing facilities at the Huntly and Willowdale mines, respectively. Both facilities crush the ROM ore and convey the crushed ore to three separate refineries located at Pinjarra, Kwinana, and Wagerup. The Pinjarra refinery is located adjacent to the east of the town of Pinjarra and is approximately 30 km southwest of the Huntly mining areas. The Kwinana refinery, also supplied by Huntly, is approximately 50 km northwest of Huntly in the city of Kwinana, approximately 40 km south of Perth. The Wagerup refinery, supplied by Willowdale, is located immediately adjacent to the east of the South Western Highway, approximately 8 km south of Waroona and 20 km west of the Willowdale mining area.

The process plant is a dry crushing operation and therefore water is not required as a consumable for the plant. Alcoa's Darling Range mining operations do not produce mine waste in the same manner as conventional mining operations and waste dumps are not constructed.

Refer to the Darling Range TRS in Sections 12.0 and 13.0 for a detailed description of the mineral reserves and mining methods used in the Darling Range.

Environmental and Social

Alcoa's mine sites are monitored in accordance with the conditions of Government authorizations and its operational licenses at Huntly and Willowdale. Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa's Environmental Management System and reported within a Triennial Environmental Review report.

Alcoa works proactively with key regulatory agencies to address operational incidents and implement operational improvements to reduce releases to the environment.

In December 2023, the Western Australian government granted a section 6 exemption under the Environmental Protection Act 1986 that allows Alcoa to continue its mining operations while the WA Environmental Protection Authority (EPA) assesses the environmental impact of parts of the MMP, following a third party's referral of the Company's future and existing mine plans in existing mine regions to the WA EPA in the first quarter of 2023. Compliance against the section 6 exemption is monitored on a weekly basis by an independent compliance monitor and reported monthly to the Department of Water and Environmental Regulation. At the request of the Western Australian government, the Company has committed to provide a bank guarantee for approximately $68 (A$100) demonstrating Alcoa's confidence that its operations will not impair drinking water supplies.

Alcoa is modernizing its environmental approvals framework for the Huntly bauxite mine and referred future mining plans to access Myara North and Holyoake to the WA EPA for assessment in 2020.

Refer to the Darling Range TRS in Section 17.0 for more information on the environmental, social, compliance, and permitting aspects of the Darling Range.

Mineral Resources and Mineral Reserves

In January 2024, Alcoa announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. Current mine plans do not accommodate this curtailment but will be amended to include a staged reduction of supply to the refinery through the third quarter of 2024.

For information on Darling Range mineral resources and mineral reserves, refer to the tables above. For comparative purposes, measured and indicated mineral resources were 198.4 mdmt and 96.7 mdmt as of December 31, 2023 and 2022, respectively, representing an increase of 105 percent. Inferred mineral resources were 106.9 mdmt and 140.3 mdmt as of December 31, 2023 and 2022, respectively, representing a decrease of 24 percent. Probable reserves were 296.0 mdmt and 255.8 mdmt as of December 31, 2023 and 2022, respectively, representing an increase of 16 percent, and proven reserves were 48.0 mdmt and 145.8 mdmt as of December 31, 2023 and 2022, respectively, representing a decrease of 67 percent.

The increase in measured and indicated mineral resources from December 31, 2022 to December 31, 2023 is primarily attributable to the addition of lower grade material in Larego and Myara, exploration activities and changes in mine scheduling. The decrease in inferred mineral resources from December 31, 2022 to December 31, 2023 is attributable to Alcoa's commitments to refrain from mining in areas within the MAZ around Dwellingup. The mineral reserves decrease from December 31, 2022 to December 31, 2023 is attributable to mining depletion in 2023, changes in mine scheduling, the depletion of ore in higher risk areas within drinking water catchments and Reservoir Protection Zones in Myara, and adjustment of the cut-off grades in Myara and parts of Larego.

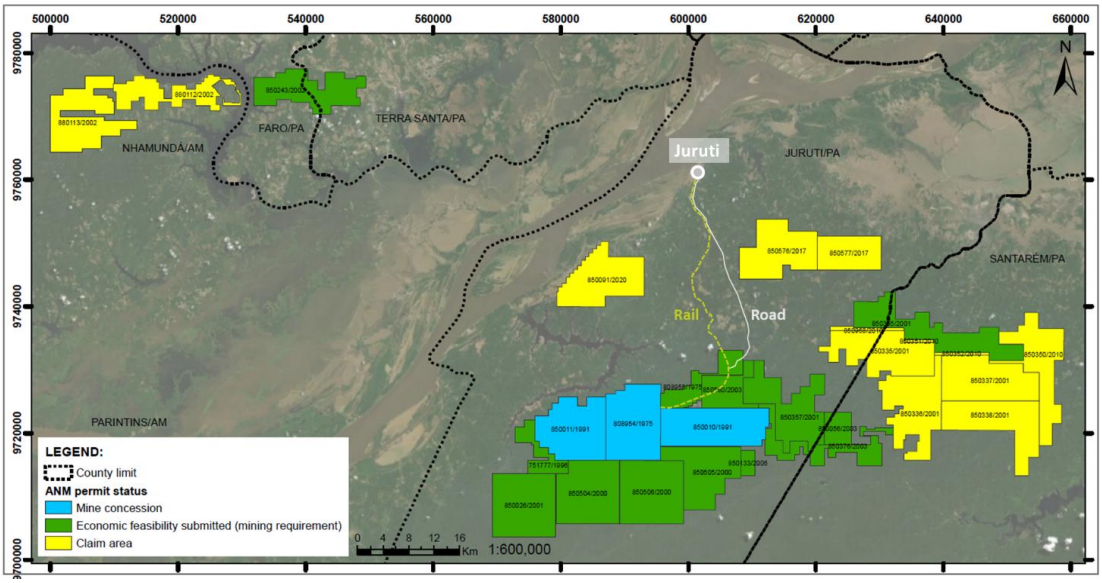
Additionally, refer to the Darling Range TRS Section 17.1 for more information on the mineral resources and mineral reserves of the Darling Range mines.

Individual Property Disclosure—Juruti

Property Location and Description

The Juruti bauxite mine is located in the west of Para State in northern Brazil. The mine is approximately 55 km south from the town of Juruti on the southern shore of the Amazon River. The mine is owned and operated by Alcoa through AWAB. The Juruti bauxite mine represents an established mining operation which commenced commercial production of bauxite in 2009.

All spatial data used for the mineral resource and mineral reserve estimation are reported using a local grid based on SIRGAS 2000 (21S). The approximate coordinates of the mining area for the Capiranga Central, Mauari, São Francisco, Mutum and Santarém plateaus are 618,879 m East and 9,721,768 m North, and for the Nhamundá plateau are 521,657 m East and 9,773,299 m North.



Juruti Location and Bauxite Mine Permit Areas

Refer to the Juruti TRS in Sections 2.0 through 5.0 for more information on the Juruti mine – history, location, accessibility, and other relevant details.

Infrastructure

Infrastructure required for bauxite mining operations is well-established and available, the majority of which is located within the area of the Juruti bauxite mine. The required infrastructure includes the following:

- Rail siding and loading equipment;
- Bauxite beneficiation plant for ore crushing and washing;
- Mine waste facilities including tailings thickening lagoons and tailings disposal ponds;
- ROM and product stockpiles and materials handling conveyors;
- Ancillary buildings (offices, warehouses, laboratory, workshops);
- Fuel station;
- Water supply intake raft, pumps, and approximate 9 km pipeline from the Juruti Grande stream;
- Power generation via thermoelectric units at the mine and port;
- Surface water management including drainage channels and pumps;
- Off-site rail corridor between the mine and port; and,
- Port facilities including rail siding, material handling equipment, ship loader.

The Juruti mining area is connected to Juruti town and port facilities by a road that joins to the PA-257 road near the town, and a dedicated railway between the mining area and port. There are very few major roads across the region and the only major road in this area is the PA-257.

The nearest major city to Juruti is Santarem, approximately 160 km to the east and is only accessible by boat or by air from Juruti Airport (JRT) to Santarem-Maestro Wilson Fonseca Airport (STM). National roads connect Santarem to wider Para State including the port city of Belem on Brazil's northern coast, approximately 1,300 km by road via the 230 and PA-151 roads.

Juruti began production in 2009 and the facilities are in a well-maintained condition. Net book value of these facilities as of December 31, 2023 of $512 is included in Properties, plants, and equipment, net on the Consolidated Balance Sheet.

Refer to the Juruti TRS in Sections 14.0 and 15.0 for more information on the surface infrastructure and facilities of the Juruti mine.

Land Tenure and Permitting

All exploration and mining activities are managed by the National Mining Agency, Agencia Nacional de Mineracao (ANM), under the Mining Code (1967). Permits are granted by the ANM and fall into two categories:

- Exploration Permits: granted to support ongoing exploration activities. On submittal of an approved Exploration Report, the holder is then granted one year to present a Mining Plan as a precursor to obtaining a Mining Concession. Exploration Permits require:
    - o Initial application fee and submission by a registered professional geologist or mining engineer;
    - o Annual fee payment to the ANM;
    - o Declaration of exploration expenditures on an annual basis; and,
    - o Survey visit fee payment to the ANM.

- Mining Concession: following a successful Mining Plan submission, enabling exploitation once Environmental Licenses are granted. Concession holders are required to:
    - o Commence mining activities within 6 months of being granted;
    - o Submit annual reports on all mining / processing activities (Relatorio Annual de Lavra, or RAL) to the ANM;
    - o Make compensation payments to landowners in line with the agreements made for mining easement; and,
    - o Make Brazilian Mineral Royalty payments (Compensacao Financeira pela Exploracao de Recursos Minerais, or CFEM).

At Juruti there are three continuous mining concessions for an aggregated 29,410 ha, where current mineral reserves are determined. Brazilian mineral legislation does not limit the duration of mining concessions and instead the concession remains in force until the deposit is exhausted. These concessions may be extended later or expire earlier than estimated, based on the rate at which the deposits are exhausted and on obtaining any additional governmental approval, as necessary, such as operational licenses and environmental approvals.

In addition to the mining rights, there are thirteen requests for mining concessions, fourteen exploration permits, and two requests for exploration permits. The aggregated area for these permits is 197,866 ha.

The mining operations at Juruti take place on third-party land and, in accordance with the Mining Concession requirements, Alcoa currently has agreements in place with respective landowners. Agreements form a "mining easement," which grants Alcoa access to the mining areas in exchange for compensation payments. As a result, there are no other titles, claims, leases, or options applicable to the exploration or mining permit areas which may limit Alcoa's rights. Similarly, there are no liens or encumbrances.

The Company has all environmental permits and operating licenses required for current mining activities; there are no liens or encumbrances.

Refer to the Juruti TRS in Sections 3.0 and 17.0 for more information on Land Permitting and Tenure for the Juruti mine.

Geology and Exploration

The bauxite deposit of the Juruti bauxite mine consist of several lateritic bauxite plateaus which exist over a large lateral extent (several km) in comparison to the total thickness of the deposit (typically up to 20 m below surface).

Systematic exploration for bauxite within the region has persisted since Alcoa's ownership and is currently conducted on a continuous basis to establish optimal mine plans to achieve a uniform quality of bauxite production. Current mine plans include further exploration throughout all areas where Alcoa has mining permits to sustain future production.

Refer to the Juruti TRS in Sections 6.0 through 11.0 for more information on the geology, mineralization, and exploration history of the Juruti mine, including QA/QC procedures and data used in the current mineral resource estimate.

Mining and Processing

Juruti is an active mining operation using surface strip mining methods over a total of eight plateaus whereby land clearance, topsoil removal, and overburden stripping is followed by bauxite deposit excavation and stockpiling. Waste is subsequently backfilled, and overburden and topsoil are re-instated for surface rehabilitation.

Juruti produces both a washed and unwashed bauxite product; however, all tonnage is presented on a zero-moisture basis. Bauxite processing takes place at a dedicated plant facility located at the Juruti mine site which has been operating since 2009 and comprises a simple comminution (crushing, screening) and washing circuit designed to remove fine particles from the ore.

Fine materials removed from ore are deposited in a thickening pond for settling and water reclamation, after which solid tailings are discarded into separate tailings ponds. There is currently one thickening pond and seven disposal ponds.

Refer to the Juruti TRS in Sections 12.0 and 13.0 for a detailed description of the mineral reserves and mining methods used in the Juruti mine.

Environmental and Social

Alcoa submits an Annual Environmental Report in compliance with the Juruti operating licenses and approvals. This report includes detailed descriptions of activities undertaken for the year and environmental and social monitoring. No significant compliance issues were identified in the 2021/2022 and 2022/2023 Annual Environmental Reports, although certain environmental incidents were recorded in December 2020 and February 2021 which involved siltation of downstream watercourses following extreme rainfall events. In addition, during 2023, Alcoa reported to the state environmental agency that the volume of ore shipped from the port exceeded the permitted volume at times over the last three years. This issue was resolved in January 2024 when the agency amended the operating permit for the port to allow up to 12 Mtpa of ore to be shipped.

Additionally, Alcoa works proactively with key regulatory agencies to address operational non-compliances and implement operational improvements to reduce releases to the environment. None of the reportable non-compliances represent a risk that could adversely affect its license to operate.

Refer to the Juruti TRS in Section 17.0 for more information on the environmental, social, compliance, and permitting aspects of the Juruti mine.

Mineral Resources and Mineral Reserves

For information on Juruti mineral resources and mineral reserves, refer to the tables above. For comparative purposes, measured and indicated mineral resources of 64.2 mdmt did not change from 2022. Inferred mineral resources were 563.6 mdmt and 563.7 mdmt as of December 31,2023 and 2022, respectively, representing a marginal decrease of 0.1 percent. Proven reserves were 46.2 mdmt and 48.6 mdmt as of December 31,2023 and 2022, respectively, representing a decrease of 5 percent. Probable reserves were 34.7 mdmt and 36.8 mdmt as of December 31,2023 and 2022, respectively, representing a decrease of 6 percent.

Mineral resources were consistent with 2022. The decrease in mineral reserves from December 31, 2022 reflects mining depletion during 2023. Refer to the Juruti TRS for more information on the mineral resources and mineral reserves of the Juruti mine.

Internal Controls

Alcoa has a long history of mining bauxite, with the majority of bauxite production having been used to supply Alcoa refineries.

Internal controls used by the Company are informed by internal reviews, representation on Technical Committees of Joint Venture operations, and by reviews, audits, and studies performed by third-party mining consultants. The controls include: surveying of drillhole collar locations, drill sample logging, collection and security, database verification and security, QA/QC programs, internal and third-party qualified person statistical analysis, internal and third-party qualified person model validation, and reconciliation. Modelling and analysis of the Company's resources is completed internally and reviewed by a qualified person, with the exception of Al Ba'itha where modelling and analysis is completed by a third-party consultant.

As the ore bodies are shallow and generally horizontal, two-dimensional seam modelling has been the standard practice; however, many operations are implementing more conventional 3D block modelling using geostatistical interpolation methods. Mineral resource estimation is validated internally through visual comparison of drillholes and model blocks as well as through the use of swath plots and statistical distributions. Mineral resource estimation is reviewed and adopted by a qualified person. Mineral reserve estimation is completed internally and reviewed by a qualified person, with the exception of Boké and Al Ba'itha where reserve estimation is completed by a third-party consultant.

Labelled samples from the drill site are securely transported for logging or temporary storage by the drilling contractor or Alcoa personnel. Additional transport to internal or external laboratories is controlled and completed, as necessary, by Alcoa personnel or by courier.

Drillhole databases are all site specific; most sites use industry standard drillhole database software, applications, and processes with security and backup protocols in place. Prior to modelling, secondary validation and cleansing of the modelling datasets is performed. Wherever possible, data collection is digital to allow direct loading into the database.

The Company has well-established QA/QC programs that are site specific. Although some programs are limited to laboratory protocols only covering analysis of duplicate pulps and standards, others involve, to varying degrees, the range of activities from twin hole drilling and collection of field duplicates, submission of blind duplicates and standards and submission of duplicate samples to umpire laboratories. Regardless of the level of QA/QC, all sites have well established and documented sampling and analysis regimes. QA/QC practices and available data are reviewed by a qualified person.

As discussed above, management relies on estimates for our mineral reserves and these estimates could change due to a number of factors, including future changes in: permitting requirements, geological conditions, ongoing mine planning, macroeconomic and industry conditions, and regulatory disclosure requirements. See Part I Item 1A of this Form 10-K for more information on risks.

Item 3. Legal Proceedings.

In the ordinary course of its business, Alcoa is involved in a number of lawsuits and claims, both actual and potential. Proceedings that were previously disclosed may no longer be reported because, as a result of rulings in the case, settlements, changes in our business, or other developments, in our judgment, they are no longer material to Alcoa's business, financial position or results of operations. See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements for additional information.

In addition to the matters discussed below, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

St. Croix Proceedings - Abednego and Abraham cases. In January 2010, ParentCo was served with a multi-plaintiff action complaint involving several thousand individual persons claiming to be residents of St. Croix alleging personal injury or property damage from Hurricane Georges or winds blowing material from the St. Croix Alumina, L.L.C. (SCA) facility on the island of St. Croix (U.S. Virgin Islands). This complaint, Abednego, et al. v. Alcoa, et al., which added the then current owners of the facility to a February 1999 action, was filed in the Superior Court of the Virgin Islands, St. Croix Division.

In 2012, ParentCo was served with a separate multi-plaintiff action alleging claims essentially identical to those set forth in the Abednego v. Alcoa complaint.

In 2015, the Superior Court dismissed all plaintiffs' complaints without prejudice, permitting the plaintiffs to re-file the complaints individually. In 2017, the court issued an order that consolidated all timely complaints into the Red Dust Claims docket (Master Case No.: SX-15-CV-620). Following this order, a total of approximately 430 complaints were filed and accepted by the court, which included claims of approximately 1,360 individuals. In November 2018, the Red Dust Claims docket was transferred to the Complex Litigation Division within the Superior Court of the Virgin Islands. At such time, the Company was unable to reasonably predict an outcome or to estimate a range of reasonably possible loss, and thereafter the Red Dust Claims docket became inactive for several years. The Court issued an amended case management order dividing the complaints filed in the Red Dust docket into groups of 50 complaints, designated Groups A though I in March 2022. The parties selected 10 complaints from Group A to proceed to trial as the Group A lead cases. In November 2023, the Court issued an amended case management order with regard to the Group A lead cases scheduling trials to begin in July 2024. Trials with regard to the Group A lead cases will continue through March 2025. Concurrently, the Court is considering discovery issues with respect to other group cases. The Company remains unable to reasonably predict an outcome or to estimate the range of reasonably possible loss in the Red Dust Claims docket cases.

Environmental Matters

SEC regulations require disclosure of certain environmental matters when a governmental authority is a party to the proceedings and such proceedings involve potential monetary sanctions that the Company reasonably believes will exceed a specified threshold. Pursuant to these regulations, the Company uses a threshold of $1 for purposes of determining whether disclosure of any such proceedings is required.

Alcoa is involved in proceedings under CERCLA and analogous state or other statutory or jurisdictional provisions regarding the usage, disposal, storage, or treatment of hazardous substances at a number of sites. The Company has committed to participate, or is engaged in negotiations with authorities relative to its alleged liability for participation, in clean-up efforts at several such sites. The most significant of these matters are discussed in Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under the caption Contingencies.

Intalco (Washington) Notice of Violation—In May 2022, the Company received a Notice of Violation (NOV) from the U.S. Environmental Protection Agency (the EPA). The NOV alleges violations under the Clean Air Act at the Company's curtailed Intalco (Washington) smelter from when the smelter was operational. The EPA has referred the matter to the U.S. Department of Justice, Environment and Natural Resources Division (the DOJ). The DOJ and the Company are engaged in discussions with respect to a resolution of this matter.

Asbestos Litigation

Some of our subsidiaries as premises owners are defendants in active lawsuits filed in various jurisdictions on behalf of persons seeking damages for alleged personal injury as a result of occupational exposure to asbestos at various facilities. Our subsidiaries and acquired companies all have had numerous insurance policies over the years that provide coverage for asbestos based claims. Many of these policies provide layers of coverage for varying periods of time and for varying locations. We have significant insurance coverage and believe that our reserves are adequate for known asbestos exposure related liabilities. The costs of defense and settlement have not been and are not expected to be material to the results of operations, cash flows, and financial position of Alcoa Corporation.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities.

Shares of the Company's common stock are listed on the New York Stock Exchange and trade under the symbol "AA."

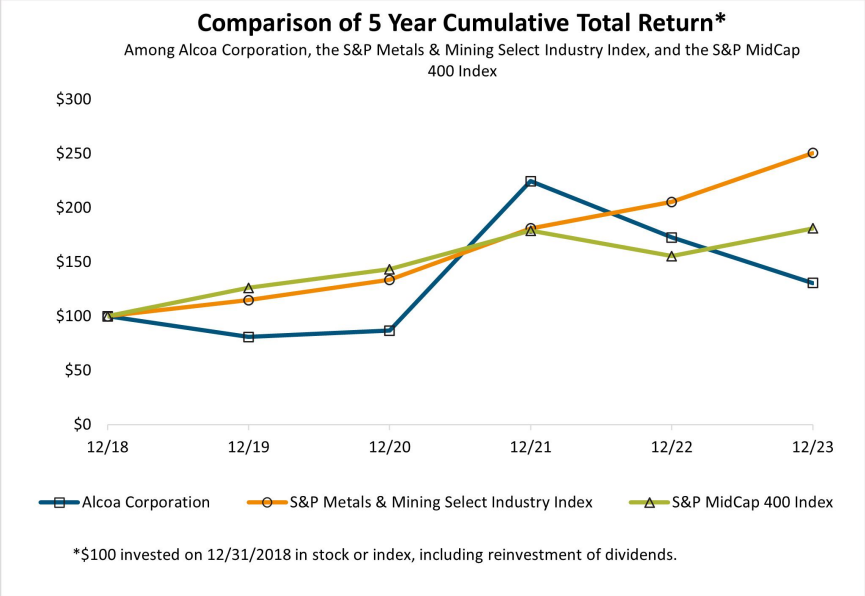
On October 14, 2021, Alcoa Corporation announced the initiation of a quarterly cash dividend program and the Board of Directors declared the first quarterly cash dividend of $0.10 per share of the Company's common stock, which was paid during the fourth quarter of 2021. Alcoa Corporation paid quarterly cash dividends of $0.10 per share in 2022 and 2023. Dividends on Alcoa Corporation common stock are subject to authorization by the Company's Board of Directors. The Company intends to pay cash dividends on a quarterly basis; however, the payment, amount, and timing of dividends, if any, depends upon matters deemed relevant by the Company's Board of Directors, such as Alcoa Corporation's financial position, results of operations, cash flows, capital requirements, business condition, future prospects, any limitations imposed by law, credit agreements or senior securities, and other factors deemed relevant and appropriate. See Part II Item 7 of this Form 10-K in Management's Discussion and Analysis of Financial Condition and Results of Operations under caption Liquidity and Capital Resources – Financing Activities for more information.

As of February 16, 2024, there were approximately 7,600 holders of record of shares of the Company's common stock. Because many of Alcoa Corporation's shares are held by brokers and other institutions on behalf of stockholders, the Company is unable to estimate the total number of stockholders represented by these holders.

Stock Performance Graph

The following graph compares Alcoa Corporation's cumulative total stockholder return (i.e., stock price change plus reinvestment of dividends) with the cumulative total stockholder returns of (1) the S&P Metals & Mining Select Industry Index, and (2) the S&P MidCap 400® Index. This comparison was based on an initial investment of $100, including the reinvestment of any dividends, on December 31, 2018 through December 31, 2023.

The stock performance information included in this graph is based on historical results and is not necessarily indicative of future stock price performance.



December 31,	2018	2019	2020	2021	2022	2023
Alcoa Corporation	$ 100	$ 81	$ 87	$ 225	$ 173	$ 131
S&P Metals & Mining Select Industry Index	100	115	134	181	206	251
S&P MidCap 400 Index	100	126	143	179	156	181

Issuer Purchases of Equity Securities

Fourth Quarter 2023	Total Number of Shares Purchased	Weighted Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Approximate Dollar Value of Shares that May Yet be Purchased Under the Program[(1)]
October 1 to October 31	—	$ —	—	$ 500,000,000
November 1 to November 30	—	—	—	500,000,000
December 1 to December 31	—	—	—	500,000,000
Total	—	—	—	

(1) On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the July 2022 authorization).

As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the July 2022 authorization. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

Item 6. [RESERVED]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts; dry metric tons in millions (mdmt); metric tons in thousands (kmt))

Forward-Looking Statements

This report contains statements that relate to future events and expectations and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as "aims," "ambition," "anticipates," "believes," "could," "develop," "endeavors," "estimates," "expects," "forecasts," "goal," "intends," "may," "outlook," "potential," "plans," "projects," "reach," "seeks," "sees," "should," "strive," "targets," "will," "working," "would," or other words of similar meaning. All statements by Alcoa Corporation that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements, including, without limitation, forecasts concerning global demand growth for bauxite, alumina, and aluminum, and supply/demand balances; statements, projections or forecasts of future or targeted financial results, or operating performance (including our ability to execute on strategies related to environmental, social and governance matters); statements about strategies, outlook, and business and financial prospects; and statements about capital allocation and return of capital. These statements reflect beliefs and assumptions that are based on Alcoa Corporation's perception of historical trends, current conditions, and expected future developments, as well as other factors that management believes are appropriate in the circumstances.

Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa Corporation believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Such risks and uncertainties include, but are not limited to: (a) the impact of global economic conditions on the aluminum industry and aluminum end-use markets; (b) volatility and declines in aluminum and alumina demand and pricing, including global, regional, and product-specific prices, or significant changes in production costs which are linked to LME or other commodities; (c) the disruption of market-driven balancing of global aluminum supply and demand by non-market forces; (d) competitive and complex conditions in global markets; (e) our ability to obtain, maintain, or renew permits or approvals necessary for our mining operations; (f) rising energy costs and interruptions or uncertainty in energy supplies; (g) unfavorable changes in the cost, quality, or availability of raw materials or other key inputs, or by disruptions in the supply chain; (h) our ability to execute on our strategy to be a lower cost, competitive, and integrated aluminum production business and to realize the anticipated benefits from announced plans, programs, initiatives relating to our portfolio, capital investments, and developing technologies; (i) our ability to integrate and achieve intended results from joint ventures, other strategic alliances, and strategic business transactions; (j) economic, political, and social conditions, including the impact of trade policies and adverse industry publicity; (k) fluctuations in foreign currency exchange rates and interest rates, inflation and other economic factors in the countries in which we operate; (l) changes in tax laws or exposure to additional tax liabilities; (m) global competition within and beyond the aluminum industry; (n) our ability to obtain or maintain adequate insurance coverage; (o) disruptions in the global economy caused by ongoing regional conflicts; (p) legal proceedings, investigations, or changes in foreign and/or U.S. federal, state, or local laws, regulations, or policies; (q) climate change, climate change legislation or regulations, and efforts to reduce emissions and build operational resilience to extreme weather conditions; (r) our ability to achieve our strategies or expectations relating to environmental, social, and governance considerations; (s) claims, costs, and liabilities related to health, safety and environmental laws, regulations, and other requirements in the jurisdictions in which we operate; (t) liabilities resulting from impoundment structures, which could impact the environment or cause exposure to hazardous substances or other damage; (u) our ability to fund capital expenditures; (v) deterioration in our credit profile or increases in interest rates; (w) restrictions on our current and future operations due to our indebtedness; (x) our ability to continue to return capital to our stockholders through the payment of cash dividends and/or the repurchase of our common stock; (y) cyber attacks, security breaches, system failures, software or application vulnerabilities, or other cyber incidents; (z) labor market conditions, union disputes and other employee relations issues; (aa) a decline in the liability discount rate or lower-than-expected investment returns on pension assets; and (bb) the other risk factors discussed in Part 1 Item 1A of this Form 10-K and other reports filed by Alcoa Corporation with the SEC, including those described in this report.

We caution readers not to place undue reliance upon any such forward-looking statements, which speak only as of the date they are made. Alcoa Corporation disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law. Market projections are subject to the risks described above and other risks in the market.

Overview

Our Business

Alcoa Corporation (Alcoa or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Aluminum is a commodity that is traded on the London Metal Exchange (LME) and priced daily. Additionally, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the price of both aluminum and alumina is subject to significant volatility and, therefore, influences the operating results of Alcoa Corporation.

Through direct and indirect ownership, Alcoa Corporation has 27 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

Business Update

During 2023, average alumina and aluminum prices decreased by 6% and 17% respectively, and the cost for energy and raw materials, including carbon products, caustic soda, and other key inputs decreased. The lower costs for energy and raw materials reflect a decline from the elevated costs in 2022, which were driven by regional conflicts, inflation pressures and multiple supply chain disruptions.

Despite the alumina and aluminum pricing challenges, Alcoa made progress on its key objectives during 2023. In December 2023, the Company received mine plan approvals from the Western Australian government for its Huntly and Willowdale bauxite mines, delivering on a near-term objective for the Company. The approvals allow the Company to continue bauxite mining and downstream alumina refining in Western Australia, while enhancing the way it operates to meet evolving requirements and expectations.

Due to its production of commercial grade aluminum, in December 2023, the Company qualified for Section 45X of the Advanced Manufacturing Tax Credit, enacted as part of the Inflation Reduction Act, which improves the profitability of its smelters in the U.S. The Company has also requested revisions to the December 2023 regulations to allow for the inclusion of materials costs in the credit calculation. During 2023, the Company continued the controlled pace for the restart of the Alumar smelter in São Luís, Brazil and improved the operating stability of restarted pots. The Company also improved operational stability across the portfolio, while achieving annual and fourth quarter production records at four smelters in Canada and Norway.

During 2023, the Company targeted improvement of financial results for certain operations. The first announced action was initiated at the Kwinana refinery in the third quarter of 2023, to mitigate the financial impacts of lower bauxite grade and to optimize current operating levels. Further analysis in 2023 also led to the decision in early 2024 to fully curtail the Kwinana refinery by mid-2024. Also, in December 2023, Alcoa began engagement with government stakeholders and workers' representatives of the San Ciprián refinery and smelter regarding the sustained and ongoing financial losses in order to find a long-term solution for the combined operations.

In addition to the actions the Company has taken to date, it has identified additional opportunities to improve profitability in both the near term and medium term, as well as market opportunities with improved alumina and aluminum pricing.

Near term opportunities include savings in 2024 for key raw materials - caustic soda and lime for refining and anode carbon products for smelting – realizable due to favorable contractual negotiations and market pricing, as well as inventory lags. Additionally, in January 2024, the Company announced a productivity and competitiveness program aimed at reducing controllable operating costs across the organization (excluding raw materials, energy, and transportation). Near term opportunities also include expected savings from the Warrick smelter optimization, the Alumar smelter restart completion, and the Kwinana refinery curtailment.

Medium term opportunities are beyond 2024 and 2025 and include the benefit of better bauxite grades in Western Australia and a fully optimized Alumar refinery.

In 2019, the Company announced a five-year strategic portfolio review of its smelting and refining capacity to improve cost positioning or curtail, close, or divest 1.5 million and 4 million metric tons of smelting and refining capacity, respectively. Through January 2024, Alcoa continued to make progress on the portfolio review completing its review of refining capacity and reaching approximately 93 percent of its target for smelting capacity.

Despite a challenging market during 2023, the Company began to see evidence of stabilizing demand in the fourth quarter of 2023. Alcoa saw a significant increase in year-over-year demand for its EcoLum aluminum in 2023, which is part of our Sustana brand, through both increased margins and deliveries while still a relatively small portion of the Company's overall sales volume. The year-over-year volume increase for EcoLum, which is aluminum produced with no more than 4.0 metric tons of carbon dioxide equivalents per metric ton of aluminum produced, was driven mostly by the European market.

While the industry is seeing challenges in the short-term, the Company continues to project strong long-term demand for aluminum, as global decarbonization goals and renewable energy scarcity are expected to positively influence the aluminum industry's demand and supply fundamentals. Due to renewable energy sources and low carbon dioxide intensity in our operations, Alcoa believes that it is well positioned as a supplier of choice, especially in a world that is working to further reduce greenhouse gas emissions.

Australia Mine Plan Approvals

The Company seeks annual approvals from the Western Australian State Government for its rolling five-year mine plans to maintain continued operations at the Huntly and Willowdale bauxite mines. In December 2023, the Western Australian government approved Alcoa's latest five-year mine plan – known as the 2023-2027 Mining and Management Program (MMP) – for its Huntly and Willowdale bauxite mines that will allow the Company to continue bauxite mining and downstream alumina refining in Western Australia. Alcoa is subject to a range of stringent conditions addressing key environmental factors that includes enhanced protections for drinking water, including increased distances from reservoirs, and biodiversity along with accelerated forest rehabilitation. The accelerated forest rehabilitation will require an acceleration of cash spend of approximately $40 over the next three and half years from asset retirement obligations already recorded.

In addition, the Western Australian government granted an exemption that allows Alcoa to continue its mining operations while the Western Australian Environmental Protection Authority (WA EPA) assesses the environmental impact of parts of the MMP, following a third party's referral of the Company's future and existing mine plans in existing mine regions to the WA EPA in the first quarter of 2023.

At the request of the Western Australian government, the Company has committed to provide a bank guarantee for approximately $68 (A$100) demonstrating Alcoa's confidence that its operations will not impair drinking water supplies.

In the second quarter of 2023, Alcoa began mining lower grade bauxite in areas at the Huntly mine as it continued to work through the annual mine approvals process. The reduction in grade increased the use of caustic, energy, and bauxite, and decreased alumina output.

Separately, Alcoa has committed to continuing to work with the Western Australian government to modernize the approvals framework for its two bauxite mines and three alumina refineries in the state. This includes transitioning all proposed new major mining regions to the more contemporary EPA assessment and approvals process. Alcoa started this process in 2020, when it referred its next two proposed mine regions (Myara North and Holyoake) for WA EPA assessment. The Company expects the bauxite quality at Myara North and Holyoake to be more consistent with the historic higher quality at the existing Myara Central. Alcoa continues to work to secure approvals for these new regions and anticipates mining in the new regions no earlier than 2027. Until then, the Company expects bauxite quality similar to recent grades.

San Ciprián Operations

The San Ciprián smelter was curtailed in January 2022, as a result of an agreement with the workers' representatives in December 2021. In February 2023, under the terms of an amended viability agreement, Alcoa agreed to a phased restart of the smelter beginning in January 2024, to operate an initial complement of approximately 6 percent of total pots, to restart all pots by October 1, 2025 and to maintain 75 percent of the annual capacity of 228 kmt from October 1, 2025 until the end of 2026. Long-term economic viability of any ramp up beyond the initial 6 percent of total pots will depend upon the availability of affordable power, which currently does not exist in adequate supply. While the Company has met its commitments to enter into power purchase agreements for the necessary capacity, that capacity has not been fully permitted by the government or built by the power provider, putting an on-time restart at significant risk and causing the smelter to incur substantial operating losses for longer, all of which is rendering the smelter economically unviable. At the refinery, operating losses continue despite the mitigating action taken by the Company in the third quarter of 2022 to curtail capacity to 50 percent.

Since the smelter curtailed in January 2022, the Company has honored its commitments under the viability agreements signed in December 2021 and February 2023, including paying all employees, making capital investments, and restarting pots in 2024. However, current market conditions, including the cost for available energy, do not support an economically viable restart. Further, permitting and development of renewable energy projects, which were a critical component of the restart, have been delayed. The refinery and smelter incurred significant losses in 2023 and prior years which have been funded with internal credit lines that are now nearing their limits, and which the operations have no ability to repay. Based on current economic conditions, the San Ciprián operations are expected to incur substantial losses in 2024 and Alcoa anticipates that available funding will be exhausted in the second half of 2024.

As a result of the extended duration of the adverse economic environment, in December 2023, Alcoa began engagement with government stakeholders and workers' representatives of the San Ciprián refinery and smelter regarding the sustained and ongoing financial losses in order to find a long-term solution for the combined operations. Alcoa is seeking flexibility and support from Spanish stakeholders to identify all potential forms of relief and to work collaboratively on a long-term solution. If stakeholder discussions do not secure the long-term economic viability of the operations, it is expected that available funding will be exhausted in the second half of 2024 and difficult decisions will have to be considered regarding the future of the San Ciprián complex.

Productivity and Competitiveness Program

In January 2024, the Company initiated a productivity and competitiveness program across its global operations and functions. The program is a first step in the Company's objective and includes a target to save approximately 5 percent of operating costs, exclusive of raw materials, energy, and transportation costs which are already under active management and cost control programs. Total savings are expected to approximate $100 on a run rate basis and to be achieved by the first quarter of 2025.

Other Portfolio Actions

Kwinana refinery—On January 8, 2024, Alcoa announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of 2.2 million metric tons and has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. The Company's decision to fully curtail the refinery was made based on a variety of factors, including the refinery's age, scale, operating costs, and current bauxite grades, in addition to current market conditions. The refinery currently has approximately 800 employees and this number will be reduced to approximately 250 in the third quarter of 2024, when alumina production will cease. Certain processes will continue until about the third quarter of 2025, when the employee number will be further reduced to approximately 50.

Warrick smelter—During the fourth quarter 2023, the Company took actions to improve the competitiveness of its Warrick Operations site in Indiana. Alcoa began the restart of one line (54,000 mtpy) that was curtailed in July 2022, and also began the closure of a line (54,000 mtpy) that had not operated since 2016 to allow for future capital investments to improve casting capabilities.

Intalco smelter—The Company announced the closure of the previously curtailed Intalco aluminum smelter in March 2023 after evaluating various options for the asset. The facility has been fully curtailed since 2020.

Capital Returns

In each quarter of 2023, the Board of Directors declared a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

Balance Sheet Actions

On January 17, 2024, the Company amended its Revolving Credit Facility to provide additional flexibility to implement portfolio actions during 2024, by providing for a temporary reduction of the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00, and increasing the maximum addback for cash restructuring charges to Consolidated EBITDA (as defined in the Revolving Credit Facility), in each case for the 2024 fiscal year. In connection with the amendment, Alcoa also agreed to provide collateral for its obligations under the Revolving Credit Facility, with a ratings-based release mechanism that would apply starting in 2025.

In April 2023, the Company purchased group annuity contracts to transfer approximately $235 of pension obligations and assets associated with defined benefit pension plans for approximately 530 Canadian retirees and beneficiaries. As a result, Alcoa recognized a non-cash settlement loss of $21 ($16 after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the second quarter of 2023. See Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for additional information.

Other Matters

In July 2023, the Supreme Court of Spain ratified the Global Settlement Agreement (GSA) with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture of those facilities. Upon completion of the remaining administrative and judicial approvals, the Company made cash payments of $76 to the former employees of the facilities in 2023 in accordance with the GSA. The remaining payments will be made in early 2024.

In the first quarter of 2023, the Company recorded an adjustment related to the Company's Ma'aden Aluminum joint venture for the settlement of a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this adjustment was $41 which is included in Other expenses (income), net on the Statement of Consolidated Operations for year ended December 31, 2023. Alcoa's total share of this dispute of $62 includes $21 that was recorded in the fourth quarter of 2022.

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen).

See the below sections for additional details on the above-described actions.

Basis of Presentation

The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

Results of Operations

The discussion that follows includes a comparison of our results of operations and liquidity and capital resources for the fiscal years ended December 31, 2023 and 2022. For a comparison of changes for the fiscal years ended December 31, 2022 and 2021, refer to Management's Discussion and Analysis of Financial Condition and Results of Operation in Part II Item 7 of Alcoa Corporation's Annual Report on Form 10-K for the year ended December 31, 2022 (filed February 23, 2023).

	For the year ended December 31,	
Statement of Operations	**2023**	**2022**
Sales	$ 10,551	$ 12,451
Cost of goods sold (exclusive of expenses below)	9,813	10,212
Selling, general administrative, and other expenses	226	204
Research and development expenses	39	32
Provision for depreciation, depletion, and amortization	632	617
Restructuring and other charges, net	184	696
Interest expense	107	106
Other expenses (income), net	134	(118)
Total costs and expenses	11,135	11,749
(Loss) income before income taxes	(584)	702
Provision for income taxes	189	664
Net (loss) income	(773)	38
Less: Net (loss) income attributable to noncontrolling interest	(122)	161
Net loss attributable to Alcoa Corporation	$ (651)	$ (123)

Selected Financial Metrics	**2023**	**2022**
Diluted loss per share attributable to Alcoa Corporation common shareholders	$ (3.65)	$ (0.68)
Third-party shipments of alumina (kmt)	8,698	9,169
Third-party shipments of aluminum (kmt)	2,491	2,570
Average realized price per metric ton of alumina	$ 358	$ 384
Average realized price per metric ton of aluminum	$ 2,828	$ 3,457
Average Alumina Price Index (API)[(1)]	$ 343	$ 365
Average London Metal Exchange (LME) 15-day lag[(2)]	$ 2,249	$ 2,726

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price; Platts Metals Daily Alumina PAX Price; and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange.

Annual Comparison

Overview

Net loss attributable to Alcoa Corporation increased $528 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Higher production costs across both segments
- Lower equity investment earnings
- Absence of favorable mark-to-market results on derivative instruments

Partially offset by:

- Lower restructuring charges
- Lower taxes on lower earnings and a lower net charge for valuation allowances on certain deferred tax assets in 2023
- Lower energy costs, primarily in Europe
- Favorable currency impacts

Sales

Sales decreased $1,900 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Lower shipments across both segments
- Lower trading activities
- Decrease in value add product sales

Partially offset by:

- Higher volumes and price from bauxite offtake and supply agreements

Cost of goods sold

Cost of goods sold as a percentage of sales increased 11% primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Higher production costs primarily related to operating certain of the Australian refineries with lower grade bauxite, the partial curtailment of the San Ciprián refinery, and increased maintenance
- Decrease in value add product sales

Partially offset by:

- Lower energy costs
- Favorable currency impacts

Selling, general administrative, and other expenses

Selling, general administrative, and other expenses increased $22 primarily as a result of:

- Higher labor costs and external legal fees

Provision for depreciation, depletion, and amortization

The Provision for depreciation, depletion, and amortization increased $15 primarily as a result of:

- Higher depreciation in Brazil and Australia for mine reclamation and bauxite residue storage asset retirement obligations
- Write offs of assets for projects no longer being pursued

Partially offset by:

- Lower depreciation resulting from the permanent closure of the Intalco aluminum smelter
- Favorable currency impacts

Interest expense

Interest expense increased $1 in comparison to 2022.

Other expenses (income), net

Other expenses (income), net was $134 in 2023, compared with $(118) in 2022. The unfavorable change of $252 was primarily a result of:

- Mark-to-market results on derivative instruments primarily due to the absence of prior year gains driven by elevated power prices in 2022
- Decrease in equity earnings from the Ma'aden aluminum joint venture primarily due to a charge for a utility settlement, lower shipments, and lower aluminum prices
- Higher equity losses from the Ma'aden bauxite and alumina joint venture primarily due to lower alumina prices and higher raw material costs partially offset by higher shipments
- Higher ELYSIS capital contributions, which triggered loss recognition

Partially offset by:

- Lower pension expense primarily due to a decrease in recognized net actuarial losses subsequent to pension annuity transactions
- Favorable currency revaluation impacts driven by the absence of losses recognized in the prior year due to the U.S. dollar strengthening against most currencies, and gains recognized in the current year primarily due to the U.S. dollar weakening against the Brazilian real

Restructuring and other charges, net

In 2023, Restructuring and other charges, net of $184 primarily related to:

- $101 for the permanent closure of the previously curtailed Intalco aluminum smelter
- $53 related to the updated viability agreement for the San Ciprián aluminum smelter
- $21 for the settlement of certain pension benefits
- $15 to record net additional environmental and asset retirement obligation reserves at previously closed locations
- $11 for employee termination and severance costs, primarily related to Kwinana refinery productivity program

Partially offset by:

- $19 for the sale of unused carbon credits at a previously closed location

In 2022, Restructuring and other charges, net of $696 primarily related to:

- $632 for U.S. pension group annuity contracts and lump sum settlements
- $79 for the accrual related to the GSA for the workers of the divested Avilés and La Coruña facilities
- $58 for an asset impairment related to the sale of the Company's interest in the MRN mine
- $29 for the permanent closure of the previously curtailed magnesium smelter in Addy (Washington)

Partially offset by:

- $83 for the reversal of state VAT valuation allowance associated with the restart of the Alumar smelter
- $10 for changes in estimated take-or-pay contract costs at the curtailed Intalco smelter and closed Wenatchee (Washington) smelter
- $9 net reversal of environmental and ARO obligations and previously closed locations

Provision for income taxes

The Provision for income taxes in 2023 was $189 on a loss before taxes of $(584) or (32.4)%. In comparison, the 2022 Provision for income taxes was $664 on income before taxes of $702 or 94.6%.

The decrease in tax expense of $475 was primarily attributable to lower income in the jurisdictions where taxes were paid. Additionally, tax expense in 2023 included a charge of $152 to record a full valuation allowance against the deferred tax assets of Alcoa World Alumina Brasil Ltda. (AWAB), partially offset by the full reversal of the valuation allowance of $58 recorded against the deferred tax assets of the Company's subsidiaries in Iceland. Tax expense in 2022 included charges of $217 to record a full valuation allowance against the deferred tax assets of Alcoa Alumínio (Alumínio) and $30 primarily to write off the deferred tax assets of Alcoa Norway ANS due to a legal entity restructuring, partially offset by a tax benefit of $33 due to changes in the utilization of the tax holiday rate in AWAB.

In December 2023, Alcoa recorded a valuation allowance of $154 against the net deferred tax assets of AWAB, of which $106 related to the balance as of December 31, 2022. The 2023 full valuation allowance was a result of AWAB's three-year cumulative loss position for the period ended December 31, 2023. The majority of AWAB's net deferred tax assets relate to prior net operating losses; the loss carryforwards are not subject to an expiration period. AWAB's profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

The Company's subsidiaries in Iceland had a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believed it was more likely than not that these tax benefits would not be realized. During 2023, after considering all positive and negative evidence, including the expectation that the jurisdiction will remain in a three-year cumulative income position, the Company determined that it is more likely than not that the net deferred tax assets will be realized. Based on this conclusion, the Company reversed the valuation allowance totaling $58 during 2023, generating a non-cash benefit from income taxes.

In 2022, a valuation allowance of $217 was recorded against the net deferred tax assets of Alumínio. Management concluded that it was more likely than not that Alumínio's net deferred tax assets, which consisted primarily of tax loss carryforwards, would not be realized as a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022.

Noncontrolling interest

Net (loss) income attributable to noncontrolling interest was $(122) in 2023 compared with $161 in 2022. These amounts are entirely related to Alumina Limited's 40% ownership interest in several affiliated operating entities.

The change is primarily a result of higher production costs, lower average realized price of alumina, unfavorable mark-to-market results on derivative instruments, higher elimination of intercompany profit in inventory, partially offset by lower energy costs and lower taxes.

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. In January 2023, the financial information provided to the Chief Operating Decision Maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined into the Alumina segment, and accordingly the Company changed its operating segments. Beginning in the first quarter of 2023, the Company's operations consisted of two worldwide reportable segments: Alumina and Aluminum. Segment information for all prior periods presented was updated to reflect the new segment structure.

Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) for each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Segment Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The CODM function regularly reviews the financial information, including Adjusted EBITDA, of these two operating segments to assess performance and allocate resources.

Segment Adjusted EBITDA totaled $734 in 2023 and $2,280 in 2022. The following information provides production, shipments, sales, and Segment Adjusted EBITDA data for each reportable segment, as well as certain realized price and average cost data, for each of the two years in the period ended December 31, 2023.

Alumina

	2023	2022
Bauxite production (mdmt)	41.0	42.1
Third-party bauxite shipments (mdmt)	7.6	3.5
Alumina production (kmt)	10,908	12,544
Third-party alumina shipments (kmt)	8,698	9,169
Intersegment alumina shipments (kmt)	4,125	3,958
Total alumina shipments (kmt)	12,823	13,127
Third-party bauxite sales	$ 484	$ 204
Third-party alumina sales	3,129	3,520
Total segment third-party sales	$ 3,613	$ 3,724
Intersegment alumina sales	1,648	1,708
Total sales	$ 5,261	$ 5,432
Segment Adjusted EBITDA	$ 273	$ 788
Average realized third-party price per metric ton of alumina	$ 358	$ 384
Operating costs	$ 4,524	$ 4,406
Average cost per metric ton of alumina shipped	$ 353	$ 336

In the above table, total alumina shipments include metric tons that were not produced by the Alumina segment. Such alumina was purchased to satisfy certain customer commitments. The Alumina segment bears the risk of loss of the purchased alumina until control of the product has been transferred to this segment's customers. Additionally, operating costs in the table above includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment represents the Company's global bauxite mining operations and worldwide refining system, which processes bauxite into alumina.

The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of the production of alumina is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders.

Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Noncontrolling Interest above).

A portion of this segment's bauxite production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. Bauxite mined is primarily used internally within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite sales to third-parties are conducted on a contract basis.

This segment also includes AWAC's 25.1% ownership interest in the mining and refining joint venture company in Saudi Arabia.

Business Update. The average API of $343 per metric ton trended unfavorably compared to 2022 reflecting a 6% sequential decrease.

During 2023, the Alumina segment experienced higher production costs primarily due to operating certain of the Australian refineries with lower grade bauxite and the partial curtailment of the San Ciprián refinery in 2022, partially offset by lower energy costs compared to 2022.

Alumina production decreased 13% in 2023 compared to 2022 primarily due to the partial curtailment of capacity at the San Ciprián refinery in 2022, partial curtailment of the Kwinana refinery in the first quarter of 2023, and reduced production at the Australia refineries due to lower grade bauxite. Production at the Alumar refinery in 2023 was less than 2022 primarily due to unplanned equipment maintenance.

Australia Mine Plan Approvals

In December 2023, the Western Australian (WA) Government approved Alcoa's latest five-year mine plan – known as the 2023-2027 Mining and Management Program (MMP) – for its Huntly and Willowdale bauxite mines. Alcoa is subject to a range of stringent conditions addressing key environmental factors that includes enhanced protections for drinking water, including increased distances from reservoirs, and biodiversity along with accelerated forest rehabilitation. The accelerated forest rehabilitation will require an acceleration of cash spend of approximately $40 over the next three and half years from asset retirement obligations already recorded.

In addition, the WA Government granted an exemption that allows Alcoa to continue its mining operations while the WA EPA assesses the environmental impact of parts of the MMP, following a third party's referral of the Company's future and existing mine plans in existing mine regions to the WA EPA in the first quarter of 2023.

In the second quarter of 2023, Alcoa began mining lower grade bauxite in areas at the Huntly mine (that supplies the Pinjarra and Kwinana refineries) as it continued to work through the annual mine approvals process. The reduction in grade increases the use of caustic, energy, and bauxite, and decreases alumina output.

Separately, Alcoa has committed to continuing to work with the Western Australian government to modernize the approvals framework for its two bauxite mines and three alumina refineries in the state. This includes transitioning all proposed new major mining regions to the more contemporary EPA assessment and approvals process. Alcoa started this process in 2020, when it referred its next two proposed mine regions (Myara North and Holyoake) for WA EPA assessment. The Company expects the bauxite quality at Myara North and Holyoake to be more consistent with the historic higher quality at the existing Myara Central. Alcoa continues to work to secure approvals for these new regions and anticipates mining in the new regions no earlier than 2027. Until then, the Company expects bauxite quality similar to recent grades.

Kwinana Refinery

On January 8, 2024, the Company announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of 2.2 million metric tons and has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production by decreasing process flows and taking offline one of five digesters in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. While the supply of natural gas improved in April 2023, the Company kept the one digester offline due to the prolonged annual mine plan approvals process.

The full curtailment will include a phased reduction of the workforce from around 800 employees at the start of 2024 to approximately 250 in the third quarter of 2024, when all alumina production will cease. Certain processes will continue until about the third quarter of 2025, when employee numbers will be further reduced to approximately 50.

In the first quarter of 2024, Alcoa will record restructuring charges between $180 and $200 related to the curtailment of the refinery. The charges include approximately $81 for water management costs, $55 for employee related costs, $26 for asset retirement obligations, and $18 of other costs. Alcoa's share of related cash outlays of approximately $115 (which includes existing employee related liabilities and asset retirement obligations) is expected to be spent in 2024 ($80) and 2025 ($35).

The Kwinana refinery recorded a net loss (pretax and noncontrolling interest) of approximately $130 in 2023. The Company expects annual improvements of approximately $70 (pretax and noncontrolling interest) beginning in the third quarter of 2024 as a result of the curtailment.

During the third quarter of 2023, the Company initiated productivity programs across its operations in Australia to mitigate the financial impacts of lower bauxite grade and to optimize current operating levels. The first announced action under the productivity programs was initiated at the Kwinana refinery. In connection with this program, the Company recorded a charge of $6 in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2023 for employee termination and severance costs for approximately 90 employees at the Kwinana refinery, which is expected to be paid through the second quarter of 2024.

Alumar Refinery

During 2023, the Alumar refinery experienced several challenges impacting production levels, maintenance, and production costs. During the fourth quarter of 2023, the Alumar refinery experienced periodic instability in power supply since the nationwide power outage that occurred on August 15, 2023, which caused lower production and other incremental costs to stabilize operations. In early July 2023, the repair of the ship-to-shore conveyance system that failed on March 25, 2023 and other unplanned equipment maintenance was completed at the Alumar refinery. As a result of the conveyance system event, bauxite discharge at the Alumar port was temporarily halted and the refinery operated on existing inventory until initial repairs were completed on April 8, 2023. Bauxite flows to the refinery were fully restored by the end of April 2023. The pier was not damaged and could still berth vessels.

Capacity. The Alumina segment had a base refining capacity of 13,843 kmt with 1,452 kmt of curtailed capacity. In the first quarter of 2023, curtailed capacity increased 438 kmt due to the reduction in production at the Kwinana refinery (see above).

Annual Comparison

Production

Alumina production decreased 13% primarily as a result of:

- The curtailment of capacity at the San Ciprián refinery in the third quarter of 2022
- The partial curtailment at the Kwinana refinery in the first quarter of 2023
- Reduced production at the Australia refineries due to lower grade bauxite
- Unplanned equipment maintenance and periodic instability in power supply at the Alumar refinery in 2023

Third-party sales

Third-party sales decreased $111 primarily as a result of:

- Lower shipments of alumina primarily due to lower production at the Australian refineries, partially offset by increased trading opportunities
- Lower average realized price of $26/ton principally driven by a lower average API
- Unfavorable currency impacts

Partially offset by:

- Higher volumes and price from bauxite offtake and supply agreements primarily caused by the shift to third-party sales due to reduced production at the San Ciprián refinery

Intersegment sales

Intersegment sales decreased $60 primarily as a result of:

- Lower average API on sales to the Aluminum segment

Partially offset by:

- Higher alumina shipments primarily due to the Alumar smelter restart

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $515 primarily as a result of:

- Higher production costs primarily related to operating certain of the Australian refineries with lower grade bauxite, the partial curtailment of the San Ciprián refinery, and increased maintenance
- Lower average realized price of $26/ton principally driven by a lower average API

Partially offset by:

- Lower energy costs, primarily in Europe
- Favorable currency impacts

Forward Look. For 2024, the Company is providing projections for both production and shipments. Alcoa expects alumina production to range between 9.8 and 10.0 million metric tons and alumina shipments to range between 12.7 and 12.9 million metric tons in 2024. The difference between production and shipments reflects trading volumes and externally sourced alumina to fulfill customer contracts due to the curtailment of the Kwinana refinery.

Further, in 2024, the Alumina segment expects to benefit from lower raw material costs.

Aluminum

	2023	2022
Production (kmt)	2,114	2,010
Total shipments (kmt)	2,491	2,570
Third-party aluminum sales	$ 7,045	$ 8,887
Other[(1)]	(120)	(152)
Total segment third-party sales	$ 6,925	$ 8,735
Intersegment sales	15	27
Total sales	$ 6,940	$ 8,762
Segment Adjusted EBITDA	$ 461	$ 1,492
Average realized third-party price per metric ton	$ 2,828	$ 3,457
Operating costs	$ 6,419	$ 7,278
Average cost per metric ton of aluminum shipped	$ 2,577	$ 2,831

(1) Other includes third-party sales of energy, as well as realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum.

In the above table, total aluminum third-party shipments include metric tons that were not produced by the Aluminum segment. Such aluminum was purchased by this segment to satisfy certain customer commitments. The Aluminum segment bears the risk of loss of the purchased aluminum until control of the product has been transferred to this segment's customer. Additionally, Total shipments includes offtake from a joint venture supply agreement.

The average realized third-party price per metric ton of aluminum includes three elements: a) the underlying base metal component, based on quoted prices from the LME; b) the regional premium, which represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and c) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., billet, slab, rod, etc.) or alloy.

Operating costs includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and the (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, virtually all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives related to energy supply contracts.

The energy assets supply power to external customers in Brazil and, to a lesser extent, in the United States, as well as internal customers in the Aluminum (Canadian smelters and Warrick smelter) and Alumina segments (Brazilian refineries).

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in the smelting joint venture company in Saudi Arabia.

Business Update. Aluminum prices decreased sequentially with LME prices on a 15-day lag averaging $2,249 per metric ton in 2023.

Due to its production of commercial grade aluminum, in December 2023, the Company qualified for Section 45X of the Advanced Manufacturing Tax Credit, enacted as part of the Inflation Reduction Act, which improves the profitability of its smelters in the U.S. In the fourth quarter of 2023, the Company recorded a full year benefit in Cost of goods sold totaling $36 related to its Massena West (New York) smelter and its Warrick smelter. The Company has also requested revisions to the December 2023 regulations to allow for the inclusion of materials costs in the credit calculation.

In December 2023, the Norwegian government approved a budget proposal that limits carbon dioxide compensation to be paid in 2024 based on 2023 power purchased and used in production. The Company recorded an adjustment of $18 in the fourth quarter of 2023 to Cost of goods sold to reverse amounts accrued for 2023 credits earned through September 30, 2023, under the prior carbon dioxide compensation program.

During the fourth quarter of 2023, the Company took actions to improve the competitiveness of its Warrick smelter. Alcoa began the restart of one line (54,000 mtpy) that was curtailed in July 2022, and also began the closure of one line (54,000 mtpy) that had not operated since 2016 to allow for future capital investments to improve casting capabilities. Restructuring charges related to the closure totaled $1 in the fourth quarter of 2023 to establish reserves related to demolition obligations. Additionally, Alcoa recorded $1 in Cost of goods sold to write-off the remaining net book value of related inventory.

In the fourth quarter of 2023, Alcoa began the restart of 16,000 mtpy of previously curtailed capacity at the Portland smelter. The smelter had previously been operating at approximately 75 percent of the site's total annual capacity of 197 kmt (Alcoa share) since March 2023 due to instability and challenges related to the production of rodded anodes. The smelter was operating at approximately 79 percent of its capacity at December 31, 2023.

During 2023, the Company continued the controlled pace for the restart of the Alumar smelter in São Luís, Brazil, which was announced in September 2021. The site was operating at approximately 69 percent of the site's total annual capacity of 268 kmt (Alcoa share) as of December 31, 2023. Alcoa incurred restart expenses of $33 during 2023.

In March 2023, Alcoa announced the closure of the Intalco aluminum smelter (279 kmt of previously curtailed capacity). Charges related to the closure totaled $117 in the first quarter of 2023 and included a charge of $16 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $101 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of $50 of asset impairments, $50 to establish reserves related to environmental and demolition obligations, and $1 of severance and employee termination costs. Cash outlays related to the permanent closure of the site are expected to be approximately $85 in 2024 and 2025. The Company spent $2 against the reserves in 2023.

San Ciprián Smelter

The San Ciprián smelter was curtailed in January 2022, as a result of an agreement with the workers' representatives in December 2021. In February 2023, under the terms of an amended viability agreement, Alcoa agreed to a phased restart of the smelter beginning in January 2024, to operate an initial complement of approximately 6 percent of total pots, to restart all pots by October 1, 2025 and to maintain 75 percent of the annual capacity of 228 kmt from October 1, 2025 until the end of 2026. Long-term economic viability of any ramp up beyond the initial 6 percent of total pots will depend upon the availability of affordable power, which currently does not exist in adequate supply. While the Company has met its commitments to enter into power purchase agreements for the necessary capacity, that capacity has not been fully permitted by the government or built by the power provider, putting an on-time restart at significant risk and causing the smelter to incur substantial operating losses for longer, all of which is rendering the smelter economically unviable.

Under the terms of both agreements, the Company is responsible for certain employee obligations from 2022 through 2025. As a result, the Company recorded charges of $53 and $62 in 2023 and 2021, respectively, in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserves. Cash payments were $38 and $26 in 2023 and 2022, respectively. The remaining reserves of $48 at December 31, 2023 relate to employee commitments in 2024 and 2025. Additionally, in connection with the agreements, the Company committed to capital improvements of $146 and smelter restart costs of $35, and incurred capital improvement expenditures of $28 during 2023. At December 31, 2023, the Company has restricted cash of $91 to be made available for the remaining capital improvements of $118 and smelter restart costs of $35.

Capacity. At December 31, 2023, the Aluminum segment had 465 kmt of idle smelting capacity on a base capacity of 2,645 kmt, a decrease from 2022 of 403 kmt in idle capacity primarily due to the permanent closure of the previously curtailed Intalco smelter, closure of one line at the Warrick smelter, and the Alumar and Warrick smelter restarts, partially offset by the partial curtailment of the Portland smelter (see above). The Company updated nameplate capacity of certain facilities to reflect capital expenditures, upgrades, or other investments which expanded production capacity, and productivity initiatives and process and supply changes that improved capacity in a sustained manner.

Annual Comparison

Production

Production increased 5% primarily as a result of:

- Alumar smelter restart

Partially offset by:

- Partial curtailment of the Lista (Norway) smelter in August 2022

Third-party sales

Third-party sales decreased $1,810 primarily as a result of:

- Lower average realized price of $629/ton driven by a lower average LME (on a 15-day lag) and lower regional premiums
- Lower trading activities
- Lower shipments primarily due to the absence of sales of accumulated inventory in 2022 from the San Ciprián smelter due to the strike in 2021 and partial curtailment of the Lista smelter
- Decrease in value add product sales due to overall lower market demand and product premiums in both Europe and North America
- Lower Warrick power plant energy sales

Partially offset by:

- Higher shipments due to the Alumar smelter restart and improved availability of railcars or vessels for outbound product from North American smelters

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $1,031 primarily as a result of:

- Lower average realized price based on LME (on a 15-day lag) and lower regional premiums
- Lower Warrick power plant energy sales
- Decrease in value add product sales
- Higher production costs primarily associated with higher labor costs and increased maintenance costs

Partially offset by:

- Favorable raw material costs primarily on lower average alumina input costs
- Lower energy costs, primarily in Europe
- Favorable currency impacts

Forward Look. For 2024, the Company is providing projections for both production and shipments. The Aluminum segment is expected to produce between 2.2 to 2.3 million metric tons of aluminum, an increase from 2023 due to smelter restarts. In 2024, aluminum shipments are expected to be between 2.5 and 2.6 million metric tons, consistent with 2023, as increased shipments from smelter restarts are offset by lower trading volumes.

Additionally, the Company engages in aluminum commodity trading activity when favorable market conditions allow. Availability of trading opportunities in 2024 may impact the Company's shipment projection.

Further, in 2024, the Aluminum segment expects benefits from lower raw material and energy costs, primarily in Brazil and Norway, to be partially offset by lower value add aluminum product sales.

Reconciliations of Certain Segment Information

Reconciliation of Total Segment Third-Party Sales to Consolidated Sales

	2023	2022
Alumina	$ 3,613	$ 3,724
Aluminum	6,925	8,735
Total segment third-party sales	$ 10,538	$ 12,459
Other	13	(8)
Consolidated sales	$ 10,551	$ 12,451

Reconciliation of Total Segment Operating Costs to Consolidated Cost of Goods Sold

	2023	2022
Alumina	$ 4,524	$ 4,406
Aluminum	6,419	7,278
Other[1]	1,006	721
Total segment operating costs	11,949	12,405
Eliminations[2]	(1,670)	(1,874)
Provision for depreciation, depletion, and amortization[3]	(610)	(595)
Other[4]	144	276
Consolidated cost of goods sold	$ 9,813	$ 10,212

(1) Other largely relates to the Aluminum segment's energy product division and the Alumina segment's purchases of bauxite from offtake or other supply agreements that is sold to third-parties.

(2) Represents the elimination of Cost of goods sold related to intersegment sales between Alumina and Aluminum.

(3) Provision for depreciation, depletion, and amortization is included in the operating costs used to calculate average cost for each of the alumina and aluminum product divisions (see Alumina and Aluminum above). However, for financial reporting purposes, Provision for depreciation, depletion, and amortization is presented as a separate line item on Alcoa Corporation's Statement of Consolidated Operations.

(4) Other includes costs related to Transformation, and certain other items that are not included in the operating costs of segments (see footnotes 1 and 3 in the Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation below).

Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net Loss Attributable to Alcoa Corporation

	2023	2022
Total Segment Adjusted EBITDA	$ 734	$ 2,280
Unallocated amounts:		
Transformation[1]	(80)	(66)
Intersegment eliminations	7	138
Corporate expenses[2]	(133)	(128)
Provision for depreciation, depletion, and amortization	(632)	(617)
Restructuring and other charges, net	(184)	(696)
Interest expense	(107)	(106)
Other (expenses) income, net	(134)	118
Other[3]	(55)	(221)
Consolidated (loss) income before income taxes	(584)	702
Provision for income taxes	(189)	(664)
Net loss (income) attributable to noncontrolling interest	122	(161)
Consolidated net loss attributable to Alcoa Corporation	$ (651)	$ (123)

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

Environmental Matters

See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies—Environmental Matters.

Liquidity and Capital Resources

Alcoa Corporation's primary future cash flows are centered on operating activities, particularly working capital, as well as capital expenditures and capital returns. Alcoa's ability to fund its cash needs depends on the Company's ongoing ability to generate and raise cash in the future.

In 2023, the Company generated lower profitability due to lower prices for aluminum and alumina and higher production costs, partially offset by lower restructuring charges. Despite the challenging year, the Company maintained a strong cash position and successfully completed the following actions:

- Entered into a Receivables Purchase Agreement facility and sold gross customer receivables of $591, and reinvested collections of $477 from previously sold receivables, resulting in net cash proceeds from the financial institution of $114;
- Funded $531 in capital expenditures to sustain and grow our operations;
- Entered into a revolving credit facility for $250 (available to be drawn in Japanese yen) (Japanese Yen Revolving Credit Facility);
- Purchased group annuity contracts to transfer the obligation to pay remaining retirement benefits for approximately 530 retirees and beneficiaries from certain Canadian defined benefit pension plans. Transferred approximately $235 in both plan obligations and plan assets;
- Returned capital to stockholders of $72. In each quarter of 2023, the Board of Directors declared and paid a quarterly cash dividend of $0.10 per share of the Company's common stock; and,
- Entered into multiple agreements with a financial institution for the sale and subsequent repurchase of aluminum inventory resulting in net short-term borrowings of $56 in 2023.

In January 2024, the Company initiated the following actions:

- Amended its Revolving Credit Facility to provide additional flexibility to implement portfolio actions during 2024, by providing for a temporary reduction of the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00, and increasing the maximum addback for cash restructuring charges to Consolidated EBITDA (as defined in the Revolving Credit Facility), in each case for the 2024 fiscal year. In connection with the amendment, Alcoa also agreed to provide collateral for its obligations under the Revolving Credit Facility, with a ratings-based release mechanism that would apply starting in 2025.
- Initiated a productivity and competitiveness program across its global operations and functions. The program is a first step in the Company's objective to improve competitiveness and includes a target to save approximately 5 percent of operating costs, exclusive of raw materials, energy and transportation costs which are already under active management and cost control programs. Total savings are expected to approximate $100 on a run rate basis and to be achieved by the first quarter of 2025.
- Initiated several operational changes to improve profitability, including engaging with government stakeholders and workers' representatives to discuss ongoing financial difficulties at the San Ciprián operations, optimizing the Warrick smelter operations, completing the Alumar restart, and announcing the curtailment of the Kwinana refinery.

Management believes that the Company's cash on hand, projected cash flows, and liquidity options, combined with its strategic actions, will be adequate to fund its short-term (at least 12 months) and long-term operating and investing needs. On January 24, 2024, ANHBV drew $201 against the Japanese Yen Revolving Credit Facility to fund working capital requirements and reductions to date in the Company's Cash and cash equivalents. The Company plans to opportunistically access liquidity sources to support its cash position and ongoing cash needs. Further, the Company has flexibility related to its use of cash; the Company has no significant debt maturities until 2027 and no significant cash contribution requirements related to its pension plan obligations (refer to Material Cash Requirements, below, for more information).

Although management believes that Alcoa's projected cash flows and other liquidity options will provide adequate resources to fund operating and investing needs, the Company's access to, and the availability of, financing on acceptable terms in the future will be affected by many factors, including: (i) Alcoa Corporation's credit rating; (ii) the liquidity of the overall capital markets; (iii) the current state of the economy and commodity markets, and (iv) short- and long-term debt ratings. There can be no assurances that the Company will continue to have access to capital markets on terms acceptable to Alcoa Corporation.

Changes in market conditions caused by global or macroeconomic events, such as ongoing regional conflicts, high inflation, and changing global monetary policies could have adverse effects on Alcoa's ability to obtain additional financing and cost of borrowing. Inability to generate sufficient earnings could impact the Company's ability to meet the financial covenants in our outstanding debt and revolving credit facility agreements and limit our ability to access these sources of liquidity or refinance or renegotiate our outstanding debt or credit agreements on terms acceptable to the Company. Additionally, the impact on market conditions from such events could adversely affect the liquidity of Alcoa's customers, suppliers, and joint venture partners and equity method investments, which could negatively impact the collectability of outstanding receivables and our cash flows.

At December 31, 2023, the Company's cash and cash equivalents were $944, of which $801 was held outside the United States. Alcoa Corporation has a number of commitments and obligations related to the Company's operations in various foreign jurisdictions, resulting in the need for cash outside the United States. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations, which may influence future repatriation decisions. See Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for additional information related to undistributed net earnings.

Cash from Operations

Cash provided from operations was $91 in 2023 compared with $822 in 2022. Notable changes to the sources and (uses) of cash include:

- ($1,323) lower net income, excluding the impacts from restructuring charges, primarily due to lower aluminum pricing, higher production costs, partially offset by lower energy costs**;**
- $690 in certain working capital accounts, primarily an increase in inventories in 2022 on higher raw material prices and a decrease in inventories in 2023 primarily on lower raw material prices; and,
- $216 less income taxes paid on prior year earnings, as well as on lower current year earnings in the jurisdictions where taxes are paid.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S to the Consolidated Financial Statements in Part II Item 8 of this Form 10-K. Upon payment, AofA recorded a noncurrent prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2023, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a noncurrent liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. At December 31, 2023 and December 31, 2022, the noncurrent liability resulting from the cumulative interest deductions was approximately $199 (A$293) and $174 (A$260), respectively.

The Company utilizes a Receivables Purchase Agreement facility to sell up to $130 of certain receivables through a special purpose entity (SPE) to a financial institution on a revolving basis. Alcoa Corporation guarantees the performance obligations of the Company subsidiaries, and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At December 31, 2023, the SPE held unsold customer receivables of $104 pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In 2023, the Company sold gross customer receivables of $591, and reinvested collections of $477 from previously sold receivables, resulting in net cash proceeds from the financial institution of $114. Cash collections from previously sold receivables yet to be reinvested of $99 were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of December 31, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows. See Part II Item 8 of this Form 10-K in Note I to the Consolidated Financial Statements for additional information related to this facility.

Financing Activities

Cash provided from financing activities was $57 in 2023 compared with cash used for financing activities of $768 in 2022.

The source of cash in 2023 was primarily $158 of net contributions from Alumina Limited (see Noncontrolling interest above) and $55 primarily related to the net issuance of short-term borrowings (see below), partially offset by $72 of dividends paid, $52 in financial contributions primarily related to the sale of the Warrick Rolling Mill, and $34 for payments related to tax withholding on stock-based compensation awards.

The use of cash in 2022 was primarily $165 of net cash paid to Alumina Limited, $500 for the repurchase of common stock, and $72 of dividends paid.

Credit Facilities.

Revolving Credit Facility

On June 27, 2022, Alcoa Corporation and Alcoa Nederland Holding B.V. (ANHBV), a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provided additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which would have continued so long as certain credit ratings were maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increased following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed .60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's Investor Service (Moody's) or Standard and Poor's Global Ratings (S&P), and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implemented a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade).

In addition to the financial covenants, the Revolving Credit Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Revolving Credit Facility also contains customary events of default, including failure to make payments under the Revolving Credit Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the Revolving Credit Facility. There were no borrowings outstanding at December 31, 2023 and 2022, and no amounts were borrowed during 2023 and 2022 under the Revolving Credit Facility.

On January 17, 2024, Alcoa Corporation, ANHBV, and certain subsidiaries of the Company entered into Amendment No. 1 (Amendment No. 1) to the Revolving Credit Facility (Amended Revolving Credit Facility). The Amended Revolving Credit Facility provides additional flexibility to the Company and the Borrower by temporarily (i) reducing the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00 and (ii) providing for a maximum addback for cash restructuring charges in Consolidated EBITDA (as defined in the Revolving Credit Facility) of $450, in each case for the 2024 fiscal year. As of January 1, 2025, the minimum interest coverage ratio requirement will revert to 4.00 to 1.00 and the maximum addback for cash restructuring charges in Consolidated EBITDA will revert to 15% of Consolidated EBITDA. The requirement that the Company maintain a debt to capitalization ratio not to exceed .60 to 1.00 was not changed by Amendment No. 1. In connection with Amendment No. 1, the Company also agreed to provide collateral for its obligations under the Amended Revolving Credit Facility, which will require it to execute all security documents to re-secure collateral under the Amended Revolving Credit Facility by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. The collateral would be released if, on or after January 1, 2025, the Company or the Borrower (as applicable) (i) has at least two of the following three designated ratings: (x) Baa3 from Moody's, (y) BBB- from S&P and (z) BBB- from Fitch Ratings and (ii) does not have any designated rating lower than: (x) Ba1 from Moody's, (y) BB+ from S&P and (z) BB+ from Fitch Ratings.

The Amended Revolving Credit Facility contains customary affirmative covenants, negative covenants, and events of default substantially comparable to the Revolving Credit Facility (other than those that are described above and other minor changes). The representations, warranties and covenants contained in the Amended Revolving Credit Facility were made only for purposes of Amendment No. 1 and as of specific dates and were solely for the benefit of the parties to the Amended Revolving Credit Facility.

Japanese Yen Revolving Credit Facility

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen) (the Japanese Yen Revolving Credit Facility). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility included covenants that are substantially the same as those included in the Revolving Credit Facility.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the facility. There were no borrowings outstanding at December 31, 2023 and $10 was borrowed and subsequently repaid in 2023.

On January 17, 2024, Alcoa Corporation and ANHBV, entered into Amendment No. 1 to the Japanese Yen Revolving Credit Facility (Amended Japanese Yen Revolving Credit Facility) which contains changes that are substantially the same as those included in the Amended Revolving Credit Facility (as described above). Also in connection with this amendment, the Company agreed to provide collateral for its obligations with the same conditions as the Amended Revolving Credit Facility. On January 24, 2024, ANHBV drew $201 against this facility.

The Company may draw on these facilities periodically to ensure working capital needs are met. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to these facilities.

Guarantees of Third Parties. As of December 31, 2023 and 2022, the Company had no outstanding potential future payments for guarantees issued on behalf of a third-party.

Bank Guarantees and Letters of Credit. Alcoa Corporation and its subsidiaries have outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2024 and 2025, was $294 (includes $86 issued under a standby letter of credit agreement —see below) at December 31, 2023. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $13 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $8 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In December 2023, AofA committed to provide a bank guarantee for approximately $68 (A$100) which demonstrates Alcoa's confidence that its operations will not impair drinking water supplies.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (amended in August 2018, May 2019, May 2021, June 2022, and January 2024), with three financial institutions. The agreement provides for a $200 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's Revolving Credit Facility. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt. As of December 31, 2023, letters of credit aggregating $86 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2024 and 2028, was $190 at December 31, 2023. Additionally, ParentCo has outstanding surety bonds related to the Company of $8 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $5 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

Debt. As of December 31, 2023, Alcoa Corporation had three outstanding series of Notes maturing at varying times. A summary of the Notes and other long-term debt is shown below. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt.

December 31,	2023	2022
5.500% Notes, due 2027	$ 750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	82	84
Unamortized discounts and deferred financing costs	(21)	(27)
Total	1,811	1,807
Less: amount due within one year	79	1
Long-term debt, less amount due within one year	$ 1,732	$ 1,806

During 2023, the Company entered into multiple agreements with a financial institution for the sale and subsequent repurchase of aluminum inventory. The Company did not record sales upon each shipment of inventory, and the net cash received of $56 was recorded in Short-term borrowings within Other current liabilities on the Consolidated Balance Sheet.

During 2023, the Company recorded borrowings of $117 and repurchased $61 of inventory related to these agreements. The cash received and subsequently paid under the inventory repurchase agreements is included in Cash provided from financing activities on the Statement of Consolidated Cash Flows in 2023.

Ratings. Alcoa Corporation's cost of borrowing and ability to access the capital markets are affected not only by market conditions but also by the short- and long-term debt ratings assigned to Alcoa Corporation's debt by the major credit rating agencies.

On January 12, 2024, Moody's affirmed a Baa3 (investment grade) rating of ANHBV's long-term debt and revised the outlook from stable to negative.

On December 20, 2023, Fitch Ratings affirmed a BBB- rating for Alcoa Corporation's long-term debt and revised the outlook from stable to negative.

On September 13, 2023, S&P affirmed the BB+ rating of Alcoa's long-term debt and affirmed the current outlook as positive.

Ratings are not a recommendation to buy or hold any of our securities and they may be revised or revoked at any time at the sole discretion of the rating organization.

Dividend. In each quarter of 2023, the Board of Directors declared and paid a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Common Stock Repurchase Program.

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the July 2022 authorization). Prior to this authorization, $150 remained available for common stock repurchases at the end of the second quarter of 2022 from the prior authorization in October 2021 of $500 which was fully exhausted in 2022 with the Company's repurchase activity (see below).

No shares were repurchased in 2023.

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500; the shares were immediately retired.

In 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired.

As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the July 2022 authorization. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

Investing Activities

Cash used for investing activities was $585 in 2023 compared to cash used for investing activities of $495 in 2022.

In 2023, the use of cash was primarily attributable to $531 related to capital expenditures and $70 of cash contributions to the ELYSIS™ partnership.

In 2022, the use of cash was primarily attributable to $480 related to capital expenditures and $32 of cash contributions to the ELYSIS partnership, partially offset by the sale of the Company's interest in the MRN mine of $10.

In 2024, Alcoa expects capital expenditures of approximately $550 related to sustaining capital projects and return-seeking capital projects. The timing and amount of capital expenditures may fluctuate as a result of the Company's normal operations.

Material Cash Requirements

As discussed above, the Company relies primarily on operating cash flows to fund its cash commitments and management believes its cash on hand, projected cash flows, and liquidity options combined with its strategic actions, will be adequate to fund its short-term (at least 12 months) and long-term operating and investing needs. On January 24, 2024, ANHBV drew $201 against the Japanese Yen Revolving Credit Facility to fund working capital requirements and reductions to date in the Company's Cash and cash equivalents. The Company plans to opportunistically access liquidity sources to support its cash position and ongoing cash needs.

The Company has committed cash outflows related to pension and postretirement benefit obligations, asset retirement obligations, environmental remediation, and operating lease agreements. See Part II Item 8 of this Form 10-K in Notes O, R, S, and T, respectively, to the Consolidated Financial Statements for additional information. As of December 31, 2023, a summary of Alcoa Corporation's outstanding material cash requirements are as follows:

	Total	2024	2025-2026	2027-2028	Thereafter
Operating activities:					
Energy-related purchase obligations	$ 13,997	$ 1,420	$ 2,542	$ 2,298	$ 7,737
Raw material purchase obligations	4,720	1,874	884	500	1,462
Other purchase obligations	1,429	658	258	185	328
Interest related to debt	422	98	185	129	10
Financing activities:					
Long-term debt and Short-term borrowings	1,888	135	2	1,250	501
Totals	$ 22,456	$ 4,185	$ 3,871	$ 4,362	$ 10,038

Purchase obligations—Energy-related purchase obligations consist primarily of electricity and natural gas contracts with expiration dates ranging from 1 year to 24 years. Raw material obligations consist mostly of bauxite (relates to AWAC's bauxite mine interests in Guinea and Brazil), caustic soda, lime, alumina, aluminum fluoride, calcined petroleum coke, anodes, and cathode blocks with expiration dates ranging from less than 1 year to 11 years. Other purchase obligations consist principally of freight for bauxite and alumina with expiration dates ranging from 1 to 11 years. Many of these purchase obligations contain variable pricing components, and, as a result, actual cash payments may differ from the estimates provided in the preceding table. In accordance with the terms of several of these supply contracts, obligations may be reduced as a result of an interruption to operations, such as a plant curtailment or a force majeure event.

Interest related to total debt—Interest is based on interest rates in effect as of December 31, 2023 and is calculated on debt with maturities that extend to 2029.

Long-term debt and Short-term borrowings—Total debt amounts in the preceding table represent the principal amounts of all outstanding long-term debt and Short-term borrowings, which have maturities that extend to 2029.

Critical Accounting Policies and Estimates

The preparation of the Company's Consolidated Financial Statements in accordance with GAAP requires management to make certain estimates based on judgments and assumptions regarding uncertainties that affect the amounts reported in the Consolidated Financial Statements and disclosed in the Notes to the Consolidated Financial Statements. Areas that require such estimates include the review of properties, plants, and equipment and goodwill for impairment, and accounting for each of the following: asset retirement and environmental obligations; litigation matters; pension plans and other postretirement benefits obligations; derivatives and hedging activities; and income taxes.

Management uses historical experience and all available information to make these estimates; actual results may differ from those used to prepare the Company's Consolidated Financial Statements at any given time. Despite these inherent limitations, management believes that the amounts recorded in the financial statements related to these items are based on its best estimates and judgments using all relevant information available at the time.

A summary of the Company's significant accounting policies is included in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements.

Properties, Plants, and Equipment. Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable, including in the period when assets have met the criteria to be classified as held for sale. The model used to determine recoverability of an asset or asset group would leverage the model that management uses for planning and strategic review of the entire business, including related inputs and assumptions. Management's impairment assessment process is described in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements. Refer to Part II Item 8 of this Form 10-K in Note K to the Consolidated Financial Statements for more information regarding properties, plants, and equipment.

Goodwill. Goodwill is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. A significant amount of judgment is involved in determining if an indicator of impairment has occurred. Such indicators may include, among others, deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, or a trend of negative or declining cash flows over multiple periods. The fair value that could be realized in an actual transaction may differ from that used to evaluate goodwill for impairment.

Under the qualitative impairment test, management considers a number of factors in its assessment, such as: general economic conditions, equity and credit markets, industry and market conditions, and earnings and cash flow trends.

Under the quantitative impairment test, management uses a discounted cash flow (DCF) model to estimate the current fair value of its reporting units. A number of significant assumptions and estimates are involved in the application of the DCF model to forecast operating cash flows, including markets and market share, sales volumes and prices, production costs, production capability, tax rates, capital spending, discount rate, and working capital changes. The model used for the goodwill impairment test leverages the model, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Management will test goodwill on a qualitative or quantitative basis. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's impairment assessment process.

As a result of the January 2023 segment change, the Company reviewed the recoverability of the carrying value of goodwill of its Alumina reporting unit in the first quarter of 2023. The estimated fair value of the Alumina reporting unit substantially exceeded the reporting unit's carrying value, resulting in no impairment.

Management performed a quantitative assessment for the Alumina reporting unit in the fourth quarter of 2023. As a result of the assessment, the estimated fair value of the Alumina reporting unit was substantially in excess of its carrying value, resulting in no impairment.

The impact on the estimated fair values of an increase in the discount rate of 1% would not result in a change in the conclusions reached for the impairment assessments performed in 2023, the estimated fair values would remain in excess of carrying values.

Further, in all years presented, there have been no triggering events that necessitated an impairment test for the Alumina reporting unit, except for the segment change in the first quarter of 2023 described above. Refer to Part II Item 8 of this Form 10-K in Note L to the Consolidated Financial Statements for more information regarding goodwill.

Asset Retirement and Environmental Obligations. Estimates are used to record environmental remediation and asset retirement obligation (ARO) reserves based on the best available information at the time of recognition. Several assumptions are used to estimate the costs required to demolish, environmentally remediate, reclaim, or restore the site, including:

- Engineering designs for construction or closure;
- Materials and services costs;
- Volume of regulated materials to be removed (asbestos, PCB fluids, spent potlining);
- Disposition of demolition materials;
- Extent of contamination based on available data;
- Scope of remediation to mitigate human health or environmental risks and/or to meet regulatory requirements;
- Timing to complete construction or closure; and,
- Commercial availability and pricing for off-site treatment or disposal applications.

As the site is demolished, remediated, reclaimed, or restored, the assumptions and estimates used to record the reserve may change to account for:

- Actual site conditions that require more or less remediation or reclamation;
- Legislation that becomes more or less stringent;
- Regulative authorities requiring updates to final design prior to completion;
- Alternative disposal methods for demolition waste;
- Technological changes which allow remediation to be more efficient;
- Market factors; and,
- Variances in work that is atypical from prior work experience.

Changes to the estimates may result in material changes to the reserve that may require an increase to or a reversal of a previously recorded reserve. Refer to Part II Item 8 of this Form 10-K in Note R and Note S to the Consolidated Financial Statements for more information regarding current reserves.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. Management determines the likelihood of an unfavorable outcome based on many factors such as, among others, the nature of the matter, available defenses and case strategy, progress of the matter, views and opinions of legal counsel and other advisors, applicability and success of appeals processes, and the outcome of similar historical matters. Once an unfavorable outcome is deemed probable, management weighs the probability of estimated losses, and the most reasonable loss estimate is recorded. If an unfavorable outcome of a matter is deemed to be reasonably possible, then the matter is disclosed, and no liability is recorded. With respect to unasserted claims or assessments, management must first determine that the probability that an assertion will be made is likely, then, a determination as to the likelihood of an unfavorable outcome and the ability to reasonably estimate the potential loss is made. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's litigation matters policy.

Pension and Other Postretirement Benefits. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used. The impact of a change in the weighted average discount rate of ¼ of 1% would be approximately $70 on combined pension and other postretirement liabilities and immaterial to pretax earnings in the following year.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment. A change in the assumption for the weighted average expected long-term rate of return on plan assets of ¼ of 1% would impact pretax earnings by approximately $6 for 2024.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

Refer to Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. To calculate the fair value of certain derivatives, management uses discounted cash flow (DCF) and other simulation models that consider the following inputs and assumptions: quoted market prices (e.g., aluminum prices on the 10-year London Metal Exchange (LME) forward curve and energy prices), information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts, aluminum and energy prices beyond those quoted in the market, and the estimated credit spread between Alcoa and the counterparty. The quoted market prices used in the valuation models are dependent on market fundamentals, the relationship between supply and demand at any point in time, seasonal conditions, inventories, and interest rates. For periods beyond the term of quoted market prices, management estimates the price of aluminum by extrapolating the 10-year LME forward curve and estimates the Midwest premium based on recent transactions.

Changes in estimates can have a material impact on the derivative valuations. Refer to Part II Item 8 of this Form 10-K in Note P to the Consolidated Financial Statements for more information regarding derivatives and hedging and related activity during the period.

Income Taxes. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income, including income available in carryback periods, future reversals of taxable temporary differences, projections of taxable income, and income from tax planning strategies. Positive evidence includes factors such as a history of profitable operations, projections of future profitability within the carryforward period, including from tax planning strategies, and Alcoa Corporation's experience with similar operations. Existing favorable contracts and the ability to sell products into established markets are additional positive evidence. Negative evidence includes items such as cumulative losses, projections of future losses, or carryforward periods that are not long enough to allow for the utilization of a deferred tax asset based on existing projections of income. In certain jurisdictions, deferred tax assets related to cumulative losses may exist without a valuation allowance where in management's judgment the weight of the positive evidence more than offsets the negative evidence of the cumulative losses. Upon changes in facts and circumstances, management may conclude that deferred tax assets for which no valuation allowance is currently recorded may not be realized, resulting in a future charge to establish a valuation allowance. Financial information utilized in this analysis leverages the same financial information, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired, or the appropriate taxing authority has completed their examination even though the statute of limitations remains open.

Changes in estimates can have a material impact on the deferred taxes and uncertain tax positions. Refer to Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for more information regarding income taxes and deferred tax assets and related activity during the period.

Related Party Transactions

Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which Alcoa Corporation retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

Recently Adopted Accounting Guidance

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Adopted Accounting Guidance.

Recently Issued Accounting Guidance

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Issued Accounting Guidance.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

See Part II Item 8 of this Form 10-K in Note P to the Consolidated Financial Statements under caption Derivatives.

Item 8. Financial Statements and Supplementary Data.

Management's Reports to Alcoa Corporation Stockholders

Management's Report on Financial Statements and Practices

The accompanying Consolidated Financial Statements of Alcoa Corporation and its subsidiaries (the Company) were prepared by management, which is responsible for their integrity and objectivity, in accordance with accounting principles generally accepted in the United States of America (GAAP) and include amounts that are based on management's best judgments and estimates. The other financial information included in the Company's Annual Report on Form 10-K for the year ended December 31, 2023 is consistent with that in the Consolidated Financial Statements.

Management recognizes its responsibility for conducting the Company's affairs according to the highest standards of personal and corporate conduct. This responsibility is characterized and reflected in key policy statements issued from time to time regarding, among other things, conduct of its business activities within the laws of the host countries in which the Company operates and potentially conflicting outside business interests of its employees. The Company maintains a systematic program to assess compliance with these policies.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) of the U.S. Securities Exchange Act of 1934 (as amended), for the Company. The Company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company, (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company, and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management conducted an assessment to evaluate the effectiveness of the Company's internal control over financial reporting as of December 31, 2023 using the criteria in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that the Company maintained effective internal control over financial reporting as of December 31, 2023.

PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the Company's financial statements included in this Annual Report on Form 10-K for the year ended December 31, 2023, has audited the Company's internal control over financial reporting as of December 31, 2023 and has issued an attestation report, which is included herein.

/s/ William F. Oplinger
William F. Oplinger
President and Chief Executive Officer

/s/ Molly S. Beerman
Molly S. Beerman
Executive Vice President and Chief Financial Officer

February 21, 2024

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Alcoa Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Alcoa Corporation and its subsidiaries (the "Company") as of December 31, 2023 and 2022, and the related consolidated statements of operations, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2023, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Asset Retirement Obligations – Mine Reclamation and Closure of Bauxite Residue Areas

As described in Notes B and R to the consolidated financial statements, the Company recognizes asset retirement obligations (AROs) related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. For the bauxite mines and alumina refineries, the AROs consist primarily of costs associated with mine reclamation and closure of bauxite residue areas, respectively. The fair values of the AROs are recorded on a discounted basis at the time the obligation is incurred and accreted over time for the change in present value; related accretion is recorded as a component of cost of goods sold. Additionally, the Company capitalizes asset retirement costs by increasing the carrying amount of the related long-lived assets and depreciating the assets over their remaining useful life. As disclosed by management, estimates are used to record AROs based on the best available information at the time of recognition. Several assumptions are used to estimate the cost required for reclamation and restoration of the site including: engineering designs for construction or closure, materials and services costs, regulatory requirements, and timing to complete construction or closure. As of December 31, 2023, the Company had $989 million in AROs, of which $328 million related to mine reclamation and $437 million related to the closure of bauxite residue areas. During 2023, the Company incurred liabilities related to mine reclamation and closure of bauxite residue areas, consisting of $97 million for changes in closure estimates of operating bauxite residue areas, $87 million for new mining areas opened during the year and higher estimated mine reclamation costs, and $10 million related to changes in closure estimates of non-operating bauxite residue areas.

The principal considerations for our determination that performing procedures relating to the AROs for mine reclamation and closure of bauxite residue areas is a critical audit matter are (i) the significant judgment by management in developing the fair value estimate of the AROs; (ii) a high degree of auditor judgement, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the engineering designs for construction or closure, materials and services costs, regulatory requirements, and timing to complete construction or closure; (collectively "management's assumptions"); and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's accounting for AROs, including controls over management's methodology, assumptions, and valuation of the AROs for mine reclamation and closure of bauxite residue areas. These procedures also included, among others, (i) testing management's process for developing the fair value estimate of the AROs for mine reclamation and closure of bauxite residue areas; (ii) evaluating the appropriateness of the methodologies used by management, (iii) testing the completeness and accuracy of underlying data used in the methodologies, and (iv) evaluating the reasonableness of management's assumptions described above. Evaluating management's assumptions involved (i) evaluating the cost of rehabilitation and restoration of a site, including comparing the cost assumptions used, on a sample basis, to comparable data from external parties and internal source data; (ii) evaluating the consistency of management's assumptions across mine and bauxite residue areas, as applicable; (iii) the identification of circumstances which may require a modification to a previous estimate; (iv) physically observing the progress of the mine reclamation; (vi) evaluating management's application of and compliance with regulatory requirements; and (vii) evaluating whether the assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in (i) evaluating the appropriateness of the methodology used by management for closure of bauxite residue areas; (ii) evaluating the reasonableness of the application of and compliance with regulatory requirements for closure of bauxite residue areas; and (iii) evaluating the reasonableness of management's estimate of AROs for closure of bauxite residue areas by developing an independent estimate of the costs included in AROs for a sample of bauxite residue areas, using independently determined assumptions, and comparing the independent estimate of the costs to management's estimate.

/s/ PricewaterhouseCoopers LLP

Pittsburgh, Pennsylvania

February 21, 2024

We have served as the Company's auditor since 2015.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Operations
(in millions, except per-share amounts)

For the year ended December 31,	2023	2022	2021
Sales (E)	$ 10,551	$ 12,451	$ 12,152
Cost of goods sold (exclusive of expenses below)	9,813	10,212	9,153
Selling, general administrative, and other expenses	226	204	227
Research and development expenses	39	32	31
Provision for depreciation, depletion, and amortization	632	617	664
Restructuring and other charges, net (D)	184	696	1,128
Interest expense (U)	107	106	195
Other expenses (income), net (U)	134	(118)	(445)
Total costs and expenses	11,135	11,749	10,953
(Loss) income before income taxes	(584)	702	1,199
Provision for income taxes (Q)	189	664	629
Net (loss) income	(773)	38	570
Less: Net (loss) income attributable to noncontrolling interest	(122)	161	141
Net (loss) income attributable to Alcoa Corporation	(651)	(123)	429
Earnings per share attributable to Alcoa Corporation common shareholders (F):			
Basic	$ (3.65)	$ (0.68)	$ 2.30
Diluted	$ (3.65)	$ (0.68)	$ 2.26

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Comprehensive Income
(in millions)

	Alcoa Corporation			Noncontrolling interest			Total		
For the year ended December 31,	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**
Net (loss) income	$ (651)	$ (123)	$ 429	$ (122)	$ 161	$ 141	$ (773)	$ 38	$ 570
Other comprehensive (loss) income, net of tax (G):									
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	(62)	944	1,654	(10)	8	54	(72)	952	1,708
Foreign currency translation adjustments	92	(71)	(229)	57	(103)	(93)	149	(174)	(322)
Net change in unrecognized gains/losses on cash flow hedges	(136)	180	(388)	(1)	2	—	(137)	182	(388)
Total Other comprehensive (loss) income, net of tax	(106)	1,053	1,037	46	(93)	(39)	(60)	960	998
Comprehensive (loss) income	$ (757)	$ 930	$ 1,466	$ (76)	$ 68	$ 102	$ (833)	$ 998	$ 1,568

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Consolidated Balance Sheet
(in millions)

December 31,	2023	2022
Assets		
Current assets:		
Cash and cash equivalents (P)	$ 944	$ 1,363
Receivables from customers (I)	656	778
Other receivables	152	131
Inventories (J)	2,158	2,427
Fair value of derivative instruments (P)	29	134
Prepaid expenses and other current assets	466	417
Total current assets	4,405	5,250
Properties, plants, and equipment, net (K)	6,785	6,493
Investments (H)	979	1,122
Deferred income taxes (Q)	333	296
Fair value of derivative instruments (P)	3	2
Other noncurrent assets (U)	1,650	1,593
Total Assets	$ 14,155	$ 14,756
Liabilities		
Current liabilities:		
Accounts payable, trade	$ 1,714	$ 1,757
Accrued compensation and retirement costs	357	335
Taxes, including income taxes	88	230
Fair value of derivative instruments (P)	214	200
Other current liabilities	578	481

Long-term debt due within one year (M & P)	79	1
Total current liabilities	3,030	3,004
Long-term debt, less amount due within one year (M & P)	1,732	1,806
Accrued pension benefits (O)	278	213
Accrued other postretirement benefits (O)	443	480
Asset retirement obligations (R)	772	711
Environmental remediation (S)	202	226
Fair value of derivative instruments (P)	1,092	1,026
Noncurrent income taxes (Q)	193	215
Other noncurrent liabilities and deferred credits (U)	568	486
Total liabilities	8,310	8,167
Contingencies and commitments (S)		
Equity		
Alcoa Corporation shareholders' equity:		
Common stock (N)	2	2
Additional capital	9,187	9,183
Accumulated deficit	(1,293)	(570)
Accumulated other comprehensive loss (G)	(3,645)	(3,539)
Total Alcoa Corporation shareholders' equity	4,251	5,076
Noncontrolling interest (A)	1,594	1,513
Total equity	5,845	6,589
Total Liabilities and Equity	$ 14,155	$ 14,756

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Cash Flows
(in millions)

For the year ended December 31,	2023	2022	2021
Cash from Operations			
Net (loss) income	$ (773)	$ 38	$ 570
Adjustments to reconcile net (loss) income to cash from operations:			
Depreciation, depletion, and amortization	632	617	664
Deferred income taxes (Q)	(22)	219	147
Equity loss (income), net of dividends (H)	201	4	(138)
Restructuring and other charges, net (D)	184	696	1,128
Net loss (gain) from investing activities—asset sales (U)	18	10	(354)
Net periodic pension benefit cost (O)	6	54	47
Stock-based compensation (N)	35	40	39
Premium paid on early redemption of debt	—	—	43
Loss (gain) on mark-to-market derivative financial contracts	26	(44)	(24)
Other	78	53	49
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:			
Decrease (increase) in receivables	104	(59)	(414)
Decrease (increase) in inventories (J)	243	(547)	(639)
Decrease (increase) in prepaid expenses and other current assets	39	44	(41)
(Decrease) increase in accounts payable, trade	(74)	189	354
Decrease in accrued expenses	(133)	(173)	(38)
(Decrease) increase in taxes, including income taxes	(146)	(152)	301
Pension contributions (O)	(24)	(17)	(579)

Increase in noncurrent assets	(210)	(87)	(160)
Decrease in noncurrent liabilities	(93)	(63)	(35)
Cash provided from operations	91	822	920
Financing Activities			
Additions to debt (M)	127	4	495
Payments on debt (M)	(72)	(1)	(1,294)
Proceeds from the exercise of employee stock options (N)	1	22	25
Repurchase of common stock (N)	—	(500)	(150)
Dividends paid on Alcoa common stock (N)	(72)	(72)	(19)
Payments related to tax withholding on stock-based compensation awards	(34)	(19)	(1)
Financial contributions for the divestiture of businesses (C)	(52)	(33)	(17)
Contributions from noncontrolling interest (A)	188	214	21
Distributions to noncontrolling interest	(30)	(379)	(215)
Other	1	(4)	(3)
Cash provided from (used for) financing activities	57	(768)	(1,158)
Investing Activities			
Capital expenditures	(531)	(480)	(390)
Proceeds from the sale of assets and businesses (C)	4	5	966
Additions to investments (H)	(70)	(32)	(11)
Sale of investments (H)	—	10	—
Other	12	2	—
Cash (used for) provided from investing activities	(585)	(495)	565
Effect of exchange rate changes on cash and cash equivalents and restricted cash	10	(9)	(13)

Net change in cash and cash equivalents and restricted cash	(427)	(450)	314
Cash and cash equivalents and restricted cash at beginning of year	1,474	1,924	1,610
Cash and cash equivalents and restricted cash at end of year	$ 1,047	$ 1,474	$ 1,924

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Changes in Consolidated Equity
(in millions)

	Alcoa Corporation shareholders					
	Common stock	Additional capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Noncontrolling interest	Total equity
Balance at December 31, 2020	$ 2	$ 9,663	$ (725)	$ (5,629)	$ 1,705	$ 5,016
Net income	—	—	429	—	141	570
Other comprehensive income (loss) (G)	—	—	—	1,037	(39)	998
Stock-based compensation (N)	—	39	—	—	—	39
Net effect of tax withholding for compensation plans and exercise of stock options (N)	—	25	—	—	—	25
Repurchase of common stock (N)	—	(150)	—	—	—	(150)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	—	—	(19)	—	—	(19)
Contributions	—	—	—	—	21	21
Distributions	—	—	—	—	(215)	(215)
Other	—	—	—	—	(1)	(1)
Balance at December 31, 2021	2	9,577	(315)	(4,592)	1,612	6,284
Net (loss) income	—	—	(123)	—	161	38
Other comprehensive income (loss) (G)	—	—	—	1,053	(93)	960
Stock-based compensation (N)	—	40	—	—	—	40
Net effect of tax withholding for compensation plans and exercise of stock options (N)	—	3	—	—	—	3
Repurchase of common stock (N)	—	(440)	(60)	—	—	(500)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	—	—	(72)	—	—	(72)
Contributions	—	—	—	—	214	214

Distributions	—	—	—	—	(379)	(379)
Other	—	3	—	—	(2)	1
Balance at December 31, 2022	2	9,183	(570)	(3,539)	1,513	6,589
Net loss	—	—	(651)	—	(122)	(773)
Other comprehensive (loss) income (G)	—	—	—	(106)	46	(60)
Stock-based compensation (N)	—	35	—	—	—	35
Net effect of tax withholding for compensation plans and exercise of stock options (N)	—	(33)	—	—	—	(33)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	—	—	(72)	—	—	(72)
Contributions	—	—	—	—	188	188
Distributions	—	—	—	—	(30)	(30)
Other	—	2	—	—	(1)	1
Balance at December 31, 2023	$ 2	$ 9,187	$ (1,293)	$ (3,645)	$ 1,594	$ 5,845

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and subsidiaries
Notes to the Consolidated Financial Statements
(dollars in millions, except per-share amounts; metric tons in thousands (kmt))

A. Basis of Presentation

Alcoa Corporation (or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Through direct and indirect ownership, the Company has

27
operating locations in

nine
countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States.

Alcoa Corporation became an independent, publicly traded company on November 1, 2016, following its separation (the Separation Transaction) from its former parent company, Alcoa Inc. References herein to "ParentCo" refer to Alcoa Inc. and its consolidated subsidiaries through October 31, 2016, at which time it was renamed Arconic Inc. (Arconic) and since has been subsequently renamed Howmet Aerospace Inc.

Basis of Presentation. The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

Principles of Consolidation. The Consolidated Financial Statements of the Company include the accounts of Alcoa Corporation and companies in which Alcoa Corporation has a controlling interest, including those that comprise the Alcoa World Alumina & Chemicals (AWAC) joint venture (see below). Intercompany transactions have been eliminated. The equity method of accounting is used for investments in affiliates and other joint ventures over which the Company has significant influence but does not have effective control. Investments in affiliates in which Alcoa Corporation cannot exercise significant influence are accounted at cost less any impairment, a measurement alternative in accordance with GAAP.

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited and consists of several affiliated operating entities, which own, have an interest in, or operate the bauxite mines and alumina refineries within the Company's Alumina segment (except for the Poços de Caldas mine and refinery, portions of the São Luís refinery, and investment in Mineração Rio do Norte S.A. (MRN) until its sale in April 2022, all in Brazil) and a portion (

55
%) of the Portland smelter (Australia) within the Company's Aluminum segment. Alcoa Corporation owns

60
% and Alumina Limited owns

40
% of these individual entities, which are consolidated by the Company for financial reporting purposes and include Alcoa of Australia Limited (AofA), Alcoa World Alumina LLC (AWA), Alcoa World Alumina Brasil Ltda. (AWAB), and Alúmina Española, S.A. (Española). Alumina Limited's interest in the equity of such entities is reflected as Noncontrolling interest on the accompanying Consolidated Balance Sheet.

Management evaluates whether an Alcoa Corporation entity or interest is a variable interest entity and whether the Company is the primary beneficiary. Consolidation is required if both of these criteria are met. Alcoa Corporation does not have any variable interest entities requiring consolidation.

Related Party Transactions. Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which the Company retains a

50
% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

B. Summary of Significant Accounting Policies

Cash Equivalents. Cash equivalents are highly liquid investments purchased with an original maturity of three months or less.

Restricted Cash. Restricted cash is included with Cash and cash equivalents when reconciling the Cash and cash equivalents and restricted cash at beginning of year and Cash and cash equivalents and restricted cash at end of year on the accompanying Statement of Consolidated Cash Flows. Current restricted cash amounts are reported in Prepaid expenses and other current assets on the accompanying Consolidated Balance Sheet. Noncurrent restricted cash amounts are reported in Other noncurrent assets on the accompanying Consolidated Balance Sheet (see Note U for a reconciliation of Cash and cash equivalents and restricted cash).

Inventory Valuation. Inventories are carried at the lower of cost or net realizable value, with the cost of inventories principally determined under the average cost method.

Properties, Plants, and Equipment. Properties, plants, and equipment are recorded at cost. Interest related to the construction of qualifying assets is capitalized as part of the construction costs. Depreciation is recorded principally on the straight-line method over the estimated useful lives of the assets. Depreciation is recorded on temporarily idled facilities until such time management approves a permanent closure. The following table details the weighted average useful lives of structures and machinery and equipment by type of operation (numbers in years):

	Structures	Machinery and equipment
Alumina	29	27
Aluminum smelting and casting	37	22
Energy generation	33	25

Repairs and maintenance are charged to expense as incurred while costs for significant improvements that add productive capacity or that extend the useful life are capitalized. Gains or losses from the sale of assets are generally recorded in Other expenses (income), net.

Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable. Recoverability of assets is determined by comparing the estimated undiscounted net cash flows of the operations related to the assets (asset group) to their carrying amount. An impairment loss would be recognized when the carrying amount of the assets (asset group) exceeds the fair value. The amount of the impairment loss to be recorded is calculated as the excess of the carrying value of the assets (asset group) over their fair value, with fair value determined using the best information available, which generally is a discounted cash flow (DCF) model. The determination of what constitutes an asset group, the associated estimated undiscounted net cash flows, and the estimated useful lives of assets also require significant judgments.

Leases. The Company determines whether an arrangement is a lease at the inception of the arrangement based on the terms and conditions in the contract. A contract contains a lease if there is an identified asset which the Company has the right to control. Lease right-of-use (ROU) assets are included in Properties, plants, and equipment, net with the corresponding operating lease liabilities included within Other current liabilities and Other noncurrent liabilities and deferred credits on the accompanying Consolidated Balance Sheet.

Operating lease ROU assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. The Company uses its incremental borrowing rate at the commencement date in determining the present value of lease payments unless a rate is implicit in the lease. Lease terms include options to extend the lease when it is reasonably certain that those options will be exercised. Leases with an initial term of 12 months or less, including anticipated renewals, are not recorded on the Consolidated Balance Sheet.

The Company made a policy election not to record any non-lease components of a lease agreement in the lease liability. Variable lease payments are not presented as part of the ROU asset or liability recorded at the inception of a contract. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term.

Equity Investments. Alcoa invests in a number of privately-held companies, primarily through joint ventures and consortia, which are accounted for using the equity method. The equity method is applied in situations where the Company has the ability to exercise significant influence, but not control, over the investee. Management reviews equity investments for impairment whenever certain indicators are present suggesting that the carrying value of an investment is not recoverable.

Deferred Mining Costs. Alcoa incurs deferred mining costs during the development stage of a mine life cycle. Such costs include the construction of access and haul roads, detailed drilling and geological analysis to further define the grade and quality of the known bauxite, and overburden removal costs. These costs relate to sections of the related mines where the Company is currently extracting bauxite or preparing for production in the near term. These sections are outlined and planned incrementally and generally are mined over periods ranging from one to five years , depending on specific mine plans. The amount of geological drilling and testing necessary to determine the economic viability of the bauxite deposit being mined is such that the reserves are considered to be proven. Deferred mining costs are amortized on a units-of-production basis and included in Other noncurrent assets on the accompanying Consolidated Balance Sheet.

Goodwill and Other Intangible Assets. Goodwill is not amortized but is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business.

Goodwill is allocated among and evaluated for impairment at the reporting unit level, which is defined as an operating segment or one level below an operating segment. Beginning in January 2023, the Company changed its operating segments, by combining the Bauxite and Alumina segments, and reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum (see Note E).

The Company has

three
reporting units, of which

two
are included in the Aluminum segment (smelting/casting and energy generation). The remaining reporting unit is the Alumina segment. Of these three reporting units, only Alumina contains goodwill (see Note L).

Goodwill is tested for impairment by assessing qualitative factors to determine whether it is more likely than not (greater than 50%) that the fair value of the reporting unit is less than its carrying amount or performing a quantitative assessment using a discounted cash flow model. If the qualitative assessment indicates a possible impairment, then a quantitative impairment test is performed to determine the fair value of the reporting unit using a discounted cash flow method. Otherwise, no further analysis is required.

Under the quantitative assessment, the evaluation of impairment involves comparing the current fair value of each reporting unit to its carrying value, including goodwill. In the event the estimated fair value of a reporting unit is less than the carrying value, an impairment loss equal to the excess of the reporting unit's carrying value over its fair value not to exceed the total amount of goodwill applicable to that reporting unit would be recognized.

Alcoa's policy for its annual review of goodwill is to perform the quantitative impairment test for its reporting unit containing goodwill at least once during every three-year period.

Intangible assets with finite useful lives are amortized generally on a straight-line basis over the periods benefited. The following table details the weighted average useful lives of software and other intangible assets by type of operation (numbers in years):

	Software	Other intangible assets
Alumina	6	25
Aluminum smelting and casting	3	40
Energy generation	3	29

Asset Retirement Obligations. Alcoa recognizes asset retirement obligations (AROs) related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining and regulated waste materials disposal, and landfill closure. Additionally, costs are recorded as AROs upon management's decision to permanently close and demolish certain structures and for any significant lease restoration obligations. The fair values of these AROs are recorded on a discounted basis at the time the obligation is incurred and accreted over time for the change in present value; related accretion is recorded as a component of Cost of goods sold. Additionally, the Company capitalizes asset retirement costs by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life.

The fair values for AROs are determined using significant assumptions, including engineering designs for construction or closure, materials and services costs, regulatory requirements, volume of regulated material to be removed, disposition of demolition materials, and timing to complete construction or closure.

Subsequent adjustments to estimates of previously established AROs for current operations are capitalized by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Adjustments to estimates of AROs for closed locations are charged to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note R).

Certain conditional asset retirement obligations related to alumina refineries, aluminum smelters, and energy generation facilities have not been recorded in the Consolidated Financial Statements due to uncertainties surrounding the ultimate settlement date. The fair value of these asset retirement obligations will be recorded when a reasonable estimate of the ultimate settlement date can be made.

Environmental Matters. Environmental related expenditures for current operations are expensed as a component of Cost of goods sold or capitalized, as appropriate. Expenditures relating to existing conditions caused by past operations, generally for closed locations which will not contribute to future revenues, are charged to Restructuring and other charges, net. Liabilities are recorded when remediation costs are probable and can be reasonably estimated. In instances where the Company has ongoing monitoring and maintenance responsibilities, it is Alcoa's policy to maintain a reserve equal to five years of expected costs. The liability is continuously reviewed and adjusted to reflect current remediation progress, rate and pricing changes, actual volumes of material requiring management, changes to the original assumptions regarding how the site was to be remediated, and other factors that may be relevant, including changes in technology or regulations. The estimates may also include costs related to other potentially responsible parties to the extent that Alcoa has reason to believe such parties will not fully pay their proportionate share.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. With respect to unasserted claims or assessments, liabilities are recorded when the probability that an assertion will be made is likely, an unfavorable outcome of the matter is deemed to be probable, and the loss is reasonably estimable. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Legal costs, which are primarily for general litigation, environmental compliance, tax disputes, and general corporate matters, are expensed as incurred.

Revenue Recognition. The Company recognizes revenue when it satisfies a performance obligation(s) in accordance with the provisions of a customer order or contract. This is achieved when control of the product has been transferred to the customer, which is generally determined when title, ownership, and risk of loss pass to the customer, all of which occurs upon shipment or delivery of the product. The shipping terms vary across all businesses and depend on the product, the country of origin, and the type of transportation. Accordingly, the sale of Alcoa's products to its customers represent single performance obligations for which revenue is recognized at a point in time, except for the Company's Energy product division in which the customer simultaneously receives and consumes electricity (see Note E). Revenue is based on the consideration the Company expects to receive in exchange for its products. Returns and other adjustments have not been material. Based on the foregoing, no significant judgment is required to determine when control of a product has been transferred to a customer.

The Company considers shipping and handling activities as costs to fulfill the promise to transfer the related products. As a result, customer payments of shipping and handling costs are recorded as a component of revenue. Taxes collected (e.g., sales, use, value added, excise) from its customers related to the sale of its products are remitted to governmental authorities and excluded from Sales.

Cost of goods sold. The Company includes the following in Cost of goods sold: operating costs of our

two

segments, excluding depreciation, depletion, and amortization, but including all production related costs: raw materials consumed; purchases of metal for consumption; conversion costs, such as labor, materials, and utilities; equity earnings of certain investments integral to the Company's supply chain; and plant administrative expenses. Also included in Cost of goods sold are: costs related to the Transformation function, which focuses on the management of expenses and obligations of previously closed operations; pension and other postretirement benefit service cost for employees maintaining closed locations; purchases of bauxite from offtake or other supply agreements, alumina to satisfy customer commitments, and metal for trade; and other costs not included in the operating costs of the segments.

Selling, general administrative, and other expenses. The Company includes the costs of corporate-wide functional support in Selling, general administrative, and other expenses. Such costs include: executive; sales; marketing; strategy; operations administration; finance; information technology; legal; human resources; and government affairs and communications.

Stock-Based Compensation. Compensation expense for employee equity grants is recognized using the non-substantive vesting period approach, in which the expense is recognized ratably over the requisite service period based on the grant date fair value. Forfeitures are accounted for as they occur. The fair value of performance stock units containing a market condition is valued using a Monte Carlo valuation model. Determining the fair value at the grant date requires judgment, including estimates for the average risk-free interest rate, and volatility. These assumptions may differ significantly between grant dates because of changes in the actual results of these inputs that occur over time. As of January 1, 2021, the Company no longer grants stock options.

Refer to Note N for more information regarding stock-based compensation.

Pension and Other Postretirement Benefits. Alcoa sponsors several defined benefit pension plans and health care postretirement benefit plans. The Company recognizes on a plan-by-plan basis the net funded status of these pension and postretirement benefit plans as either an asset or a liability on its Consolidated Balance Sheet. The net funded status represents the difference between the fair value of each plan's assets and the benefit obligation of the respective plan. The benefit obligation represents the present value of the estimated future benefits the Company currently expects to pay to plan participants based on past service. Unrecognized gains and losses related to the plans are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet until amortized into earnings.

The plan assets and benefit obligations are measured at the end of each year or more frequently, upon the occurrence of certain events such as a significant plan amendment, settlement, or curtailment. For interim plan remeasurements, it is the Company's policy to record the related accounting impacts within the same quarter as the triggering event.

Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

A change in one or a combination of these assumptions, or the effects of actual results differing from assumptions, could have a material impact on Alcoa's projected benefit obligation. These changes or differences are recorded in Accumulated other comprehensive loss and are amortized into earnings as a component of the net periodic benefit cost (income) over the average future working lifetime or average remaining life expectancy, as appropriate, of the plan's participants.

One-time accounting impacts, such as curtailment and settlement losses (gains), are recognized immediately and are reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Refer to Note O for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. Derivatives are held for purposes other than trading and are part of a formally documented risk management program.

Alcoa accounts for hedges of firm customer commitments for aluminum as fair value hedges. The fair values of the derivatives and changes in the fair values of the underlying hedged items are reported as assets and liabilities in the Consolidated Balance Sheet. Changes in the fair values of these derivatives and underlying hedged items generally offset and are recorded each period in Sales, consistent with the underlying hedged item.

The Company accounts for certain hedges of foreign currency exposures and certain forecasted transactions as cash flow hedges. The fair values of the derivatives are recorded as assets and liabilities in the Consolidated Balance Sheet. The changes in the fair values of these derivatives are recorded in Other comprehensive (loss) income and are reclassified to Sales, Cost of goods sold, or Other expenses (income), net in the period in which earnings are impacted by the hedged items or in the period that the transaction no longer qualifies as a cash flow hedge. These contracts cover the same periods as known or expected exposures, generally not exceeding five years .

If no hedging relationship is designated, the derivative is marked to market through Other expenses (income), net.

Cash flows from derivatives are recognized in the Statement of Consolidated Cash Flows in a manner consistent with the underlying transactions.

Income Taxes. The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, the provision for income taxes represents income taxes paid or payable (or received or receivable) for the current year plus the change in deferred taxes during the year. Deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid, resulting from differences between the financial and tax bases of Alcoa's assets and liabilities and are adjusted for changes in tax rates and tax laws when enacted.

Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income. Deferred tax assets for which no valuation allowance is recorded may not be realized upon changes in facts and circumstances, resulting in a future charge to establish a valuation allowance. Existing valuation allowances are re-examined under the same standards of positive and negative evidence. If it is determined that it is more likely than not that a deferred tax asset will be realized, the appropriate amount of the valuation allowance, if any, is released. Deferred tax assets and liabilities are also re-measured to reflect changes in underlying tax rates due to law changes and the granting and lapse of tax holidays.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired or the appropriate taxing authority has completed their examination even though the statute of limitations remains open. Interest and penalties related to uncertain tax positions are recognized as part of the provision for income taxes and are accrued in the period that such interest and penalties would be applicable under relevant tax law until such time that the related tax benefits are recognized.

Foreign Currency. The local currency is the functional currency for Alcoa's significant operations outside the United States, except for certain operations in Canada and Iceland, and a holding and trading company in the Netherlands, where the U.S. dollar is used as the functional currency. The determination of the functional currency for Alcoa's operations is made based on the appropriate economic and management indicators. Where local currency is the functional currency, assets and liabilities are translated into U.S. dollars using period end exchange rates and income and expenses are translated using the average exchange rates for the reporting period. Unrealized foreign currency translation gains and losses are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet.

Recently Adopted Accounting Guidance. On January 1, 2023, the Company adopted Accounting Standard Update (ASU) No. 2022-04 which requires a buyer in a supplier finance program to disclose qualitative and quantitative information about its supplier finance programs, including the key terms of the program, the amount of obligations outstanding at the end of the reporting period, a description of where those obligations are presented in the balance sheet, and effective January 1, 2024, a roll-forward of such amounts during the annual period. The adoption of this guidance resulted in enhanced disclosures regarding these programs (see Note V) and did not have a material impact on the Company's Consolidated Financial Statements.

Recently Issued Accounting Guidance. In December 2023, the Financial Accounting Standards Board (FASB) issued ASU No. 2023-09 which includes changes to income tax disclosures, including greater disaggregation of information in the rate reconciliation and disclosure of taxes paid by jurisdiction. The guidance is effective for annual periods beginning after December 15, 2024. Early adoption is permitted. The adoption of this guidance will provide enhanced disclosures regarding income taxes and will not have a material impact on the Company's financial statements.

In November 2023, the FASB issued ASU No. 2023-07 which requires disclosure of significant segment expenses regularly provided to the chief operating decision maker (CODM), other segment items (not included in significant segment expenses for each reportable segment), the title and position of the CODM, and an explanation of how the CODM uses the reported measure of segment profit or loss to assess segment performance and allocate resources. The guidance is effective for fiscal years beginning after December 15, 2023 on an annual basis and beginning after December 15, 2024 on an interim basis. Early adoption is permitted. The adoption of this guidance will provide enhanced disclosures regarding reportable segments and will not have a material impact on the Company's financial statements.

C. Divestitures

Rockdale Site

During the fourth quarter of 2021, the Company completed the sale of land and industrial assets at the previously closed Rockdale smelter site in the state of Texas in a transaction valued at $

240

. Upon closing of the transaction, the Company received $

230

in cash and recorded a net gain of $

202

in Other expenses (income), net (pre- and after-tax; see Note U) on the Statement of Consolidated Operations.

Eastalco Site

During the second quarter of 2021, the Company completed the sale of land at the previously closed Eastalco smelter site in the state of Maryland in a transaction valued at $

100

. Upon closing of the transaction, the Company received $

94

in cash and recorded a gain of $

90

in Other expenses (income), net ($

90

pre- and $

89

after-tax; see Note U) on the Statement of Consolidated Operations.

Warrick Rolling Mill

In March 2021, Alcoa completed the sale of its rolling mill located at Warrick Operations (Warrick Rolling Mill), an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser) for total consideration of approximately $

670
, which included the assumption of $

69
in other postretirement benefit liabilities. The Company recorded a net gain of $

30
in Other expenses (income), net (pre- and after-tax, see Note U) on the Statement of Consolidated Operations. Upon the closing of the transaction, the Company recorded estimated liabilities for future site separation commitments and remaining transaction costs associated with the sales agreement.

The Company recorded a charge of $

17
and $

8
in 2023 and 2022 in Other expenses (income), net, respectively, related to additional costs of existing site separation commitments. In 2023 and 2022, the Company spent $

52
and $

37
against the reserve, respectively. The remaining balance of $

11
at December 31, 2023 is expected to be spent in 2024. The cash spent against the reserve is included in Cash provided from (used for) financing activities on the Statement of Consolidated Cash Flows.

D. Restructuring and Other Charges, Net

Restructuring and other charges, net were comprised of the following:

	2023	2022	2021
Settlements and/or curtailments related to retirement benefits (O)	$ 21	$ 632	$ 977
Severance and employee termination costs	11	1	1
Loss on divestitures	—	79	—
Asset impairments	50	58	75
Asset retirement obligations (R)	41	34	23
Environmental remediation (S)	27	21	15
Other	36	(7)	82
Reversals of previously recorded charges	(2)	(122)	(45)
Restructuring and other charges, net	$ 184	$ 696	$ 1,128

Severance and employee termination costs were recorded based on approved detailed action plans submitted by the operating locations that specified positions to be eliminated, benefits to be paid under existing severance plans, union contracts or statutory requirements, and the expected timetable for completion of the plans.

2023 Actions. In 2023, Alcoa Corporation recorded Restructuring and other charges, net, of $

184
which were primarily comprised of the following components:

- Non-cash settlement charges related to pension benefits (see Note O):
  - $ 21 related to the purchase of group annuity contracts to transfer approximately $ 235 of pension obligations and assets associated with defined benefit pension plans for approximately 530 Canadian retirees and beneficiaries;
- Charges related to portfolio actions:
  - $ 101 for the permanent closure of the previously curtailed Intalco (Washington) smelter (see below);
  - $ 53 for the updated viability agreement for the San Ciprián (Spain) smelter; and,
  - $ 11 for employee termination and severance costs, primarily related to the Kwinana refinery productivity program (see below);
- Other net charges:
  - $ 17 to record additional environmental and asset retirement related reserves at previously closed sites (see Note R and Note S);
  - $ 19 benefit for the sale of unused carbon credits at a previously closed site;
  - $ 1 to record additional asset retirement related reserves at Warrick Operations (Indiana) (see Note R); and,
  - $ 1 for additional take-or-pay contract costs related to the closed Wenatchee (Washington) and Intalco smelters;
- Reversals:
  - $ 2 due to lower costs for demolition and remediation at previously closed sites (see Note R).

In December 2023, Alcoa began the closure of a line at its Warrick Operations site in Indiana that had not operated since 2016 to allow for future capital investments to improve casting capabilities. The Company recorded a charge of $ 1 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish reserves related to demolition obligations. Additionally, Alcoa recorded $ 1 in Cost of goods sold on the Statement of Consolidated Operations to write-off the remaining net book value of related inventory.

In September 2023, the Company initiated productivity programs across its operations in Australia to mitigate the financial impacts of lower grade bauxite and to optimize operating levels. In connection with this program, the Company recorded Restructuring and other charges, net of $

6
for employee termination and severance costs for approximately

90
employees at the Kwinana refinery. The restructuring action and associated cash outlays are anticipated to be complete by the end of the second quarter of 2024. In 2023, the Company spent $

1
against the reserve.

In March 2023, Alcoa Corporation announced the closure of the Intalco aluminum smelter, which had been fully curtailed since 2020. The Company recorded charges of $

117
related to the closure, including a charge of $

16
in Cost of goods sold on the Statement of Consolidated Operations to write-down remaining inventories to net realizable value and a charge of $

101
in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of asset impairments of $

50
, environmental and demolition obligation reserves of $

50
, and severance and employee termination costs of $

1
for the separation of approximately

12
employees. Cash outlays related to the permanent closure of the site in 2024 and 2025 are expected to be approximately $

54
related to environmental and demolition obligation reserves, $

4
of which was reserved for in prior periods, and $

31
related to holding costs during the closure. At December 31, 2023, the separation of employees associated with this program was complete with $

1
of payments made against the severance and employee termination cost reserve.

In February 2023, the Company reached an updated viability agreement with the workers' representatives of the San Ciprián smelter to commence the restart process in phases beginning in January 2024. The smelter was curtailed in January 2022 as a result of an agreement reached with the workers' representatives in December 2021 (see below). Under the terms of the updated viability agreement, the Company is responsible for certain employee obligations during 2023 through 2025 and made commitments for capital improvements of $

78
. The Company recorded charges of $

53
in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserve for employee obligations in 2023. Cash outlays related to these obligations were $

7
in 2023 and the remainder is expected in 2024 and 2025. At December 31 2023, the Company has restricted cash of $

91
to be made available for remaining capital improvement commitments at the site of $

118
and smelter restart costs of $

35
(see below). Restricted cash is included in Prepaid expenses and other current assets and Other noncurrent assets on the Consolidated Balance Sheet (see Note U).

2022 Actions. In 2022 Alcoa Corporation recorded Restructuring and other charges, net, of $

696
which were primarily comprised of the following components:

- Non-cash settlement charges related to pension benefits (see Note O):
  - o $

635
related to the purchase of group annuity contracts to transfer approximately $

1,000
of pension obligations and assets associated with defined benefit pension plans for approximately

4,400
United States retirees and beneficiaries, as well as lump sum settlements;

- Charges related to portfolio actions:
  - o $

79
for the agreement reached with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture (see Note S);
  - o $

58
for an asset impairment related to the sale of the Company's interest in MRN (see Note H); and,
  - o $

29
related to the closure of the previously curtailed magnesium smelter facility in Addy (Washington) (see below);
- Other charges and credits:
  - o $

26
to record additional environmental and asset retirement related reserves at previously closed sites (see Note R and Note S); and,
  - o $

7
net credit for revaluation of adjustments to take-or-pay contract reserves related to the closed Wenatchee and curtailed Intalco smelters;
- Reversals:
  - o $

83
for the release of a valuation allowance on Brazil value added taxes (VAT) (see Note Q); and,
  - o $

34
due to lower costs for demolition and remediation at previously closed sites (see Note S).

In July 2022, Alcoa made the decision to permanently close the previously curtailed magnesium smelter in Addy. The facility has been fully curtailed since 2001. The Company recorded a charge of $

29
to establish reserves for environmental and demolition obligations in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2022.

2021 Actions. In 2021 Alcoa Corporation recorded Restructuring and other charges, net, of $

1,128
which were comprised of the following components**:**

- Non-cash settlement charges related to pension and certain other postretirement benefits (see Note O):
  - o $

858
related to the purchase of group annuity contracts to transfer approximately $

1,500
of pension obligations and assets associated with defined benefit pension plans for approximately

14,000
United States retirees and beneficiaries, as well as lump sum settlements;
  - o $

63
related to the purchase of a group annuity contract to transfer approximately $

55
of pension obligations and assets associated with a Suriname pension plan for approximately

800
retirees and beneficiaries;

- o $ 47 related to lump sum settlements; and,
- o Net $ 9 related to the settlement and curtailment of certain other postretirement benefits resulting from the sale of the Warrick Rolling Mill;

- Charges related to portfolio actions taken as part of the Company's ongoing strategic review (see details below):
  - o $ 80 related to the closure of the previously curtailed aluminum smelter facility in Wenatchee (Washington);
  - o $ 62 related to the agreement reached with the workers at the San Ciprián aluminum smelter to curtail smelting capacity; and,
  - o $ 27 related to the closure of the previously curtailed anode facility in Lake Charles (Louisiana);
- Other charges:
  - o $ 13 for additional take-or-pay contract costs related to the curtailed Wenatchee and Intalco smelters;
  - o $ 11 to record additional environmental and asset retirement related reserves (see Note R and Note S); and,
  - o $ 3 for several other immaterial items;
- Reversals:
  - o $ 6 for a take-or-pay energy-related obligation at the Alumar (Brazil) smelter no longer required due to the restart;
  - o $ 17 related to the divestiture of the Avilés and La Coruña entities (see below); and,
  - o $ 22 due to lower costs for demolition and remediation related to previously established reserves (see Note R and Note S).

In December 2021, the Company announced the two-year curtailment of 228 kmt of smelting capacity at the San Ciprián smelter. The temporary curtailment, which began at the end of January 2022, was the result of an agreement reached with the workers' representatives at the site to suspend production due to exorbitant energy prices in Spain. Under the terms of the agreement, the Company is responsible for certain employee obligations during 2022 and 2023, and committed to restart the smelter beginning in January 2024. The Company recorded charges of $ 62 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserve for employee obligations in 2021. Cash payments were $ 31 and $ 26 in 2023 and 2022, respectively and this program is complete as of December 31, 2023. Additionally, the Company made restricted cash available for capital improvements at the site of $ 68 and smelter restart costs of $ 35 (see above).

During the fourth quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the permanent closure of the Wenatchee aluminum smelter. The smelter has been fully curtailed since 2015. Charges related to the closure totaled $ 90 in the fourth quarter of 2021 and included a charge of $

10
for the write-down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $

80
recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of: $

30
to write-off the remaining net book value of various assets; $

23
of asset impairments; $

21
to establish reserves related to environmental and demolition obligations; $

5
related to take-or-pay contractual obligations; and $

1
of severance and employee termination costs from the separation of approximately

10
employees. Cash payments were $

3
and $

1
in 2023 and 2022, respectively.

During the third quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the decision to permanently close the previously curtailed anode facility in Lake Charles. The anode facility within the Lake Charles site has been fully curtailed since 2015. The Company recorded charges of $

27
in the third quarter of 2021, which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, comprised of asset impairments of $

22
and cash-based charges for closure and asset retirement obligations of $

5
. The closure was completed in September 2022. The decision to permanently close the facility was made as part of the Company's ongoing portfolio review. The Company's petroleum coke calciner located at the same site in Lake Charles remains in operation, unaffected by the closure of the anode facility.

Alcoa Corporation does not include Restructuring and other charges, net in the results of its reportable segments. The impact of allocating such charges to segment results would have been as follows:

	2023	2022	2021
Alumina[1]	$ 8	$ (27)	$ 1
Aluminum	169	82	184
Segment total	177	55	185
Corporate	7	641	943
Total Restructuring and other charges, net	$ 184	$ 696	$ 1,128

(1) Beginning in January 2023, the Company changed its operating segments, by combining the Bauxite and Alumina segments, and reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum (see Note E).

Activity and reserve balances for restructuring charges were as follows:

	Severance and employee termination costs	Other costs	Total
Balances at December 31, 2020	$ 6	$ 57	$ 63
Restructuring charges, net	1	80	81
Cash payments	(4)	(25)	(29)
Reversals and other	—	(22)	(22)
Balances at December 31, 2021	3	90	93
Restructuring charges, net	1	73	74
Cash payments	(2)	(37)	(39)
Reversals and other	(1)	(10)	(11)
Balances at December 31, 2022	1	116	117
Restructuring charges, net	11	55	66
Cash payments	(6)	(118)	(124)
Reversals and other	—	4	4
Balances at December 31, 2023	$ 6	$ 57	$ 63

The activity and reserve balances include only Restructuring and other charges, net that impact the reserves for Severance and employee termination costs and Other costs. Restructuring and other charges, net that affected other accounts such as Investments (see Note H), Accrued pension benefits and Accrued other postretirement benefits (see Note O), Asset retirement obligations (see Note R), and Environmental remediation (see Note S) are excluded from the above activity and balances. Reversals and other include reversals of previously recorded liabilities and foreign currency translation impacts.

The current portion of the reserve balance is reflected in Other current liabilities on the Consolidated Balance Sheet and the noncurrent portion of the reserve balance is reflected in Other noncurrent liabilities and deferred credits on the Consolidated Balance Sheet. The noncurrent portion of the reserve was $

15
and $

3
at December 31, 2023 and 2022, respectively.

E. Segment and Related Information

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. Beginning in January 2023, the financial information provided to the chief operating decision maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined into the Alumina segment, and accordingly the Company changed its operating segments. Beginning with the first quarter of 2023, the Company reported its financial results in the following

two
segments: (i) Alumina and (ii) Aluminum. Segment information for all prior periods presented has been updated to reflect the new segment structure.

Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) for each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Segment Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The CODM function regularly reviews the financial information, including Adjusted EBITDA, of these

two
operating segments to assess performance and allocate resources.

Segment assets include, among others, customer receivables (third-party and intersegment), inventories, properties, plants, and equipment, and equity investments. The accounting policies of the segments are the same as those described in the Summary of Significant Accounting Policies (see Note B). Transactions between segments are established based on negotiation between the parties. Differences between segment totals and Alcoa Corporation's consolidated totals for line items not reconciled are in Corporate.

The following are detailed descriptions of Alcoa Corporation's reportable segments:

Alumina. This segment represents the Company's worldwide refining system, including the mining of bauxite, which is then refined into alumina.

The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders.

Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Principles of Consolidation in Note A).

A portion of this segment's bauxite production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. Bauxite mined is primarily used internally within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite sales to third-parties are conducted on a contract basis.

This segment also includes AWAC's

25.1
% ownership interest in a mining and refining joint venture company in Saudi Arabia (see Note H).

Aluminum. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, nearly all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value-add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives (see Note P) related to energy supply contracts.

The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum segment (Canadian smelters and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segment (Brazilian refineries).

Results from the Warrick Rolling Mill are included in this segment through the first quarter of 2021 (see Note C). Alcoa continues to own and operate the Warrick Operations aluminum smelter and the power plant.

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's

25.1
% ownership interest in a smelting joint venture company in Saudi Arabia (see Note H).

The operating results, capital expenditures, and assets of Alcoa Corporation's reportable segments were as follows:

	Alumina	Aluminum	Total
2023			
Sales:			
Third-party sales	$ 3,613	$ 6,925	$ 10,538
Intersegment sales	1,648	15	1,663
Total sales	$ 5,261	$ 6,940	$ 12,201
Segment Adjusted EBITDA	$ 273	$ 461	$ 734
Supplemental information:			
Depreciation, depletion, and amortization	$ 333	$ 277	$ 610
Equity loss	(48)	(106)	(154)
2022			
Sales:			
Third-party sales	$ 3,724	$ 8,735	$ 12,459
Intersegment sales	1,708	27	1,735
Total sales	$ 5,432	$ 8,762	$ 14,194
Segment Adjusted EBITDA	$ 788	$ 1,492	$ 2,280
Supplemental information:			
Depreciation, depletion, and amortization	$ 312	$ 283	$ 595
Equity (loss) income	(39)	48	9
2021			
Sales:			
Third-party sales	$ 3,375	$ 8,766	$ 12,141
Intersegment sales	1,552	18	1,570
Total sales	$ 4,927	$ 8,784	$ 13,711
Segment Adjusted EBITDA	$ 1,192	$ 1,879	$ 3,071
Supplemental information:			
Depreciation, depletion, and amortization	$ 351	$ 289	$ 640

Equity income	4	116	120
2023			
Assets:			
Capital expenditures	$ 323	$ 198	$ 521
Equity investments	395	569	964
Total assets	6,153	5,854	12,007
2022			
Assets:			
Capital expenditures	$ 320	$ 153	$ 473
Equity investments	422	685	1,107
Total assets	5,859	6,358	12,217

The following tables reconcile certain segment information to consolidated totals:

	2023	2022	2021
Sales:			
Total segment sales	$ 12,201	$ 14,194	$ 13,711
Elimination of intersegment sales	(1,663)	(1,735)	(1,570)
Other	13	(8)	11
Consolidated sales	$ 10,551	$ 12,451	$ 12,152

	2023	2022	2021
Net (loss) income attributable to Alcoa Corporation:			
Total Segment Adjusted EBITDA	$ 734	$ 2,280	$ 3,071
Unallocated amounts:			
Transformation[1]	(80)	(66)	(44)
Intersegment eliminations	7	138	(119)
Corporate expenses[2]	(133)	(128)	(129)
Provision for depreciation, depletion, and amortization	(632)	(617)	(664)
Restructuring and other charges, net (D)	(184)	(696)	(1,128)
Interest expense (U)	(107)	(106)	(195)
Other (expenses) income, net (U)	(134)	118	445
Other[3]	(55)	(221)	(38)
Consolidated (loss) income before income taxes	(584)	702	1,199
Provision for income taxes (Q)	(189)	(664)	(629)
Net loss (income) attributable to noncontrolling interest	122	(161)	(141)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (651)	$ (123)	$ 429

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

December 31,	2023	2022
Assets:		
Total segment assets	$ 12,007	$ 12,217
Elimination of intersegment receivables	(159)	(126)
Unallocated amounts:		
Cash and cash equivalents	944	1,363
Corporate fixed assets, net	392	364

Corporate goodwill	142	141
Deferred income taxes	333	296
Pension assets	125	146
Other	371	355
Consolidated assets	$ 14,155	$ 14,756

Product Information

Alcoa Corporation has four product divisions and one divested product division as follows:

Bauxite—Bauxite is a reddish clay rock that is mined from the surface of the earth's terrain. This ore is the basic raw material used to produce alumina and is the primary source of aluminum.

Alumina—Alumina is an oxide that is extracted from bauxite and is the basic raw material used to produce primary aluminum. This product can also be consumed for non-metallurgical purposes, such as industrial chemical products.

Primary aluminum—Primary aluminum is metal in the form of a common alloy ingot or a value-add ingot (e.g., foundry, billet, rod, and slab). These products are sold primarily to customers that produce products for the transportation, building and construction, packaging, wire, and other industrial markets, and traders.

Energy—Energy is the generation of electricity, which is sold in the wholesale market to traders, large industrial consumers, distribution companies, and other generation companies.

Flat-rolled aluminum—Flat-rolled aluminum is metal in the form of sheet, which is sold primarily to customers that produce beverage and food cans, including body, tab, and end stock. As noted above, the Company sold the Warrick Rolling Mill in March 2021 which represented the Company's only Flat-rolled aluminum asset. The results of the Warrick Rolling Mill are included in this product division through the first quarter of 2021.

The following table represents the general commercial profile of the Company's Bauxite, Alumina, and Primary aluminum product divisions (see text below table for Energy):

Product division	Pricing components	Shipping terms[3]	Payment terms[4]
Bauxite	Negotiated	FOB/CIF	LC Sight
Alumina:			
Smelter-grade	API[1]/spot/fixed	FOB/CIF	LC Sight/CAD/Net 30 days
Non-metallurgical	Negotiated	FOB/CIF	Net 30 days
Primary aluminum:			
Common alloy ingot	LME + Regional premium[2]	DAP/CIF	Net 30 to 45 days
Value-add ingot	LME + Regional premium + Product premium[2]	DAP/CIF	Net 30 to 45 days

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange. The regional premium represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States). The product premium represents the incremental price for receiving physical metal in a particular shape or alloy.

(3) CIF (cost, insurance, and freight) means that the Company pays for these items until the product reaches the buyer's designated destination point related to transportation by vessel. DAP (delivered at place) means the same as CIF related to all methods of transportation. FOB (free on board) means that the Company pays for costs, insurance, and freight until the product reaches the seller's designated shipping point.

(4) The net number of days means that the customer is required to remit payment to the Company for the invoice amount within the designated number of days. LC Sight is a letter of credit that is payable immediately (usually within five to ten business days) after a seller meets the requirements of the letter of credit (i.e. shipping documents that evidence the seller performed its obligations as agreed to with a buyer). CAD (cash against documents) is a payment arrangement in which a seller instructs a bank to provide shipping and title documents to the buyer at the time the buyer pays in full the accompanying bill of exchange.

For the Company's Energy product division, sales of electricity are based on current market prices. Electricity is provided to customers on demand through a national or regional power grid; the customer simultaneously receives and consumes the electricity. Payment terms are generally within 10 days related to the previous 30 days of electricity consumption.

The following table details Alcoa Corporation's Sales by product division:

	2023	2022	2021
Sales:			
Primary aluminum	$ 7,045	$ 8,887	$ 8,420
Alumina	3,103	3,478	3,125
Bauxite	466	168	207
Energy	118	201	286
Flat-rolled aluminum[1]	—	—	320
Other[2]	(181)	(283)	(206)
	$ 10,551	$ 12,451	$ 12,152

(1) Flat-rolled aluminum represented sales of the Warrick Rolling Mill through the sale of the facility in March 2021 (see Note C).

(2) Other includes realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum (see Note P).

Geographic Area Information

Geographic information for Third-party sales was as follows (based upon the country where the point of sale originated):

	2023	2022	2021
Sales:			
United States[1][2]	$ 4,993	$ 5,462	$ 5,290
Netherlands[3]	2,261	3,031	2,644
Australia	2,240	2,742	2,092
Brazil	735	527	610
Spain[2][3]	289	618	1,465
Canada	1	1	11
Other	32	70	40
	$ 10,551	$ 12,451	$ 12,152

(1) Sales of a portion of the alumina from refineries in Australia and Brazil and most of the aluminum from smelters in Canada occurred in the United States.
(2) Sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H), occurred in Spain through most of the third quarter of 2021, and in the United States thereafter.
(3) Sales of aluminum from smelters in Iceland and Norway occurred in Spain through most of the first quarter of 2021, and in the Netherlands thereafter.

Geographic information for long-lived assets was as follows (based upon the physical location of the assets):

December 31,	2023	2022
Long-lived assets:		
Australia	$ 2,046	$ 1,944
Brazil	1,550	1,298
Iceland	950	1,002
Canada	896	919
United States	780	830
Norway	310	304
Spain	250	194
Other	3	2

	6,785	6,493
	$	$

F. Earnings Per Share

Basic earnings per share (EPS) amounts are computed by dividing Net (loss) income attributable to Alcoa Corporation by the average number of common shares outstanding. Diluted EPS amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding.

The share information used to compute basic and diluted EPS attributable to Alcoa Corporation common shareholders was as follows (shares in millions):

	2023	2022	2021
Average shares outstanding—basic	178	181	186
Effect of dilutive securities:			
Stock options	—	—	—
Stock units	—	—	4
Average shares outstanding—diluted	178	181	190

In 2023, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2023,

three
million common share equivalents related to

three
million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the period.

In 2022, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2022,

three
million common share equivalents related to

five
million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the period.

In 2021, options to purchase less than two hundred thousand shares of common stock outstanding as of December 31, 2021 at a weighted average exercise price of $

38.67
per share were not included in the computation of diluted EPS because the exercise prices of these options were greater than the annual average market price of Alcoa Corporation’s common stock.

G. Accumulated Other Comprehensive Loss

The following table details the activity of the three components that comprise Accumulated other comprehensive loss for both Alcoa Corporation's shareholders and Noncontrolling interest:

	Alcoa Corporation			Noncontrolling interest		
	2023	2022	2021	2023	2022	2021
Pension and other postretirement benefits (O)						
Balance at beginning of period	$ (62)	$ (882)	$ (2,536)	$ (5)	$ (13)	$ (67)
Other comprehensive income (loss):						
Unrecognized net actuarial gain (loss) and prior service cost/benefit	(112)	263	550	(13)	7	30
Tax (expense) benefit[2]	(17)	(42)	(37)	2	—	(6)
Total Other comprehensive income (loss) before reclassifications, net of tax	(95)	221	513	(11)	7	24
Amortization of net actuarial loss and prior service cost/benefit[1]	39	723	1,144	1	1	30
Tax expense[2]	(6)	—	(3)	—	—	—
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	33	723	1,141	1	1	30
Total Other comprehensive income (loss)	(62)	944	1,654	(10)	8	54
Balance at end of period	$ —	$ (62)	$ (882)	$ (15)	$ (5)	$ (13)
Foreign currency translation						
Balance at beginning of period	$ (2,685)	$ (2,614)	$ (2,385)	$ (1,040)	$ (937)	$ (844)
Other comprehensive income (loss)	92	(71)	(229)	57	(103)	(93)
Balance at end of period	$ (2,593)	$ (2,685)	$ (2,614)	$ (983)	$ (1,040)	$ (937)
Cash flow hedges (P)						
Balance at beginning of period	$ (916)	$ (1,096)	$ (708)	$ 1	$ (1)	$ (1)
Other comprehensive (loss) income:						
Net change from periodic revaluations	(295)	(119)	(782)	—	2	(2)
Tax benefit[2]	70	43	140	—	—	1
Total Other comprehensive (loss) income before reclassifications, net of tax	(225)	(76)	(642)	—	2	(1)
Net amount reclassified to earnings:						
Aluminum contracts[3]	181	316	288	—	—	—

Financial contracts[4]	(20)	—	2	—	—	1
Interest rate contracts[5]	(5)	5	8	(1)	—	1
Foreign exchange contracts[6]	(26)	(5)	(3)	—	—	—
Sub-total	130	316	295	(1)	—	2
Tax expense[2]	(41)	(60)	(41)	—	—	(1)
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	89	256	254	(1)	—	1
Total Other comprehensive (loss) income	(136)	180	(388)	(1)	2	—
Balance at end of period	$ (1,052)	$ (916)	$ (1,096)	$ —	$ 1	$ (1)
Total Accumulated other comprehensive loss	$ (3,645)	$ (3,539)	$ (4,592)	$ 998	$ (1,044)	$ (951)

(1) These amounts were included in the computation of net periodic benefit cost for pension and other postretirement benefits. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Alcoa Corporation include $ 21, $ 633, and $ 952 for the years ended December 31, 2023, 2022, and 2021, respectively. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Noncontrolling interest include $ 0, ($ 1), and $ 25 for the years ended December 31, 2023, 2022, and 2021, respectively (see Note O).

(2) These amounts were reported in Provision for income taxes on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Sales on the accompanying Statement of Consolidated Operations.

(4) These amounts were reported in Cost of goods sold on the accompanying Statement of Consolidated Operations.

(5) These amounts were included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(6) In 2023, $ 5 was reported in Cost of goods sold and ($ 31) was reported in Sales on the accompanying Statement of Consolidated Operations. In 2022, $ 5 was reported in Cost of goods sold and ($ 10) was reported in Sales on the accompanying Statement of Consolidated Operations.

(7) A positive amount indicates a corresponding charge to earnings and a negative amount indicates a corresponding benefit to earnings.

H. Investments

December 31,	2023	2022
Equity investments	$ 969	$ 1,112
Other investments	10	10
	$ 979	$ 1,122

Equity Investments. The following table summarizes information of Alcoa Corporation's equity investments as of December 31, 2023 and 2022 . In 2023, 2022, and 2021, Alcoa Corporation received $

51
, $

127
, and $

50
, respectively, in dividends from these equity investments. Each of the investees either owns the facility listed or has an ownership interest in an entity that owns the facility listed:

Investee	Country	Nature of investment	Income Statement Location of Equity Earnings	Ownership interest
Ma'aden Aluminum Company	Saudi Arabia	Aluminum smelter and casthouse	Other expenses (income), net	25.1 %
Ma'aden Bauxite and Alumina Company	Saudi Arabia	Bauxite mine and alumina refinery	Other expenses (income), net	25.1 %
Halco Mining, Inc.	Guinea	Bauxite mine	Cost of goods sold	45 %
Energética Barra Grande S.A.	Brazil	Hydroelectric generation facility	Cost of goods sold	42.18 %
Pechiney Reynolds Quebec, Inc.	Canada	Aluminum smelter	Cost of goods sold	50 %
Serra do Facão Energia S/A	Brazil	Hydroelectric generation facility	Cost of goods sold	34.97 %
Manicouagan Power Limited Partnership	Canada	Hydroelectric generation facility	Cost of goods sold	40 %
Elysis™ Limited Partnership	Canada	Aluminum smelting technology	Other expenses (income), net	48.235 %

Saudi Arabia Joint Venture—Alcoa Corporation and Ma'aden have a 30 -year (from December 2009) joint venture shareholders agreement (automatic extension for an additional 20 years, unless the parties agree otherwise or unless earlier terminated) setting forth the terms for the development, construction, ownership, and operation of an integrated aluminum complex in Saudi Arabia. The project developed by the joint venture consists of a bauxite mine from the Al Ba'itha bauxite deposit in the northern part of Saudi Arabia, an alumina refinery, a primary aluminum smelter, and an aluminum rolling mill.

The joint venture is owned

74.9
% by Ma'aden and

25.1
% by Alcoa Corporation and originally consisted of three separate companies as follows: the bauxite mine and alumina refinery (Ma'aden Bauxite and Alumina Company; MBAC), the smelter (Ma'aden Aluminum Company; MAC), and the rolling mill (Ma'aden Rolling Company; MRC). In June 2019, Alcoa Corporation and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. Under the terms of the agreement, Alcoa Corporation transferred its

25.1
% interest in MRC to Ma'aden and, as a result, has

no

further direct or indirect equity interest in MRC. In accordance with the June 2019 amended joint venture agreement, Ma'aden's put option and Alcoa Corporation's call option, relating to additional interests in the joint venture, were exercisable for a period of six months after October 1, 2021. On March 31, 2022, Ma'aden's and Alcoa's put and call options, respectively, expired with neither party exercising their options.

The results for the Saudi Arabia joint venture for the year ended December 31, 2022 include a charge related to a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this charge was $

21

which is included in Other expenses (income), net on the Statement of Consolidated Operations for the year ended December 31, 2022. The results for the Saudi Arabia joint venture for the year ended December 31, 2023 include an adjustment to the estimate for the settlement of this dispute. Alcoa's share of this adjustment is $

41

which is included in Other expenses (income), net on the Statement of Consolidated Operations for 2023. As of December 31, 2023 and 2022, the carrying value of Alcoa's investment in this joint venture was $

533

and $

710

, respectively.

ELYSIS Limited Partnership—In June 2018, Alcoa Corporation, Rio Tinto Alcan Inc. (Rio Tinto), and Investissement Québec, a company wholly-owned by the Government of Québec, Canada, launched the ELYSIS Limited Partnership (ELYSIS). The purpose of this partnership is to advance larger scale development and commercialization of its patent-protected technology that produces oxygen and eliminates direct greenhouse gas emissions from the traditional aluminum smelting process. Alcoa and Rio Tinto plc, as general partners, each own a

48.235

% stake in ELYSIS, and the Québec provincial government, as a limited partner, owns a

3.53

% stake. The federal government of Canada and Apple Inc., as well as the Québec provincial government, are providing initial financing to the partnership.

Through December 31, 2023, the Company has contributed $

118

(C$

155

) toward its investment commitment in ELYSIS. The Company's basis in the investment has been reduced to

zero

for its share of losses incurred to date. In addition to cash contributions, Alcoa is contributing approximately $

3

annually to cover overhead expenses incurred by Alcoa and charged to the joint venture. As a result, the Company has $

60

in unrecognized losses as of December 31, 2023 that will be recognized upon additional contributions into the partnership.

The following table summarizes the profit and loss data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments. Information shown for the Saudi Arabia Joint Venture for all periods presented includes the combined balances for MAC and MBAC. The investments are grouped based on the nature of the investment. The Mining investments are part of the Alumina segment, while the Energy and Other investments are primarily part of the Aluminum segment.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2023				
Sales	$ 2,726	$ 670	$ 236	$ 464
Cost of goods sold	2,550	446	118	425
Net (loss) income	(457)	50	100	(97)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(115)	23	39	(46)
Other	(43)	-	1	(9)
Alcoa Corporation's equity in net (loss) income of affiliated companies	(158)	23	40	(55)
2022				
Sales	$ 3,317	$ 763	$ 252	$ 488
Cost of goods sold	2,696	488	120	445
Net income (loss)	42	110	109	(75)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	11	39	41	(36)
Other	(7)	(2)	(3)	15
Alcoa Corporation's equity in net income (loss) of affiliated companies	4	37	38	(21)
2021				
Sales	$ 3,127	$ 794	$ 264	$ 404
Cost of goods sold	2,083	571	135	365
Net income (loss)	495	30	114	(42)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	124	18	45	(20)
Other	(8)	5	(1)	25
Alcoa Corporation's equity in net income of affiliated companies	116	23	44	5

The following table summarizes the balance sheet data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2023				
Current assets	$ 1,433	$ 8	$ 103	$ 181
Noncurrent assets	6,958	419	310	764
Current liabilities	1,444	5	16	89
Noncurrent liabilities	4,272	24	34	117
2022				
Current assets	$ 1,769	$ 5	$ 114	$ 134
Noncurrent assets	6,993	363	301	757
Current liabilities	1,255	3	13	114
Noncurrent liabilities	4,314	24	26	84

On February 15, 2022, the Company signed an agreement to sell its share of its investment in MRN in Brazil for $

10

to South32 Minerals S.A. Related to this transaction, the Company recorded an asset impairment of $

58

in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. On April 30, 2022, Alcoa completed the sale of its investment in MRN. An additional $

30

in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied.

I. Receivables

On January 31, 2023, a wholly-owned special purpose entity (SPE) of the Company entered into a one-year agreement with a financial institution to sell up to $

150

of certain customer receivables without recourse on a revolving basis. On August 27, 2023, the Company amended the agreement to decrease the amount of certain receivables that can be transferred from $

150

to $

130

. On November 15, 2023, the Company amended the agreement to extend the termination date from January 30, 2024 to November 14, 2024. Company subsidiaries sell customer receivables to the SPE, which then transfers the receivables to the financial institution. The Company does not maintain effective control over the transferred receivables, and therefore accounts for the transfers as sales of receivables.

Alcoa Corporation guarantees the performance obligations of the Company subsidiaries and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At December 31, 2023, the SPE held unsold customer receivables of $

104

pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In 2023, the Company sold gross customer receivables of $

591

, and reinvested collections of $

477

from previously sold receivables, resulting in net cash proceeds from the financial institution of $

114

. Cash collections from previously sold receivables yet to be reinvested of $

99

were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of December 31, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows.

J. Inventories

December 31,	2023	2022
Finished goods	$ 355	$ 385
Work-in-process	287	350
Bauxite and alumina	586	584
Purchased raw materials	700	923
Operating supplies	230	185
	$ 2,158	$ 2,427

K. Properties, Plants, and Equipment, Net

December 31,	2023	2022
Land and land rights, including mines	$ 257	$ 253
Structures (by type of operation):		
Bauxite mining and alumina refining	4,085	3,515

Aluminum smelting and casting		
	3,274	3,265
Energy generation		
	380	354
Other		
	357	346
	8,096	7,480
Machinery and equipment (by type of operation):		
Bauxite mining and alumina refining		
	4,352	4,227
Aluminum smelting and casting		
	5,781	5,813
Energy generation		
	869	851
Other		
	457	461
	11,459	11,352
	19,812	19,085
Less: accumulated depreciation, depletion, and amortization		
	13,596	13,112
	6,216	5,973
Construction work-in-progress		
	569	520
	$ 6,785	$ 6,493

L. Goodwill and Other Intangible Assets

Goodwill, which is included in Other noncurrent assets on the accompanying Consolidated Balance Sheet, was as follows:

December 31,	2023	2022
Alumina	$ 4	$ 4
Aluminum	—	—
Corporate[1]	142	141
	$ 146	$ 145

(1) The carrying value of Corporate's goodwill is net of accumulated impairment losses of $ 742 as of both December 31, 2023 and 2022. As of December 31, 2023, the $ 142 of goodwill reflected in Corporate is allocated to Alcoa Corporation's Alumina reportable segment for purposes of impairment testing (see Note B). This goodwill is reflected in Corporate for segment reporting purposes because it is not included in management's assessment of performance by the reportable segment. Changes in the carrying amount of goodwill were attributable to foreign currency translation as of December 31, 2023 and 2022.

Management performed a quantitative assessment for the Alumina reporting unit in the fourth quarter 2023. The estimated fair value of the Alumina reporting unit was substantially in excess of its carrying value, resulting in no impairment. As a result of the January 2023 segment change, the Company reviewed the recoverability of the carrying value of goodwill of its Alumina reporting unit in the first quarter of 2023. The estimated fair value of the Alumina reporting unit substantially exceeded the reporting unit's carrying value, resulting in no impairment.

Other intangible assets, which are included in Other noncurrent assets on the accompanying Consolidated Balance Sheet, were as follows:

	2023			2022		
December 31,	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Computer software	$ 207	$ (194)	$ 13	$ 206	$ (202)	$ 4
Patents and licenses	25	(10)	15	25	(9)	16
Other intangibles	21	(12)	9	20	(11)	9
Total other intangible assets	$ 253	$ (216)	$ 37	$ 251	$ (222)	$ 29

Computer software consists primarily of software costs associated with the enterprise business solution within Alcoa to drive common systems among all businesses.

Amortization expense related to the intangible assets in the table above for the years ended December 31, 2023, 2022, and 2021 was $ 5, $ 7, and $ 11, respectively, and is expected to be approximately $

annually from 2024 to 2028.

M. Debt

Short-term Borrowings.

December 31,	2023	2022
Short-term borrowings	$ 56	$ —

Short-term borrowings are reported in Other current liabilities on the accompanying Consolidated Balance Sheet.

Inventory Repurchase Agreements

During 2023, the Company entered into inventory repurchase agreements whereby the Company sold aluminum to a third party and agreed to subsequently repurchase substantially similar inventory. The Company did not record sales upon each shipment of inventory and the net cash received of $ 56 related to these agreements was recorded in Short-term borrowings as of December 31, 2023.

For the year ended December 31, 2023, the Company recorded borrowings of $ 117 and repurchased $ 61 of inventory related to these agreements. As of December 31, 2023, inventory sold of $ 56 was reflected in Prepaid expenses and other current assets on the Consolidated Balance Sheet.

The cash received and subsequently paid under the inventory repurchase agreements is included in Cash provided from financing activities on the Statement of Consolidated Cash Flows for the year-ended December 31, 2023.

Long-term Debt.

December 31,	2023	2022
5.500% Notes, due 2027	$ 750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	82	84
Unamortized discounts and deferred financing costs	(21)	(27)
Total	1,811	1,807
Less: amount due within one year	79	1
Long-term debt, less amount due within one year	$ 1,732	$ 1,806

The principal amount of long-term debt maturing in each of the next five years is: $ 79 in 2024, $ 1 in each of 2025 and 2026, $ 750 in 2027, and $ 500

in 2028. At December 31, 2023, Other includes $

78
related to a term loan that matures in November 2024 .

144A Debt.

2029 Notes. In March 2021, Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa Corporation, completed a Rule 144A (U.S. Securities Act of 1933, as amended) debt issuance for $

500
aggregate principal amount of

4.125
% Senior Notes due 2029 (the 2029 Notes) with the following terms:

- Net proceeds were approximately $

493
, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;
- Interest is paid semi-annually in March and September, which commenced September 30, 2021 ;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 10 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after March 31, 2024, at a redemption price up to

102.063
% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to

101
% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2029 Notes, together with cash on hand, to contribute $

500
to its U.S. defined benefit pension plans applicable to salaried and hourly employees on April 1, 2021 (see Note O), to redeem in full $

750
aggregate principal amount of the Company's outstanding

6.75
% Senior Notes due 2024 on April 7, 2021, and to pay transaction-related fees and expenses.

2027 Notes. In July 2020, ANHBV completed a Rule 144A debt issuance for $

750
aggregate principal amount of

5.500
% Senior Notes due 2027 (the 2027 Notes) with the following terms:

- Net proceeds were approximately $

736

, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;
- Interest is paid semi-annually in June and December, which commenced on December 15, 2020 ;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 15 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after June 15, 2023, at a redemption price up to

102.750

% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to

101

% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2027 Notes for general corporate purposes, including adding cash to its balance sheet.

2028 Notes. In May 2018, ANHBV completed a Rule 144A debt issuance for $

500

aggregate principal amount of

6.125

% Senior Notes due 2028 (the 2028 Notes) with the following terms:

- Net proceeds were approximately $

492

, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;
- Interest is paid semi-annually in November and May, which commenced November 15, 2018 ;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 30 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after May 2023, at a redemption price up to

103.063

% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to

101

% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2028 Notes, together with cash on hand, to make discretionary contributions to certain U.S. defined benefit pension plans.

The indentures governing the 2027 Notes, 2028 Notes, and 2029 Notes contain customary affirmative and negative covenants, such as limitations on liens, limitations on sale and leaseback transactions, and a prohibition on a reduction in the ownership of AWAC entities below an agreed level. The negative covenants in the indentures are less extensive than those in the Revolving Credit Facility (see below). For example, the indentures do not include a limitation on restricted payments, such as repurchases of common stock and dividends to stockholders.

The 2027 Notes, the 2028 Notes, and the 2029 Notes are senior unsecured obligations of ANHBV and do not entitle the holders to any registration rights pursuant to a registration rights agreement. ANHBV does not intend to file a registration statement with respect to resales of or an exchange offer for the notes. The notes are guaranteed on a senior unsecured basis by Alcoa Corporation and its subsidiaries that are guarantors under the Facility (the “subsidiary guarantors” and, together with Alcoa Corporation, the “guarantors”). Each of the subsidiary guarantors will be released from their guarantees upon the occurrence of certain events, including the release of such guarantor from its obligations as a guarantor under the Facility.

The 2027 Notes, the 2028 Notes, and the 2029 Notes rank equally in right of payment with each other and with all of ANHBV’S existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of ANHBV; and are effectively subordinated to ANHBV’s existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness. The guarantees of the notes rank equally in right of payment with each other and with all the guarantors’ existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of the guarantors; and are effectively subordinated to the guarantors’ existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness.

Redemption events. On April 7, 2021, the Company redeemed in full $

750

aggregate principal amount notes due in 2024 at a redemption price equal to

103.375

% of the principal amount, plus accrued and unpaid interest. The issuance of the 2029 Notes and this redemption were determined to be an issuance of new debt and an extinguishment of existing debt. As a result, the Company recorded a loss of $

32

on the extinguishment of debt in the second quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

On September 30, 2021, the Company redeemed in full $

500

aggregate principal amount notes due in 2026 at a redemption price equal to

103.5

% of the principal amount, plus accrued and unpaid interest. As a result, the Company recorded a loss of $

22

on the extinguishment of debt in the third quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred

financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

Credit Facilities.

Revolving Credit Facility

On June 27, 2022, Alcoa Corporation and Alcoa Nederland Holding B.V. (ANHBV), a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provided additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027 , (ii) reducing the aggregate commitments under the facility from $

1,500
to $

1,250
, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which would have continued so long as certain credit ratings were maintained, (iv) increasing the maximum leverage ratio from

2.75
to 1.00 to

3.25
to 1.00, which increased following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed

.60
to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's Investor Service (Moody's) or Standard and Poor's Global Ratings (S&P), and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implemented a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade).

In addition to the financial covenants, the Revolving Credit Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Revolving Credit Facility also contains customary events of default, including failure to make payments under the Revolving Credit Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the Revolving Credit Facility. There were

no

borrowings outstanding at December 31, 2023 and 2022, and

no

amounts were borrowed during 2023 and 2022 under the Revolving Credit Facility.

On January 17, 2024, Alcoa Corporation, ANHBV, and certain subsidiaries of the Company entered into Amendment No. 1 (Amendment No. 1) to the Revolving Credit Facility (Amended Revolving Credit Facility). The Amended Revolving Credit Facility provides additional flexibility to the Company and the Borrower by temporarily (i) reducing the minimum interest coverage ratio required thereunder from

4.00
to 1.00 to

3.00
to 1.00 and (ii) providing for a maximum addback for cash restructuring charges in Consolidated EBITDA (as defined in the Revolving Credit Facility) of $

450
, in each case for the 2024 fiscal year. As of January 1, 2025, the minimum interest coverage ratio requirement will revert to

4.00
to 1.00 and the maximum addback for cash restructuring charges in Consolidated EBITDA will revert to

15
% of Consolidated EBITDA. The requirement that the Company maintain a debt to capitalization ratio not to exceed

.60
to 1.00 was not changed by Amendment No. 1. In connection with Amendment No. 1, the Company also agreed to provide collateral for its obligations under the Amended Revolving Credit Facility, which will require it to execute all security documents to re-secure collateral under the Amended Revolving Credit Facility by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. The collateral would be released if, on or after January 1, 2025, the Company or the Borrower (as applicable) (i) has at least two of the following three designated ratings: (x) Baa3 from Moody's, (y) BBB- from S&P and (z) BBB- from Fitch Ratings and (ii) does not have any designated rating lower than: (x) Ba1 from Moody's, (y) BB+ from S&P and (z) BB+ from Fitch Ratings.

The Amended Revolving Credit Facility contains customary affirmative covenants, negative covenants, and events of default substantially comparable to the Revolving Credit Facility (other than those that are described above and other minor changes). The representations, warranties and covenants contained in the Amended Revolving Credit Facility were made only for purposes of Amendment No. 1 and as of specific dates and were solely for the benefit of the parties to the Amended Revolving Credit Facility.

Japanese Yen Revolving Credit Facility

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $

250

(available to be drawn in Japanese yen) (the Japanese Yen Revolving Credit Facility). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility included covenants that are substantially the same as those included in the Revolving Credit Facility.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the facility. There were

no
borrowings outstanding at December 31, 2023 and $

10
was borrowed and subsequently repaid in 2023.

On January 17, 2024, Alcoa Corporation and ANHBV, entered into Amendment No. 1 to the Japanese Yen Revolving Credit Facility (Amended Japanese Yen Revolving Credit Facility) which contains changes that are substantially the same as those included in the Amended Revolving Credit Facility (as described above). Also in connection with this amendment, the Company agreed to provide collateral for its obligations with the same conditions as the Amended Revolving Credit Facility. On January 24, 2024, ANHBV drew $

201
against this facility.

N. Preferred and Common Stock

Preferred Stock. Alcoa Corporation is authorized to issue

100,000,000
shares of preferred stock at a par value of $

0.01
per share. At December 31, 2023 and 2022, the Company had

no

issued preferred stock.

Common Stock. Alcoa Corporation is authorized to issue

750,000,000
shares of common stock at a par value of $

0.01
per share. As of December 31, 2023 and 2022, Alcoa Corporation had

178,472,464

and

176,969,091

, respectively, issued and outstanding shares of common stock.

Under its employee stock-based compensation plan, the Company issued shares of

1,503,373
in 2023,

1,434,543
in 2022, and

1,305,979
in 2021. The Company issues new shares to satisfy the exercise of stock options and the conversion of stock units. As of December 31, 2023,

20,525,431
shares of common stock were available for issuance.

Common Stock Repurchase

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $

500
, depending on cash availability, market conditions, and other factors.

In July 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $

500
, depending on the Company's continuing analysis of market, financial, and other factors (the New Repurchase Program).

No shares were repurchased in 2023. As of the date of this report, the Company is currently authorized to repurchase up to a total of $

500
, in the aggregate, of its outstanding shares of common stock under the New Repurchase Program. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

In 2022, the Company repurchased

8,565,200
shares of its common stock for $

500
, which fully exhausted the October 2021 authorization; the shares were immediately retired.

In 2021, the Company repurchased

3,184,300
shares of its common stock for $

150
; the shares were immediately retired.

Dividend

Dividends on common stock are subject to authorization by Alcoa Corporation’s Board of Directors.

In October 2021, the Company announced the initiation of a quarterly cash dividend on its common stock and the Board of Directors declared the first quarterly cash dividend of $

0.10
per share of the Company’s common stock. Dividends paid totaled $

19
in 2021.

Quarterly dividends paid were $

0.10

per share in 2023 and 2022, totaling $

72

in both years.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Stock-based Compensation

Restricted stock units are generally granted in January and/or February of each calendar year to eligible employees (the Company's Board of Directors also receive certain stock units; however, these amounts are not material). Time-based restricted stock units (RSUs) generally cliff vest on the third anniversary of the award grant date. The Company also grants performance restricted stock units (PRSUs), which are subject to performance conditions and earned after the end of the three-year measurement period. As of January 1, 2021, the Company no longer grants stock options.

The final number of PRSUs earned is dependent on Alcoa Corporation's achievement of certain targets over a three-year measurement period for grants. For PRSUs granted in 2021, the award was earned after the end of the measurement period of January 1, 2021 through December 31, 2023 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2022, the award will be earned after the end of the measurement period of January 1, 2022 through December 31, 2024 based on performance against three measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; and (3) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2023, the award will be earned after the end of the measurement period of January 1, 2023 through December 31, 2025 based on performance against three measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; and (3) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations.

In 2023, 2022, and 2021, Alcoa Corporation recognized stock-based compensation expense of $

35

, $

40

, and $

39

, respectively, of which approximately

95

% to

100

% was related to stock units in each period. There was

no

stock-based compensation expense capitalized in 2023, 2022, and 2021.

Stock-based compensation expense is based on the grant date fair value of the applicable equity grant. For both RSUs and PRSUs, the fair value was equivalent to the closing market price per share of Alcoa Corporation's common stock on the date of grant in the respective periods. For stock units with a market condition, the fair value was estimated on the date of grant using a Monte Carlo simulation model, which generated a result of $

71.12

, $

126.86

, and $

39.88

per unit in 2023, 2022, and 2021, respectively. The Monte Carlo simulation model uses certain assumptions to estimate the fair value of a market-based stock unit, including volatility and a risk-free interest rate, to estimate the probability of satisfying market conditions. Volatility (

64.88

%,

65.25

%, and

60.19

% in 2023, 2022, and 2021, respectively) was estimated using the historical volatility of the Company calculated from daily stock price returns. The risk-free interest rate (

4.26

%,

1.71

%, and

0.22

% in 2023, 2022, and 2021, respectively) was based on the U.S. Treasury yield curve at the time of the grant based on the remaining performance period.

The activity for stock units and stock options during 2023 was as follows:

	Stock units		Stock options	
	Number of units	Weighted average FMV per unit	Number of options	Weighted average exercise price
Outstanding, January 1, 2023	4,606,215	$ 26.08	220,596	$ 23.88
Granted	835,083	49.95	—	—
Exercised	—	—	(70,060)	17.94
Converted	(2,090,761)	16.98	—	—
Expired or forfeited	(354,230)	55.82	(1,928)	19.89
Performance share adjustment	(862)	127.42	—	—
Outstanding, December 31, 2023	2,995,445	$ 35.54	148,608	$ 26.73

The number of Converted units includes

657,448

shares withheld to meet the Company's statutory tax withholding requirements related to the income earned by the employees as a result of vesting in the units.

As of December 31, 2023, the

148,608
outstanding stock options were fully vested and exercisable, had a weighted average remaining contractual life of 3.99 years, a total intrinsic value of $

2
and a weighted average exercise price of $

26.73
. Cash received from stock option exercises was $

1
, $

22
, and $

25
in 2023, 2022, and 2021, respectively. The total intrinsic value of stock options exercised during 2023, 2022, and 2021 was $

2
, $

22
, and $

17
, respectively. The total fair value of stock units converted during 2023, 2022, and 2021 was $

35
, $

32
and $

19
, respectively.

At December 31, 2023, there was $

23
of combined unrecognized compensation expense (pretax) related to non-vested grants of stock units. This expense is expected to be recognized over a weighted average period of 1.80 years.

O. Pension and Other Postretirement Benefits

Defined Benefit Plans

Alcoa sponsors several defined benefit pension plans covering certain employees in the U.S. and foreign locations. Pension benefits generally depend on length of service, job grade, and remuneration. Substantially all benefits are paid through pension trusts that are sufficiently funded to ensure that all plans can pay benefits to retirees as they become due. Most salaried and non-bargaining hourly U.S. employees hired after March 1, 2006 and most bargaining hourly U.S. employees hired after January 1, 2020 participate in a defined contribution plan instead of a defined benefit plan.

The Company also maintains health care postretirement benefit plans covering certain eligible U.S. retired employees and certain retirees from foreign locations. Generally, the medical plans are unfunded and pay a percentage of medical expenses, reduced by deductibles and other coverage. The Company retains the right, subject to existing agreements, to change or eliminate these benefits. All salaried and certain non-bargaining hourly U.S. employees hired after January 1, 2002 and certain bargaining hourly U.S. employees hired after July 1, 2010 are not eligible for postretirement health care benefits.

As of January 1, 2023, the pension benefit plans and the other postretirement benefit plans covered an aggregate of approximately

17,000
and approximately

21,000
participants, respectively.

2023 Plan Actions. In 2023, management initiated the following actions to certain pension plans:

Action #1 – In the second quarter of 2023, plan amendment accounting and related plan remeasurements were triggered within the Surinamese pension and other postretirement plans as a result of participants electing to prospectively convert their Surinamese dollar pension and Company-provided retiree medical to a United States dollar pension with no Company-provided retiree medical. As a result, Alcoa recorded a $

15
increase to Accrued pension benefits and a $

9
decrease to Accrued other postretirement benefits.

Action #2 – In the second quarter of 2023, settlement accounting and related plan remeasurements were triggered within certain Canadian pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately

530
retirees and beneficiaries from its Canadian defined benefit pension plans. The transfer of approximately $

235
in both plan obligations and plan assets was completed in April 2023. As a result, Alcoa recorded a $

22
increase to Accrued pension benefits and a $

5
decrease to Other noncurrent assets and recognized a non-cash settlement loss of $

21
($

16
after-tax) in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Action #3 – In the third quarter of 2023, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. As a result, Alcoa recorded a $

2
decrease to Other noncurrent assets.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability	Decrease to other noncurrent assets	Decrease to accrued other postretirement benefits liability	Settlement loss[1]
1	~ 370	5.58 %	March 31, 2023	5.20 %	$ 15	$ —	$ (9)	$ —
2	~ 530	5.20 %	April 30, 2023	4.80 %	22	(5)	—	21
3	~ 50	5.08 %	September 30, 2023	5.03 %	—	(2)	—	—
	~ 950				$ 37	$ (7)	$ (9)	$ 21

(1) This amount represents the net actuarial loss and was reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2022 Plan Actions. In 2022, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately

4,400
retirees and beneficiaries from its U.S. defined benefit pension plans. The transfer of approximately $

1,000
in both plan obligations and plan assets was completed in August 2022. As a result, Alcoa recorded a $

5
increase to Accrued pension benefits and a $

27
increase to Other noncurrent assets and recognized a non-cash settlement loss of $

617
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #2 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recognized a non-cash settlement loss of $

11
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #3 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $

23
increase to Accrued pension benefits and a $

12
decrease to Other noncurrent assets and recognized a non-cash settlement loss of $

1
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #4 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $

21
increase to Other noncurrent assets and recognized a non-cash settlement gain of $

3
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #5 – In the fourth quarter of 2022, settlement accounting was triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recorded a $

3
increase to Accrued pension benefits and recognized a non-cash settlement loss of $

6
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability[1]	Increase (decrease) to other noncurrent assets[1]	Settlement loss (gain)[2]
1	~ 4,400	2.90 %	July 31, 2022	4.63 %	$ 5	$ 27	$ 617
2	~ 45	2.90 %	July 31, 2022	4.63 %	—	—	11
3	~ 5	4.57 %	September 30, 2022	5.71 %	23	(12)	1
4	~ 25	2.46 %	September 30, 2022	4.99 %	—	21	(3)
5	~ 20	N/A	December 31, 2022	N/A	3	—	6

4,495	$ 31	$ 36	$ 632	

(1) Actions 1-4 caused interim plan remeasurements, including an update to the discount rates used to determine the benefit obligations of the affected plans. These amounts include impacts due to interim plan remeasurements.

(2) These amounts represent the net actuarial loss (gain) and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2021 Plan Actions. In 2021, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – On March 31, 2021, Alcoa completed the sale of the Warrick Rolling Mill to Kaiser Aluminum Corporation for total consideration of $ 670, which included the assumption of $ 69 in other postretirement benefit liabilities. Approximately 1,150 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, became employees of Kaiser. As a result, the affected plan was remeasured, including an update to the discount rate used to determine the benefit obligation of the plan. Accrued other postretirement benefits reflects a decrease of $ 40 related to the remeasurement in addition to the $ 69 assumed by Kaiser. Further, Alcoa recognized a curtailment gain of $ 17 (pre- and after-tax) and a settlement loss of $ 26 (pre- and after-tax).

Action #2 – In the second quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of a high number of participants electing lump sum payments. This includes former employees of the Warrick Rolling Mill, as well as other Alcoa employees making this election at retirement. Alcoa recorded a $

90
decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $

39
(pre- and after-tax).

Action #3 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $

7
increase to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $

7
(pre- and after-tax).

Action #4 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $

38
decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $

1
(pre- and after-tax).

Action #5 – In the fourth quarter of 2021, the Company purchased a group annuity contract to transfer the obligation to pay the remaining retirement benefits of approximately

800
retirees and deferred vested participants from one of its Suriname pension plans to an insurance company. The transfer of $

55

in both plan obligations and plan assets were completed on October 19, 2021. As a result, the Company recorded a settlement loss of $

63
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #6 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company purchasing group annuity contracts to transfer the obligation to pay remaining retirement benefits of approximately

14,000
retirees and beneficiaries from its U.S. defined benefit pension plans and transferred approximately $

1,540

in both plan obligations and plan assets. The transfers were completed on November 23, 2021 and December 16, 2021. As a result, the Company recorded a $

84
decrease to Accrued pension benefits related to this remeasurement and recognized a non-cash settlement loss of $

848
(pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #7 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments (and the group annuity contracts discussed in Action 6 above). Alcoa recorded a $

1
decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $

10
(pre- and after-tax).

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability	Decrease to accrued other postretirement benefits liability	Curtailment gain[1]	Settlement loss[1]
1	~840	2.45%	March 31, 2021	3.06%	$ —	$ (106)	$ (17)	$ 26
2	~120	2.38%	June 30, 2021	2.71%	(90)	—	—	39

3	~ 20	2.71 %	September 30, 2021	2.74 %	7	—	—	7
4	~ 20	1.34 %	September 30, 2021	1.53 %	(38)	—	—	1
5	~ 800	N/A	N/A	N/A	N/A	—	—	63
6	~ 14,000	2.59 %	November 30, 2021	2.79 %	(84)	—	—	848
7	~ 60	2.59 %	November 30, 2021	2.79 %	(1)	—	—	10
					$ (206)	$ (106)	$ (17)	$ 994

(1) These amounts primarily represent the accelerated amortization of a portion of the existing prior service benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

Obligations and Funded Status

December 31,	Pension benefits 2023	Pension benefits 2022	Other postretirement benefits 2023	Other postretirement benefits 2022
Change in benefit obligation				
Benefit obligation at beginning of year	$ 2,518	$ 4,594	$ 536	$ 710
Service cost	11	13	3	4
Interest cost	119	107	26	15
Amendments	2	—	—	—
Actuarial losses (gains)	117	(803)	(7)	(140)
Settlements	(280)	(1,090)	—	—
Benefits paid, net of participants' contributions	(133)	(211)	(52)	(53)
Suriname resident election transfer	12	—	(12)	—
Foreign currency translation impact	27	(92)	—	—
Benefit obligation at end of year	$ 2,393	$ 2,518	$ 494	$ 536
Change in plan assets				
Fair value of plan assets at beginning of year	$ 2,434	$ 4,306	$ —	$ —
Actual return on plan assets	141	(528)	—	—
Employer contributions	24	18	—	—
Participant contributions	3	4	—	—
Benefits paid	(125)	(204)	—	—
Administrative expenses	(9)	(6)	—	—
Settlements	(280)	(1,090)	—	—

Annuity purchase premium refund	7	22	—	—
Foreign currency translation impact	24	(88)	—	—
Fair value of plan assets at end of year	$ 2,219	$ 2,434	$ —	$ —
Funded status	$ (174)	$ (84)	$ (494)	$ (536)
Less: Amounts attributed to joint venture partners	(11)	(6)	—	—
Net funded status	$ (163)	$ (78)	$ (494)	$ (536)
Amounts recognized in the Consolidated Balance Sheet consist of:				
Noncurrent assets	$ 125	$ 146	$ —	$ —
Current liabilities	(10)	(11)	(51)	(55)
Noncurrent liabilities	(278)	(213)	(443)	(481)
Net amount recognized	$ (163)	$ (78)	$ (494)	$ (536)
Amounts recognized in Accumulated Other Comprehensive Loss consist of:				
Net actuarial loss	$ 1,098	$ 1,016	$ 88	$ 95
Prior service cost (benefit)	4	2	(97)	(111)
Total, before tax effect	1,102	1,018	(9)	(16)
Less: Amounts attributed to joint venture partners	33	27	—	—
Net amount recognized, before tax effect	$ 1,069	$ 991	$ (9)	$ (16)
Other Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income (Loss) consist of:				
Net actuarial loss (benefit)	$ 131	$ (141)	$ (2)	$ (140)
Amortization of accumulated net actuarial loss	(49)	(720)	(5)	(18)
Prior service cost	2	—	—	—
Amortization of prior service benefit	—	—	14	14

Total, before tax effect	84	(861)	7	(144)
Less: Amounts attributed to joint venture partners	6	(11)	—	—
Net amount recognized, before tax effect	$ 78	$ (850)	$ 7	$ (144)

At December 31, 2023, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $ 1,119 , $ 1,054 , and ($ 65), respectively. At December 31, 2022, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $ 1,113 , $ 1,064 , and ($ 49), respectively.

Pension Plan Benefit Obligations

	Pension benefits	
	2023	2022
The aggregate projected benefit obligation and accumulated benefit obligation for all defined benefit pension plans was as follows:		
Projected benefit obligation	$ 2,393	$ 2,518
Accumulated benefit obligation	2,285	2,453
The aggregate projected benefit obligation and fair value of plan assets for pension plans with projected benefit obligations in excess of plan assets was as follows:		
Projected benefit obligation	1,636	1,465
Fair value of plan assets	1,336	1,232
The aggregate accumulated benefit obligation and fair value of plan assets for pension plans with accumulated benefit obligations in excess of plan assets was as follows:		
Accumulated benefit obligation	1,425	1,458
Fair value of plan assets	1,169	1,232

Components of Net Periodic Benefit Cost

	Pension benefits[1]			Other postretirement benefits		
	2023	2022	2021	2023	2022	2021
Service cost	$ 10	$ 13	$ 22	$ 3	$ 4	$ 4
Interest cost[2]	114	104	116	26	15	15
Expected return on plan assets[2]	(146)	(151)	(281)	—	—	—
Recognized net actuarial loss[2]	28	88	190	5	18	21
Amortization of prior service cost (benefit)[2]	—	—	—	(14)	(14)	(14)
Settlements[3]	21	632	968	—	—	26
Curtailments[4]	—	—	—	—	—	(17)
Net periodic benefit cost[5]	$ 27	$ 686	$ 1,015	$ 20	$ 23	$ 35

(1) In 2023, 2022, and 2021 , net periodic benefit cost for U.S pension plans was $

6
, $

698
, and $

962
, respectively.

(2) These amounts were reported in Other expenses (income), net on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2023, 2022 and 2021, settlements were due to management actions (see Plan Actions above).

(4) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2021, curtailments were due to management actions (see Plan Actions above).

(5) Amounts attributed to joint venture partners are not included.

Assumptions. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

Weighted average assumptions used to determine benefit obligations for pension and other postretirement benefit plans were as follows:

December 31,	2023	2022
Discount rate—pension plans	5.03 %	5.41 %
Discount rate—other postretirement benefit plans	5.19	5.54
Rate of compensation increase—pension plans	3.77	3.21

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years . The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

Weighted average assumptions used to determine net periodic benefit cost for pension and other postretirement benefit plans were as follows:

	2023	2022	2021
Discount rate—pension plans	5.34 %	2.66 %	1.91 %
Discount rate—other postretirement benefit plans	5.45	2.46	1.99
Expected long-term rate of return on plan assets—pension plans	6.21	4.94	5.66
Rate of compensation increase—pension plans	3.21	3.11	2.58

For 2023, 2022, and 2021, the expected long-term rate of return used by management was based on the prevailing and planned strategic asset allocations, as well as estimates of future returns by asset class. For 2024, management anticipates that

6.13
% will be the weighted average expected long-term rate of return.

Assumed health care cost trend rates for U.S. other postretirement benefit plans were as follows (non-U.S. plans are not material):

	2023	2022	2021
Health care cost trend rate assumed for next year	6.5 %	7.0 %	5.5 %
Rate to which the cost trend rate gradually declines	5.0 %	5.0 %	4.5 %
Year that the rate reaches the rate at which it is assumed to remain	2032	2028	2026

The assumed health care cost trend rate is used to measure the expected cost of gross eligible charges covered by the Company's other postretirement benefit plans. For 2024, a

6.5
% trend rate will be used, reflecting management's best estimate of the change in future health care costs covered by the plans.

Plan Assets. Alcoa's pension plan weighted average target and actual asset allocations at December 31, 2023 and 2022, by asset class, were as follows:

	Target asset allocation		Plan assets at December 31,	
Asset class	**2023**	**2022**	**2023**	**2022**
Equities	20 %	20 %	17 %	29 %
Fixed income	65	65	70	57
Other investments	15	15	13	14
Total	100 %	100 %	100 %	100 %

The principal objectives underlying the investment of the pension plan assets are to ensure that the Company can properly fund benefit obligations as they become due under a broad range of potential economic and financial scenarios, maximize the long-term investment return with an acceptable level of risk based on such obligations, and broadly diversify investments across and within various asset classes to protect asset values against adverse movements. Investment risk is controlled by rebalancing to target allocations on a periodic basis and ongoing monitoring of investment manager performance.

The portfolio includes an allocation to investments in long-duration corporate credit and government debt, public and private market equities, intermediate duration corporate credit and government debt, global-listed infrastructure, high-yield bonds and bank loans, real estate, and securitized credit.

In late 2022, management began restructuring the asset portfolios of certain non-U.S. pension plans. The new strategy increased the amount and duration of the fixed income asset portfolios to reduce exposure to interest rates and was substantially implemented at the end of the first quarter in 2023.

Investment practices comply with the requirements of applicable laws and regulations in the respective jurisdictions, including the Employee Retirement Income Security Act of 1974 (ERISA) in the United States.

The following section describes the valuation methodologies used by the trustees to measure the fair value of pension plan assets. For plan assets measured at

net asset value, this refers to the net asset value of the investment on a per share basis (or its equivalent) as a practical expedient. Otherwise, an indication of the level in the fair value hierarchy in which each type of asset is generally classified is provided (see Note P for the definition of fair value and a description of the fair value hierarchy).

Equities—These securities consist of: (i) direct investments in the stock of publicly traded U.S. and non-U.S. companies and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (ii) the plans' share of commingled funds that are invested in the stock of publicly traded companies and are valued at net

asset value; and (iii) direct investments in long/short equity hedge funds and private equity (limited partnerships and venture capital partnerships) and are valued at net asset value.

Fixed income—These securities consist of: (i) U.S. government debt and are generally valued using quoted prices (included in Level 1); (ii) cash and cash equivalents invested in publicly-traded funds and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (iii) publicly traded U.S. and non-U.S. fixed interest obligations (principally corporate bonds and debentures) and are valued through consultation and evaluation with brokers in the institutional market using quoted prices and other observable market data (included in Level 2); and (iv) cash and cash equivalents invested in institutional funds and are valued at net asset value.

Other investments—These investments include, among others: (i) real estate investment trusts valued based on the closing price reported in an active market on which the investments are traded (included in Level 1); (ii) the plans' share of commingled funds that are invested in real estate partnerships and are valued at net asset value; (iii) direct investments in private real estate (includes limited partnerships) and are valued at net asset value; and (iv) absolute return strategy funds and are valued at net asset value.

The fair value methods described above may not be indicative of net realizable value or reflective of future fair values. Additionally, while Alcoa believes the valuation methods used by the plans' trustees are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table presents the fair value of pension plan assets classified under either the appropriate level of the fair value hierarchy or net asset value:

December 31, 2023	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 108	$ —	$ —	$ 134	$ 242
Private equity	—	—	—	127	127
	$ 108	$ —	$ —	$ 261	$ 369
Fixed income:					
Intermediate and long-duration government/credit	$ 403	$ 517	$ —	$ 496	$ 1,416
Cash and cash equivalent funds	14	—	—	114	128
	$ 417	$ 517	$ —	$ 610	$ 1,544
Other investments:					
Real estate	$ 21	$ —	$ —	$ 253	$ 274
Other	—	—	—	19	19
	$ 21	$ —	$ —	$ 272	$ 293
Total[1]	$ 546	$ 517	$ —	$ 1,143	$ 2,206

December 31, 2022	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 71	$ —	$ —	$ 480	$ 551

Long/short equity hedge funds	—	—	—	8	8
Private equity	—	—	—	145	145
	$ 71	$ —	$ —	$ 633	$ 704
Fixed income:					
Intermediate and long-duration government/credit	$ 390	$ 426	$ —	$ 420	$ 1,236
Cash and cash equivalent funds	38	—	—	118	156
	$ 428	$ 426	$ —	$ 538	$ 1,392
Other investments:					
Real estate	$ 20	$ —	$ —	$ 282	$ 302
Other	—	—	—	28	28
	$ 20	$ —	$ —	$ 310	$ 330
Total[2]	$ 519	$ 426	$ —	$ 1,481	$ 2,426

(1) As of December 31, 2023, the total fair value of pension plan assets excludes a net receivable of $ 13, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

(2) As of December 31, 2022, the total fair value of pension plan assets excludes a net receivable of $ 8, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

Funding and Cash Flows. It is Alcoa's policy to fund amounts for defined benefit pension plans sufficient to meet the minimum requirements set forth in applicable country benefits laws and tax laws, including ERISA for U.S. plans. From time to time, the Company contributes additional amounts as deemed appropriate.

In 2023, 2022, and 2021, cash contributions to Alcoa's defined benefit pension plans were $

24
, $

17
, and $

579
.

During 2021, Alcoa made $

500
in unscheduled contributions to certain U.S. defined benefit pension plans. The additional contributions were discretionary in nature and were funded with net proceeds from a March 2021 debt issuance (see Note M) plus available cash on hand. There were

no

discretionary contributions made in 2022 or 2023.

Alcoa's minimum required contribution to defined benefit pension plans in 2024 is estimated to be $

60
, of which approximately $

40
is for U.S. plans. Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years. In 2024, management intends to make such election related to the Company's U.S. plans.

Benefit payments expected to be paid to pension and other postretirement benefit plan participants are as follows:

Year ending December 31,	Pension benefits	Other postretirement benefits
2024	$ 180	$ 50
2025	175	50
2026	175	45
2027	180	45
2028	175	45
2029 through 2033	855	195
	$ 1,740	$ 430

Defined Contribution Plans

The Company sponsors savings and investment plans in several countries, primarily in Australia and the United States. In the United States, employees may contribute a portion of their compensation to the plans, and Alcoa matches a specified percentage of these contributions in equivalent form of the investments elected by the employee. Also, the Company makes contributions to a retirement savings account based on a percentage of eligible compensation for certain U.S. employees that are not able to participate in Alcoa's defined benefit pension plans. The Company's expenses related to all defined contribution plans were $

80
in 2023, $

71
in 2022, and $

72

in 2021.

Member-funded Pension Plans

The Company contributes to member-funded pension plans for the employees of Aluminerie de Bécancour Inc. and Aluminerie de Deschambault in Canada. Alcoa makes contributions to the plans based on a percentage of the employees' eligible compensation. The Company's expenses related to the member-funded pension plans were $

16
in 2023, $

17
in 2022, and $

17
in 2021.

Target Benefit Plan

The Company contributes to a target benefit plan for the employees of Baie-Comeau in Canada. Alcoa makes contributions to the plan based on a percentage of the employees' eligible compensation. The Company's expenses related to the target benefit plan were $

8
in 2023, $

9
in 2022, and $

9
in 2021.

P. Derivatives and Other Financial Instruments

Fair Value. The Company follows a fair value hierarchy to measure its assets and liabilities. As of December 31, 2023 and 2022, respectively, the assets and liabilities measured at fair value on a recurring basis were primarily derivative instruments. In addition, the Company measures its pension plan assets at fair value (see Note O). Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1—Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;
- Level 2—Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates); and inputs that are derived principally from or corroborated by observable market data by correlation or other means; and,
- Level 3—Inputs that are both significant to the fair value measurement and unobservable.

Derivatives. Alcoa Corporation is exposed to certain risks relating to its ongoing business operations, including the risks of changing commodity prices, foreign currency exchange rates and interest rates. Alcoa Corporation's commodity and derivative activities include aluminum, energy, foreign exchange, and interest rate contracts, which are held for purposes other than trading. They are used to mitigate uncertainty and volatility, and to cover underlying exposures. While Alcoa does not generally enter into derivative contracts to mitigate the risk associated with changes in aluminum price, the Company may do so in isolated cases to address discrete commercial or operational conditions. Alcoa is not involved in trading activities for energy, weather derivatives, or other nonexchange commodities.

Alcoa Corporation's commodity and derivative activities are subject to the management, direction, and control of the Strategic Risk Management Committee (SRMC), which consists of at least

three

members, including the chief executive officer, the chief financial officer, and the chief commercial officer. The remaining member(s) are other officers and/or employees of the Company as the chief executive officer may designate from time to time. The SRMC meets on a periodic basis to review derivative positions and strategy and reports to the Audit Committee of Alcoa Corporation's Board of Directors on the scope of its activities.

Alcoa Corporation's aluminum and foreign exchange contracts are predominately classified as Level 1 under the fair value hierarchy. All of the Level 1 contracts are designated as either fair value or cash flow hedging instruments (except as described below). Alcoa Corporation also has several derivative instruments classified as Level 3 under the fair value hierarchy, which are either designated as cash flow hedges or undesignated. Alcoa includes the changes in its equity method investee's Level 2 derivatives in Accumulated other comprehensive loss.

The following tables present the detail for Level 1 and 3 derivatives (see additional Level 3 information in further tables below):

	2023		2022	
Balance at December 31,	**Assets**	**Liabilities**	**Assets**	**Liabilities**
Level 1 derivative instruments	$ 16	$ 9	$ 84	$ 14
Level 3 derivative instruments	16	1,297	52	1,212
Total	$ 32	$ 1,306	$ 136	$ 1,226
Less: Current	29	214	134	200
Noncurrent	$ 3	$ 1,092	$ 2	$ 1,026

	2023		2022	
Year ended December 31,	**Unrealized gain (loss) recognized in Other comprehensive loss**	**Realized gain (loss) reclassed from Other comprehensive loss to earnings**	**Unrealized gain (loss) recognized in Other comprehensive loss**	**Realized gain (loss) reclassed from Other comprehensive loss to earnings**
Level 1 derivative instruments	$ 31	$ 86	$ 116	$ 35
Level 3 derivative instruments	(326)	(221)	(247)	(345)
Noncontrolling and equity interest (Level 2)	—	5	12	(6)

Total	(	(	(	(
	295	130	119	316
	$)	$)	$)	$)

The 2023 realized gain of $

86
on Level 1 cash flow hedges was comprised of a $

91
gain recognized in Sales and a $

5
loss recognized in Cost of goods sold. The 2022 realized gain of $

35
on Level 1 cash flow hedges was comprised of a $

40
gain recognized in Sales and a $

5
loss recognized in Cost of goods sold.

The following table presents the outstanding quantities of derivative instruments classified as Level 1:

	Classification	December 31, 2023	December 31, 2022
Aluminum (in kmt)	Commodity buy forwards	78	176
Aluminum (in kmt)	Commodity sell forwards	46	337
Foreign currency (in millions of euro)	Foreign exchange buy forwards	48	60
Foreign currency (in millions of euro)	Foreign exchange sell forwards	9	—
Foreign currency (in millions of Norwegian krone)	Foreign exchange buy forwards	138	302
Foreign currency (in millions of Brazilian real)	Foreign exchange buy forwards	467	1,008
Foreign currency (in millions of Brazilian real)	Foreign exchange sell forwards	—	7
Foreign currency (in millions of Canadian dollar)	Foreign exchange buy forwards	31	—

Alcoa routinely uses Level 1 aluminum derivative instruments to manage exposures to changes in the fair value of firm commitments for the purchases or sales of aluminum. Additionally, Alcoa uses Level 1 aluminum derivative instruments to manage exposures to changes in the LME associated with the Alumar (Brazil) restart (April 2022 through December 2023) and the San Ciprián (Spain) strike (expired October 2022). As a result of delays with the Alumar restart, it became probable that certain of the original forecasted transactions would not occur by the end of the originally specified time period and Alcoa dedesignated certain aluminum sell forwards. The Company reclassified the related unrealized gain of $

11
and $

20
included in Accumulated other comprehensive loss to Sales during the year ended December 31, 2023 and 2022, respectively. In conjunction with the dedesignations, the Company entered into aluminum buy forwards in 2023 and 2022 for the same volume and periods which were also not designated. The unrealized and realized gains and losses on the aluminum buy and sell forwards that are not designated offset resulting in no impact to Alcoa's earnings.

Alcoa Corporation uses Level 1 foreign exchange forward contracts to mitigate the risk of foreign exchange exposure related to euro power purchases in Norway (expires December 2026), U.S. dollar aluminum sales in Norway (expires June 2025), U.S. dollar alumina and aluminum sales in Brazil (expires August 2025), and U.S. dollar aluminum sales in Canada (expires March 2025).

Derivative instruments classified as Level 3 in the fair value hierarchy represent those in which management has used at least one significant unobservable input in the valuation model. Alcoa Corporation uses a discounted cash flow model to fair value all Level 3 derivative instruments. Inputs in the valuation models for Level 3 derivative instruments are composed of the following: (i) quoted market prices (e.g., aluminum prices on the 10 -year LME forward curve and energy prices), (ii) significant other observable inputs (e.g., information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts), and (iii) unobservable inputs (e.g., aluminum and energy prices beyond those quoted in the market, and estimated credit spread between Alcoa and the counterparty). For periods beyond the term of quoted market prices for aluminum, Alcoa Corporation estimates the price of aluminum by extrapolating the 10 -year LME forward curve. For periods beyond the term of quoted market prices for the Midwest premium, management estimates the Midwest premium based on recent transactions. Where appropriate, valuations are adjusted for various factors such as liquidity, bid/offer spreads, and credit considerations. Such adjustments are generally based on available market evidence (Level 2). In the absence of such evidence, management's best estimate is used (Level 3). If a significant input that is unobservable in one period becomes observable in a subsequent period, the related asset or liability would be transferred to the appropriate classification (Level 1 or 2) in the period of such change (there were no such transfers in the periods presented). There

were no sales or settlements of Level 3 derivative instruments in the periods presented.

Level 3 derivative instruments outstanding as of December 31, 2023 are described in the table below:

Description	Designation	Contract Termination	Unobservable Inputs Impacting Valuation	Sensitivity to Inputs
Power contracts				
Embedded derivative that indexes the price of power to the LME price of aluminum plus the Midwest premium	Cash flow hedge of forward sales of aluminum	March 2026 December 2029 February 2036	LME price, Midwest premium and MWh per year	Increase in LME price and/or the Midwest premium results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the LME price of aluminum	Cash flow hedge of forward sales of aluminum	September 2027	LME price and MWh per year	Increase in LME price results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the credit spread between the Company and the counterparty	Not designated	October 2028	Estimated credit spread	Wider credit spread results in a higher cost of power and increase in the derivative liability
Financial contracts				
Hedge power prices	Not designated	June 2035	LME price and power price	Lower prices in the power market or higher LME prices result in an increase in the derivative liability

In December 2022, Alcoa entered into a financial contract with a counterparty to hedge power price exposure through March 31, 2023. The Financial contract was designated as a cash flow hedge of future sales of power. Unrealized gains and losses were recognized in Accumulated other comprehensive loss on the accompanying Consolidated Balance Sheet, and realized gains and losses were recognized in Cost of goods sold on the accompanying Statement of Consolidated Operations.

In addition to the instruments presented above, Alcoa had a financial contract that expired in July 2021 that hedged the anticipated power requirements at one of its smelters and was designated as a cash flow hedge of future purchases of electricity. In March 2021, Alcoa entered into four financial contracts (Financial contracts (undesignated), below) with three counterparties to hedge the anticipated power requirements at this smelter for the period from August 1, 2021 through June 30, 2026. A fifth financial contract (undesignated) was entered into in November 2021, with an effective date of September 30, 2022 through June 30, 2026. In August 2023, the Company entered into a nine-year financial contract (undesignated) effective July 1, 2026 when the current contracts end. Three of these financial contracts include LME-linked pricing components and do not qualify for hedge accounting treatment. Management elected not to apply hedge accounting treatment for the other three financial contracts. Unrealized and realized gains and losses on these financial contracts are included in Other expenses (income), net on the accompanying Statement of Consolidated Operations.

At December 31, 2023, the outstanding Level 3 instruments are associated with

seven

smelters. At December 31, 2023 and 2022, the power contracts with embedded derivatives designated as cash flow hedges hedge forecasted aluminum sales of

1,456

kmt and

1,683

kmt, respectively.

The following table presents quantitative information related to the significant unobservable inputs described above for Level 3 derivative instruments (megawatt hours in MWh):

	December 31, 2023	Unobservable Input	Unobservable Input Range	
Asset Derivatives				
Financial contract (undesignated)	$ 16	Interrelationship of forward energy price, LME forward price and the Consumer Price Index	Electricity (per MWh)	2024: $ 50.99
				2024: $ 53.55
			LME (per mt)	2024: $ 2,352
				2024: $ 2,424
Total Asset Derivatives	$ 16			
Liability Derivatives				
Power contract	$ 197	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $ 2,352
				2027: $ 2,796
			Electricity	Rate of 4 million MWh per year
Power contracts	1,100	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $ 2,352
				2029: $ 2,904
				2036: $ 3,153
			Midwest premium (per pound)	2024: $ 0.1880
				2029: $ 0.2300
				2036: $ 0.2300
			Electricity	Rate of 18 million MWh per year
Power contract	—	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $ 2,352
				2024: $ 2,381
			Midwest premium (per pound)	2024: $ 0.1880
				2024: $ 0.2140

			Electricity	Rate of	
				2	million MWh per year
Power contract (undesignated)		Estimated spread between the 30-year debt yield of Alcoa and the counterparty	Credit spread		
	—			1.15	%: 30-year debt yield spread
				6.33	%: Alcoa (estimated)
				5.18	%: counterparty
Total Liability Derivatives	$				
	1,297				

The fair values of Level 3 derivative instruments recorded in the accompanying Consolidated Balance Sheet were as follows:

Asset Derivatives	**December 31, 2023**	**December 31, 2022**
Derivatives designated as hedging instruments:		
Current—financial contract		
	$ —	$ 20
Total derivatives designated as hedging instruments		
	$ —	$ 20
Derivatives not designated as hedging instruments:		
Current—financial contract		
	$ 16	$ 32
Total derivatives not designated as hedging instruments		
	$ 16	$ 32
Total Asset Derivatives		
	$ 16	$ 52
Liability Derivatives		
Derivatives designated as hedging instruments:		
Current—power contracts		
	$ 210	$ 195
Noncurrent—power contracts		
	1,087	1,017
Total derivatives designated as hedging instruments		
	$ 1,297	$ 1,212
Total Liability Derivatives		
	$ 1,297	$ 1,212

The following table shows the net fair values of the Level 3 derivative instruments at December 31, 2023 and the effect on these amounts of a hypothetical change (increase or decrease of 10%) in the market prices or rates that existed as of December 31, 2023:

	Fair value asset (liability)	**Index change of + / -10%**
Power contracts	$ (1,297)	$ 300
Embedded credit derivative	-	-
Financial contracts	16	8

The following tables present a reconciliation of activity for Level 3 derivative instruments:

	Assets	
2023	**Power contracts**	**Financial contracts**
January 1, 2023	$ —	$ 52
Total gains or losses included in:		
Sales (realized)	(4)	—
Cost of goods sold (realized)	—	(20)
Other expenses, net (unrealized/realized)	—	(5)
Other comprehensive income (unrealized)	4	—
Settlements and other	—	(11)
December 31, 2023	$ —	$ 16
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2023:		
Other expenses, net	$ —	$ (5)

	Liabilities
2023	**Power contracts**
January 1, 2023	$ 1,212
Total gains or losses included in:	
Sales (realized)	(245)
Other comprehensive income (unrealized)	330
December 31, 2023	$ 1,297

	Assets
2022	**Financial contracts**
January 1, 2022	$ 2
Total gains or losses included in:	
Sales (realized)	—
Other income, net (unrealized/realized)	171
Other comprehensive income (unrealized)	20

Settlements and other	(141)
December 31, 2022	$ 52
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2022:	
Other income, net	$ 171

	Liabilities	
2022	**Power contracts**	**Embedded credit derivative**
January 1, 2022	$ 1,290	$ 3
Total gains or losses included in:		
Sales (realized)	(345)	—
Other income, net (unrealized/realized)	—	(3)
Other comprehensive (income) loss (unrealized)	267	—
December 31, 2022	$ 1,212	$ —
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2022:		
Other income, net	$ —	$ (3)

Derivatives Designated As Hedging Instruments—Cash Flow Hedges

Assuming market rates remain constant with the rates at December 31, 2023, a realized loss of $ 210 related to power contracts is expected to be recognized in Sales over the next 12 months.

Material Limitations

The disclosures with respect to commodity prices and foreign currency exchange risk do not consider the underlying commitments or anticipated transactions. If the underlying items were included in the analysis, the gains or losses on the futures contracts may be offset. Actual results will be determined by several factors that are not under Alcoa Corporation’s control and could vary significantly from those factors disclosed.

Alcoa Corporation is exposed to credit loss in the event of nonperformance by counterparties on the above instruments, as well as credit or performance risk with respect to its hedged customers' commitments. Alcoa Corporation does not anticipate nonperformance by any of these parties. Contracts are with creditworthy counterparties and are further supported by cash, treasury bills, or irrevocable letters of credit issued by carefully chosen banks. In addition, various master netting arrangements are in place with counterparties to facilitate settlement of gains and losses on these contracts.

Other Financial Instruments. The carrying values and fair values of Alcoa Corporation's other financial instruments were as follows:

	2023		2022	
December 31,	**Carrying value**	**Fair value**	**Carrying value**	**Fair value**
Cash and cash equivalents	$ 944	$ 944	$ 1,363	$ 1,363
Restricted cash	103	103	111	111
Short-term borrowings	56	56	—	—
Long-term debt due within one year	79	79	1	1
Long-term debt, less amount due within one year	1,732	1,702	1,806	1,744

Cash and cash equivalents and Restricted cash. The carrying amounts approximate fair value because of the short maturity of the instruments. The fair value amounts for Cash and cash equivalents and Restricted cash were classified in Level 1 of the fair value hierarchy.

Short-term borrowings and Long-term debt, including amounts due within one year. The fair value of Long-term debt, less amount due within one year was based on quoted market prices for public debt and on interest rates that are currently available to Alcoa Corporation for issuance of debt with similar terms and maturities for non-public debt. The fair value amounts for all Short-term borrowings and Long-term debt were classified in Level 2 of the fair value hierarchy.

Q. Income Taxes

Provision for income taxes. The components of (Loss) income before income taxes were as follows:

	2023	2022	2021
Domestic	$ (277)	$ (652)	$ (663)
Foreign	(307)	1,354	1,862
Total	$ (584)	$ 702	$ 1,199

Provision for income taxes consisted of the following:

	2023	2022	2021
Current:			
Federal	$ —	$ —	$ 8
Foreign	211	445	473
State and local	—	—	1
	$ 211	$ 445	$ 482
Deferred:			

Federal	(3)		6
Foreign	(22)	222	141
State and local	—	—	—
	(22)	219	147
Total	$ 189	$ 664	$ 629

Federal includes U.S. income taxes related to foreign income.

A reconciliation of the U.S. federal statutory rate to Alcoa's effective tax rate was as follows:

	2023	2022	2021
U.S. federal statutory rate	21.0 %	21.0 %	21.0 %
Taxes on foreign operations—rate differential	7.1	9.9	10.8
Tax credits	1.4	(0.2)	—
Adjustment of prior year income taxes	0.3	—	—
Noncontrolling interest	0.2	0.8	0.5
Internal legal entity reorganizations	0.2	(9.0)	—
Tax holidays	0.1	(5.2)	(2.8)
Impacts of the U.S. Tax Cuts and Jobs Act of 2017	—	—	2.0
Uncertain tax positions	(0.1)	0.4	—
Equity loss	(5.3)	(2.0)	(2.5)
Tax on foreign operations—other	(6.1)	1.3	1.7
Changes in valuation allowances	(50.8)	76.7	23.4
Other	(0.4)	0.9	(1.6)
Effective tax rate	(32.4 %)	94.6 %	52.5 %

Certain income earned by AWAB is eligible for a tax holiday, which decreases the tax rate on this income from 34 % to 15.25 %, which will result in future cash tax savings. The holiday related to production at the Alumar refinery was originally expected to end on December 31, 2027. During 2023, it was extended to December 31, 2032. The holiday related to the operation of the Juruti (Brazil) bauxite mine will end on December 31, 2026.

In 2021, it was determined that the deferred taxes associated with income subject to the tax holiday would be fully exhausted within the holiday period and the amounts were therefore maintained on the balance sheet at the holiday tax rate. In 2022, the Company's projection of the reversal of deferred tax assets during the holiday tax period was lowered, and as a result, the remainder was revalued at the statutory rate of 34 %, resulting in a discrete income tax benefit of $ 33 , which is included in Tax holidays, above. In 2023, the Company determined that it was no longer more likely than not that the deferred tax asset at AWAB would be realized and recorded a full valuation allowance against the deferred tax asset (see below). As a result, the amount reflected in Tax holidays, above, is zero with respect to AWAB as of December 31, 2023.

In October 2022, Alcoa completed the liquidation of Alcoa Saudi Rolling Inversiones S.L. (ASRI), a wholly owned subsidiary that previously held the Company's investment in MRC. This liquidation resulted in a deductible loss in the Netherlands and a tax benefit of $

94
was recognized in 2022, however, this tax benefit was substantially offset by a valuation allowance.

In December 2022, Alcoa commenced an internal reorganization to reduce its number of legal entities in Norway from

four
to

one
to simplify accounting and treasury functions and reduce external costs. As a result of the simplification, the Company recorded a deferred tax expense of $

30
in 2022.

Deferred income taxes. The components of deferred tax assets and liabilities based on the underlying attributes without regard to jurisdiction were as follows:

	2023		2022	
December 31,	**Deferred tax assets**	**Deferred tax liabilities**	**Deferred tax assets**	**Deferred tax liabilities**
Tax loss carryforwards	$ 2,042	$ —	$ 1,781	$ —
Employee benefits	312	—	297	—
Derivatives and hedging activities	312	10	283	24
Loss provisions	161	—	174	—
Interest	142	6	127	2
Depreciation	94	318	128	336
Investment basis differences	78	—	75	—
Lease assets and liabilities	34	33	24	23
Tax credit carryforwards	24	—	23	—
Deferred income/expense	16	131	10	153
Other	25	—	36	—
	$ 3,240	$ 498	$ 2,958	$ 538
Valuation allowance	(2,595)	—	(2,333)	—
Total	$ 645	$ 498	$ 625	$ 538

The following table details the expiration periods of the deferred tax assets presented above:

December 31, 2023	Expires within 10 years	Expires within 11-20 years	No expiration	Other	Total
Tax loss carryforwards	$ 203	$ 333	$ 1,471	$ 35	$ 2,042
Tax credit carryforwards	24	—	—	—	24
Other	(1)	—	154	1,021	1,174
Valuation allowance	(226)	(333)	(1,613)	(423)	(2,595)
Total	$ —	$ —	$ 12	$ 633	$ 645

Deferred tax assets with no expiration may still have annual limitations on utilization. Other represents deferred tax assets whose expiration is dependent upon the reversal of the underlying temporary difference.

The total deferred tax asset (net of valuation allowance) is supported by projections of future taxable income exclusive of reversing temporary differences and taxable temporary differences that reverse within the carryforward period. The composition of Alcoa's net deferred tax asset by jurisdiction as of December 31, 2023 was as follows:

	Domestic	Foreign	Total
Deferred tax assets	$ 1,050	$ 2,190	$ 3,240
Valuation allowance	(988)	(1,607)	(2,595)
Deferred tax liabilities	(62)	(436)	(498)
Total	$ —	$ 147	$ 147

The Company has several income tax filers in various foreign countries. Of the $

147
net deferred tax asset included under the Foreign column in the table above, approximately

90
% relates to

six
of Alcoa's income tax filers (the Foreign Filers) as follows: a $

135
net deferred tax asset for Alcoa Canada Company in Canada; a $

90
net deferred tax asset for Alcoa-Lauralco Management Company in Canada; a $

39
net deferred tax asset for Alcoa Wolinbec Company in Canada; a $

19
net deferred tax asset for Alcoa Islandi and a $

35
net deferred tax asset for Fjarðaál, both in Iceland; and a $

185
net deferred tax liability for AofA in Australia.

The future realization of the net deferred tax asset for each of the Foreign Filers was based on projections of the respective future taxable income (defined as the sum of pretax income, other comprehensive income, and permanent tax differences), exclusive of reversing temporary differences and carryforwards. The realization of the net deferred tax assets of the Foreign Filers is not dependent on any future tax planning strategies.

Accordingly, management concluded that the net deferred tax assets of the Foreign Filers referenced above will more likely than not be realized in future periods, resulting in no need for a partial or full valuation allowance as of December 31, 2023.

In December 2023, Alcoa recorded a valuation allowance of $

154

against the net deferred tax assets of AWAB, of which $

106

related to the balance as of December 31, 2022. The 2023 full valuation allowance for AWAB was a result of AWAB's three-year cumulative loss position for the period ended December 31, 2023. The majority of AWAB's net deferred tax assets relate to prior net operating losses; the loss carryforwards are not subject to an expiration period. AWAB's profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

The Company's subsidiaries in Iceland had a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believed it was more likely than not that these tax benefits would not be realized. During 2023, after considering all positive and negative evidence, including the expectation that the jurisdiction will remain in a three-year cumulative income position, the Company determined that it is more likely than not that the net deferred tax assets will be realized. Based on this conclusion, the Company reversed the valuation allowance totaling $

58

during 2023, generating a non-cash benefit from income taxes.

In December 2022, Alcoa recorded a valuation allowance of $

217

against the net deferred tax assets of Alcoa Alumínio (Alumínio), of which $

150

related to the balance as of December 31, 2021. The 2022 full valuation allowance for Alumínio was a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022. Although the Company entered into aluminum contracts to manage exposures associated with the restart, these contracts were held by another legal entity, and the associated realized gains are not available to Alumínio to offset the restart losses. While management believes Alumínio will return to profitability in the future with the restart of the Alumar smelter, current volatility in the market does not provide a reliable basis for concluding that it is more likely than not that Alumínio's net deferred tax assets, which consist primarily of tax loss carryforwards with indefinite life, will be realized. Alumar smelter profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

In 2021, Alcoa recorded a valuation allowance of $

103

against the net deferred tax assets of Alúmina Española, S.A. (Española). Management concluded that it was more likely than not that Española's net deferred tax assets, which consisted primarily of tax loss carryforwards, would not be realized as the entity's sole operating asset, the San Ciprián refinery, was in a three-year cumulative loss position for the period ended December 31, 2021. This cumulative loss position was the result of recent operating losses due to the high energy costs in Spain and the impact of the refinery workers' strike on the fourth quarter of 2021. After weighing all available positive and negative evidence as of December 31, 2023, management's position continues to be that it is more likely than not that Alcoa Corporation will not realize the benefit of these deferred tax assets and continues to have a full valuation allowance recorded against the deferred tax assets.

The following table details the changes in the valuation allowance:

December 31,	**2023**	**2022**	**2021**
Balance at beginning of year	$ (2,333)	$ (2,062)	$ (2,127)
Establishment of new allowances[1]	(106)	(150)	(103)
Net change to existing allowances[2]	(113)	(151)	139
Foreign currency translation	(43)	30	29
Balance at end of year	$ (2,595)	$ (2,333)	$ (2,062)

(1) Reflects valuation allowances initially established as a result of a change in management's judgment regarding the realizability of deferred tax assets.

(2) Reflects movements in previously established valuation allowances, which increase or decrease as the related deferred tax assets increase or decrease. Such movements occur as a result of a change in management's judgment regarding previously established valuation allowances, remeasurement due to a tax rate change and changes in the underlying attributes of the deferred tax assets, including expiration of the attribute and reversal of the temporary difference that gave rise to the deferred tax asset.

Undistributed net earnings. Certain earnings of Alcoa's foreign subsidiaries are deemed to be permanently reinvested outside the United States. The cumulative amount of Alcoa's foreign undistributed net earnings deemed to be permanently reinvested was approximately $

2,676

as of December 31, 2023. Alcoa Corporation has several commitments and obligations related to the Company's operations in various foreign jurisdictions; therefore, management has no plans to distribute such earnings in the foreseeable future. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations and anticipated debt facilities, which may influence future repatriation decisions. If these earnings were distributed in the form of dividends or otherwise, Alcoa could be subject to foreign income or withholding taxes and state income taxes. Due to the uncertainty of the manner in which the undistributed earnings would be brought back to the United States and the tax laws in effect at that time, it is not practicable to estimate the tax liability that might be incurred if such earnings were remitted to the U.S.

Unrecognized tax benefits. Alcoa and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various foreign and U.S. state jurisdictions. With few exceptions, the Company is not subject to income tax examinations by tax authorities for years prior to 2014 . The U.S. federal income tax filings of the Company's U.S. consolidated tax group have been examined through the 2018 tax year. Foreign jurisdiction tax authorities are in the process of examining income tax returns of several of Alcoa's subsidiaries for various tax years. Excluding the Australia tax matter discussed in Note S, the period under foreign examination includes the income tax years from 2014 through 2022 . For U.S. state income tax purposes, the Company and its subsidiaries remain subject to income tax examinations for the 2017 tax year and forward.

In the third quarter of 2020, AofA paid approximately $

74
(A$

107
) to the ATO related to the tax dispute described in Note S. Upon payment, AofA recorded a noncurrent prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. Interest compounded in future years is also deductible against AofA's income in future periods. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2023, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a noncurrent liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. The noncurrent liability resulting from the cumulative interest deductions was approximately $

199
(A$

293
) and $

174
(A$

260
) at December 31, 2023 and 2022, respectively.

The reserve balance for unrecognized tax benefits is included in Noncurrent income taxes on the Consolidated Balance Sheet. A reconciliation of the beginning and ending amount of unrecognized tax benefits (excluding interest and penalties) was as follows:

December 31,	2023	2022	2021
Balance at beginning of year	$ 5	$ 4	$ 4
Additions for tax positions of prior years	—	2	—
Reductions for tax positions of prior years	—	—	—
Expiration of the statute of limitations	—	(1)	—
Foreign currency translation	—	—	—
Balance at end of year	$ 5	$ 5	$ 4

For all periods presented, a portion of the balance at end of year pertains to state tax liabilities, which are presented before any offset for federal tax benefits. The effect of unrecognized tax benefits, if recorded, that would impact the annual effective tax rate for 2023, 2022, and 2021 would be

1
%,

1
%, and

0
%, respectively, of (Loss) income before income taxes. Alcoa does not anticipate that changes in its unrecognized tax benefits will have a material impact on the Statement of Consolidated Operations during 2024.

It is the Company's policy to recognize interest and penalties related to income taxes as a component of the Provision for income taxes on the accompanying Statement of Consolidated Operations. In 2023, 2022, and 2021 Alcoa recognized $

1
, $

1
, and $

0
, in interest and penalties, respectively. Due to the expiration of the statute of limitations, settlements with tax authorities, and refunded overpayments, the Company also recognized interest income of $

1
, $

1
, and $

0
in 2023, 2022, and 2021, respectively. As of December 31, 2023 and 2022, the amount accrued for the payment of interest and penalties was $

4
and $

3
, respectively.

Other Matters. On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022 (IRA), which includes a

15
% minimum tax on book income of certain large corporations, a

1
% excise tax on net stock repurchases after December 31, 2022, and several tax incentives to promote clean energy. As a result of the provisions of the IRA, we will incur an excise tax of

1
% for certain common stock repurchases made subsequent to December 31, 2022, which will be reflected in the cost of purchasing the underlying shares. The minimum corporate tax did not have an impact on the Company for 2023 and will not have an impact on the Company for 2024.

The IRA contains a number of tax credits and other incentives for investments in renewable energy production, carbon capture, and other climate-related actions, as well as the production of critical minerals. In December 2023, the U.S. Treasury issued guidance on Section 45X of the Advanced Manufacturing Tax Credit. The Notice of Proposed Rulemaking (the Notice) clarifies that commercial grade aluminum can qualify for the credit, which was designed to incentivize domestic production of critical materials important for the transition to clean energy. In the fourth quarter of 2023, the Company recorded a benefit of $

36
in Cost of goods sold and Other receivables related to its Massena West smelter (New York) and its Warrick smelter (Indiana).

R. Asset Retirement Obligations

The following table details the carrying value of recorded AROs by major category, of which $

217
and $

117
was classified as a current liability as of December 31, 2023 and 2022, respectively:

December 31,	2023	2022
Closure of bauxite residue areas	$ 437	$ 342
Mine reclamation	328	279
Spent pot lining disposal	124	115
Demolition	76	61
Landfill closure	24	31
Balance at end of year	$ 989	$ 828

The following table details the changes in the total carrying value of recorded AROs:

December 31,	2023	2022
Balance at beginning of year	$ 828	$ 738
Accretion expense	33	20
Liabilities incurred	254	224
Payments	(148)	(114)
Reversals of previously recorded liabilities	(8)	(12)
Foreign currency translation and other	30	(28)
Balance at end of year	$ 989	$ 828

Liabilities incurred in 2023 include:

- $

  97
  for changes in closure estimates of operating bauxite residue areas;
- $

  87
  for new mining areas opened during the year and higher estimated mine reclamation costs;
- $

  36
  related to the closure of the previously curtailed Intalco smelter;
- $

  23

related to spent pot lining treatment and disposal;

- $ 10 for changes in closure estimates of non-operating bauxite residue areas; and,
- $ 1 related to an accrual for demolition for the closure of a potline at Warrick Operations.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs except for $ 15 related to non-operating bauxite residue areas at the Alumar refinery, spent pot lining and treatment, and mine reclamation which was recorded to Cost of goods sold; and $ 41 related to the closure of the Intalco smelter, updated estimates for spent pot lining treatment and disposal at a previously closed site, and demolition accruals for the closure of a potline at Warrick Operations, which was recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

Liabilities incurred in 2022 include:

- $ 81 related to improvements required on both operating and non-operating bauxite residue areas at the Poços de Caldas and Alumar refineries for changes in closure estimates and to comply with updated impoundment regulations in the regions;
- $ 79 for new mining areas opened during the year and higher estimated mine reclamation costs;
- $ 28 related to spent pot lining treatment and disposal;
- $ 18 for bauxite residue areas related to water management at non-operating bauxite residue areas and changes in engineering designs for closure of operating bauxite residue areas;
- $ 15 related to the closure of the previously curtailed magnesium smelter in Addy (Washington). The facility has been fully curtailed since 2001; and,
- $ 3 related to accruals for demolition projects at closed sites.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $ 72 related to non-operating bauxite reside areas which was recorded to Cost of goods sold at the Poços de Caldas and Alumar refineries and $ 34 related to the closure of the magnesium smelter in Addy and adjustments to other previously closed sites which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

In 2023, reversals of previously recorded liabilities included a reversal of $ 8 due to changes in estimates at various sites and the completion of a site demolition project. In 2022, reversals of previously recorded liabilities included a reversal of $ 12 due to the completion of demolition projects at numerous permanently closed sites.

The estimated timing of cash outflows for recorded AROs at December 31, 2023 was as follows:

2024	$ 217
2025 – 2028	573
Thereafter	199
Total	$ 989

Changes to the estimates may result in material changes to the recorded AROs that may require an increase to or a reversal of previously recorded liabilities, as well as changes in the timing of cash outflows.

S. Contingencies and Commitments

Contingencies

Environmental Matters

Alcoa Corporation participates in environmental assessments and cleanups at several locations. These include currently or previously owned or operated facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

Alcoa Corporation's environmental remediation reserve balance reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. The following table details the changes in the carrying value of recorded environmental remediation reserves:

Balance at December 31, 2020	$ 322
Liabilities incurred	21
Cash payments	(23)
Reversals of previously recorded liabilities	(17)
Foreign currency translation and other	6
Balance at December 31, 2021	309
Liabilities incurred	32
Cash payments	(26)
Reversals of previously recorded liabilities	(30)
Foreign currency translation and other	(1)
Balance at December 31, 2022	284
Liabilities incurred	39

Cash payments	(55)
Reversals of previously recorded liabilities	(1)
Foreign currency translation and other	1
Balance at December 31, 2023	$ 268

At December 31, 2023 and 2022, the current portion of the remediation reserve balance was $ 66 and $ 58 , respectively.

In 2023, the Company incurred liabilities of $ 39 primarily related to $ 14 for the closure of the previously curtailed Intalco smelter and $ 13 for an increase in estimated costs associated with ongoing remediation work at the previously closed Longview (Washington) site which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, and $ 12 for an increase in estimated costs associated with ongoing remediation work at various other sites which was recorded in Cost of goods sold on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $ 55 in 2023. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company reversed reserves of $ 1 during 2023 due to the determination that certain remaining site remediation is no longer required.

In 2022, the Company incurred liabilities of $ 32 primarily related to $ 14 for the closure of the previously curtailed magnesium smelter in Addy (Washington), $ 6 for estimates for environmental remediation at the Point Henry site, $ 4 for a new phase of work at the former East St. Louis site and $ 9 for environmental activities at various sites. These charges are recorded in Cost of goods sold and Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $ 26 in 2022. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company reversed reserves of $ 30 during 2022, primarily related to changes in estimates for site remediation at Massena East of $ 18 and Suralco of $ 5 , and completion of remediation at a previously closed site in Brazil of $ 6 .

In 2021, the Company incurred liabilities of $

21

primarily related to remediation design considerations at the Longview site in Washington, closure of the Wenatchee aluminum smelter in Washington, environmental activities at the Point Comfort site in Texas, closure of the anode plant at the Lake Charles site in Louisiana, and wetlands mitigation at the Longview site in Washington, as well as other increases for ongoing monitoring and maintenance at various sites. These charges are primarily recorded in Cost of goods sold and Restructuring and other charges, net on the accompanying Statement of Consolidated Operations. Payments in 2021 include mandated expenditures as well as those not required by any regulatory authority or third-party. Further, the Company reversed reserves of $

17

related to:

- $

  7

  due to the determination that previously estimated site remediation is not required at the previously closed Tennessee site;
- $

  5

  due to lower costs for waste treatment at a previously closed Suriname site; and,
- $

  5

  due to lower costs for site remediation related to a previously closed site in Brazil.

The estimated timing of cash outflows from the environmental remediation reserve at December 31, 2023 was as follows:

2024	$ 66
2025 – 2028	112
Thereafter	90
Total	$ 268

Reserve balances at December 31, 2023 and 2022, associated with significant sites with active remediation underway or for future remediation were $

211

and $

234

, respectively. In management's judgment, the Company's reserves are sufficient to satisfy the provisions of the respective action plans. Upon changes in facts or circumstances, a change to the reserve may be required. The Company's significant sites include:

Suriname—The reserve associated with the 2017 closure of the Suralco refinery and bauxite mine is for treatment and disposal of refinery waste and soil remediation. The work began in 2017 and is expected to be completed at the end of 2025.

Hurricane Creek, Arkansas—The reserve associated with the 1990 closure of two mining areas and refineries near Hurricane Creek, Arkansas is for ongoing monitoring and maintenance for water quality surrounding the mine areas and residue disposal areas.

Massena, New York—The reserve associated with the 2015 closure of the Massena East smelter by the Company's subsidiary, Reynolds Metals Company, is for subsurface soil remediation to be performed after demolition of the structures. Remediation work commenced in 2021 and will take four to eight years to complete.

Point Comfort, Texas—The reserve associated with the 2019 closure of the Point Comfort alumina refinery is for disposal of industrial wastes contained at the site, subsurface remediation, and post-closure monitoring and maintenance. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Sherwin, Texas—In connection with the 2018 settlement of a dispute related to the previously-owned Sherwin alumina refinery, the Company's subsidiary, Copano Enterprises LLC, accepted responsibility for the final closure of four bauxite residue waste disposal areas (known as the Copano facility). Work commenced on the first residue disposal area in 2018 and is expected to take up to an additional four years to complete, depending on the nature of its potential re-use. Other than ongoing maintenance and repair activities, work on the next three areas has not commenced but is expected to be completed by 2048, depending on its potential re-use.

Longview, Washington— In connection with a 2018 Consent Decree and Cleanup Action Plan with the State of Washington Department of Ecology, the Company's subsidiary, Northwest Alloys as landowner, accepted certain responsibilities for future remediation of contaminated soil and sediments at the site located near Longview, Washington. In December 2020, the lessee of the land, who was a partner in the remediation of the site, filed for bankruptcy and exited the site in January 2021. The full site remediation project design, long-term and post-closure monitoring and maintenance at the site was approved in March 2023. In the third quarter of 2023, changes in scope and cost increases for remediation resulted in an increase to the reserve. The project is planned to be completed in the next two years.

Addy, Washington—The reserve associated with the 2022 closure of the Addy magnesium smelter facility is for site-wide remediation and investigation and post-closure monitoring and maintenance. Remediation work is not expected to begin until 2026 and will take three to five years to complete. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Ferndale, Washington—The reserve associated with the 2023 closure of the Intalco aluminum smelter in Ferndale, Washington is for below grade site remediation and five years of post-closure maintenance and monitoring. The final remediation plan is under review.

Other Sites—The Company is in the process of decommissioning various other plants and remediating sites in several countries for potential redevelopment or to return the land to a natural state. In aggregate, there are remediation projects at

32

other sites that are planned or underway. These activities will be completed at various times in the future with the latest expected to be in 2026, after which ongoing monitoring and other activities may be required. At December 31, 2023 and 2022, the reserve balance associated with these activities was $

57

and $

50

, respectively.

Tax

Brazil (AWAB)— In March 2013, AWAB was notified by the Brazilian Federal Revenue Office (RFB) that approximately $

110

(R$

220

) of value added tax credits previously claimed were being disallowed and a penalty of

50

% was assessed. Of this amount, AWAB received $

41

(R$

82

) in cash in May 2012. The value added tax credits were claimed by AWAB for both fixed assets and export sales related to the Juruti bauxite mine and Alumar refinery expansion for tax years 2009 through 2011. The RFB has disallowed credits they allege belong to the consortium in which AWAB owns an interest and should not have been claimed by AWAB. Credits have also been disallowed as a result of challenges to apportionment methods used, questions about the use of the credits, and an alleged lack of documented proof. AWAB presented defense of its claim to the RFB on April 8, 2013. In February 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2012 and disallowed $

4

(R$

19

). In its decision, the RFB allowed credits of $

14

(R$

65

) that were similar to those previously disallowed for 2009 through 2011. In July 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2013 and disallowed $

13

(R$

70

). In its decision, the RFB allowed credits of $

16

(R$

84

) that were similar to those previously disallowed for 2009 through 2011. The decisions on the 2012 and 2013 credits provide positive evidence to support management’s opinion that there is no basis for these credits to be disallowed. AWAB received the 2012 allowed credits with interest of $

9

(R$

44

) in March 2022 and the 2013 allowed credits with interest of $

6

(R$

31

) in August 2022. AWAB will continue to dispute the credits that were disallowed for 2012 and 2013. If AWAB is successful in this administrative process, the RFB would have no further recourse. If unsuccessful in this process, AWAB has the option to litigate at a judicial level. Separately from AWAB’s administrative appeal, in June 2015, a new tax law was enacted repealing the provisions in the tax code that were the basis for the RFB assessing a

50

% penalty in this matter. As such, the estimated range of reasonably possible loss for these matters is $

0

to $

49

(R$

239

). It is management's opinion that the allegations have no basis; however, at this time, the Company is unable to reasonably predict an outcome for this matter.

Australia (AofA)— In December 2019, AofA received a statement of audit position (SOAP) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The SOAP proposed adjustments that would result in additional income tax payable by AofA. During 2020, the SOAP was the subject of an independent review process within the ATO. At the conclusion of this process, the ATO determined to continue with the proposed adjustments and issued Notices of Assessment (the Notices) that were received by AofA on July 7, 2020. The Notices asserted claims for income tax payable by AofA of approximately $

145
(A$

214
). The Notices also included claims for compounded interest on the tax amount totaling approximately $

481
(A$

707
).

On September 17, 2020, the ATO issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment issued to AofA. This paper proposed penalties of approximately $

87
(A$

128
).

AofA disagreed with the Notices and with the ATO's proposed position on penalties. During 2020, AofA lodged formal objections to the Notices, provided a submission on the ATO's imposition of interest and submitted a response to the ATO's position paper on penalties. After the ATO completes its review of AofA's response to the penalties position paper, the ATO could issue a penalty assessment.

To date, AofA has not received a response to its submission on the ATO's imposition of interest or its response to the ATO's position paper on penalties.

Through February 1, 2022, AofA did not receive a response from the ATO on AofA's formal objections to the Notices and, on that date, AofA submitted statutory notices to the ATO requiring the ATO to make decisions on AofA's objections within a 60-day period. On April 1, 2022, the ATO issued its decision disallowing the Company's objections related to the income tax assessment, while the position on penalties and interest remains outstanding.

On April 29, 2022, AofA filed proceedings in the Australian Administrative Appeals Tribunal (AAT) against the ATO to contest the Notices, a process which could last several years. The AAT held the first directions hearing on July 25, 2022 ordering AofA to file its evidence and related materials by November 4, 2022, ATO to file its materials by April 14, 2023 and AofA to file reply materials by May 26, 2023. AofA filed its evidence and related materials on November 4, 2022. The ATO did not file its materials by April 14, 2023. At a directions hearing on May 17, 2023, the ATO was granted an extension to file its materials by August 18, 2023. At a directions hearing on September 26, 2023, the ATO was granted an additional extension to file its materials by November 3, 2023. The ATO filed its materials on November 13, 2023. At a directions hearing on November 22, 2023, AofA was ordered to file any reply materials by March 15, 2024. The substantive hearing is scheduled for June 2024.

The Company maintains that the sales subject to the ATO's review, which were ultimately sold to Aluminium Bahrain B.S.C., were the result of arm's length transactions by AofA over two decades and were made at arm's length prices consistent with the prices paid by other third-party alumina customers.

In accordance with the ATO's dispute resolution practices, AofA paid

50
% of the assessed income tax amount exclusive of interest and any penalties, or approximately $

74
(A$

107
), during the third quarter 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the

50
% payment would be refunded. AofA funded the payment with cash on hand and recorded the payment within Other noncurrent assets as a noncurrent prepaid tax asset; the related December 31, 2023 balance is $

73
(A$

107
).

Further interest on the unpaid tax will continue to accrue during the dispute. The initial interest assessment and the additional interest accrued are deductible against taxable income by AofA but would be taxable as income in the year the dispute is resolved if AofA is ultimately successful. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. At December 31, 2023 and December 31, 2022, total reductions in cash tax payments were $

199
(A$

293
) and $

174
(A$

260
), respectively, and are reflected within Other noncurrent liabilities and deferred credits as a noncurrent accrued tax liability.

The Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. However, because the ultimate resolution of this matter is uncertain at this time, the Company cannot predict the potential loss or range of loss associated with the outcome, which may materially affect its results of operations and financial condition. References to any assessed U.S. dollar amounts presented in connection with this matter have been converted into U.S. dollars from Australian dollars based on the exchange rate in the respective period.

AofA is part of the Company's joint venture with Alumina Limited, an Australian public company listed on the Australian Securities Exchange. The Company and Alumina Limited own

60
% and

40
%, respectively, of the joint venture entities, including AofA.

Other

Spain— In July 2019, the Company completed the divestiture of the Avilés and La Coruña (Spain) aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process. In connection with the divestiture, Alcoa committed to make financial contributions to the divested entities of up to $

95
; a total of $

78
was paid through December 31, 2021.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER. In June 2023, the Court of First Instance in Madrid issued a declaratory judgment in Alcoa's favor ruling that the transaction between PARTER and the unrelated party was a breach of the sale agreement. There was no financial compensation to the Company as a result of this ruling.

Related to this subsequent sale transaction, certain proceedings and investigations were initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits.

During 2022, Alcoa reached a Global Settlement Agreement (GSA) with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture, and Alcoa recorded a charge of $

79
in Restructuring and other charges, net to reflect its estimated liability for the GSA. In July 2023, the Supreme Court of Spain ratified the GSA. Upon completion of the remaining administrative and judicial approvals, the Company made cash payments of $

76
to the former employees of the facilities in 2023 in accordance with the GSA. The remaining payments will be made in the early 2024.

General

In addition to the matters discussed above, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, and employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

Commitments

Purchase Obligations. Alcoa Corporation is party to unconditional purchase obligations for energy that expire between 2040 and 2041 . Commitments related to these contracts total $

56
in 2024, $

59
in 2025, $

61
in 2026, $

63
in 2027, $

65
in 2028, and $

770
thereafter. Expenditures under these contracts totaled $

53
in 2023, $

58
in 2022, and $

86
in 2021. Additionally, the Company has entered into other purchase commitments for energy, raw materials, and other goods and services, which total $

3,896
in 2024, $

1,998
in 2025, $

1,566
in 2026, $

1,448
in 2027, $

1,407
in 2028, and $

8,757
thereafter.

AofA has a gas supply agreement to power its

three
alumina refineries in Western Australia which began in July 2020 for a 12-year period. The terms of this agreement required AofA to make a prepayment of $

500
prior to 2017. At December 31, 2023, prepayments of $

37
and $

283
were included in Prepaid expenses and other current assets and Other noncurrent assets (see Note U), respectively, on the accompanying Consolidated Balance Sheet. At December 31, 2022, prepayments of $

37
and $

311
were included in Prepaid expenses and other current assets and Other noncurrent assets (see Note U), respectively, on the accompanying Consolidated Balance Sheet.

Guarantees of Third Parties. As of December 31, 2023 and 2022, the Company had

no

outstanding potential future payments for guarantees issued on behalf of a third party.

Bank Guarantees and Letters of Credit. Alcoa Corporation and its subsidiaries have outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2024 and 2025 , was $

294
(includes $

86
issued under a standby letter of credit agreement —see below) at December 31, 2023. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $

13
at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $

8
at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In December 2023, AofA committed to provide a bank guarantee for approximately $

68
(A$

100
) which demonstrates Alcoa's confidence that its operations will not impair drinking water supplies.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (amended in August 2018, May 2019, May 2021, June 2022, and January 2024), with three financial institutions. The agreement provides for a $

200
facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's Revolving Credit Facility (see Note M). As of December 31, 2023, letters of credit aggregating $

86
were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2024 and 2028 , was $

190
at December 31, 2023. Additionally, ParentCo has outstanding surety bonds related to the Company of $

8
at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $

5
at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

T. Leasing

The Company records a right-of-use asset and lease liability for several types of operating leases, including land and buildings, alumina refinery process control technology, plant equipment, vehicles, and computer equipment. These amounts are equivalent to the aggregate future lease payments on a discounted basis. The leases have remaining terms of less than one to 59 years . The discount rate applied in determining the present value of lease payments is the Company's incremental borrowing rate at the lease commencement date, unless there is a rate implicit in the lease agreement. The Company does not have material financing leases.

Lease expense and operating cash flows include:

	2023	2022
Costs from operating leases	$ 53	$ 54
Variable lease payments	$ 25	$ 16
Short-term rental expense	$ 11	$ 2

The weighted average lease term and weighted average discount rate were as follows:

December 31,	2023	2022
Weighted average lease term for operating leases (years)	12.9	5.1
Weighted average discount rate for operating leases	6.7 %	5.6 %

The following represents the aggregate right-of-use assets and related lease obligations recognized in the Consolidated Balance Sheet:

December 31,	2023	2022
Properties, plants, and equipment, net	$ 135	$ 89
Other current liabilities	31	30
Other noncurrent liabilities and deferred credits	104	59
Total operating lease liabilities	$ 135	$ 89

New leases of $ 76 and $ 26 were added during the years ended December 31, 2023 and 2022, respectively.

The future cash flows related to the operating lease obligations as of December 31, 2023 were as follows:

Year Ending December 31,	
2024	$ 40
2025	26
2026	20
2027	16

2028	11
Thereafter	112
Total lease payments (undiscounted)	225
Less: discount to net present value	(90)
Total	$ 135

U. Other Financial Information

Interest Cost Components

	2023	2022	2021
Amount charged to expense	$ 107	$ 106	$ 195
Amount capitalized	4	3	6
	$ 111	$ 109	$ 201

Other Expenses (Income), Net

	2023	2022	2021
Equity loss (income)	$ 228	$ 27	$ (105)
Foreign currency (gains) losses, net	(64)	9	3
Net loss (gain) from asset sales	14	10	(354)
Net loss (gain) on mark-to-market derivative instruments (P)	5	(174)	(25)
Non-service costs – pension and other postretirement benefits (O)	13	60	47
Other, net	(62)	(50)	(11)
	$ 134	$ (118)	$ (445)

In 2023, Other, net of $ 62 was primarily related to interest income on interest bearing accounts.

In 2022, Other, net of $ 50 was primarily related to interest income for the Brazil value added tax credits (see Note S).

In 2021, Net loss (gain) from asset sales of $ 354 was primarily related to the sales of the Rockdale site, the Eastalco site, and the Warrick Rolling Mill (see Note C).

Other Noncurrent Assets

December 31,	2023	2022
Value added tax credits	$ 336	$ 294
Prepaid gas transmission contract	297	285
Gas supply prepayment (S)	283	311
Deferred mining costs, net	187	161
Goodwill (L)	146	145
Prepaid pension benefit (O)	125	146
Noncurrent prepaid tax asset (S)	73	72
Noncurrent restricted cash (see below)	71	56

Intangibles, net (L)	37	29
Other	95	94
	$ 1,650	$ 1,593

Prepaid gas transmission contract—As part of a previous sale transaction of an equity investment, Alcoa maintained access to approximately

30
% of the Dampier to Bunbury Natural Gas Pipeline transmission capacity in Western Australia for gas supply to

three
alumina refineries. At December 31, 2023 and 2022, AofA had an asset of $

297
and $

285
, respectively, representing prepayments made under the agreement for future gas transmission services.

Value added tax credits—The Value added tax (VAT) credits (federal and state) relate to

two
of the Company's subsidiaries in Brazil, AWAB and Alumínio, concerning the Alumar smelter and refinery and the Juruti mine. The mine, refinery and smelter pay VAT on the purchase of goods and services used in the mining, alumina, and production process. The credits generally can be utilized to offset the VAT charged on domestic sales of bauxite, alumina, and aluminum.

In March 2021, the Brazil Federal Supreme Court provided clarification on an earlier ruling that found the inclusion of state VAT within the federal VAT tax base to be unconstitutional. After receiving further clarification from the court in August 2021, the Company finalized the amount of its recovery claim and submitted the claim to the tax authorities in the fourth quarter and received acknowledgment of the claim in January 2022. As a result, in the fourth quarter of 2021, the Company recorded $

95
of additional VAT credits in Other noncurrent assets, $

47
payable to Arconic Corporation within Other noncurrent liabilities, $

34
in Sales, and $

14
of interest income within Other (income) expenses, net. The amount due to Arconic Corporation represents VAT payments related to an Arconic subsidiary previously owned by Alumínio for a portion of the claim years and covered under agreements related to the Separation Transaction (see Note A).

In the fourth quarter of 2018, after an assessment of the future realizability of Brazil state VAT credits recorded, the Company established an allowance on the accumulated state VAT credit balances and stopped recording any future credit benefits. With the restart of the Alumar smelter and its first metal sales in June 2022, the Company had the ability to monetize these credits. In June 2022, the Company reversed the allowance with a credit of $

83
to Restructuring and other charges, net and reversed the subsequent additions to the valuation allowance with a credit to Cost of goods sold of $

46
(same accounts as when incurred).

Other Noncurrent Liabilities and Deferred Credits

December 31,	2023	2022
Noncurrent accrued tax liability (S)	$ 199	$ 174
Operating lease obligations (T)	104	59
Accrued compensation and retirement costs	94	95
Value added tax credits payable to Arconic Corporation	58	51
Deferred energy credits	42	37
Noncurrent restructuring reserve (D)	15	3
Deferred alumina sales revenue	20	28
Other	36	39
	$ 568	$ 486

Deferred energy credits—Deferred energy credits relate to cash received for 2022 and 2021 carbon dioxide emissions related to the San Ciprián smelter and refinery during the years ended December 31, 2023 and 2022, respectively, from a governmental agency in Spain. The terms of the credits require the Company to comply with certain conditions for a period of three years. These deferred credits will be recognized as a reduction to Cost of goods sold once it is determined to be probable the Company will satisfy all conditions. Should the Company not meet all conditions during the three-year period, the credits will be repaid to the governmental agency.

Value added tax credits payable to Arconic Corporation—See, Other noncurrent assets—Value added tax credits, above.

Cash and Cash Equivalents and Restricted Cash

December 31,	2023	2022
Cash and cash equivalents	$ 944	$ 1,363
Current restricted cash	32	55
Noncurrent restricted cash	71	56
	$ 1,047	$ 1,474

Restricted cash primarily relates to commitments made for the December 2021 and February 2023 viability agreements for the San Ciprián restart (see Note D).

At December 31, 2023, the Company had restricted cash of $

91
remaining to be made available for $

118
in capital improvements at the site and $

35
in smelter restart costs. The Company incurred $

28
of capital investment expenditures against the commitments during 2023.

Cash Flow Information

Cash paid for interest and income taxes was as follows:

	2023	2022	2021
Interest, net of amount capitalized	$ 100	$ 100	$ 191
Income taxes, net of amount refunded	319	504	152

V. Supplier Finance Programs

The Company has various supplier finance programs with third-party financial institutions that are made available to suppliers to facilitate payment term negotiations. Under the terms of these agreements, participating suppliers receive payment in advance of the payment date from third-party financial institutions for qualifying invoices. Alcoa's obligations to its suppliers, including amounts due and payment terms, are not impacted by its suppliers' participation in these programs. The Company does not pledge any assets as security or provide any guarantees beyond payment of outstanding invoices at maturity under these arrangements. The Company does not pay fees to the financial institutions under these arrangements. At December 31, 2023 and December 31, 2022, qualifying supplier invoices outstanding under these programs were $ 104 and $ 185, respectively, and have payment terms ranging from 50 to 110 days. These obligations are included in Accounts payable, trade on the accompanying Consolidated Balance Sheet.

W. Subsequent Events

On January 8, 2024, Alcoa announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of

2.2
million metric tons and has been operating at approximately

80
percent of its nameplate capacity since January 2023, when the Company reduced production in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. The Company's decision to fully curtail the refinery was made based on a variety of factors, including the refinery's age, scale, operating costs and current bauxite grades, in addition to current market conditions. The refinery currently has approximately

800
employees and this number will be reduced to approximately

250
in the third quarter of 2024, when alumina production will cease. Certain processes will continue until about the third quarter of 2025, when the employee number will be further reduced to approximately

50
.

In the first quarter of 2024, Alcoa will record restructuring charges between $

180
and $

200
related to the curtailment of the refinery. The charges include approximately $

81
for water management costs, $

55
for employee related costs, $

26
for asset retirement obligations, and $

18
of other costs. Alcoa's share of related cash outlays of approximately $

115
(which includes existing employee related liabilities and asset retirement obligations) is expected to be spent in 2024 ($

80
) and 2025 ($

35
).

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

(a) Evaluation of Disclosure Controls and Procedures

Alcoa Corporation's Chief Executive Officer and Chief Financial Officer have evaluated the Company's disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the U.S. Securities Exchange Act of 1934, as amended, as of the end of the period covered by this report, and they have concluded that these controls and procedures were effective as of December 31, 2023.

(b) Management's Annual Report on Internal Control over Financial Reporting

Management's Report on Internal Control over Financial Reporting is included in Part II Item 8 of this Form 10-K.

(c) Attestation Report of the Registered Public Accounting Firm

The effectiveness of Alcoa Corporation's internal control over financial reporting as of December 31, 2023 has been audited by PricewaterhouseCoopers LLP (PCAOB ID No. 238), an independent registered public accounting firm, as stated in their report, which is included in Part II Item 8 of this Form 10-K.

(d) Changes in Internal Control over Financial Reporting

There have been no changes in internal control over financial reporting during the fourth quarter of 2023 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information.

None of the Company's directors or "officers," as defined in Rule 16a-1(f) of the Exchange Act, adopted , modified, or terminated a "Rule 10b5-1 trading arrangement" or a "non-Rule 10b5-1 trading arrangement," as each term is defined in Item 408 of Regulation S-K, during the Company's fiscal quarter ended December 31, 2023.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by Item 401 of Regulation S-K regarding executive officers is set forth in Part I Item 1 of this Form 10-K under the caption "Information about our Executive Officers." The information required by Item 401 of Regulation S-K regarding directors is contained under the caption "Item 1 Election of 10 Director Nominees to Serve for One-Year Terms Expiring in 2025" of Alcoa Corporation's Definitive Proxy Statement for the 2024 Annual Meeting of Stockholders (Proxy Statement), which will be filed with the SEC within 120 days of the end of Alcoa Corporation's fiscal year ended December 31, 2023 (Proxy Statement) and is incorporated herein by reference.

The Company's Code of Conduct and Ethics (Code of Conduct), which incorporates a code of ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, is publicly available on the Company's website at www.alcoa.com under the section "Investors—Governance—Governance Documents—Code of Conduct." Alcoa Corporation will post any amendments to, or waivers of, its Code of Conduct that apply to its principal executive officer, principal financial officer, principal accounting officer or controller on its website at www.alcoa.com.

The information required by Items 407(c)(3), (d)(4) and (d)(5) of Regulation S-K is included under the captions "Item 1 Election of 10 Director Nominees to Serve for One-Year Terms Expiring in 2025—Nominating Board Candidates—Procedures and Director Qualifications," "Corporate Governance—Board Information—Meetings, Attendance and Committee Composition" and "Corporate Governance—Board Information—Committees of the Board" of the Proxy Statement and is incorporated herein by reference.

Item 11. Executive Compensation.

The information required by Item 402 and Item 407(e)(4) and (e)(5) of Regulation S-K is contained under the captions “Item 1 Election of 10 Director Nominees to Serve for One-Year Terms Expiring in 2025—Non-Employee Director Compensation Program,” “Executive Compensation,” “Corporate Governance—Board Information—The Board’s Role in Risk Oversight,” “Corporate Governance—Board Information—Committees of the Board,” and “Corporate Governance—Compensation Matters” of the Proxy Statement. Such information (other than the Compensation Committee Report, which shall not be deemed to be filed) is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by Item 201(d) of Regulation S-K is contained under the caption “Equity Compensation Plan Information” of the Proxy Statement and is incorporated herein by reference.

The information required by Item 403 of Regulation S-K is contained under the caption “Beneficial Ownership” of the Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by Item 404 of Regulation S-K is contained under the caption “Corporate Governance —Related Person Transactions” of the Proxy Statement and is incorporated herein by reference.

The information required by Item 407(a) of Regulation S-K is contained under the caption “Corporate Governance—Board Information” of the Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by Item 9(e) of Schedule 14A is contained under the caption “Item 2 Ratification of the Appointment of PricewaterhouseCoopers LLP as the Company’s Independent Auditor for 2024—Audit Committee Pre-Approval Policy” and “Item 2 Ratification of the Appointment of PricewaterhouseCoopers LLP as the Company’s Independent Auditor for 2024—Auditor Fees” of the Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibit and Financial Statement Schedules.

(a) The consolidated financial statements and exhibits listed below are filed as part of this report.

(1) The Company's consolidated financial statements, the notes thereto and the report of the Independent Registered Public Accounting Firm are included in Part II Item 8 of this report.

(2) Financial statement schedules have been omitted because they are not applicable, not required, or the required information is included in the consolidated financial statements or notes thereto.

(3) Exhibits.

Exhibit No.	Description of Exhibit
3.1	Amended and Restated Certificate of Incorporation of Alcoa Corporation (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed November 3, 2016 (File No. 1-37816))
3.2	Amended and Restated Bylaws of Alcoa Corporation, as adopted on July 26, 2023 (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed July 27, 2023 (File No. 1-37816))
4.1	Indenture, dated May 17, 2018, among Alcoa Nederland Holding B.V., Alcoa Corporation, certain subsidiaries of Alcoa Corporation, and the Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed May 17, 2018 (File No. 1-37816))
4.2	Supplemental Indenture, dated as of December 9, 2019, among Alcoa Corporation, Alcoa Treasury S.à r.l, Alcoa Nederland Holding B.V., and The Bank of New York Mellon Trust Company, N.A. under the Indenture dated May 17, 2018 (incorporated by reference to Exhibit 4.5 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019, filed February 21, 2020 (File No. 1-137816))
4.3	Indenture, dated July 13, 2020, among Alcoa Nederland Holding B.V., Alcoa Corporation, certain subsidiaries of Alcoa Corporation, and The Bank of New York Mellon Trust Company, National Association, as trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed July 13, 2020 (File No. 1-37816))
4.4	Indenture, dated as of March 24, 2021, among Alcoa Nederland Holding B.V., Alcoa Corporation, certain subsidiaries of Alcoa Corporation, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed March 24, 2021 (File No. 1-37816))
4.5	Description of Securities (incorporated by reference to Exhibit 4.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019, filed February 21, 2020 (File No. 1-137816))
10.1	Separation and Distribution Agreement, dated as of October 31, 2016, by and between Arconic Inc. and Alcoa Corporation (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed November 4, 2016 (File No. 1-37816))
10.2	Tax Matters Agreement, dated as of October 31, 2016, by and between Arconic Inc. and Alcoa Corporation (incorporated by reference to Exhibit 2.3 to the Company's Current Report on Form 8-K filed November 4, 2016 (File No. 1-37816))
10.3	Amendment No. 1, dated as of January 17, 2024, which includes, as Exhibit A thereto, the Revolving Credit Agreement, dated as of September 16, 2016, as amended as of October 26, 2016, as amended and restated as of November 14, 2017, as amended and restated as of November 21, 2018, as amended as of August 16, 2019, as amended as of April 21, 2020, as amended as of June 24, 2020, as amended as of March 4, 2021, as amended and restated as of June 27, 2022 and as amended as of January 17, 2024, among Alcoa Corporation, Alcoa Nederland Holding B.V., the lenders and issuers from time to time party thereto, and JPMorgan Chase Bank N.A., as administrative agent for the lenders and issuers (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed January 18, 2024 (File No. 1-37816))

Exhibit No.	Description of Exhibit
10.4	Amended and Restated Charter of the Strategic Council for the AWAC Joint Venture (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed November 4, 2016 (File No. 1-37816))
10.5	Side Letter of November 1, 2016, between Alcoa Corporation and Alumina Limited clarifying transfer restrictions (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed November 4, 2016 (File No. 1-37816))
10.6	Third Amended and Restated Limited Liability Company Agreement of Alcoa World Alumina LLC, dated as of November 1, 2016, by and among Alcoa USA Corp., ASC Alumina, Alumina International Holdings Pty Ltd, Alumina (USA) Inc., Reynolds Metals Company, LLC and Reynolds Metals Exploration, Inc. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed November 4, 2016 (File No. 1-37816))
10.7	Shareholders' Agreement between Alcoa of Australia Limited, Alcoa Australian Holdings Pty Ltd and Alumina Limited, originally dated as of May 10, 1996 (incorporated by reference to Exhibit 10.13 to Amendment No. 2 to the Company's Registration Statement on Form 10 filed September 1, 2016 (File No. 1-37816))
10.8	Kwinana State Agreement of 1961 (incorporated by reference to Exhibit 10.7 to Amendment No. 2 to the Company's Registration Statement on Form 10 filed September 1, 2016 (File No. 1-37816))
10.9	Pinjarra State Agreement of 1969 (incorporated by reference to Exhibit 10.8 to Amendment No. 2 to the Company's Registration Statement on Form 10 filed September 1, 2016 (File No. 1-37816))
10.10	Wagerup State Agreement of 1978 (incorporated by reference to Exhibit 10.9 to Amendment No. 2 to the Company's Registration Statement on Form 10 filed September 1, 2016 (File No. 1-37816))
10.11	Alumina Refinery Agreement of 1987 (incorporated by reference to Exhibit 10.10 to Amendment No. 2 to the Company's Registration Statement on Form 10 filed September 1, 2016 (File No. 1-37816))
10.12	Framework Agreement, dated June 26, 2019, between Saudi Arabian Mining Company (Ma'aden) and Alcoa Corporation (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed July 31, 2019 (File No. 1-37816))
10.13	Amendment and Restatement Deed dated June 26, 2019 relating to the Aluminium Project Framework Shareholders' Agreement originally dated December 20, 2009 between Saudi Arabian Mining Company (Ma'aden) and Alcoa Corporation (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed July 31, 2019 (File No. 1-37816))
10.14	Alcoa Corporation 2016 Stock Incentive Plan (as Amended and Restated as of May 9, 2018), (incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed May 15, 2018 (File No. 1-37816))*
10.15	Alcoa USA Corp. Deferred Compensation Plan, effective August 1, 2016, as amended November 15, 2021 (incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed February 24, 2022 (File No. 1-137816))*
10.16	Alcoa USA Corp. Nonqualified Supplemental Retirement Plan C (incorporated by reference to Exhibit 10.3 to Amendment No. 1 to the Company's Registration Statement on Form 10 filed August 12, 2016 (File No. 1-37816))*
10.17	Amendment 1 to Alcoa USA Corp. Nonqualified Supplemental Retirement Plan C, effective January 1, 2021 (incorporated by reference to Exhibit 10.9 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed February 23, 2018 (File No. 1-37816))*
10.18	Form of Amended and Restated Indemnification Agreement by and between Alcoa Corporation and individual directors or officers, effective August 1, 2017 (incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q filed August 3, 2017 (File No. 1-37816))*
10.19	Alcoa Corporation Annual Cash Incentive Compensation Plan (as Amended and Restated), effective February 21, 2018 (incorporated by referenced to Exhibit 10 to the Company's Quarterly Report on Form 10-Q filed May 9, 2018 (File No. 1-37816))*

Exhibit No.	Description of Exhibit
10.20	Alcoa Corporation Amended and Restated Change in Control Severance Plan, dated July 30, 2019 (incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.21	Amendment No. 1, dated as of January 8, 2023 to the Alcoa Corporation Amended and Restated Change in Control Severance Plan, dated July 30, 2019 (incorporated by reference to Exhibit 10.27 to the Company's Annual Report on Form 10-K for the year ended December 31, 2022, filed February 23, 2023 (File No. 1-137816))*
10.22	Amended and Restated Form of Alcoa Corporation Chief Executive Officer and Chief Financial Officer Executive Severance Agreement, effective as of July 30, 2019 (incorporated by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.23	Amendment No. 1 to Amended and Restated Executive Severance Agreement, between William F. Oplinger and Alcoa Corporation, effective February 1, 2023 (incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K for the year ended December 31, 2022, filed February 23, 2023 (File No. 1-137816))*
10.24	Amendment to the Amended and Restated Executive Severance Agreement, between Roy C. Harvey and Alcoa Corporation, effective September 24, 2023 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed October 26, 2023 (File No. 1-37816))*
10.25	Amended and Restated Form of Alcoa Corporation Corporate Officer Executive Severance Agreement, effective as of July 30, 2019 (incorporated by reference to Exhibit 10.7 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.26	Amended and Restated Form of Alcoa Corporation Corporate Officer Executive Severance Agreement (Canada), effective as of April 1, 2020 (filed herewith)*
10.27	Terms and Conditions for Employee Stock Option Awards (incorporated by reference to Exhibit 10.30 to the Company's Registration Statement on Form S-1 filed January 18, 2017 (File No. 333-215606))*
10.28	Terms and Conditions for Employee Stock Option Awards, dated January 24, 2018 (incorporated by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed February 23, 2018 (File No. 1-37816))*
10.29	Terms and Conditions for Employee Restricted Share Units, effective October 1, 2019 (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.30	Terms and Conditions for Employee Stock Option Awards, effective October 1, 2019 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.31	Terms and Conditions for Employee Special Retention Awards, effective October 1, 2019 (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q filed October 31, 2019 (File No. 1-37816))*
10.32	Terms and Conditions for Employee Restricted Share Units, effective December 8, 2021 (incorporated by reference to Exhibit 10.37 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed February 24, 2022 (File No. 1-137816))*
10.33	Terms and Conditions for Employee Special Retention Awards, effective December 8, 2021 (incorporated by reference to Exhibit 10.38 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed February 24, 2022 (File No. 1-137816))*
10.34	Terms and Conditions for Employee Restricted Share Units, effective January 24, 2024 (filed herewith)*
10.35	Terms and Conditions for Employee Special Retention Awards, effective January 24, 2024 (filed herewith)*
10.36	Alcoa Corporation Non-Employee Director Compensation Policy, effective October 1, 2023 (filed herewith)*
10.37	Terms and Conditions for Deferred Fee Restricted Share Units Director Awards, effective December 1, 2016 (incorporated by reference to Exhibit 10.34 to the Company's Registration Statement on Form S-1 filed January 18, 2017 (File No. 333-215606))*

Exhibit No.	Description of Exhibit
10.38	Terms and Conditions for Deferred Fee Restricted Share Units Director Awards, effective May 4, 2022 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed July 25, 2022 (File No. 1-37816))*
10.39	Terms and Conditions for Restricted Share Units Annual Director Awards, effective December 1, 2016 (incorporated by reference to Exhibit 10.35 to the Company's Registration Statement on Form S-1 filed January 18, 2017 (File No. 333-215606))*
10.40	Terms and Conditions for Restricted Share Units Annual Director Awards, effective May 9, 2017 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report Form 10-Q filed August 3, 2017 (File No. 1-37816))*
10.41	Terms and Conditions for Restricted Share Units Annual Director Awards, effective May 4, 2022 (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q filed July 25, 2022 (File No. 1-37816))*
10.42	Alcoa Corporation 2016 Deferred Fee Plan for Directors, effective November 1, 2016, as amended and restated on December 5, 2018 (incorporated by reference to Exhibit 10.37 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed February 26, 2019 (1-37816))*
21.1	List of Subsidiaries (filed herewith)
23.1	Consent of PricewaterhouseCoopers LLP (filed herewith)
23.2	Consent of SLR International Corporation (filed herewith)
31.1	Certification of Principal Executive Officer required by Securities and Exchange Commission Rule 13a-14(a) or 15d-14(a) (filed herewith)
31.2	Certification of Principal Financial Officer required by Securities and Exchange Commission Rule 13a-14(a) or 15d-14(a) (filed herewith)
32.1	Certification of Principal Executive Officer, required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (furnished herewith)
32.2	Certification of Principal Financial Officer, required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (furnished herewith)
96.1	Technical Report Summary for Darling Range, Western Australia (filed herewith)
96.2	Technical Report Summary for Juruti, Brazil (incorporated by reference to Exhibit 96.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed February 24, 2022 (File No. 1-137816))
97	Alcoa Corporation Clawback Policy, effective October 15, 2023 (filed herewith)
99.1	Amended and Restated Grantor Trust Agreement by and between Alcoa Corporation and Wells Fargo Bank, National Association, effective October 24, 2017 (incorporated by reference to Exhibit 99.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed February 23, 2018 (File No. 137816))
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema with Embedded Linkbases Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

Certain schedules exhibits, and appendices have been omitted in accordance with to Item 601(a)(5) of Regulation S-K. The Company hereby undertakes to furnish copies of any omitted schedule, exhibit, or appendix to the Commission upon request.

* Denotes management contracts or compensatory plans or arrangements required to be filed as Exhibits to this Form 10-K.

Item 16. Form 10-K Summary.

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ALCOA CORPORATION

By: /s/ Renee R. Henry
Renee R. Henry
Senior Vice President and Controller

February 21, 2024

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated and as of February 21, 2024.

/s/ William F. Oplinger
William F. Oplinger
President, Chief Executive Officer and Director
(Principal Executive Officer and Director)

/s/ Molly S. Beerman
Molly S. Beerman
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

/s/ Renee R. Henry
Renee R. Henry
Senior Vice President and Controller
(Principal Accounting Officer)

/s/ Steven W. Williams
Steven W. Williams
Director, Chairman of the Board of Directors

/s/ Mary Anne Citrino
Mary Anne Citrino
Director

/s/ Pasquale Fiore
Pasquale Fiore
Director

/s/ Thomas J. Gorman
Thomas J. Gorman
Director

/s/ James A. Hughes
James A. Hughes
Director

/s/ Roberto O. Marques
Roberto O. Marques
Director

/s/ Carol L. Roberts
Carol L. Roberts
Director

/s/ Jackson P. Roberts
Jackson P. Roberts
Director

/s/ Ernesto Zedillo
Ernesto Zedillo
Director

AMENDED AND RESTATED EXECUTIVE SEVERANCE AGREEMENT

By this Amended and Restated Executive Severance Agreement dated and effective as of April 1, 2020 (the "Agreement"), Alcoa Corporation (the "Company"), and [NAME], who has been designated as an officer of the Company by the Company's Board of Directors (the "Board") (" Executive"), intending to be legally bound, and for good and valuable consideration, agree as follows:

I. Termination of Executive's Employment by the Company.

The Company may terminate your employment at any time, with or without Cause, with the results described below. In such case, the Company shall determine the effective date of your termination, which termination shall constitute a "separation from service" for purposes of Section 409A of the Internal Revenue Code of 1986, as amended ("409A") (the "Involuntary Termination Date").

A. Involuntary Termination With Cause. If the Company terminates your employment due to Cause, you will receive no severance payment under this Agreement or any other severance plan, policy or arrangement of the Company or any of its affiliates. For purposes of this Agreement, " Cause" means: (i) your willful and continued failure to substantially perform your duties that has not been cured within thirty days after a written demand for substantial performance is delivered to you, which demand specifically identifies the manner in which the Company believes that you have not substantially performed your duties, or (ii) your willful engagement in conduct which is demonstrably and materially injurious to the Company, monetarily or otherwise. For purposes of clauses (i) and (ii) of this definition, (x) no act, or failure to act, on your part shall be deemed "willful" unless done, or omitted to be done, by you not in good faith and without reasonable belief that your act, or failure to act, was in the best interest of the Company, and (y) in the event of a dispute concerning the application of this provision, no claim by the Company that Cause exists shall be given effect unless the Board determines that there is clear and convincing evidence that Cause exists and the Board finding to that effect is adopted by the affirmative vote of not less than three quarters of the entire membership of the Board (after reasonable notice to you and an opportunity for you, together with your counsel, to be heard by the Board).

B. Involuntary Termination Without Cause. If the Company terminates your employment for reasons other than Cause, and you fulfill your obligations as set forth in this Agreement, you shall be paid the greater of (i) the amounts you would have been entitled to receive under the Layoff, Job Elimination, and Dismissal of Salaried Employee Plan applicable to your Canadian location (or successor plan) if you had been an eligible participant under such plan or (ii) the amounts set forth below in this Section I.B, in either case as soon as practicable after the Involuntary Termination Date but in no event later than 60 days after the Involuntary Termination Date; *provided*, that if you are, as of the Involuntary Termination Date, a "specified employee" within the meaning of 409A as determined in accordance with the methodology duly adopted by the Company as in effect on the Involuntary Termination Date, then such amounts shall instead be paid on the first business day following the date which is six months after the Involuntary Termination Date (the "Six-Month Delay Date") (or if sooner, upon your death); and *further provided* that the amount payable under Section I.B(ii), if applicable, will be paid in the fiscal year following the fiscal year in which the Involuntary Termination Date occurs, if later than as otherwise specified herein. Payment of the amounts set forth in Section I.B are conditioned upon and subject to the requirement that, on or after the Involuntary Termination Date, and at least 10 days prior to the Six-Month Delay Date or, if applicable, at least 10 days prior to the last day of the aforementioned 60 day period, (i) you execute and return to the Company, to the extent permitted by law, the release agreement attached as Exhibit A (the "Release Agreement") (or any equivalent form in accordance with local law of your location), and (ii) only to the extent required by applicable law, any period within which you may revoke the Release Agreement (or any equivalent form in accordance with local law of your location) pursuant to the terms thereof has expired without you having revoked the Release Agreement:

(i) a lump sum amount equivalent to your annual base salary as of the Involuntary Termination Date; and

(ii) a pro-rated annual bonus for the fiscal year in which the Involuntary Termination Date occurs, which lump sum amount shall be determined based on, for such fiscal year, the level of achievement of the applicable performance goals under the Company's Incentive Plan(s), the bonus-eligible percentage of your annual base pay in effect and the amount of base pay actually paid to you prior to the Involuntary Termination Date; and

(iii) access to reasonable outplacement services suitable to the Executive's position for a period of 12 months or, if earlier, until the first acceptance by the Executive of an offer of employment (to the extent of reimbursement for such outplacement services, such reimbursement shall occur prior to the last day of the 15th month following the Involuntary Termination Date); and

(iv)(A) if, on the Involuntary Termination Date, you are an active participant who is accruing benefits under any tax-qualified, supplemental or excess defined benefit pension plan maintained by the Company or any of its affiliates (a "DB Pension Plan"), pursuant to the DB Pension Plan terms, you will receive additional pension service through the earlier of (i) the one year anniversary of your Involuntary Termination Date, and (ii) the date upon which benefit accruals for active employees cease under the terms of the DB Pension Plan; or

(B) if, on the Involuntary Termination Date, you are not an active participant who is accruing benefits under a DB Pension Plan, but are eligible to receive either Employer Retirement Income Contributions (ERIC) under an Alcoa Savings Plan (a "U.S. DC Plan"), or comparable employer contributions under a non-U.S. defined contribution plan maintained by the Company or any of its affiliates which is designed to provide you with retirement benefits (a "Non-U.S. DC Plan"), a lump sum amount, in cash, equal to the U.S. DC Plan or Non-U.S. DC Plan contribution percent in effect on the Involuntary Termination Date multiplied by the sum of your annual base salary as of your Involuntary Termination Date plus your target annual variable compensation; or

(C) if, on the Involuntary Termination Date, you are not an active participant who is accruing benefits under a DB Pension Plan, but are eligible to participate in the Global Pension Plan, you will receive a lump sum amount, in cash, equal to the Global Pension Plan annual percentage contribution in effect on the Involuntary Termination Date, multiplied by the sum of your annual base salary as of your Involuntary Termination Date plus your target annual variable compensation.

In addition, for a period of one year after the Involuntary Termination Date the Company shall arrange to provide you, and anyone entitled under the terms of the applicable plan to claim through you, health (including medical, behavioral, prescription drug, dental and vision) benefits substantially similar to those provided to active employees as long as you pay the active employee contribution for the coverage. Coverage provided under this Agreement will run concurrently with the coverage to which you are entitled under the Consolidated Omnibus Budget Reconciliation Act of 1985. In order to comply with 409A, the following shall apply to the health care benefits provided pursuant to this paragraph, the costs of which are not fully paid by you (the "Health Benefits"). Any and all reimbursements of eligible expenses made pursuant to the Health Benefits shall be made no later than the end of the calendar year next following the calendar year in which the expenses were incurred. The amount of expenses that are eligible for reimbursement or of in-kind benefits that are provided pursuant to the Health Benefits in any given calendar year shall not affect the expenses that are eligible for reimbursement or benefits to be provided pursuant to the Health Benefits in any other calendar year, except as specifically permitted by Treasury Regulation Section 1.409A-3(i)(1)(iv)(B). Your right to the Health Benefits may not be liquidated or exchanged for any other benefit.

If your employment with the Company terminates pursuant to this Section I, upon and following the Involuntary Termination Date, your other compensation and benefits continue to be governed by the terms of the plans in which you participate; provided however, that payments and benefits under this Section I are in lieu of any other involuntary separation benefits or severance payments which you may be eligible to receive from the Company; and if you receive severance pay and benefits under the Company's Change in Control Severance Plan, no payments will be made, or benefits provided, under this Agreement or the Layoff, Job Elimination, and Dismissal of Salaried Employee Plan applicable to your Canadian location (or successor plan).

In the event that, as of the Involuntary Termination Date, you are not a "specified employee" (as described above), and the 60 day period following your Involuntary Termination Date specified herein for payment of any of the amounts due to you under this Section I.B. spans two calendar years, any such payment will be made in the second calendar year.

Restrictive Covenants

You acknowledge that to the extent that you are a party to any noncompetition, nonsolicitation or other restrictive covenants or confidentiality agreements with the Company (collectively, "Restrictive Covenants"), the terms of such Restrictive Covenants, shall remain in full force and effect.

Tax Withholding

You shall be solely responsible for all taxes owed with respect to all payments and benefits provided hereunder. You must pay all applicable foreign, federal and state income and employment withholding taxes when due. The Company shall be entitled to withhold from amounts to be paid to you hereunder any federal, state or local withholding or other taxes or charges (or foreign equivalents of such taxes or charges) which it is from time to time required to withhold.

Application of 409A Provisions

If you provide a written, unqualified opinion from your tax advisor to the Company stating that you are a non-resident alien not subject to 409A at the time of your termination of employment, or that 409A otherwise does not apply to you at that time, unless the Company has reason to believe that such opinion is more likely than not incorrect, the Company shall cooperate with you to amend this Agreement in a mutually satisfactory manner to cause any severance payments payable hereunder to be paid as soon as practicable following your termination of employment, and to otherwise remove references to Section 409A from this Agreement; provided that in no event shall such payments be made unless and until you have returned an executed Release Agreement (signed by you on or following your termination date) (or any equivalent form in accordance with local law of your location) and any period within which you may revoke the Release Agreement pursuant to the terms thereof has expired without you having revoked the Release Agreement (or any equivalent form in accordance with local law of your location). The Company shall have no responsibility for any taxes or penalties you may incur on account of any such amendments, whether pursuant to 409A or otherwise.

Governing Law; Jurisdiction

This Agreement shall be governed and interpreted in accordance with the laws of the State of Delaware without reference to its choice of law principles. Any action arising out of or related to this Agreement shall be brought in the state or Federal courts located in Pittsburgh, Pennsylvania, and you and the Company consent to the jurisdiction and venue of such courts.

Amendment; Waiver

No provision of this Agreement may be modified, waived, or discharged unless such waiver, modification or discharge is in writing and signed by the Chief Executive Officer of the Company as authorized by the Board or the Compensation and Benefits Committee of the Board (or successor committee). Any failure by you or the Company to enforce any of the provisions of this Agreement shall not be construed to be a waiver of such provisions or any right to enforce each and every provision in the future. A waiver of any breach of this Agreement shall not be construed as a waiver of any other or subsequent breach.

Successors; Binding Agreement

The Company shall have the right to assign its rights and obligations under this Agreement to any entity that acquires all or substantially all of the assets of the Company and continues the Company's business. The rights and obligations of the Company under this Agreement shall inure to the benefit and shall be binding upon the successors and assigns of the Company.

Severability

In the event that any one or more of the provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remainder of this Agreement shall not in way be affected or impaired thereby.

Entire Agreement

You acknowledge that you have not relied upon any representations (whether oral or written) from the Company, other than as set forth in this Agreement. This Agreement sets forth the entire agreement and understanding between you and the Company and merges and supersedes any and all prior discussions, agreements, arrangements and understandings with regard to the subject matter hereof, and may not be modified, amended, discharged or supplemented in any respect, except by a subsequent writing signed by you and the Company. In the event that any payments under this Agreement in the aggregate are more than 2.99 times of your base salary and bonus, the payments

which you will be eligible to receive under this Agreement will be reduced accordingly. Except for involuntary separation benefits or other similar severance payments, this Agreement does not supersede the terms of any other compensation plans, stock option programs, welfare benefit plans, or other such plans or programs in which you are eligible to participate, or may become eligible to participate.

If you agree to the terms of this Agreement, please sign on the line provided below and return two signed copies to the Secretary. A fully executed copy will be returned to you for your files after it is signed by the Company.

Termination of Officer Status and Agreement

You hereby acknowledge and agree that, in the event you cease to be an "officer" of the Company (meaning, an officer designated by the Board or a committee thereof), and remain employed with the Company in another continuing role thereafter, this Agreement shall immediately terminate and become null and void upon such Board determination date and you shall not have any right to payments or benefits provided hereunder.

Language

The parties hereto acknowledge that they have requested and are satisfied that this Agreement and all related documents be drawn up in the English language. *Les parties aux présentes reconnaissent avoir requis que la présente entente et les documents qui y sont relatifs soient rédigés en anglais*.

IN WITNESS WHEREOF, the Executive and the Company, by its duly authorized representative, have executed this Agreement on the dates stated below, effective as of the date first set forth above.

COMPANY: **ALCOA CORPORATION**

By: _____
Title: _____
Date: _____

EXECUTIVE: **[NAME]**

By: _____
Title: _____
Date: _____

Exhibit 10.34

ALCOA CORPORATION

TERMS AND CONDITIONS FOR RESTRICTED SHARE UNITS

These terms and conditions, including Appendices attached hereto (the "Award Terms"), are authorized by the Compensation and Benefits Committee (the "Committee") of the Board of Directors (the "Board"). They are deemed to be incorporated into and form a part of the Award of Restricted Share Units issued on or after January 24, 2024, under the Alcoa Corporation 2016 Stock Incentive Plan, as may be amended from time to time (the "Plan").

Terms that are defined in the Plan have the same meanings in the Award Terms.

General Terms and Conditions

1. Restricted Share Units are subject to the provisions of the Plan and the provisions of the Award Terms. If the Plan and the Award Terms are inconsistent, the provisions of the Plan will govern. Interpretations of the Plan and the Award Terms by the Committee are binding on the Participant and the Company. A Restricted Share Unit is an undertaking by the Company to issue the number of Shares indicated in the Participant's account with the Company's designated stock plan broker or service provider (the "Broker"), subject to the fulfillment of certain conditions, except to the extent otherwise provided in the Plan or herein. A Participant has no voting rights or rights to receive dividends on Restricted Share Units, but the Board has authorized that dividend equivalents be accrued and paid on Restricted Share Units in accordance with paragraphs 2 and 4 below. Any dividend equivalents will be subject to the same applicable terms and conditions (including vesting, timing of payment, forfeitability and clawback) as apply to the Restricted Share Units on which the dividend equivalents were credited.

Vesting and Payment

2. A Restricted Share Unit Award that is not subject to performance conditions pursuant to paragraph 33 will vest ratably in one-third increments on the first, second, and third anniversary dates of the grant date and, subject to paragraph 3, will be paid to the Participant in Shares on each applicable vesting date or within 90 days after each applicable vesting date (or, if it is not practicable to make payment by such date, as soon as practicable thereafter, but in no event later than the end of the calendar year in which the applicable vesting date occurs and/or later than the time permitted under Section 409A of the Code).

A Restricted Share Unit Award that is subject to performance conditions pursuant to paragraph 33 will become earned and payable, if at all, based on the Company's performance over a three-year performance period and, subject to paragraphs 3 and 33, will vest on the third anniversary date of the grant date, effective on the date that is later, and will be paid to the Participant in Shares within 90 days thereafter (or, if it is not practicable to make payment by such date, as soon as practicable thereafter, but in no event later than the end of the calendar year in which the vesting date occurs and/or later than the time permitted under Section 409A of the Code).

3.Notwithstanding the foregoing, except as provided in paragraph 4, if a Participant's employment with the Company (including its Subsidiaries) is terminated before the Restricted Share Units vest, the Award is forfeited and is automatically canceled.

4.The following are exceptions to the rules in paragraph 3:

▪ Death or Disability: Restricted Share Units held by a Participant, who dies while an Employee or who is permanently and totally disabled (as defined below) while an Employee, are not forfeited but will vest and be paid, if earned, in the case of Restricted Share Units subject to performance conditions, on the original stated vesting date(s) set forth in paragraph 2.

A Participant is deemed to be permanently and totally disabled if the Participant is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months. A Participant shall not be considered to be permanently and totally disabled unless the Participant furnishes proof of the existence thereof in such form and manner, and at such times, as the Company may require. In the event of a dispute, the determination of whether a Participant is permanently and totally disabled will be made by the Committee or its delegate.

▪ Change in Control: Restricted Share Units vest if a Replacement Award is not provided following certain Change in Control events, as described in the Plan. Notwithstanding anything in the Award Terms to the contrary, if a Change in Control qualifies as a "change in control event" within the meaning of Treas. Reg. § 1.409-3(i)(5), the vested Restricted Share Units (whether vested pursuant to the preceding sentence or otherwise and with vesting determined under Section 409A of the Code) will be paid to the Participant within 30 days following the Change in Control. If the Change in Control does not so qualify, the vested Restricted Share Units will vest and be paid to the Participant on the original stated vesting date(s) set forth in paragraph 2.

▪ Termination Following Change in Control: As further described in the Plan, if a Replacement Award is provided following a Change in Control, but within 24 months of such Change in Control the Participant's employment is terminated without Cause (as defined in the Alcoa Corporation Change in Control Severance Plan) or by the Participant for Good Reason (as defined in the Alcoa Corporation Change in Control Severance Plan), the Replacement Award will vest and be paid to the Participant on the original stated vesting date(s) set forth in paragraph 2.

▪ Retirement: Unless otherwise determined by the Committee or its delegate, Restricted Share Units will not be forfeited if they are held by a Participant who terminates employment due to Retirement (as defined in the Plan) at least six months after the grant date. In such event, the Restricted Share Units will vest and

be paid, if earned, in the case of Restricted Share Units subject to performance conditions, on the original stated vesting date(s) set forth in paragraph 2.

▪ Divestiture: If Restricted Share Units are held by a Participant who is to be terminated from employment with the Company or a Subsidiary as a result of a divestiture of a business or a portion of a business of the Company (each, a "Divestiture") and the Participant either becomes an employee of (or is leased or seconded to) the entity acquiring the business on the date of the closing, or the Participant is not offered employment with the entity acquiring the business and is terminated by the Company or a Subsidiary within 90 days of the closing of the sale, then, at the discretion of the Chief Executive Officer of the Company, for Participants other than those subject to the short-swing profit rules of Section 16(b) of the Exchange Act (a "Section 16 Insider"), or, at the discretion of the Committee for Section 16 Insiders, as the case may be, the Restricted Share Units will not be forfeited and will vest and be paid, if earned, in the case of Restricted Share Units subject to performance conditions, on the original stated vesting date(s) set forth in paragraph 2. For purposes of this paragraph, employment by "the entity acquiring the business" includes employment by a subsidiary or affiliate of the entity acquiring the business; and "Divestiture of a business" means the sale of assets or stock resulting in the sale of a going concern. "Divestiture of a business" does not include a plant shut down or other termination of a business.

▪ Involuntary Termination without Cause: In circumstances other than a Divestiture or in connection with a Change in Control as described above, if a Participant is involuntarily terminated without Cause (as defined below) from employment with the Company or a Subsidiary at least one year after the grant date, the Restricted Share Units will not be forfeited in whole but only in part upon termination of employment. The portion of the Restricted Share Units that is not forfeited will remain outstanding and continue to vest on the original stated vesting date(s) set forth in paragraph 2 and is calculated for each vesting period or performance period, as applicable, based on the number of days during such vesting period (or performance period in the case of Restricted Share Units subject to performance conditions) that the Participant was actively employed with the Company or a Subsidiary, with any remaining amount being automatically forfeited as follows: the actual number of days the Participant was actively employed during the applicable vesting period (or performance period in the case of Restricted Share Units subject to performance conditions) divided by the total number of days in the applicable period (with the resulting Restricted Share Units rounded up to the next whole unit). For example, a Participant who is involuntarily terminated without Cause from employment with the Company (or a Subsidiary) at the end of the 18th month following the grant of an Award that is not subject to performance conditions that vests ratably in one-third increments on the first, second, and third anniversary dates of the grant date will receive one-half of the second tranche of the Award on the applicable vesting date, with the first tranche having previously vested on the first anniversary of the grant date and the third tranche of the Award being automatically forfeited in full upon termination. Similarly, a Participant who is

involuntarily terminated without Cause from employment with the Company (or a Subsidiary) after the end of the first year of a three-year performance period for an Award that is subject to performance conditions will receive one-third of the Award on the applicable vesting date, if earned, with the remaining two-thirds of the Award being automatically forfeited upon termination.

For purposes of this bullet and the last bullet of this paragraph 4:

if the Participant participates in the Alcoa Corporation Change in Control Severance Plan, “Cause” shall have the meaning set forth in such plan and shall additionally include any violation by the Participant of the Company’s Code of Conduct, or similar codes and/or policies (as may be implemented and/or amended from time to time) that results in significant financial or reputational harm to the Company, as determined in the Board’s sole discretion; and

if the Participant does not participate in the Alcoa Corporation Change in Control Severance Plan, “Cause” means (i) the willful and continued failure by the Participant to substantially perform the Participant’s duties with the Company or Subsidiary employer that has not been cured within 30 days after a written demand for substantial performance is delivered to the Participant by the Board or the Participant’s direct supervisor, which demand specifically identifies the manner in which the Participant has not substantially performed the Participant’s duties, (ii) the willful engaging by the Participant in conduct which is demonstrably and materially injurious to the Company or a Subsidiary, monetarily or otherwise; (iii) the Participant’s fraud or acts of dishonesty relating to the Company or any of its Subsidiaries; (iv) any violation by the Participant of the Company’s Code of Conduct, or similar codes and/or policies (as may be implemented and/or amended from time to time) that results in significant financial or reputational harm to the Company, as determined in the Board’s sole discretion; or (v) the Participant’s conviction of any misdemeanor relating to the affairs of the Company or any of its Subsidiaries or indictment for any felony. For purposes of clauses (i) and (ii) of this definition, no act, or failure to act, on the Participant’s part shall be deemed “willful” unless done, or omitted to be done, by the Participant not in good faith and without reasonable belief that the Participant’s act, or failure to act, was in the best interest of the Company.

▪ Termination for Cause: In circumstances other than in connection with a Change in Control as described above, if a Participant is terminated from employment with the Company or a Subsidiary for Cause (as defined above), Restricted Share Units held by such Participant shall be forfeited and immediately canceled. In addition, in circumstances other than in connection with a Change in Control as described above, if a Participant is terminated from employment with the Company or a Subsidiary for Cause (as defined above), the Board in its discretion may require that the Participant repay to the Company any and all Shares previously paid to the Participant pursuant to the Award Terms (or the equivalent value in cash at the time of such repayment).

oA Participant will receive one Share upon the vesting and payment of a Restricted Share Unit. Notwithstanding the foregoing or anything in the Award Terms to the contrary, to the extent that payment in Shares is prohibited under applicable law or would require the Participant or the Company to obtain the approval of any governmental and/or regulatory body in the Participant's country, or as necessary to meet tax objectives, the Company in its sole discretion may substitute a cash payment in lieu of Shares, such cash payment to be equal to the Fair Market Value of the Shares on the date that such Shares would have otherwise been issued under the terms of the Plan and the Award Terms.

•Taxes

6.All taxes required to be withheld under applicable tax laws in connection with the vesting and payment of Restricted Share Units must be paid by the Participant at the appropriate time under applicable tax laws. The Company may satisfy applicable tax withholding obligations by any of the means set forth in Section 15(k) of the Plan, but will generally withhold from the Shares to be issued upon payment of the Restricted Share Units that number of Shares with a Fair Market Value on the vesting date equal to the taxes required to be withheld at the minimum required rates, or at any other rate approved by the Committee, up to the maximum individual tax rate for the applicable tax jurisdiction, which include, for Participants subject to taxation in the United States, applicable income taxes, federal and state unemployment compensation taxes and FICA/FUTA taxes. Notwithstanding the foregoing, if the Participant is a Section 16 Insider, the Company will withhold Shares from the Shares to be issued upon payment of the Restricted Share Units, as described herein, at the minimum required rates or such other rates approved by the Committee and other means will not be used to satisfy such tax withholding obligations.

Beneficiaries

7.If permitted by the Company, Participants will be entitled to designate one or more beneficiaries to receive all Restricted Share Units that have not yet vested at the time of death of the Participant. All beneficiary designations will be on beneficiary designation forms approved for the Plan. Copies of the form will generally be available from the Broker or may otherwise be obtained from the Company.

8.Beneficiary designations on an approved form will be effective at the time received by the Company, including, as applicable, through submission to the Broker. A Participant may revoke a beneficiary designation at any time by written notice to the Company, including as applicable, through submission to the Broker, or by filing a new designation form. Any designation form previously filed by a Participant will be automatically revoked and superseded by a later-filed form.

9. A Participant will be entitled to designate any number of beneficiaries on the form, and the beneficiaries may be natural or corporate persons.

10.The failure of any Participant to obtain any recommended signature on the form will not prohibit the Company from treating such designation as valid and effective. No beneficiary will

acquire any beneficial or other interest in any Restricted Share Unit prior to the death of the Participant who designated such beneficiary.

11. Unless the Participant indicates on the form that a named beneficiary is to receive Restricted Share Units only upon the prior death of another named beneficiary, all beneficiaries designated on the form will be entitled to share equally in the Restricted Share Units upon vesting and payment. Unless otherwise indicated, all such beneficiaries will have an equal, undivided interest in all such Restricted Share Units.

12. Should a beneficiary die after the Participant but before the Restricted Share Units are paid, such beneficiary's rights and interest in the Award will be transferable by the beneficiary's last will and testament or by the laws of descent and distribution. A named beneficiary who predeceases the Participant will obtain no rights or interest in Restricted Share Units, nor will any person claiming on behalf of such individual. Unless otherwise specifically indicated by the Participant on the beneficiary designation form, beneficiaries designated by class (such as "children," "grandchildren" etc.) will be deemed to refer to the members of the class living at the time of the Participant's death, and all members of the class will be deemed to take "per capita."

13. If a Participant does not designate a beneficiary or if the Company does not permit a beneficiary designation, the Restricted Share Units that have not yet vested or been paid at the time of death of the Participant will be paid to the Participant's legal heirs pursuant to the Participant's last will and testament or by the laws of descent and distribution.

Adjustments

14. In the event of an Equity Restructuring or other transaction described in Section 4(f) of the Plan, the Committee will equitably adjust the Restricted Share Units as it deems appropriate in accordance with the terms of the Plan. The adjustments authorized by the Committee will be final and binding.

Repayment/Forfeiture/Clawback

15. As an additional condition of receiving the Restricted Share Units, the Participant acknowledges and agrees that the terms and conditions set forth in the Alcoa Corporation Clawback Policy (as may be amended and restated from time to time, the "Clawback Policy") are incorporated in the Award Terms by reference. To the extent the Clawback Policy is applicable to the Participant, it creates additional rights for the Company with respect to certain Awards and other applicable compensation, including, without limitation, annual cash incentive compensation awards granted to the Participant under the Alcoa Corporation Annual Cash Incentive Compensation Plan (as Amended and Restated), or any successor plan. Notwithstanding any provisions in the Award Terms to the contrary, certain Awards granted under the Plan and such other applicable compensation, including, without limitation, annual cash incentive compensation, will be subject to potential mandatory cancellation, forfeiture and/or repayment by the Participant to the Company to the extent the Participant is, or in the future becomes, subject to (a) any Company clawback or recoupment policy, including the Clawback Policy, and any other policies that are adopted to comply with the requirements of any applicable laws, rules, regulations, stock

exchange listing standards or otherwise, or (b) any applicable laws that impose mandatory clawback or recoupment requirements under the circumstances set forth in such laws, including as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable laws, rules, regulations or stock exchange listing standards, as may be in effect from time to time, and which may operate to create additional rights for the Company with respect to awards and the recovery of amounts relating thereto. By accepting an Award under the Plan and pursuant to the Award Terms, the Participant consents to be bound by the terms of the Clawback Policy, if applicable, and agrees and acknowledges that the Participant is obligated to cooperate with, and provide any and all assistance necessary to, the Company in its efforts to recover or recoup an Award, any gains or earnings related to an Award, or any other applicable compensation, including, without limitation, annual cash incentive compensation, that is subject to clawback or recoupment pursuant to such laws, rules, regulations, stock exchange listing standards or Company policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to facilitate the recovery or recoupment by the Company from the Participant of any such amounts, including from the Participant's accounts or from any other compensation, to the extent permissible under Section 409A of the Code.

Miscellaneous Provisions

16. *Stock Exchange Requirements; Applicable Laws.* Notwithstanding anything to the contrary in the Award Terms, no Shares issuable upon vesting of the Restricted Share Units, and no certificate representing all or any part of such Shares, shall be issued or delivered if, in the opinion of counsel to the Company, such issuance or delivery would cause the Company to be in violation of, or to incur liability under, any securities law, or any rule, regulation or procedure of any U.S. national securities exchange upon which any securities of the Company are listed, or any listing agreement with any such securities exchange, or any other requirement of law or of any administrative or regulatory body having jurisdiction over the Company or a Subsidiary.

17. *Non-Transferability.* The Restricted Share Units are non-transferable and may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered by the Participant other than by will or the laws of descent and distribution and any such purported assignment, alienation, pledge, attachment, sale, transfer or encumbrance shall be void and unenforceable against the Company; provided, that, the designation of a beneficiary shall not constitute an assignment, alienation, pledge, attachment, sale, transfer or encumbrance.

18. *Stockholder Rights.* No person or entity shall be entitled to vote, receive dividends or be deemed for any purpose the holder of any Shares until the Restricted Share Units shall have vested and been paid in the form of Shares in accordance with the provisions of the Award Terms.

19. *Notices.* Any notice required or permitted under the Award Terms shall be in writing and shall be deemed sufficient when delivered personally or sent by confirmed email, telegram, or fax or five days after being deposited in the mail, as certified or registered mail, with postage prepaid, and addressed to the Company at the Company's principal corporate offices or to the Participant at the address maintained for the Participant in the Company's records or, in either case, as subsequently modified by written notice to the other party.

20. *Severability and Judicial Modification.* If any provision of the Award Terms is held to be invalid or unenforceable under the applicable laws of any country, state, province, territory or other political subdivision or the Company elects not to enforce such restriction, the remaining provisions shall remain in full force and effect and the invalid or unenforceable provision shall be modified only to the extent necessary to render that provision valid and enforceable to the fullest extent permitted by law. If the invalid or unenforceable provision cannot be, or is not, modified, that provision shall be severed from the Award Terms and all other provisions shall remain valid and enforceable.

21. *Successors.* The Award Terms shall be binding upon and inure to the benefit of the Company and its successors and assigns, on the one hand, and the Participant and his or her heirs, beneficiaries, legatees and personal representatives, on the other hand.

22. *Appendices.* Notwithstanding any provisions in the Award Terms, for Participants residing and/or working outside the United States, the Restricted Share Units shall be subject to the additional terms and conditions set forth in Appendix A to the Award Terms and to any special terms and conditions for the Participant's country set forth in Appendix B to the Award Terms. Further, Appendices C and D include information for European Union / European Economic Area Participants. Moreover, if the Participant relocates outside the United States or relocates between the countries included in Appendix B, the additional terms and conditions set forth in Appendix A and the special terms and conditions for such country set forth in Appendices B, C and D will apply to the Participant, to the extent the Company determines that the application of such terms and conditions is necessary or advisable for legal or administrative reasons. The Appendices constitute part of the Award Terms.

23. *Imposition of Other Requirements.* The Company reserves the right to impose other requirements on the Participant's participation in the Plan, on the Restricted Share Units and on any Shares acquired under the Plan, to the extent the Company determines it is necessary or advisable for legal or administrative reasons, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

24. *Compliance with Code Section 409A.* It is intended that the Restricted Share Units granted pursuant to the Award Terms be compliant with (or exempt from) Section 409A of the Code and the Award Terms shall be interpreted, construed and operated to reflect this intent. Notwithstanding the foregoing, the Award Terms and the Plan may be amended at any time, without the consent of any party, to the extent necessary or desirable to satisfy any of the requirements under Section 409A of the Code, but the Company shall not be under any obligation to make any such amendment. Further, the Company and its Subsidiaries do not make any representation to the Participant that the Restricted Share Units granted pursuant to the Award Terms satisfies the requirements of Section 409A of the Code, and the Company and its Subsidiaries will have no liability or other obligation to indemnify or hold harmless the Participant or any other party for any tax, additional tax, interest or penalties that the Participant or any other party may incur in the event that any provision of the Award Terms or any amendment or modification thereof or any other action taken with respect thereto, is deemed to violate any of the requirements of Section 409A of the Code.

25.*Waiver.* A waiver by the Company of breach of any provision of the Award Terms shall not operate or be construed as a waiver of any other provision of the Award Terms, or of any subsequent breach by the Participant or any other Participant.

26.*No Advice Regarding Award.* The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant is hereby advised to consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action related to the Plan.

27.*Governing Law and Venue.* As stated in the Plan, the Restricted Share Units and the provisions of the Award Terms and all determinations made and actions taken thereunder, to the extent not otherwise governed by the laws of the United States, shall be governed by the laws of the State of Delaware, United States of America, without reference to principles of conflict of laws, and construed accordingly. The jurisdiction and venue for any disputes arising under, or any actions brought to enforce (or otherwise relating to), the Restricted Share Units will be exclusively in the courts in the State of Delaware, including the Federal Courts located therein (should Federal jurisdiction exist).

28.*Electronic Delivery and Acceptance.* The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

29.*Entire Agreement.* The Award Terms and the Plan embody the entire understanding and agreement of the parties with respect to the subject matter hereof (including, without limitation, the obligations and understandings set forth in Section 15(e) of the Plan), and no promise, condition, representation or warranty, express or implied, not stated or incorporated by reference herein, shall bind either party hereto.

30. *Employment at Will.* Nothing in the Award Terms or the Plan provide the Participant with any right to continue in the Company's or any of its Affiliates' employ for any period of specific duration or interfere with or otherwise restrict in any way the Participant's or the rights of the Company and its Affiliates to terminate the Participant's service at any time for any reason, with or without cause, subject to applicable law. The Participant's status with the Company and its Affiliates will accordingly remain at will.

31.*Amendments.* Except as otherwise provided herein or the Plan, these Award Terms may be amended or modified at any time by an instrument in writing signed by the parties hereto or by the Company without the consent of the Participant if such action would not materially impair the rights of the Participant under this Award.

Acceptance of Award

32. In accordance with Section 15(c) of the Plan, the Participant may reject the Restricted Share Units by notifying the Company within 30 days of the grant date that he or she does not accept the Restricted Share Units. The Participant's acceptance of the Restricted Share Units constitutes the Participant's acceptance of and agreement with the Award Terms, including, without limitation, paragraph 15 herein, and the Plan. Notwithstanding the foregoing, if required by the Company, the Participant will provide a signed copy of the Award Terms in such manner and within such timeframe as may be requested by the Company. The Company has no obligation to issue Shares to the Participant if the Participant does not accept the Restricted Share Units.

Performance Feature

33. If the vesting of Restricted Share Units is subject to a performance condition, the following additional terms and conditions will apply to the Award:

· The Participant will have the right to receive from 0% to 200% of the number of Shares indicated on the grant date, based on achievement of performance goals established by the Committee for the Award.

· The performance period is three years, which may consist of a single performance period or multiple interim periods as determined by the Committee.

· Achievement of performance objectives will be determined or certified by the Committee following the end of the applicable period.

· Except as otherwise set forth in paragraph 4 of the Award Terms or below in this "Performance Feature" section, vesting of the Award will occur upon satisfaction of the time-based vesting conditions set forth in paragraph 2 of the Award Terms and vesting and payment of the Award will be based on the extent to which the performance objectives established by the Committee have been attained. In any case, except where payment of the Award is made upon a Change in Control within the meaning of Treas. Reg. § 1.409-3(i)(5), in no event will payment of the Award occur outside of the time period set forth in paragraph 2.

· In the event of termination of the Participant's employment with the Company (including its Subsidiaries) before the vesting of the Restricted Share Units by reason of death, disability, Retirement, Divestiture, or involuntary termination without Cause, each as described in paragraph 4, payment of the Restricted Share Units (or portion thereof in the case of an involuntary termination without Cause) will be based on the extent to which the performance objectives established by the Committee have been attained following the end of the performance period.

· In the event of a Change in Control, the performance feature of the Award will cease to apply and the Award will be converted into a time-based award in

accordance with the formula set forth in Section 12(a)(v) of the Plan. The vesting and payment of such Award will then be governed in accordance with paragraph 4.

APPENDIX A
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Restricted Share Units
for Non-U.S. Participants

This Appendix A contains additional (or, if so indicated, different) terms and conditions that govern the Restricted Share Units if the Participant resides and/or works outside of the United States. Capitalized terms used but not defined herein shall have the same meanings assigned to them in the Plan and the Terms and Conditions for Restricted Share Units (the "Terms and Conditions").

A.*Termination.* This provision supplements paragraph 3 of the Terms and Conditions.

The Company will determine when the Participant is no longer providing services for purposes of the Restricted Share Units (including whether the Participant may still be considered to be providing services while on a leave of absence).

B. *Responsibility for Taxes.* This provision replaces paragraph 6 of the Terms and Conditions (except to the extent that the Participant is a Section 16 Insider).

The Participant acknowledges that, regardless of any action taken by the Company or, if different, the Subsidiary that employs the Participant (the "Employer"), the ultimate liability for all income tax, social insurance, payroll tax, fringe benefits tax, payment on account or other tax- related items related to the Participant's participation in the Plan and legally applicable to the Participant ("Tax-Related Items") is and remains the Participant's responsibility and may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (a) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of these Restricted Shares Units, including, but not limited to, the grant, vesting or settlement of Restricted Shares Units, the subsequent sale of Shares acquired pursuant to the Restricted Share Units and the receipt of any dividends or dividend equivalents; and (b) do not commit to and are under no obligation to structure the terms of the Restricted Share Units or any aspect of the Restricted Share Units to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. The Participant shall not make any claim against the Company, the Employer or any other Subsidiary, or their respective board, officers or employees related to Tax-Related Items arising from this Award. Furthermore, if the Participant has become subject to tax in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax- Related Items in more than one jurisdiction.

In connection with any relevant taxable or tax withholding event, as applicable, the Participant will pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax- Related Items. In this regard, the Participant authorizes the Company and/or the Employer, or their respective agents, at their discretion, to satisfy their withholding obligations with regard to all Tax-Related Items by: (i) requiring a cash payment from the Participant; (ii)

withholding from the Participant's wages or other cash compensation paid to the Participant by the Company and/or the Employer, (iii) withholding from the proceeds of the sale of Shares acquired pursuant to the Restricted Share Units, either through a voluntary sale or through a mandatory sale arranged by the Company (on the Participant's behalf pursuant to this authorization without further consent); and/or (iv) withholding from the Shares subject to Restricted Share Units.

Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering statutory withholding amounts or other rates, including minimum or maximum rates, applicable in the Participant's jurisdiction(s). In the event of over-withholding, the Participant may receive a refund of any over-withheld amount in cash (with no entitlement to the equivalent in Shares) or, if not refunded, the Participant may seek a refund from the local tax authorities. In the event of under-withholding, the Participant may be required to pay any additional Tax-Related Items directly to the applicable tax authority or to the Company and/or the Employer. If the obligation for Tax-Related Items is satisfied by withholding in Shares, the Participant is deemed, for tax purposes, to have been issued the full number of Shares subject to the vested Restricted Shares Units, notwithstanding that a number of the Shares is held back solely for the purpose of paying the Tax-Related Items.

Finally, the Participant shall pay to the Company and/or the Employer any amount of Tax- Related Items that the Company and/or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Company may refuse to issue or deliver the Shares or the proceeds of the sale of Shares if the Participant fails to comply with his or her obligations in connection with the Tax-Related Items.

C.*Nature of Award.* By accepting the Restricted Share Units, the Participant acknowledges, understands and agrees that:

a. the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended, or terminated by the Company at any time, to the extent permitted by the Plan;

b. this Award of Restricted Share Units is exceptional, voluntary and occasional and does not create any contractual or other right to receive future Restricted Share Units, or benefits in lieu of Restricted Share Units, even if Restricted Share Units have been granted in the past;

c. all decisions with respect to future Restricted Share Units or other Awards, if any, will be at the sole discretion of the Company;

d. this Award of Restricted Share Units and the Participant's participation in the Plan shall not create a right to, or be interpreted as forming an employment or service contract with the Company and shall not interfere with the ability of the Employer to terminate the Participant's employment contract (if any) at any time;

e. the Participant's participation in the Plan is voluntary;

f. this Award of Restricted Share Units and the Shares acquired under the Plan, and the income from and value of same, are not intended to replace any pension rights or compensation;

g. this Award of Restricted Share Units and the Shares acquired under the Plan, and the income and value of the same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end- of-service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments;

h. the future value of the Shares subject to the Restricted Share Units is unknown, indeterminable and cannot be predicted with certainty;

i. no claim or entitlement to compensation or damages shall arise from the forfeiture of any portion of this Award of Restricted Share Units resulting from (i) the Participant's termination of employment and/or service relationship (for any reason whatsoever, whether or not later found to be invalid or in breach of employment or other laws in the jurisdiction where the Participant is employed or otherwise rendering services, or the terms of his or her employment or service agreement, if any); or (ii) the application of any recoupment, recovery or clawback policy or action, pursuant to Section 15 of the Terms and Conditions and/or Section 15(e) or (f) of the Plan;

j. unless otherwise agreed with the Company, Restricted Share Units and the Shares acquired under the Plan, and the income from and value of same, are not granted as consideration for, or in connection with, the service the Participant may provide as a director of any Subsidiary;

k. unless otherwise provided in the Plan or by the Company in its discretion, this Award of Restricted Share Units and the benefits under the Plan evidenced by these Award Terms do not create any entitlement to have this Award of Restricted Share Units or any such benefits transferred to, or assumed by, another company nor to be exchanged, cashed out or substituted for, in connection with any corporate transaction affecting the Shares; and

l. neither the Company, the Employer nor any other Subsidiary shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Restricted Share Units or of any amounts due to the Participant pursuant to the Restricted Share Units or the subsequent sale of any Shares acquired under the Plan.

D.***Data Privacy. The following Data Privacy consent only applies to Participants located outside the EU/EEA. Participants located in the EU/EEA should review the GDPR Notice in Appendix D.***

The Participant hereby explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of the Participant's personal data as described in these Award Terms and any other grant materials by and among, as applicable, the Company, the Employer and any other Subsidiary for the exclusive purpose of implementing, administering and managing the Participant's participation in the Plan.

The Participant understands that the Company and the Employer may hold certain personal information about the Participant, including, but not limited to, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, details of all Restricted Share Units or any other entitlement to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.

The Participant understands that Data may be transferred to the Broker or such additional or other stock plan service providers as may be selected by the Company, which are assisting the Company with the implementation, administration and management of the Plan. The Participant understands that the recipients of Data may be located in the United States or elsewhere, and that the recipients' country (e.g., the United States) may have different data privacy laws and protections than the Participant's country. The Participant understands that the Participant may request a list with the names and addresses of any potential recipients of Data by contacting the Participant's local human resources representative. The Participant authorizes the Company, the Broker and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage the Participant's participation in the Plan. The Participant understands that the Participant may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing the Participant's local human resources representative. Further, the Participant understands that the Participant is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the Participant's consent, the Participant's employment and career with the Employer will not be affected; the only consequence of refusing or withdrawing the Participant's consent is that the Company would not be able to grant this Award of Restricted Share Units or other Awards to the Participant or administer or maintain such Awards. Therefore, the Participant understands that refusing or withdrawing the Participant's consent may affect the Participant's ability to participate in the Plan. For more information on the consequences of the Participant's refusal to consent or withdrawal of consent, the Participant understands that the Participant may contact the Participant's local human resources representative.

E.*Retirement.* Notwithstanding paragraph 4 of the Terms and Conditions, if the Company receives an opinion of counsel that there has been a legal judgment and/or legal development in the Participant's jurisdiction that would likely result in the favorable treatment applicable to the Restricted Share Units pursuant to paragraph 4 being deemed unlawful and/or discriminatory, then the Company will not apply the favorable treatment at the time of the Participant's retirement, and the Restricted Share Units will be treated as set forth in the remaining provisions of paragraph 4 of the Terms and Conditions.

F.*Language.* If the Participant has received these Award Terms, or any other document related to this Award of Restricted Share Units and/or the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control, unless otherwise required by applicable law.

G. *Insider Trading Restrictions/Market Abuse Laws.* The Participant acknowledges that, depending on his or her country of residence, the Broker's country of residence, or where the Shares are listed, the Participant may be subject to insider trading restrictions and/or market abuse laws in applicable jurisdictions, which may affect his or her ability to accept, acquire, sell or attempt to sell or otherwise dispose of Shares or rights to Shares (e.g., Restricted Share Units) or rights linked to the value of Shares, during such times as the Participant is considered to have "inside information" regarding the Company (as defined by applicable laws or regulations in the applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before possessing inside information. Furthermore, the Participant may be prohibited from (i) disclosing the inside information to any third party including colleagues of the Participant (other than on a "need to know" basis) and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.

H.*Foreign Asset/Account Reporting Requirements, Exchange Controls and Tax Requirements.* The Participant acknowledges that his or her country may have certain foreign asset and/or account reporting requirements and exchange controls which may affect his or her ability to acquire or hold Shares under the Plan or cash received from participating in the Plan (including from any dividends received or sale proceeds arising from the sale of Shares) in a brokerage or bank account outside his or her country. The Participant understands that he or she may be required to report such accounts, assets or transactions to the tax or other authorities in his or her country. The Participant also may be required to repatriate sale proceeds or other funds received as a result of the Participant's participation in the Plan to his or her country through a designated bank or broker and/or within a certain time after receipt. The Participant acknowledges that it is his or her responsibility to be compliant with all such requirements, and that the Participant should consult his or her personal legal and tax advisors, as applicable, to ensure the Participant's compliance.

APPENDIX B
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Restricted Share Units
For Non-U.S. Participants

Capitalized terms used but not defined in this Appendix B have the meanings set forth in the Plan and the Terms and Conditions for Restricted Share Units (the “Terms and Conditions”).

Terms and Conditions

This Appendix B includes additional terms and conditions that govern Restricted Share Units if the Participant resides and/or works in one of the countries listed below.

If the Participant is a citizen or resident (or is considered as such for local law purposes) of a country other than the country in which the Participant is currently residing and/or working, or if the Participant transfers to another country after the grant of Restricted Share Units, the Committee shall, in its discretion, determine to what extent the additional terms and conditions contained herein shall be applicable to the Participant.

Notifications

This Appendix B also includes information regarding securities exchange control, tax, and certain other issues of which the Participant should be aware with respect to participation in the Plan. The information is based on the securities, exchange control, tax and other laws in effect in the respective countries as of January 2024. Such laws are often complex and change frequently. As a result, the Company strongly recommends that the Participant not rely on the information in this Appendix B as the only source of information relating to the consequences of participation in the Plan because the information may be out of date at the time the Participant sells Shares acquired under the Plan.

In addition, the information contained herein is general in nature and may not apply to the Participant’s particular situation and the Company is not in a position to assure the Participant of any particular result. Accordingly, the Participant should seek appropriate professional advice as to how the relevant laws in the Participant’s country may apply to his or her situation.

Finally, if the Participant is a citizen or resident (or is considered as such for local tax purposes) of a country other than the country in which the Participant currently is residing and/or working, or if the Participant transfers to another country after the grant of the Restricted Share Unit the information contained herein may not be applicable to the Participant in the same manner.

AUSTRALIA

Notifications

Securities Law Information.

The grant of the Restricted Share Units is being made pursuant to Division 1A, Part 7.12 of the Corporations Act 2001 (Cth). If the Participant offers Shares for sale to a person or entity resident in Australia, the offer may be subject to disclosure requirements under Australian law. The Participant should obtain legal advice on applicable disclosure obligations prior to making any such offer.

Exchange Control Information.

Exchange control reporting is required for cash transactions exceeding A$10,000 and for international fund transfers. If an Australian bank is assisting with the transaction, the bank will file the report on the Participant's behalf.

Tax Information.

The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) (the "Act") applies (subject to conditions in the Act).

BELGIUM

Notifications

Stock Exchange Tax.

A stock exchange tax applies to transactions executed by Belgian residents through a non-Belgian financial intermediary. The stock exchange tax will likely apply when Shares are sold. The Participant should consult with a personal tax advisor to determine the Participant's obligations with respect to the stock exchange tax.

Foreign Asset/Account Reporting Information.

Belgian residents are required to report any security (*e.g.*, Shares acquired under the Plan) or bank account established outside of Belgium on their annual tax return. In a separate report, Belgian residents are also required to provide the National Bank of Belgium with certain details regarding such foreign accounts (including the account number, bank name and country in which any such account was opened). This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the *Kredietcentrales / Centrales des credits* caption. The Participant should consult with a personal advisor to ensure compliance with applicable reporting obligations.

Annual Securities Account Tax Information.

An annual securities accounts tax may apply if the total value of securities held in a Belgian or foreign securities account exceeds €1,000,000 on four reference dates within the relevant reporting period (i.e., December 31, March 31, June 30 and September 30). In such case, the tax will be due on the value of the qualifying securities held in such account. The Participant should consult with a professional tax or financial advisor for more information regarding the Participant's annual securities accounts tax payment obligations.

BRAZIL

Terms and Conditions

Compliance with Law.

By accepting the Restricted Share Units, the Participant agrees to comply with applicable Brazilian laws and to report and pay any and all applicable Tax-Related Items or other taxes associated with the vesting of the Restricted Share Units, the sale of the Shares acquired under the Plan and the receipt of any dividends or dividend equivalents.

Acknowledgement of Nature of the Grant.

This provision supplements paragraph C "Nature of Award" of Appendix A:

By accepting the Restricted Share Units, the Participant agrees that he or she is (i) making an investment decision, (ii) the Shares will be issued to the Participant only if the vesting conditions are met and any necessary services are rendered by the Participant over the vesting period, and (iii) the value of the underlying Shares is not fixed and may increase or decrease over the vesting period without compensation to the Participant.

Notifications

Exchange Control Information.

If the Participant is a resident of or domiciled in Brazil, the Participant will be required to submit an annual declaration of assets and rights held outside of Brazil to the Central Bank of Brazil if the aggregate value of the assets and rights is equal to or greater than US$1,000,000. If such amount exceeds US$100,000,000, the declaration must be submitted quarterly. Assets and rights that must be reported include Shares acquired under the Plan.

Tax on Financial Transactions (IOF).

Repatriation of funds (e.g., proceeds from the sale of Shares) into Brazil and the conversion of USD into BRL associated with such fund transfers may be subject to the Tax on Financial Transactions. It is the Participant's responsibility to comply with any applicable Tax on Financial Transactions arising from the Participant's participation in the Plan. The Participant should consult with a personal tax advisor for additional details.

CANADA

Terms and Conditions

Payment.

Notwithstanding anything to the contrary in paragraphs 1, 2, and 4 of the Terms and Conditions, any vested Restricted Share Unit will be paid to the Participant by no later than the end of the calendar year in which the vesting date specified in paragraph 2 occurs (i.e., by the end of the calendar year in which the third anniversary of the grant date occurs).

Notwithstanding anything to the contrary in the Terms and Conditions, a Participant will receive one Share upon the vesting and payment of a Restricted Share Unit. Notwithstanding paragraph 5 of the Terms and Conditions, the Company shall not have discretion to substitute a cash payment in lieu of Shares.

Further, in no event will the Restricted Share Units carry any right to receive payment of any dividend equivalents in cash. To the extent the Board of Directors authorizes that dividend equivalents be accrued and paid on vesting of Restricted Share Units, such dividend equivalents shall be paid in such whole number of Shares with a fair market value at the time the Restricted Share Units vest equal to the amount of dividend equivalents accrued on the Restricted Share Units at that time. Any fractional Shares attributable to dividend equivalents shall be rounded down to the nearest whole Share, and the Participant shall not be entitled to any consideration for such fractional Shares, or any other amount in respect of the accrued dividend equivalents.

Withholding.

Notwithstanding anything to the contrary in the Terms and Conditions, the number of Shares otherwise required to be issued to a Participant on vesting and payment of a Restricted Share Unit shall not be reduced to satisfy the payment of Tax-Related Items, except for at the election of a Participant, in the Participant's sole discretion. A Participant who is not a Section 16 Insider shall be permitted to make such an election only if the Company has established procedures for such withholding.

Termination of Service.

The following provision replaces paragraph A "Termination" of Appendix A:

For purposes of the Restricted Share Units, the Participant's employment relationship will be considered terminated (regardless of the reason for the termination and whether or not later found to be invalid or in breach of applicable laws in the jurisdiction where the Participant is employed or otherwise rendering services or the terms of the Participant's employment or other service agreement, if any) effective as of the date that is the earliest of (i) the date the Participant's employment relationship terminates;, or (ii) the date the Participant receives notice of termination of employment; and (iii) the date the Participant is no longer actively employed or otherwise providing services to the Company, the Employer, or any Subsidiary (the "Termination Date"). The Termination Date will not be extended, regardless of any notice period or period of pay in lieu

of such notice required under applicable laws (including, without limitation, statutory law, regulatory law and common law) in the jurisdiction where the Participant is employed or otherwise providing services or the terms of the Participant's employment or other service agreement, if any. The Company shall have the exclusive discretion to determine when the Participant is no longer actively employed or otherwise providing service for purposes of the Restricted Share Unit grant (including whether the Participant may still be considered to be employed or otherwise providing services while on a leave of absence).

If, notwithstanding the foregoing, applicable employment legislation explicitly requires continued vesting during a statutory notice period, the Participant's right to vest in the Restricted Share Units, if any, will terminate effective as of the last date of the minimum statutory notice period, but the Participant will not earn or be entitled to any pro-rated vesting if the vesting date falls after the end of the Participant's statutory notice period, nor will the Participant be entitled to any compensation for lost vesting.

The following provisions apply to Participants resident in Quebec:

French Language Documents.

A French translation of this document and certain other documents related to the Restricted Share Units will be made available to the Participant as soon as reasonably practicable. The Participant understands that, from time to time, additional information related to the Restricted Share Units may be provided in English and such information may not be immediately available in French. However, upon request, the Company will provide a translation of such information into French as soon as reasonably practicable. Notwithstanding anything to the contrary in the Award Terms, and unless the Participant indicates otherwise, the French translation of this document and the Plan will govern the Participant's participation in the Plan.

Une traduction française de ce document et de certains autres documents liés aux unités d'actions restreintes sera mise à la disposition du participant dès que raisonnablement possible. Le Participant comprend que, de temps à autre, des informations supplémentaires relatives aux unités d'actions restreintes peuvent être fournies en anglais et que ces informations peuvent ne pas être immédiatement disponibles en français. Cependant, sur demande, la Société fournira une traduction de ces informations en français dès que raisonnablement possible. Nonobstant toute disposition contraire des Conditions d'attribution, et sauf indication contraire du Participant, la traduction française de ce document et du Plan régira la participation du Participant au Plan.

Authorization to Release and Transfer Necessary Personal Information.

The following provision supplements paragraph D "Data Privacy" of Appendix A:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company, any Subsidiary and the administrator of the Plan to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Subsidiary to record such information and

to keep such information in the Participant's Employee file. The Participant acknowledges and agrees that the Participant's personal information, including any sensitive personal information, may be transferred or disclosed outside the province of Quebec, including to the U.S. If applicable, the Participant also acknowledges and authorizes the Company, the Employer, the Broker and any other Subsidiary involved in the administration of the Plan to use technology for profiling purposes and to make automated decisions that may have an impact on the Participant or the administration of the Plan.

Notifications

Securities Law Information.

The Participant is permitted to sell Shares acquired under the Plan through the Broker, provided the sale of the Shares takes place outside of Canada through facilities of a stock exchange on which the Shares are listed (i.e., the NYSE).

Foreign Asset/Account Reporting Information.

Canadian residents are required to report to the tax authorities any foreign property held outside of Canada (including Restricted Share Units and Shares acquired under the Plan) annually on form T1135 (Foreign Income Verification Statement) if the total cost of the foreign property exceeds C$100,000 at any time in the year. The form must be filed by April 30 of the following year. Restricted Share Units must be reported--generally at a nil cost--if the C$100,000 cost threshold is exceeded because of other foreign property the Participant holds. If Shares are acquired, their cost generally is the adjusted cost base ("ACB") of the Shares. The ACB would normally equal the fair market value of the Shares at vesting, but if the Participant owns other Shares, this ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with a personal tax advisor to ensure compliance with applicable reporting requirements.

CHINA

Terms and Conditions

The following terms and conditions will apply to Participants who are subject to exchange control restrictions and regulations in the People's Republic of China ("PRC"), including the requirements imposed by the State Administration of Foreign Exchange ("SAFE"), as determined by the Company in its sole discretion:

Termination of Employment.

Due to exchange control laws in PRC, the Participant agrees that the Company reserves the right to require the sale of any Shares acquired at vesting of the Restricted Share Units upon the termination of the Participant's employment for any reason. If the Company, in its discretion, does not exercise its right to require the automatic sale of Shares issuable upon vesting of the Restricted Share Units, as described in the preceding sentence, the Participant understands and agrees that any Shares acquired by the Participant under the Plan must be sold no later than six (6) months after termination of the Participant's employment, or within any other such time frame as permitted

by the Company or required by SAFE. The Participant understands that any Shares acquired under the Plan that have not been sold within six (6) months of the Participant's termination of employment will be automatically sold by a designated broker at the Company's discretion, pursuant to this authorization by the Participant.

The Participant agrees that the Company is authorized to instruct its designated broker to assist with the mandatory sale of such Shares (on the Participant's behalf, pursuant to this authorization), and the Participant expressly authorizes the Company's designated broker to complete the sale of such Shares. The Participant also agrees to sign any agreements, forms and/or consents that may be reasonably requested by the Company (or the designated broker) to effectuate the sale of the Shares (including, without limitation, as to the transfers of the proceeds and other exchange control matters noted below) and shall otherwise cooperate with the Company with respect to such matters, provided that the Participant shall not be permitted to exercise any influence over how, when or whether the sales occur. The Participant acknowledges that the Company's designated broker is under no obligation to arrange for the sale of the Shares at any particular price. Due to fluctuations in the Share price and/or applicable exchange rates between vesting and (if later) the date on which the Shares are sold, the amount of proceeds ultimately distributed to the Participant may be more or less than the market value of the Shares upon vesting (which is the amount relevant to determining the Participant's liability for Tax- Related Items). The Participant understands and agrees that the Company is not responsible for the amount of any loss the Participant may incur and the Company assumes no liability for any fluctuations in the Share price and/or any applicable exchange rate.

Upon the sale of the Shares, the Company agrees to pay the cash proceeds from the sale (less any Tax-Related Items, brokerage fees or commissions) to the Participant in accordance with the applicable exchange control laws and regulations including but not limited to the restrictions set forth in this Appendix B for China below under "Exchange Control Restrictions."

Exchange Control Restrictions.

The Participant understands and agrees that, pursuant to local exchange control requirements, the Participant will be required to immediately repatriate any cash payments or proceeds obtained with respect to participation in the Plan to the PRC. The Participant further understands that such repatriation of any cash payments or proceeds may need to be effectuated through a special exchange control account established by the Company or any Subsidiary, and the Participant hereby consents and agrees that any payment or proceeds may be transferred to such special account prior to being delivered to the Participant.

Any payment or proceeds may be paid to the Participant in U.S. dollars or local currency at the Company's discretion. If the payments or proceeds are paid to the Participant in U.S. dollars, the Participant will be required to set up a U.S. dollar bank account in the PRC (if the Participant does not already have one) so that the payments or proceeds may be deposited into this account. If the payments or proceeds are paid to the Participant in local currency, the Company is under no obligation to secure any particular exchange conversion rate and the Company may face delays in converting the payments or proceeds to local currency due to exchange control restrictions. The Participant agrees to bear any currency exchange conversion rate fluctuation risk between the time

the cash proceeds are received and the time the cash proceeds are distributed to the Participant through the special account described above.

The Participant further agrees to comply with any other requirements that may be imposed by the Company in the future to facilitate compliance with exchange control requirements in the PRC.

HUNGARY

There are no country-specific provisions.

ICELAND

There are no country-specific provisions.

ITALY

Terms and Conditions

Plan Document Acknowledgement.

By accepting the Restricted Share Units, the Participant acknowledges that the Participant has received a copy of the Plan and the Award Terms and has reviewed the Plan and the Award Terms in their entirety and fully understands and accepts all provisions of the Plan and the Award Terms. The Participant further acknowledges that the Participant has read and specifically and expressly approves the following paragraphs of the Award Terms: paragraphs 2-5: Vesting and Payment; paragraph 15: Repayment and Forfeiture/Clawback; paragraph 16: Stock Exchange Requirements and Applicable Laws; paragraph 20: Severability and Judicial Modification; paragraph 22: Appendices; paragraph 23: Imposition of Other Requirements; paragraph 27: Governing Law and Venue; paragraph A of Appendix A: Termination; Appendix D: GDPR Notice.

Notifications

Foreign Asset/Account Reporting Information.

Italian residents who, during the fiscal year, hold investments abroad or foreign financial assets (e.g., cash, Shares) which may generate income taxable in Italy are required to report such on their annual tax returns (UNICO form, RW Schedule) for the year during which the assets are held, or on a special form if no tax return is due. The same reporting obligations apply to Italian residents who, even if they do not directly hold investments abroad or foreign financial assets (e.g., cash, Shares), are beneficial owners of the investment or foreign financial asset pursuant to Italian money laundering provisions. The Participant should consult with a personal tax advisor to ensure compliance with applicable reporting obligations.

Tax on Foreign Financial Assets.

The value of the financial assets (*e.g. Shares)* held outside of Italy by Italian residents may be subject to a foreign asset tax. The taxable amount will be the fair market value of the financial

assets (*e.g.* Shares) assessed at the end of the calendar year and is subject to pro-ration for the portion of the year that the Participant holds the Shares received at vesting. The value of financial assets held abroad must be reported in Form RM of the annual return. The Participant should consult with a personal tax advisor for additional information on the tax on foreign financial assets.

NETHERLANDS

There are no country-specific provisions.

NORWAY

There are no country-specific provisions.

SAUDI ARABIA

Notifications

Securities Law Information.

This document may not be distributed in the Kingdom of Saudi Arabia except to such persons as permitted under the Rules on the Offer of Securities and Continuing Obligations issued by the Capital Market Authority.

The Capital Market Authority does not make any representation as to the accuracy or completeness of this document, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this document. The Participant should conduct his or her own due diligence on the accuracy of the information relating to the Restricted Share Units and the underlying Shares. If the Participant does not understand the content of this document, the Participant should consult with an authorized financial advisor.

SINGAPORE

Terms and Conditions

Sale Restriction.

The Restricted Share Units are subject to section 257 of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA") and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Restricted Share Units unless such sale or offer in Singapore is made (i) after six months from the grant date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280)

of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provisions of the SFA. Notifications.

Securities Law Information.

The grant of the Restricted Share Units is being made in reliance on the "Qualifying Person" exemption under section 273(1)(f) of the SFA under which it is exempt from the prospectus and registration requirements under the SFA and the grant of the Restricted Share Units is not made to the Participant with a view to the Shares being subsequently offered for sale to any other party. The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore.

Director Notification Obligation.

Directors, associate directors or shadow directors of a Singapore Subsidiary are subject to certain notification requirements under the Singapore Companies Act. Specifically, such directors must notify the Singapore Subsidiary in writing of an interest (e.g., Restricted Share Units, Shares, etc.) in the Company or any related company within two business days of (i) its acquisition or disposal, (ii) any change in a previously-disclosed interest (e.g., upon vesting of Restricted Share Units or when Shares acquired under the Plan are subsequently sold), or (iii) becoming a director.

SPAIN

Terms and Conditions

No Entitlement for Claims or Compensation.

The following provisions supplement paragraph A "Termination" of Appendix A.

By accepting the Restricted Share Units, the Participant consents to participate in the Plan and acknowledges that the Participant has received a copy of the Plan.

The Participant understands and agrees that, as a condition of the grant of the Restricted Share Units, if the Participant's employment terminates, unless otherwise provided in the Award Terms or by the Company, any unvested Restricted Share Units shall be forfeited without entitlement to the underlying Shares or to any amount as indemnification in the event of a termination, including, but not limited to: resignation, disciplinary dismissal adjudged to be with cause, disciplinary dismissal adjudged or recognized to be without cause (i.e., subject to a "*despido improcedente*"), individual or collective layoff on objective grounds, whether adjudged to be with cause or adjudged or recognized to be without cause, material modification of the terms of employment under Article 41 of the Workers' Statute, relocation under Article 40 of the Workers' Statute, Article 50 of the Workers' Statute, unilateral withdrawal by the Employer, and under Article 10.3 of Royal Decree 1382/1985.

The Participant understands that the Company has unilaterally, gratuitously and in its sole discretion decided to grant Restricted Share Units under the Plan to individuals who may be Employees of the Company or a Subsidiary. The decision is limited and entered into based upon

the express assumption and condition that any Restricted Share Units will not economically or otherwise bind the Company or any Subsidiary, including the Employer, on an ongoing basis, other than as expressly set forth in the Award Terms. Consequently, the Participant understands that the Restricted Share Units are granted on the assumption and condition that the Restricted Share Units shall not become part of any employment or service agreement (whether with the Company or any Subsidiary, including the Employer) and shall not be considered a mandatory benefit, salary for any purpose (including severance compensation) or any other right whatsoever. Furthermore, the Participant understands and freely accepts that there is no guarantee that any benefit whatsoever shall arise from the grant of Restricted Share Units, which is gratuitous and discretionary, since the future value of the Restricted Share Units and the underlying Shares is unknown and unpredictable. The Participant also understands that the grant of Restricted Share Units would not be made but for the assumptions and conditions set forth hereinabove; thus, the Participant understands, acknowledges and freely accepts that, should any or all of the assumptions be mistaken or any of the conditions not be met for any reason, the Restricted Share Unit and any right to the underlying Shares shall be null and void.

Notifications

Securities Law Information.

No “offer of securities to the public,” as defined under Spanish law, has taken place or will take place in the Spanish territory with respect to the Restricted Share Units. Neither the Plan nor the Award Terms constitute a public offering prospectus and they have not been, nor will they be, registered with the Comisión Nacional del Mercado de Valores (Spanish Securities Exchange Commission) (“CNMV”).

Exchange Control Information.

If the Participant holds 10% or more of the Share capital of the Company or such other amount that would entitle the Participant to join the Board of Directors, the Participant must declare the acquisition, ownership and sale of Shares to the *Dirección General de Comercial e Inversiones* (the “DGCI”), the Bureau for Commerce and Investments, which is a department of the Ministry of Economics and Competitiveness. Generally, the declaration must be made in January for Shares owned as of December 31 of the prior year and/or Shares acquired or disposed of during the prior year; however, if the value of the Shares acquired or disposed of or the amount of the sale proceeds exceeds €1,502,530, the declaration must be filed within one month of the acquisition or disposition, as applicable.

Further, the Participant may be required to declare electronically to the Bank of Spain any securities accounts (including brokerage accounts held abroad), any foreign instruments (e.g., Shares) and any transactions with non-Spanish residents (including any payments of cash or Shares made to the Participant by the Company or any U.S. brokerage account) if the balances in such accounts together with the value of such instruments as of December 31, or the volume of transactions with non-Spanish residents during the prior or current year, exceed €1,000,000.

Foreign Asset/Account Reporting Information.

To the extent that the Participant holds rights or assets (*e.g.* Shares and/or bank accounts) outside Spain with a value in excess of €50,000 (for each type of right or asset) as of December 31, the Participant will be required to report information on such rights and assets on his or her tax return (tax form 720) for such year. After such Shares and/or accounts are initially reported, the reporting obligation will apply for subsequent years only if the value of any previously-reported Shares or accounts increases by more than €20,000 or if the Participant sells or otherwise disposes of any previously-reported Shares or accounts. The Participant should consult with a personal advisor to ensure compliance with applicable reporting requirements.

SURINAME

There are no country-specific provisions.

SWITZERLAND

Notifications

Securities Law Information.

Neither this document nor any other materials relating to the Restricted Share Units (i) constitute a prospectus according to articles 35 et seq. of the Swiss Federal Act on Financial Services ("FinSA"), (ii) may be publicly distributed nor otherwise made publicly available in Switzerland to any person other than an Employee of the Company or other Participant or (iii) have been or will be filed with, approved or supervised by any Swiss reviewing body according to article 51 FinSA or any Swiss regulatory authority, including the Swiss Financial Market Supervisory Authority (FINMA).

UNITED KINGDOM

Terms and Conditions

Responsibility for Taxes.

The following provision supplements paragraph B "Responsibility for Taxes" of Appendix A:

Without limitation to paragraph B "Responsibility for Taxes" of Appendix A, the Participant agrees that the Participant is liable for all Tax-Related Items and hereby covenants to pay all such Tax-Related Items as and when requested by the Company or the Employer or by HM Revenue and Customs ("HMRC") (or any other tax authority or any other relevant authority). The Participant also agrees to indemnify and keep indemnified the Company and the Employer against any Tax-Related Items that they are required to pay or withhold or have paid or will pay to HMRC (or any other tax authority or any other relevant authority) on the Participant's behalf.

Notwithstanding the foregoing, if the Participant is a director or executive officer of the Company (within the meaning of Section 13(k) of the Exchange Act), the Participant may not be able to indemnify the Company or the Employer for the amount of any Tax-Related Items not collected from or paid by the Participant, as it may be considered a loan. In this case, the amount of any uncollected income tax may constitute a benefit to the Participant on which additional income tax and employee national insurance contributions ("NICs") may be payable. The Participant agrees to report and pay any income tax due on this additional benefit directly to HMRC under the self-assessment regime and to pay the Employer for the value of the employee NICs due on this additional benefit, which the Company or the Employer may recover from the Participant by any of the means referred to in paragraph B "Responsibility for Taxes" of Appendix A.

APPENDIX C
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan (As Amended and Restated)

Important Information

Introduction

All employees and non-employee directors (collectively, "employees") of Alcoa Corporation ("Alcoa" or "Company") and its subsidiaries, including in the European Union / European Economic Area ("EU/EEA"), have the opportunity to be selected to participate in the Alcoa Corporation 2016 Stock Incentive Plan (as amended and restated, the "2016 Plan") to obtain rights to shares of Alcoa common stock or other property. Under the 2016 Plan, such employees may be granted, among other awards, a stock option ("Option") that gives them the right to purchase a specified number of shares of Alcoa common stock, provided that certain vesting and other requirements are satisfied, or restricted stock units ("RSUs") that will enable them to acquire shares of Alcoa common stock.

This summary provides details with respect to the 2016 Plan.

Identification of the Issuer

The issuer of the common stock that is offered under the 2016 Plan is Alcoa Corporation, a Delaware corporation, whose common stock is traded on the New York Stock Exchange ("NYSE") under the ticker symbol "AA." The International Securities Identification Number (the "ISIN") for the shares of Alcoa common stock is US0138721065. The US security identification number (the "CUSIP number") for the shares of Alcoa common stock is 013872106. The Company's address is 201 Isabella Street, Suite 500, Pittsburgh, PA 15212, U.S.A. Additional information on Alcoa can be found on its website at www.alcoa.com.

Stockholder disclosure made by the Company with the US Securities and Exchange Commission (the "SEC") is available on the SEC website (www.sec.gov). Employees may request copies of the filings from:

Alcoa Corporation

Attention: Corporate Secretary's Office

201 Isabella Street, Suite 500

Pittsburgh, PA 15212

Telephone: 412-315-2900

Corporate_Secretary@alcoa.com

Reasons for the Offer

The purpose of offers made under the 2016 Plan is to encourage eligible employees to acquire a proprietary interest in the long-term growth and financial success of Alcoa, and to further link the interests of such individuals to the long-term interests of stockholders.

Exemption from the EU Prospectus Regulation

To the extent offers of Options, RSUs and other rights under the 2016 Plan are offers of securities to the public, Alcoa is exempt from an obligation to publish a prospectus which meets the requirements set forth in Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 (the "Prospectus Regulation"). Article 1(4)(i) of the Prospectus Regulation exempts offers made in the context of an employee-share scheme within the EEA from the obligation to publish a prospectus if the securities are offered to existing or former directors or employees by their employer and certain other conditions are met, including the availability of a short-form disclosure document (the "Employee-Share Scheme Exemption"). Accordingly, in reliance on the Employee-Share Scheme Exemption, Alcoa has not prepared or filed a prospectus with any competent regulatory authority in the EU or the EEA in relation to offers made under the 2016 Plan and no such prospectus has been published in the EU or the EEA.

This document does not constitute a prospectus. Instead, this document contains the information that an issuer must make available to its employees in the EU/EEA when relying on the Employee Exemption.

Details of the Offer

The 2016 Plan authorizes the Compensation and Benefits Committee (the "Committee") of the Board of Directors (the "Board") of Alcoa to grant awards to eligible employees of Alcoa and its subsidiaries. The 2016 Plan also authorizes the Board to make awards to non-employee directors. The 2016 Plan generally is administered by the Committee. The Board or the Committee may delegate to a subcommittee of the Committee, other Board members, or to one or more officers of Alcoa or an affiliate any or all of its authority (except as otherwise provided in the 2016 Plan).

The Committee has the authority, subject to the terms of the 2016 Plan, to:

- select the employees to whom awards may be granted;
- determine the types of awards and the number of shares to be covered by each award;
- determine the terms and conditions of awards and make modifications to such terms and conditions;
- determine whether, to what extent and under what circumstances awards may be (i) settled in cash, shares or other property or (ii) canceled or suspended;

• determine whether, to what extent, and under what circumstances, cash, shares and other property and other amounts payable with respect to awards may be deferred;

• determine whether any corporate transaction will be deemed to result in a participant's termination of service for purposes of any award granted under the 2016 Plan;

• interpret the 2016 Plan and any instrument or agreement entered into under the 2016 Plan;

• establish rules and regulations and appoint agents for the proper administration of the 2016 Plan; and

• make any other determination and take any other action that the Committee deems necessary or desirable for administration of the 2016 Plan.

The Board has similar authority with respect to awards to non-employee directors.

The Committee is authorized to interpret the 2016 Plan and to provide for special terms for any Options, RSUs or other awards granted to employees who are foreign nationals or who are employed by the Company or any of its subsidiaries outside of the United States. Currently, the Company is granting only Options and RSUs outside of the United States. As a result, the details of the offer of Options and RSUs may vary slightly between countries to reflect any special terms adopted by the Committee, as will be set forth in the grant materials provided to employees.

Addressees of the Offer

The offer of Options and RSUs under the 2016 Plan will be made to employees of Alcoa and its subsidiaries, who are eligible to receive awards under the terms of the 2016 Plan and who are selected by the Committee (or its designee).

Time Frame of the Offer

Periodically, the Company will offer awards, including Options and RSUs, under the

2016 Plan to eligible employees who have been selected by the Committee (or its designee). Any employee receiving an award will be provided with a written agreement detailing the terms and conditions of the grant. Employees granted Options and RSUs ("Participants") who remain in the continuous employ or service of the Company or one of its subsidiaries may generally exercise their Options and vest in their RSUs and thereby acquire Alcoa common stock after the end of a vesting period. All Options must be exercised prior to their termination.

Minimum and Maximum Amount of Orders

The number of shares of common stock subject to an Option will be set out in a stock option agreement that is provided to employees who receives an offer of an Option under the 2016

Plan. The maximum number of shares that may be subject to awards under the 2016 Plan shall not exceed 30,000,000 subject to the adjustment and replenishment provisions of the 2016 Plan. There is no minimum number of shares that must be granted under an Option. At the time a Participant exercises an Option, the Option may be exercised for all or part of the number of shares of common stock covered by the Option.

The number of shares subject to an RSU will be set out in an RSU agreement that is provided to employees who receive an offer of an RSU under the 2016 Plan. There is no minimum number of shares that must be granted pursuant to an RSU.

Nature of the Offer

An Option granted under the 2016 Plan gives the Participant the right, but not the obligation, to purchase shares of Alcoa common stock at a fixed Option Price (as defined below). The Options may be exercised once the vesting period is satisfied and any other conditions are met. During the Option vesting period, the Participant must generally remain in the continuous employ or service of the Company or one of its subsidiaries, although an exception is made in the event that the Participant's employment or service is terminated due to death and other specified reasons set forth in the option agreement. Once an Option is vested, it may be exercised by the Participant, provided that the Participant remains in the employ or service of the Company or one of its subsidiaries as provided in the option agreement. Please consult the actual terms and conditions included in the relevant option grant materials for further details.

An RSU granted under the 2016 Plan represents the Company's unsecured promise to issue one share of Alcoa common stock to the Participant. During the RSU vesting period, the Participant must remain in the continuous employ or service of the Company or one of its subsidiaries, although certain exceptions are made in the event the Participant's death or for other specified reasons set forth in the RSU agreement. Please consult the actual terms and conditions included in the relevant RSU grant materials for further details. Participants will generally not be required to pay any consideration to receive the shares issuable once an RSU is vested.

Any award agreement (for Options, RSUs or other awards under the Plan) may provide for the potential mandatory cancellation, forfeiture and/or repayment by the Participant to the Company of an award or such other applicable compensation, including, without limitation, annual cash incentive compensation, upon such terms and conditions as may be determined by the Committee in accordance with (i) any Company clawback or recoupment policy, including the Alcoa Corporation Clawback Policy (as may be amended and restated from time to time, the "Clawback Policy"), and any other policies that are adopted to comply with the requirements of any applicable laws, rules, regulations, stock exchange listing standards or otherwise, or (ii) any applicable laws that impose mandatory clawback or recoupment requirements, under the circumstances set forth in such laws, including as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable laws, rules, regulations or stock exchange listing standards, as may be in effect from time to time, and which may operate to create additional rights for the Company with respect to awards and the recovery of amounts relating thereto. By accepting awards under the Plan and pursuant to the award agreement, the Participants consent to be bound by the terms of the Clawback Policy, if applicable, and agree and acknowledge

that they are obligated to cooperate with, and provide any and all assistance necessary to, the Company in its efforts to recover or recoup any award, any gains or earnings related to any award, or any other applicable compensation, including, without limitation, annual cash incentive compensation, that is subject to clawback or recoupment pursuant to such laws, rules, regulations, stock exchange listing standards or Company policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to facilitate the recovery or recoupment by the Company from the Participants of any such amounts, including from Participants' accounts or from any other compensation, to the extent permissible under Section 409A of the Internal Revenue Code of 1986, as amended.

The Options and RSUs generally may not be transferred and may be exercised by or vest in the Participant only. The Participant may freely transfer the shares of Alcoa common stock acquired upon exercise of the Option or vesting of the RSUs; however the Committee may impose such restrictions on any such shares as it deems advisable, including minimum holding period requirements, restrictions under applicable securities laws, or under the requirements of any stock exchange or market upon which such shares are then listed and/or traded.

Further, Options and RSUs are granted to Participants in the sole discretion of the Company. No employee shall have the right to be selected to receive an Option, RSU or any other award under the 2016 Plan or, having been so selected, to receive a future Option or RSU. Options and RSUs are granted by Alcoa and neither award or other award under the 2016 Plan creates an employment or service contract nor constitutes any part of a Participant's employment or service contract with the Company or any subsidiary of the Company.

Option and RSU Price

The price of each share of Alcoa common stock subject to an Option (the "Option Price") will be fixed by the Committee at the time the Option is granted. The Option Price will be not less than 100% of the closing price of a share of the Company's common stock as reported on the NYSE on the date that the Options are granted. The Option Price may be adjusted in the event of a reorganization or change in capitalization of the Company, as set forth in the 2016 Plan. Information on the current fair market value of the Company's shares can be found on the Alcoa website at http://www.alcoa.com.

Participants will not be required to pay any cash consideration to receive shares upon vesting of RSUs.

Termination, Suspension or Amendment of the 2016 Plan

Alcoa may at any time repeal the 2016 Plan or amend it within the limits set forth in the 2016 Plan.

Commission

Participants will not have to pay a fee for opening an account with the 2016 Plan broker nor for the management of their account or the purchase of shares of Alcoa common stock. Participants are responsible for all the commissions and fees related to any sale or transfer of the shares of Alcoa common stock from the account at the 2016 Plan broker. In addition, the SEC applies a fee

to most securities transactions at a rate determined by the SEC. Such commission and fees are subject to change at any time.

Non-transferability of Purchase Rights

RSUs and Options granted to Participants may not be voluntarily or involuntarily assigned, transferred, pledged, or otherwise disposed of in any way.

Restriction on Shares and Transferability

The shares of Alcoa common stock made under the 2016 Plan are registered on a registration statement on Form S-8 with the SEC and are generally freely transferable (subject however to any transferability restrictions resulting from applicable insider trading laws and Alcoa's insider trading policy).

The 2016 Plan is intended to provide shares of Alcoa common stock for investment and not for resale. Alcoa does not, however, intend to restrict or influence any Participant in the conduct of his or her own affairs. A Participant, therefore, may sell shares of Alcoa common stock acquired under the 2016 Plan at any time he or she chooses, subject to compliance with any applicable securities laws. The Participant assumes the risk of any market or currency fluctuations in the price of the shares of Alcoa common stock. Moreover the Participants' attention is drawn to the risk of investing in shares of Alcoa's common stock generally as described, in particular, in the "Risk factors" section in Alcoa's SEC filings.

Number and Nature of the Securities Offered

Options and RSUs over shares of Alcoa common stock will not be granted in excess of the available share limitations set forth in the 2016 Plan. Up to 30,000,000 shares of common stock may be issued under the 2016 Plan. Any shares of Alcoa common stock issued under the 2016 Plan may consist, in whole or in part, of authorized and unissued shares, treasury shares or shares of Alcoa common stock purchased in the open market or otherwise. Shares authorized under the 2016 Plan are subject to the following limitations and "share counting" provisions (subject to the adjustment provisions of the 2016 Plan):

- Shares issued or transferred upon the exercise of incentive stock options ("ISOs") may not exceed 5,000,000 shares;
- Each share issued pursuant to an award other than an Option or stock appreciation right ("SAR") will count as 1.63 shares from May 10, 2017 and thereafter.
- Options and SARs will be counted as one share for each option or SAR. Shares subject to awards that are granted in cash, or cash-settled awards, will not count against the 30,000,000 share limit.

For purposes of complying with Section 162(m) of the United States Internal Revenue Code limitations on "performance-based compensation, if that is intended by the Committee, and subject

to the adjustment provisions of the 2016 Plan, no participant in the 2016 Plan may be granted, during any one fiscal year:

- Options or SARs, in the aggregate, for more than 10,000,000 shares of Alcoa common stock;
- Restricted share awards or RSU awards, in each case, that are performance awards (at a maximum award level), in the aggregate, for more than 4,000,000 shares of Alcoa common stock; or
- Performance awards that are valued with reference to cash or property, other than shares of Alcoa common stock, with an aggregate value in excess of $15,000,000.

Subject to adjustment as described in the 2016 Plan, awards to a non-employee directors made under the 2016 Plan cannot exceed $500,000, based on the grant date fair value, in any one fiscal year period.

The shares are traded on the NYSE.

Summary of the Rights Attached to the Shares

The shares delivered to Participants upon exercise of Options and at the vesting of RSUs granted under the 2016 Plan are shares of common stock in the Company, which will allow Participants to participate in:

- Dividends - When the Company announces its financial results, it may decide to give a portion of its profits back to stockholders in the form of dividends.
- Voting - As a stockholder, a Participant will be entitled to vote at the Company's annual meetings where each of his or her shares will count as one vote.
- Liquidation Proceeds - In the event of liquidation, dissolution or winding up of the Company, the holders of shares of Alcoa common stock are entitled to share ratably in all assets remaining after payment of or provisions for the Company's liabilities, subject to prior rights or preferred stock, if any, then outstanding.
- No Preemptive, Redemptive or Conversion Provisions - The shares of Alcoa common stock are not entitled to preemptive rights and are not subject to conversion or redemption.

Further, once a stockholder, a Participant will have the right to receive certain information from the Company, such as the Company's annual report to stockholders. The Company can make such information available for its stockholders at its office and/or via its website.

The Company may issue other classes of shares and/or securities which are not part of this offer and the 2016 Plan.

Note that the Company may, at any time, but subject to the passing of a stockholder vote, amend its Bylaws and/or Certificate of Incorporation in a way that impacts the rights of holders of the

shares of Alcoa Common Stock. These documents can be found as exhibits to the Company's latest Annual Report on Form 10-K filed with the SEC.

Information on the 2016 Plan

Further information on the 2016 Plan can be found at https://www.alcoa.com/equity-plan/, on the Company's internal intranet.

Requests for information about the 2016 Plan should be directed to:

Alcoa Corporation

Attention: Compensation & Benefits Manager

201 Isabella Street, Suite 500

Pittsburgh, PA 15212

CompensationBusinessSupport@Alcoa.com

IMPORTANT NOTE

The Company is not providing any tax , legal or financial advice, nor is the Company making any recommendations regarding whether or not Participants decide to participate in the 2016 Plan. Participants should consult with their personal tax , legal and financial advisors regarding whether to participate in the 2016 Plan before taking any action related to the 2016 Plan. Further, depending upon where the shares of Alcoa common stock are listed, the country of Participant's residence and/or the country in which the 2016 Plan broker resides, the Participant may be subject to insider trading restrictions and/or market abuse laws that may affect his or her ability to accept, acquire, sell or otherwise dispose of shares of Alcoa common stock, rights to shares of Alcoa common stock, or rights linked to the value of shares of Alcoa common stock during such times the Participant is considered to have "inside information" regarding the Company as defined by the laws or regulations in the Participant's country. Local insider trading laws and regulations also may prohibit the cancellation or amendment of orders the Participant places before he or she possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party (other than on a "need to know" basis) and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Third parties may include fellow employees. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. Please note that it is the Participant's personal responsibility to comply with any applicable requirements or restrictions, and the Participant should consult with his or her personal legal advisor to determine his or her personal obligations and duties.

APPENDIX D TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Restricted Share Units
for Non-U.S. Participants GDPR Notice
for EU/EEA Participants

RE: 2016 Stock Incentive Plan (the "Plan")

Dear Participant:

The EU General Data Protection Regulation (also known as the "GDPR") came into force on May 28, 2018. For the purposes of the GDPR, Alcoa Corporation (the "Company") wants to make EU/EEA-based participants in the Plan aware that the Company holds certain Data (as defined below) about the participants. The Company also wants to explain why the Company holds this Data and to let each participant know how to raise any questions regarding the Company's use of the Data. The purpose of this communication is to provide participants with this information.

This document constitutes a Notice under the GDPR. Copies of this Notice are also available for viewing online at https://www.alcoa.com/equity-plan/ or by request using the contact details set out below.

This communication supplements information relating to the use of your Data set out in the relevant agreement, or agreements issued to you under the Plan (the "Agreements"). Should there be any inconsistency between the terms of this Notice and the Agreements relating to the Company's use of your Data, then this Notice is the document that will apply.

The term "Data" as used in this Notice includes your name, home address, email address and telephone number, date of birth, social insurance number, passport number or other identification number, salary, nationality and job title, as well as details of any shares, directorships, awards or any other equity or share rights you may have in the Company (whether awarded, canceled, exercised, vested, unvested or outstanding).

Data Controller Entity: The Company is the Data Controller. The Company is a Delaware corporation, with its principal United States office at 201 Isabella Street, Suite 500, Pittsburgh, Pennsylvania 15212-5858, USA.

Purposes: Data is held for the exclusive purpose of implementing, administering and managing your participation in the Plan.

Legitimate Interests: The Company holds the Personal Data for the legitimate interests of implementing, administering and maintaining the Plan and each participant's participation in the Plan.

International Transfers of Data: As the Company is based in the United States and the Agreements are performed in the United States, the Company can only meet its contractual obligations to you under the Agreements if the Data is transferred to the United States. The performance of the contractual obligations of the Company to you is one of the legal bases for

the transfer of the Data from the European Union to the United States. You should be aware that the United States may have different data privacy laws and protections than the data privacy laws in place in the European Union.

Retention Period: Records relating to the Plan are kept on an indefinite basis, as they are part of the statutory records of the Company.

Other Recipients: To fulfill its obligations under the Agreements, the Company may share Data with its subsidiary companies who employ participants in the Plan. In addition, Data may be transferred to certain third parties assisting in the implementation, administration and management of the Plan, such as share plan administrators and transfer agents. At your instruction, the Data will be shared with a broker or other third party whom you have instructed the Company to deposit shares or other securities acquired upon the vesting of any awards under the Agreements.

Data Subject Rights: Participants have a number of rights under the GDPR. Depending upon the circumstances, these may include the right of data portability (where the Company helps a participant move Data to someone else at the participant's request), the right to object to the processing of the Data, the right to require the Company to update and correct the Data, the right to require erasure of the Data and the right for the participant to review the Data held by the Company and to require the Company to cease processing it. You must understand, however, that any such request may affect your ability to participate in the Plan. For more information on the consequences of your refusal to consent or your withdrawal of consent, please contact the Company using the contact details below.

Data Security: The Company recognizes the importance of treating Data in a lawful, fair and transparent manner. The Company will apply reasonable organizational and security measures to prevent the unlawful processing and/or the accidental loss or destruction of these materials and, in particular, the personal data contained in them.

Contact: If you have any questions concerning this Notice, you should contact the Alcoa Equity Administrator, by using the following contact details:

Alcoa Corporation

Attention: Compensation & Benefits Manager

201 Isabella Street, Suite 500

Pittsburgh, PA 15212

CompensationBusinessSupport@Alcoa.com

Exhibit 10.35

ALCOA CORPORATION
TERMS AND CONDITIONS FOR
SPECIAL RETENTION AWARDS
(RESTRICTED SHARE UNITS)

These terms and conditions, including Appendices attached hereto (the "Award Terms"), are authorized by the Compensation and Benefits Committee (the "Committee") of the Board of Directors (the "Board"). They are deemed to be incorporated into and form a part of the Award of special retention Restricted Share Units ("Special Retention Award") issued on or after January 24, 2024, under the Alcoa Corporation 2016 Stock Incentive Plan, as may be amended from time to time (the "Plan").

Terms that are defined in the Plan have the same meanings in the Award Terms.

General Terms and Conditions

1. Special Retention Awards are subject to the provisions of the Plan and the provisions of the Award Terms. If the Plan and the Award Terms are inconsistent, the provisions of the Plan will govern. Interpretations of the Plan and the Award Terms by the Committee are binding on the Participant and the Company. A Special Retention Award is an undertaking by the Company to issue the number of Shares indicated in the Participant's account with the Company's designated stock plan broker or service provider (the "Broker"), subject to the fulfillment of certain conditions, except to the extent otherwise provided in the Plan or herein. A Participant has no voting rights or rights to receive dividends on a Special Retention Award, but the Board has authorized that dividend equivalents be accrued and paid on a Special Retention Award in accordance with paragraphs 2 and 4 below. Any dividend equivalents will be subject to the same applicable terms and conditions (including vesting, timing of payment, forfeitability and clawback) as apply to the Special Retention Award on which the dividend equivalents were credited.

Vesting and Payment

2. A Special Retention Award will vest on the third anniversary date of the grant date and, subject to paragraph 3, will be paid to the Participant in Shares on the vesting date or within 90 days thereafter (or, if it is not practicable to make payment by such date, as soon as practicable thereafter, but in no event later than the end of the calendar year in which the vesting date occurs and/or later than the time permitted under Section 409A of the Code).

3. Notwithstanding the foregoing, except as provided in paragraph 4, if a Participant's employment with the Company (including its Subsidiaries) is terminated before the Special Retention Award vests, the Special Retention Award is forfeited and is automatically canceled.

4. The following are exceptions to the rules in paragraph 3:

· Death or Disability: A Special Retention Award held by a Participant, who dies while an Employee or who is permanently and totally disabled (as defined below) while an Employee, is not forfeited but will vest and be paid on the original stated vesting date set forth in paragraph 2.

A Participant is deemed to be permanently and totally disabled if the Participant is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months. A Participant shall not be considered to be permanently and totally disabled unless the Participant furnishes proof of the existence thereof in such form and manner, and at such times, as the Company may require. In the event of a dispute, the determination of whether a Participant is permanently and totally disabled will be made by the Committee or its delegate.

· Change in Control: A Special Retention Award vests if a Replacement Award is not provided following certain Change in Control events, as described in the Plan. Notwithstanding anything in the Award Terms to the contrary, if a Change in Control qualifies as a "change in control event" within the meaning of Treas. Reg. § 1.409-3(i)(5), the vested Special Retention Award (whether vested pursuant to the preceding sentence or otherwise and with vesting determined under Section 409A of the Code) will be paid to the Participant within 30 days following the Change in Control. If the Change in Control does not so qualify, the vested Special Retention Award will be paid to the Participant on the original stated vesting date set forth in paragraph 2.

· Termination Following Change in Control: As further described in the Plan, if a Replacement Award is provided following a Change in Control, but within 24 months of such Change in Control the Participant's employment is terminated without Cause (as defined in the Alcoa Corporation Change in Control Severance Plan) or by the Participant for Good Reason (as defined in the Alcoa Corporation Change in Control Severance Plan), the Replacement Award will vest and be paid to the Participant on the original stated vesting date set forth in paragraph 2.

· Involuntary Termination without Cause: In circumstances other than a Change in Control as described above, if a Participant is involuntarily terminated without Cause (as defined below) from employment with the Company or a Subsidiary at least one year after the grant date, the Special Retention Award will not be forfeited in whole but only in part upon termination of employment. The portion of the Special Retention Award that is not forfeited will remain outstanding and continue to vest on the original stated vesting date set forth in paragraph 2 and is calculated for the vesting period based on the number of days during such vesting period that the Participant was actively employed with the Company or a Subsidiary, with any remaining amount being automatically forfeited as follows: the actual number of days the Participant was actively employed during the vesting period divided by the total number of days in the period (with the resulting Restricted Share Units rounded up to the next whole unit). For example, a Participant who is involuntarily

terminated without Cause from employment with the Company (or a Subsidiary) after the end of the first year of a three-year vesting period will receive one-third of the Award on the applicable vesting date, with the remaining two-thirds of the Shares being automatically forfeited upon termination.

For purposes of this bullet and the last bullet of this paragraph 4:

if the Participant participates in the Alcoa Corporation Change in Control Severance Plan, “Cause” shall have the meaning set forth in such plan and shall additionally include any violation by the Participant of the Company’s Code of Conduct, or similar codes and/or policies (as may be implemented and/or amended from time to time) that results in significant financial or reputational harm to the Company, as determined in the Board’s sole discretion; and

if the Participant does not participate in the Alcoa Corporation Change in Control Severance Plan, “Cause” means (i) the willful and continued failure by the Participant to substantially perform the Participant’s duties with the Company or Subsidiary employer that has not been cured within 30 days after a written demand for substantial performance is delivered to the Participant by the Board or the Participant’s direct supervisor, which demand specifically identifies the manner in which the Participant has not substantially performed the Participant’s duties, (ii) the willful engaging by the Participant in conduct which is demonstrably and materially injurious to the Company or a Subsidiary, monetarily or otherwise; (iii) the Participant’s fraud or acts of dishonesty relating to the Company or any of its Subsidiaries; (iv) any violation by the Participant of the Company’s Code of Conduct, or similar codes and/or policies (as may be implemented and/or amended from time to time) that results in significant financial or reputational harm to the Company, as determined in the Board’s sole discretion; or (v) the Participant’s conviction of any misdemeanor relating to the affairs of the Company or any of its Subsidiaries or indictment for any felony. For purposes of clauses (i) and (ii) of this definition, no act, or failure to act, on the Participant’s part shall be deemed “willful” unless done, or omitted to be done, by the Participant not in good faith and without reasonable belief that the Participant’s act, or failure to act, was in the best interest of the Company.

· Termination for Cause: In circumstances other than in connection with a Change in Control as described above, if a Participant is terminated from employment with the Company or a Subsidiary for Cause (as defined above), the Special Retention Award held by such Participant shall be forfeited and immediately canceled. In addition, in circumstances other than in connection with a Change in Control as described above, if a Participant is terminated from employment with the Company or a Subsidiary for Cause (as defined above), the Board in its discretion may require that the Participant repay to the Company any and all Shares previously paid to the Participant pursuant to the Award Terms (or the equivalent value in cash at the time of such repayment).

5. A Participant will receive one Share upon the vesting and payment of each Restricted Share Unit comprising a Special Retention Award. Notwithstanding the foregoing or anything in the Award Terms to the contrary, to the extent that payment in Shares is prohibited under applicable law or would require the Participant or the Company to obtain the approval of any governmental and/or regulatory body in the Participant's country, or as necessary to meet tax objectives, the Company in its sole discretion may substitute a cash payment in lieu of Shares, such cash payment to be equal to the Fair Market Value of the Shares on the date that such Shares would have otherwise been issued under the terms of the Plan and the Award Terms.

Taxes

6. All taxes required to be withheld under applicable tax laws in connection with the vesting and payment of a Special Retention Award must be paid by the Participant at the appropriate time under applicable tax laws. The Company may satisfy applicable tax withholding obligations by any of the means set forth in Section 15(k) of the Plan, but will generally withhold from the Shares to be issued upon payment of the Special Retention Award that number of Shares with a Fair Market Value on the vesting date equal to the taxes required to be withheld at the minimum required rates, or at any other rate approved by the Committee, up to the maximum individual tax rate for the applicable tax jurisdiction, which include, for Participants subject to taxation in the United States, applicable income taxes, federal and state unemployment compensation taxes and FICA/FUTA taxes. Notwithstanding the foregoing, if the Participant is a Section 16 Insider, the Company will withhold Shares from the Shares to be issued upon payment of the Special Retention Award, as described herein, at the minimum required rates or such other rates approved by the Committee and other means will not be used to satisfy such tax withholding obligations.

Beneficiaries

7. If permitted by the Company, Participants will be entitled to designate one or more beneficiaries to receive all portions of a Special Retention Award that have not yet vested at the time of death of the Participant. All beneficiary designations will be on beneficiary designation forms approved for the Plan. Copies of the form will generally be available from the Broker or may otherwise be obtained from the Company.

8. Beneficiary designations on an approved form will be effective at the time received by the Company, including, as applicable, through submission to the Broker. A Participant may revoke a beneficiary designation at any time by written notice to the Company, including as applicable, through submission to the Broker, or by filing a new designation form. Any designation form previously filed by a Participant will be automatically revoked and superseded by a later-filed form.

9. A Participant will be entitled to designate any number of beneficiaries on the form, and the beneficiaries may be natural or corporate persons.

10. The failure of any Participant to obtain any recommended signature on the form will not prohibit the Company from treating such designation as valid and effective. No beneficiary

will acquire any beneficial or other interest in any Special Retention Award prior to the death of the Participant who designated such beneficiary.

11. Unless the Participant indicates on the form that a named beneficiary is to receive a Special Retention Award only upon the prior death of another named beneficiary, all beneficiaries designated on the form will be entitled to share equally in the Special Retention Award upon vesting and payment. Unless otherwise indicated, all such beneficiaries will have an equal, undivided interest in all such Special Retention Awards.

12. Should a beneficiary die after the Participant but before the Special Retention Award is paid, such beneficiary's rights and interest in the Special Retention Award will be transferable by the beneficiary's last will and testament or by the laws of descent and distribution. A named beneficiary who predeceases the Participant will obtain no rights or interest in a Special Retention Award, nor will any person claiming on behalf of such individual. Unless otherwise specifically indicated by the Participant on the beneficiary designation form, beneficiaries designated by class (such as "children," "grandchildren" etc.) will be deemed to refer to the members of the class living at the time of the Participant's death, and all members of the class will be deemed to take "per capita."

13. If a Participant does not designate a beneficiary or if the Company does not permit a beneficiary designation, the Special Retention Award that has not yet vested or been paid at the time of death of the Participant will be paid to the Participant's legal heirs pursuant to the Participant's last will and testament or by the laws of descent and distribution.

Adjustments

14. In the event of an Equity Restructuring or other transaction described in Section 4(f) of the Plan, the Committee will equitably adjust the Special Retention Award as it deems appropriate in accordance with the terms of the Plan. The adjustments authorized by the Committee will be final and binding.

Repayment/Forfeiture/Clawback

15. As an additional condition of receiving the Special Retention Award, the Participant acknowledges and agrees that the terms and conditions set forth in the Alcoa Corporation Clawback Policy (as may be amended and restated from time to time, the "Clawback Policy") are incorporated in the Award Terms by reference. To the extent the Clawback Policy is applicable to the Participant, it creates additional rights for the Company with respect to certain Awards and other applicable compensation, including, without limitation, annual cash incentive compensation awards granted to the Participant under the Alcoa Corporation Annual Cash Incentive Compensation Plan (as Amended and Restated), or any successor plan. Notwithstanding any provisions in the Award Terms to the contrary, certain Awards granted under the Plan and such other applicable compensation, including, without limitation, annual cash incentive compensation, will be subject to potential mandatory cancellation, forfeiture and/or repayment by the Participant to the Company to the extent the Participant is, or in the future becomes, subject to (a) any Company clawback or recoupment policy, including the Clawback Policy, and any other policies that are

adopted to comply with the requirements of any applicable laws, rules, regulations, stock exchange listing standards or otherwise, or (b) any applicable laws that impose mandatory clawback or recoupment requirements under the circumstances set forth in such laws, including as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable laws, rules, regulations or stock exchange listing standards, as may be in effect from time to time, and which may operate to create additional rights for the Company with respect to awards and the recovery of amounts relating thereto. By accepting an Award under the Plan and pursuant to the Award Terms, the Participant consents to be bound by the terms of the Clawback Policy, if applicable, and agrees and acknowledges that the Participant is obligated to cooperate with, and provide any and all assistance necessary to, the Company in its efforts to recover or recoup an Award, any gains or earnings related to an Award, or any other applicable compensation, including, without limitation, annual cash incentive compensation, that is subject to clawback or recoupment pursuant to such laws, rules, regulations, stock exchange listing standards or Company policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to facilitate the recovery or recoupment by the Company from the Participant of any such amounts, including from the Participant's accounts or from any other compensation, to the extent permissible under Section 409A of the Code.

Miscellaneous Provisions

16. *Stock Exchange Requirements; Applicable Laws*. Notwithstanding anything to the contrary in the Award Terms, no Shares issuable upon vesting of the Special Retention Award, and no certificate representing all or any part of such Shares, shall be issued or delivered if, in the opinion of counsel to the Company, such issuance or delivery would cause the Company to be in violation of, or to incur liability under, any securities law, or any rule, regulation or procedure of any U.S. national securities exchange upon which any securities of the Company are listed, or any listing agreement with any such securities exchange, or any other requirement of law or of any administrative or regulatory body having jurisdiction over the Company or a Subsidiary.

17. *Non-Transferability.* The Special Retention Award is non-transferable and may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered by the Participant other than by will or the laws of descent and distribution and any such purported assignment, alienation, pledge, attachment, sale, transfer or encumbrance shall be void and unenforceable against the Company; provided, that, the designation of a beneficiary shall not constitute an assignment, alienation, pledge, attachment, sale, transfer or encumbrance.

18. *Stockholder Rights*. No person or entity shall be entitled to vote, receive dividends or be deemed for any purpose the holder of any Shares until the Special Retention Award shall have vested and been paid in the form of Shares in accordance with the provisions of the Award Terms.

19. *Notices*. Any notice required or permitted under the Award Terms shall be in writing and shall be deemed sufficient when delivered personally or sent by confirmed email, telegram, or fax or five days after being deposited in the mail, as certified or registered mail, with

postage prepaid, and addressed to the Company at the Company's principal corporate offices or to the Participant at the address maintained for the Participant in the Company's records or, in either case, as subsequently modified by written notice to the other party.

20. *Severability and Judicial Modification*. If any provision of the Award Terms is held to be invalid or unenforceable under the applicable laws of any country, state, province, territory or other political subdivision or the Company elects not to enforce such restriction, the remaining provisions shall remain in full force and effect and the invalid or unenforceable provision shall be modified only to the extent necessary to render that provision valid and enforceable to the fullest extent permitted by law. If the invalid or unenforceable provision cannot be, or is not, modified, that provision shall be severed from the Award Terms and all other provisions shall remain valid and enforceable.

21. *Successors*. The Award Terms shall be binding upon and inure to the benefit of the Company and its successors and assigns, on the one hand, and the Participant and his or her heirs, beneficiaries, legatees and personal representatives, on the other hand.

22. *Appendices*. Notwithstanding any provisions in the Award Terms, for Participants residing and/or working outside the United States, the Special Retention Award shall be subject to the additional terms and conditions set forth in Appendix A to the Award Terms and to any special terms and conditions for the Participant's country set forth in Appendix B to the Award Terms. Further, Appendices C and D include information for European Union / European Economic Area Participants. Moreover, if the Participant relocates outside the United States or relocates between the countries included in Appendix B, the additional terms and conditions set forth in Appendix A and the special terms and conditions for such country set forth in Appendices B, C and D will apply to the Participant, to the extent the Company determines that the application of such terms and conditions is necessary or advisable for legal or administrative reasons. The Appendices constitute part of the Award Terms.

23. *Imposition of Other Requirements*. The Company reserves the right to impose other requirements on the Participant's participation in the Plan, on the Special Retention Award and on any Shares acquired under the Plan, to the extent the Company determines it is necessary or advisable for legal or administrative reasons, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

24. *Compliance with Code Section 409A*. It is intended that the Special Retention Award granted pursuant to the Award Terms be compliant with (or exempt from) Section 409A of the Code and the Award Terms shall be interpreted, construed and operated to reflect this intent. Notwithstanding the foregoing, the Award Terms and the Plan may be amended at any time, without the consent of any party, to the extent necessary or desirable to satisfy any of the requirements under Section 409A of the Code, but the Company shall not be under any obligation to make any such amendment. Further, the Company and its Subsidiaries do not make any representation to the Participant that the Special Retention Award granted pursuant to the Award Terms satisfies the requirements of Section 409A of the Code, and the Company and its Subsidiaries will have no liability or other obligation

to indemnify or hold harmless the Participant or any other party for any tax, additional tax, interest or penalties that the Participant or any other party may incur in the event that any provision of the Award Terms or any amendment or modification thereof or any other action taken with respect thereto, is deemed to violate any of the requirements of Section 409A of the Code.

25. *Waiver*. A waiver by the Company of breach of any provision of the Award Terms shall not operate or be construed as a waiver of any other provision of the Award Terms, or of any subsequent breach by the Participant or any other Participant.

26. *No Advice Regarding Award*. The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant is hereby advised to consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action related to the Plan.

27. *Governing Law and Venue*. As stated in the Plan, the Special Retention Award and the provisions of the Award Terms and all determinations made and actions taken thereunder, to the extent not otherwise governed by the laws of the United States, shall be governed by the laws of the State of Delaware, United States of America, without reference to principles of conflict of laws, and construed accordingly. The jurisdiction and venue for any disputes arising under, or any actions brought to enforce (or otherwise relating to), the Special Retention Award will be exclusively in the courts in the State of Delaware, including the Federal Courts located therein (should Federal jurisdiction exist).

28. *Electronic Delivery and Acceptance*. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

29. *Entire Agreement*. The Award Terms and the Plan embody the entire understanding and agreement of the parties with respect to the subject matter hereof (including, without limitation, the obligations and understandings set forth in Section 15(e) of the Plan), and no promise, condition, representation or warranty, express or implied, not stated or incorporated by reference herein, shall bind either party hereto.

30. *Employment at Will*. Nothing in the Award Terms or the Plan provide the Participant with any right to continue in the Company's or any of its Affiliates' employ for any period of specific duration or interfere with or otherwise restrict in any way the Participant's or the rights of the Company and its Affiliates to terminate the Participant's service at any time for any reason, with or without cause, subject to applicable law. The Participant's status with the Company and its Affiliates will accordingly remain at will.

31. *Amendments.* Except as otherwise provided herein or the Plan, these Award Terms may be amended or modified at any time by an instrument in writing signed by the parties hereto

or by the Company without the consent of the Participant if such action would not materially impair the rights of the Participant under this Award.

Acceptance of Award

32. In accordance with Section 15(c) of the Plan, the Participant may reject the Special Retention Award by notifying the Company within 30 days of the grant date that he or she does not accept the Special Retention Award. The Participant's acceptance of the Special Retention Award constitutes the Participant's acceptance of and agreement with the Award Terms, including, without limitation, paragraph 15 herein, and the Plan. Notwithstanding the foregoing, if required by the Company, the Participant will provide a signed copy of the Award Terms in such manner and within such timeframe as may be requested by the Company. The Company has no obligation to issue Shares to the Participant if the Participant does not accept the Special Retention Award.

APPENDIX A
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Special Retention Awards
For Non-U.S. Participants

This Appendix A contains additional (or, if so indicated, different) terms and conditions that govern the Special Retention Awards if the Participant resides and/or works outside of the United States. Capitalized terms used but not defined herein shall have the same meanings assigned to them in the Plan and the Terms and Conditions for Special Retention Awards (the "Terms and Conditions").

A.*Termination*. This provision supplements paragraph 3 of the Terms and Conditions.

The Company will determine when the Participant is no longer providing services for purposes of the Special Retention Awards (including whether the Participant may still be considered to be providing services while on a leave of absence).

B. *Responsibility for Taxes*. This provision replaces paragraph 6 of the Terms and Conditions (except to the extent that the Participant is a Section 16 Insider).

The Participant acknowledges that, regardless of any action taken by the Company or, if different, the Subsidiary that employs the Participant (the "Employer"), the ultimate liability for all income tax, social insurance, payroll tax, fringe benefits tax, payment on account or other tax-related items related to the Participant's participation in the Plan and legally applicable to the Participant ("Tax-Related Items") is and remains the Participant's responsibility and may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (a) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of these Special Retention Awards, including, but not limited to, the grant, vesting or settlement of Special Retention Awards, the subsequent sale of Shares acquired pursuant to the Special Retention Award and the receipt of any dividends or dividend equivalents; and (b) do not commit to and are under no obligation to structure the terms of the Special Retention Awards or any aspect of the Special Retention Awards to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. The Participant shall not make any claim against the Company, the Employer or any other Subsidiary, or their respective board, officers or employees related to Tax-Related Items arising from this Award. Furthermore, if the Participant has become subject to tax in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

In connection with any relevant taxable or tax withholding event, as applicable, the Participant will pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company and/or the Employer, or their respective agents, at their discretion, to satisfy their withholding obligations with regard to all Tax-Related Items by: (i) requiring a cash payment from the Participant; (ii) withholding from the Participant's wages or other cash compensation paid to the Participant by

the Company and/or the Employer, (iii) withholding from the proceeds of the sale of Shares acquired pursuant to the Special Retention Awards, either through a voluntary sale or through a mandatory sale arranged by the Company (on the Participant's behalf pursuant to this authorization without further consent); and/or (iv) withholding from the Shares subject to Special Retention Awards.

Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering statutory withholding amounts or other rates, including minimum or maximum rates applicable in the Participant's jurisdiction(s). In the event of over-withholding, the Participant may receive a refund of any over-withheld amount in cash (with no entitlement to the equivalent in Shares) or, if not refunded, the Participant may seek a refund from the local tax authorities. In the event of under-withholding, the Participant may be required to pay any additional Tax-Related Items directly to the applicable tax authority or to the Company and/or the Employer. If the obligation for Tax-Related Items is satisfied by withholding in Shares, the Participant is deemed, for tax purposes, to have been issued the full number of Shares subject to the vested Special Retention Awards, notwithstanding that a number of the Shares is held back solely for the purpose of paying the Tax-Related Items.

Finally, the Participant shall pay to the Company and/or the Employer any amount of Tax-Related Items that the Company and/or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Company may refuse to issue or deliver the Shares or the proceeds of the sale of Shares if the Participant fails to comply with his or her obligations in connection with the Tax-Related Items.

C.*Nature of Award.* By accepting the Special Retention Awards, the Participant acknowledges, understands and agrees that:

a. the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended, or terminated by the Company at any time, to the extent permitted by the Plan;

b.this Special Retention Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future Special Retention Awards, or benefits in lieu of Special Retention Awards, even if Special Retention Awards have been granted in the past;

c.all decisions with respect to future Special Retention Awards or other Awards, if any, will be at the sole discretion of the Company;

d.this Special Retention Award and the Participant's participation in the Plan shall not create a right to, or be interpreted as forming an employment or service contract with the Company and shall not interfere with the ability of the Employer to terminate the Participant's employment contract (if any) at any time;

e.the Participant's participation in the Plan is voluntary;

f.this Special Retention Award and the Shares acquired under the Plan, and the income from and value of same, are not intended to replace any pension rights or compensation;

g.this Special Retention Award and the Shares acquired under the Plan, and the income and value of same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments;

h. the future value of the Shares subject to the Special Retention Award is unknown, indeterminable and cannot be predicted with certainty;

i. no claim or entitlement to compensation or damages shall arise from the forfeiture of any portion of this Special Retention Award resulting from (i) the Participant's termination of employment and/or service relationship (for any reason whatsoever, whether or not later found to be invalid or in breach of employment or other laws in the jurisdiction where the Participant is employed or otherwise rendering services, or the terms of his or her employment or service agreement, if any); or (ii) the application of any recoupment, recovery or clawback policy or action, pursuant to Section 15 of the Terms and Conditions and/or Section 15(e) or (f) of the Plan;

j.unless otherwise agreed with the Company, Special Retention Awards and the Shares acquired under the Plan, and the income from and value of same, are not granted as consideration for, or in connection with, the service the Participant may provide as a director of any Subsidiary;

k.unless otherwise provided in the Plan or by the Company in its discretion, this Special Retention Award and the benefits under the Plan evidenced by these Award Terms do not create any entitlement to have this Special Retention Award or any such benefits transferred to, or assumed by, another company nor to be exchanged, cashed out or substituted for, in connection with any corporate transaction affecting the Shares; and

l.neither the Company, the Employer nor any other Subsidiary shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Special Retention Awards or of any amounts due to the Participant pursuant to the Special Retention Awards or the subsequent sale of any Shares acquired under the Plan.

D.***Data Privacy. The following Data Privacy consent only applies to Participants located outside the EU/EEA. Participants located in the EU/EEA should review the GDPR Notice in Appendix D.***

The Participant hereby explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of the Participant's personal data as described in these Award Terms and any other grant materials by and among, as applicable, the Company, the Employer and any other Subsidiary for the exclusive purpose of implementing, administering and managing the Participant's participation in the Plan.

The Participant understands that the Company and the Employer may hold certain personal information about the Participant, including, but not limited to, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships

held in the Company, details of all Special Retention Awards or any other entitlement to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.

The Participant understands that Data may be transferred to the Broker, or such additional or other stock plan service providers as may be selected by the Company, which are assisting the Company with the implementation, administration and management of the Plan. The Participant understands that the recipients of Data may be located in the United States or elsewhere, and that the recipients' country (e.g., the United States) may have different data privacy laws and protections than the Participant's country. The Participant understands that the Participant may request a list with the names and addresses of any potential recipients of Data by contacting the Participant's local human resources representative. The Participant authorizes the Company, the Broker and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage the Participant's participation in the Plan. The Participant understands that the Participant may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing the Participant's local human resources representative. Further, the Participant understands that the Participant is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the Participant's consent, the Participant's employment and career with the Employer will not be affected; the only consequence of refusing or withdrawing the Participant's consent is that the Company would not be able to grant this Special Retention Award or other Awards to the Participant or administer or maintain such Awards. Therefore, the Participant understands that refusing or withdrawing the Participant's consent may affect the Participant's ability to participate in the Plan. For more information on the consequences of the Participant's refusal to consent or withdrawal of consent, the Participant understands that the Participant may contact the Participant's local human resources representative.

E.*Language*. If the Participant has received these Award Terms, or any other document related to this Special Retention Award and/or the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control, unless otherwise required by applicable law.

F. *Insider Trading Restrictions/Market Abuse Laws*. The Participant acknowledges that, depending on his or her country of residence, the Broker's country of residence, or where the Shares are listed, the Participant may be subject to insider trading restrictions and/or market abuse laws in applicable jurisdictions, which may affect his or her ability to accept, acquire, sell or attempt to sell or otherwise dispose of Shares or rights to Shares (*e.g.,* Special Retention Award), or rights linked to the value of Shares during such times as the Participant is considered to have "inside information" regarding the Company (as defined by applicable laws or regulations in the applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before possessing inside information. Furthermore,

the Participant may be prohibited from (i) disclosing the inside information to any third party including colleagues of the Participant (other than on a “need to know” basis) and (ii) “tipping” third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.

G.*Foreign Asset/Account Reporting Requirements, Exchange Controls and Tax Requirements*. The Participant acknowledges that his or her country may have certain foreign asset and/or account reporting requirements and exchange controls which may affect his or her ability to acquire or hold Shares under the Plan or cash received from participating in the Plan (including from any dividends received or sale proceeds arising from the sale of Shares) in a brokerage or bank account outside his or her country. The Participant understands that he or she may be required to report such accounts, assets or transactions to the tax or other authorities in his or her country. The Participant also may be required to repatriate sale proceeds or other funds received as a result of the Participant’s participation in the Plan to his or her country through a designated bank or broker and/or within a certain time after receipt. The Participant acknowledges that it is his or her responsibility to be compliant with all such requirements, and that the Participant should consult his or her personal legal and tax advisors, as applicable, to ensure the Participant’s compliance.

APPENDIX B
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Special Retention Awards
For Non-U.S. Participants

Capitalized terms used but not defined in this Appendix B have the meanings set forth in the Plan and the Terms and Conditions for Special Retention Awards (the "Terms and Conditions").

Terms and Conditions

This Appendix B includes additional terms and conditions that govern Special Retention Awards if the Participant resides and/or works in one of the countries listed below. If the Participant is a citizen or resident (or is considered as such for local law purposes) of a country other than the country in which the Participant is currently residing and/or working, or if the Participant transfers to another country after the grant of Special Retention Awards, the Company shall, in its discretion, determine to what extent the additional terms and conditions contained herein shall be applicable to the Participant.

Notifications

This Appendix B also includes information regarding securities, exchange control, tax and certain other issues of which the Participant should be aware with respect to participation in the Plan. The information is based on the securities, exchange control, tax and other laws in effect in the respective countries as of January 2024. Such laws are often complex and change frequently. As a result, the Company strongly recommends that the Participant not rely on the information in this Appendix B as the only source of information relating to the consequences of participation in the Plan because the information may be out of date at the time the Participant sells Shares acquired under the Plan.

In addition, the information contained herein is general in nature and may not apply to the Participant's particular situation and the Company is not in a position to assure the Participant of any particular result. Accordingly, the Participant should seek appropriate professional advice as to how the relevant laws in the Participant's country may apply to his or her situation.

Finally, if the Participant is a citizen or resident (or is considered as such for local tax purposes) of a country other than the country in which the Participant is currently residing and/or working, or if the Participant transfers to another country after the grant of the Special Retention Award, the information contained herein may not be applicable to the Participant in the same manner.

A**USTRALIA**

Notifications

Securities Law Information.

The grant of the Special Retention Award is being made pursuant to Division 1A, Part 7.12 of the Corporations Act 2001 (Cth). If the Participant offers Shares for sale to a person or entity resident in Australia, the offer may be subject to disclosure requirements under Australian law. The Participant should obtain legal advice on applicable disclosure obligations prior to making any such offer.

Exchange Control Information.

Exchange control reporting is required for cash transactions exceeding A$10,000 and for international fund transfers. If an Australian bank is assisting with the transaction, the bank will file the report on the Participant's behalf.

Tax Information.

The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) (the "Act") applies (subject to conditions in the Act).

BELGIUM

Notifications

Stock Exchange Tax.

A stock exchange tax applies to transactions executed by Belgian residents through a non-Belgian financial intermediary. The stock exchange tax will likely apply when Shares are sold. The Participant should consult with a personal tax advisor to determine the Participant's obligations with respect to the stock exchange tax.

Foreign Asset/Account Reporting Information.

Belgian residents are required to report any security (e.g., Shares acquired under the Plan) or bank account established outside of Belgium on their annual tax return. In a separate report, Belgian residents are also required to provide the National Bank of Belgium with certain details regarding such foreign accounts (including the account number, bank name and country in which any such account was opened). This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the *Kredietcentrales / Centrales des credits* caption. The Participant should consult with a personal advisor to ensure compliance with applicable reporting obligations.

Annual Securities Account Tax Information.

An annual securities accounts tax may apply if the total value of securities held in a Belgian or foreign securities account exceeds €1,000,000 on four reference dates within the relevant reporting period (*i.e.*, December 31, March 31, June 30 and September 30). In such case, the tax will be due on the value of the qualifying securities held in such account. The Participant should consult with a professional tax or financial advisor for more information regarding the Participant's annual securities accounts tax payment obligations.

BRAZIL

Terms and Conditions

Compliance with Law.

By accepting the Special Retention Award, the Participant agrees to comply with applicable Brazilian laws and to report and pay any and all applicable Tax-Related Items or other taxes associated with the vesting of Special Retention Awards, the sale of the Shares acquired under the Plan and the receipt of any dividends or dividend equivalents.

Acknowledgement of Nature of the Grant.

This provision supplements paragraph C "Nature of Award" of Appendix A:

By accepting the Special Retention Awards, the Participant agrees that he or she is (i) making an investment decision, (ii) the Shares will be issued to the Participant only if the vesting conditions are met and any necessary services are rendered by the Participant over the vesting period, and (iii) the value of the underlying Shares is not fixed and may increase or decrease over the vesting period without compensation to the Participant.

Notifications

Exchange Control Information.

If the Participant is a resident of or domiciled in Brazil, the Participant will be required to submit an annual declaration of assets and rights held outside of Brazil to the Central Bank of Brazil if the aggregate value of the assets and rights is equal to or greater than US$1,000,000. If such amount exceeds US$100,000,000, the declaration must be submitted quarterly. Assets and rights that must be reported include Shares acquired under the Plan.

Tax on Financial Transactions (IOF).

Repatriation of funds (*e.g.*, proceeds from the sale of Shares) into Brazil and the conversion of USD into BRL associated with such fund transfers may be subject to the Tax on Financial Transactions. It is the Participant's responsibility to comply with any applicable Tax on Financial Transactions arising from the Participant's participation in the Plan. The Participant should consult with a personal tax advisor for additional details.

CANADA

Terms and Conditions

Payment.

Notwithstanding anything to the contrary in paragraphs 2 and 5 of the Terms and Conditions, any vested Special Retention Award will be paid to the Participant by no later than the end of the calendar year in which the vesting date specified in paragraph 2 occurs (*i.e*., by the end of the calendar year in which the third anniversary of the grant date occurs).

Notwithstanding anything to the contrary in the Terms and Conditions, a Participant will receive one Share upon the vesting and payment of a Restricted Share Unit. Notwithstanding paragraph 4 of the Terms and Conditions, the Company shall not have discretion to substitute a cash payment in lieu of Shares.

Further, in no event will the Special Retention Award carry any right to receive payment of any dividend equivalents in cash. To the extent the Board of Directors authorizes that dividend equivalents be accrued and paid on vesting of the Special Retention Award, such dividend equivalents shall be paid in such whole number of Shares with a fair market value at the time the Special Retention Award vests equal to the amount of dividend equivalents accrued on the Special Retention Award at that time. Any fractional Shares attributable to dividend equivalents shall be rounded down to the nearest whole Share, and the Participant shall not be entitled to any consideration for such fractional Shares, or any other amount in respect of the accrued dividend equivalents.

Withholding.

Notwithstanding anything to the contrary in the Terms and Conditions, the number of Shares otherwise required to be issued to a Participant on vesting and payment of a Restricted Share Unit shall not be reduced to satisfy the payment of Tax-Related Items, except for at the election of a Participant, in the Participant's sole discretion. A Participant who is not a Section 16 Insider shall be permitted to make such an election only if the Company has established procedures for such withholding.

Termination of Service.

The following provision replaces paragraph A "Termination" of Appendix A:

For purposes of the Special Retention Award, the Participant's employment relationship will be considered terminated (regardless of the reason for the termination and whether or not later found to be invalid or in breach of applicable laws in the jurisdiction where the Participant is employed or otherwise rendering services or the terms of the Participant's employment or other service agreement, if any) effective as of the date that is the earliest of: (i) the date the Participant's employment relationship terminates; (ii) the date the Participant receives notice of termination of employment; and (iii) the date the Participant is no longer actively employed or otherwise providing services to the Company, the Employer or any Subsidiary (the "Termination Date"). The Termination Date will not be extended, regardless of any notice period or period of pay in lieu of

such notice required under applicable laws (including, without limitation, statutory law, regulatory law and common law) in the jurisdiction where the Participant is employed or otherwise providing services or the terms of the Participant's employment or other service agreement, if any. The Company shall have the exclusive discretion to determine when the Participant is no longer actively employed or otherwise providing service for purposes of the Special Retention Award grant (including whether the Participant may still be considered to be employed or otherwise providing services while on a leave of absence).

If, notwithstanding the foregoing, applicable employment legislation explicitly requires continued vesting during a statutory notice period, the Participant's right to vest in the Special Retention Award, if any, will terminate effective as of the last date of the minimum statutory notice period, but the Participant will not earn or be entitled to any pro-rated vesting if the vesting date falls after the end of the Participant's statutory notice period, nor will the Participant be entitled to any compensation for lost vesting.

The following provisions apply to Participants resident in Quebec:

French Language Documents.

A French translation of this document and certain other documents related to the Special Retention Award will be made available to the Participant as soon as reasonably practicable. The Participant understands that, from time to time, additional information related to the Special Retention Award may be provided in English and such information may not be immediately available in French. However, upon request, the Company will provide a translation of such information into French as soon as reasonably practicable. Notwithstanding anything to the contrary in the Award Terms, and unless the Participant indicates otherwise, the French translation of this document and the Plan will govern the Participant's participation in the Plan.

Une traduction française de ce document et de certains autres documents liés à la récompense spéciale de rétention sera mise à la disposition du participant dès que raisonnablement possible. Le Participant comprend que, de temps à autre, des informations supplémentaires relatives à la Récompense spéciale de rétention peuvent être fournies en anglais et que ces informations peuvent ne pas être immédiatement disponibles en français. Cependant, sur demande, la Société fournira une traduction de ces informations en français dès que raisonnablement possible. Nonobstant toute disposition contraire des Conditions d'attribution, et sauf indication contraire du Participant, la traduction française de ce document et du Plan régira la participation du Participant au Plan.

Authorization to Release and Transfer Necessary Personal Information.

The following provision supplements paragraph D "Data Privacy" of Appendix A:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company, any Subsidiary and the administrator of the Plan to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Subsidiary to record such information and

to keep such information in the Participant's Employee file. The Participant acknowledges and agrees that the Participant's personal information, including any sensitive personal information, may be transferred or disclosed outside the province of Quebec, including to the U.S. If applicable, the Participant also acknowledges and authorizes the Company, the Employer, the Broker and any other Subsidiary involved in the administration of the Plan to use technology for profiling purposes and to make automated decisions that may have an impact on the Participant or the administration of the Plan.

Notifications

Securities Law Information.

The Participant is permitted to sell Shares acquired under the Plan through the Broker, provided the sale of the Shares takes place outside of Canada through facilities of a stock exchange on which the Shares are listed (*i.e.*, the NYSE).

Foreign Asset/Account Reporting Information.

Canadian residents are required to report to the tax authorities any foreign property held outside of Canada (including Special Retention Awards and Shares acquired under the Plan) annually on form T1135 (Foreign Income Verification Statement) if the total cost of the foreign property exceeds C$100,000 at any time in the year. The form must be filed by April 30 of the following year. Special Retention Awards must be reported--generally at a nil cost--if the C$100,000 cost threshold is exceeded because of other foreign property the Participant holds. If Shares are acquired, their cost generally is the adjusted cost base ("ACB") of the Shares. The ACB would normally equal the fair market value of the Shares at vesting, but if the Participant owns other Shares, this ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with a personal tax advisor to ensure compliance with applicable reporting requirements.

CHINA

Terms and Conditions

The following terms and conditions will apply to Participants who are subject to exchange control restrictions and regulations in the People's Republic of China ("PRC"), including the requirements imposed by the State Administration of Foreign Exchange ("SAFE"), as determined by the Company in its sole discretion:

Termination of Employment.

Due to exchange control laws in PRC, the Participant agrees that the Company reserves the right to require the sale of any Shares acquired at vesting of the Special Retention Awards upon the termination of the Participant's employment for any reason. If the Company, in its discretion, does not exercise its right to require the automatic sale of Shares issuable upon vesting of the Special Retention Awards, as described in the preceding sentence, the Participant understands and agrees that any Shares acquired by the Participant under the Plan, must be sold no later than six (6) months after termination of the Participant's employment, or within any other such time frame as permitted

by the Company or required by SAFE. The Participant understands that any Shares acquired under the Plan that have not been sold within six (6) months of the Participant's termination of employment will be automatically sold by a designated broker at the Company's discretion, pursuant to this authorization by the Participant.

The Participant agrees that the Company is authorized to instruct its designated broker to assist with the mandatory sale of such Shares (on the Participant's behalf, pursuant to this authorization) and the Participant expressly authorizes the Company's designated broker to complete the sale of such Shares. The Participant also agrees to sign any agreements, forms and/or consents that may be reasonably requested by the Company (or the designated broker) to effectuate the sale of the Shares (including, without limitation, as to the transfers of the proceeds and other exchange control matters noted below) and shall otherwise cooperate with the Company with respect to such matters, provided that the Participant shall not be permitted to exercise any influence over how, when or whether the sales occur. The Participant acknowledges that the Company's designated broker is under no obligation to arrange for the sale of the Shares at any particular price. Due to fluctuations in the Share price and/or applicable exchange rates between vesting and (if later) the date on which the Shares are sold, the amount of proceeds ultimately distributed to the Participant may be more or less than the market value of the Shares upon vesting (which is the amount relevant to determining the Participant's liability for Tax-Related Items). The Participant understands and agrees that the Company is not responsible for the amount of any loss the Participant may incur and the Company assumes no liability for any fluctuations in the Share price and/or any applicable exchange rate.

Upon the sale of the Shares, the Company agrees to pay the cash proceeds from the sale (less any Tax-Related Items, brokerage fees or commissions) to the Participant in accordance with the applicable exchange control laws and regulations, including but not limited to the restrictions set forth in this Appendix B for China below under "Exchange Control Restrictions."

Exchange Control Restrictions.

The Participant understands and agrees that, pursuant to local exchange control requirements, the Participant will be required to immediately repatriate any cash payments or proceeds obtained with respect to participation in the Plan to the PRC. The Participant further understands that such repatriation of any cash payments or proceeds may need to be effectuated through a special exchange control account established by the Company or any Subsidiary, and the Participant hereby consents and agrees that any payment or proceeds may be transferred to such special account prior to being delivered to the Participant.

Any payment or proceeds may be paid to the Participant in U.S. dollars or local currency at the Company's discretion. If the payments or proceeds are paid to the Participant in U.S. dollars, the Participant will be required to set up a U.S. dollar bank account in the PRC (if the Participant does not already have one) so that the payments or proceeds may be deposited into this account. If the payments or proceeds are paid to the Participant in local currency, the Company is under no obligation to secure any particular exchange conversion rate and the Company may face delays in converting the payments or proceeds to local currency due to exchange control restrictions. The Participant agrees to bear any currency exchange conversion rate fluctuation risk between the time

the cash proceeds are received and the time the cash proceeds are distributed to the Participant through the special account described above.

The Participant further agrees to comply with any other requirements that may be imposed by the Company in the future to facilitate compliance with exchange control requirements in the PRC.

HUNGARY

There are no country-specific provisions.

ICELAND

There are no country-specific provisions.

ITALY

Terms and Conditions

Plan Document Acknowledgement.

By accepting the Special Retention Award, the Participant acknowledges that the Participant has received a copy of the Plan and the Award Terms and has reviewed the Plan and the Award Terms in their entirety and fully understands and accepts all provisions of the Plan and the Award Terms. The Participant further acknowledges that the Participant has read and specifically and expressly approves the following paragraphs of the Award Terms: paragraphs 2-5: Vesting and Payment; paragraph 15: Repayment and Forfeiture; paragraph 16: Stock Exchange Requirements and Applicable Laws; paragraph 20: Severability and Judicial Modification; paragraph 22: Appendices; paragraph 23: Imposition of Other Requirements; paragraph 27: Governing Law and Venue; paragraph A of Appendix A: Termination; Appendix D: GDPR Notice.

Notifications

Foreign Asset/Account Reporting Information.

Italian residents who, during the fiscal year, hold investments abroad or foreign financial assets (*e.g.*, cash, Shares) which may generate income taxable in Italy are required to report such on their annual tax returns (UNICO form, RW Schedule) for the year during which the assets are held, or on a special form if no tax return is due. The same reporting obligations apply to Italian residents who, even if they do not directly hold investments abroad or foreign financial assets (*e.g.*, cash, Shares), are beneficial owners of the investment or foreign financial asset pursuant to Italian money laundering provisions. The Participant should consult with a personal tax advisor to ensure compliance with applicable reporting obligations.

Tax on Foreign Financial Assets.

The value of the financial assets (*e.g.*, Shares) held outside of Italy by Italian residents may be subject to a foreign asset tax. The taxable amount will be the fair market value of the financial assets (*e.g.*, Shares) assessed at the end of the calendar year and is subject to pro-ration for the

portion of the year that the Participant holds the Shares received at vesting. The value of financial assets held abroad must be reported in Form RM of the annual return. The Participant should consult with a personal tax advisor for additional information on the tax on foreign financial assets.

NETHERLANDS

There are no country-specific provisions.

NORWAY

There are no country-specific provisions.

SAUDI ARABIA

Notifications

Securities Law Information.

This document may not be distributed in the Kingdom of Saudi Arabia except to such persons as permitted under the Rules on the Offer of Securities and Continuing Obligations issued by the Capital Market Authority.

The Capital Market Authority does not make any representation as to the accuracy or completeness of this document, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this document. The Participant should conduct his or her own due diligence on the accuracy of the information relating to the Special Retention Awards and the underlying Shares. If the Participant does not understand the content of this document, the Participant should consult with an authorized financial advisor.

SINGAPORE

Terms and Conditions

Sale Restriction.

The Special Retention Award is subject to section 257 of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA") and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Special Retention Award unless such sale or offer in Singapore is made (i) after six months from the grant date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280) of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provisions of the SFA.

Notifications

Securities Law Information.

The grant of the Special Retention Awards is being made in reliance on the "Qualifying Person" exemption under section 273(1)(f) of the SFA under which it is exempt from the prospectus and

registration requirements under the SFA and the grant of the Special Retention Awards is not made to the Participant with a view to the Shares being subsequently offered for sale to any other party. The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore.

Director Notification Obligation.

Directors, associate directors or shadow directors of a Singapore Subsidiary are subject to certain notification requirements under the Singapore Companies Act. Specifically, such directors must notify the Singapore Subsidiary in writing of an interest (*e.g.*, Special Retention Awards, Shares, etc.) in the Company or any related company within two business days of (i) its acquisition or disposal, (ii) any change in a previously-disclosed interest (*e.g.*, upon vesting of Special Retention Awards or when Shares acquired under the Plan are subsequently sold), or (iii) becoming a director.

SPAIN

Terms and Conditions

No Entitlement for Claims or Compensation.

The following provisions supplement paragraph A "Termination" of Appendix A:

By accepting the Special Retention Award, the Participant consents to participate in the Plan and acknowledges that the Participant has received a copy of the Plan.

The Participant understands and agrees that, as a condition of the grant of the Special Retention Award, if the Participant's employment terminates, unless otherwise provided in the Award Terms or by the Company, any unvested Special Retention Awards shall be forfeited without entitlement to the underlying Shares or to any amount as indemnification in the event of a termination, including, but not limited to: resignation, disciplinary dismissal adjudged to be with cause, disciplinary dismissal adjudged or recognized to be without cause (*i.e.*, subject to a "*despido improcedente*"), individual or collective layoff on objective grounds, whether adjudged to be with cause or adjudged or recognized to be without cause, material modification of the terms of employment under Article 41 of the Workers' Statute, relocation under Article 40 of the Workers' Statute, Article 50 of the Workers' Statute, unilateral withdrawal by the Employer, and under Article 10.3 of Royal Decree 1382/1985.

The Participant understands that the Company has unilaterally, gratuitously and in its sole discretion decided to grant Special Retention Awards under the Plan to individuals who may be Employees of the Company or a Subsidiary. The decision is limited and entered into based upon the express assumption and condition that any Special Retention Awards will not economically or otherwise bind the Company or any Subsidiary, including the Employer, on an ongoing basis, other than as expressly set forth in the Award Terms. Consequently, the Participant understands that the Special Retention Awards are granted on the assumption and condition that the Special Retention Awards shall not become part of any employment or service agreement (whether with the Company or any Subsidiary, including the Employer) and shall not be considered a mandatory benefit, salary for any purpose (including severance compensation) or any other right whatsoever.

Furthermore, the Participant understands and freely accepts that there is no guarantee that any benefit whatsoever shall arise from the grant of Special Retention Awards, which is gratuitous and discretionary, since the future value of the Special Retention Awards and the underlying Shares is unknown and unpredictable. The Participant also understands that the grant of Special Retention Awards would not be made but for the assumptions and conditions set forth hereinabove; thus, the Participant understands, acknowledges and freely accepts that, should any or all of the assumptions be mistaken or any of the conditions not be met for any reason, the Special Retention Award and any right to the underlying Shares shall be null and void.

Notifications

Securities Law Information.

No “offer of securities to the public,” as defined under Spanish law, has taken place or will take place in the Spanish territory with respect to the Special Retention Award. Neither the Plan nor the Award Terms constitute a public offering prospectus and they have not been, nor will they be, registered with the *Comisión Nacional del Mercado de Valores*.

Exchange Control Information.

If the Participant holds 10% or more of the Share capital of the Company or such other amount that would entitle the Participant to join the Board of Directors, the Participant must declare the acquisition, ownership and sale of Shares to the *Dirección General de Comercial e Inversiones* (the “DGCI”), the Bureau for Commerce and Investments, which is a department of the Ministry of Economics and Competitiveness. Generally, the declaration must be made in January for Shares owned as of December 31 of the prior year and/or Shares acquired or disposed of during the prior year; however, if the value of Shares acquired or disposed of or the amount of the sale proceeds exceeds €1,502,530, the declaration must be filed within one month of the acquisition or disposition, as applicable.

Further, the Participant may be required to declare electronically to the Bank of Spain any securities accounts (including brokerage accounts held abroad), any foreign instruments (*e.g.*, Shares) and any transactions with non-Spanish residents (including any payments of cash or Shares made to the Participant by the Company or any U.S. brokerage account) if the balances in such accounts together with the value of such instruments as of December 31, or the volume of transactions with non-Spanish residents during the prior or current year, exceed €1,000,000.

Foreign Asset/Account Reporting Information.

To the extent that the Participant holds rights or assets (*e.g.*, Shares and/or bank accounts) outside Spain with a value in excess of €50,000 (for each type of right or asset) as of December 31, the Participant will be required to report information on such rights and assets on his or her tax return (tax form 720) for such year. After such Shares and/or accounts are initially reported, the reporting obligation will apply for subsequent years only if the value of any previously-reported Shares or accounts increases by more than €20,000 or if the Participant sells or otherwise disposes of any previously-reported Shares or accounts. The Participant should consult with a personal tax advisor to ensure compliance with applicable reporting requirements.

SURINAME

There are no country-specific provisions.

SWITZERLAND

Notifications

Securities Law Information.

Neither this document nor any other materials relating to the Special Retention Award (i) constitute a prospectus according to articles 35 et seq. of the Swiss Federal Act on Financial Services ("FinSA"), (ii) may be publicly distributed nor otherwise made publicly available in Switzerland to any person other than an Employee of the Company or other Participant, or (iii) have been or will be filed with, approved or supervised by any Swiss reviewing body according to article 51 FinSA or any Swiss regulatory authority, including the Swiss Financial Market Supervisory Authority (FINMA).

UNITED KINGDOM

Terms and Conditions

Responsibility for Taxes.

The following provision supplements paragraph B "Responsibility for Taxes" of Appendix A:

Without limitation to paragraph B "Responsibility for Taxes" of Appendix A, the Participant agrees that the Participant is liable for all Tax-Related Items and hereby covenants to pay all such Tax-Related Items as and when requested by the Company or the Employer or by HM Revenue and Customs ("HMRC") (or any other tax authority or any other relevant authority). The Participant also agrees to indemnify and keep indemnified the Company and the Employer against any Tax-Related Items that they are required to pay or withhold or have paid or will pay to HMRC (or any other tax authority or any other relevant authority) on the Participant's behalf.

Notwithstanding the foregoing, if the Participant is a director or executive officer of the Company (within the meaning of Section 13(k) of the Exchange Act), the Participant may not be able to indemnify the Company or the Employer for the amount of any Tax-Related Items not collected from or paid by the Participant, as it may be considered a loan. In this case, the amount of any uncollected income tax may constitute a benefit to the Participant on which additional income tax and employee national insurance contributions ("NICs") may be payable. The Participant agrees to report and pay any income tax due on this additional benefit directly to HMRC under the self-assessment regime and to pay the Employer for the value of the employee NICs due on this additional benefit, which the Company or the Employer may recover from the Participant by any of the means referred to in paragraph B "Responsibility for Taxes" of Appendix A.

APPENDIX C
TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
(As Amended and Restated)

Important Information

Introduction

All employees and non-employee directors (collectively, "employees") of Alcoa Corporation ("Alcoa" or "Company") and its subsidiaries, including in the European Union / European Economic Area ("EU/EEA"), have the opportunity to be selected to participate in the Alcoa Corporation 2016 Stock Incentive Plan (as amended and restated, the "2016 Plan") to obtain rights to shares of Alcoa common stock or other property. Under the 2016 Plan, such employees may be granted, among other awards, a stock option ("Option") that gives them the right to purchase a specified number of shares of Alcoa common stock, provided that certain vesting and other requirements are satisfied, or restricted stock units ("RSUs") that will enable them to acquire shares of Alcoa common stock.

This summary provides details with respect to the 2016 Plan.

Identification of the Issuer

The issuer of the common stock that is offered under the 2016 Plan is Alcoa Corporation, a Delaware corporation, whose common stock is traded on the New York Stock Exchange ("NYSE") under the ticker symbol "AA." The International Securities Identification Number (the "ISIN") for the shares of Alcoa common stock is US0138721065. The US security identification number (the "CUSIP number") for the shares of Alcoa common stock is 013872106. The Company's address is 201 Isabella Street, Suite 500, Pittsburgh, PA 15212, U.S.A. Additional information on Alcoa can be found on its website at http://www.alcoa.com.

Stockholder disclosure made by the Company with the US Securities and Exchange Commission (the "SEC") is available on the SEC website (www.sec.gov). Employees may request copies of the filings from:

Alcoa Corporation
Attention: Corporate Secretary's Office
201 Isabella Street, Suite 500
Pittsburgh, PA 15212
Telephone: 412-315-2900
Corporate_Secretary@alcoa.com

Reasons for the Offer

The purpose of offers made under the 2016 Plan is to encourage eligible employees and directors to acquire a proprietary interest in the long-term growth and financial success of Alcoa, and to further link the interests of such individuals to the long-term interests of stockholders.

Exemption from the EU Prospectus Regulation

To the extent offers of Options, RSUs and other rights under the 2016 Plan are offers of securities to the public, Alcoa is exempt from an obligation to publish a prospectus which meets the requirements set forth in Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 (the "Prospectus Regulation"). Article 1(4)(i) of the Prospectus Regulation exempts offers made in the context of an employee-share scheme within the EEA from the obligation to publish a prospectus if the securities are offered to existing or former directors or employees by their employer and certain other conditions are met, including the availability of a short-form disclosure document (the "Employee-Share Scheme Exemption"). Accordingly, in reliance on the Employee-Share Scheme Exemption, Alcoa has not prepared or filed a prospectus with any competent regulatory authority in the EU or the EEA in relation to offers made under the 2016 Plan and no such prospectus has been published in the EU or the EEA.

This document does not constitute a prospectus. Instead, this document contains the information that an issuer must make available to its employees in the EU /EEA when relying on the Employee Exemption.

Details of the Offer

The 2016 Plan authorizes the Compensation and Benefits Committee (the "Committee") of the Board of Directors (the "Board") of Alcoa to grant awards to eligible employees of Alcoa and its subsidiaries. The 2016 Plan also authorizes the Board to make awards to non-employee directors. The 2016 Plan generally is administered by the Committee. The Board or the Committee may delegate to a subcommittee of the Committee, other Board members, or to one or more officers of Alcoa or an affiliate any or all of its authority (except as otherwise provided in the 2016 Plan).

The Committee has the authority, subject to the terms of the 2016 Plan, to:

- select the employees to whom awards may be granted;
- determine the types of awards and the number of shares to be covered by each award;
- determine the terms and conditions of awards and make modifications to such terms and conditions;
- determine whether, to what extent and under what circumstances awards may be (i) settled in cash, shares or other property or (ii) canceled or suspended;
- determine whether, to what extent, and under what circumstances, cash, shares and other property and other amounts payable with respect to awards may be deferred;
- determine whether any corporate transaction will be deemed to result in a participant's termination of service for purposes of any award granted under the 2016 Plan;
- interpret the 2016 Plan and any instrument or agreement entered into under the 2016 Plan;

- establish rules and regulations and appoint agents for the proper administration of the 2016 Plan; and

- make any other determination and take any other action that the Committee deems necessary or desirable for administration of the 2016 Plan.

The Board has similar authority with respect to awards to non-employee directors.

The Committee is authorized to interpret the 2016 Plan and to provide for special terms for any Options, RSUs or other awards granted to employees who are foreign nationals or who are employed by the Company or any of its subsidiaries outside of the United States. Currently, the Company is granting only Options and RSUs outside of the United States. As a result, the details of the offer of Options and RSUs may vary slightly between countries to reflect any special terms adopted by the Committee, as will be set forth in the grant materials provided to employees.

Addressees of the Offer

The offer of Options and RSUs under the 2016 Plan will be made to employees of Alcoa and its subsidiaries, who are eligible to receive awards under the terms of the 2016 Plan and who are selected by the Committee (or its designee).

Time Frame of the Offer

Periodically, the Company will offer awards, including Options and RSUs, under the 2016 Plan to eligible employees who have been selected by the Committee (or its designee). Any employee receiving an award will be provided with a written agreement detailing the terms and conditions of the grant. Employees granted Options and RSUs (“Participants”) who remain in the continuous employ or service of the Company or one of its subsidiaries may generally exercise their Options and vest in their RSUs and thereby acquire Alcoa common stock after the end of a vesting period. All Options must be exercised prior to their termination.

Minimum and Maximum Amount of Orders

The number of shares of common stock subject to an Option will be set out in a stock option agreement that is provided to employees who receives an offer of an Option under the 2016 Plan. The maximum number of shares that may be subject to awards under the 2016 Plan shall not exceed 30,000,000 subject to the adjustment and replenishment provisions of the 2016 Plan. There is no minimum number of shares that must be granted under an Option. At the time a Participant exercises an Option, the Option may be exercised for all or part of the number of shares of common stock covered by the Option.

The number of shares subject to an RSU will be set out in a RSU agreement that is provided to employees who receive an offer of an RSU under the 2016 Plan. There is no minimum number of shares that must be granted pursuant to an RSU.

Nature of the Offer

An Option granted under the 2016 Plan gives the Participant the right, but not the obligation, to purchase shares of Alcoa common stock at a fixed Option Price (as defined below). The Options may be exercised once the vesting period is satisfied and any other conditions are met. During the Option vesting period, the Participant must generally remain in the continuous employment or service of the Company or one of its subsidiaries, although an exception is made in the event that the Participant's employment or service is terminated due to death and other specified reasons set forth in the option agreement. Once an Option is vested, it may be exercised by the Participant, provided that the Participant remains in the employ or service of the Company or one of its subsidiaries as provided in the option agreement. Please consult the actual terms and conditions included in the relevant option grant materials for further details.

An RSU granted under the 2016 Plan represents the Company's unsecured promise to issue one share of Alcoa common stock to the Participant. During the RSU vesting period, the Participant must remain in the continuous employment or service of the Company or one of its subsidiaries, although certain exceptions are made in the event the Participant's death or for other specified reasons set forth in the RSU agreement. Please consult the actual terms and conditions included in the relevant RSU grant materials for further details. Participants will generally not be required to pay any consideration to receive the shares issuable once an RSU is vested.

Any award agreement (for Options, RSUs or other awards under the Plan) may provide for the potential mandatory cancellation, forfeiture and/or repayment by the Participant to the Company of an award or such other applicable compensation, including, without limitation, annual cash incentive compensation, upon such terms and conditions as may be determined by the Committee in accordance with (i) any Company clawback or recoupment policy, including the Alcoa Corporation Clawback Policy (as may be amended and restated from time to time, the "Clawback Policy"), and any other policies that are adopted to comply with the requirements of any applicable laws, rules, regulations, stock exchange listing standards or otherwise, or (ii) any applicable laws that impose mandatory clawback or recoupment requirements, under the circumstances set forth in such laws, including as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable laws, rules, regulations or stock exchange listing standards, as may be in effect from time to time, and which may operate to create additional rights for the Company with respect to awards and the recovery of amounts relating thereto. By accepting awards under the Plan and pursuant to the award agreement, the Participants consent to be bound by the terms of the Clawback Policy, if applicable, and agree and acknowledge that they are obligated to cooperate with, and provide any and all assistance necessary to, the Company in its efforts to recover or recoup any award, any gains or earnings related to any award, or any other applicable compensation, including, without limitation, annual cash incentive compensation, that is subject to clawback or recoupment pursuant to such laws, rules, regulations, stock exchange listing standards or Company policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to facilitate the recovery or recoupment by the Company from the Participants of any such amounts, including from Participants' accounts or from any other compensation, to the extent permissible under Section 409A of the Internal Revenue Code of 1986, as amended.

The Options and RSUs generally may not be transferred and may be exercised by or vest in the Participant only. The Participant may freely transfer the shares of Alcoa common stock acquired

upon exercise of the Option or vesting of the RSUs; however the Committee may impose such restrictions on any such shares as it deems advisable, including minimum holding period requirements, restrictions under applicable securities laws, or under the requirements of any stock exchange or market upon which such shares are then listed and/or traded.

Further, Options and RSUs are granted to Participants in the sole discretion of the Company. No employee shall have the right to be selected to receive an Option, RSU or any other award under the 2016 Plan or, having been so selected, to receive a future Option or RSU. Options and RSUs are granted by Alcoa and neither award or other award under the 2016 Plan creates an employment or service contract nor constitutes any part of a Participant's employment or service contract with the Company or any subsidiary of the Company.

Option and RSU Price

The price of each share of Alcoa common stock subject to an Option (the "Option Price") will be fixed by the Committee at the time the Option is granted. The Option Price will be not less than 100% of the closing price of a share of the Company's common stock as reported on the NYSE on the date that the Options are granted. The Option Price may be adjusted in the event of a reorganization or change in capitalization of the Company, as set forth in the 2016 Plan. Information on the current fair market value of the Company's shares can be found on the Alcoa website at http://www.alcoa.com.

Participants will not be required to pay any cash consideration to receive shares upon vesting of RSUs.

Termination, Suspension or Amendment of the 2016 Plan

Alcoa may at any time repeal the 2016 Plan or amend it within the limits set forth in the 2016 Plan.

Commission

Participants will not have to pay a fee for opening an account with the 2016 Plan broker nor for the management of their account or the purchase of shares of Alcoa common stock. Participants are responsible for all the commissions and fees related to any sale or transfer of the shares of Alcoa common stock from the account at the 2016 Plan broker. In addition, the SEC applies a fee to most securities transactions at a rate determined by the SEC. Such commission and fees are subject to change at any time.

Non-transferability of Purchase Rights

RSUs and Options granted to Participants may not be voluntarily or involuntarily assigned, transferred, pledged, or otherwise disposed of in any way.

Restriction on Shares and Transferability

The shares of Alcoa common stock made under the 2016 Plan are registered on a registration statement on Form S-8 with the SEC and are generally freely transferable (subject however to any

transferability restrictions resulting from applicable insider trading laws and Alcoa's insider trading policy). The 2016 Plan is intended to provide shares of Alcoa common stock for investment and not for resale. Alcoa does not, however, intend to restrict or influence any Participant in the conduct of his or her own affairs. A Participant, therefore, may sell shares of Alcoa common stock acquired under the 2016 Plan at any time he or she chooses, subject to compliance with any applicable securities laws. The Participant assumes the risk of any market or currency fluctuations in the price of the shares of Alcoa common stock. Moreover the Participants' attention is drawn to the risk of investing in shares of Alcoa's common stock generally as described, in particular, in the "Risk factors" section in Alcoa's SEC filings.

Number and Nature of the Securities Offered

Options and RSUs over shares of Alcoa common stock will not be granted in excess of the available share limitations set forth in the 2016 Plan. Up to 30,000,000 shares of common stock may be issued under the 2016 Plan. Any shares of Alcoa common stock issued under the 2016 Plan may consist, in whole or in part, of authorized and unissued shares, treasury shares or shares of Alcoa common stock purchased in the open market or otherwise. Shares authorized under the 2016 Plan are subject to the following limitations and "share counting" provisions (subject to the adjustment provisions of the 2016 Plan):

- Shares issued or transferred upon the exercise of incentive stock options ("ISOs") may not exceed 5,000,000 shares;

- Each share issued pursuant to an award other than an Option or stock appreciation right ("SAR") will count as 1.63 shares from May 10, 2017 and thereafter.

- Options and SARs will be counted as one share for each option or SAR. Shares subject to awards that are granted in cash, or cash-settled awards, will not count against the 30,000,000 share limit.

For purposes of complying with Section 162(m) of the United States Internal Revenue Code limitations on "performance-based compensation, if that is intended by the Committee, and subject to the adjustment provisions of the 2016 Plan, no participant in the 2016 Plan may be granted, during any one fiscal year:

- Options or SARs, in the aggregate, for more than 10,000,000 shares of Alcoa common stock;

- Restricted share awards or RSU awards, in each case, that are performance awards (at a maximum award level), in the aggregate, for more than 4,000,000 shares of Alcoa common stock; or

- Performance awards that are valued with reference to cash or property, other than shares of Alcoa common stock, with an aggregate value in excess of $15,000,000.

Subject to adjustment as described in the 2016 Plan, awards to a non-employee directors made under the 2016 Plan cannot exceed $500,000, based on the grant date fair value, in any one fiscal year period.

The shares are traded on the NYSE.

Summary of the Rights Attached to the Shares

The shares delivered to Participants upon exercise of Options and at the vesting of RSUs granted under the 2016 Plan are shares of common stock in the Company, which will allow Participants to participate in:

- Dividends - When the Company announces its financial results, it may decide to give a portion of its profits back to stockholders in the form of dividends.

- Voting - As a stockholder, a Participant will be entitled to vote at the Company's annual meetings where each of his or her shares will count as one vote.

- Liquidation Proceeds - In the event of liquidation, dissolution or winding up of the Company, the holders of shares of Alcoa common stock are entitled to share ratably in all assets remaining after payment of or provisions for the Company's liabilities, subject to prior rights or preferred stock, if any, then outstanding.

- No Preemptive, Redemptive or Conversion Provisions - The shares of Alcoa common stock are not entitled to preemptive rights and are not subject to conversion or redemption.

Further, once a stockholder, a Participant will have the right to receive certain information from the Company, such as the Company's annual report to stockholders. The Company can make such information available for its stockholders at its office and/or via its website.

The Company may issue other classes of shares and/or securities which are not part of this offer and the 2016 Plan.

Note that the Company may, at any time, but subject to the passing of a stockholder vote, amend its Bylaws and/or Certificate of Incorporation in a way that impacts the rights of holders of the shares of Alcoa Common Stock. These documents can be found as exhibits to the Company's latest Annual Report on Form 10-K filed with the SEC.

Information on the 2016 Plan

Further information on the 2016 Plan can be found at https://www.alcoa.com/equity-plan/, on the Company's internal intranet.

Requests for information about the 2016 Plan should be directed to:

Alcoa Corporation
Attention: Compensation & Benefits Manager
201 Isabella Street, Suite 500

Pittsburgh, PA 15212
CompensationBusinessSupport@Alcoa.com

IMPORTANT NOTE

The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding whether or not Participants decide to participate in the 2016 Plan. Participants should consult with their personal tax, legal and financial advisors regarding whether to participate in the 2016 Plan before taking any action related to the 2016 Plan. Further, depending upon where the shares of Alcoa common stock are listed, the country of Participant's residence and/or the country in which the 2016 Plan broker resides, the Participant may be subject to insider trading restrictions and/or market abuse laws that may affect his or her ability to accept, acquire, sell or otherwise dispose of shares of Alcoa common stock, rights to shares of Alcoa common stock, or rights linked to the value of shares of Alcoa common stock during such times the Participant is considered to have "inside information" regarding the Company as defined by the laws or regulations in the Participant's country. Local insider trading laws and regulations also may prohibit the cancellation or amendment of orders the Participant places before he or she possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party (other than on a "need to know" basis) and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Third parties may include fellow employees. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. Please note that it is the Participant's personal responsibility to comply with any applicable requirements or restrictions, and the Participant should consult with his or her personal legal advisor to determine his or her personal obligations and duties.

APPENDIX D TO THE ALCOA CORPORATION
2016 Stock Incentive Plan
Terms and Conditions for Restricted Share Units
for Non-U.S. Participants GDPR Notice
for EU/EEA Participants

RE: 2016 Stock Incentive Plan (the "Plan")

Dear Participant:

The EU General Data Protection Regulation (also known as the "GDPR") came into force on May 28, 2018. For the purposes of the GDPR, Alcoa Corporation (the "Company") wants to make EU/EEA-based participants in the Plan aware that the Company holds certain Data (as defined below) about the participants. The Company also wants to explain why the Company holds this Data and to let each participant know how to raise any questions regarding the Company's use of the Data. The purpose of this communication is to provide participants with this information.

This document constitutes a Notice under the GDPR. Copies of this Notice are also available for viewing online at https://www.alcoa.com/equity-plan/ or by request using the contact details set out below.

This communication supplements information relating to the use of your Data set out in the relevant agreement, or agreements issued to you under the Plan (the "Agreements"). Should there be any inconsistency between the terms of this Notice and the Agreements relating to the Company's use of your Data, then this Notice is the document that will apply.

The term "Data" as used in this Notice includes your name, home address, email address and telephone number, date of birth, social insurance number, passport number or other identification number, salary, nationality and job title, as well as details of any shares, directorships, awards or any other equity or share rights you may have in the Company (whether awarded, canceled, exercised, vested, unvested or outstanding).

Data Controller Entity: The Company is the Data Controller. The Company is a Delaware corporation, with its principal United States office at 201 Isabella Street, Suite 500, Pittsburgh, Pennsylvania 15212-5858, USA.

Purposes: Data is held for the exclusive purpose of implementing, administering and managing your participation in the Plan.

Legitimate Interests: The Company holds the Personal Data for the legitimate interests of implementing, administering and maintaining the Plan and each participant's participation in the Plan.

International Transfers of Data: As the Company is based in the United States and the Agreements are performed in the United States, the Company can only meet its contractual obligations to you under the Agreements if the Data is transferred to the United States. The performance of the contractual obligations of the Company to you is one of the legal bases for the

transfer of the Data from the European Union to the United States. You should be aware that the United States may have different data privacy laws and protections than the data privacy laws in place in the European Union.

Retention Period: Records relating to the Plan are kept on an indefinite basis, as they are part of the statutory records of the Company.

Other Recipients: To fulfill its obligations under the Agreements, the Company may share Data with its subsidiary companies who employ participants in the Plan. In addition, Data may be transferred to certain third parties assisting in the implementation, administration and management of the Plan, such as share plan administrators and transfer agents. At your instruction, the Data will be shared with a broker or other third party whom you have instructed the Company to deposit shares or other securities acquired upon the vesting of any awards under the Agreements.

Data Subject Rights: Participants have a number of rights under the GDPR. Depending upon the circumstances, these may include the right of data portability (where the Company helps a participant move Data to someone else at the participant's request), the right to object to the processing of the Data, the right to require the Company to update and correct the Data, the right to require erasure of the Data and the right for the participant to review the Data held by the Company and to require the Company to cease processing it. You must understand, however, that any such request may affect your ability to participate in the Plan. For more information on the consequences of your refusal to consent or your withdrawal of consent, please contact the Company using the contact details below.

Data Security: The Company recognizes the importance of treating Data in a lawful, fair and transparent manner. The Company will apply reasonable organizational and security measures to prevent the unlawful processing and/or the accidental loss or destruction of these materials and, in particular, the personal data contained in them.

Contact: If you have any questions concerning this Notice, you should contact the Alcoa Equity Administrator, by using the following contact details:

Alcoa Corporation
Attention: Compensation & Benefits Manager
201 Isabella Street, Suite 500
Pittsburgh, PA 15212
CompensationBusinessSupport@Alcoa.com

Exhibit 10.36

ALCOA CORPORATION

NON-EMPLOYEE DIRECTOR COMPENSATION POLICY

Effective October 1, 2023

1.General. This Non-Employee Director Compensation Policy (the "Policy"), sets forth the cash and equity-based compensation that has been approved by the Board of Directors (the "Board") of Alcoa Corporation, a Delaware corporation (the "Company"), as payable to eligible non-employee members of the Board ("Non-Employee Directors") commencing October 1, 2023. The cash and equity-based compensation described in this Policy shall be paid or be made, as applicable, automatically and without further action of the Board, to each Non-Employee Director who may be eligible to receive such compensation. This Policy shall remain in effect until it is revised or rescinded by further action of the Board.

2.Cash Compensation.

(a) Annual Retainers. Each Non-Employee Director shall be eligible to receive an annual cash retainer of $130,000 for service on the Board. In addition, a Non-Employee Director shall receive the following additional annual retainers, as applicable:

Non-Employee Director Position	Additional Annual Cash Retainer Fee
Non-Executive Chairman Fee	$175,000
Audit Committee Chair Fee (includes Audit Committee Member Fee)	$27,500
Audit Committee Member Fee	$11,000
Compensation and Benefits Committee Chair Fee	$20,000
Governance and Nominating Committee Chair Fee	$20,000
Other Committee Chair Fee	$16,500

(b) Payment of Retainers. The annual retainers described in Section 2(a) shall be earned on a quarterly basis based on a calendar quarter and shall be paid by the Company in arrears not later than the third business day following the end of each calendar quarter (if not deferred by the Non-Employee Director in accordance with subsection (c) hereof). In the event a Non-Employee Director does not serve as a Non-Employee Director, or in the applicable positions described in Section 2(a), for an entire calendar quarter, the retainer paid to such Non-Employee Director shall be prorated for the portion of such calendar quarter actually served as a Non-Employee Director, or in such positions, as applicable.

(c) Deferral of Retainers. Non-Employee Directors may elect to defer payment of all or a portion of the annual retainers described in Section 2(a) into specified investment funds and/or into vested restricted share units for shares of the Company's common stock, which deferral will be made pursuant to the terms of the Company's 2016 Deferred Fee Plan for Directors, as may be amended from time to time, or its successor plan (the "Deferred Fee Plan"). Unless otherwise

determined by the Board, any restricted share units will be granted under the Alcoa Corporation 2016 Stock Incentive Plan or its successor plan (the "Equity Plan"), on the date on which such retainer(s) would otherwise have been paid in cash.

3. Equity Compensation. Non-Employee Directors shall be granted the equity awards described below. The awards described below in paragraphs 3(a) and 3(b) shall be granted under and shall be subject to the terms and provisions of the Equity Plan and shall be granted subject to an award agreement in substantially the same form approved by the Board on or prior to the grant date, setting forth the terms of the award, consistent with the Equity Plan. For purposes of this Section 3, the number of shares subject to any restricted share unit award will be determined by dividing the grant date dollar value specified under subsection (a) or (b) hereof by the Fair Market Value (as defined in the Equity Plan) of a share of the Company's common stock on the grant date.

(a) Annual Equity Award. A person who is a Non-Employee Director immediately following each annual meeting of the Company's stockholders and who will continue to serve as a Non-Employee Director following such annual meeting shall be automatically granted, on the second market trading day following the date of each such annual meeting, a restricted share unit award with a grant date value equal to $160,000 (the "Annual Equity Award"). The Annual Equity Award shall vest on the earlier of the first anniversary date of the grant date or the date of the Company's next subsequent annual meeting of stockholders following the grant date.

(b) Pro-Rated Annual Equity Award. On the date of a person's initial appointment as a Non-Employee Director (or, if such date is not a market trading day, the first market trading day thereafter), and provided such person has not otherwise received an Annual Equity Award for the relevant year under Section 3(a), the Non-Employee Director shall be automatically granted a restricted share unit award with a grant date value equal to $160,000 multiplied by a fraction, the numerator of which is 365 less the number of days that have elapsed since the date of the Company's last annual meeting of stockholders and the Non-Employee Director's date of initial appointment, and the denominator of which is 365 (the "Pro-Rated Award"). The Pro-Rated Award shall vest on the date of the Company's next subsequent annual meeting of stockholders following the date of the Non-Employee Director's appointment to the Board.

(c) Deferral of Equity Award. Payment of the Annual Equity Award or any Pro-Rated Award will be deferred until the Non-Employee Director's separation from service, in accordance with the terms of the Deferred Fee Plan, unless otherwise required by applicable laws.

4. Stock Ownership Guideline. Non-Employee Directors are required to attain ownership of at least $750,000 in the Company's common stock and maintain such ownership until retirement from the Board.

5. Policy Subject to Amendment, Modification and Termination. This Policy may be amended, modified or terminated by the Board in the future at its sole discretion, provided that no such action that would materially and adversely impact the rights with respect to annual retainers payable in the fiscal quarter during which a Non-Employee Director is then performing services shall be effective without the consent of the affected Non-Employee Director.

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

Name	State or Country of Organization
Alcoa Alumínio S.A.	Brazil
Alcoa Australian Holdings Pty Ltd	Australia
Alcoa Holland B.V.	Netherlands
Alcoa Nederland Holding B.V.	Netherlands
Alcoa of Australia Limited[1]	Australia
Alcoa USA Corp.	Delaware
Alcoa USA Holding Company	Delaware
Alcoa-Lauralco Management Company	Canada
Aluminerie Lauralco B.V.	Netherlands
Reynolds Metals Company, LLC	Delaware

The names of particular subsidiaries have been omitted because, considered in the aggregate as a single subsidiary, they would not constitute, as of the end of the year covered by this report, a “significant subsidiary” as defined in Regulation S-X under the Securities Exchange Act of 1934, as amended.

[1] Part of the AWAC joint venture.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-214420, 333-214423, 333-218038, and 333-228258) of Alcoa Corporation of our report dated February 21, 2024 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Pittsburgh, Pennsylvania
February 21, 2024

Exhibit 23.2

21 February 2024

CONSENT OF QUALIFIED PERSON

Re: Form 10-K of Alcoa Corporation (the "Company")

SLR Consulting Limited ("SLR"), in connection with the Company's Annual Report on Form 10-K for the year ended December 31, 2023 (the "Form 10-K"), consents to:

- the public filing by the Company and use of the technical report summary titled "Technical Report Summary on the Darling Range, Western Australia," with an effective date of December 31, 2023 and dated February 21, 2024, and the technical report summary titled "Technical Report Summary for Juruti, Brazil," with an effective date of December 31, 2021 and dated February 24, 2022 (together, the "Technical Report Summaries"), that were prepared in accordance with Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission, as exhibits to and referenced in the Form 10-K;
- the incorporation by reference of the Technical Report Summaries into the Company's Registration Statements on Form S-8 (Nos. 333-214420, 333-214423, 333-218038, and 333-228258) (collectively, the "Registration Statements");
- the use of and references to our name, including our status as an expert or "qualified person" (as defined in Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission), in connection with the Form 10-K, the Registration Statements, and the Technical Report Summaries; and
- any extracts from or a summary of the Technical Report Summaries in the Form 10-K and incorporated by reference in the Registration Statements and the use of any information derived, summarized, quoted, or referenced from the Technical Report Summaries, or portions thereof, that was prepared by us, that we supervised the preparation of, and/or that was reviewed and approved by us, that is included or incorporated by reference in the Form 10-K and the Registration Statements.

SLR is responsible for authoring, and this consent pertains to, the Technical Report Summaries. SLR certifies that it has read the Form 10-K and that it fairly and accurately represents the information in the Technical Report Summaries for which it is responsible.

SLR Consulting Limited

Per:

John R. Walker, FGS, MIMMM, FIQ

Technical Director, Mining Advisory Europe

Exhibit 31.1

CERTIFICATIONS

I, William F. Oplinger, certify that:

1. I have reviewed this annual report on Form 10-K of Alcoa Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2024

/s/ William F. Oplinger

Name: William F. Oplinger

Title: President and Chief Executive Officer

Exhibit 31.2

CERTIFICATIONS

I, Molly S. Beerman, certify that:

1. I have reviewed this annual report on Form 10-K of Alcoa Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2024

/s/ Molly S. Beerman

Name: Molly S. Beerman

Title: Executive Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Alcoa Corporation (the "Company") on Form 10-K for the period ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, in the capacity and on the date indicated below, hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2024

/s/ William F. Oplinger

William F. Oplinger

President and Chief Executive Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of this report.

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Alcoa Corporation (the "Company") on Form 10-K for the period ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, in the capacity and on the date indicated below, hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to her knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2024

/s/ Molly S. Beerman

Molly S. Beerman

Executive Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of this report.

Exhibit 96.1

S-K 1300 Report

Technical Report Summary on the Darling Range, Western Australia

Alcoa Corporation

201 Isabella Street, Suite 500

Pittsburgh, Pennsylvania

15212-5858

Prepared by:

SLR International Corporation

22118 20th Ave SE, Suite G202, Bothell, WA 98021 USA

SLR Project No.: 410.065239.00001

Effective Date: 31 December 2023

Signature Date: 21 February 2024

Revision: 1

Making Sustainability Happen

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1.0 Executive Summary

1.1 Summary

SLR International Corporation (SLR or the QP) was appointed by Alcoa Corporation (Alcoa) to prepare an independent Technical Report Summary (TRS) on the Darling Range bauxite mines, located in Western Australia. The purpose of this report is to support the Mineral Resource and Mineral Reserve estimates for the mines as of December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300), and Item 601(b)(96) of Regulation S-K, Technical Report Summary.

1.1.1 Conclusions

1.1.1.1 Geology and Mineral Resources

- SLR is independently declaring the 31 December 2023 Mineral Resources for the defined bauxites located within Alcoa's Darling Range deposits. The Mineral Resource models were prepared by Alcoa using their in-house estimation procedures and reviewed extensively by SLR.
- As of December 31, 2023, exclusive of Mineral Reserves, as summarized in Table 11-13 at an appropriate level of precision reflecting confidence, the Measured Mineral Resources are estimated to be 93.0 Mt at a grade of 30.44% available alumina (AL) and 1.52% reactive silica (SI). Similarly, the Indicated Mineral Resources are estimated to be 105.4 Mt at 30.75% AL and 1.34% SI, and the Inferred Mineral Resources are estimated to be 106.9 Mt at 32.32% AL and 1.22% SI.
- Drill sampling and sample control procedures at Alcoa's Darling Range Bauxite Operations are adequate and appropriate for use in the estimation of Mineral Resources. The defined volumes and grades of mineralization are not expected to be systematically impacted (biased) by errors in either the collar location or the 3D sample location.
- The Quality Assurance / Quality Control (QA/QC) of sample preparation and assaying is adequate, and the assay results are suitable for use in Mineral Resource estimation.
- Analytical procedures used for the Alcoa Mineral Resource comprises part of conventional industry practice. Fourier transform infrared spectrometry (FTIR) is not widely used yet in the bauxite industry but is becoming more widely accepted and applied to more operations. At Alcoa the method has been consistently applied successfully for a decade and is routinely validated by industry standard XRF and wet chemical procedures as discussed in Sections 8.3 and 8.4. It is the opinion of the QP based on the studies on FTIR repeatability that the overall precision and accuracy of the FTIR assaying is acceptable.
- The database is adequate, and the data is appropriate for the purpose of Mineral Resource estimation.
- The continuous improvements in the geological modelling, estimation techniques, and block model migration to the 3D approach are appropriate and constantly improve the confidence level and precision of the Mineral Resources.
- The dry bulk density data is less well controlled than other analytes, although different attempts were taken since 1980. However, based on the different reconciliation approaches and on the fact that the polygonal and GSM model have lower confidence level, the density values are acceptable for the Resource estimation.

- The condition of Reasonable Prospects for Economic Extraction is met by constraining the Mineral Resource model using the ArcGIS system, by ensuring that the model defines key parameters for the refinery, and by sound reconciliation practices providing feedback that the modelling is appropriate for the purpose.

1.1.2 Mining and Mineral Reserves

- As of December 31, 2023, Proven Mineral Reserves are estimated to total 48.0 Mt at 29.1% AL and 1.65% SI and Probable Mineral Reserves are estimated to total 296.0 Mt at 31.9% AL and 1.27% SI.
- The QP has used the December 31, 2023 Mineral Resource estimate as the basis for its Mineral Reserve estimate, applying Modifying Factors only to those Resources classified as Measured Mineral Resources and Indicated Mineral Resources.
- The bauxite operations are operating mining projects with a long history of production for which establishment capital has been repaid and for which sustaining capital and supported operating costs have been observed to be applied in economic analysis. The review of the Capex Front End Loading (FEL) 2 Study report for the Myara North Crusher move has provided further support. Consequently, the QP considers that support by a Feasibility Study (FS) is demonstrated by the history of profitable operation and the level of technical support for the Modifying Factors. The QP has reviewed the operating and planning procedures and parameters for the operations.
- The QP considers that the accuracy and confidence in the Mineral Reserve estimate to be appropriate for the classification applied, which is supported by both the conservative operational processes and the long operational history.
- The QP is not aware of any risk factors associated with, or changes to, any aspects of the Modifying Factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the current Mineral Reserve estimate. The Darling Range operations have however undergone some changes as related to the permitting requirements which are discussed in this report; namely the approvals process, river corridor constraints, restoration obligations, and any required adjustments to accommodate the recently announced curtailment of the Kwinana refinery.

1.1.3 Mineral Processing

- The operating data between 2010 to 2023 indicates that the product from the Darling Range operations consisted of an average AL grade of 33%, with SI below the target for refinery feed.
- The QP is of the opinion that the Darling Range operation demonstrated that ore can be effectively crushed and supplied to a refinery for further upgrading to produce alumina. The historical operational data confirmed that the ore consistently met refinery specifications without any deleterious elements.
    - Based on this, and additional information provided by Alcoa regarding the mine plan, it is reasonable to assume that the ore from Darling Range will meet the refinery specifications for the next nine years.

1.1.4 Infrastructure

- The Darling Range mining operations have established and operational infrastructure, with mining hubs that host administrative offices, as well as crushing facilities and maintenance facilities.

- Hubs are relocated periodically as production moves away from the hub and transportation costs increase. These relocations are well-understood with planning and associated budgeting occurring well in advance of relocations; production restarted seven days after the shutdown.

- An extensive haul road network, rail, and overland conveyors transport crushed bauxite from the Hub to the refineries.
  - Bauxite is transferred from each mine to the refineries primarily via long distance conveyor belt, apart from the Kwinana refinery which receives bauxite via railway.
  - Alumina produced by the three refineries is then shipped to external and internal smelter customers through the Kwinana and Bunbury ports.
  - It was announced in January 2024 that the Kwinana refinery will undergo phased curtailment, which will be accommodated in mine planning going forwards.
- The Huntly and Willowdale mines are located near the towns of Pinjarra and Waroona respectively. These are easily accessible via the national South Western Highway, a sealed single carriageway road, spanning almost 400 km from the southern side of Perth to the southwest corner of Western Australia.
- Sealed access roads to the main hubs have been established, connecting Huntly and Willowdale to the road network.
- Major haul roads have been established to each mining area, while secondary haul roads, cross-cut each individual mining plateau. Roads are unsealed and require continuous maintenance.
- The Darling Range's Pinjarra refinery receives power from the South West Interconnected System (SWIS), but also has internal generation capacity of 100 MW from four steam driven turbine alternators, with steam produced by gas fired boilers and a gas turbine Heat Recovery Steam Generator (HRSG).
  - The refinery supplies power to the Huntly Mine by a 33,000 volt power supply line and two 13,800 volt lines.
- The Wagerup refinery is a net exporter of power to the SWIS, with internal generation capacity of 108 MW from three steam driven turbine alternators and one gas turbine; steam being generated by gas fired boilers.
  - The refinery supplies power to the Willowdale Mine by a single 22,000 volt power supply.
- Water is used on the mines for dust suppression, dieback washdown, vehicle washdown, workshops, conveyor belt wash, construction, and domestic purposes.
  - The water supplies for mining consist of licensed surface water sources supplemented with treated wastewater from vehicle washdowns, stormwater runoff and maintenance workshops.
  - The annual volume of freshwater abstracted under the Department of Water and Environmental Regulation (DWER) surface water licences and Water Corporation supply agreements decreased at Willowdale in 2022, and increased at Huntly, the combined volume for both mines has been reasonably consistent over the last three years.
  - In 2022, water abstraction comprised approximately:
    - 53% of the annual entitlement from Boronia Dam
    - 22% from Banksiadale Dam

- 70% from Samson Dam.
  - An additional 651,840.7 kL was also abstracted from South Dandalup Dam under the agreement with Water Corporation.
- On site facilities include offices, ablutions, crib-rooms, and workshops, however there are no Alcoa accommodation facilities, as the Huntly and Willowdale mining areas are close to established population centers.
- No tailings are generated within the boundaries of the mining operations and waste dumps are not constructed. The management of tailings generated downstream at the refineries is beyond the boundaries of the Darling Range mining operations and are therefore not considered in this TRS.
- Overburden is segregated for later contouring and rehabilitation of adjacent, completed mining operations. Caprock and other non-viable rock is used to backfill these shallow, completed pits and the viable topsoil spread on top, contoured, and revegetated.

L.1.1.5 Environment

- Alcoa has established processes to facilitate conformance with environmental requirements, while identifying sensitive areas ahead of time enables them to be managed ahead of disturbance.
- Mining in some areas became more constrained in 2023 as a result of internal and external factors, which has resulted in a presumed temporary decrease in operability and associated decrease in Reserve estimation:
  - Alcoa's ongoing consultation with the MMPLG
  - A third-party referral of Alcoa's annual rolling five-year Mining and Management Programs (MMP) approval (required under the State Agreement Act framework)
  - Alcoa's progress on the *Environmental Protection Act 1986* (EP) and *Environmental Protection and Conservation Act 1999* (EPBC Act) assessment (beyond the scope of the MMP) to transition mining from Huntly to the Myara North and Holyoake areas and increase Pinjarra refinery production by 5%.
- The 2023-2027 MMP describes Alcoa’s proposed mining operations for the Huntly and Willowdale mines within ML1SA from 1 January 2023 to 31 December 2027. It excludes mine development activities associated with Myara North or Holyoake mining regions currently under consideration by the EPA and DCCEEW.
- Changes from what was reported in the 2022 TRS under the previous MMP include but are not limited to:
  - Reduce mining activities inside higher risk areas within drinking water catchments.
  - Alcoa will not undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
  - Increase rehabilitation and reduce open areas where possible, with priority in higher risk areas.
  - Maximum annual clearing footprint of 800 ha.
  - Revise the Rehabilitation Completion Criteria by 31 December 2024, in consultation with DBCA.

- Alcoa acknowledges that future MMPs will continue to improve and evolve, based on feedback from review and consultation processes.
- Alcoa is modernizing its environmental approvals framework for its Huntly Bauxite Mine and Pinjarra Alumina Refinery, by referring future mining plans for assessment under Part IV of the Western Australian *Environmental Protection Act 1986* and the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Construction for Myara North will be commenced pursuant to the requirements of the Ministerial Decision, which will be issued upon completion of the EPA assessment process indicatively forecast for completion in approximately mid-2025, as opposed to the third quarter of 2024 as reported in the TRS for 2022. The timeframe to approval of Myara North and Holyoake under the EP and EPBC Act can be estimated, but not predicted with certainty; further delays are possible.
- Importantly, on 14 December 2023 the State Government announced the *Alcoa Transitional Approvals Framework* which will enable Alcoa to continue mining as defined in the current 2023-2027 MMP while the formal EPA EIA is in progress. In most circumstances, activities under assessment must cease during the EPA's process. Note, that the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point.
- Alcoa's mine sites are monitored in accordance with the conditions of Government authorizations and its operational licenses at Huntly (L6210/1991/10) and Willowdale (L6465/1989/10) and the MMP. Compliance with the section 6 exemption is also required from 14 December 2023. Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa's Environmental Management System and reported within the Annual Environmental Review report:
    - Review of the most recent report, JTSI Annual Environmental Review 2022 (dated May 2023), largely reported compliance with environmental commitments and success of operational controls to manage environmental objectives.
    - The one area with a substantial change in success was related to an increase in number and volume of spills at Huntly. A key contributor to spills at Huntly was the change-out of coolant hoses across the heavy vehicle fleet in January/February 2022. This was found to be the result of faulty new coolant hoses. Alcoa's hose supplier undertook an investigation and identified the cause of the hose failures as an issue in the manufacturing process. All trucks were stood down following the supplier investigation and the faulty hoses changed out. The coolant hose failure events were 34% (almost 3,000L) of Huntly's LOC events between January 2022 and July 2022 and were a significant contributor to the number of spills.
- Alcoa, in association with the former Water and Rivers Commission, has researched the hydrology and salinity in the Jarrah forest since the 1970s, as part of the Joint Intermediate Rainfall Zone Research Program (JIRZRP). The JIRZRP has included monitoring of surface water, groundwater and salinity as well as analysis and modelling of the Intermediate Rainfall Zone (IRZ). This work continues to evaluate potential impacts of clearing and rehabilitation on groundwater salinization.
- Alcoa implements a comprehensive water management and monitoring program in accordance with the requirements of its abstraction and operational licenses.
- A groundwater monitoring program commenced in the second half of 2022 across the Darling Range operations to support approvals and operational monitoring.
    - Alcoa will continue to expand its monitoring program, as necessary, if groundwater quality or quantity has been identified as potentially at risk due to

operational or mining activities, or potential exists for mining to impact offsite/private groundwater supply quantity or quality.

- o Alcoa has a long-term groundwater research project within the Intermediate Rainfall Zone to evaluate potential impacts of clearing on groundwater salinization.

- Outcomes of and compliance with the management and monitoring programs have most recently been reported within the 2022 Annual Environmental Review report. Consistent with the outcomes reported between 2018 and 2021:
  - o Review of the most recent report, published for 2022 largely reported compliance with environmental commitments and success of operational controls to managed environmental objectives.

l.1.2 Recommendations

l.1.2.1 Geology and Mineral Resources

It is apparent to the QP that the long history of exploration, development and mining of Alcoa's Darling Range bauxite tenements have established sound knowledge and understanding of the geology and mineral endowment. The QP has not identified any fatal flaws in the current practices of mapping (based on the ArcGIS system), drill sampling (based on progressive continuous improvement), assaying (based on calibrated and validated FTIR, with reasonable quality control), estimation (3D Block Model - 3DBM), database management (using acQuire), the application of mining criteria that assure RPEE, and the application of constraints establishing forestry, heritage and noise limits to the Mineral Resource definition. The following recommendations are offered as suggestions for further improvement, aligned with Alcoa's comprehensive approach to research and development (seen for example in the evolution of their drilling, sampling and assaying technologies). These recommendations are prioritized in terms of their perceived value to the overall operation:

- Continuing to replace the gridded seam model (GSM) and polygonal areas to the 3D block modelling methodology, using a script-based semi-automated approach, which enables more robust rapid model building. The validation of interpolation parameters using risk-based (conditional simulation) techniques to quantify confidence should be considered.
- To improve the reporting of recoverable resources, a re-blocked block model to a minimum practical mining scale or single mining unit (SMU) should be considered. Economical parameters considering more flexible costs and bauxite prices related to the Mineral Reserves can also be implemented in the Mineral Resources workflow, aiming to optimize the bauxite mineable portion including potential marginal grades.
- Investigate whether the 5% bias in the tonnage between the As Mined and sampling tower weightometers is persistent in the 3D block models.
- Further redrilling or where viable re-assaying of pulps.
- Implementation of a mine wide reconciliation system should be considered as a way to overcome the issue of density estimation. This could be integrated with the extensive production tracking data already available from the current fleet management system and operational control system (covering the mining equipment, crushers, conveyors, sampling towers, stockpile stackers and reclaimers).
- To include volume surveys using drones and truck gantry scanning, wet mass measurement using weightometers on conveyors and LoadRite sensors on mining equipment, and infra-red moisture determination, mean that better in situ dry density

estimation may become possible if the operation requires it for better refinery feedstock control.

- The QP considers that twinned hole studies are of limited value and should only be implemented once the sample splitting and preparation demonstrates good repeatability, using field duplicates (or the equivalent sample to extinction [STE] samples). They may be of value to investigate specific issues under closely supervised conditions.
- While the STE procedure could be retained for specific studies, in the QP's opinion, the reintroduction of field duplicates using appropriate riffle splitters under supervision should be considered.
- The QP is of the opinion that the grade characteristics of the bauxite profile could be reproduced in the model, which enables optimization techniques to be used for the definition of mining floors and boundaries, better support for ore loss and dilution studies, and more accurate reconciliation studies.

l.1.2.2 Mining and Mineral Reserves

- Currently a dilution and mining recovery factor is applied to the final Reserves to reconcile the tonnes and grade. The QP recommends applying dilution and ore loss at the re-blocked model level before performing the optimization and reporting these values independently.
- The life-of-mine scheduling requires further refinement with regards to sequencing of the different mining areas and assigning the scheduled years back to the OreBest model (the mining output that defines Reserves). Recommendations would be to provide a strategic schedule over a minimum of nine years and tactical schedule over 3 years. The tactical schedule should incorporate restoration and rehabilitation scheduling. The view of the QP is that additional optimization of the mine schedule would be possible with this approach to strategic and tactical scheduling.
- The QP recommends detailed haulage analysis focusing on haulage profiles and cycle times to provide more accurate operating costs.
- The QP noted the mining models were in both a 2D grid and 3D model system. Aligning all the mining models within the same 3D mining model system will provide clarity and consistency across the Darling Range project with regards to evaluation and reporting processes. Alcoa have been progressing this alignment to 3D as a follow on from the deeplime 2D to 3D conversion project.
- A reconciliation system should be implemented to allow the review of the mined tonnes to modelled geological model. Alcoa has been actively developing this reconciliation system with an intention to implement during 2024.

l.1.2.3 Mineral Processing

The historical operational data for the Darling Range demonstrates that ore consistently met refinery specifications.

- Ideally, independent verification of sample analysis is conducted, by a certified laboratory, on a structured program, to ensure the QA/QC aspects of the internal analysis. Within this process a proportion of samples from each batch could be sent to the independent laboratory for analysis and the results can be compared with the internal analysis.
- The QP is appreciative that the mine is operational, meaning a trade-off versus logistics / practicality would need to be carried out.

I.1.2.4 Infrastructure

The Darling Range mining operations have well established infrastructure, with mining hubs that are periodically moved to reduce transportation distances between mining operations and the hubs. The QP makes no recommendations regarding infrastructure.

I.1.2.5 Environment

Alcoa has established systems to facilitate adherence to environmental commitments and has made progress with modernizing environmental approvals and permits for Huntly, Willowdale and the future mining areas at Holyoake and Myara North. The QP recommends that the following action is taken:

- Continued close engagement with EPA, DCCEEW and MMPLG to best enable a prompt resolution to approval and permitting process to minimize impacts to the Reserve estimate into the future.
- Continued Compliance with all approval and permit requirements. Compliance with the conditions associated with the *Alcoa Transitional Approvals Framework* exemption is critical as the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point.
- Finalization of the Catchment Risk Assessment tool in consultation with DWER, DBCA and other regulators.
- Continued refinement of the WA Mining and Haul Road Drainage Design Manual in consultation with the Bauxite Hydrology Committee
- Close-out the Auditor-compliant contaminated sites process related to the identification of low levels of PFAS and AFFF on site.

I.2 Economic Analysis

I.2.1 Economic Criteria

An un-escalated technical-economic model was prepared on an after-tax discounted cash flow (DCF) basis, the results of which are presented in this subsection.

Annual estimates of mine production with associated cash flows are provided for years 2024 to 2032 inclusive, based on Proven and Probable Reserves only.

Key criteria used in the analysis are discussed elsewhere throughout this TRS. General assumptions used are summarized in Table 1-1. All values are presented in United States Dollars ($) unless otherwise stated.

able 1-1: LOM Technical-Economic Assumptions

Description	Value
Start Date	January 1, 2024
Mine Life based on Mineral Reserves	9 years
Average LOM Price Assumption	$21.46
Total Operating Costs	$4,887.7 million
Capital over nine years	$832.8 million
Income tax	$314.3 million
Discount Rate	12.00%

Discounting Basis	End of Period
Inflation	0%
Corporate Income Tax Rate	30%

L.2.2 Cash Flow Analysis

The indicative economic analysis results, presented in Table 19-3, indicate an after-tax NPV of $121.6 million at a 12.00% discount rate and an average bauxite price of $21.46/t over LOM.

Capital identified in the economics is for major mine moves, conveyor replacements, haul roads, and other sustaining operations.

The cashflow is presented on a 100% attributable basis.

The economic analysis was performed using the estimates presented in this TRS and confirms that the operations have a positive cash flow that supports the statement of Mineral Reserves.

able 1-2: LOM Indicative Economic Results

Description	Units	Total LOM
LOM	Years	9
LOM Bauxite Production	Mt	326.0
Average LOM Price	$/t	21.46
Gross Revenue	$ million	**6,994.6**
Labor	$ million	1,720.6
Service	$ million	932.7
Other	$ million	780.9
PAE – Corporate Chargebacks	$ million	207.2
Energy	$ million	121.3
Fuel	$ million	222.4
Supplies	$ million	238.8
Maintenance	$ million	576.0
On-site Mine Operating Costs	$ million	**4,800.0**
Off-site Mine Operating Costs	$ million	**87.7**
Corporate Income Tax	$ million	314.3
Net Income after Taxes	$ million	**733.4**
Depreciation Tax Savings	$ million	1,059.1
Sustaining Capital (2024 to 2032 inclusive)	$ million	$832.8
Closure Costs	$ million	Included in ARO under operating costs
Free Cash Flow	$ million	**325.5**
NPV @ 12.00%	$ million	**121.6**

I.2.3 Sensitivity Analysis

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities. The operation is nominally most sensitive to market prices (revenues) followed by operating costs.

I.3 Technical Summary

I.3.1 Property Description

The Mineral Resource and Reserve estimates declared in this Report were derived for bauxite deposits located within the Darling Range in the southwest of Western Australia. The mining center of Huntly is located approximately 80 km to the southeast of Perth, and approximately 30 km northeast of the township of Pinjarra. Willowdale is located 100 km south-southeast of Perth, and approximately 20 km southeast of the township of Waroona.

The Pinjarra refinery is located adjacent to the east of the town of Pinjarra and is approximately 25 km southwest of the Huntly mining areas. The Kwinana refinery, also supplied by Huntly, is approximately 50 km northwest of Huntly in the city of Kwinana, a suburb approximately 40 km south of Perth. The Wagerup refinery, supplied by Willowdale, is located immediately adjacent to the east of the South Western Highway, approximately 8 km south of Waroona and 20 km west of the Willowdale mining area.

I.3.2 Land Tenure

The bauxite deposits are all located within ML1SA. The Agreement permits the exploration and mining of bauxite within the tenement boundaries. ML1SA was granted on 24 September 1961, for four 21-year periods, and the current lease expires on 24 September 2045, with provision for renewal extending beyond 2045. The current lease covers an area of 7,022.61 km², and extends from just north of Perth, to Collie in the south. The legislation under which Alcoa operates is overseen by the Mining and Management Program Liaison Group, which comprises representatives from several State Government departments. The current concession of ML1SA covers an area of 7,022.61 km², extending from the north of Perth on the eastern side to the town of Collie in the south.

Alcoa has the exclusive right to explore for and mine bauxite on all Crown Land within the ML1SA, however a number of environmental and statutory constraints exist within the area, and Alcoa is not permitted to access bauxite from the areas covered under these constraints. For example, the 2023-2027 MMP requires:

- A reduction in mining activities inside higher risk areas within drinking water catchments.
- Alcoa cannot undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
- An increase in rehabilitation and reduction in open areas.
- A maximum annual clearing footprint of 800 ha.

Mineral Resources have not been defined in the constrained areas. In August 2001, Alcoa entered a sub-lease arrangement with a consortium referred to as the Worsley Participants. This arrangement permits the Worsley Participants to mine and process bauxites within the sub-lease area. Alcoa has not declared Mineral Resources within the sub-lease area.

3.3 Ownership

The mining rights and assets involved with bauxite mining and alumina refining in Australia are 100% owned by Alcoa of Australia Limited (AofA), an affiliate of Alcoa owned by Alcoa World Alumina and Chemicals (AWAC). AWAC is an unincorporated global joint venture between Alcoa and Alumina Limited, a company incorporated under the laws of the Commonwealth of Australia and listed on the Australian Securities Exchange. AWAC consists of a number of affiliated entities that own, operate or have an interest in bauxite mines and alumina refineries, as well as an aluminum smelter, in seven countries. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these entities, directly or indirectly, with such entities being consolidated by Alcoa Corporation for financial reporting purposes.

3.4 History

Bauxite occurrences were first recorded in the Darling Range in 1902. Bauxite was detected as a result of analyzing laterite from Wongan Hills, and subsequently through examination of lateritic road gravels from several localities in the Darling Range. The Geological Survey of Western Australia (Geological Survey) produced studies and publications, driving the bauxite exploration, though most attention was focused on localities in the Darling Range close either to Perth or to railway lines servicing towns such as Toodyay and York. By 1938 bauxite deposits were known to be common throughout the Darling Range over an area of 560 km long by 40 km to 80 km wide. The Geological Survey maintained interest in Darling Range laterite as an economic source of aluminum until the 1950s. However, by the late 1950s exploration had been taken over by mining companies. The earliest non-government exploration for bauxite was carried out in 1918 by the Electrolytic Zinc Co. of Australia Pty Ltd, deeming the deposits to be generally low grade and not of commercial value, though like earlier explorers, did not focus upon the underlying friable units.

No further private exploration took place until 1957 when Western Mining Corporation Ltd (WMC) began to explore for bauxite in the Darling Range. Following a regional reconnaissance, a joint venture company, Western Aluminum NL (WANL), formed by WMC with North Broken Hill Ltd and Broken Hill South Ltd, explored temporary reserves over a large portion of the southwest. These areas were part of a Special Mineral Lease (ML1SA) granted to WANL in 1961.

By 1961, WANL had delineated 37 Mt of bauxite at an average grade of 33% AL. Also in 1961, WANL joined with the Aluminum Company of America Ltd (Alcoa US), allowing additional systematic exploration of lease ML1SA. Commercial mining was finally started in 1963 at Jarrahdale and continued until 1998, supplying bauxite to the Kwinana refinery.

In 1977 WANL became Alcoa. As of December 2023, the Huntly and Willowdale mining operations remain active. Huntly supplies bauxite to the Kwinana and Pinjarra refineries (approximately 25 million tonnes per annum, Mtpa) while Willowdale supplies the Wagerup refinery (approximately 10 Mtpa).

3.5 Geological Setting, Mineralization, and Deposit

The Mineral Resource estimates declared in this Technical Report Summary were derived for bauxite deposits located within the Darling Range in the southwest of Western Australia. The Darling Range comprises a low incised plateau formed by uplift along the north-south trending Darling Fault, which is a major structural lineament that separates the Pinjarra Orogen to the west, from the Yilgarn Craton to the east. The range extends for over 250 km, from Bindoon in the north to Collie in the south.

Bauxite deposits have been identified throughout the Darling Range and generally occur as erratically distributed alumina-rich lenses within the eroded laterites that mantle the granites to the east of the scarp line. The bauxites are thought to have formed from the lateritization

of the peneplained surface of the Western Gneiss Terrane rocks. Lateritization is thought to have commenced during the Cretaceous and continued through to the Eocene, with the subsequent periodic activity of the Darling Fault resulting in the current landform of scarps and deeply incised valleys on the western edge of the Darling Range.

Most of the bauxites display a typical profile comprising the following sequence, from the top down:

- Overburden: A mix of soils, clays, rock fragments and humus that is typically 0.5 m deep, but deeper pockets are common.
- Hardcap: An indurated iron-rich layer that is usually 1 m to 2 m thick. It is generally high in available alumina (AL) and low in reactive silica (SI).
- Friable Zone: A partially leached horizon that usually contains a mix of caprock fragments, clasts, nodules, pisolites, and clays. It is usually a few meters thick but can exceed several meters in places. It is generally high in AL and low in SI.
- Basal Clay: A kaolinitic clay horizon that represents the transition zone between the Friable Zone and the underlying saprolitic material. It is generally high in SI and low in AL.

The Hardcap and Friable Zone are targeted as the ore horizon. Selective mining practices are applied to minimize the inclusion of Overburden, because of its elevated organic carbon levels, and Basal Clay because of its elevated SI concentrations. Within the Hardcap and Friable Zone, the dominant minerals, in order of abundance, are gibbsite, quartz, goethite, kaolinite, and hematite, with lesser amounts of anatase and muscovite.

L.3.6 Exploration

Systematic exploration for bauxite within the region commenced in the 1960s and is conducted on a continuous basis to maintain sufficient Resources and Reserves to meet refinery supply. Alcoa systematically drills the laterite areas on a regular grid spacing of 60 × 60 m, followed by successive infill programs in selected areas that reduce the spacing to 30 × 30 m, and finally to 15 × 15 m. The 2023 Mineral Resource estimates were derived from data acquired from a total of 361,026 holes, drilled between 1981 and 2023, with approximately 80% of the holes drilled after 2009.

The planned drill hole collar locations are pegged by Alcoa surveying staff using real time kinematic differential global positioning system (RTK DGPS). Prior to mid-2015, theodolite/ total stations and DGPS were used to position the 60 m spaced holes, and the 30 m and 15 m grids were positioned by taping and optical square sighting between the 60 m pegs. If the drill rig cannot be setup within 2 m of the peg, the offset distance is measured and marked on the driller's log. Alcoa has recently introduced the practice of resurveying all drill hole locations after drilling. However, the planned coordinates are used for subsequent modelling activities.

All holes are assumed to be vertical. However, the drill rigs have limited levelling capability, and most holes are orthogonal to the local surface gradient, resulting in deviations of several degrees from vertical.

A digital elevation model representing the natural surface was prepared from a combination of collar survey data, LiDAR data, and satellite imagery.

The drilling is conducted using a fleet of tractor-mounted vacuum rigs, which have been modified to operate in forested areas with minimal clearing or ground preparation. In 2015, Alcoa added aircore drilling rigs to the fleet. These rigs are also tractor-mounted and are fitted with a similar sample collection system to that used on the vacuum rigs. The rigs are fitted with hollow-bladed bits that have a nominal cutting diameter of 45 mm and an internal retrieval tube diameter of 22–25 mm.

All samples are collected on 0.5 m intervals, with the material extracted via the hollow drill stem into a collector flask attached to the cyclone underflow. Each sample, which weighs approximately 1.5 kg, is repeatedly passed through a riffle splitter to yield a retained split weighing approximately 200 g. This material is placed into barcode-labelled sample packets for dispatch to the test laboratory. The remaining material is discarded.

For each hole, the drillers prepare a log sheet that contains survey, drilling, geological logging, and sample submission information.

L.3.7 Mineral Resource Estimates

The long production history of Alcoa's ML1SA operations has resulted in the development of an integrated approach for data collection, bauxite delineation, and production planning, aimed at providing feedstock that meets the technical specification requirements of the local refineries. In the past few years, Alcoa recognized that some of its procedures required optimization and updating to be more consistent with best practice approaches within the industry. They commenced a process of investigation and revision of many of these procedures but recognized that this must be implemented in a staged manner to ensure that the Mineral Resources and Mineral Reserves delineation procedures remain consistent with, and do not result in significant disruption to, current mining practices. In 2019, they began introduction 3D block modelling techniques to replace the polygon and gridded seam modelling resource estimation procedures. Approximately 63% of the tonnages that contribute to the current Mineral Resource (exclusives Mineral Reserves) have been prepared using the new 3D block modelling procedures.

The majority of the estimates that make up the current Mineral Resource inventory were prepared using techniques that Alcoa has developed since the commencement of mining in 1963. Over the period, Alcoa developed an integrated approach to data collection, resource definition, and mining that has proven effective in meeting the refineries' feedstock requirements.

The development of the resource estimation procedures largely predates the wider industry move to block modelling and geostatistical estimation techniques that occurred in the 1990s. Although there have been numerous changes and refinements to Alcoa's procedures, these systems are essentially a semi-automated implementation of the traditional 2D polygonal estimation techniques.

A legacy of the development history of the resource estimation system is that different procedures were used to delineate Mineral Resources using the 30 m and 60 m spaced data, termed the ResTag procedures, compared to those defined using the 15 m spaced data, termed the Gridded Seam Model (GSM) procedures.

The estimates defined using the 15 m spaced data are limited to the material that is planned to be mined. The parameters used by Alcoa meant that the resultant estimates were essentially nearest neighbor polygonal estimates.

In 2019, Alcoa introduced 3D block modelling and geostatistical estimation techniques, which they term the 3D Block Model (3DBM) procedures, to replace the polygonal and gridded seam modelling techniques.

In essence, all techniques largely rely upon the definition of a resource floor based on AL and SI cut-off grade criteria applied to both individual and accumulated sample grades (for the traditional approaches) or individual and accumulated model grades (for the 3DBM approach). Minimum thickness criteria are also considered. For the models defined using the 15 m spaced data, practical mining constraints are also included in floor definition, including stripping ratios, and the floor heights in surrounding holes. The sample grades in each drill hole or column of model cells are composited over the interval between the base of overburden and the resource floor.

The lateral constraints are initially defined using AL and SI grade thresholds, and then modified to include minimum area, minimum composite numbers, and maximum internal waste criteria. Additional constraints are applied for the resources defined using 15 m spaced data. These include maintaining equipment transit corridors and including minimum buffer distances around environmental exclusion zones and bedrock outcrop.

The resource outlines are divided into resource blocks that delineate sub-regions containing material with similar grade characteristics, and contain tonnages that can be used for long-term, medium-term, and short-term scheduling activities (80 kt to 100 kt for 60 m spacing, down to 20 kt to 40 kt for 15 m spacing). For the 30 m and 60 m areas, the resource blocks are assigned the length-weighted average grades of the enclosed composites.

The model contains estimates for a range of constituents that are of prime importance for Bayer processing including AL, SI, oxalate, sulphate, boehmite, and iron. Validation included visual and statistical checks between the input data and resource block estimates, comparisons of the estimates derived from different data spacings, and comparisons of the estimates with production data.

The annual reconciliation data for the past 12 years indicate the presence of grade and tonnage biases which, although some show long-term trends, appear to be relatively consistent and predictable on a year-to-year basis. The As Mined tonnage estimates are consistently biased high by approximately 5%. The As Mined AL is biased low but has shown a gradual improvement from 5% to 1%, relative over the past decade. The As Mined SI is biased low but has shown a gradual improvement from around 30% to 10% relative over the past decade. Most other constituents exhibit similar bias reductions over the past decade.

The Mineral Resource classifications have been applied to the resource estimates based on consideration of the confidence in the geological interpretation, the quality and quantity of the input data, the confidence in the estimation technique, and the likely economic viability of the material.

There are limited quality assurance data to enable a thorough assessment of the reliability of the estimation datasets, and nowadays the minority of the Mineral Resource estimates (inclusive Mineral Reserves) have been prepared using traditional 2D estimation techniques which have known limitations when used to prepare local estimates. However, the long production history and significant amount of reconciliation data indicate that past estimates prepared using these techniques have been relatively reliable and predictable.

Based on the above considerations, the main controlling factors for Mineral Resource classification are deemed to be sample spacing, geological modelling and block model criteria, and data quality.

l.3.8 Mineral Reserve Estimates

A Mineral Reserve has been estimated for Alcoa's Darling Range bauxite mining operations in accordance SEC S–K 1300 which are consistent with the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the JORC 2012 Code).

The QP inspected the Alcoa Huntly and Willowdale operations and Mine Planning Department between October 24th and 25th October 2023 and visited Alcoa's Mine Planning department on October 26th and 27th 2023, interviewing relevant personnel on these dates and on other occasions. The QP has prior knowledge of the asset being involved in the previous Mineral Reserve Statement in the preceding years (2021 and 2022).

The Mineral Reserve is classified with reference to the classification of the underlying Mineral Resource and with reference to confidence in the informing Modifying Factors. The

QP considers the Proven and Probable classification to be appropriate to the deposit and associated mining operations.

The reference point for the Mineral Reserve is prior to the processing plant at the refinery.

The Proven Mineral Reserve is a subset of Measured Resources only. The Proven Mineral Reserve is included in the Long Term Mine Plan (LTMP) and is approved for mining.

The Probable Mineral Reserve is estimated from that part of the Mineral Resource that has been classified as Indicated or from Measured resources that are not yet approved for mining.

Variable cut-off grades are applied in estimation of the Mineral Reserve, and these are related to operating cost and the nature of the Mineral Resource in relation to blending requirements. The Mineral Reserve estimate is expressed in relation to available aluminum oxide (AL) and reactive silica (SI), this being the critical contaminant in relation to the Refinery.

L.3.9 Mining Methods

The Huntly and Willowdale mines employ conventional open pit mining practices and equipment. The fleet is mixed between contract and owner-operator, depending on the nature of the task at hand. Owner operator equipment is used for mining the bulk of the Mineral Reserve, operating in areas away from those subject to environmental restrictions. Contract mining operates smaller equipment, day shift only, in environmentally (noise) sensitive areas and at the perimeter of the mining area.

Following definition of Mineral Reserve blocks, vegetation is cleared ahead of mining by the Western Australian State Forest Products Commission (FPC), saleable timber being harvested for use. On receipt of clearance to proceed from the FPC, Alcoa operations commence stripping topsoil and secondary overburden removal (SOBR) using small excavators, scrapers, and trucks. Soil is stockpiled at the site, away from the proposed pit, for rehabilitation purposes.

Mining progresses on 4 m benches, utilizing a contour-mining sequence, cutting benches across the topography, working from top to bottom, maintaining the flattest floor obtainable to a maximum overall gradient of 1:10. This is most pronounced in steep areas. Most of the mineralization lies beneath a gently undulating topography and contour mining is minimal.

After completion of mining, overburden is progressively backfilled into adjacent exhausted pits, topsoiled and rehabilitated by re-establishment of native vegetation, creating a stable post-mining landform that replicates the pre-existing environment.

L.3.10 Processing and Recovery Methods

The QP notes in accordance with the mine planning reviewed, total ($T.SiO_2$) and SI contents, on an annual average basis, remains on the target for refineries for the next nine years. This means, there are no evidence of any deleterious element's presence in the Darling Range ore within the next nine years of production.

The process plant for the Darling Range operations consists of two separate crushing facilities at the Huntly and Willowdale mines. Both facilities crush the Run-of-Mine (ROM) and currently convey the crushed ore to three separate refineries located at Pinjarra, Kwinana and Wagerup.

The power consumption of the Huntly operation is approximately 8,000 Megawatt-hour (MWh) to 9,000 MWh per month. The Willowdale power consumption is approximately 2,000 MWh per month.

The process plant is a dry crushing operation and therefore water is only required for dust suppression and is included as part of mine water consumption. Water is not required as a consumable for the plant.

3.11 Infrastructure

The infrastructure for the mining operations is established and operational. During 2021, the infrastructure hub for Willowdale was relocated 16 km southwards from Orion (after having been based there for 21 years) to the Larego Hub which is located about 20 km north-east of the town of Harvey. The hub hosts new administrative offices, as well as crushing facilities and maintenance facilities. The Orion Hub site has been decommissioned.

Extensive haul road networks, rail, and overland conveyors transport crushed bauxite from the Hubs to the refineries (namely Kwinana, Wagerup and Pinjarra). Bauxite is transferred from each mine to the refineries primarily via long distance conveyor belt, apart from the Kwinana refinery which receives bauxite via railway. The Alumina produced by the three refineries is then currently shipped to external and internal smelter customers through the Kwinana and Bunbury ports.

It was announced in January 2024 that the Kwinana refinery will undergo curtailment beginning in the second quarter of 2024. Current mine plans do not accommodate this curtailment but will be amended to include a staged reduction of supply to the refinery through the third quarter of 2024.The Darling Range's Pinjarra refinery receives power from the South West Interconnected System (SWIS). The refinery also has internal generation capacity of 100 MW from four steam driven turbine alternators, with steam produced by gas fired boilers and a gas turbine Heat Recovery Steam Generator (HRSG). The refinery supplies power to the Huntly Mine by three different power supply lines (a single 33 kV and two 13.8 kV). Willowdale Mine has a single 22 kV power supply fed from the Wagerup refinery. The Wagerup refinery is a net exporter of power to the SWIS, with internal generation capacity of 108 MW from three steam driven turbine alternators and one gas turbine. The steam is produced by gas fired boilers.

The WA mines are licensed by the Department of Water and Environmental Regulation (DWER) to draw surface water from five locations to meet their water supply requirements. The Huntly mine draws water from Banksiadale Dam and Boronia Waterhole. Huntly mine also holds a license to draw water from Pig Swamp and Marrinup, however these resources are retained as a backup water supply and have not been utilized in recent years. Huntly mine is also permitted to draw water from South Dandalup Dam under an agreement with the Water Corporation. A pumpback facility from South Dandalup Dam to Banksiadale Dam is used to raise levels in Banksiadale Dam during periods of low rainfall runoff. Willowdale Mine draws water from Samson Dam.

There are no Alcoa accommodation facilities within the Darling Range. As described above, the Huntly and Willowdale mining areas are within proximity to established population centers including Pinjarra approximately 30 km to the southwest of Huntly and Waroona approximately 20 km northwest of Willowdale. Onsite facilities include offices, ablutions, crib-rooms and workshops, all of which were observed to be in excellent condition.

No tailings are generated within the boundaries of the mining operations. The management of tailings generated downstream at the refineries is beyond the boundaries of the Darling Range mining operations and are therefore not considered in this TRS. Alcoa's Darling Range mining operations do not produce mine waste or "mullock" in the same manner as conventional mining operations and waste dumps are not constructed.

3.12 Market Studies

Alcoa Corporation is a vertically integrated aluminum company comprising bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation.

Through direct and indirect ownership, during 2023 Alcoa Corporation had 27 locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

There are three commodities in the vertically integrated system: bauxite, alumina, and aluminum, with each having their own market and related price and impacted by their own market fundamentals. Bauxite, which contains various aluminum hydroxide minerals, is the principal raw material used to produce alumina. Bauxite is refined using the Bayer process to produce alumina, a compound of aluminum and oxygen, which in turn is the raw material used by smelters to produce aluminum metal.

Alcoa obtains bauxite from its own resources and processes over 80% of its combined bauxite production into alumina. The remainder is sold to the third-party market. In 2023, total Alcoa production was 41.0 million dmt (dry metric tonne) of bauxite.

China is the largest third-party seaborne bauxite market and accounts for more than 90% of all bauxite traded. Bauxite is sourced primarily from Australia, Guinea, and Indonesia on the third-party market. In the long run, China is expected to continue to be the largest consumer of third-party bauxite with Guinea expected to be the majority supplier. Further, third-party traded bauxite is expected to be in surplus over the next decade, with most new mining projects announced recently being located in Guinea.

Bauxite characteristics and variations in quality heavily impact the selection of refining technology and refinery operating cost. A market bauxite with high impurities could limit the customer volume an existing refinery could use, resulting in a discount applied to the value-in-use price basis.

Besides quality and geography, market fundamentals, including macroeconomic trends – the prices of raw materials, like caustic soda and energy, the prices of Alumina and Aluminum, and the cost of freight – will also play a role in bauxite prices.

In 2016, Darling Range entered into a 5-year third-party sales contract with a major alumina producer in China. Following the expiration of the third-party sales contract at the end of 2021, all bauxite production from Huntly and Willowdale was consumed internally by the Darling Range.

The pricing mechanism of the third-party sales contract was based on a value-in-use methodology (as described in Section 16.1) that was anchored to the customer’s other bauxite sources at the time of execution, with a market adjustment factor linked to the Alumina price.

A price of $19.77/t has been utilized for 2024 with an estimate for economic market-based factors applied throughout the LOM.

3.13 Environmental Studies, Permitting and Plans, Negotiations, or Agreements with Local Individuals or Groups

Alcoa has established practices and processes for enabling conformance to environmental requirements. Sensitive areas are identified and managed ahead of disturbance. Environmental factors are taken into account prior to infill drilling; hence, mining blocks carrying environmental risks do not feature in the Mineral Reserves (for example, areas around granite outcrops and water courses have a buffer applied and are essentially no-go areas from a mining perspective). Mining in some areas became more constrained in 2023 as a result of internal and external factors.

The 2023-2027 MMP was developed by Alcoa and approved in December 2023. The MMP describes the way in which Alcoa mines within Mining Lease ML1SA at Huntly and Willowdale. For example, Alcoa undertakes surveys to inform the mine plan development, facilitate characterization of ore quality and volumes, assess geotechnical conditions, identify constraints and protect or manage important environmental, cultural heritage and social values.

Changes from what was reported in the 2022 TRS under the previous MMP include but are not limited to:

- Reduce mining activities inside higher risk areas within drinking water catchments.
- Alcoa will not undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
- Increase rehabilitation and reduce open areas where possible, with priority in higher risk areas.
- Maximum annual clearing footprint of 800 ha.
- Revise the Rehabilitation Completion Criteria by 31 December 2024, in consultation with DBCA.

These changes have resulted in a presumed temporary decrease in operability and associated decrease in Reserve estimation.

Alcoa is modernizing its environmental approvals framework for the Huntly Bauxite Mine by referring future mining plans beyond the scope of the 2023-2027 MMP for assessment under Part IV of the Western Australian *Environmental Protection Act 1986* (EP) and the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The future mining plans that have currently been referred to both state and federal departments propose to transition the Huntly Mine into the proposed Myara North and Holyoake mine regions within Alcoa's Mining Lease ML1SA.

The resulting Environmental Impact Assessments (EIAs) under State and Federal legislation will inform stakeholders on long-term mine plans and environmental management requirements and facilitate the setting of approval conditions.

Importantly, on 14 December 2023 the State Government announced the *Alcoa Transitional Approvals Framework* which will enable Alcoa to continue mining as defined in the current 2023-2027 MMP while the formal Western Australian Environmental Protection Authority (EPA) EIA is in progress. In most circumstances, activities under assessment must cease during the EPA's process. Note, that the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point.

As reported in the TRS for 2022, numerous baseline studies have been completed to support approvals for future extensions to the mining footprint to the Myara North and Holyoake regions. Baseline studies are guided by the requirements of the EPA and guidelines under the EPBC Act and are well understood.

Construction for Myara North will be commenced pursuant to the requirements of the Ministerial Decision, which will be issued upon completion of the EPA assessment process indicatively forecast for completion in approximately mid-2025, as opposed to the third quarter of 2024 as reported in the TRS for 2022. The timeframe to approval of Myara North and Holyoake under the EP Act and EPBC Act can be estimated, but not predicted with certainty; further delays are possible.

There is no requirement for the monitoring of any tailings or mine waste dumps associated within the mining operations as:

- No tailings are generated within the boundaries of the mining operations.
- Alcoa's Darling Range mining operations do not produce mine waste - waste dumps are not constructed. Overburden from Darling Range ore blocks is carefully segregated for later contouring and rehabilitation of adjacent, completed mining operations. Caprock and other non-viable rock is used to backfill these shallow, completed pits and the viable topsoil spread on top, contoured, and revegetated.

Alcoa's mine sites are monitored in accordance with the conditions of Government authorizations and its operational licenses at Huntly (L6210/1991/10) and Willowdale (L6465/1989/10). Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa's Environmental Management System and reported within the Annual Environmental Review report:

- Review of the most recent report, JTSI Annual Environmental Review 2022 (dated May 2023), largely reported compliance with environmental commitments and success of operational controls to manage environmental objectives.
- The one area with a substantial change in success was related to an increase in number and volume of spills at Huntly. A key contributor to spills at Huntly was the change-out of coolant hoses across the heavy vehicle fleet in January/February 2022. This was found to be the result of faulty new coolant hoses. Alcoa's hose supplier undertook an investigation and identified the cause of the hose failures as an issue in the manufacturing process. All trucks were stood down following the supplier investigation and the faulty hoses changed out. The coolant hose failure events were 34% (almost 3,000L) of Huntly's LOC events between January 2022 and July 2022 and were a significant contributor to the number of spills.

Alcoa has established systems and processes for maintaining its social license to operate and was admitted to ICMM in 2019, aligning to its social performance requirements. Related to the requirements of the MMPLG, Alcoa's actions include an annual 5-year consultation process aligned with the 5 Year Mine Plan. The consultation process involves engaging with affected landowners. Alcoa's consultation extends to shires, as well as state and local government.

Community consultation results (both in-bound [e.g. noise complaints] and out-bound [e.g. Alcoa-initiated engagement with stakeholder groups]) are recorded in the Community Consultation System (CCS). Annual targets for consultation are set based on current and proposed mine plans. CCS allocates and tracks follow-up actions.

Alcoa has formally consulted and engaged survey work from the relevant Traditional Owners (Gnaala Karla Booja) across its operational footprint. Alcoa will prepare a Cultural Heritage Management Plan for ML1SA by 31 December 2024, in consultation with Gnaala Karla Booja.

Alcoa is implementing a Social Performance Management System (SPMS) across its global operations. Alcoa has conducted a gap analysis of existing practices against best-in-class social management systems and defined a program to close these gaps, which are mostly related to developing a more structured approach to social risk management and formalizing Alcoa's social performance actions.

Alcoa's Closure Planning group for Darling Range (located within the Global Planning Team) is responsible for developing the closure planning process as well as the subsequent Long-Term Mine Closure Plans (LTMCPs) of Alcoa's WA Mining Operations (Huntly and Willowdale). Closure Strategies, Schedules and Cost Estimates are being developed across organizational divisions and includes multidisciplinary inputs from Operations, Mid- and Short-term Planning, Finance, Centre for Excellence, Environment and Asset Management (both Fixed and Mobile Plant). The agreed closure requirements for Darling Range centers around the return of Jarrah Forest across the site.

The Alcoa procurement system defines "local" as the localities of Dwellingup, Harvey, Pinjarra, Waroona, Coolup, North Dandalup, Jarrahdale and Yarloop. Within Alcoa's guidelines of safe, ethical, and competitive business practices, they state they will:

- Invite capable local businesses to bid on locally supplied or manufactured goods or services.
- Give preference to local business in a competitive situation.
- Work with local business interest groups to identify and utilize local suppliers.
- Where possible, structure bids to enable local supplier participation.

Alcoa also endeavors to add value to Traditional Owners and the local economy through the use of businesses owned by Traditional Owners, businesses that employ and work with Traditional Owners and locally owned businesses.

L.3.14 Capital and Operating Cost Estimates

Alcoa forecasts its capital and operating costs estimates based on annual budgets and historical capital and operating costs over the long life of the current operation.

L.3.14.1 Capital Costs

The operation is well-established, and the LOM plan does not envisage any significant change to the production rate over the LOM. Anticipated future major capital expenditure is related to major mine moves and sustaining the on-going operations.

Projected capital expenditure over the next nine years of mine life is estimated to total $833 million, although this will include capital outlay required to extend the mine life much beyond the nine-year period covered by the valuation. Of this total, it is understood that $216 million is associated with completing the mine move to the Myara North site. Capital for the Holyoake move is estimated to be $324 million.

A breakdown of the major expenditure areas and total expenditure over the Mine Plan is shown in Table 1-3.

able 1-3: Nine Year LOM Sustaining Capital Costs by Area

Project	Cost $ Million	Percentage of Total
Mine Moves	541	65.0%
Conveyor Belt Replacements	31	3.7%
Haul Road Improvements	112	13.4%
Other Sustaining capital	149	17.9%
Total	**832.8**	**100%**

Other capital costs are for replacement of conveyors, haul road improvements and other sustaining capital needed to continue the operations.

Alcoa's sustaining capital estimates for Darling Range are derived from annual budgets and historical actuals over the long life of the current operation. According to the American Association of Cost Engineers (AACE) International, these estimates would generally be classified as Class 1 or Class 2 with an expected accuracy range of -3% to -10% to +3% to +15%.

l.3.14.2 Operating Costs

The main production mining operations are primarily Owner-operated using Alcoa equipment and employees. Contractors are also used for certain activities on site.

Operating costs for the current LOM of nine years are based on the 2023 budget (i.e. Alcoa's 2023 long-term plan).

No items have been identified that would significantly impact operating costs either positively or negatively over the life of mine. Minor year-to-year variations should be expected based upon maintenance outages and production schedules. It should be noted that the current mine plans and operational cost projections reviewed by the QP do not yet reflect the impact of the Kwinana refinery curtailment (announced 8th January 2024), Alcoa is working to provide mine planning updates and indicate these will be completed during 2024.

Forecast costs for 2024 and average mine operating costs for the nine-year LOM are shown below in Table 1-4.

able 1-4: LOM On-site Mine Operating Costs by Category*

Cost Centre	2024 ($/wmt)	Average LOM ($/wmt)	Percentage of Operating Cost
Direct Labor	$4.38	$5.28	36%
Services	$3.58	$2.86	20%
Other	$1.89	$2.40	16%
Corporate Chargebacks for support services	$0.68	$0.64	4%
Energy	$0.33	$0.37	3%
Fuel	$0.37	$0.68	4%
Operating Supplies and Spare Parts	$0.58	$0.73	5%
Maintenance (fixed plant and mobile fleet)	$1.40	$1.77	12%
Mine Operating Cash Cost ($/wmt)	**$13.22**	**$14.72**	**100%**
Off-site Costs			
G & A, selling and other expenses	$0.26	$0.24	
R & D Corporate Chargebacks	$0.03	$0.03	
Total Cash Operating Costs	**$13.51**	**$14.99**	

**Due to rounding, numbers presented may not add up precisely to the totals provided.*

Services costs include contractor costs for certain mining activities such as in noise sensitive areas and for haul road construction services, in select areas of pit development, and during landscaping activities for rehabilitation after mining.

As of December 2023, the Huntly and Willowdale operations together employ 899 employees consisting of 48 technical, 80 management and 771 operations employees. Additionally, 98 employees are centrally employed on the combined operations.

2.0 Introduction

SLR International Corporation (SLR) was appointed by Alcoa Corporation (Alcoa) to prepare an independent Technical Report Summary (TRS) on the Darling Range bauxite mines, located in Western Australia. The purpose of this report is to support the Mineral Resource and Mineral Reserve estimates for the mines as of December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300), and Item 601(b)(96) of Regulation S-K. This Technical Report Summary updates the TRS titled "Technical Report Summary for Darling Range, Western Australia," with an effective date of December 31, 2022, that was prepared in accordance with S-K 1300 and Item 601(b)(96) by SLR for Alcoa.

Alcoa is one of the world's largest aluminum producers and is a publicly traded company on the New York Stock Exchange (NYSE). The company owns and operates integrated bauxite mining, alumina refining and aluminum smelting operations at numerous assets globally across nine countries. Alcoa is also a Joint Venture partner for several other integrated operations in Brazil, Canada, Guinea, and Saudi Arabia.

The Darling Range, located south of Perth in Western Australia, comprises two active bauxite mining areas – the Huntly and Willowdale mines – owned and operated by Alcoa of Australia Limited, which is 60% owned by Alcoa Corporation and 40% owned by Alumina Limited. The Huntly and Willowdale operations collectively represent one of the world's largest bauxite mines which supplies Alcoa's three aluminum refineries in the region: Kwinana, Pinjarra, and Wagerup. On the basis that both mining areas supply ore to the same local refineries which are also operated by Alcoa, and that both mining areas are located within the same mining lease boundary, SLR considers the mines a single property for the purposes of this report.

Alcoa has a long history of mining in the Darling Range with Huntly and Willowdale commencing commercial production in 1972 and 1984 respectively. These mining areas were preceded by the Jarrahdale bauxite mine which was operational between 1963 and 1998. The Huntly mine currently supplies bauxite to the Pinjarra and Kwinana refineries, while the Willowdale mine supplies the Wagerup refinery. The mines collectively produce approximately 35 Mtpa of bauxite, with approximately 25 Mtpa from Huntly and 10 Mtpa from Willowdale. For the purposes of this report, available alumina ($A.Al_2O_3$) is abbreviated to AL, and reactive silica ($R.SiO_2$) is abbreviated to SI.

2.1 Site Visits

SLR Qualified Persons (QPs) for Geology/Resources and Mining/Reserved visited the sites between 24 October to 27 October, 2023. The SLR Geologist and SLR Mining Engineer were accompanied by various Alcoa personnel to undertake site visits, inspections of various aspects of the Huntly and Willowdale mining areas. Further discussions on reconciliation, geological modeling, long term mine planning, and permitting were undertaken at the Booragoon office. Table 2-1 below provides a summary of the site visit. Alcoa provided permission to document the site visit with video, photos, and audio which were shared with the other SLR team members. Further, an SLR Environmental practitioner attended the Huntly visit to review pertinent items such as the site constraints and other aspects of rehabilitation (as part of the broader Modifying Factor review).

able 2-1: Site Visit Summary

Date	Day	Tasks / Areas of Investigation	Comments
24-Oct	Tues	Willowdale Mine tour	Inspect grade control process and mining operation
		MTP	Medium Term Planning discussion at Pinjarra Hub.
25-Oct	Wed	Mine tour for Huntly Mine Myara	Operations and short term mine planning discussions. Mine site visit to river/ reservoir exclusion zone. Inspect grade control process, mining operations and replacement equipment. Review mulching & rehabilitation areas.
		Hydrology/ Hydrogeological overview. Economics, Financial modelling/Environmental risk mitigation	Finance and Environmental discussions at Pinjarra Hub.
26-Oct	Thu	Reconciliation/LOA model, cut off grades, LTMP	LTMP for Huntly and Willowdale
		Deeplime/Approvals/Regional Environmental issues	Modelling process/MMP and Part IV Approvals
27-Oct	Fri	Reporting approach/Review feedback	Meet with Karthik and Alex Greaves

2.2 Sources of Information

During the preparation of this Technical Report Summary, discussions were held with personnel from Alcoa Corporation and the Huntly and Willowdale Mines, as below:

able 2-2: List of Alcoa staff who had input into discussions with SLR QPs

Name	Position	Department	Area of responsibility
Alex Hatch	Principal Geologist	Global Planning	Geology - Review Coordinator
Vanessa Collins	Mining Engineer	Willowdale	Operational Planning
Rhys Van Asselt	Mining Engineer	Willowdale	Operational Planning
Damian Brown	Mine Planner	Willowdale	Grade Control
Darrin Strange	WA Mining Manager	WA Mining	WA Mines
Jaime Eleuterio	Technical Services Manager	WA Mining	Medium Term Planning
Ryan Jack	Senior Mine Planning Engineer	WA Mining	Medium Term Planning - Willowdale
Stephanie Lewis	Short Term Planning Superintendent	Huntly Mine	Operational planning
Eva van Hooijdonk	Mining Engineer	Huntly Mine	Operational planning
Patricia Bostock	WA Mining Controller	WA Mining	Finance
Deborah May	Assistant Controller WA Mining	WA Mining	Finance

Grant Griffiths	Environmental Superintendent	WA Mining	Environmental Planning and improvement/Catchment risk management
Rishi Kumar	Senior Mining Engineer	Mining CoE	Mining Improvement Projects - Reconciliation
Neylor Aguiar	Principal Mining Engineer	Global Planning	Long Term Mine Planning - Darling Range
Lucas Tuckwell	Senior Resource Geologist	Global Planning	Geology - Resource/Reserve Modelling
Kane Moyle	Director of Regulatory Approvals	Regulatory Approvals	Regulatory Approvals - MMP and transition
Ashley Bird	Approvals Manager	Regulatory Approvals	Regulatory Approvals - Part IV/EPBC
Jennifer Longstaff	Director Environment Australia	Environmental CoE	Environmental
Karthik Sampath	Global Planning Director	Global Planning	Planning
Alex Greaves	Global Mine Planning Manager	Global Planning	Mine Planning
Tom Green	Resource Development Manager	Global Planning	Resource Development

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 24.0.

2.3 List of Abbreviations

Units of measurement used in this report conform to the metric system. All currency in this report is United States dollars (US$), unless otherwise noted.

Abbreviation	Description
$	United States Dollars
°C	degree Celsius
°F	degree Fahrenheit
2D	2-dimensional
3D	3-dimensional
3DBM	3D Block Model
a	Annum
A	Ampere
A.Al_2O_3 or AL	available alumina
AACE	American Association of Cost Engineers
AFFF	Aqueous Film Forming Foams
AGD	Australian Geodetic Datum
Alcoa	Alcoa Corporation
Alcoa US	Aluminum Company of America Ltd
AMG	Australian Map Grid

AMPD	Absolute Mean Percentage Difference
AMSL	above mean sea level
AMWU	Australian Metal Workers Union
AofA	Alcoa of Australia Ltd
API	Alumina Price Index
ARO	Asset Retirement Obligations
AWAC	Alcoa World Alumina and Chemicals
AWU	Australian Workers Union
B&P	Bias and Precision
bbl	barrels
BD	Bomb digest
BD-GC	bomb digest gas chromatography
BD-ICP	bomb digest inductively coupled plasma
BD-NDIR	bomb digest non-dispersive infrared
Bella	Bella Analytical Systems
Btu	British thermal units
BV	Bureau Veritas
C$	Canadian dollars
cal	calorie
CalVal	calibration and validation for FTIR
cfm	cubic feet per minute
CIM	CIM (2014)
cm	centimeter
cm²	square centimeter
CRM	certified reference material
CV	Coefficient of Variation
d	Day
DBCA	Department of Biodiversity, Conservation and Attractions
DCF	Discounted Cash Flow
DEM	Digital Terrain Model
DG	Discrete Gaussian
DGPS	(Differential) Global Positioning System
dia	Diameter
DIBD	dry in situ bulk density (t/m3)
DJTSI	Department of Jobs, Tourism, Science and Innovation
DMIRS	Department of Mines Industry Regulation and Safety
dmt	dry metric tonne
DWER	Department of Water and Environment Regulation

dwt	dead-weight ton
EMS	Environmental Management System
ETU	Electrical Trades Union
EWR	Ecological water requirements
FEL	Front End Loading
FMS	Fleet Management System
FPC	Forest Products Commission
FS	Feasibility Study
ft	foot
ft/s	foot per second
ft²	square foot
ft³	cubic foot
FTIR	fourier transform infrared spectrometry
g	gram
G	giga (billion)
g/L	gram per liter
g/t	gram per tonne
Gal	Imperial gallon
GC	gas chromatography
Geological Survey	Geological Survey of Western Australia
GIS	Geographical Information System
Gpm	Imperial gallons per minute
gr/ft³	grain per cubic foot
gr/m³	grain per cubic meter
GSM	gridded seam model
ha	hectare
HARD	Half Absolute Relative Difference
hp	horsepower
hr	hour
HRSG	Heat Recovery Steam Generator
Hz	Hertz
ICP-OES	inductively coupled plasma optical emission spectrometry
IDW	inverse distance weighting
ID2	inverse distance squared
in.	inch
in²	square inch
IRM	internal reference material
IRR	Internal Rate of Return

ISO	International Standardization Organization
J	Joule
JORC	JORC Code (2012)
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometer
km/h	kilometer per hour
km²	square kilometer
kPa	kilopascal
kV	kilovolt
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
KWI	Kwinana Mining Laboratory
L	liter
L/s	liters per second
lb	pound
LiDAR	Light Detecting and Ranging
LIMS	laboratory information management system
LME	London Metal Exchange
LOM	Life of Mine
LTMCPs	Long-Term Mine Closure Plans
m	micron
m	meter
M	mega (million); molar
m²	square meter
m³	cubic meter
m³/h	cubic meters per hour
Ma	Million years ago
MALSI	microwave available alumina (AL) and reactive silica (SI)
MASL	meters above sea level
MD	microwave digest
MD-ICP	microwave digest inductively coupled plasma optical emission spectrometry
mg	microgram
mi	mile
min	minute
mL	milliliters

ML	Mineral Lease
mm	millimeter
MMPLG	Mining and Management Program Liaison Group
MMPs	Mining and Management Programs
mph	miles per hour
MS	Ministerial Statement or Magnetic Susceptibility
Mtpa	Million tonnes per annum
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
NATA	Australian National Association of Testing Authorities
NI 43-101	National Instrument 43-101 (2014)
NN	Nearest Neighbor
NPC	Net Present Cost
NPV	Net Present Value
NTU	Nephelometric Turbidity Units
NYSE	New York Stock Exchange
OK	ordinary kriging
oz	Troy ounce (31.1035g)
oz/st, opt	ounce per short ton
PFAS	per- and polyfluoroalkyl substances
ppb	part per billion
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
QA	Quality Assurance
QA/QC	Quality Assurance / Quality Control
QC	Quality Control
QP(s)	Qualified Person(s)
R.SiO_2 or SI	reactive silica
RC	Reverse Circulation
REF	reference method
ResTag	mineral resource estimation system
RL	relative elevation
ROM	Run of Mine
RPEE	Reasonable Prospects for Economic Extraction
RTK	real time kinematic
s	second

SEC	Securities and Exchange Commission
S-K 1300	Subpart 1300 of Regulation S-K
SLR	SLR International Corporation
SMU	Single Mining Unit
Snowden	Snowden Mining Consultants
SOBR	stripping topsoil and secondary overburden removal
SPU	sample presentation unit
SRK	SRK Consulting (Australasia) Pty Ltd
st	short ton
STE	sample to extinction
stpa	short ton per year
stpd	short ton per day
SWIS	South West Interconnected System
t	metric tonne
$T.Al_2O_3$	Total Alumina
$T.SiO_2$	Total silica
TICTOC	Total Inorganic Carbon and Extractable Organic Carbon
tpa	metric tonne per year
tpd	metric tonne per day
TRS	Technical Report Summary
US$	United States dollar
Usg	United States gallon
Usgpm	United States gallon per minute
V	volt
W	watt
WA	Western Australia
WANL	Western Aluminum NL
WMC	Western Mining Corporation Ltd
wmt	wet metric tonne
wt%	weight percent
XRD	x-ray diffraction
XRF	x-ray fluorescence
Xstract	Xstract Resources
yd^3	cubic yard
yr	Year

3.0 Property Description

3.1 Location

The Darling Range is located in the southwest of Western Australia and comprises an extensive uplifted plateau of bauxite deposits which is host to several mining operations including the Huntly and Willowdale mining areas, approximately 80 km and 100 km southeast of Perth, respectively. The nearest towns to the mining centers are North Dandalup (approximately 15 km west of Huntly) and Waroona (approximately 20 km northwest of Willowdale). Both towns are within the Peel Region of southwest Western Australia and are on the route of the South Western Highway, a major national road connecting Perth with the south coast.

All spatial data used for Mineral Resource estimation are reported using a local grid based on Australian Map Grid 1984 (AMG84) system (Zone 50) and using Australian Geodetic Datum 1984 (AGD84) coordinate set. The approximate coordinates of the mining areas are 410000 m East and 6390000 m North (Huntly) and 410000 m East and 6365000 m North (Willowdale). The Huntly and Willowdale mining areas are separated by approximately 35 km (Figure 3-1).

The Pinjarra refinery is located adjacent to the east of the town of Pinjarra and is approximately 25 km southwest of the Huntly mining areas. The Kwinana refinery, also supplied by Huntly, is approximately 50 km northwest of Huntly in the city of Kwinana, a suburb approximately 40 km south of Perth. The Wagerup refinery, supplied by Willowdale, is located immediately adjacent to the east of the South Western Highway, approximately 8 km south of Waroona and 20 km west of the Willowdale mining area.

3.2 Land Tenure

The Huntly and Willowdale bauxite mines are covered by a single mineral concession referred to as Mineral Lease (ML) 1SA. The concession was originally granted on September 25, 1961, by the State Government of Western Australia under the Alumina Refinery Agreement Act, 1961, permitting the exploration and extraction of bauxite. ML1SA was granted for a period of four, 21-year periods the fourth period of which is due to expire on September 24, 2045. The State Government concession agreement includes the potential for conditional renewal beyond 2045. This will require negotiation between Alcoa and the State Government prior to this date to agree on an extension of the agreement and is therefore not guaranteed.

Conditions which must be fulfilled by Alcoa to retain ML1SA include annual reporting requirements under several State Agreement Acts, Ministerial Statements, and Environmental Protection Acts. These are described in Section 3.6 below.

The current concession of ML1SA covers an area of 7,022.61 km², extending from the north of Perth on the eastern side to the town of Collie in the south (Table 3-1). Alcoa has the exclusive right to explore for and mine bauxite on all Crown Land within the ML1SA; however, a number of environmental and statutory constraints exist within the area, and Alcoa is not permitted to access bauxite from the areas covered under these constraints. For example, the 2023-2027 MMP requires:

- A reduction in mining activities inside higher risk areas within drinking water catchments.
- Alcoa cannot undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
- An increase in rehabilitation and reduction in open areas.

 A maximum annual clearing footprint of 800 ha.

The ML1SA area includes sub-lease arrangements made between Alcoa and the Worsley Alumina joint venture participants which include South32, Japan Alumina Associates (Australia) Pty Ltd and Sojitz Alumina Pty Ltd (Worsley Participants). The agreements, made in August 2001 and September 2016, provide bauxite mining concessions to the Worsley Participants. No Mineral Resources or Mineral Reserves attributable to the Darling Range mining areas have been declared within these sub-lease areas.

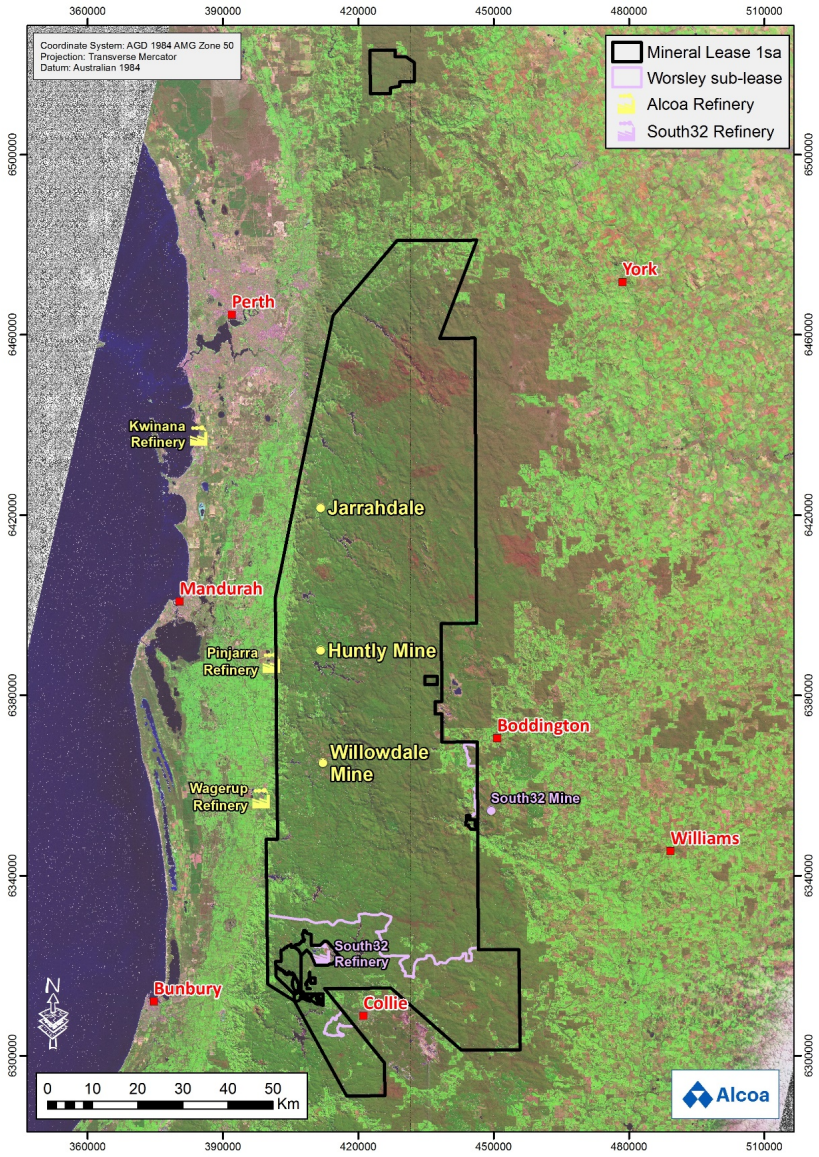
able 3-1: ML1SA License Details

Concession Name	Title Holder	Expiry Date	Area (km²)
ML1SA	Alcoa of Australia	24/09/2045	7,022.61

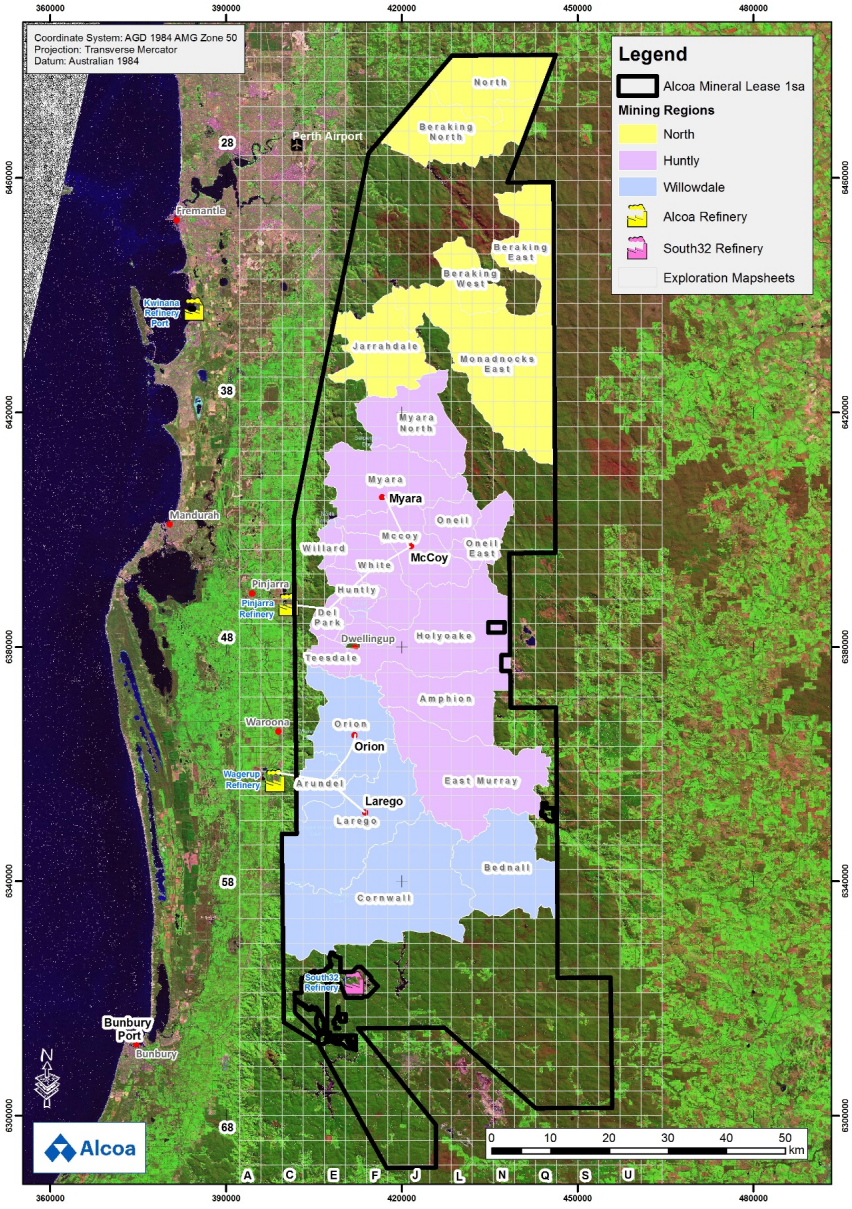
Alcoa pays rental for each square mile of ML1SA in accordance with the Alumina Refinery Agreement Act 1961 (WA). In 2023, this amounted to A$13,560.

The boundary of the ML1SA concession area, including the limit of the Worsley Participants' area, is illustrated in Figure 3-1. The contained Mining Regions are shown in Figure 3-4, while the extents of the mined areas and Mineral Resources and Mineral Reserves are shown in Figure 3-3.

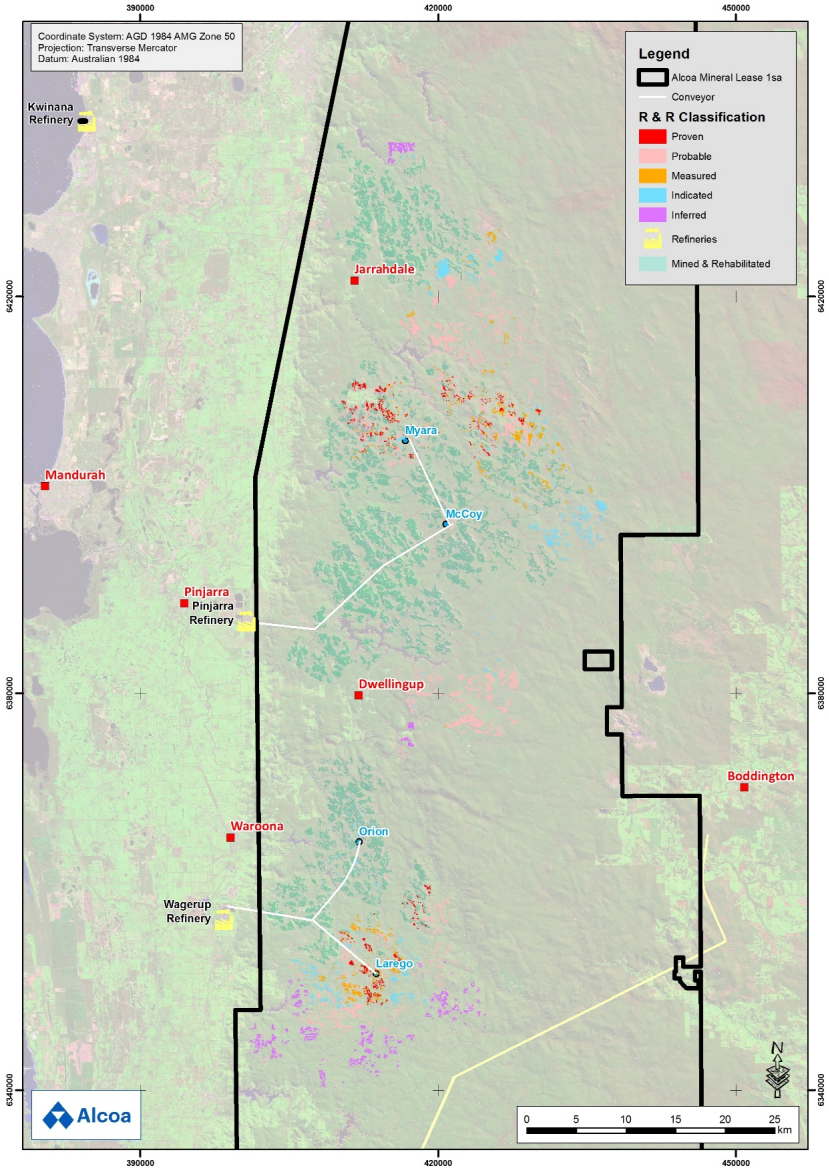
igure 3-1: ML1SA Lease Extents (Alcoa, 2023)



igure 3-2: Map of Mining Reporting Centers, Mining Regions, and Production Sheets (Alcoa, 2023)



igure 3-3: Map of Current Mineral Resource and Mineral Reserve Extents (Alcoa, 2023)



3.3 Naming Conventions

Alcoa has developed a terminology to refer to various parts of the Mineral Lease. There are three major Mining Reporting Centers in ML1SA: North (previously Jarrahdale), Huntly in the central area, and Willowdale in the south. The boundaries are nominal and may change to

match the planned ore destination. The southernmost region of the North mining center was reallocated to Huntly in 2017 and named Myara North.

Mining Regions are subdivisions of the Reporting Centers that cover several years of mining activities, focused on a specific crusher location. The boundaries are named after forestry blocks. A total of 11 Mining Regions are represented in the current resource estimate: one in North, seven in Huntly, and three in Willowdale.

Mining Pits are named based on their sequence along haul roads. These names are used by the mining fleet when referring to local short-term production. The map reference system outlined below is used for drilling, estimation, and long-term planning.

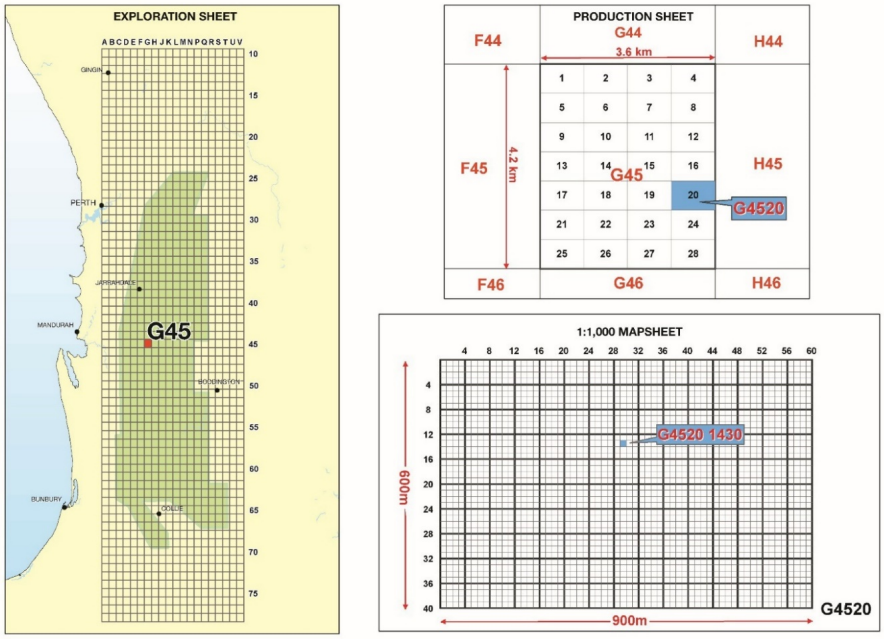
The Mineral Lease is divided into a grid of Exploration Sheets being rectangles 4.2 km (north) by 3.6 km (east). Each 15.12 km² Exploration Sheet is assigned a name and coded using letters A to V (west to east), and numbers 10 to 80 (north to south), e.g., G45.

Each Exploration Sheet is divided into 28 Production Sheets 900 m (east) by 600 m (north), an area of 0.54 km². The Production Sheets are assigned a number (1 to 28), sequentially 4 across (towards the east) and 7 down (towards the south), e.g., G4520.

Each Production Sheet is divided using a 15 m by 15 m grid resulting in 2,400 grid cells (40 north by 60 east). Each of these is regarded as a point and assigned a numeric code 1 to 40 towards the south and 1 to 60 towards the east. These are appended to the Production Sheet name to provide a grid point label, e.g., G4520 1430 and used on 1:1000 Map Sheets to define drill hole locations.

The Exploration Sheet, Production Sheet, and Map Sheet conventions are shown in Figure 3-4:

igure 3-4: Exploration Sheet, Production Sheet, and Map Sheet Conventions (SRK, 2021)



3.4 Encumbrances

Baseline constraints on mining activities within the ML1SA concession are in place which prevent bauxite mining in these areas including:

- Within 200 m of the top water level margin of any water reservoir
- Within Serpentine Pipehead Dam Catchment
- Within 10 m of a Black Cockatoo nesting tree or a Black Cockatoo significant tree
- National Parks
- Aboriginal Heritage Sites
- Old Growth Forest
- Formal Conservation Areas
- Within a 50 m buffer of Granite Outcrop (greater than 1 ha)
- The agreed Mining Avoidance Zones (MAZ) around the towns of Dwellingup and Jarrahdale.

Mineral Resources and Mineral Reserves have not been defined in these restricted areas. Operating rights are obtained by Alcoa through annual submission and approval of the Mining and Management Programs (MMPs) which include mining schedules and the authorizations provided by the Mining and Management Program Liaison Group (MMPLG).

Mining on a day-only basis is conducted in “noise zones” where noise from the mining operations will potentially exceed allowable levels. The operation actively seeks to maintain lower noise levels than those mandated, thus mining in these areas is undertaken by contract miners on day shifts only.

3.5 Royalties

Alcoa is the holder of ML1SA. For bauxite that is mined and processed in Alcoa’s Western Australian alumina refineries, Alcoa pays royalties on the alumina produced in accordance with the Alumina Refinery Agreement Act 1961 (WA).

3.6 Required Permits and Status

Alcoa operates under several State Agreement Acts as well as Ministerial Statements and environmental operating licenses issued under the Environmental Protection Act 1986 (WA) (EP) including:

- Alumina Refinery Agreement Act 1961 (WA);
- Alumina Refinery (Pinjarra) Agreement Act 1969 (WA);
- Alumina Refinery (Wagerup) Agreement Act and Acts Amendment Act 1978 (WA), which provided for the creation of the MMPLG;
- Alumina Refinery Agreements (Alcoa) Amendment Act 1987 (WA);
- Ministerial Statement 728 (as amended by Ministerial Statements 897, 1069 and 1157) (MS728);
- Ministerial Statement 646;
- Environmental Protection (Alcoa – Huntly and Willowdale Mine Sites) Exemption Order 2004 (Exemption Order); and

 Environmental licenses L6210/1991/10 and L6465/1989/10 granted under Part V of the Environmental Protection Act 1986 (WA).

The MMPLG was first established in 1978 and is chaired by the Department of Jobs, Tourism, Science and Innovation (JTSI). Along with JTSI it is comprised of the following State Government agencies:

 Department of Biodiversity, Conservation and Attractions (DBCA)

 Department of Energy Mines, Industry Regulation and Safety (DEMIRS)

 Department of Planning, Lands and Heritage (DPLH)

 Department of Water and Environmental Regulation (DWER)

 Water Corporation (WC).

The MMPLG is recognized by the Minster for Environment in Ministerial Statements (95, 390, 564, 728, 897 and 1069) regarding expansion of Alcoa operations. The management and oversight of all Darling Range operations by the MMPLG involves:

 Provide oversight to mining, infrastructure, processing and related operations within ML1SA;

 Advise on the environmental and social adherence of the 5-year MMPs developed by Alcoa on a recurring annual basis;

 Provide six-monthly authorizations for ground clearance for mining in accordance with the submitted and approved MMPs; and

 Provide oversight to ongoing rehabilitation of mined areas.

The permitting and approval processes, as provided by Alcoa, are summarized below:

 Clause 9 (1) of the 1961 State Agreement provides Alcoa the sole rights to explore and mine the bauxite deposits within ML1SA.

 Clause 5 of the Wagerup State Agreement specifies that Alcoa must consult with the DBCA in relation to the requirement to submit annual mine plans for mining associated with the Wagerup refinery.

 Under Clause 6 (1) of the Wagerup State Agreement, Alcoa has submitted several environmental review documents to the State Government for subsequent approvals of the Wagerup refinery construction and expansions. Within these environmental assessment documents, significant information on Alcoa's bauxite mining operations associated with the Wagerup refinery was included, resulting in several conditions in relation to Alcoa's bauxite mining operations associated with the Wagerup refinery being incorporated in the Ministerial Statements of which the current one is Ministerial Statement 728 (as amended). Procedure 3 of MS728 outlines Alcoa's requirements to have a publicly available Completion Criteria document for its bauxite mining operations, developed in consultation with the MMPLG. Procedure 4 of MS728 outlines the MMPLG's authority to review and approve Alcoa's mining operations through the five-year Mine Plan process. To the extent the conditions on bauxite mining operations in Ministerial Statement 728 and the predecessor Ministerial Statements did not cover bauxite mining unrelated to the Wagerup refinery, Alcoa agreed to extend the conditions to the rest of its bauxite mining.

 Through the Wagerup State Agreement, MS728, and agreement between the State Government and Alcoa, the MMPLG is responsible for reviewing and providing a recommendation to the Minister for State Development to approve Alcoa's five-year Mine Plans in concurrence with the Minister for the Environment and the Minister for Water.

- Alcoa's mining operations within ML1SA are also conducted in accordance with the Environmental Protection (Alcoa – Huntly and Willowdale Mine Sites) Exemption Order 2004 (Exemption Order) made by the Minister for the Environment. The Exemption Order is consistent with the Wagerup State Agreement that established the MMPLG and MMP processes and it also reflects the procedures of MS728 that sets out the MMPLG's responsibility to review annual rolling 5-year mine plans for Alcoa's operations.

Alcoa reports that all licenses and permissions for the current mining operations are valid. However, on 28 February 2023, the Western Australian Forest Alliance Inc (WAFA) made two third-party referrals to the EPA under s. 38 of the EP Act. The referrals referenced Alcoa's Mining and Management Programs (MMPs) and its bauxite mining operations on the Darling Range in the southwest of WA for the years 2022 to 2026 and 2023 to 2027. Following receipt of the referrals, the EPA sought further advice from Alcoa including detail on the scope of its planned/completed activities between 2022 to 2026 and 2023 to 2027. On 7 August 2023, EPA conducted a 7-day public comment on whether or not it should assess the proposals and, if so, what level of assessment is considered appropriate.

Section 38B of the EP Act provides that a proposal cannot be referred to the EPA more than once. In considering these referrals, the EPA undertook detailed investigations and enquiries to identify whether the proposals have been previously referred to the EPA.

Importantly, on 14 December 2023, the State Government announced the *Alcoa Transitional Approvals Framework* which will enable Alcoa to continue mining as defined in the current 2023-2027 MMP while the formal EPA EIA is in progress. In most circumstances, activities under assessment must cease during the EPA's process, however, the State Government granted Alcoa an exemption under section 6 of the EP Act to continue operating subject to a series of conditions. Note, that the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point.

On 18 December 2023, the EPA published its public advice in relation to the third-party referrals. The EPA concluded that five mine areas at Huntly (Myara North, Holyoake, White Road and portions of McCoy and Myara), and two at Willowdale (Mt William/Arundel/part Larego and Willowdale North/part Orion) have been previously referred. The remaining mine areas, the subject of the referrals, were found to be validly referred and that the likely environmental effects are significant warranting formal assessment at the level of public environmental review (10 weeks). In the next stage of the assessment, the EPA will publish a scoping document which will set out the assessment requirements for Alcoa to complete.

In addition, as reported for 2022, Alcoa is seeking formal environmental impact assessment and approval from the State and Federal Government to transition mining from the current Huntly mine area to Myara North and Holyoake, and to increase production at the Pinjarra refinery by 5%. The proposed transition in mining area and production increase has been determined by the EPA to be a significant amendment to an approved proposal, the Pinjarra Refinery Efficiency Upgrade (PREU), approved in 2004 via Ministerial Statement 646 (MS 646) and needs to be considered in accordance with section 40AA of the EP Act.

3.7 Other Significant Factors and Risks

SLR is not aware of any environmental liabilities on the property. Alcoa has all the required permits to conduct the proposed work on the property. SLR is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

4.0 Accessibility, Climate, Local Resources, Infrastructure and Physiography

4.1 Accessibility

As described in previous sections, the Darling Range Huntly and Willowdale operations are located approximately 150 km south of Perth. The Darling Range is readily accessible via road from Perth and surrounding areas. The mines are near the towns of Pinjarra and Waroona. Both towns are easily accessible via the national South Western Highway, a sealed single carriageway road, which starts on the southern side of Perth and continues for almost 400 km to the southwest corner of Western Australia.

Huntly is accessible from the South Western Highway via Del Park Road, a sealed single carriageway road which connects the town of North Dandalup in the north with Dwellingup in the south. From Del Park Road, a 3km sealed road following the route of the bauxite conveyor to the Pinjarra refinery provides access to the Huntly site administration offices.

Willowdale is similarly accessible 19 km from the South Western Highway via Willowdale Road, a sealed single carriageway road to the south of Waroona.

There are several airstrips in the region, although the closest major airport is in Perth, approximately 70 km north of North Dandalup. The nearest commercial port is at the Kwinana refinery, approximately 40 km south of Perth (as illustrated on Figure 15-1).

While an extensive haul road network and overland conveyors transport crushed bauxite from the main mining hub to the Wagerup and Pinjarra refineries, bauxite is also transferred to the Kwinana refinery via the Kwinana freight railway system, using the Kwinana–Mundijong line.

4.2 Climate

The southwest region of Western Australia exhibits a temperate climate, with very hot and dry summers (December to February) and mild winters (June to August). Rainfall is generally low and variable, ranging from an average rainfall of 25 mm during the three summer months and exceeding 200 mm during the three winter months (Australian Government, Bureau of Meteorology). Local climate conditions generally do not interrupt the mining schedule, which continues throughout the year. Occasionally however, significant rainfall inhibits access and can impact mining activities.

able 4-1: Historical Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
°C Mean Max	29.8	29.7	27.1	22.5	18.6	16.1	15.1	15.8	17.4	20.2	23.9	27.5
°C Mean Min	14.3	14.6	13.1	10.4	7.7	6.5	5.5	5.5	6.5	8.1	10.5	12.7
mm Mean Rainfall	16.1	21.6	26.9	66.2	154.8	232.3	234.7	192.9	129.3	78.1	45.6	20.4

Notes:

1. Temperature and rainfall data sourced from the Australian Government Bureau of Meteorology, collected from the weather station at Dwellingup http://www.bom.gov.au/climate/averages/tables/cw_009538.shtml

2. Data includes that collected from 1935 to 2023.

4.3 Local Resources

The Darling Range is located in an easily accessible region of southwest Western Australia with the Huntly and Willowdale mining areas both within 15 km of well-established towns which act as residential and commercial centers. Several other towns and smaller

settlements are positioned along the South Western Highway which acts as a major connection for the Darling Range to the city of Perth where a far greater range of general services is available.

1.4 Infrastructure

The following section refers to several named mining areas within the Huntly and Willowdale mining centers, including Myara, Larego, Orion, and Arundel, each of which is illustrated in Figure 3-2 above.

Mining infrastructure in the Darling Range is generally concentrated in the Myara site in the northwest of the Huntly mining center, and at the Larego area in the center of the Willowdale mining area (20 km southeast of Wagerup) having been relocated 16 km southwards from the Orion Hub during 2021). Both operations include various ancillary facilities that are not listed exhaustively here, however both infrastructure areas include:

- Ore crushing and handling facilities;
- Ore stockpile stacker/reclaimer;
- Maintenance facilities;
- Sampling stations;
- Site offices including a production tracking room;
- Haul road networks;
- Overland conveyors, as illustrated on Figure 15-1; and
- Water supplies consisting of abstraction from licensed surface water sources supplemented with treated wastewater from vehicle washdowns, stormwater runoff, and maintenance workshops. Water sources are illustrated on Figure 15-1.
    - The Huntly mine draws water from Banksiadale Dam and Boronia Waterhole. The mine also holds a license to draw water from Pig Swamp and Marrinup, although these are reported as being rarely utilized, and it is permitted to draw water from South Dandalup Dam under an agreement with the Water Corporation.
    - Willowdale Mine draws water from Samson Dam, approximately 10 km southeast of Waroona.

Personnel are sourced from the area around Perth, Western Australia, which benefits from a skilled workforce due to the relatively large number of operating mines in the region. Personnel typically have private accommodation in the nearby city of Mandurah (60 km from the mine) and towns (Waroona, Hamel, Yarloop, Harvey, and Wagerup).

Huntly Mine has three power supplies fed from the Pinjarra refinery. A single 33 kilovolt (KV) supply and two 13.8 kV supplies. The Pinjarra refinery is a net importer of power from the South West Interconnected System (SWIS), with internal generation capacity of 100 Megawatt (MW) from 4 steam driven turbine alternators. The steam is produced by gas fired boilers and a non-Alcoa gas turbine Heat Recovery Steam Generator (HRSG).

Willowdale Mine has a single 22 kV power supply fed from the Wagerup refinery. The Wagerup refinery is a net exporter of power to the SWIS, with internal generation capacity of 108 MW from three steam driven turbine alternators and one gas turbine. The steam is produced by gas fired boilers.

4.5 Physiography

The western edge of the Darling Range is characterized by scarps and incised valleys, landforms which are attributed to tectonic activity along the Darling Fault, the dominant structural feature in the region which acts as the western boundary of the deposits. This feature is observable in regional topographical survey information and satellite imagery to roughly follow the coastline of southwest Western Australia and is approximately demarcated by the extent of Jarrah Forest, a recognized bioregion.

The topography of the ML1SA concession generally comprises wide valleys and undulating hills separated by minor surface water drainage channels and streams. Vegetation across the ML1SA is dominated by several areas of State Forest including Dwellingup, Lane Poole, and Youraling. These include distinct areas of old growth forest within which mining is prohibited.

The typical elevation ranges from 300 m to 400 m in the mining areas, however the highest points of the region (outside of the mining areas) are approximately 550 m.

Topography data was acquired from:

- Drill hole collar survey data;
- Light Detecting and Ranging (LiDAR) surveys; and
- Landgate satellite data.

5.0 History

5.1 Prior Ownership

Prior to 1961, there were no records of ownership of the Darling Range mines. A Special Mineral Lease (ML1SA) was granted to Western Aluminum NL (WANL) in 1961. In the same year WANL joined Aluminum Company of America Ltd (Alcoa US). In 1977 WANL became Alcoa.

5.2 Exploration and Development History

The following text is sourced and modified from Hickman, *et al.*, 1992.

Bauxite occurrences were first recorded in the Darling Range in 1902. Bauxite was detected as a result of analyzing laterite from Wongan Hills, and subsequently through examination of lateritic road gravels from several localities in the Darling Range. The Geological Survey of Western Australia (Geological Survey) produced studies and publications, driving the bauxite exploration, though most attention was focused on localities in the Darling Range close either to Perth or to railway lines servicing towns such as Toodyay and York. The Geological Survey mapped the extent of laterite in the Darling Range (close to Perth) to determine whether it contained commercial deposits of iron or aluminum ore.

The earliest non-government exploration for bauxite was carried out in 1918 by the Electrolytic Zinc Co. of Australia Pty Ltd, deeming the deposits to be generally low grade and not of commercial value, though like earlier explorers, did not focus upon the underlying friable units.

Of 46 early samples of laterite analyzed in 1919, 26 contained 35% or more available alumina. It was then assumed that bauxite in the Darling Range was confined to the duricrust part of the profile, and not considered in the underlying friable units. By 1938 bauxite deposits were known to be common throughout the Darling Range over an area of 560 km long by 40 km to 80 km wide.

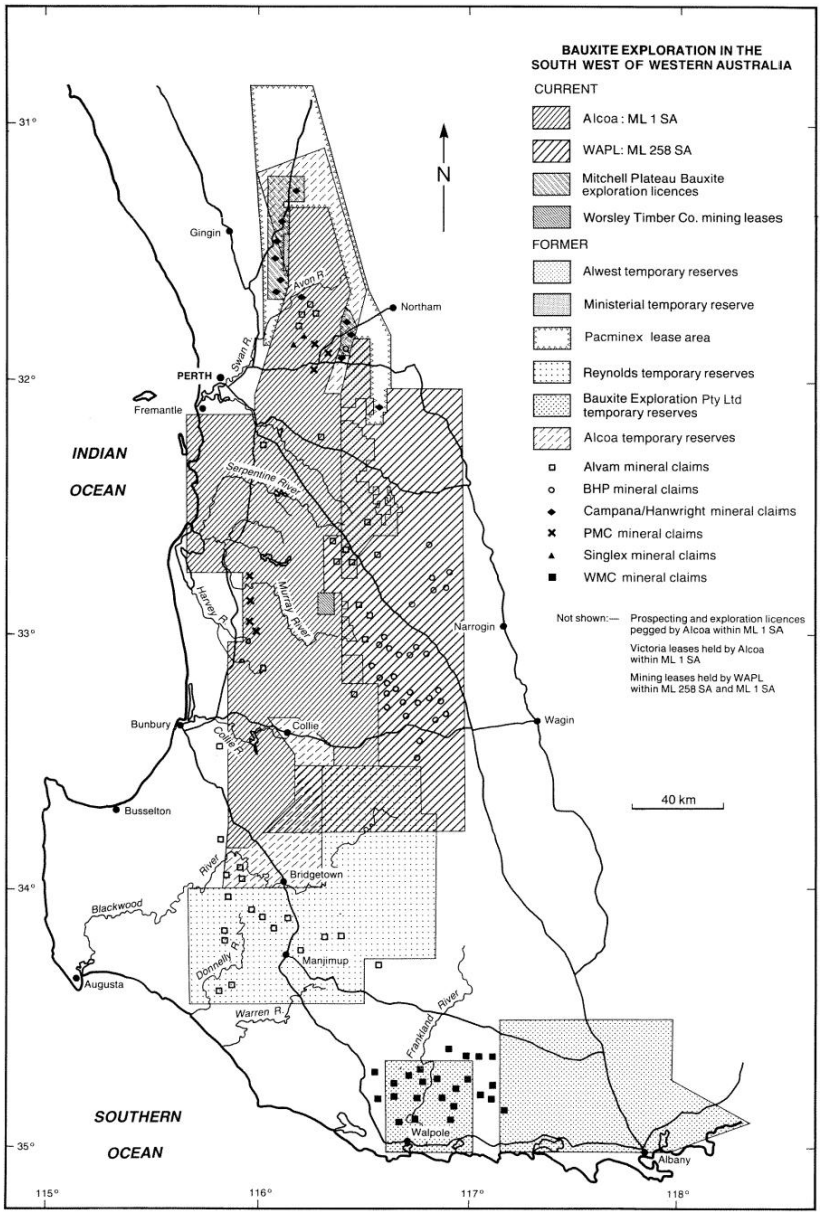
The Geological Survey maintained an interest in Darling Range laterite as an economic source of aluminum until the 1950s. However, by the late 1950s exploration had been taken over by mining companies.

No further private exploration took place until 1957 when Western Mining Corporation Ltd (WMC) began to explore for bauxite in the Darling Range. Following a regional reconnaissance, a joint venture company, WANL, formed by WMC with North Broken Hill Ltd and Broken Hill South Ltd, explored temporary reserves over a large portion of the southwest. Profiles were sampled from road cuttings, with samples collected at 400 m intervals along main roads. Selected lateritic ridges and plateaus were sampled at 90 m intervals. These areas were part of a Special Mineral Lease (ML1SA) granted to WANL in 1961.

By 1961, WANL had delineated 37 Mt of bauxite at an average grade of 33% AL. Also in 1961, WANL joined with the Alcoa US, allowing additional systematic exploration of lease ML1SA (Figure 5-1). Holes were drilled initially on 370 m by 185 m centers. Progressive in-fill drilling down to a spacing of 45 m by 45 m blocked out the ore at Jarrahdale and was followed by grade-control drilling. Commercial mining was finally started in 1963 at the former Jarrahdale mining center and continued until 1998, supplying bauxite to the Kwinana refinery.

In 1977 WANL became Alcoa. As of December 2023, the Huntly and Willowdale mining operations remain active. Huntly supplies bauxite to the Kwinana and Pinjarra refineries (approximately 25 million tonnes per annum, Mtpa) while Willowdale supplies the Wagerup refinery (approximately 10 Mtpa).

igure 5-1: Bauxite Exploration in the Southwest of Western Australia 1961 (adapted from Hickman, 1992)



6.0 Geological Setting, Mineralization, and Deposit

6.1 Bauxite Deposits

Bauxite deposits, economic concentrations of aluminum oxide, represent the world's major source of aluminum and consist primarily of the minerals gibbsite, boehmite, and diaspore. These are commonly found alongside iron oxide minerals including goethite and hematite, kaolinite clay minerals, and minor accessory minerals.

Lateritic bauxite deposits such as those in the Darling Range of WA generally formed in tropical (hot and humid) environments through chemical weathering. As a result, lateritic bauxite deposits are known to exist across Central and South America, West Africa, Central Asia, and Australia.

With its large available resources, access to a stable workforce, infrastructure (comprising conveyors, rail, road, and port access), and three captive (mine-to-mill) dedicated alumina refineries, Alcoa's Darling Range Bauxite operations near Perth WA, has been one of the world's leading alumina producing regions for at least 30 years (Hickman *et al*, 1992), or approximately 60 years as of 2023.

6.2 Regional Geology

The bauxite deposits of the Huntly and Willowdale operations are located in the Darling Range region of southwest Western Australia. The predominant topographic feature of the region is the Darling Range Fault, a north-south trending scarp which extends approximately 220 km from Bindoon (70 km north-northeast of Perth) to Collie (160 km south-southeast of Perth).

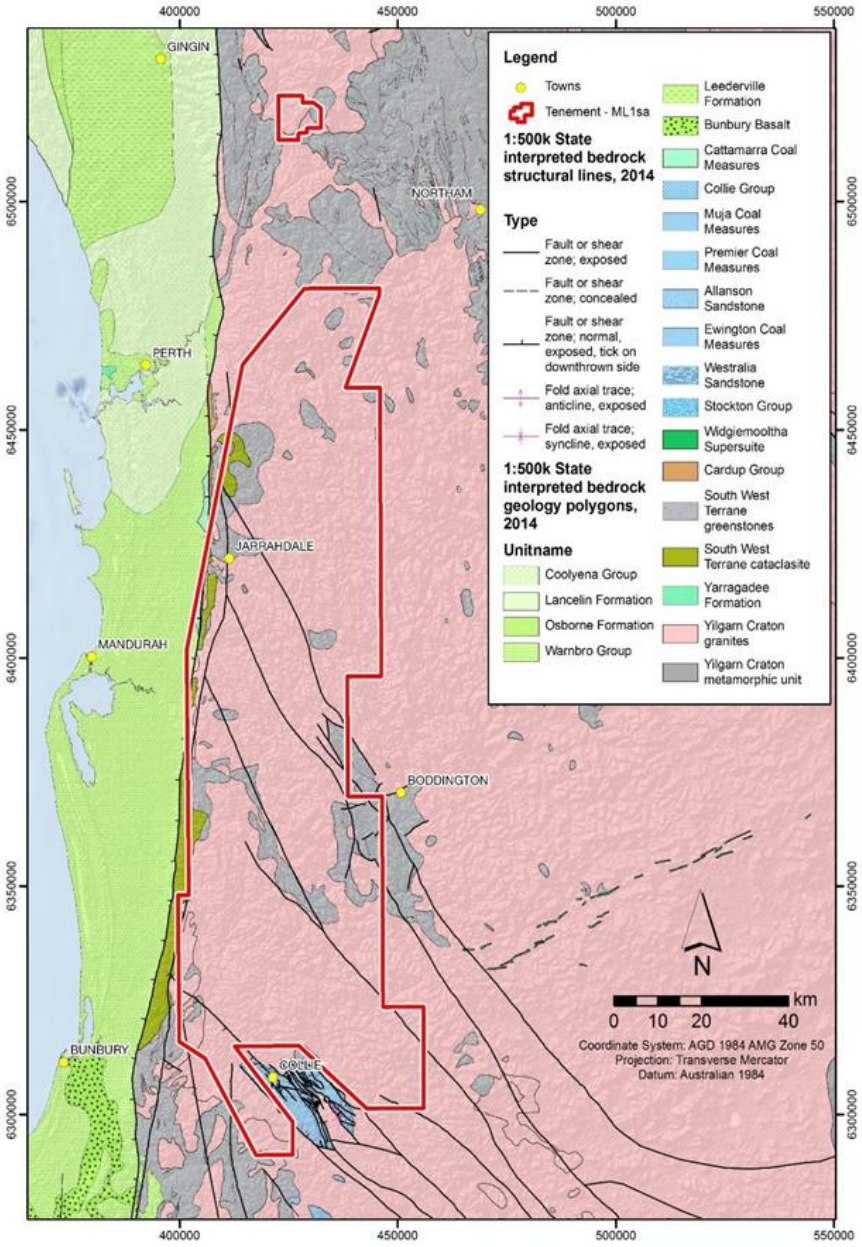
The Darling Range Fault is the structural boundary between two geological terranes: the Pinjarra Orogen to the west, now the sedimentary Swan Coastal Plain, and the Yilgarn Craton to the east, a gneissic granite complex with greenstones. To the east of the Darling Range Fault intense weathering and erosion of exposed Archean basement rocks of the Western Gneiss Terrane, the western portion of the Yilgarn Craton, formed widespread lateritic bauxite deposits by the intense weathering, accumulation and leaching of the aluminosilicate rich material of the bedrock granites (Hickman *et al*, 1992).

Alcoa's current bauxite mining areas of Huntly and Willowdale are on the eastern side of the Darling Range Fault, as low-lying plateaus separated by valleys in which alluvial deposits have accumulated. Figure 6-1 shows the regional geology of the southwest region of Western Australia and Alcoa's ML1SA lease boundary in relation to Perth, while Figure 6-2 shows the distribution of surficial deposits across the region.

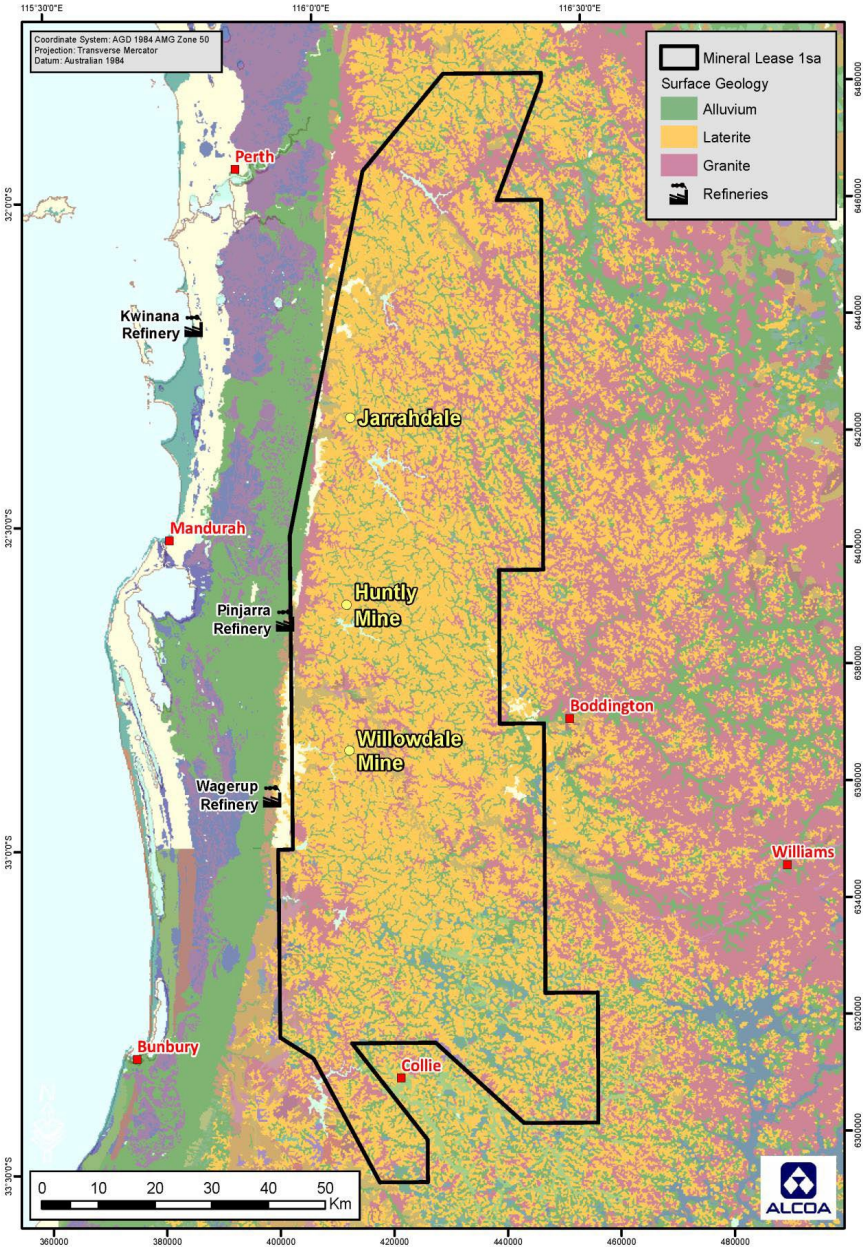
The Jarrahdale, Del Park, Huntly and Willowdale areas that have been mined by Alcoa are on laterite within the Western Gneiss Terrane (Figure 6-2), formed over granites that have been intruded by numerous north trending tholeiitic, quartz dolerite dykes, of early to late Proterozoic age, with thicknesses ranging from 1 m to 200 m.

Lateritic bauxite developed from the Late Cretaceous (65 million years ago, Ma) to the Eocene (40 Ma), with several periods of erosion and intense weathering of the basement granites and dolerites. Subsequent reactivation of the Darling Fault combined with periods of erosion led to the establishment of plateaus and incised valleys, trending to wider valleys and low hills to the east which now characterize the physiography of the region.

igure 6-1: Regional Geology (adapted from SRK, 2021)



igure 6-2: Surface Geology Showing Laterite Over Granite (Alcoa, 2015)



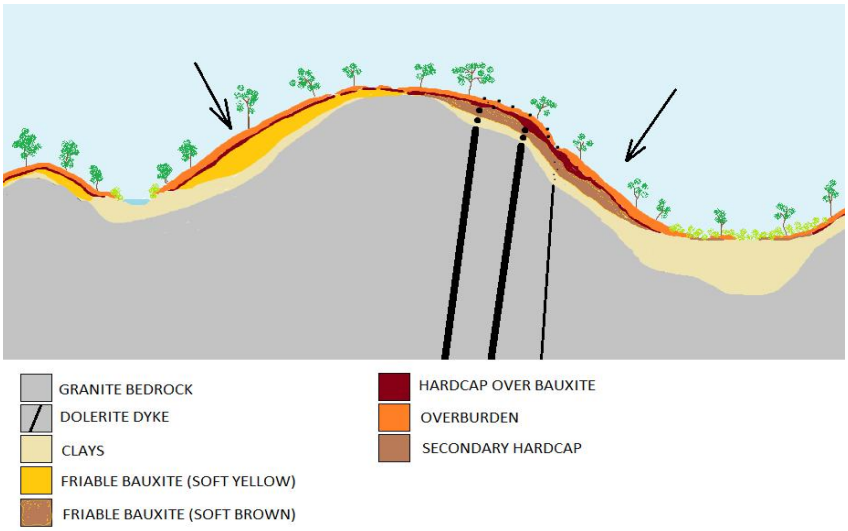
6.3 Local Geology

Laterite remnants are thickest and most extensive over a 150 km long region between the Avon and Harris Rivers, and within about 50 km of the Darling Scarp. The laterite occupies

gently sloping (3° to horizontal) upland areas with an average elevation of 280 to 300 meters above sea level (MASL), and high annual rainfall. Steeper slopes may have a thin cover of partly transported laterite with bedrock near the surface. Above 340 m the laterite is penetrated by bedrock which rises above the general topographic level. Below 200 m drainage has removed pre-existing laterite. Blocks of laterite, released by headward erosion of streams, decay to lateritic gravels on the lower slopes of valleys, which pass laterally into alluvial sands and silt in the valley floors (Hickman *et al*, 1992).

Bauxite deposits typically occur as irregularly shaped lenses on the flanks of plateaus. Critical to this is the laterite position on the slopes (Figure 6-3): erosion generally dominates on steeper slopes which prevent accumulation and effective bauxite formation, whereas flat areas lack the necessary sub-surface water flows which drive the removal of clays and the enrichment of soluble silicate minerals.

igure 6-3: Bauxite Deposit Formation Schematic – Relief Exaggerated (Alcoa, 2021)



6.4 Mineralization

Weathering, alteration and leaching of the granite bedrock has developed the bauxite mineralization which principally occurs as 65% microcrystalline gibbsite $Al(OH)_3$ with minor to rare boehmite $AlO(OH)$, and accessory minerals of 18% goethite $FeO(OH)$, 7% hematite Fe_2O_3, 9% quartz SiO_2, 1% kaolinite/halloysite $Al_2Si_2O_5(OH)_4$, and 0.5% anatase/rutile TiO_2.

Other minerals within the bauxite that may influence the alumina refinery performance include:

- Boehmite: generally occurring below 1%, this can cause premature precipitation of dissolved gibbsite resulting in alumina being lost to the red mud residues.
- Organic Carbon: as oxalate, typically less than 0.2%, (2.0 kg/t, measured as $Na_2C_2O_4$) this can result in reduced digestion efficiencies and cause crystal growth issues during precipitation.

 Sulphate: generally occurring at 0.25%, this can consume caustic soda during digestion resulting in lower yields.

6.5 Property Geology

Table 6-1 provides a summary of the typical stratigraphy defined by Alcoa across their Darling Range deposits. The Hardcap and Friable Zones represent the primary horizons of economic interest due to their concentrations of alumina. A generalized mineralogical profile through these horizons is provided in Figure 6-4 and a typical grade profile in Figure 6-5 showing the alumina and iron-rich Hardcap, with increasing silica and decreasing alumina through the Friable Zone.

able 6-1: Alcoa's Darling Range Deposit Typical Stratigraphic Column

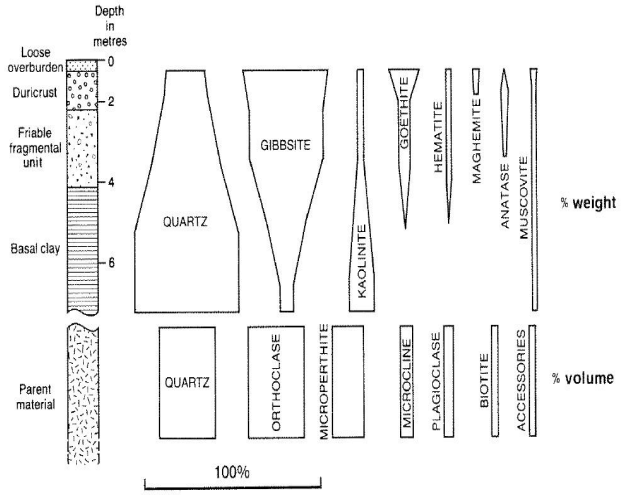
Stratigraphic Horizon	Typical Thickness Range (m)	Description
Overburden	0 to 0.5	Mixed soils and clays, high in organic matter, generally forming a thin layer which can penetrate deeper if the underlying Hardcap surface is variable.
Hardcap (Caprock)	1 to 3	Ferricrete formed by the remobilization of iron into a layer comprising iron and alumina-rich nodules which can exhibit the highest alumina concentrations across the deposit. Highly variable in thickness but generally 1 m to 3 m with a sharp contact against the underlying Friable Zone.
Friable Zone	3 to 5	Leached horizon resulting in the accumulation and enrichment of bauxite minerals. The Friable Zone comprises a mixture of the overlying Hardcap, clasts, Al and Fe rich nodules, and clays. Upper contact with the Hardcap is variable, found as a sharp or transitional boundary in places. AL typically reduces with depth as SI increases, defining the lower boundary with the Basal Clay.
Basal Clay	-	Kaolinitic clay horizon which transitions into a saprolitic zone above unweathered basement. This horizon is typically used as a marker indicating the full bauxite zone has been intersected and where drilling is often stopped.

Alcoa's bauxite deposits across the Darling Range show high variability in both the thickness and relative proportion of each horizon. Table 6-2 provides an extract from the acQuire database for the Mining Centres of Huntly (in the north) and Willowdale (more southerly) showing the most common (modal) Depth To Top and Thickness of the four stratigraphic horizons, based on logged drill holes from 2016 to 2020.

able 6-2: Summary of Typical (Modal) Stratigraphic Horizons Within Each Area

Area	Description (m)	Overburden	Hardcap	Friable Zone	Basal Clay
Huntly	Depth to top	-	0.64	1.51	4.54
	Thickness	0.64	0.87	3.04	-
Willowdale	Depth to top	-	0.58	1.51	4.91
	Thickness	0.58	0.93	3.40	-
North	Depth to top	-	0.64	1.78	4.45
	Thickness	0.64	1.14	2.67	-

igure 6-4: Typical Alcoa Darling Range Mineralogy Profile (Hickman et al, 1992)



igure 6-5: Typical Alcoa Darling Range Grade Profile (Alcoa, 2015)

Typical photos of the bauxite profile in current mining areas observed on 14 October 2021 are provided in Figure 6-6.

igure 6-6: Typical Alcoa Darling Range Mining Sequence and Vertical Profile (SLR, 2021)

Vegetation cleared prior to mining

Top soil and oxalate removed leaving Hardcap

Blastholes on Hardcap after sheeting with low grade

Hardcap (hard brown) Friable (soft yellow), relict fresh remnant Dolerite dyke boulder

Sandy topsoil, Hardcap (hard brown), Friable (soft yellow), Basal Clay (white clay, lower right in the floor).

7.0 Exploration

7.1 Exploration

WANL, which became Alcoa (in 1977), carried out exploration over much of the ML1SA lease area in the 1960s as mentioned in Section 5.2. Samples were assayed for Total Al_2O_3 only and the data, referred to as the Imperial Drilling, is still retained comprising approximately 104,400 holes and approximately 670,000 samples.

The Imperial Drilling has not been used to prepare the current Mineral Resource estimate because the sample collection, preparation, and assaying techniques were not consistent with current practices and can no longer be validated.

7.2 Resource Definition Drilling

Resource definition drilling is initially done on a nominal regular grid spacing of 60 by 60 m. Infill drilling programs are then scheduled as required to reduce the drill spacing to 30 by 30 m, and then 15 by 15 m.

The planned drill hole collars are assigned a hole identifier (Hole ID) using the code of the 15 by 15 m grid point on the 1:1,000 Map Sheets (Section 3.3).

A total of 361,026 holes were used to the resource estimate, and these holes were drilled between 1981 to 2023, with approximately 80% drilled after 2009.

A tabulation of the drill quantities by year and location is presented in Table 7-1, and a graphical summary is shown in Figure 7-1.

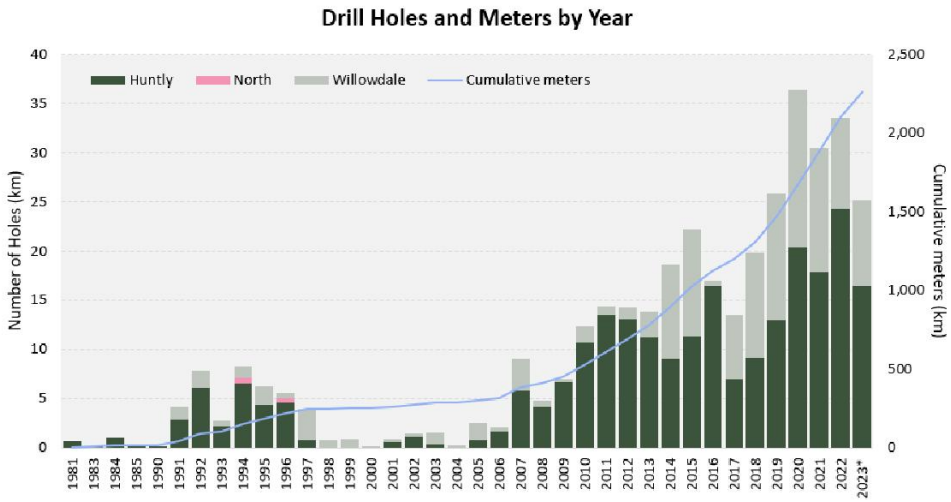
able 7-1: Drill Quantities by Year and Location

Year	Holes				Meters				Assay			
	Huntly	North	Willowdale	Total	Huntly	North	Willowdale	Total	Huntly	North	Willowdale	Total
1981	656	---	---	656	5,574	---	---	5,574	10,415	---	---	10,415
1983	199	---	---	199	1,090	---	---	1,090	1,899	---	---	1,899
1984	995	---	---	995	7,083	---	---	7,083	12,119	---	---	12,119
1985	393	---	---	393	2,815	---	---	2,815	4,971	---	---	4,971
1990	13	---	---	13	58.05	---	---	58.05	101	---	---	101
1991	2,888	---	1,251	4,139	16,091	---	9,591	25,682	28,074	---	17,358	45,432
1992	6,168	---	1,738	7,906	34,155	---	12,559	46,714	59,442	---	22,796	82,238
1993	2,264	---	545	2,809	13,022	---	3,498	16,520	22,723	---	6,415	29,138
1994	6,527	632	1,168	8,327	36,032	4,019	6,453	46,504	62,083	7,103	11,224	80,410
1995	4,356	79	1,843	6,278	25,820	477.25	10,543	36,840	45,022	871	19,021	64,914
1996	4,664	336	641	5,641	26,160	1,522	4,025	31,707	45,709	2,667	7,300	55,676
1997	808	---	3,191	3,999	4,868	---	20,054	24,922	8,603	---	36,006	44,609
1998	12	---	830	842	160.25	---	5,119	5,279	304	---	9,289	9,593
1999	18	---	906	924	137.3	---	4,325	4,462	239	---	7,603	7,842
2000	22	---	174	196	187.3	---	1,022	1,210	344	---	1,852	2,196
2001	632	---	314	946	5,878	---	2,086	7,963	10,906	---	3,805	14,711
2002	1,171	---	252	1,423	9,628	---	1,440	11,068	17,551	---	2,551	20,102
2003	372	---	1,231	1,603	2,412	---	8,093	10,505	4,330	---	14,827	19,157
2004	0	---	270	270	0	---	1,405	1,405	0	---	2,554	2,554
2005	833	---	1,720	2,553	6,079	---	9,932	16,011	11,050	---	18,103	29,153
2006	1,649	---	508	2,157	12,256	---	3,212	15,467	22,598	---	5,936	28,534
2007	5,861	---	3,191	9,052	40,522	---	21,746	62,268	74,155	---	39,916	114,071

2008	4,125	---	739	4,864	24,576	---	4,524	29,100	43,464	---	8,101	51,565
2009	6,675	---	311	6,986	39,482	---	1,822	41,305	69,630	---	3,304	72,934
2010	10,754	---	1,568	12,322	63,898	---	10,755	74,653	112,226	---	19,778	132,004
2011	13,477	---	936	14,413	73,574	---	6,488	80,063	128,147	---	11,850	139,997
2012	13,140	---	1,186	14,326	73,289	---	9,205	82,494	127,733	---	17,045	144,778
2013	11,217	---	2,661	13,878	66,799	---	21,304	88,103	117,029	---	39,384	156,413
2014	9,099	---	9,495	18,594	49,688	---	65,243	114,931	86,417	---	120,098	206,515
2015	11,302	---	10,958	22,260	62,324	---	66,937	129,261	109,279	---	122,162	231,441
2016	16,519	---	459	16,978	98,352	---	2,407	100,759	172,546	---	4,336	176,882
2017	7,003	---	6,485	13,488	38,071	---	38,044	76,115	66,373	---	67,466	133,839
2018	9,196	---	10,605	19,801	50,629	---	55,922	106,551	89,185	---	98,703	187,889
2019	13,016	---	12,811	25,827	76,950	---	86,302	163,252	136,412	---	156,066	292,478
2020	20,367	---	16,000	36,367	107,760	---	100,566	208,327	187,883	---	180,979	368,862
2021	17,846	---	12,679	30,525	111,273	---	96,117	207,391	196,469	---	174,851	371,320
2022	24,277	---	9,249	33,526	147,522	---	68,701	216,222	263,797	---	124,876	388,673
2023*	16,449	---	8,711	25,160	98,429	---	64,092	162,522	172,407	---	118,895	291,302
Total	**244,963**	**1,047**	**124,626**	**370,636**	**1,432,649**	**6,018**	**823,530**	**2,262,197**	**2,521,635**	**10,641**	**1,494,450**	**4,026,726**

** Drill holes completed until June 30, 2023.*

igure 7-1: Chart of Resource Drill Holes by Year



The Darling Range deposits contain more than three million drillholes distributed across a lease of over 7,000 km², making it unfeasible to show a plan view of the property with the locations of all drill holes and other samples. Figure 3-3, however, shows the lateral extent of Alcoa's mined areas and Mineral Resources and Mineral Reserves within the ML1SA lease.

The Darling Range bauxite project is considered to be in the process of sustaining Mineral Reserve from already defined mineralization, rather than in Exploration mode, looking for new, broader targets. Resource Definition drilling is planned to continue throughout all areas where Alcoa has mining permits as described, to sustain the Mineral Reserves and future production.

7.3 Drilling Methods

The methods currently used for drill sampling in the Darling Range by Alcoa have been consistently used since the 1980s. Drilling is done using dedicated drills mounted on a fleet of tractors which can be driven off tracks into the forest, causing minimal damage or disturbance and obviating the need to clear drilling pads. Planned hole positions are located by the driller using Global Positioning System (GPS). The articulated tractors are highly maneuverable and there is only minor disruption to groundcover vegetation and saplings which may be eased out of the way (Figure 7-2).

igure 7-2: Resource Drilling Tractor Accessing the Forest (SLR, 2021)

Drilling is completed by Alcoa using vacuum drill rigs, by contractor Wallis Drilling using their patented reverse circulation (RC) aircore rigs, and by contractor JSW using a similar RC method. Wallis and JSW holes are both referred to as aircore drilling.

In recent years the drilling period has been extended from 9 to 10 months. More wet ground is now encountered and, where required, vacuum drilling is either deferred until the ground conditions improve, or is re-assigned for aircore drilling.

Drilling is rapid with holes typically completed every 15 minutes from locating the collar position to completing the drilling, cleaning the sampling equipment and readying the samples for dispatch. While 12 rigs are currently used, the procedure is consistent across all rigs and virtually unchanged since the early 1990s at Jarrahdale. Minor modifications to the drilling procedures that have occurred include (in order of importance for their impact on the resource database):

- Drilling initially was done by vacuum rigs but this has been supplemented by the aircore rigs.
- GPS methods have been introduced to locate the drill hole collar positions in 3D space, providing more precision on the hole and sample locations.
- The sample catching, splitting and logging procedures have been progressively upgraded, following review by various independent consultants (Holmes, 2018; Snowden, 2015; SRK, 2017, 2018, 2019b, 2021a; Xstract, 2016). The riffle splitting system has been enhanced through simple changes to provide a better, more robust method.
- The logging system has changed from manual paper plods to a completely digital recording system, albeit with paper backup where needed. Barcodes are now used on samples and matching these to the logs is now semi-automatic.
- The splitting and logging equipment on the drill rig has been progressively improved to make setup and pack-down more efficient and to protect the logging equipment during site moves.
- Rollover bars, guards, shields, lockouts and other safety protections have been added, and safety procedures have been enhanced with industry norms.
- Environmental protections and reporting have been enhanced to best practice in SLR's opinion.

Samples used for Mineral Resource estimation are only acquired using vacuum drilling or aircore reverse circulation. Both methods generally drill dry holes in that water is not added. Water ingress into vacuum holes destroys the sample circulation and wet holes are abandoned. Alcoa commenced aircore drilling in 2015, with the initial plan being to phase out vacuum

drilling. The prime advantage of aircore over vacuum is sample recovery when holes do encounter groundwater.

For the 2022 Mineral Resource inventory, 12% of the estimation dataset is derived from aircore holes. In the 2019-2021 drilling for which assay data is available, 79% was performed using aircore (71% for Huntly and 89% for Willowdale).

In vacuum drilling the sample is finely ground and sucked up from the bottom of the hole by a top-mounted vacuum pump. In aircore drilling, compressed air is blown down the annulus between the inner and outer drill string tubes, pushed out through ports on the face of the bit and then blows the sample through the center of the bit and up the drill string.

In both methods, the sample material is extracted from inside the bit, avoiding sample delineation error (contamination), and carried up the center of the drill string into the sampling container, avoiding sample extraction error (sample material left down the hole or lost as dust).

The aircore drilling uses a blade bit with a nominal cutting diameter of 45 mm and an internal retrieval tube diameter of 22 mm (Figure 7-3). Alcoa increased the internal diameter to 25 mm in 2018 to reduce blockages. The particle size of drilled material is sufficiently small (less than 10 mm) to promote good sample splitting in dry conditions.

igure 7-3: Drill Bits, Reverse Circulation Drill String and Particle Size of the Sample Residue (SLR, 2021)

Scale pen diameter 13 mm

7.4 Drill Sampling

7.4.1 Procedure

The sample catching, splitting, and logging procedures are the same for both vacuum and aircore drilling (Figure 7-4).

The drilling and logging are controlled by the driller with minimal supervision by geologists. This has been observed and is deemed reasonable by the QP due to the combination of very simple logging, experienced personnel, employment continuity and continual review by geologists.

Sampling begins at the base of the overburden and continues until the driller considers that the basal clays have been penetrated for at least 1 m or for infill holes at a 15 m spacing to the depth defined on the drill hole plan from surrounding data. The depth of basal clays to be penetrated was increased to 2m in 2019 for 60m spaced holes and in 2021 for 30m spaced holes. Alcoa estimates that, most recently, less than 5% of the limited depth holes terminate in bauxite.

Samples are collected at 0.5 m intervals, measured using a laser gauge mounted on the rig. At the end of each 0.5 m interval, the drilling is paused and the sample passes from the cyclone (for aircore) into the collection flask. For vacuum drilling the collection flask is at the end of the vacuum system.

The sample, nominally 1.5 kg, is poured from the flask into a feed tray, distributed evenly, then on the vacuum rigs the tray is pivoted to feed a small 12-vane riffle splitter (the rotating tray is excellent but not yet fitted to the aircore rigs). Where (usually) required, the splitting is repeated to give a retained split of 150 to 200 g, small enough to be collected into a 120 mL measuring cup with minimal spillage. The riffle split subsample is poured into a barcoded Kraft packet and boxed for dispatch to the assay laboratory. The sample retrieval and splitting systems are cleaned with compressed air after each hole.

During the site inspection, the JSW RC sampling procedures were observed closely. It was found that the principles of correct sampling were understood by all personnel at the rig and the equipment and practices were observed to be satisfactory.

Over the period 2015 to 2021 the drill sampling procedures have been externally reviewed (Snowden, 2015; Holmes, 2018; and others) and various improvements have been made such as using riffle splitters with more vanes, using a pivoting tray to consistently feed the splitter, training in the correct splitting and retention of all the subsample, digital recording of logging, monitoring of accuracy with Standards, and monitoring of precision with duplicates.

SLR opinion on the drilling, sampling, and recovery factors are discussed in Sections 8.5 and 11.17.

igure 7-4: Sample Catching and Riffle Splitting Practices (SLR, 2021)

7.4.2 Recording Sampling Data

The drill hole and sample information are recorded digitally onto a tablet at the rig during drilling (Figure 7-5). The data is automatically loaded into an acQuire database. In previous years the same information was all recorded in a ticket book and manually transferred to the database.

This approach remains as a backup method when needed. Data recorded includes hole number, drill rig number, driller name, offsider name, depth of overburden, depth of Caprock, map reference, material type code, and comments on the reason for ending the hole, e.g. if bedrock or water was encountered.

igure 7-5: Barcode Reader and Digital Recorder Mounted on the Drill Rig (SLR, 2021)

7.4.3 Sample Logging

The geology of the Darling Range bauxite is well understood. The Material Type codes have been simplified to meet the production needs of the operation and the drill crew has been trained in their identification, which is primarily based on color and hardness.

This results in logging of a reasonably consistent regolith profile formed by surface weathering of the few bedrock types (granite or dolerite). A comprehensive geological log is not produced but the Material Type codes can be ratified by the assay results. The Material Type codes are provided in Table 7-2.

able 7-2: Logging Codes for Material Type

Material Type	Description	Comment
HB	Hard brown	Hardcap and Friable Zone
HSB	Hard / soft brown	
SB	Soft brown	
SY	Soft yellow	
CLB	Clayish brown	
CLY	Clayish yellow	Basal Clay Zone
BC	Brown clay	
YC	Yellow clay	
WC	White clay	
DOL	Dolerite	Intrusion
GR	Granite	
WET	Wet	Other
ROD	Broken rod	

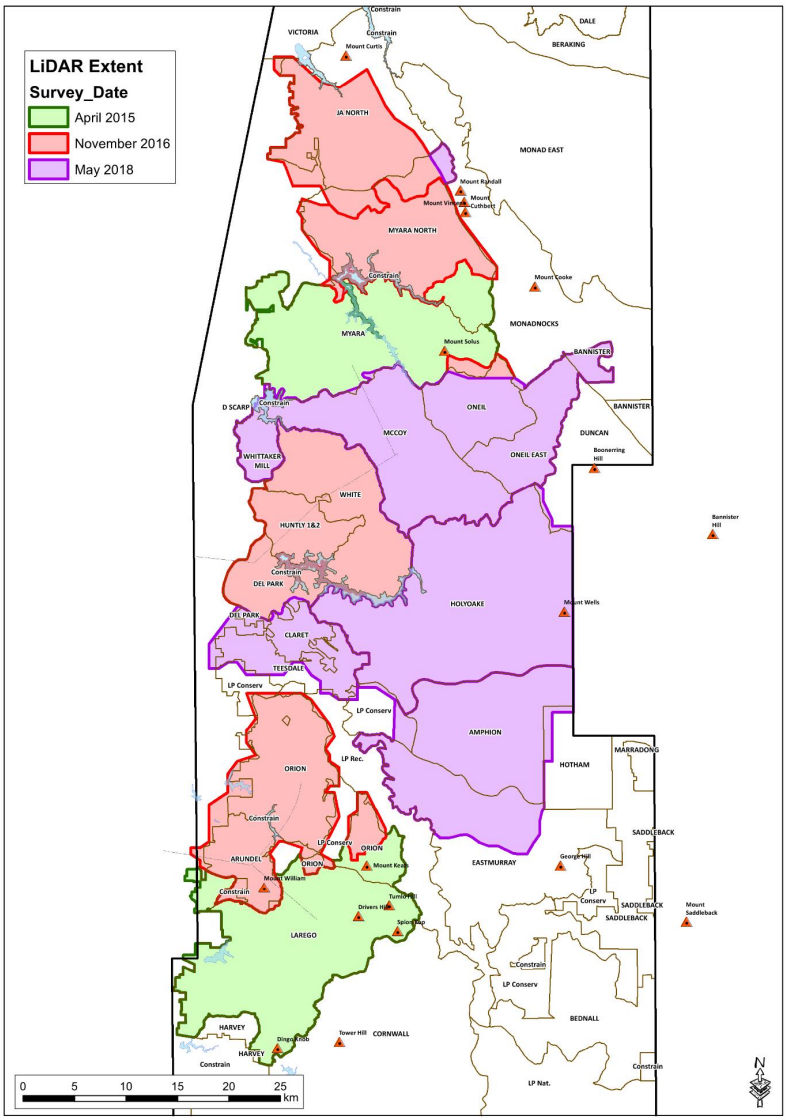
7.5 Topography

Topography data was acquired from:

- Drill hole collar survey data and check surveys performed using Trimble R10 real time kinematic differential global positioning system (RTK DGPS) equipment.
- LiDAR surveys conducted in April 2015, November 2016, and June 2018 (no further surveys have been required). A plan showing the LiDAR coverage for each survey is provided in Figure 7-6.
- Landgate satellite data collected in the late 1990s.

A digital elevation model representing the natural surface was prepared by combining (in order of priority) the collar survey data, the LiDAR data, and the satellite data.

igure 7-6: Topographic Data Coverage of the 2015, 2016 and 2018 LiDAR Surveys (Alcoa, 2022)



7.6 Surveying

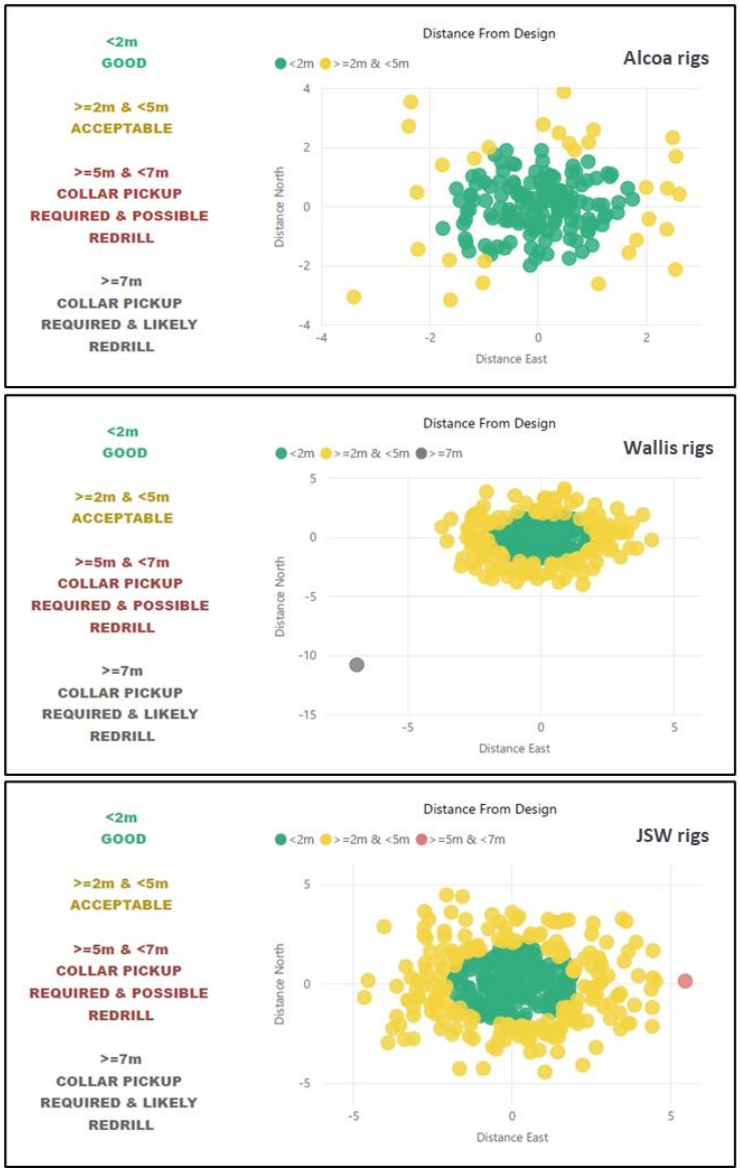
Alcoa has consistently drilled the Darling Range bauxite deposit on a 60 by 60 m grid (with infills to 30 by 30 m and 15 by 15 m) since the 1970s. Initially collar peg positions were surveyed using either a theodolite or Total Station. The 30 m and 15 m pegs were positioned between the 60 m pegs using tape and an optical square. Alcoa commenced using GPS survey control (RTK DGPS) in mid-2015.

Drilling is conducted before any forest clearing activities, which are only carried out for mine development. Positioning the drill rigs is thus imperfect. If the actual coordinates are within 2 m of the planned coordinates, the hole is considered to be correctly located, and the planned coordinates are used in all subsequent processing. Holes that are collared more than 2 m away from the planned location are flagged accordingly in the database, but the planned coordinates are still used in preference to the actual locations. In 2015, Alcoa commenced check surveying of collar positions after drilling. Most of the holes drilled in 2016 and 2017 were check surveyed. Major discrepancies, such as large differences between the actual coordinates and the coordinates defined by the hole identifier, are investigated and corrected in the database.

The planned coordinates at the 15 by 15 m grid points on Map Sheets (see Section 3.3) were used in preference to the actual coordinates. This choice stems from the fact that the original resource delineation systems (Polygonal and GSM, see Section 11.4) were based on the use of regularly gridded data. However, the current 3DBM methodology prioritizes the use of actual coordinates. The use of planned instead of actual coordinates does introduce some uncertainty in the local sample position and consequently the local estimates. However, it is noted that:

- The lateral error is random, small in magnitude compared to the smallest drill grid spacing (15 m) and monitored (Figure 7-7) with deviations from plan greater than 7 m redrilled.
- The error affects few holes (for 2022/23 of the 60,754 holes drilled, 58% were within 2 m, and 99.8% within 5 m).
- The long range of the grade continuity of mineralization as shown by the variograms is several hundred meters.
- The local small-scale variations on the grade of mineralization due to variations in the amount of lateralization are uncontrolled and unpredictable (see discussions of drill hole twinning in Section 8.4.3.4).
- The effect is a controlled ‘random stratified grid’, given that the nominal collar position is always used for estimation and there is no evident bias.

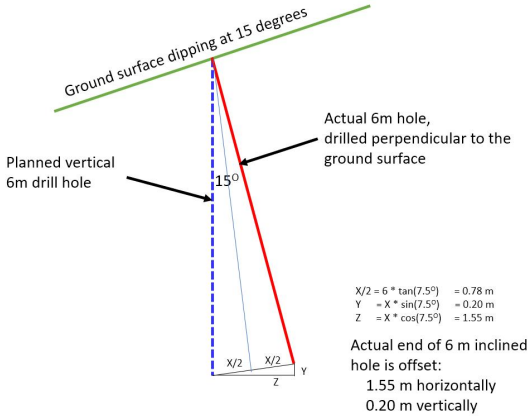
igure 7-7: Error in Actual Collar Location from the Nominal (planned) Position is Monitored for the Three Drill Rig Types (Alcoa, 2021)



Downhole surveys are not performed in drill holes because of their generally shallow depth and narrow diameter, so all holes are assumed to be vertical.

The drill rigs have limited capacity to be levelled and cannot drill angled holes, so in some circumstances the holes may be drilled perpendicular to the natural surface. The rigs are designed to safely operate on gradients of up to 15°, so holes could be drilled up to 15° off the vertical. For a 6 m hole drilled at the planned collar position, the offset may be up to 1.55 m horizontally and 0.2 m vertically (Figure 7-8).

igure 7-8: Possible Lateral and Vertical Sample Location Error on 15° Sloping Ground (SLR, 2021)



The impact of differences between the actual locations of samples in 3D space compared to their nominal location on the mine plan is considered to not materially impact on the Mineral Resource because the errors in the spatial controls on mining are likely to be of the same magnitude as the spatial errors in mining (±2 m laterally and ±0.3 m vertically). Mining is locally controlled by DGPS on mining equipment to meet short-term plans and visually for indications of the base of ore (e.g., WC white clay).

7.7 Sampling Conclusions

In the QP's opinion, the drill sampling and sample control procedures at Alcoa's Darling Range Bauxite Operations are adequate and appropriate for use in the estimation of Mineral Resources. The defined volumes and grades of mineralization are not expected to be systematically impacted (biased) by errors in either the collar location or the 3D sample location.

7.8 Hydrogeology Data

Historically, no site-specific hydrogeological data was available on the basis that no hydrogeological considerations are required for the definition of mining plans in Alcoa's Darling Range operations. However, extension of mining activities into the proposed Myara North and Holyoake development envelopes was recently considered to potentially pose a risk to the multiple uses of groundwater in the area including drinking water production, timber harvesting, pine plantation and recreation.

Alcoa has collected groundwater level and groundwater quality data within the Myara North mine region since the 1970s, with available groundwater data typically concentrated within the

eastern areas of the mine region. In contrast, only limited water level and water quality data had been obtained within the Holyoake mine area. As part of the 2020 to 2021 baseline monitoring program, the monitoring network and program was expanded to include:

- 18 new groundwater bores at 16 locations within the Myara North mine region, to supplement 25 existing Alcoa groundwater bores. Two sites included installation of a shallow and deep paired bores, providing data on groundwater for the upper ‘perched’ unit and the underlying more regional groundwater.
- 17 new groundwater monitoring bores were installed in 2020 within the Holyoake mine region, to supplement 8 existing Alcoa groundwater bores.
- The baseline groundwater monitoring program comprised monthly water level dips and physico-chemical parameter measurements from October 2020, with groundwater samples collected for laboratory analysis of a broader suite of parameters in October 2020 and February 2021.

In consideration of the data obtained from the expanded monitoring network, several hydrogeologic and hydrologic investigations were undertaken by GHD Pty Ltd (GHD) throughout 2021 and into 2022, including:

- Implementation of a baseline surface and groundwater monitoring program including installation of a monitoring network
- Groundwater modelling for Myara North and Holyoake mine regions
- Drinking water risk assessment for Serpentine, Serpentine Pipehead, South Dandalup and Wungong Brook catchments.

The results of these investigations will be assessed as part of the Pinjarra Alumina Refinery Revised Proposal (Assessment No. 2253), which includes the Huntly Bauxite Mine transition to Myara North and Holyoake (See Section 17.1.2).

The work completed by GHD has been incorporated into Alcoa’s Catchment Risk Assessment (CRA). The CRA considers potential hazards to PDWSAs and other factors to evaluate mining related catchment risk. This is an iterative process that will allow refining of the model to ensure it is more accurate on the completion of each subsequent iteration. Iteration 1 was produced in 2022; it will be revised in consultation with DWER, DBCA and other relevant regulators. While the CRA is designed to inform mining risk (and lack of risk) the data and predictions can be applied to exploration. Ultimately, the CRA will help Alcoa understand in more detail the hydrological and hydrogeological risk down to a subcatchment level, supporting the development of future mining areas. The CRA is an integral part of the approved 2023-2027 MMP.

7.9 Geotechnical Data

As the slopes are so shallow, no geotechnical considerations are required for the definition of mining plans in Alcoa’s Darling Range operations.

Some limited material characterization is available within the historic reports carried out for the ROM and bauxite crushing facility and seven other mine infrastructure locations. The crusher site is situated south of Willowdale though the geology is considered similar across the sites. Testing includes cone penetration (CPT), basic laboratory classification, some limited consolidated undrained (Cu) triaxials and point load testing (PLT). Some historical data is available for strength testing within the caprock unit including unconfined compressive strength

(UCS), young's modulus (E), tensile strength and abrasion. A factual laboratory report is available from Wirtgen group based off six rock samples (post drilled from cobbles) taken at Huntly with testing including UCS, tensile strength and Cerchar abrasivity. Details for the testing protocols/standards for the Wirtgen tests are not available. As such, it is considered that there is limited information available in terms of material characterization, strength testing, or pit wall design for the mine site.

Recent factual and interpretive results of a geotechnical investigation carried out by Tetra Tech Coffey Pty Ltd (TTC) in July 2023 for the Kisler Stage 1 area are available. Laboratory testing was carried under TTC direction by STATS Australia, a National Association of Testing Authorities (NATA) accredited laboratory located in Canning Vale WA, in accordance with the general requirements of Australian Standard AS1289. A NATA accreditation is to the ISO/IEC 17025 standard, which demonstrates that the laboratory operates competently and generates valid results. TTC states that the geotechnical laboratory assessment was conducted on representative soil and rock samples recovered from test pits and boreholes, with laboratory test certificates available. The investigations were carried out primarily within the footprint of the proposed Kisler facility, located approximately 10 km south-east of the Serpentine Main Dam. The generalized subsurface profile of the site is presented in Table 7-3, with the assumption that the actual interface between materials may be far more gradual or abrupt than those made based on the facts obtained. An additional assumption is made in that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area.

Groundwater was not encountered at any of the test pit locations, to the maximum depth of investigation (i.e. 3.3m BGL). Groundwater was not observable at the borehole locations due to the use of drilling fluid. However, all boreholes have been converted to monitoring bores for future groundwater monitoring purposes.

Based on the results of geotechnical investigation and AS 1170.4 – 2007 Structural Design Actions (Part 4: Earthquake actions in Australia), a sub-soil classification of "Class Ce – Shallow soil" is considered appropriate for the Kisler Stage 1 site at the time of investigation by TTC.

able 7-3: Generalized subsurface profile

Layer/Unit	Typical depth to top of layer (m)	Typical layer thickness (m)	Description/Remarks
Sandy Silt / Silty Sand / Sandy Clay / Clayey Sand	0.2 – 3.0	1.2 – To maximum depth of investigation	Low to medium plasticity, yellow-brown to brown, sand, fine grained, sub-angular, with some gravel. Predominantly encountered at most test locations throughout the course of investigation.
Clay	0.00 – 11.0	3.0 – 5.4	Medium to high plasticity, brown, yellow-brown, grey-brown, with some sand and gravel.
Silty Gravel / Clayey Gravel	0.0 – 9.0	3.0 – 5.0	Fine to coarse grained, sub-rounded and sub- angular, grey-brown and brown, clay, low to medium plasticity, with some sand, trace non-plastic fine.
Granite / Dolerite	5.60 – 20.00	To maximum depth of investigation	Medium to coarse grained, pale grey to grey, red- brown, generally very high to extremely high strength. Some boreholes showed very low to medium strength.

Granite was encountered at most borehole locations. Generally high to extremely high strength.

Dolerite was encountered at 1 location. Extremely high strength.

8.0 Sample Preparation, Analyses, and Security

Sample preparation is performed by Bella Analytical Systems (Bella). Although the laboratory is located within Alcoa's Kwinana Refinery complex and only processes Alcoa material, it is independently owned and operated by Bella. A link exists between the Bella and Alcoa Laboratory Information Management System (LIMS) for the two-way exchange of data. Bella does not have Australian National Association of Testing Authorities (NATA) accreditation.

All assays produced by Bella are monitored and controlled by Alcoa at the Kwinana Mining Laboratory (KWI), which, although it has a QA/QC system based on ISO 9001 protocols, only has one section of the laboratory certified to ISO 9001 for the purpose of certification of shipment assays of alumina.

A robotic processing system is used to prepare each sample for Fourier Transform Infrared Spectrometry (FTIR) and Reference Method (REF) testing. This entails pulverizing each sample in a flow-through ring mill to a nominal grind size of 85% passing 180 µm, and then splitting off sufficient material to fill a barcoded scanning flask (20 mm high with an 80 mm diameter). The material from the ring mill is discharged through a rotary splitter, with approximately 80–100 g of material retained for geochemical testing, and the remainder discarded. A duplicate sample is collected from 1% of the samples via a rotary splitter fitted with twin select chutes. These samples are used for Reference Methods testing.

8.1 Sample Security

Subsamples are collected by the drillers, sealed into Kraft packets with barcodes and submitted for assay. Cardboard boxes holding 50 packets are delivered at the end of each shift, by the drilling crew, to secure sample storage facilities. Unfilled boxes are stored in the drill support vehicle and completed in the next shift.

The filled sample boxes are stacked onto pallets in batches of 40 (i.e., 2,000 samples), wrapped with plastic and dispatched by courier to the Bella assay facility at the Kwinana Refinery.

8.2 Sample Preparation

Upon receipt by Bella, the sample barcodes are scanned and checked against the submission data in the Bella LIMS. Each sample packet is then split open at the top, placed in a cardboard drying tray and oven-dried at 100°C for 10 hours. The packets are transferred to a customized holder in batches of about 60, with a control between each batch, and automatically fed to a bank of 10 Rocklabs flow-through ring mills (Figure 8-1), each of which have three concentric milling rings. The barcode is read, the sample is pulverized, a subsample is rotary split, captured in a single-use plastic Petri dish with the barcode printed on the lid, then sent to the spectral analyzer for assay. The ring mills are air flushed and vacuumed between samples.

Each sample is pulverized to a nominal grind size of 85% passing 180 µm. The ring mill discharges through a chute and rotary splitter, retaining 80 to 100 g and discarding the rest. One of the ring mills is set up to take two splits and these are used for pulp duplicate assays and to generate the Reference (REF) samples. These are sent to the KWI for wet chemical assay checking of the spectral assay. Pulverized samples are stored in a barcoded dedicated receptacle for assay (Figure 8-2).

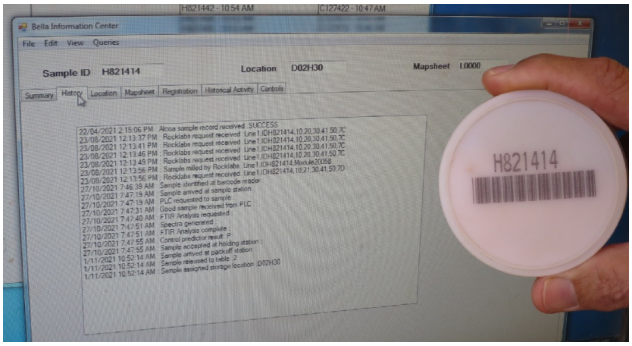
The robotic system can run 24 hours a day handling approximately 3,000 samples per day. Only the Mineral Resource estimation samples are processed at Bella with all other stockpile and processing control samples processed using the same methods as the REF samples.

igure 8-1: The Bella Robotic Sample Preparation using Rocklabs Ring Mills (SLR, 2021)

igure 8-2: The Pulverized Sample is Stored in a Barcoded Dedicated Receptacle for Assay (SLR, 2021)

A LIMS system controls the progress of the sample packet through the whole of the sample preparation and assay procedure enabling digital tracking of all stages (Figure 8-3). This ensures *inter alia* that the sample is valid, not previously assayed, and the assay looks like one for a bauxite sample. It also generates pulp duplicates at a frequency of 1 in 100 which are also the REF samples.

igure 8-3: The Pulverized Sample is Tracked Digitally Through the Bella Preparation and Assaying (SLR, 2021)



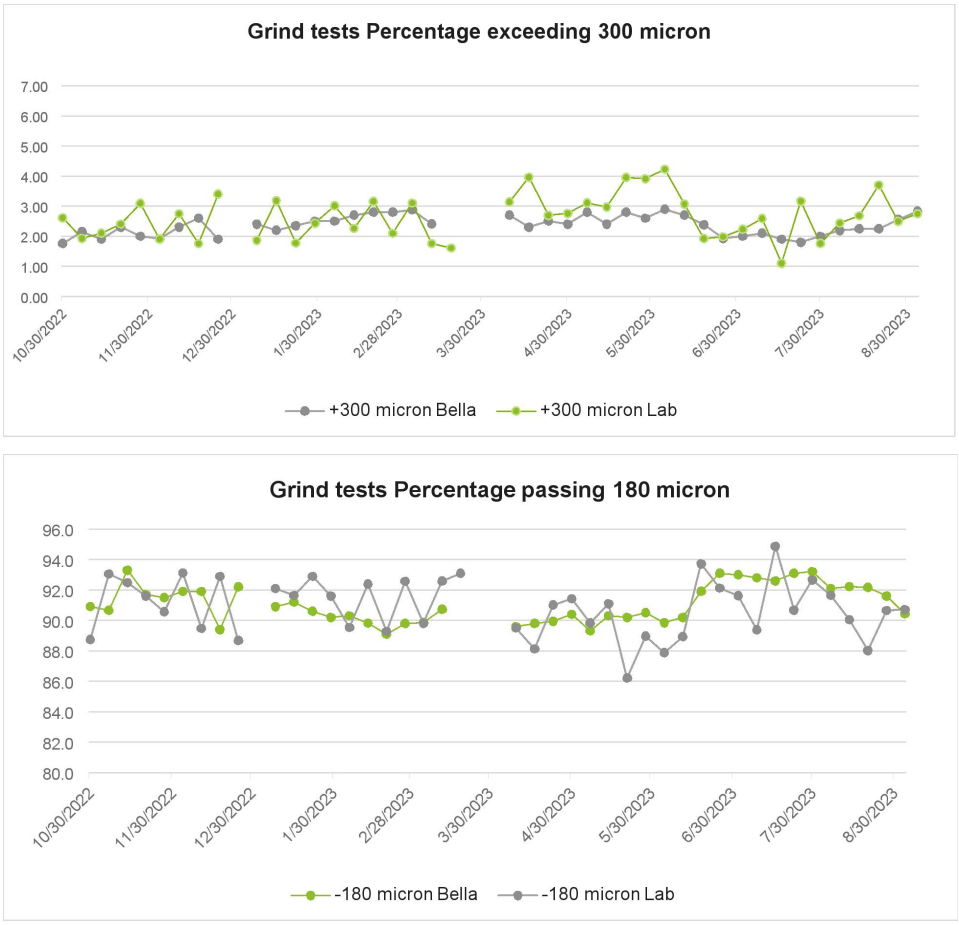
Grind size monitoring is carried out with the advantage of the robotic sample preparation being consistent grind size. A risk with all such systems is the possibility of contamination between samples. This is usually avoided by inserting blank samples of zero grade into the sample processing stream. The difficulty is that the blank samples may themselves contaminate the next sample being assayed.

Quality control (QC) procedures were developed and implemented to monitor the Bella robotic sample preparation system (Franklin, 2019) and they include:

- Temperature testing on the ovens. These are recorded between 2 and 5 times a year since 2017 at 8 positions for each of 4 ovens and demonstrate consistent safe drying temperatures below 100oC (average 97.9°C for 352 readings).

 Daily grind size checks. The percentage passing 180 microns and percentage exceeding 300 microns is recorded at Bella on all 10 ring mills at a rate of 1:200 for the resource drill samples, with independent checks by the KWI on a random selection of all samples milled for the week. These demonstrate satisfactory sample preparation, and the consistency of the Bella robotic system, which is critical for effective FTIR assaying (Figure 8-4).

igure 8-4: Sample Preparation Monitoring: Grind Sizes for the Robotic Sample Preparation Unit Tested by Bella and by KWI



3.3 Assaying

Assaying of the drill samples is based on a spectral method, using a Nicolet 6700 FTIR Spectrometer with a robotic feeder (Figure 8-5). FTIR obtains an infrared absorption spectrum from the sample. The FTIR spectrometer simultaneously collects high-resolution spectral data

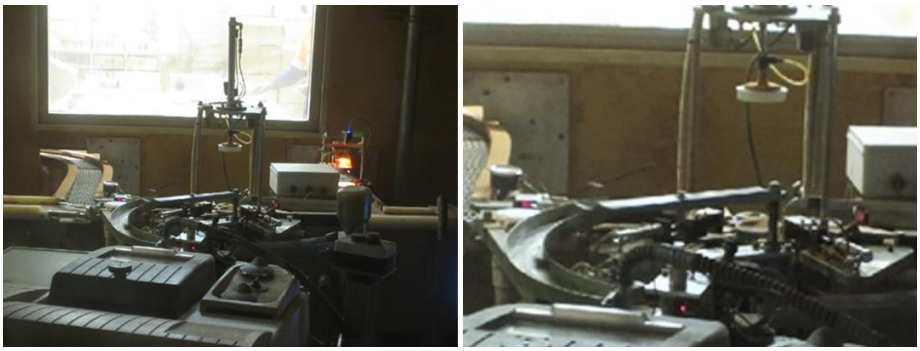
over a wide spectral range. A mathematical process (Fourier transformation) converts the raw data into the actual spectrum for subsequent determination of the component analytes.

All drill samples are currently assayed using a customized, bespoke FTIR method, with the final corrected results used for Mineral Resource estimation. Calibration and monitoring of the FTIR results are done using the Reference Method assay results.

Bella generates the raw FTIR spectral dataset for each sample, which is transferred to the Alcoa LIMS system for post-processing. Alcoa performs all the Reference Method analyses at KWI.

The FTIR spectra are determined using a robotic scoop arm that collects an approximately 5 g aliquot of the pulp from the Petri dish and presents it to a platinum crucible. The material in the crucible is pressed flat to ensure an even surface for scanning. The crucible is then rotated several times through the spectrometer and 20 scans are conducted on the aliquot. The scans are processed and validated by the Bella system and when accepted, they are then transferred to the Alcoa LIMS system for post-processing and further validation.

igure 8-5: The Robotic FTIR Assaying Equipment (RHS shows the sampling scoop arm and pulp dish with the lid elevated) (SLR, 2021)



3.3.1 FTIR Method Assays and the CalVal Dataset

The FTIR Method for bauxite assay uses infrared absorption spectra to characterize the presented sample for multiple analytes as element, compound, or mineral percentages. The approach has been developed using an extensive calibration and validation (CalVal) dataset, constant monitoring of Reference samples and Standards, and periodic revision of the prediction algorithms.

In 1990, an initial set of approximately 2,300 CalVal samples was collected covering the Darling Range tenement. A subset of approximately 700 samples was used to develop the initial FTIR prediction model. Extra CalVal samples have been added to help predictions in areas of low Reactive Silica (less than 0.5% SI) and high Total Iron (greater than 50% Fe). The CalVal samples are run randomly through the FTIR equipment in triplicate, under differing conditions (time of day, season, operator, order, etc.) to test for external factors. The FTIR results based on the prediction model algorithm are monitored using the REF assays (Franklin, 2019).

Initially some FTIR analytes (Available Alumina, Total Iron, Carbonate, Sulphate, Total Silica, Total Phosphorus and Magnetic Susceptibility) were all determined using a ‘common’ algorithm, whereas Reactive Silica, Oxalate, Extractable Organic Carbon, Total Alumina and Boehmite

each used a specific algorithm. Since 2017 specific algorithms have been used for all analytes. The algorithms are periodically updated, typically if there has been a change in equipment or Reference Method. Retaining all FTIR spectra now means additional analytes can be determined using specific algorithms, with three new analytes being added to Method Set MIC#00005 in 2021 (Potassium, Titanium and Gallium).

3.3.2 Reference Method (REF) Assays

The REF assaying is done by Alcoa in the KWI to validate and calibrate the FTIR assays. This is a suite of assays and tests that are carried out by wet chemical and other means and has included:

- XRF x-ray fluorescence spectroscopy
- ICP-OES inductively coupled plasma optical emission spectrometry
- XRD x-ray diffraction
- MS magnetic susceptibility, a proxy for grindability
- BD-ICP bomb digest in a caustic solution, with an ICP-OES finish
- BD-GC bomb digest in a caustic solution, with a gas chromatography finish
- BD-NDIR bomb digest in a caustic solution, with a non-dispersive infrared finish
- MD-ICP microwave digest in a caustic solution, with ICP-OES finish

There are differences in the nature of these tests. Both XRF and ICP methods are instrument-based methods designed to replicate wet chemical analysis results, either total or partial assays depending on the digestion. Both XRD and MS methods are used to investigate mineralogy contents so are regarded as proxies for assays. Bomb digest (BD) methods have been developed by the alumina refining industry to determine the expected yield of bauxite ore during processing. They are the basis for ‘metallurgical assays’ that are designed to replicate the physicochemical reactions in the refinery and accordingly may be customized for a particular ore type or process plant. At Alcoa some BD assaying has been replaced with a microwave digest (MD) method.

3.3.2.1 REF Assaying Methods

A summary of the assaying used for the REF samples, which are used to calibrate and validate the FTIR Method, is provided in Table 8-1.

able 8-1: Assaying Methodologies for Resource Estimation Samples

Name	Analyte	Code	Units	Reference Method
Available Alumina	$A.Al_2O_3$	AL	%	MD – ICP (MALSI)
Reactive Silica	$R.SiO_2$	SI	%	MD – ICP (MALSI)
Total Iron	Fe_2O_3	FE	%	XRF and FTIR
Oxalate	NaC_2O_4	OX	kg/t	BD – GC
Carbonate	Na_2CO_3	CO	kg/t	BD – NDIR (TICTOC)
Extractable Organic Carbon	C	EO	kg/t	BD – NDIR (TICTOC)

Total Phosphorous	P_2O_5	PT	%	XRF
Sulphate	Na_2SO_4	SU	kg/t	XRF
Total Silica	SiO_2	ST	%	XRF
Magnetic Susceptibility	MagSus	MS	None	MS (CGS system)
Total Alumina	Al_2O_3	AT	%	XRF
Boehmite	AlO(OH)	BO	%	XRD

The bomb digest (BD) method involves adding a measured amount of carbonate free 52% caustic soda to the sample aliquot (1 g), sealing it in a small 10 mL pressure vessel and then cooking it at 145°C. After cooling, the solution is assayed by titration or other methods to determine the alumina and silica contents. As the digestion of these elements by the hot caustic solution is determined by the physical conditions during digestion (mainly temperature and pressure) the results provide a proxy for the expected performance of ore of that nature in the alumina refinery plant. The resulting assays are termed available alumina (AL) and reactive silica (SI), measured as percentages.

The MD method was introduced in 1996 to supplant the BD methods for assaying of the Mineral Resource drill samples. Atmospheric digestion is done in a microwave oven using a 13% caustic solution. The advantage of this is that it is faster, more repeatable and uses a bigger aliquot (0.5 g). The MD assays are collectively named ‘microwave available alumina and reactive silica’ (MALSI). The BD methods are still used for the refinery monitoring samples including those taken from the sampling towers prior to the feed stockpiles of crushed ore.

Following digestion using either MD, BD, or wet chemical methods, the analytes are assayed (Table 8-1) using the following methods (Figure 8-6):

- For ICP the digestion liquor is read using a PerkinElmer Optima 8300 machine.
- For XRF an aliquot of 0.7 g is combined with a lithium borate flux, fused in platinum crucibles on a dedicated Phoenix 8-bank burner, and batches are assayed on an Axios Max PW4400 machine.
- For gas chromatography (GC) a 1.00 g aliquot is used and assayed on an Agilent 7890B machine.
- For Total Inorganic Carbon and Extractable Organic Carbon (TICTOC) a 1.00 g aliquot is digested and assayed using an Analytical Aurora 1030 Total Organic Carbon Analyzer with carousel.

igure 8-6: Digestion and Assay Equipment used for REF Samples at the KWI Clockwise from top left: BD, MD, TICTOC, ICP, XRF, GC (SLR, 2021)

Details on the assaying method used for the final (Best) assay value for every sample interval are carried in the acQuire database.

For resource estimation, the Reference Method results are used to monitor the performance of the FTIR assaying, and to calibrate (adjust) the FTIR results on a batch-by-batch basis. The

Reference Method is also used for all monitoring of the refinery performance including the grades of ore presented to the sampling towers at Pinjarra and Wagerup prior to stockpiling and reclaiming of the ore feed.

A consistent approach to sample collection, preparation and assaying for Mineral Resource estimation has been used since 1980. Refinements to the assaying methods have comprised:

- 1996 Microwave digestion was introduced instead of bomb digestion for the REF samples.
- 1999 The collection of the FTIR spectral data was outsourced to Bella, with direct control of processing and prediction still done by Alcoa.
- 2006 Robotic sample preparation was introduced at Bella.
- 2006 Digital retention of all FTIR spectral data was introduced, enabling additional post-processing of assayed samples for new analytes.
- 2017 The calibration sets were rescanned with FTIR and an updated Method Set (MIC#00005), was developed.
- 2018 Original wet chemical assays were replaced by FTIR for approximately 73,000 samples (drilled in Myara North from 1992 to 2002).
- 2019 Original wet chemical or FTIR assays were replaced by FTIR for approximately 251,000 samples (drilled in Myara North from 1991 to 1997).

The impact of these changes and validation of the results were investigated by Alcoa personnel and independently by SRK (2021a). It was concluded that the assaying precision (i.e. repeatability) and accuracy (lack of bias, as demonstrated by quantile-quantile plots) did not show significant differences between the pre-2018 and post-2018 data sets.

Since completion of the 2022 Mineral Resource inventory, an additional 60,716 vacuum and aircore holes have been drilled and approximately 707,270 routine FTIR analyses performed. These represent holes drilled between September 2022 and June 30, 2023.

3.4 Quality Assurance and Quality Control

Quality assurance (QA) consists of evidence that the assay data has been prepared to a degree of precision and accuracy within generally accepted limits for the sampling and analytical method(s) to support its use in a Mineral Resource estimate. Quality control (QC) consists of procedures used to ensure that an adequate level of quality is maintained in the process of collecting, preparing, and assaying the drilling samples.

3.4.1 QA/QC Protocols

The following QA/QC protocols are implemented and managed by Alcoa's team, and QA/QC samples are not blind to the laboratory, with the exception of Sample To Extinction (STE) samples. Batches of samples are submitted to the Bella laboratory daily. Internal standards created from the stockpile of the Darling Range bauxite are introduced by the Bella Laboratory every 50 samples during the FTIR analysis to check the chain of process. All standard sample insertions and batches maintain consecutive numerical order. Calibration is done at first to generate the reference mean of the standard as well as the acceptable minimum and maximum values totaling three standard deviations.

After the boxes of drill samples are received at Bella, packets of Reference Method samples (REF) are split out by the robotic sample preparation, based on a random selection by Alcoa LIMS, at a frequency of 1 in 100 (1%). These are submitted to the KWI in batches of 19 for REF assaying to calibrate and validate the quality of the FTIR Bella assays. As the FTIR assays are adjusted to match the REF assays (using a 'broken stick' curve adjustment to remove bias and maintain precision, see Figure 8-10) it is expected that there should be minimal bias between REF and FTIR corrected results (FTIR_corr). However, the repeatability between the two methods is an important attribute of the quality of the assay results used for Mineral Resource estimation. Each batch of REF samples includes 1 Blank and 1 Standard. The REF samples are considered to serve the same purpose as pulp repeats in defining the repeatability of the assays. Alcoa also sends checks of REF samples assayed at Bella and KWI to an independent laboratory, Bureau Veritas (BV).

Alcoa introduced in 2018 an alternative procedure to field duplicates, termed Sample To Extinction (STE). This involves taking the normal 0.5 m drill sample (referred to as the Parent) and collecting all the residue from that drilled interval (i.e. the riffle split reject, and previously any material left in the sampling cup). This residue is collected once per shift from each rig under supervision by the geologist. The residue is pulverized and homogenized, then two equal splits (referred to as the "Daughters") are assayed.

Following receipt of results from the laboratories, Alcoa geologists review the values, and sample batches identified as anomalous are repeated by the laboratory. Monthly and quarterly QA/QC reports are produced to detect and address potential temporal trends or issues in their results.

The following are the existing written QA/QC procedures available to all staff:

- Franklin (2019) describing the FTIR process.
- Use of the customized in-house Exploration PowerApps digital module to record and document field inspections by the geologist at the drill rigs (documenting visible contamination, Sample ID, Hole ID, splitting, chip size of sample, split volume, depth measurement, collection of Sample To Extinction (STE) samples, collection of further FTIR calibration and validation (CalVal) samples, as well as other prestart, safety, risk and EHS inspections.
- Procedures for generating STE samples.
- Various PowerPoint presentations providing an overview of the laboratory procedures.

SLR reviewed QA/QC information compiled in the previous report (SLR, 2022) and analyzed the new QA/QC data compiled by Alcoa between November 2022 and September 2023. The findings of this analysis are presented in the subsequent subsections.

Blanks are not routinely introduced in FTIR submission batches into the robotic mills at Bella and there is no check on cross-contamination during sample preparation. Given the style of mineralization, the ore grades being assayed, and the volume of material milled compared to the final aliquot assayed, the absence of sample preparation blanks is not considered material. There is also no available blank sample on the market that would not introduce contamination of the mills by very low-grade samples at Bella. KWI laboratory submits blanks with a frequency of 1 to 19 in the REF samples sets compiled and dispatched regularly by Bella, however that information was not available for review.

3.4.2 Standards

Standards evaluate accuracy of the assaying by detecting the differences between a result and an expected value, also known as a bias. Alcoa has used a series of specially prepared Internal Reference Material (IRM) samples derived from Darling Range bauxite, pulverized and homogenized by Gannet Holdings, labelled KH09 to KH18. Between 2021 and 2022, only IRM KH14 and KH20 have been used at the Bella Laboratory and KH10 at the mining laboratory. Monitoring using these IRM samples provides arguably better assurance of assaying accuracy than commercial Certified Reference Material (CRM) samples. The IRMs have generally been sourced from stockpile material and used in both coarse-crushed and pulp form. The IRMs have not been externally certified. A summary of the IRMs is provided in Table 8-2.

able 8-2: Standards Used for Drilling and REF Monitoring (IRMs)

Standard	Date	Comment
KH09	May 1999 to present	Boehmite analysis, FTIR, MD-ICP, and XRF analysis Mining reference analysis (IRM)
KH10	May 2012 to present	Mining reference analysis (IRM)
KH11	July 2008 to March 2015	FTIR analysis (IRM)
KH12	July 2008 to April 2014	Grind size control (IRM)
KH13	April 2014 to present	Grind size control (IRM)
KH14	March 2015 to October 2021	FTIR analysis (IRM)
KH15	October 2015 to September 2017	Preparation and analytical control – introduced at the drill rig (IRM)
KH16	September 2017 to December 2018	Preparation and analytical control – introduced at the drill rig (IRM)
KH17	September 2017 to December 2018	Preparation and analytical control – introduced at the drill rig (IRM)
KH18	September 2017 to December 2018	Preparation and analytical control – introduced at the drill rig (IRM)
KH20	October 2021 to present	FTIR analysis (IRM)

Control of the accuracy of FTIR samples is currently monitored at the Bella laboratory using IRM KH20. The IRMs are inserted every 50 FTIR samples. FTIR batches totaling 14,960 samples of KH20 analyzed between November 2022 to September 2023 and using Priority Codes P194 to P201, grouped by quarters, were sent to SLR for review. Priority Codes represent batches assayed by the FTIR Method using the same batch correction factors.

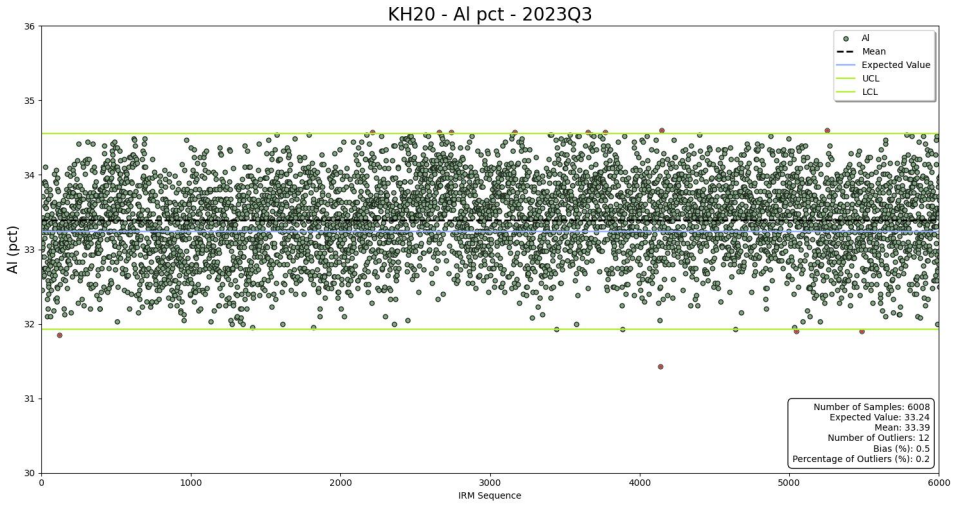
The QP selected six batches; three for review from the second quarter of 2023 and three from the third quarter of 2023 for the IRM KH20. The QP prepared control charts for AL, SI and FE and analyzed temporal and grade trends, reviewed the data for low and high biases, and the failure rate of each standard. The failure rate was defined as a value reporting more than three standard deviations (SD) from the expected value.

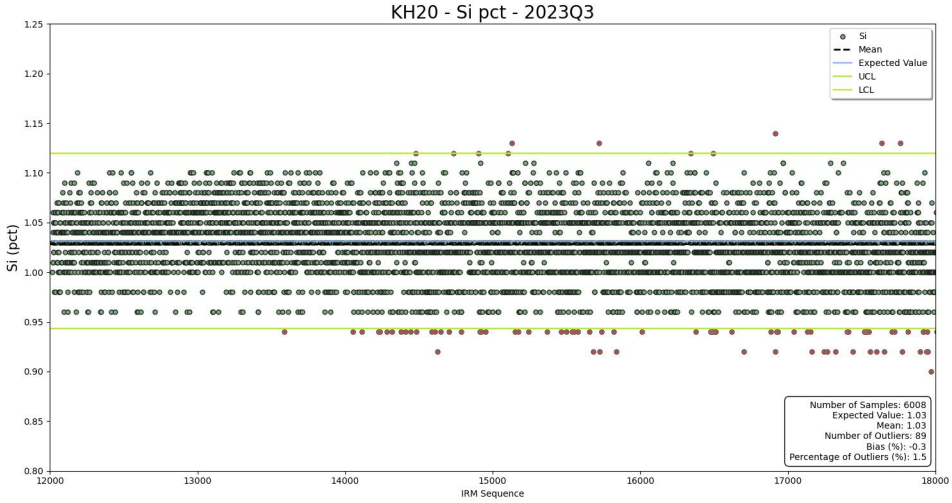
KH20 standards from batches P199, P200 and P201 were examined. The AL expected values in percent are between 31.92% and 34.15% while SI range between 0.94% and 1.12%. For FE, the average expected results are between 14.79% and 17.4%. This standard is representative

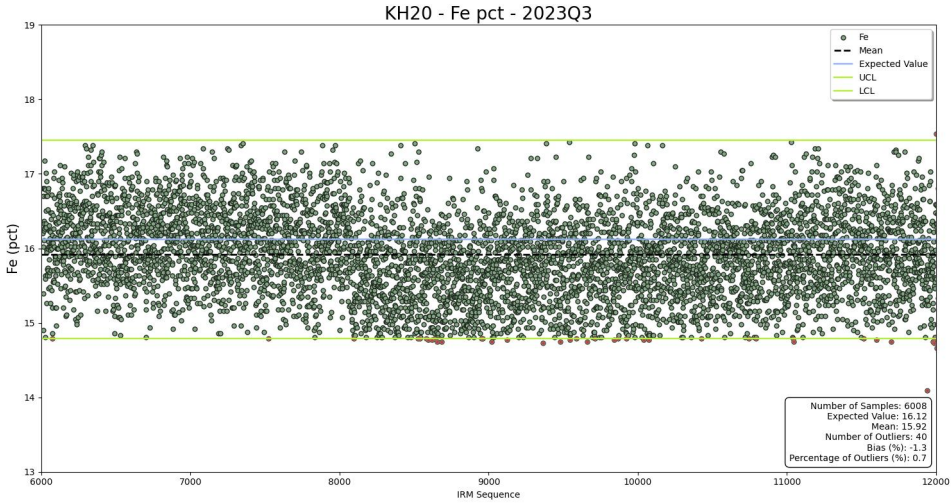
of the average grades of the deposit. The control charts for KH20 of the third quarter of 2023 are shown in Figure 8-7.

In general, during the third quarter, the values for AL are well within acceptable limits, falling between the low and high control limits of three SD. Most of the failed samples slightly exceed the acceptable limits, resulting in a minor failure rate of 0.2% and bias of 0.5% from the expected value. As for SI, the failure rate of 1.5%, and it is noteworthy that starting August 4 2023 most of the failures consistently fall below the low control limit of 3SD. This leads to an overall slight negative bias of -0.3%. Results for FE indicate acceptable levels of accuracy at the Bella Laboratory, with only 0.7% of the samples falling outside the ±3SD. However, it is worth noting that starting in August 2023, most of the failed samples consistently showed values below the lower limit. This trend includes two samples from batch P200, which recorded by the end of September the lowest values of 14.09% and 14.66%, resulting in a bias of -1.3%. The QP recommends investigating this negative bias and making necessary adjustments to avoid any adverse impact on the Mineral Resource estimate.

igure 8-7: KH20 control chart of AL, SI, and FE from third quarter of 2023



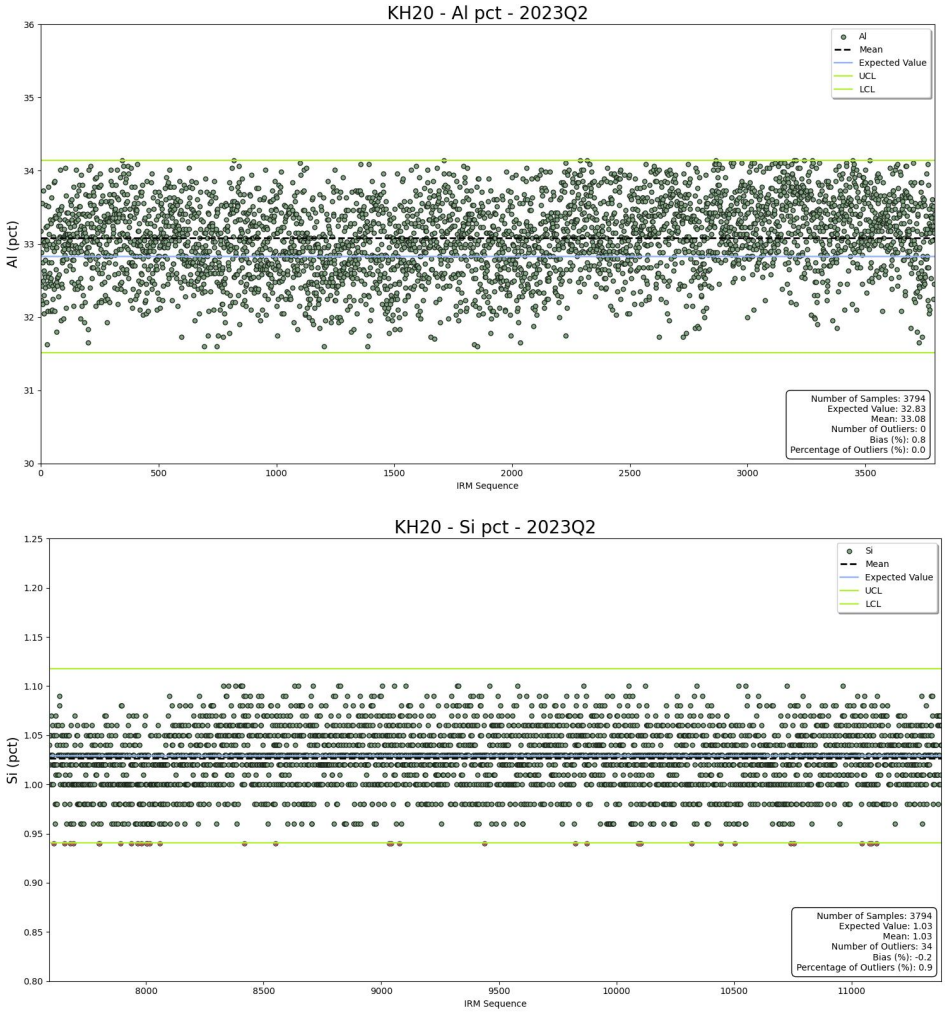


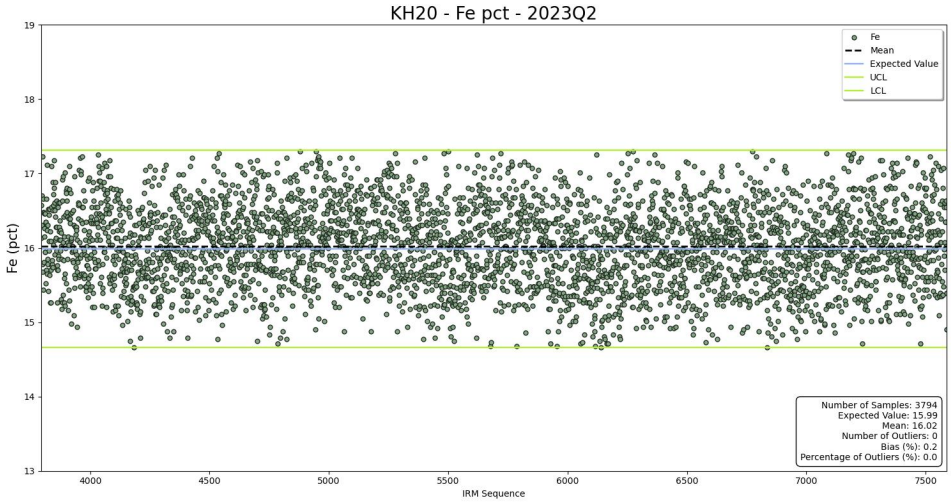


Batches P197, and P198 were also examined for standards KH20. Its AL expected values in percent are between 31.51 % and 34.14% while SI range between 0.94% and 1.12%. For FE, the average expected results are between 15.97 % and 17.31%. The control charts for KH20 of the second quarter of 2023 are shown in Figure 8-8.

AL values generally show good performance, with no outliers and resulting in a 0.8% of bias. Similarly, all FE samples are within the ±3SD threshold, with a consistent bias of 0.2%. Results of SI exhibited a 0.9% failure rate with outlier values slightly below -3SD, and a -0.2% bias. The QP considers this database can support the Mineral Resources estimate.

igure 8-8: KH20 control charts of AL, SI, and FE from second quarter of 2023.





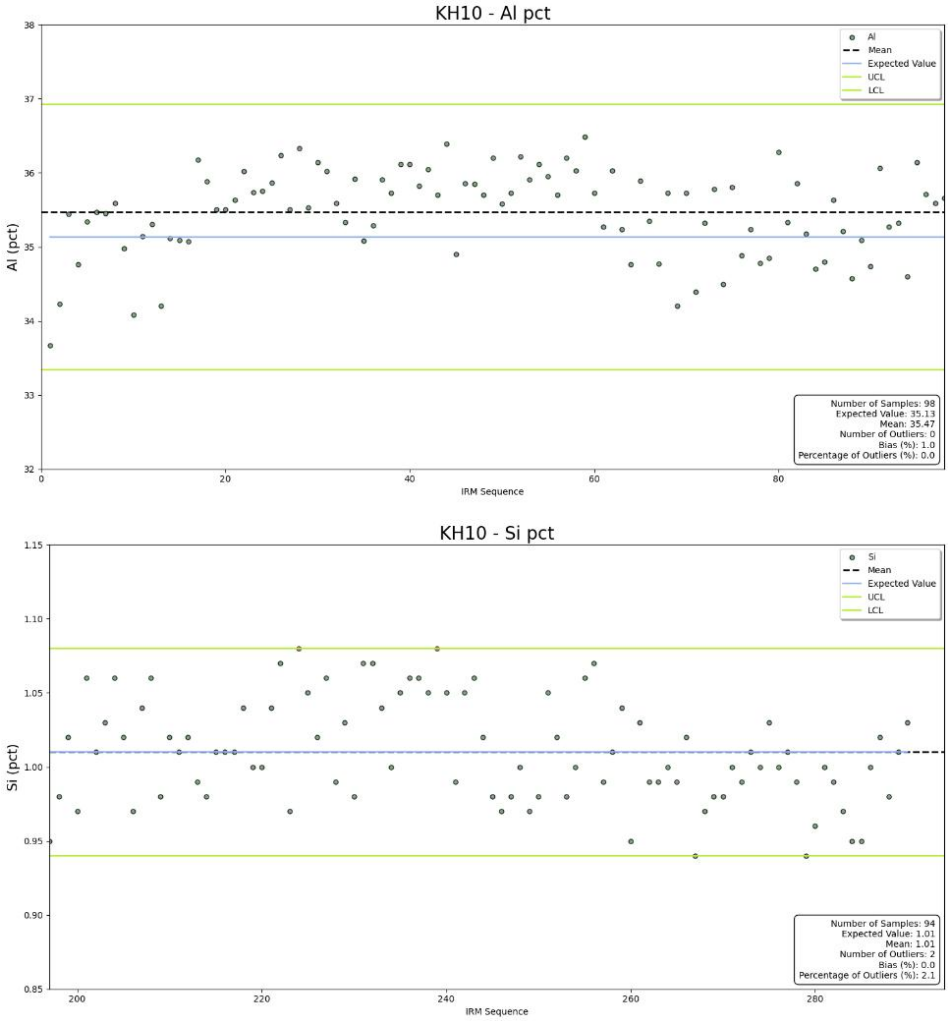
The frequency of insertion of IRMs at the mining laboratory of standard KH10 is 1 in every 19 samples (one REF batch). The frequency of re-assaying the FTIR results (if rejected by a REF assay) has an expected rate of less than 1.5%. Actual performance depends on the total number of FTIR assayed samples, the area where they were drilled and whether there were issues with the Sample Presentation Unit (SPU) in the FTIR process.

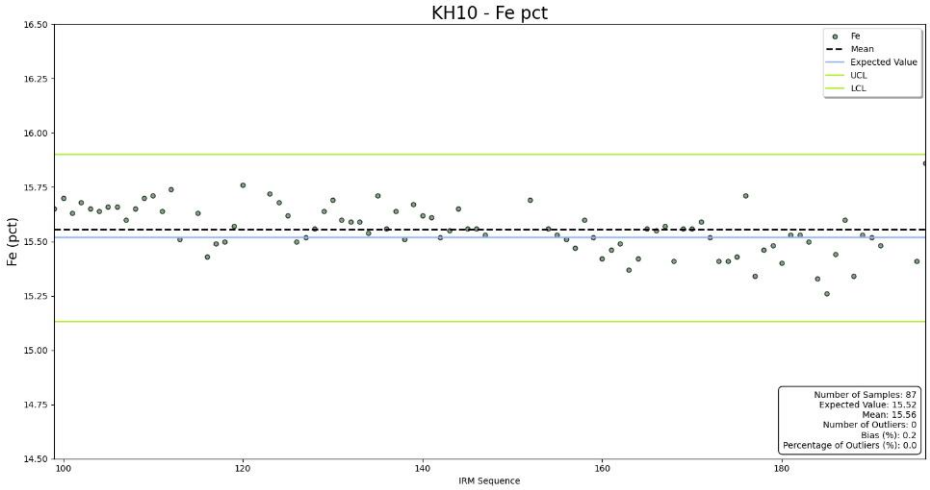
The QP selected three batches, P199, P200 and P201, to examine the values of AL, SI and FE analytes in KH10 standards in the third quarter of 2023 for additional review. KH10 expected values are close to the average grade of the deposit.

Results from the analysis of the AL analyte in standard KH10 across the three revised batches generally indicate good laboratory accuracy and precision, with no observed failures, although a slight low bias of 1.0 was noted. The SI analyte also exhibited overall good behavior, resulting in 0% and 2.1% failure rates. Similarly, the FE analyte consistently showed a low bias of 0.2% and no outliers across all three batches. Figure 8-9 illustrates the control charts for these selected analytes, focusing on batches from the third quarter of 2023.

Overall, standards performance is excellent for Al, Si, and FE analytes.

igure 8-9: KH10 Control Chart of AL, SI and FE from the third quarter of 2023





3.4.3 Duplicates

3.4.3.1 Measures Of Precision

There are a number of approaches to defining the repeatability of an assay result, and they are generally controlled by a framework first developed by Pierre Gy, now referred to as the Theory of Sampling. Accepted approaches used here for determining the repeatability of sampling and assay results are:

- Scatter plots with the same X and Y axes, showing the overall distribution of the paired samples, and obvious outliers, with perfect repeatability shown by the 45o line of equality.
- Measures based on the robust Half Absolute Relative Difference (HARD) bivariate statistic (Shaw, 1997; Abzalov, 2016). These include the precision (as Coefficient of Variation (CV) with a confidence interval of 68%) and the correlation coefficient.
- Other bivariate measures, that may be influenced by outliers, such as the slope of regression, variance, and CV.

With all measures, trimming the data (excluding outliers, obvious errors, incorrect values, out of range values, and those near the Limit of Detection) can impact on statistical measures of precision, which is why scatter plots are helpful in interpreting results.

3.4.3.2 Field Duplicates

It is generally considered best practice to collect field duplicates in resource drill sampling programs. They should be a second split collected with the first split in exactly the same way (i.e. from the same drilled interval, using the same splitter, generally from the reject side of the splitter, sometimes by re-splitting all of the reject a second time). Alcoa discontinued the routine collection of field duplicates in January 2018 due to limitations to the benefit of collecting field duplicates because the sample splitting procedure was problematic (SLR, 2022). Therefore, no

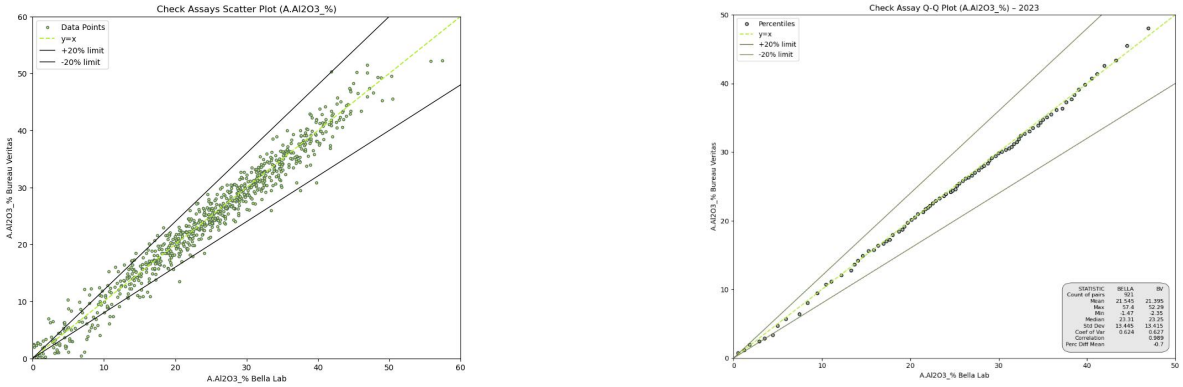
additional data is currently available to review for field duplicates. The process was superseded by the Sample to Extinction process, described in Section 8.4.3.5.

3.4.3.3 Check Assays – Umpire Laboratory Checks

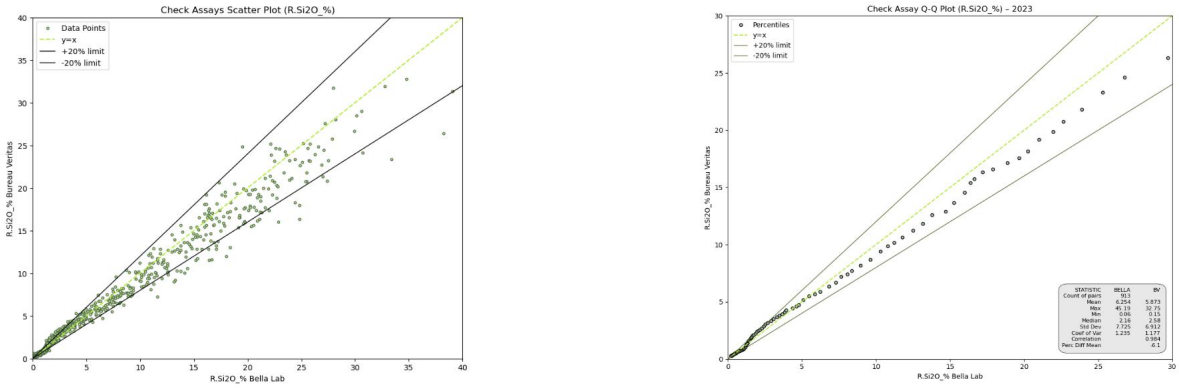
Alcoa sends checks of REF samples assayed at Bella Lab to an independent laboratory, Bureau Veritas Minerals (BV) in Canning Vale, Western Australia for an impartial review. BV holds NATA accreditation No.626 and it is accredited for compliance with ISO/IEC 17025 – Testing. SLR was handed out a spreadsheet to examine, with a total of 983 samples that covered the original Bella and REF values as well as the results from the analytes re-assay by FTIR at BV. Results from the REF comparison with BV can be visualized in the form of scatter plots and quantile-quantile plots in Figure 8-10, Figure 8-11, and Figure 8-12 for AL, SI and FE. The associated method of analysis for each REF analyses are listed in Section 8.3.2.1.

Results for AL show an acceptable difference of -0.7%, where Bureau Veritas presents slightly lower values compared to the Bella Lab, with a strong correlation of 0.989 for 921 pairs. The Quantile-Quantile plot suggests there does not seem to be any systematic bias in the measurements; since the data points follow the trend line closely and are consistent across the range of values. The analysis of SI showed a difference between pairs of -6.1%. Bureau Veritas is reporting marginally lower values from 0% to 1%, slightly higher values between 1-4%, and exhibits a low to moderate bias above 4%. However, the correlation of 0.984 is considered good for 913 pairs and it may be worth noting that both populations are statistically similar. The QP recommends further investigation on the protocol applied by Bureau Veritas for SI that may be affecting the resulting bias. The results of FE demonstrated a good correlation, with a coefficient of 0.985 and a low difference between means of 0.4%.

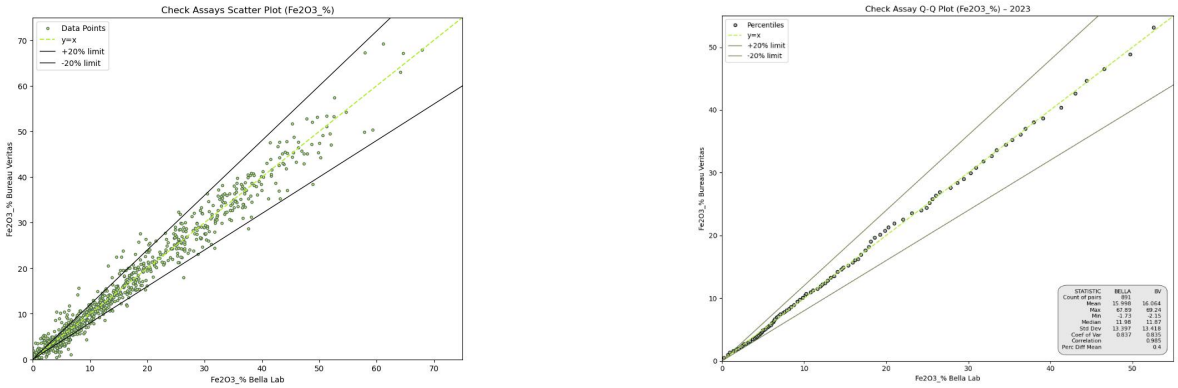
igure 8-10: Scatter Plot, Quantile-Quantile Plot and Statistics of AL Umpire Laboratory Checks – Bella and Bureau Veritas



igure 8-11: Scatter Plot, Quantile-Quantile Plot and Statistics of SI Umpire Laboratory Checks – Bella and Bureau Veritas



igure 8-12: Scatter Plot, Quantile-Quantile Plot and Statistics of FE Umpire Laboratory Checks – Bella and Bureau Veritas



3.4.3.4 Twinned Hole Studies

Since the last report (SLR, 2022), the twin hole studies campaign has been suspended because of its limited value and therefore, no additional data is available for an updated analysis.

3.4.3.5 Sample To Extinction (STE) Samples

After a few reviews of the data sets between 2018 and 2021 by independent consultants, biases and poor repeatability were reported. The issue was investigated, and it demonstrated that perhaps the splitting at the drill rig was incorrect, and also illustrated the sampling principle that pulverizing (reducing the particle size) before splitting will always reduce the error. On the basis

of these studies and external review, modifications to the splitting procedure at the rig were carried out.

Since 2020, Alcoa refined the STE sampling procedure to now collect one sample per shift from each drill rig and assay three Daughters after pulverizing and splitting. The 2023 STE clean dataset examined by SLR contained results for 400 pairs. SLR has used this data set to prepare bivariate statistics, scatter plots and precision plots.

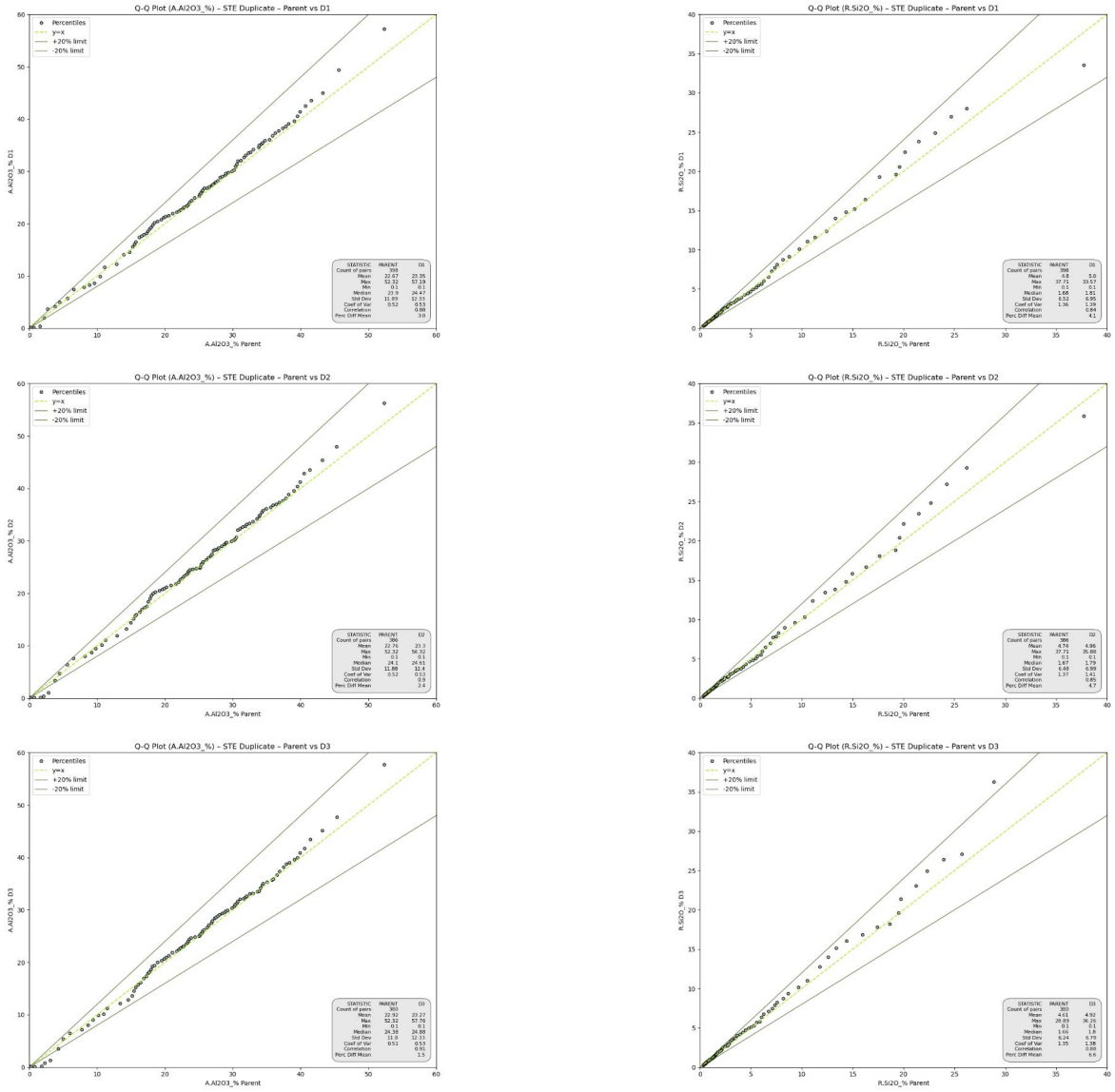
Comparisons were carried out for the analytes AL, SI, and FE between:

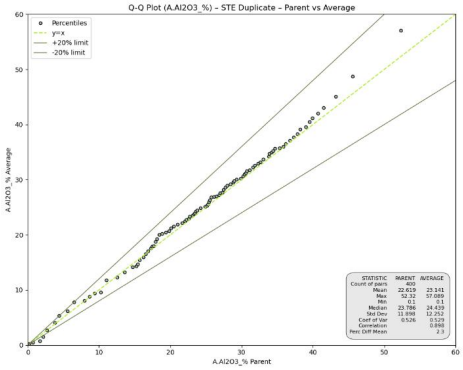
- Daughter 1 vs the Parent
- Daughter 2 vs the Parent
- Daughter 3 vs the Parent
- Daughter 2 vs Daughter 1
- The average of the Daughters vs the Parent

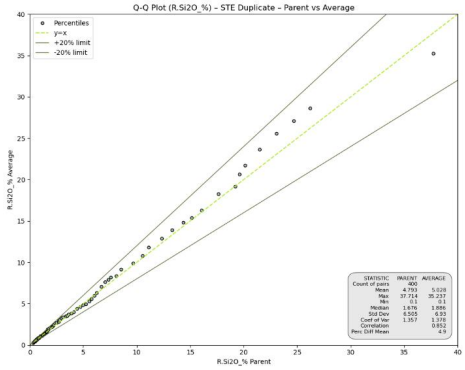
The Parent-Daughter studies showed that the test results present reliably repeatability for the residue pulp repeats, meaning the test results were similar across multiple trials. Although the relationship between the tests was strong, the exactness of the match was not perfect, with a match score (correlation coefficient) between 0.921 and 0.948. The Daughters (D1, D2, and D3) were very close to the original sample (Parent), indicating that the methods used to prepare and divide the sample were done properly. The AL levels were consistently higher in the daughters compared to the parent, especially when the AL levels were between 0-8%, with more variation in results when levels were between 0-5%. The correlations for aluminum oxide were 0.88 for D1, 0.90 for D2, and 0.91 for D3. Results for SI showed an alternance of low and high bias, the first low bias ranging from 0-5%, the second low bias from 5% to 8% and the last high bias for grades 8% and above. The correlation for SI ranged from 0.84 to 0.88. As for the results of FE, a slightly low bias was identified for each parent-daughter set but is most prominent above 8%. The correlation coefficients varied between 0.91 and 0.94. Examples are provided in Figure 8-13 for AL and SI.

As expected, similar repeatability with the individual Daughter analysis was reported between the residue results (the average of the Daughters) and the normal drill sample (the Parent), with comparable bias suggestions. It is therefore reasonable to say that split taken at the drill rig (Parent, taken by splitting down to 150 g) is as good a representation of the drill interval grade as collecting the whole of the residue and carrying out pulverizing, homogenization and splitting.

igure 8-13: Quantile-Quantile Plot of Parent and Individual Daughters' Analysis of AL (on the left) and of SI (on the right)







While the STE procedure could be retained for specific studies, in the QP's opinion, the reintroduction of field duplicates using appropriate riffle splitters under supervision should be considered.

3.4.3.6 Holyoake Program

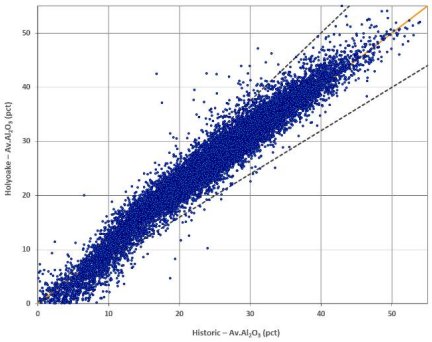
Submitting historic assays to be re-evaluated is a method that helps monitor the quality of the historical data to guide daily production. A set of 33,224 historic and recent assays was provided to SLR, which was cleaned up to produce a total of 15,412 perfectly match pairs. The QP prepared an analysis which included a comparison of the original historic FTIR Al and SI assay and recent Holyoake duplicate assay results. Alcoa implemented the Holyoake check assay in 2021.

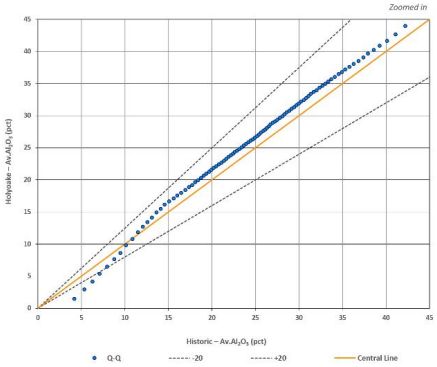
The large pool of samples facilitated the interpretation of accuracy and precision. The analysis of both AL historic versus Holyoake results indicates clearly that recent values are higher above 10% in grade, confirming a clear high bias. Below 10%, the values are lower, showing a low bias, and mostly outside the acceptable limit of 20% difference. Both affirmations can be visualized in Figure 8-14. Values of SI are behaving similarly, as observed in Figure 8-15, with a low bias between grade of 0 and 5%, and a strong high bias for values above 5%. The percent difference between the means are quite high for both analytes, at 5.3% for Al and 13.5% for SI.

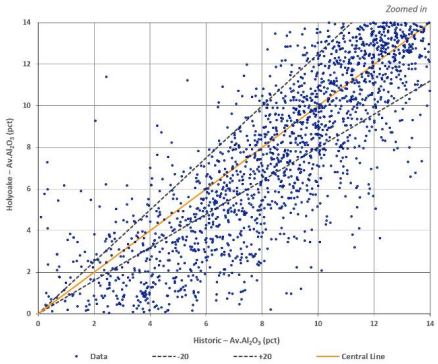
These differences can be the results of an improvement of the analysis method and procedure since 2005 reflecting a better geochemical understanding of the deposit. The QP recommends addressing these biases by limiting the use of historic data when possible and continuing the re-assay program of assays collected before 2005.

igure 8-14: Scatter Plot, Quantile-Quantile Plot and Statistics of AL Historic and Holyoake Results.

Scatter Plot – AL	Quantile-Quantile Plot – AL



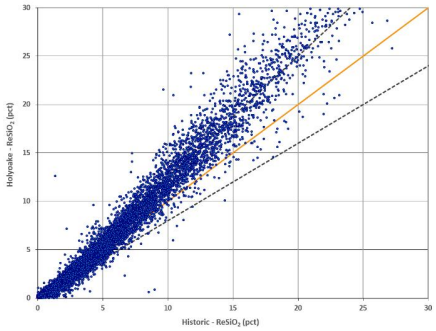


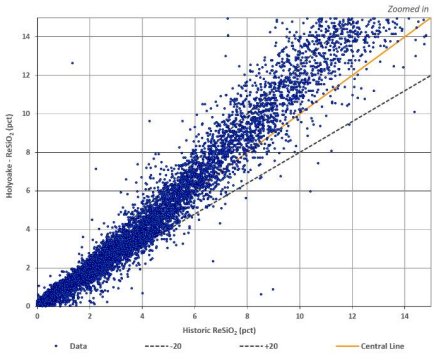


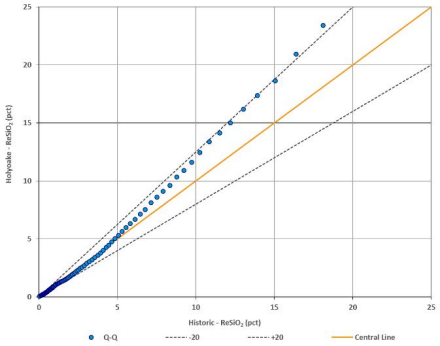
	Original	Duplicate
Number of Samples (N):	15,412	15,412
Mean (%):	23.71	24.96
Maximum Value (%):	59.00	58.60
Minimum Value (%):	-4.09	-2.08
Median (%):	24.46	26.10
Variance:	101.39	120.83
Std. Dev:	10.07	10.99
Co-ef. Variation:	0.42	0.44
Correlation Coefficient	0.975	
%Difference Between Means	-5.3%	

igure 8-15: Scatter Plot, Quantile-Quantile Plot and Statistics of SI Historic and Holyoake Results.

Scatter Plot – SI	Quantile-Quantile Plot – SI







	Original	Duplicate
Number of Samples (N):	15,412	15,412
Mean (%):	3.65	4.14
Maximum Value (%):	34.55	42.96
Minimum Value (%):	-0.92	-0.13
Median (%):	1.64	1.48
Variance:	21.37	34.71
Std. Dev:	4.62	5.89
Co-ef. Variation:	1.27	1.42
Correlation Coefficient	0.987	
% Difference Between Means	-13.5%	

3.4.3.7 Stockpile Feed and Sampling

Refinery feed grade is monitored at Huntly and Willowdale using material collected at the Pinjarra and Wagerup sample plants. At each operation, the sample plants are located at the refinery end of the overland conveyors, just prior to the stockpile stackers.

The stockpile area at the Pinjarra refinery is fed by two conveyor belts (SP-171 and SP-271) that derive their ore from the same crusher (currently at Myara). Prior to the ore being combined from the belts and fed to the stockpile area, it passes through a sampling tower that alternatively takes a primary cut from each belt, dries, crushes, subsamples and combines them into two parallel samples for 12 hour shifts.

A comparison of these paired samples (SLR, 2022) found no material issues and no new data was presented for this review.

3.5 Conclusions

It is the SLR QP's opinion that the data reviewed from November 2022 to September 2023, along with the protocols in place for ensuring accuracy and precision, offer sufficient confidence on the reliability of the data used in resource estimation. Sample and data security protocols adhere to the best industry standards.

Specifically:

- The current use of internal standards provides a robust framework for ensuring the precision and accuracy of assay data through continuous adjustments. SLR recommends investigating and correcting the slightly negative bias detected for the SI and FE results from the third quarter of 2023, to prevent any long-term trending bias that might adversely affect the Mineral Resources estimate.
- The regular external checks performed by Bureau Veritas have ensured the reproducibility of the Bella lab results. SLR recommends investigating and reviewing the protocols under which reactive silica has been analyzed at both Bella and Bureau Veritas, that may be creating the final bias of -6.1% observed.
- The STE method is as good a representation of the drill interval grade as collecting the whole of the residue and carrying out pulverizing, homogenization and splitting. Additionally, considering the STE process's efficacy, the reintroduction of field duplicates using appropriate riffle splitters should be contemplated for further validation of the sampling process.

It is the opinion of the SLR QP that the sample preparation, security, and analytical procedures used for the Alcoa Mineral Resource meet conventional industry practice and are adequate to allow provision of data included in this Mineral Resource estimate. FTIR is not widely used yet in the bauxite industry but is becoming more widely accepted and applied at more operations. At Alcoa, the method has been consistently applied successfully for a decade and is routinely validated by industry standard XRF and wet chemical procedures as discussed in Sections 8.3 and 8.4.

It is the opinion of the SLR QP that, from the studies on FTIR repeatability discussed above, the overall precision and accuracy of the FTIR assaying is acceptable and adequate for use in a Mineral Resource estimate.

9.0 Data Verification

9.1 Data Structures

Wherever possible the transfer of geological, sampling and assaying data is now carried out digitally.

The use of rugged field tablets was introduced after an external review (Snowden, 2015). The data recorded at the drill rig is uploaded daily via WiFi for validation prior to importing into the acQuire database. This allows the data to be captured, checked, approved, and then loaded without any further manual keystroke entry.

The sample preparation and assaying data are all recorded at the Bella facility (see Figure 8-3) allowing all aspects of the sample preparation to be tracked and transferred to KWI through direct connection to their Laboratory Information Management System (LIMS). After calibration, validation and checking of the FTIR and REF assays they are transferred digitally to the acQuire database.

Within the database, scripts are run to prioritize the results and to define the BEST value for each analyte (e.g. AL_BEST, SI_BEST, etc.). The downhole accumulations of all grades are calculated, and the base of mineralization is determined. Other values are also calculated such as the Density using a regression equation (see Section 11.9.5).

An events table is used to change the status of each hole at all stages as it progresses through the validation process from designed, to drilled, to dispatched, to lab pending, to validated.

The various downhole geological features (LithCode, Seam, Geol Floor, etc.) are all verified spatially, validated by geologists using the vertical position and assays (e.g. Figure 7-6), and where appropriate metadata (e.g. Status Flag) is added to record the basis of the interpretation.

The required modelling files are exported from the acQuire database by the geostatisticians using queries. The final Mineral Resource models are then imported into the over-arching ArcMap environment for mine planning, and integration with the environmental and other planning protocols.

igure 9-1: Visual Display of Hole Status (logged and assayed) for Hole G39150224 in Serpentine (Alcoa, 2021)

9.2 Data Verification Measures

The QP interrogated the data extracted from the acQuire database for two areas (Serpentine and Millars). For these two areas, the count of records in each table is summarized in Table 9-1.

Table 9-1: Count of Records by Database Table for Two Database Extracts

Data Type	Table	Serpentine	Millars
Collars	*tblass*	6,362	8,298
Surveys	*tblsur*	6,362	8,298
Assays	*tblass*	59,622	70,905
REF Assays	*tblassrefs*	611	711
Lithology	*tblgeoLithology*	69,564	82,762
Geology Floor	*tblgeoGeolFloor*	69,561	82,761
Seam	*tblgeoSeam*	69,564	82,762

Extensive checks were run to validate the integrity. These included searching for duplicate records, downhole gaps¸ interval overlaps, missing collar or survey records, etc.

The following observations were made:

- As expected, the Validation Tables ensure that there are no anomalous codes.
- Checks for assay closure (adding all assays to 100%) are done by Alcoa when the assay data is prepared for resource estimation. The availability of total oxide assays (e.g. AT and ST) has progressively increased over time.
- In a few cases (156 for Serpentine, drilled from October 2019 to December 2019, and 114 for Millars) there were blank values for LithCode in the table geoLithology at the top of the hole, followed by a zero-length interval (e.g. From 1.2 m and To 1.2 m) with a valid LithCode. This is due to the practice of not sampling the overburden but instead discarding it, creating in some cases a short interval with no assay or LithCode. This type of database error is usually picked up by a validation check looking for zero length drill segments. In this deposit, because the geological logging is expected to follow a vertical sequence (which is used for some of the interpretation scripts), such zero length intervals are not uncommon to allow for pinching and swelling of some horizons.

Some calculation and range checks were run that highlighted gaps or anomalies in the scripts used to validate that data before resource estimation:

- There are 19 records with ST_BEST values greater than 100% in Serpentine and 2 in Millars. Such values should be investigated, trimmed, and flagged.
- There are a number of records (107 for Serpentine and 165 for Millars) where AL (available alumina) is greater than AT (total alumina). There are also records (1,273 for Serpentine and 2,029 for Millars) where SI (reactive silica) is greater than ST (total silica). These should be further investigated, flagged in the database, and future instances flagged during data loading so that when such results (infrequently) occur there is recognition during the data loading that this is due to FTIR assays outside the normal calibration range, rather than due to sample mix-up or contamination.

- Checks on the regression calculation for density were run on the Serpentine database. There were 1,187 records not flagged as Seam=CAP, that had density values ranging from 2.04 to 2.28. These were either 20% or 40% CAP and had a density value reflecting the length weighted average of the two domains assigned. Of the total 6,399 records with valid seam and iron data, SLR found that 5,566 (87%) were within ±0.1 of the database density value. The remaining 833 records with Seam=CAP and an FE_BEST assay were either 60% or 80% CAP and had a density value reflecting the length weighted average of the two domains assigned.

9.3 QP Opinion

The database extracts that were provided proved very robust to scrutiny, except for a small number of anomalies noted, none of which are considered material in view of the vast number of drill holes, assays, and other records.

The QP is of the opinion that the database is adequate, and the data is appropriate for the purpose of Mineral Resource estimation.

10.0 Mineral Processing and Metallurgical Testing

Mineral processing and metallurgical test work samples representing the Darling Range operations are not available; however, this is an operating mine and consistent operating data demonstrates that the ore is directly transported to the refineries following size reduction. SLR understands that these operating data represent all material mined for ten years and sourced from four mining regions and as such represent the various types and styles of mineralization within the Darling Range operations.

It is important to note that there is no upgrading involved in the processing and therefore the processing recovery can be considered above 99% allowing for any losses in production.

The operating data between 2010 to 2023 for the Willowdale operation and 2010 to 2023 for the Huntly operations indicates that the product from the Darling Range operations consisted of an average AL grade of 33% and average Total SiO_2 grade of 20%. It is important to note that higher grades of SI are potentially deleterious but that it has remained below 1.31% throughout the 14 years of operation with the only exception of 2023 (1.64% for Pinjarra and 1.61% for Kwinana). SLR understands that according to the mine plan the Total SiO_2 content on an annual average basis remains below 22.5%, and that SI, on the same basis, remains at or below 1.8% (for the combined mine output) for the next nine years. This means there is no evidence of any problematic deleterious elements present in the Darling Range ore within the next nine years of production.

A summary of the product grades from the Darling Range operations are shown in Table 10-1, Table 10-2 and Table 10-3.

able 10-1: Product Grades of Darling Range Operation (Willowdale–Wagerup refinery feed)

Year	Moisture (%)	LOI (%)	Total Al_2O_3 (%)	Total SiO_2 (%)	Fe_2O_3 (%)	TiO_2 (%)	AL (%)	SI (%)
2010	8.0	22.3	38.1	21.8	17.5	1.43	32.8	1.13
2011	7.9	20.9	40.6	22.3	17.6	1.47	32.8	1.14
2012	8.0	21.0	38.1	21.1	18.1	1.58	33.0	1.16
2013	7.7	21.2	36.8	18.6	19.5	1.61	32.7	1.21
2014	7.9	21.2	37.2	18.1	19.3	1.62	33.1	1.17
2015	7.5	21.5	37.0	18.0	19.0	1.72	33.2	1.11
2016	7.8	21.6	37.6	16.7	20.6	1.75	33.1	1.14
2017	7.8	21.8	37.9	16.0	21.4	1.83	33.0	1.10
2018	8.0	21.6	38.3	15.9	21.3	1.88	33.0	1.13
2019	7.6	21.3	37.3	16.8	21.3	1.85	32.3	1.15
2020	7.8	21.5	37.4	14.1	23.3	2.10	32.5	1.07
2021	8.3	21.5	37.5	18.0	21.0	1.73	32.4	1.06
2022	7.8	21.1	37.5	17.9	21.3	1.85	32.3	1.02
2023	7.8	20.6	36.8	18.8	21.5	1.80	31.6	1.04

able 10-2: Product Grades of Darling Range Operations (Huntly–Pinjarra refinery feed)

Year	Moisture (%)	LOI (%)	Total Al_2O_3 (%)	Total SiO_2 (%)	Fe_2O_3 (%)	TiO_2 (%)	AL (%)	SI (%)
2010	7.4	20.8	38.6	20.8	17.4	1.34	33.1	1.05
2011	7.8	21.0	38.8	20.0	18.0	1.41	33.0	1.04
2012	8.2	21.4	39.4	20.2	17.1	1.37	33.6	1.13
2013	8.1	21.5	39.8	19.5	17.1	1.35	33.9	1.12
2014	8.2	21.5	39.6	18.6	17.7	1.45	33.8	1.16
2015	8.0	21.6	39.3	19.5	17.3	1.41	33.8	1.08
2016	8.2	21.4	39.2	20.3	17.0	1.38	33.8	1.13
2017	8.3	21.3	39.3	19.6	17.5	1.42	33.9	1.11
2018	8.3	21.4	39.1	19.5	17.6	1.42	33.7	1.07
2019	8.1	21.3	38.9	20.1	17.2	1.38	33.5	1.12
2020	8.4	21.4	39.1	18.4	18.6	1.52	33.5	1.20
2021	8.9	21.1	38.8	19.7	18.3	1.48	33.0	1.24
2022	8.5	20.8	37.9	19.3	19.9	1.62	31.9	1.31
2023	9.1	19.7	35.6	20.0	21.9	1.84	29.6	1.64

able 10-3: Product Grades of Darling Range Operations (Huntly–Kwinana refinery feed)

Year	Moisture (%)	LOI (%)	Total Al_2O_3 (%)	Total SiO_2 (%)	Fe_2O_3 (%)	TiO_2 (%)	AL (%)	SI (%)
2006	7.8	21.7	39.3	18.7	18.0	1.37	33.9	1.10
2007	8.0	21.6	39.2	19.5	17.6	1.33	33.7	1.11
2008	7.9	21.3	39.1	20.1	17.3	1.34	33.8	1.09
2009	7.8	21.3	39.0	20.7	17.3	1.29	33.5	1.02
2010	7.5	21.4	38.6	20.8	17.4	1.26	33.1	1.04
2011	7.6	21.3	38.7	20.1	18.2	1.30	32.8	1.03
2012	8.2	21.5	39.4	20.3	17.0	1.25	33.5	1.13
2013	8.1	21.8	39.8	19.5	17.1	1.26	33.9	1.11
2014	8.2	22.0	39.6	18.8	17.7	1.37	33.7	1.17
2015	8.0	22.0	39.4	19.7	17.2	1.31	33.8	1.08
2016	8.2	21.7	39.1	21.3	16.1	1.32	33.8	1.03
2017	8.3	22.2	38.9	20.6	16.5	1.34	33.8	1.03
2018	8.3	22.1	38.6	20.8	16.7	1.33	33.9	1.05
2019	8.0	21.8	38.9	21.2	16.4	1.32	33.5	1.12
2020	8.4	21.7	39.1	19.8	17.6	1.44	33.5	1.16
2021	8.9	21.0	38.7	20.9	17.6	1.39	33.0	1.20

2022	8.5	20.8	37.6	20.7	18.6	1.50	31.9	1.26
2023	9.1	20.0	35.8	21.2	20.6	1.76	29.6	1.61

l0.1 QP Opinion

SLR is of the opinion that the Darling Range operation demonstrates that ore can be effectively crushed and supplied to a refinery for further upgrading to produce Alumina. The historical operational data confirms that the ore consistently meets refinery specifications without any deleterious elements. Based on this, and the additional information about the mine plan provided by Alcoa, it is reasonable to assume that the ore from Darling Range can be economically processed for the next nine years.

l1.0 Mineral Resource Estimates

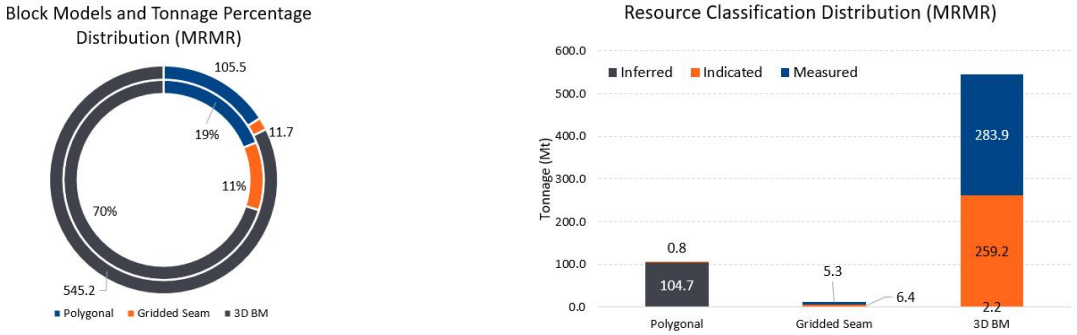
l1.1 Summary

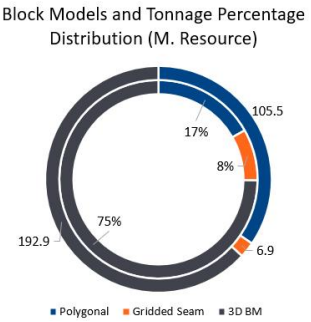
The Darling Range resource comprises over 20,000 resource blocks, with a combined area of approximately 10,250 ha, averaging 30 kt of Mineral Resource per block. The lateritic bauxites occur as surficial coverings of limited thickness, typically between 4 m to 8 m, but with significant lateral extent. Historically, resource estimation was by 2D plan-polygonal methods (Polygonal) referred to by Alcoa informally as the ResTag procedure. More recently, resource estimation by Alcoa has evolved to include gridded seam (GSM) and 3D block (3DBM) models using geostatistical techniques. Mineral Resource estimates based on GSM and 3DBM models (and some Polygonal models) consider practical mining constraints.

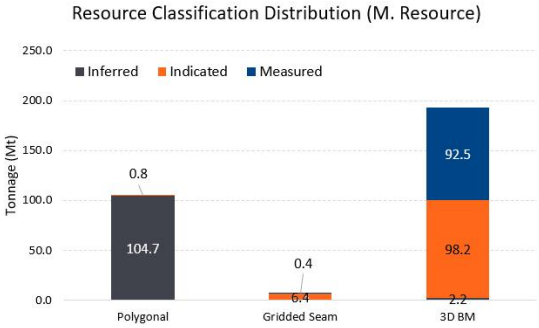
The delineation of Mineral Resources using 3D methods has focused on well drilled areas that fall within the nine-year mine plan. Approximately 82% of the total tonnage, including Mineral Resources and Mineral Reserves (MRMR), of the Darling Range project is already in 3D block models. GSM models were typically constructed in areas with 15 m spaced drilling, which comprises 10 models. Approximately 34% of the Mineral Resources are based on Polygonal (ResTag) estimates which are mostly located in areas of wider-spaced (30 m and 60 m) drilling and are of lower confidence. All new resource updates employ the 3DBM methods irrespective of drill hole spacing.

Figure 11-1 illustrates the tonnages and number of models for each model type that are being discussed in this section.

igure 11-1: Circle Charts Showing the Tonnage (external circle) and Number of Models (internal Circle) and Bar Charts Showing the Tonnage by Mineral Resource Categories







Charts on the top refer to all the tonnage of the Darling Range project, and on the bottom to the exclusive Mineral Resources

Mineral Resource estimation was carried out by Alcoa and resources are defined for 92 sheets in 70 mining regions. There are 13,467 discrete zones of mineralization that comprise the resource, each split vertically into 4 domains for which 11 elements were estimated. SLR carried out audits on representative models selected in conjunction with Alcoa and comprising:

 Models to be mined in the short to medium term (less than 5 years)

 Models with significant amounts of resource material

 Models representing the three estimation methods used by Alcoa.

The models audited were:

 ResTag estimation method: Teesdale

 GSM estimation method: Larego (F54 and F55)

 3DBM estimation method: Myara North M25, M22, M23, and Holyoake H12.

The audit process by SLR comprised examination of the procedures used by Alcoa, independent review, discussion with staff, and normal validation checks (e.g., global statistics, swath plots, visual examination, and change of support analysis). M23 and H12 were the focus of the 2023 work, while R25 and R22 were reviewed in detail in the previous years.

The process used by Alcoa involves an integrated approach to data collection, bauxite delineation, and production planning aimed at the provision of feedstock that meets the requirements of the local alumina refineries.

For all 3 estimation methods drill holes were flagged with geological units using multi-pass geochemical scripts that included thickness constraints. The GSM flagging process incorporated some additional mining constraints. Geological interpretations in both 2D and 3D were constructed with the flagged drill hole composite data, which constrain the spatial estimation of bauxite mineralization. Subsequent to block grade estimation, mining constraints are applied to the 3DBM models to restrict Mineral Resources to areas of potentially economic bauxite mineralization.

AL, SI, FE, ST, PT, OX, EO, CO, and SU are estimated for all models, but only AL and SI are reported for the Mineral Resource. GSM uses inverse distance weighting methods to assign grades to the bauxite profile, and 3DBMs rely on ordinary kriging block grade estimates.

Validation methods differ slightly for the different model types, but all models are reported by Alcoa to validate well against the input drill hole data.

Mineral Resources have been classified in accordance with the definitions for Mineral Resources in S-K 1300, which are consistent with Australasian JORC Code (2012) and Canadian Institute of Mining Metallurgy and Petroleum (CIM) (2014) definitions in NI 43-101 and are determined primarily on drill hole spacing. Models constructed primarily with pre-2010 drill holes are downgraded as this information is considered to be of lower confidence.

Mineral Resource estimates exclusive of Mineral Reserves Darling Range deposit are shown in Table 11-1, and include a 5% reduction factor in tonnage, based on the results of annual reconciliations (see discussion on density in Section 11.14).

able 11-1: Summary of Darling Range Mineral Resources exclusive of Mineral Reserves – 31 December 2023

Category	Tonnage (Mt)	AL (%)	SI (%)
Measured	93.0	30.44	1.52
Indicated	105.4	30.75	1.34
Measured + Indicated	**198.4**	**30.61**	**1.42**
Inferred	106.9	32.32	1.22

Notes:

1. The definitions for Mineral Resources in S-K 1300 were followed, which are consistent with JORC (2012) definitions.
2. Mineral Resources are 100% attributable to AWAC.
3. Mineral Resources are estimated at a geological cut-off grade, which generally approximates to nominal cut-off grades of 27.5% available alumina (AL) with less than 3.5% reactive silica (SI). Locally the cut-off grade may vary, depending on operating costs and ore quality for blending. The target grade for mine planning is 32.7% AL and 1.0% SI.
4. Mineral Resources have been estimated using a LOM price of $21.46/t representing an average arms-length sale of bauxite from Darling Range. The price that constrains the estimate for optimization was discounted to exclude export logistics costs, i.e. the base price was $21.46/t, and the discounted price was $16.00/t.
5. A minimum total mining thickness of 1.5 m was used.
6. In situ dry bulk density is variable and is defined for each block in the Mineral Resource model.
7. A global downwards adjustment of tonnes by 5% is made to account for density differences based on historic mining performance.
8. Mineral Resources are reported exclusive of Mineral Reserves.
9. The reference point for the Mineral Resource is the in situ predicted dry tonnage and grade of material to be delivered to the refinery stockpile following the application of Mineral Resource pit.
10. Metallurgical recovery has not been directly considered in the estimation of Mineral Resources as the Darling Range operations do not include a conventional processing plant, only crushing as described in Section 14.0. The metallurgical recovery of the three refineries (Kwinana, Pinjarra, and Wagerup) are beyond the boundaries of the mining operations being the subject of the TRS.
11. Numbers may not add due to rounding.

l1.2 Comparison with Previous Estimate

A comparison of the current Alcoa Mineral Resource estimate, exclusive of Mineral Reserves, to the previous 2022 Mineral Resource estimate is presented in Table 11-2. Overall, the Measured and Indicated resources increased 101.7 Mt (+105%), from 96.7 to 198.4 Mt, while the Inferred resource decreased 33.4 Mt (-24%), from 140.3 to 106.9 Mt. This results in a net increase of 68.3 Mt for Darling Range.

The differences are primarily due to the following changes:

- Depletion of the Mining Avoidance Zone (MAZ) around Dwellingup, to preserve the social, recreational, and environmental values of the area. Alcoa has committed to refrain from mining in this Zone.
- Grade optimization to the nominal cut-off in Myara and Larego, which also includes additions and re-blocking in Oneil and re-blocking in Larego.
- Exploration activities in Oneil East, which resulted in new Mineral Resource for the region.
- Change in the mine scheduling, which moved material from Mineral Reserves back to Mineral Resources.

able 11-2: Comparison with Previous Mineral Resource Estimates.

Category	Mine	2023 Mineral Resource			2022 Mineral Resource			Difference (%)		
		Tonnage (Mt)	AL (%)	SI (%)	Tonnage (Mt)	AL (%)	SI (%)	Tonnage	AL	SI
Measured	Huntly	51.5	30.49	1.62	26.2	30.48	1.19	96%	0%	35%
	North	0.0	0.00	0.00	0.0	0.00	0.00	0%	0%	0%
	Willowdale	41.5	30.37	1.39	18.7	32.15	1.09	123%	-6%	28%
	Sub-total	**93.0**	**30.44**	**1.52**	**44.9**	**31.17**	**1.15**	107%	-2%	32%
Indicated	Huntly	66.3	30.97	1.50	44.4	31.59	1.16	49%	-2%	30%
	North	0.8	32.26	1.38	0.8	32.26	1.38	0%	0%	0%
	Willowdale	38.3	30.35	1.05	6.6	29.95	1.25	482%	1%	-16%
	Sub-total	**105.4**	**30.75**	**1.34**	**51.8**	**31.40**	**1.17**	103%	-2%	14%
Measured + Indicated	Huntly	117.7	30.76	1.55	70.6	31.18	1.17	67%	-1%	32%
	North	0.8	32.26	1.38	0.8	32.26	1.38	0%	0%	0%
	Willowdale	79.8	30.36	1.23	25.2	31.58	1.13	216%	-4%	9%
	Sub-total	**198.4**	**30.61**	**1.42**	**96.7**	**31.29**	**1.16**	105%	-2%	22%
Inferred	Huntly	11.2	34.36	1.35	44.5	34.74	1.39	-75%	-1%	-3%
	North	15.1	31.62	1.00	15.1	31.62	1.00	0%	0%	0%
	Willowdale	80.6	32.17	1.24	80.6	32.17	1.24	0%	0%	0%
	Sub-total	**106.9**	**32.32**	**1.22**	**140.3**	**32.93**	**1.26**	-24%	-2%	-4%

11.3 Resource Database

11.3.1 Drill Hole Data

Drill hole collar, survey, and assay data are exported from the acQuire database for resource estimation.

Data exports from acQuire currently utilize Python scripts and the Spyder open-source plugin for validation and initial processing, including:

- Removing holes where drill hole intervals lack AL, SI, and FE assays
- Removing holes from the database if located greater than 7 m horizontally from the planned location
- Identifying and removing duplicate or repeat holes based on a set of criteria
- Resetting AT to AL where AL exceeds AT
- Where SI exceeds ST, resetting SI to ST if ST is greater than 15%, otherwise reset ST to SI
- Calculating Assay Total = AT (AL if AT absent) + ST + FE + PT + (SU/17.74) + 2
- Deleting assays for samples where the Assay Total is below 70% or greater than 100%.

The output is a set of CSV files for collar, survey, assay, and geology. The assay file contains a series of variables, including grades, cumulative grades, and historical domaining fields that are no longer used for the current geological modelling methodology. Table 11-3 shows the variables available in the assay output file.

able 11-3: Variables in the assay table

Variable	Description	Variable	Description
Hole ID	Drill hole identification	**Cumulatives Date**	Date Cumulatives script was run
Project	Mining region	**BO_BEST**	Final bohemite AlO(OH) assay - based on DB priority, generally REF first then FTIR
Sample ID	Sample identification	**AL_BEST**	Final available alumina (AL) assay
From	Beginning of the sample	**EO_BEST**	Final extractable organic carbon (C) assay
To	End of the sample	**FE_BEST**	Final Fe_2O_3 assay
Seam	Profile unit - derived from logging. CAP from logged Cap depth then FRI derived from set of rules that determine the first clay sample beneath it	**MS_BEST**	Final magnetic susceptibility assay
Storage Status	Information of the sample's storage	**OX_BEST**	Final oxalate (NaC_2O_4) assay
Cumulative Density	Downhole cumulative density calculated in DB from top of CAP	**CO_BEST**	Final carbonate assay
Cumul_AL	Downhole cumulative AL calculated in DB from top of CAP	**SU_BEST**	Final sulphate (Na_2SO_4) assay
Cumul_AT	Downhole cumulative AT calculated in DB from top of CAP	**PT_BEST**	Final total phosphorus (P_2O_5) assay
Cumul_BO	Downhole cumulative BO calculated in DB from top of CAP	**SI_BEST**	Final reactive silica (SI) assay
Cumul_CO	Downhole cumulative CO calculated in DB from top of CAP	**ST_BEST**	Final total silica (SiO_2) assay
Cumul_EO	Downhole cumulative EO calculated in DB from top of CAP	**AT_BEST**	Final total alumina (Al_2O_3) assay
Cumul_FE	Downhole cumulative FE calculated in DB from top of CAP	**Density**	Density - calculated and stored as an assay - FE based algorithm for CAP otherwise 2. Note that these values are not used by DeepLime but are consistent with the values used other than for OVB and CLY

Cumul_MS	Downhole cumulative MS calculated in DB from top of CAP	**DOM1**	Levels of domain coding - Historical fields no longer used, geochemical domain definition is now run in DeepLime
Cumul_OX	Downhole cumulative OX calculated in DB from top of CAP	**DOM2**	
Cumul_PT	Downhole cumulative PT calculated in DB from top of CAP	**DOM3**	
Cumul_SI	Downhole cumulative SI calculated in DB from top of CAP	**DOM4**	
Cumul_ST	Downhole cumulative ST calculated in DB from top of CAP	**DOM5**	
Cumul_SU	Downhole cumulative SU calculated in DB from top of CAP	**DOM6**	
Cumulatives By	Whoever ran the script to calculate Cumulatives		

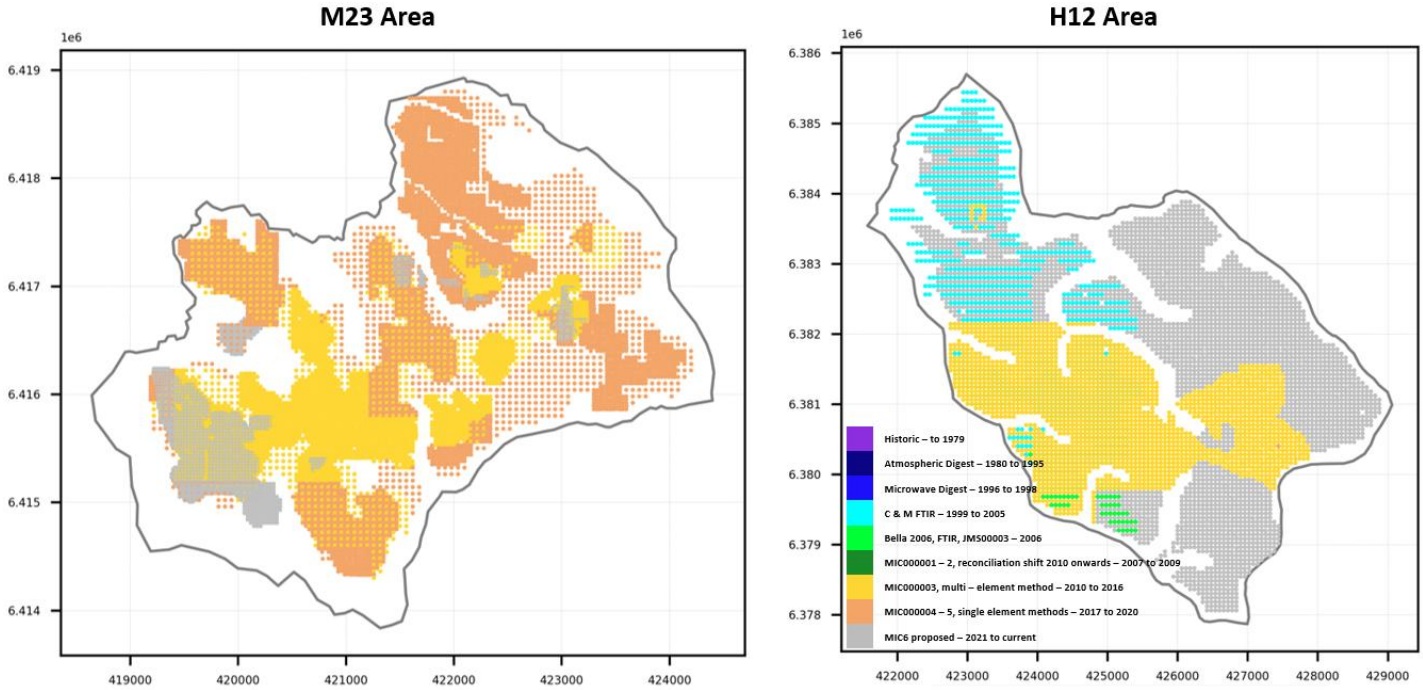
The validation checks have been implemented progressively over time as drill hole data for some project areas includes some samples where AL exceeds AT and SI exceeds ST.

Other than collar elevation adjustments, no further data transformations are applied prior to resource estimation.

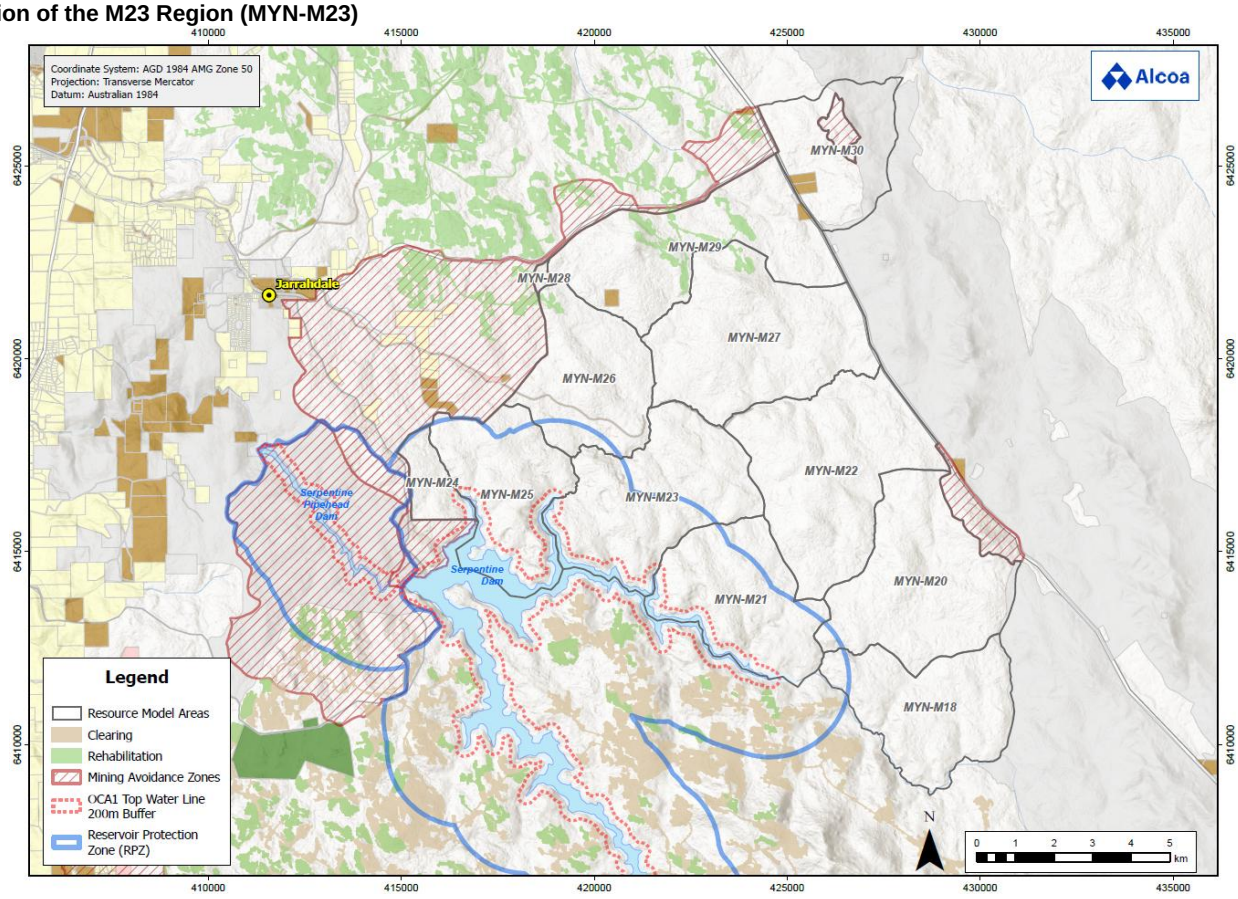
A summary of the drillhole database is outlined in Figure 7-1.

Due to the large lateral extension of the project, SLR randomly selected two areas to be illustrated and detailed in the report, these being MYN-M23 (M23) and HLY-H12 (H12). Figure 11-2 illustrates the drilling in the M23 and H12 areas; Figure 11-3 and Figure 11-4 location of the M23 and H12 areas, respectively.

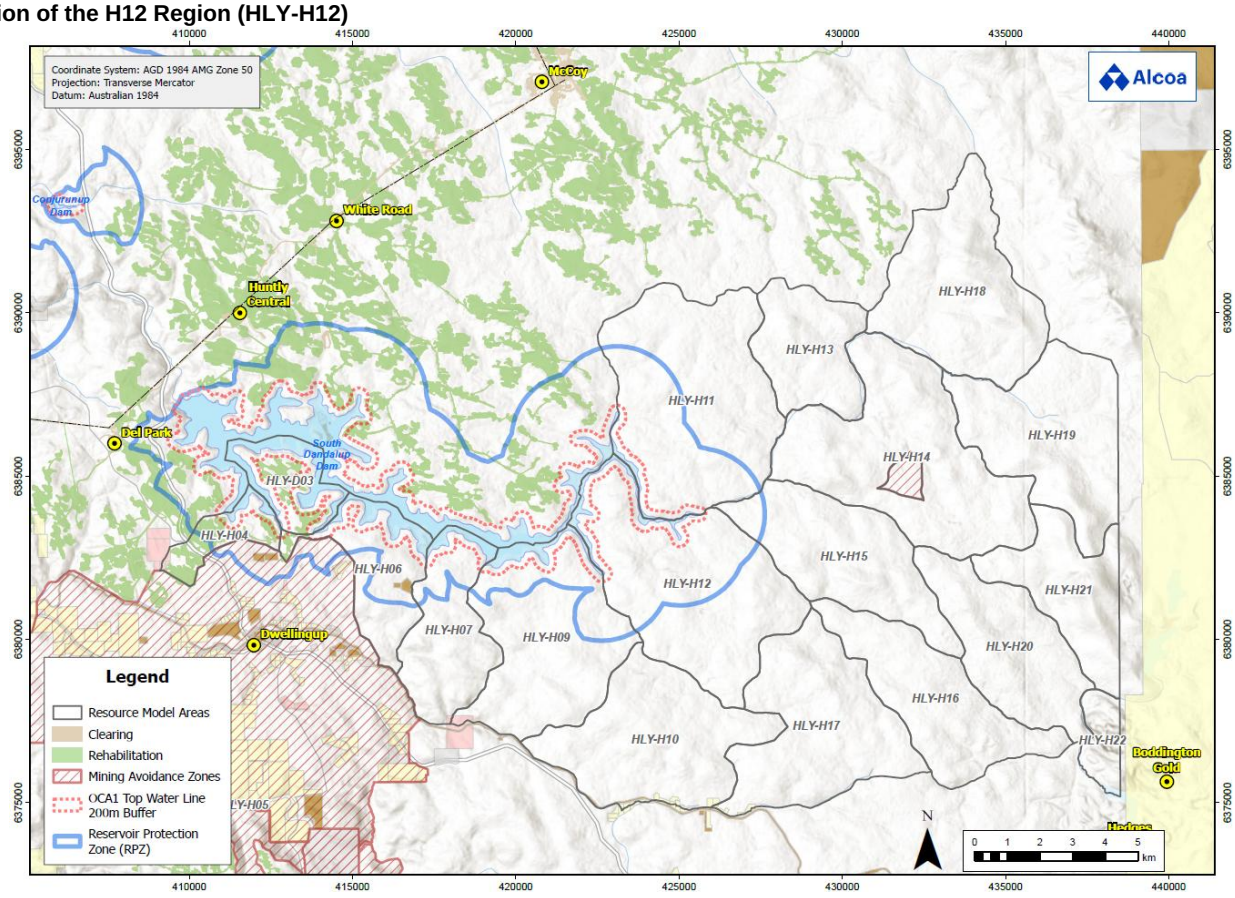
igure 11-2: M23 and H12 area delimitation and drilling. The different colours represent the assay method used for each drilling phase



igure 11-3: Location of the M23 Region (MYN-M23)



igure 11-4: Location of the H12 Region (HLY-H12)



1.3.2 Topographic Data

Digital elevations models (DEMs) were generated from (in order of priority) drill collar survey data, LiDAR survey data, and Landgate satellite data. A 7.5 m by 7.5 m mesh is used for the DEMs. Drill hole collar elevations were registered to the DEM for resource estimation.

1.4 Geological Interpretation

1.4.1 Polygonal Models

For Polygonal resource estimates, grade-based ‘geological’ codes are assigned to drill hole intervals. These codes are used to define the top and bottom of the ‘bauxite’ horizon in each hole, which is then used to estimate the bauxite volumes and average grades within polygons.

The top of the bauxite usually coincides with the base of the overburden, as defined in the drillers’ logs. The base of the Bauxite Zone (termed the geological floor) is defined within the acQuire database using a multi-pass script that applies the following hierarchical set of rules to the sample grades:

Pass 1:

- Uphole search for two consecutive samples with individual AL values ≥27.0%;
- Record depth of the lower of the two samples;
- Check that the cumulative AL at that depth is ≥27.5%;
- Check that the individual SI at that depth is ≤3.5%;
- Check that the cumulative SI at that depth is ≤3.0%;
- Check that the cumulative OX at that depth is ≤4 kg/t;
- Check that the sampled depth is ≥2.0 m, but less than hole depth (if equal, see pass 3);
- If all criteria are met, set flag to “pass”, set geological floor depth to lower sample depth; and
- Proceed to pass 2.

Pass 2:

- Uphole search for two consecutive samples with individual AL values ≥25.5%;
- Record depth of the lower of the two samples;
- Check that the cumulative AL at that depth is ≥27.5%;
- Check that the individual SI at that depth is ≤3.5%;
- Check that the cumulative SI at that depth is ≤3.0%;
- Check that the cumulative OX at that depth is ≤4 kg/t;
- Check that the sampled depth is ≥2.0 m, but less than hole depth (if equal, see Pass 3);
- If all criteria are met, set flag to “pass”, set geological floor depth to lower sample depth; and
- If any criteria fail, geological floor defined in Pass 1 is retained.

Pass 3:

 Uphole search for two consecutive samples with individual AL values ≥27.0%;

 Record depth of the lower of the two samples;

 Check that the cumulative AL at that depth is ≥27.5%;

 Check that the individual SI at that depth is ≤3.5%;

 Check that the cumulative SI at that depth is ≤3.0%;

 Check that the cumulative OX at that depth is ≤4 kg/t;

 Check that sampled depth = hole depth; and

 If all criteria are met, set flag to “pass – open”, set geological floor depth to lower sample depth.

Pass 4:

 Uphole search for two consecutive samples with individual AL values ≥24.5%;

 Record depth of the lower of the two samples;

 Check that the cumulative AL at that depth is ≥25.0%;

 Check that the individual SI at that depth is ≤3.5%;

 Check that the cumulative SI at that depth is ≤3.0%;

 Check that the cumulative OX at that depth is ≤4 kg/t;

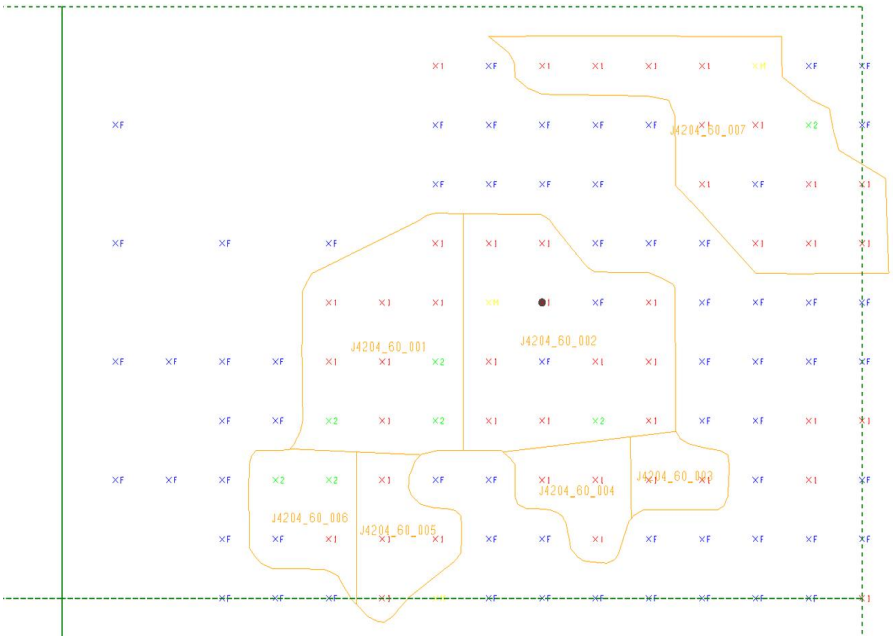
 Check that the sampled depth is ≥2.0 m, but less than hole depth (if equal, see pass 3); and

 If all criteria are met, set flag to “marginal”, set geological floor depth to lower sample depth.

The application of these rules assigns a geological floor depth to each hole, along with a Pass, Pass-Open, Marginal, or Fail flag. Holes flagged as Marginal or Fail are inspected by Alcoa staff members, with manual adjustments applied if warranted. For areas infilled to 15 m spaced holes, the geological floor model is replaced by a mining floor model, which is discussed in the following section.

Results of geological floor flagging are used to subjectively define the lateral extents of the Mineral Resource. Outlines are manually interpreted by Alcoa geologists in ArcGIS or MineSight, and are guided by consistency in thickness, depth, and grade, minimum limits on the number of enclosed samples and the enclosed area, and local geomorphology. The polygons delineate separate areas that typically range in size from 10 ha to 100 ha, with most being around 30 ha. An example plan view is shown below in Figure 11-5.

igure 11-5: Plan View of Polygonal Approach (Pass = red, pass open = green, marginal = yellow, fail = blue) (Alcoa, 2022)



l1.4.2 Gridded Seam Models

GSM models are located in areas of 15 m spaced infill drilling and include practical mining constraints as part of the ‘geological’ interpretation used for resource models.

The base of overburden and the base of caprock is identified in each drill hole as 3D points and wireframed as surfaces. The geological bauxite zone floor, which is defined for the wider drill spacings used for Polygonal estimates, is replaced by a mining floor for GSMs. The mining floor is interpreted directly from the drill hole data presented on the 15 m spaced east-west cross sections, digitized in MineSight as strings, then linked to form wireframe surfaces.

The interpretation of the mining floor is a manual process performed by the site geologist, with the objective of achieving acceptable grades and practical mining outlines. The mining floors are defined using a set of guidelines instead of prescribed rules, including:

 Nominal cut-off grades of ≥27.5% AL and ≤3.5% SI are used for mining floor definition;

 If the SI grade in the sample immediately below the floor exceeds 5.0%, the floor is raised 0.5 m;

 A minimum face height (distance from mining floor to the base of overburden) is targeted;

 Face heights exceeding 4 m will require multiple cuts or bench mining;

 The overburden to face height ratio should not exceed 1;

- A maximum floor gradient of 1 in 7 is required between 15 m spaced holes (the gradient can be increased to 1 in 5 for second and third cuts);
- Benching should be invoked where the gradient constraints cannot be maintained; and
- The floor interpretations should be extended laterally into at least one of the surrounding waste holes.

The base of overburden and mining floor surfaces are used to flag the drill hole samples. For each drill hole, the samples located below the base of the overburden and above the mining floor are composited into a single interval, with composite grades length- and density-weighted. Additional drill hole composites are generated for second and third pass mining floors.

The composite data are examined in plan view, and polygons are digitized around the interpreted lateral extents of the mining zones using the following guidelines:

- Nominal cut-off grades of ≥27.5% AL and ≤3.5% SI for lateral boundary definition;
- The boundary is positioned at least 15 m away from holes with SI grades exceeding 5%;
- Buffer zones are placed around environmental constraints, and around bedrock outcrop;
- Internal waste zones should contain at least three drill holes;
- Individual polygons should have an area of at least 1 ha; and
- A width of at least 45 m should be retained for mining equipment movement.

The resulting polygons are divided into typically smaller ‘mining’ blocks that each contain approximately 20 kt to 40 kt of Mineral Resource.

11.4.3 3D Block Models

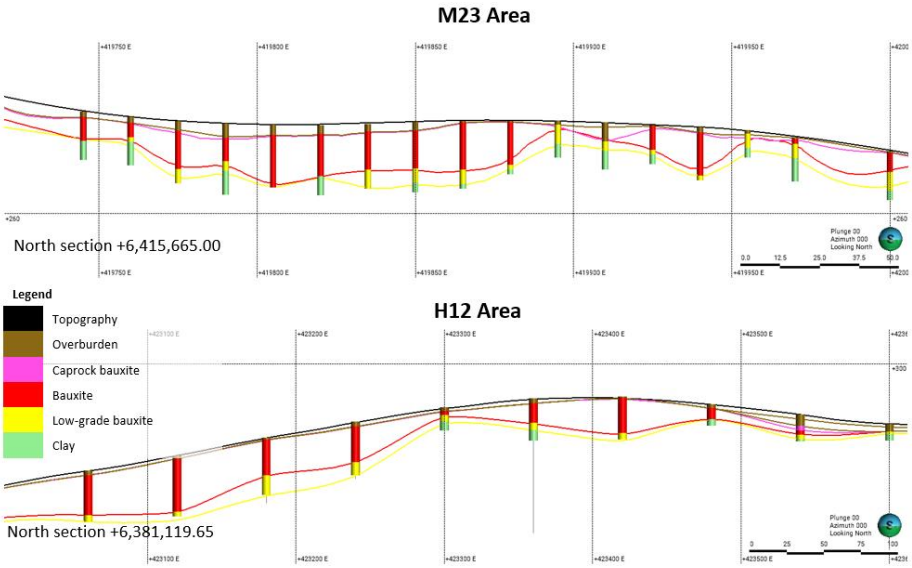
Similar to the Polygon and GSM interpretation approaches, a set of rules written in Python scripts are used to assign initial domain codes to individual samples. These domain codes are then modified in several subsequent passes that take into account the grades and coding of other intervals in the hole.

The initial script is used to assign a domain code to each interval based on various combinations of major analyte threshold grades. A total of six main material type domains (DOMAF) are defined:

- DOMAF = 99: overburden;
- DOMAF = 10: caprock waste;
- DOMAF = 20: caprock bauxite;
- DOMAF = 30: bauxite;
- DOMAF = 40: low-grade bauxite; and
- DOMAF = 50 clay.

Figure 11-6 illustrates an example of those domains in the M23 and H12 areas. Each of these material types (apart from overburden) is divided into up to five grade-based sub-domains. Three subsequent coding passes are conducted that iteratively adjust the codes to combine the sub-domain into the six main domains while ensuring that strict stratigraphic ordering is maintained. A further two passes are coded to assign domain codes that denote whether the material is derived from granite or dolerite.

igure 11-6: Section Showing Domain (DOMAF) and the Main Wireframed Surfaces for the M23 (top) and H12 (bottom) areas– vertical scale 5x

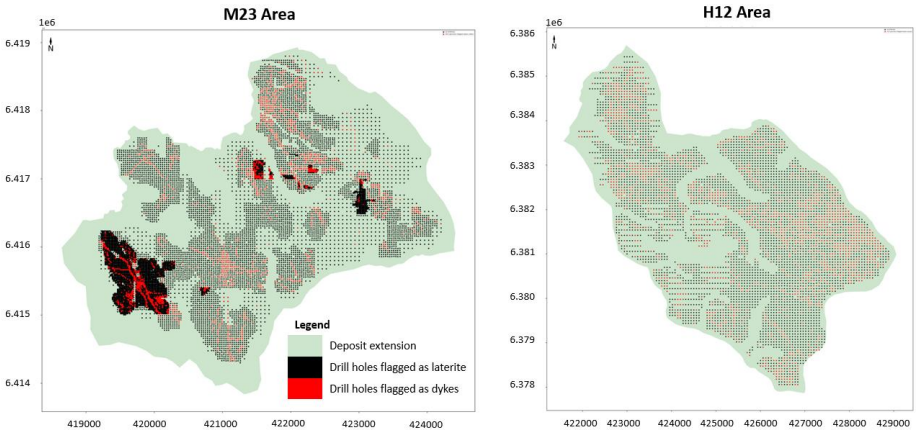


Source: SLR, 2023

The base of each Domain is generated on a 7.5 m by 7.5 m grid using an automated modelling process in DeepLime software package. To ensure a better fit of the wireframes, the elevation of some collars was adjusted to match the topography surface. Where drill holes do not penetrate the full bauxite profile or the domain contact is not properly defined due to missing assays, a conditional simulation algorithm is used to estimate the domain thickness from adjacent drill holes. The simulation algorithm employs a general variogram and selects the average of 10 simulations for the missing data point. The grid mesh is then wireframed in MineSight to provide 3D surfaces. The base of domain 50 (clay) is set at 10 m below the top of that domain.

Potential dolerite dyke intervals are flagged for samples where FE exceeds 25% and ST is below 10%, and the entire hole is flagged as potential dyke if 3 or more samples are flagged in this manner. The interpretation of dykes is carried out manually using local orientation trends and may be based on one or more holes. They are assumed to be vertical, are extended laterally half-way between drill holes, and can represent up to 15% of material in some areas but unweathered material can generally be screened out in the pit or prior to crushing as oversize boulders. The dykes tend to be well defined only when drill hole spacings are reduced to 15 m by 15 m, as shown in Figure 11-7.

igure 11-7: Plan View of Bauxite Zone and Drill Holes Flagged as Laterite and Dykes



Source: SLR, 2023.

The dolerite dykes are delineated and flagged in the block models. A lateral boundary is interpreted to constrain the resource model, and the 3D surfaces are extended where required. The lateral boundary, domain surfaces, and dolerite dyke interpretations are converted to wireframe solids. All the constraints where mining is not allowed (federal reserves, indigenous heritage sites, and rivers and protection buffers associated) are delimitated and removed after the geological modelling step. This way all the mineable reminiscent area is included in the final orebody perimeters.

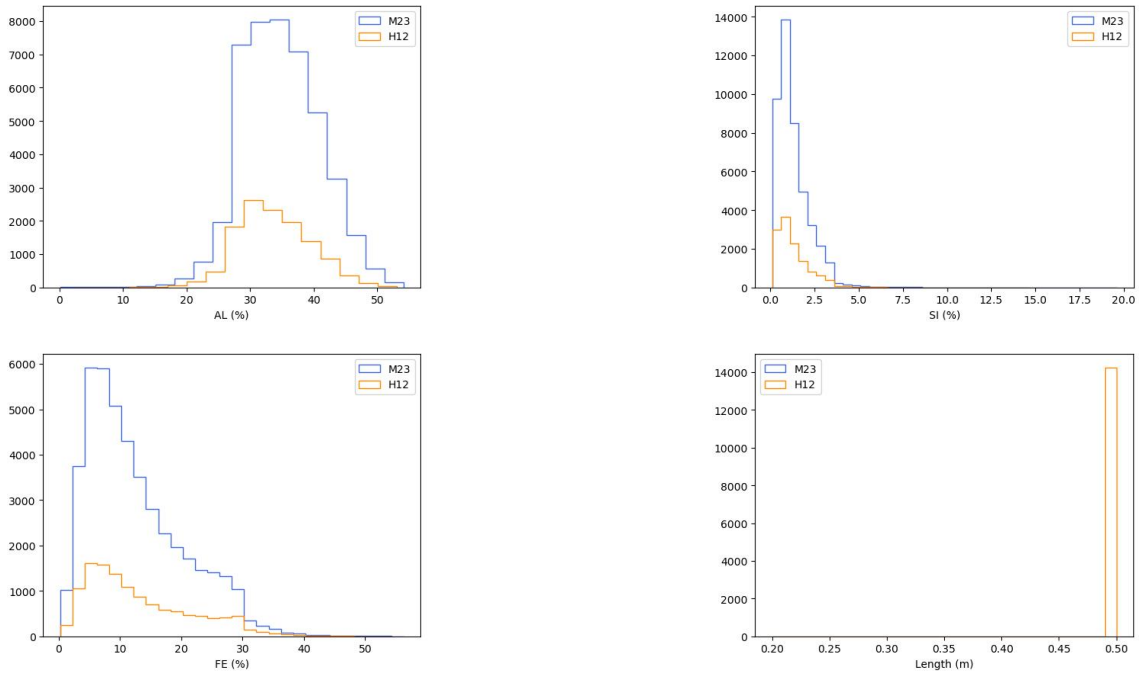
l1.5 Resource Assay

The statistical data analysis procedures are carried out in DeepLime and Supervisor. Usually, the statistical analysis is performed using the univariate approach, however, FTIR and ICP scatter plots are also analyzed.

Global statistics by lithology and histograms are created for the statistical population assessment, validation after compositing and for checks against the resulting resource models. For the purposes of this report, a more detailed focus will be given for the caprock bauxite, bauxite and low-grade bauxite layers, as well as the main variables; AL, AT, FE, SI and ST.

Histograms show that AL analytes have distributions that are close to normal, while SI and FE are moderately to strongly positively skewed, as shown in Figure 11-8.

igure 11-8: Histograms for AL, SI, FE and Length in the bauxite domain (M23 and H12 areas)



The descriptive statistics from the histograms of Figure 11-8 for the bauxite layer, as well as for the caprock bauxite and low-grade bauxite are shown in Table 11-4.

able 11-4: Descriptive Statistics for the Main Variables

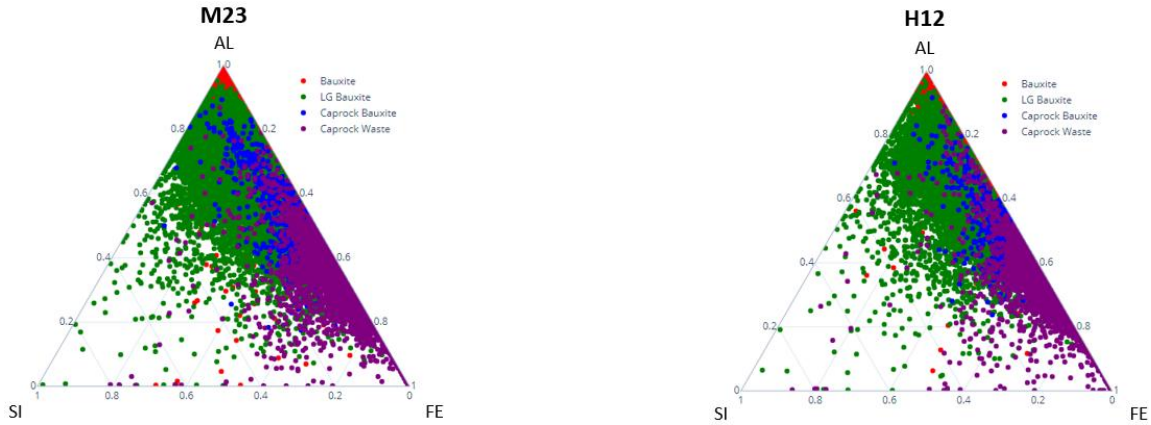
Lithology	Variable	Count	Length	Mean	SD	Variance	Minimum	Q25	Q50	Q75	Maximum
					M23 Area						
Caprock Bauxite	AL (%)	5,226	2,613.0	26.83	3.96	15.72	7.75	24.57	26.47	29.25	54.73
	AT (%)	5,226	2,613.0	35.35	4.32	18.65	15.30	32.55	35.34	38.05	61.36
	FE (%)	5,226	2,613.0	33.13	7.85	61.69	0.25	30.46	33.73	37.68	59.65
	SI (%)	5,226	2,613.0	1.66	1.76	3.09	0.10	0.56	1.02	2.06	19.45
	ST (%)	5,226	2,613.0	9.32	8.13	66.04	0.25	3.96	7.07	11.61	64.66
	Length (m)	5,226	2,613.0	0.50	0.00	0.00	0.50	0.50	0.50	0.50	0.50
Bauxite	AL (%)	44,460	22,230.0	34.87	6.13	37.53	0.10	30.39	34.56	39.00	55.00
	AT (%)	44,460	22,230.0	39.78	5.95	35.38	11.65	35.75	40.03	43.89	64.90
	FE (%)	44,460	22,230.0	12.50	7.89	62.24	0.25	6.39	10.49	17.12	57.66
	SI (%)	44,460	22,230.0	1.30	0.96	0.93	0.10	0.64	1.03	1.70	20.10
	ST (%)	44,460	22,230.0	24.57	12.67	160.41	0.25	14.86	22.43	33.82	80.17
	Length (m)	44,460	22,230.0	0.50	0.00	0.00	0.50	0.50	0.50	0.50	0.50
Low-grade Bauxite	AL (%)	21,007	10,503.5	24.59	4.89	23.89	0.10	21.71	24.29	26.69	53.94
	AT (%)	21,007	10,503.5	31.63	5.89	34.64	6.09	27.54	30.90	35.37	62.25
	FE (%)	21,007	10,503.5	12.44	10.73	115.05	0.25	4.60	7.94	17.87	75.58
	SI (%)	21,007	10,503.5	4.11	2.98	8.88	0.10	2.06	3.57	5.26	35.71

	ST (%)	21,007	10,503.5	37.35	16.81	282.48	0.25	24.50	42.05	50.74	82.62
	Length (m)	21,007	10,503.5	0.50	0.00	0.00	0.50	0.50	0.50	0.50	0.50
H12 Area											
Caprock Bauxite	AL (%)	2,734	1,367.0	26.92	4.22	17.82	10.63	24.46	26.54	29.43	41.38
	AT (%)	2,306	1,153.0	34.79	4.12	16.95	19.41	32.20	34.85	37.34	50.27
	FE (%)	2,734	1,367.0	33.78	7.82	61.10	1.52	30.73	34.18	38.20	64.01
	SI (%)	2,734	1,367.0	1.61	1.77	3.14	0.10	0.54	0.94	1.92	16.28
	ST (%)	2,734	1,367.0	9.07	8.40	70.56	0.25	3.77	6.29	10.99	57.78
	Length (m)	2,981	1,490.5	0.50	0.00	0.00	0.50	0.50	0.50	0.50	0.50
Bauxite	AL (%)	12,287	6,143.2	33.76	5.78	33.43	2.03	29.61	33.19	37.51	55.00
	AT (%)	10,651	5,325.2	38.22	5.54	30.73	15.54	34.53	38.23	42.00	67.96
	FE (%)	12,287	6,143.2	13.19	8.62	74.23	0.25	6.41	10.69	18.58	55.79
	SI (%)	12,287	6,143.2	1.30	0.99	0.97	0.10	0.61	1.02	1.70	14.71
	ST (%)	12,287	6,143.2	25.85	13.04	170.08	0.25	16.08	25.25	35.72	70.09
	Length (m)	14,275	7,137.2	0.50	0.00	0.00	0.20	0.50	0.50	0.50	0.50
Low-grade Bauxite	AL (%)	8,489	4,244.5	24.40	4.95	24.54	0.10	21.50	24.23	26.79	48.61
	AT (%)	7,562	3,781.0	31.77	5.68	32.29	3.28	27.82	31.27	35.44	57.73
	FE (%)	8,489	4,244.5	14.11	11.25	126.51	0.25	5.16	9.72	22.13	64.77
	SI (%)	8,489	4,244.5	4.28	3.42	11.69	0.10	1.92	3.50	5.49	28.69
	ST (%)	8,489	4,244.5	34.83	17.14	293.95	0.25	19.83	38.84	48.83	79.03
	Length (m)	9,600	4,800.0	0.50	0.00	0.00	0.50	0.50	0.50	0.50	0.50

Clear grade trends at depth exist for most analytes and are consistent with the mineralization style. They have been adequately accounted for by the geological interpretation and the use of unfolding methods during block grade estimation.

Figure 11-9 illustrates the compositions of the different layers according to AL, SI and FE proportions.

igure 11-9: Ternary Charts of Lithologies for M23 and H12 Areas



Missing values, that are mostly result of the validation routines, are kept as null in the database, as well as results below the detection limit are changed to values that are half of the detection limit.

l1.6 Treatment of High-Grade Assays

High-grade caps for all analytes were applied to individual composites by Alcoa on a domain-by-domain basis following inspection of the data distribution, and no high-grade spatial restrictions were used by Alcoa in the resource estimation process. SLR QP notes that the top-cuts of areas M23 and H12, are in the upper break of the probability plots. Table 11-5 shows the top-cuts used for the M23 and H12 areas.

able 11-5: Top-Cuts Used for the M23 and H12 Areas

Area	Lithology	AL	AT	FE	SI	ST	BO	EO	OX	PT	CO	SU
M23	Caprock Bauxite	48.44	70	80	12.86	56.98	8.89	9.89	15	0.248	11.9	15
	Bauxite	55	70	80	13.39	69.35	9.02	8.84	9.29	0.351	10.17	7.94
	Low-Grade Bauxite	55	70	63.21	24.82	95	6.18	9.97	8.32	1	9.6	15
H12	Caprock Bauxite	55	70	80	49.063	95.26	15	15	15	1	34	15
	Bauxite	55	70	80	49.063	95.26	15	15	15	1	34	15
	Low-Grade Bauxite	55	70	80	49.063	95.26	15	15	15	1	34	15

l1.7 Compositing

Drill holes were sampled at 0.5 m intervals in the bauxite zone below the base of the overburden, with residual intervals sometimes present at domain contacts. The Polygon and GSM estimation approaches used the original drill hole data intervals. Prior to the interpretation of geological surfaces, holes used in the 3DBM resource estimates were composited to 0.5 m, and with residual intervals of maximum 50% the composite length, the total length ranges between 0.25 m and 0.75 m.

Following the interpretation of geological surfaces, drill holes used for Polygonal and GSM resource models were composited to:

 Polygonal – a single interval for samples located below the base of the overburden and above the geological floor.

 GSM – a single interval for samples located below the base of the overburden and above the mining floor. Additional composites were generated in areas where second and third pass mining floors were identified.

All grade compositing for drill holes employs length-weighted linear averages.

l1.8 Trend–Analysis - Variography

Only some variogram analysis was carried out for Polygonal and GSM models as variogram parameters were not required to generate the resource models.

For the 3DBMs, variogram analysis is routine. Experimental variograms are calculated in unfolded space, with bauxite domains 20, 30 and 40 unfolded to the 10/20 domain contact and the clay domain (50) unfolded to the 40/50 domain contact.

Variograms are calculated for AL, SI, ST, and FE for the bauxite zone, standardized to a sill of one, and modelled with 3-structure spherical models, as described in Table 11-6 and Table 11-7. A single variogram model that provides the best fit to these four variables was selected.

able 11-6: Variogram parameters for the M23 area (MineSight ZXY rotation)

Parameter	M23				
Domain	Domain 20,30,40				
Domain Name	Caprock Bauxite, Bauxite, and Low-Grade Bauxite				
Element	AL	SI	FE	ST	Combined Variogram
Nugget C0	0.07	0.04	0.03	0.01	**0.04**
First Structure C1	0.64	0.51	0.5	0.64	**0.6**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	35	60	45	45	**45**
Range 2	20	50	40	40	**40**
Range 3	3	3	6	6	**5**
Second Structure C2	0.14	0.15	0.23	0.21	**0.16**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	55	100	120	105	**85**
Range 2	40	80	115	100	**75**
Range 3	4	6	7	7	**6**
Third Structure C3	0.15	0.3	0.24	0.14	**0.2**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	120	250	285	315	**200**
Range 2	95	185	155	190	**150**
Range 3	5	7	10	8	**7**
Rotation Strike (^{o})(1)	140	140	140	140	**140**
Rotation Plunge (^{o})(2)	0	0	0	0	**0**
Rotation Dip (^{o})(3)	0	0	0	0	**0**

able 11-7: Variogram parameters for the H12 area (MineSight ZXY rotation)

Parameter	H12				
Domain	Domain 20,30,40				
Domain Name	Caprock Bauxite, Bauxite, and Low-Grade Bauxite				
Element	AL	SI	FE	ST	Combined Variogram
Nugget C0	0.1	0.09	0.1	0.04	**0.1**
First Structure C1	0.52	0.54	0.59	0.61	**0.56**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	90	95	80	100	**90**
Range 2	70	80	80	90	**80**
Range 3	4	4	4	4	**4**
Second Structure C2	0.34	0.12	0.05	0.15	**0.15**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	200	230	200	250	**220**

Range 2	150	150	150	220	**170**
Range 3	5	5	6	6	**6**
Third Structure C3	0.04	0.25	0.26	0.2	**0.19**
Structure Type	Spherical	Spherical	Spherical	Spherical	**Spherical**
Range 1	500	500	600	800	**550**
Range 2	400	500	400	700	**500**
Range 3	6	6	7	7	**7**
Rotation Strike (°)(1)	120	130	130	120	**125**
Rotation Plunge (°)(2)	0	0	0	0	**0**
Rotation Dip (°)(3)	0	0	0	0	**0**

Variogram models display nugget values of less than 10% and total ranges of several hundred meters, but 80% of the sill is generally reached within 100 m laterally. As expected, horizontal to vertical anisotropy ratios are high (typically exceeding 50:1), but there is minor lateral anisotropy. This good definition of continuity compared to the 15 m drill spacing is considered by SLR to be a benefit of the unfolding approach.

Independent variogram models for each bauxite domain and analyte are not used for grade estimation to enable correlations between analytes to be maintained during the change in support from drill hole samples to blocks, which is important for mine planning considerations.

11.9 Bulk Density

For Mineral Resource estimation purposes, density can be regarded as another analyte, and tests can be evaluated for repeatability (precision) and accuracy (bias). The determination of the metal content of a specified volume of ore is as sensitive for density as it is for grade. For bulk commodities, like bauxite, there is usually much more emphasis on grade since product tonnages are measured by a weightometer.

Alcoa does not routinely collect density data but relies on production records to define averages. This is due to the broad geological consistency of the ore zones and the local chemical and physical nature of the lateritized ore. Porosity and permeability in particular show high lateral and vertical variability, rendering repeatability of density test work meaningless. Even if large numbers of data points were available (for example by developing a density algorithm from the FTIR assaying of every drill sample, and then modelling it), the resulting model would still need to be factored by the actual mining results for local porosity.

For 3DBM resource estimation, each drill hole bauxite composite is assigned a dry *in situ* bulk density (DIBD) value based on the logged material type and the FTIR iron grade using the regression equation defined below in Section 11.9.5.

The available density test work data is summarized as follows.

11.9.1 1980 to 1992

Senini (1993) collated and reviewed all previous bauxite density data, including that by Sadleir done in 1986, and modified Sadleir's algorithm used for computation of density from individual 0.5 m sample assays of Fe_2O_3. Results are summarized in Table 11-8.

Table 11-8: Summary of Density Test Data (t/m³) from 1980 to 1992 (Senini, 1993)

Year	Source	Material	Count	Mean	Min	Max	Regression On Fe_2O_3

							Fe Mean		
								Slope	Intercept
1980	DOSCO	Hardcap	18	2.200	1.98	2.52	19.35	0.0089	2.032
1986	Sadleir (in Senini)	Hardcap	14	2.364	2.08	2.75	20.88	0.0092	2.172
1992	Senini	Hardcap	67	2.409	1.81	3.10	21.00	0.0103	2.192
1986	Sadleir (in Senini)	Friable	11	1.846	1.64	2.12	8.80	0.0015	1.830
1992	Senini	Friable	27	2.225	1.88	2.79	14.30	0.0045	2.–89
1980 - 1992	reported above	Granitic	67	2.327	1.81	3.10	16.7–		
1980 - 1992	reported above	Doleritic	32	2.444	2.07	2.96	28.96		

While the approach used has merit, there are some obvious challenges:

- There are very few data points, unevenly distributed by material type and mining area
- Methodologies for collecting and testing the samples varied (sand replacement method for Hardcap, driven cylinder for Friable, water displacement are all noted)
- There is some lack of clarity on moisture, but it is assumed that the values are all in situ dry bulk density reported as t/m³.

The differences between hardcap (caprock) and friable (other material) and between granitic or doleritic derivation are however clear.

Senini (1993) concluded that the dry *in situ* bulk density (DIBD) should be estimated using a regression equation which is still used.

1.9.2 2013 to 2018 Drill Samples

Various further test programs have been attempted including collection of all material from drill samples (assuming the drill hole volume is constant) and then taking wet and dry weights and assaying for iron. There were 51 samples from 8 holes at Huntly and 93 samples from 24 holes at Willowdale. Scatter plots produced by SRK 2021a showed significant scatter of all available data for both Hardcap and Friable (other) material.

1.9.3 2016 to 2017 Pit Samples

Alcoa collected 2 kg to 5 kg grab samples from 16 Huntly pits (76 samples) and 10 Willowdale pits (41 samples). Water immersion density testing was done by Bureau Veritas. The average of 2.01 t/m³ is significantly lower than that from the 2015 study of 2.23 t/m³. The drill samples did not account for porosity and voids and were not adequately sealed.

FTIR assays for Fe_2O_3 were compared to sealed and unsealed density estimates and it was found that Senini's regression equation better predicted the unsealed densities. Thus, it appears that the current regression equation based on Fe_2O_3 assays overestimates the in situ dry tonnage.

1.9.4 2018 Downhole Density Estimates

In December 2018 Alcoa contracted downhole geophysical measurements in 54 aircore holes drilled in the Larego area. The data from this study is still being evaluated and is not used for Mineral Resource estimation.

11.9.5 Density Estimation

Ore grades range from 28 to 38% AL for paired belt sample data (see Section 8.4.3.7) whereas test work densities range from 1.5 t/m³ to 3.2 t/m³, but the data is sparse and unreliable.

For resource estimation, each 0.5 m drill hole sample is assigned a dry in situ bulk density (DIBD) value based on the logged material type and the FTIR iron grade, using Senini's 1993 regression equation:

*Hardcap (caprock) = 2.19 + 0.0103*Fe*

Friable (other) = 2.00 (used for all non-Hardcap material)

If the sample is logged as comprising a mix of Hardcap and Friable, the assigned value for that 0.5 m interval represents a volume-weighted average. There is no differentiation between granitic and dolerite derived bauxite, due to the relatively small proportion of the latter (less than 15%).

In resource estimates prior to 2017 a moisture content of 9% was assumed and used to estimate wet tonnes. Since the implementation of 3D block modelling in 2018, densities are assigned after grade estimation, based on the regression equation and Fe grade of Hardcap, and using 2.0 t/m³ for all other material, weighted by the proportion of Hardcap or other material.

11.9.6 Reconciliation of Density

Alcoa uses comparisons between the As Mined tonnages and the sampling tower weightometers to apply adjustment factors to mine design estimates, scheduling and stockpile planning. Such adjustments are not applied directly to the Mineral Resource estimate as they vary locally.

Reconciliation of Huntly and Willowdale mined production (see discussion on density in Section 11.14) indicates that the density estimates are biased, with the long-term average As Mined tonnages being approximately 5% higher than the actual production measured on calibrated weightometers.

11.9.7 Density Conclusions

The density data is limited in coverage and there is significant uncertainty regarding the methodology used for some sampling programs. A simple regression algorithm is used to estimate the DIBD for Hardcap from the FTIR assays of Fe_2O_3. This does not account for voids or porosity, nor does it differentiate between Hardcap derived from granitic or doleritic material. All other material is assigned a density of 2.0 t/m³. A constant moisture content of 9% is assumed for wet tonnages.

The SLR QP is of the opinion that the dry bulk density data is less well controlled than other analytes, however, the long history of mining production and stockpile reconciliation means that the assumed values are adequate for resource estimation.

11.10 Resource Models

11.10.1 Polygonal

For each drill hole contained within a polygon, the samples located below the base of the overburden and above the geological floor are composited into a single interval. The following numbers are assigned to each polygon:

 Thickness = average length of contained composites;

 Grade = length-weighted average grade of contained composites (density weighting is not applied);

 Density = average density of contained composites;

 Volume = Polygon area by Thickness; and

 Tonnage = Volume by Density.

1.10.2 Gridded Seam Modelling

GSM employs 15 m by 15 m cells centered on the nominal drill hole locations. Separate seams are created for the overburden, and for the interpreted Bauxite Zone (BXZ) between the overburden and the mining floor. BXZ is subdivided into separate seams where second and third mining cuts have been interpreted. Interpreted wireframe surfaces are used to assign a seam thickness to each cell, effectively the seam thickness of drill hole at the cell centroid.

Cell grade estimation used inverse distance weighting (IDW) techniques as follows:

 Hard boundaries, with each seam cell only estimated using nearby composite drill hole data within the corresponding seam;

 IDW weighting factor of 1.2 for SI and 2 for all other variables;

 1 by 1 by 1 cell discretization;

 Isotropic search distance of 180 m, and;

 Minimum of 2 and maximum of 8 composites with a maximum of 2 composites per quadrant

Where drill holes are located at the centroid of cells the resulting cell grade estimates are essentially nearest neighbor estimates. In other words, the GSM outcomes are equivalent to 2D polygon estimates, with the usual constraint of that method, specifically that the block variances are not smaller than the composite variances.

The GSM is constrained to the interpreted lateral extents of the mining zones. For each mining zone the following attributes are determined:

 Seam Thickness = average seam thickness of the contained GSM cells;

 Grade = weighted average grade of contained cells (density weighting is not applied);

 Density = average density of contained cells;

 Volume = mining zone area by Seam Thickness, and;

 Tonnage = Volume by Density.

1.10.3 3D Block Modelling

In 2019, Alcoa commenced preparing Mineral Resource estimates using 3DBM techniques, with the aim to progressively replace all Polygonal and GSM models. To date, Alcoa has prepared a total of 89 3DBM representing around 76% of the Mineral Resource and Mineral Reserves (MRMR) tonnage.

This section describes the current 3DBM procedures, which have evolved over time, with some parts now automated or semi-automated. Changes in the 3DBM procedures have generally been minor and are not considered material to the resulting resource models.

Block models are initially generated using the ML1SA lease area grid, and with an origin that ensures that the majority of the drill holes are located closer to the block corners rather than the centroids. The parent block size is 15 m by 15 m by 0.5 m and a sub-block size of 3 m by 3 m by 0.25 m (XYZ), respectively.

The block grade estimation includes the interpolation by ordinary kriging (OK) of AL, SI, ST, FE, EO, PT, CO, SU, OX, BO, and AT, using the same unfolding surfaces as used in the variogram analysis. Hard boundaries between the bauxite domains (DOMAF 20, 30 and 40) started to be implemented in 2022, where the previous block models were estimated using soft boundaries between these domains. A 3-pass search strategy is used for the bauxite domains and only one pass for the clay zone (DOMAF 50). A list of the search parameters is presented in Table 11-9. It is important to note that the major and semi-major orientations are in the unfolded horizontal plane, and that a maximum of 3 samples are used from any one drill hole. Thus, a minimum of four holes is required for pass one, two holes for pass two, and one hole for pass 3.

able 11-9: Ordinary Kriging Search Parameters (MineSight ZXY rotation).

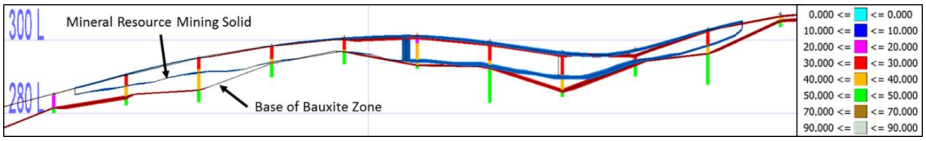
Domain	Pass	Bearing (Z)	Search Distance (m)			Number of Samples		
			Major	Semi-major	Minor	Min	Max	Max Per Hole
20, 30, 40	3	140°	300	300	50	3	27	3
	2		100	100	20	4	27	3
	1		55	55	20	12	27	3
50	1	130°	300	300	50	4	27	3

The DIBD (density) is not estimated into individual parent and sub blocks but is a post-estimation calculation based on the block domain compositions (see 11.8.5).

The OK estimation approach is designed to maintain correlations between analytes and assist in ensuring that estimation totals are consistent with the input drill hole data.

A set of wireframe solids representing the mining outlines are generated using a similar grade accumulation and threshold approach to those used for the GSM model, as shown in the example of Figure 11-10. The sub-block model is then regularized to the parent block size (15 m by 15 m by 0.5 m), with blocks located within the mining solids flagged for reporting Mineral Resources. Block tonnages are factored to reflect the proportion of the block contained below the topographic surface and within the mining solid.

igure 11-10: Example Section showing Bauxite Zone and Mining Solid



Notes:

1. Vertical to horizontal exaggeration is 3:1.
2. Drill holes colored by DOMAF variable.
3. Source: SLR, 2021.

The QP summarized the information of 10 block models, shown in Table 11-10, where there is available data for a comparison between a soft and hard boundary estimation of the bauxite layer. In overall, the AL grades increased by 7% and SI grades decreased by 23%, and the tonnage is higher in most of the cases, reflecting the additional drilling.

able 11-10: Tonnage and Grade Information Between the Original Resource Model and the 3D Block Model.

Model	Original Resource Model			3DBM - Resource Model			Difference		
	Tonnage (000 t)	AL (%)	SI (%)	Tonnage (000 t)	AL (%)	SI (%)	Tonnage (000 t)	AL (%)	SI (%)
Holyoake Central	25,211	31.97	1.94	25,919	34.12	1.23	3%	7%	-36%
Windsor	8,935	32.82	2.67	8,798	33.69	2.38	-2%	3%	-11%
Cooke	15,421	30.85	2.22	18,976	31.99	1.95	23%	4%	-12%
Serpentine	16,444	32.00	1.96	20,299	32.75	1.72	23%	2%	-12%
Gleneagle	26,333	31.58	1.67	35,144	34.69	1.14	33%	10%	-32%
Buckley	17,998	33.74	1.68	27,435	35.39	1.27	52%	5%	-24%
Cobiac	23,498	31.15	1.70	30,865	34.81	1.18	31%	12%	-31%
Frollett	12,556	30.07	1.68	18,587	33.59	1.31	48%	12%	-22%
Yarri	10,044	30.90	2.04	30,362	32.51	1.62	202%	5%	-20%
Millars	26,156	30.64	2.21	24,987	32.32	1.88	-4%	5%	-15%
Total	**182,596**	**31.55**	**1.93**	**241,372**	**33.71**	**1.48**	**32%**	**7%**	**-23%**

l1.11 Block Model Validation

l1.11.1 Polygonal and Gridded Seam Modelling

Alcoa uses a similar general approach to validate both the Polygonal and GSM resource models which includes:

1. Visual validation of cell estimated grades versus seam composited data;
2. Comparison between composite and block model global statistics;
3. Swath plots comparing cell grades against seam composite grades; and
4. Comparison between models when upgraded with new information.

Estimated cell grades were compared visually to the drill hole composite grades to ensure that the cell grade estimates appeared consistent with the drill hole seam composite data.

As GSMs were effectively nearest neighbor estimates, checks by SRK (2021a) on several GSM models indicated excellent global and local correlation between the estimated cell grades and the input seam composite grades.

The QP undertook some independent checks on datasets and GSMs for the F54 and F55 blocks to confirm that the modelling procedures had performed as intended. Results were consistent with those observed by previous consultants and no material issues were noted.

Polygonal resource models were updated by Alcoa when drill hole data is infilled from 60 m and 30 m spacings, and then GSM models were previously produced by Alcoa after 15 m infill drilling (3DBM models are now produced routinely at this stage). Changes in tonnages and average grades (AL, SI, OX) are presented as scatterplots in Figure 11-11 for map sheets at Huntly where such infill drilling has occurred. It is noted that:

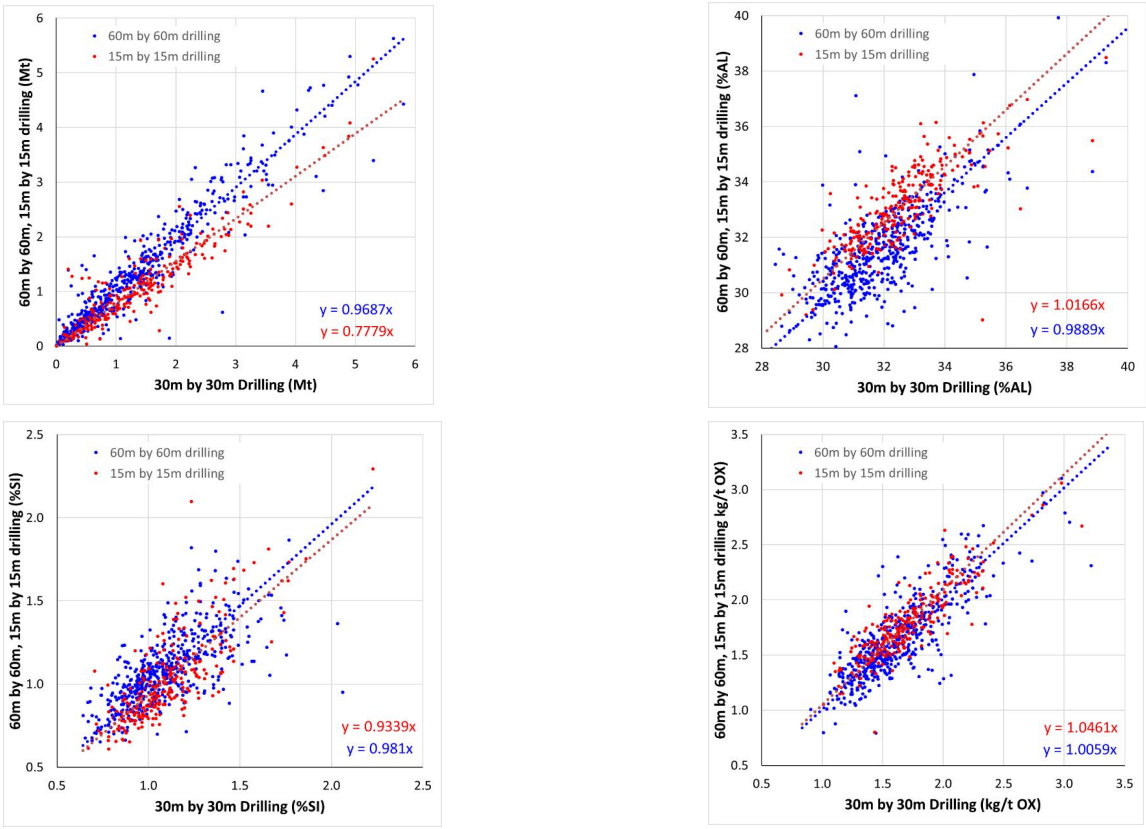
- Material differences in tonnages are evident for individual map sheets, represented by the scatter around the 45° line in the top left-hand plot in Figure 11-11.
- Globally, there is only a 3% change in resource tonnage when infilling from 60 m to 30 m, but a 22% drop in tonnage when the deposit is further infilled to 15 m drill centers.

The latter is mainly due to a change in the geological interpretation from a geological to a mining floor.

- Decreasing the drill spacings from 60 m to 15 m results in an average reduction in SI of 10%, an increase in OX of 5%, but little change to AL. These grade changes are likely due to the preferential loss of deeper DOMAF 40 material that is high in SI and low in OX when mining constraints are considered.
- Similar grade-tonnage relationships related to infill drilling were noted at Willowdale by SLR.

Applying a global correction factor to Polygonal resource model tonnages generated from 30 m and 60 m spaced drill hole datasets is not considered appropriate as local differences are highly variable and not considered to be predictable, as shown by the red dots in the top left-hand plot in Figure 11-11.

igure 11-11: Resource Comparison Scatterplots for Huntly (Tonnage, AL, SI, OX) (SLR, 2021)



Source: SLR, 2021.

11.11.2 3D Block Modelling

Alcoa staff performs the block model validation for the individual areas through the volume checks between the geological interpretation solids and sub-block model, visual validation of block model coding and estimated grades versus composite data, comparison between composite and block model global statistics, and swath plots comparing block grades against composite grades.

SLR evaluated the information provided in the block model summary files provided by Alcoa, and also undertook independent checks on datasets and block models for M23 and H12 areas, obtaining results that were consistent with those provided by Alcoa. The SLR QP ran individual inverse distance squared (ID^2) and nearest neighborhood (NN) estimations to assist in the block model validation.

Visual validations, global statistical comparison, and swath plots were built comparing the main variables estimated by Alcoa and the parallel estimation made by SLR. The results of these comparisons for the M23 and H12 areas are provided in the following subsections.

11.11.2.1 Statistical Validation

Statistics of the blocks estimated by OK were compared against the composited and capped samples, ID2 and NN estimates. Table 11-11 and Table 11-12 present the statistical comparison for the M23 and H12 areas.

In overall, smaller differences are observed for the AL estimation of the bauxite and low-grade bauxite for the M23 area, and more significant differences are observed for the SI estimation of both areas. These differences may be related to either potential differences in the estimation parameters used by the independent estimation made by SLR, and/or small discrepancies in the sample selection used for the estimation due to the parallel workflow used by SLR. The impact of these differences can be minimized once the composites and OK means show a good correlation.

Despite the differences mentioned previously, the SLR QP is of the opinion that the statistical comparisons are reasonable.

able 11-11: Composites, OK, ID^2, and NN statistics for the M23 area

M23												
Variable	Statistical Parameter	Caprock Bauxite				Bauxite				Low-Grade Bauxite			
		Samples	OK	ID^2	NN	Samples	OK	ID^2	NN	Samples	OK	ID^2	NN
AL	Number	5,226	19,988	19,988	19,988	44,460	157,444	157,444	157,444	21,007	101,770	101,770	101,770
	Mean	26.83	26.54	26.19	26.27	34.87	34.81	31.92	31.58	24.59	24.99	22.80	21.62
	SD	3.95	1.96	4.02	6.81	6.13	3.66	4.93	8.70	4.89	2.46	4.02	8.36
	Variance	15.61	3.85	16.16	46.32	37.53	13.40	24.33	75.62	23.89	6.04	16.15	69.83
	Minimum	7.75	15.96	3.75	0.10	0.10	14.26	6.37	0.10	0.10	9.85	2.21	0.10
	Q25	24.57	25.32	24.14	23.34	30.39	32.36	28.75	26.54	21.71	23.44	20.71	17.71
	Q50	26.47	26.18	26.16	26.71	34.56	34.40	32.00	32.21	24.29	24.72	22.90	22.55
	Q75	29.25	27.49	28.34	30.12	39.00	37.00	35.29	37.56	26.69	26.31	24.95	26.36
	Maximum	48.44	44.72	46.46	51.45	55.00	52.67	51.84	55.00	53.94	44.67	49.55	55.00
SI	Number	5,226	19,988	19,988	19,988	44,460	157,444	157,444	157,444	21,007	101,770	101,770	101,770
	Mean	1.66	1.87	2.77	2.90	1.30	1.46	2.23	2.29	4.10	4.60	5.55	5.99
	SD	1.74	1.15	2.46	3.87	0.95	0.68	1.55	2.84	2.96	1.76	2.60	4.76
	Variance	3.02	1.32	6.05	14.97	0.90	0.46	2.42	8.06	8.76	3.10	6.77	22.64
	Minimum	0.10	0.10	0.12	0.10	0.10	0.12	0.22	0.10	0.10	0.10	0.42	0.10
	Q25	0.56	1.00	1.19	0.74	0.64	0.91	1.20	0.76	2.06	3.45	3.72	2.65
	Q50	1.02	1.67	2.18	1.48	1.03	1.40	1.85	1.37	3.57	4.51	5.09	4.58
	Q75	2.06	2.43	3.57	3.35	1.70	1.98	2.77	2.57	5.26	5.52	7.02	7.82
	Maximum	12.86	8.94	31.19	40.20	13.39	9.13	24.21	38.90	24.82	20.93	32.32	40.18
FE	Number	5,226	19,988	19,988	19,988	44,460	157,444	157,444	157,444	21,007	101,770	101,770	101,770
	Mean	33.13	32.70	31.04	30.33	12.50	12.77	12.72	12.28	12.44	11.49	11.07	10.83
	SD	7.85	5.31	7.13	10.55	7.89	5.30	5.74	9.04	10.72	6.31	6.90	9.88

Variance	61.69	28.24	50.84	111.37	62.24	28.10	32.93	81.81	114.97	39.77	47.55	97.62
Minimum	0.25	3.72	2.53	0.25	0.25	0.95	1.70	0.25	0.25	0.25	0.42	0.25
Q25	30.46	30.88	28.08	25.78	6.39	8.74	8.32	5.44	4.60	6.81	5.97	4.05
Q50	33.73	33.23	32.46	32.58	10.49	12.45	11.53	9.47	7.94	9.96	8.99	6.92
Q75	37.68	35.79	35.48	37.75	17.12	15.86	16.01	16.92	17.87	14.56	14.11	13.93
Maximum	59.65	54.35	54.97	71.06	57.66	42.37	43.65	80.00	63.21	48.80	51.35	63.21

able 11-12: Composites, OK, ID2, and NN statistics for the H12 area

H12													
Variable	Statistical Parameter	Caprock Bauxite				Bauxite				Low-Grade Bauxite			
		Samples	OK	ID^2	NN	Samples	OK	ID^2	NN	Samples	OK	ID^2	NN
AL	Number	2,981	64,964	64,964	64,964	14,275	297,393	297,393	297,393	9,600	205,206	205,206	205,206
	Mean	26.87	26.94	26.67	26.29	33.66	33.57	31.76	30.85	24.40	24.49	23.70	23.36
	SD	4.17	2.35	3.52	6.44	5.76	3.72	4.15	7.85	4.92	2.62	3.22	6.66
	Variance	17.41	5.52	12.40	41.45	33.23	13.81	17.25	61.56	24.23	6.86	10.38	44.40
	Minimum	10.63	16.63	0.22	0.10	2.03	9.80	1.87	0.10	0.10	7.53	0.93	0.10
	Q25	24.45	25.48	24.88	23.34	29.55	30.91	29.10	26.92	21.52	22.96	21.91	20.34
	Q50	26.49	26.60	26.52	26.39	33.11	33.18	31.54	31.01	24.23	24.27	23.51	23.70
	Q75	29.41	28.27	28.68	29.72	37.39	35.81	34.22	35.79	26.77	25.78	25.28	27.08
	Maximum	41.38	38.01	44.45	48.30	55.00	53.74	53.92	55.00	48.61	42.03	43.18	49.51
SI	Number	2,981	64,964	64,964	64,964	14,275	297,393	297,393	297,393	9,600	205,206	205,206	205,206
	Mean	1.59	1.50	2.02	2.48	1.29	1.31	1.82	2.10	4.22	4.29	4.78	5.03
	SD	1.73	1.04	2.13	3.48	0.97	0.65	1.21	2.69	3.36	2.16	2.52	4.20
	Variance	2.99	1.09	4.54	12.13	0.94	0.42	1.46	7.22	11.32	4.67	6.35	17.66
	Minimum	0.10	0.12	0.13	0.10	0.10	0.10	0.12	0.10	0.10	0.10	0.13	0.10
	Q25	0.54	0.73	0.78	0.54	0.61	0.81	1.02	0.69	1.85	2.82	3.02	2.07
	Q50	0.94	1.22	1.33	1.12	0.99	1.22	1.54	1.26	3.45	4.01	4.40	3.87
	Q75	1.89	1.94	2.47	3.00	1.68	1.72	2.27	2.31	5.47	5.28	5.97	6.49
	Maximum	12.08	9.48	30.96	32.19	9.69	8.81	24.69	31.65	23.16	19.91	26.87	34.39
FE	Number	2,981	64,964	64,964	64,964	14,275	297,393	297,393	297,393	9,600	205,206	205,206	205,206
	Mean	33.64	33.30	33.21	32.11	12.94	13.70	13.82	13.91	13.93	13.76	13.29	13.21
	SD	7.90	5.17	6.02	9.13	8.48	5.97	6.21	9.67	11.16	7.51	7.81	10.76
	Variance	62.44	26.69	36.23	83.31	71.96	35.62	38.62	93.54	124.59	56.47	60.92	115.88

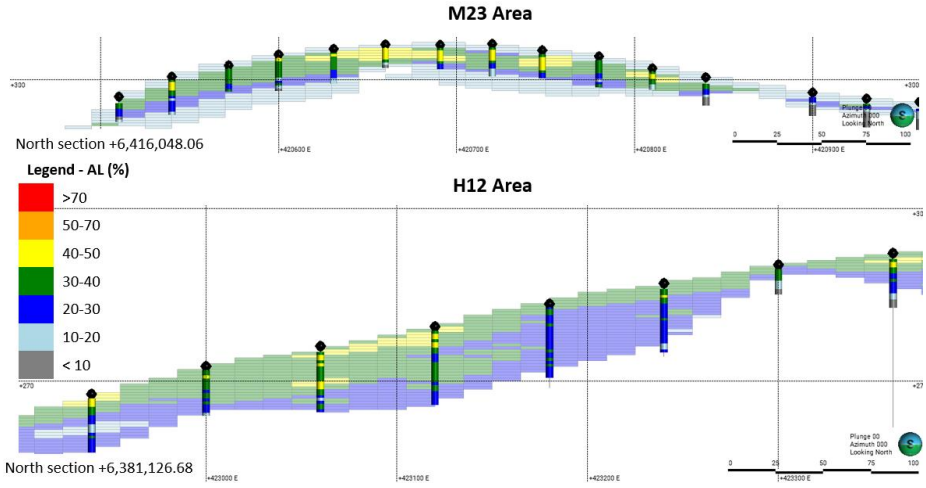
Minimum	1.52	3.09	0.66	0.25	0.25	1.16	1.54	0.25	0.25	0.25	0.36	0.25
Q25	30.63	30.66	30.70	28.01	6.32	9.08	9.06	6.31	5.11	7.89	7.28	4.94
Q50	34.06	33.65	33.79	32.88	10.48	12.88	12.64	10.99	9.48	12.48	11.22	8.88
Q75	38.12	36.47	36.95	37.37	18.14	17.59	17.41	19.55	21.67	18.15	17.62	20.83
Maximum	64.43	54.00	59.79	64.43	55.79	46.11	49.60	64.01	58.53	50.54	53.11	58.53

11.11.2.2 Visual Validation

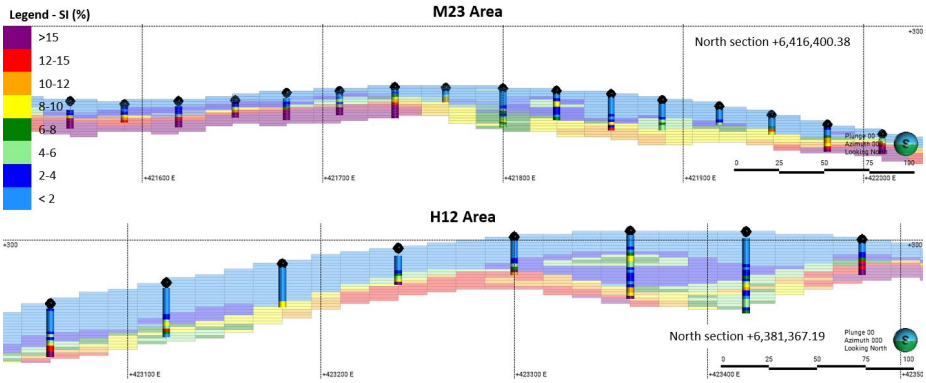
For the visual validation, several cross sections in multiple orientations were created aiming to assess the grade distribution over the blocks and related to the composites. No major discrepancies were identified, being observed in most of the cases a good adherence of the grades estimated in the blocks with the samples around, and also the grade continuity with the topography.

Figure 11-12, Figure 11-13, and Figure 11-14 illustrate the cross sections in the block models comparing the AL, SI, and FE OK estimation and the composites.

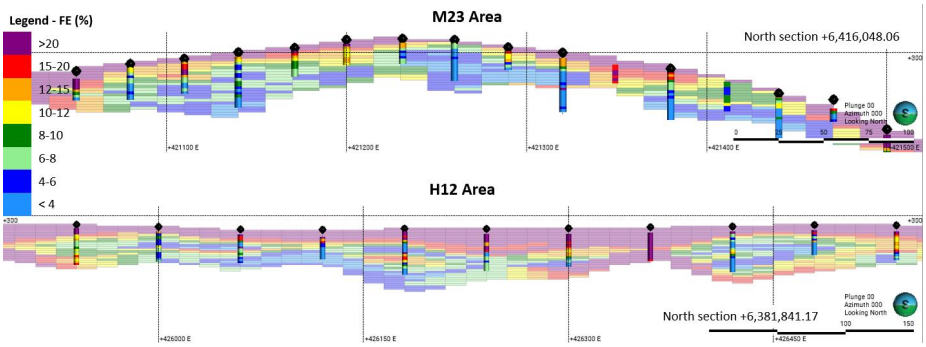
igure 11-12: Visual validation of Blocks and Composites for AL



igure 11-13: Visual validation of Blocks and Composites for SI



igure 11-14: Visual validation of Blocks and Composites for FE



11.11.2.3 Swath Plots

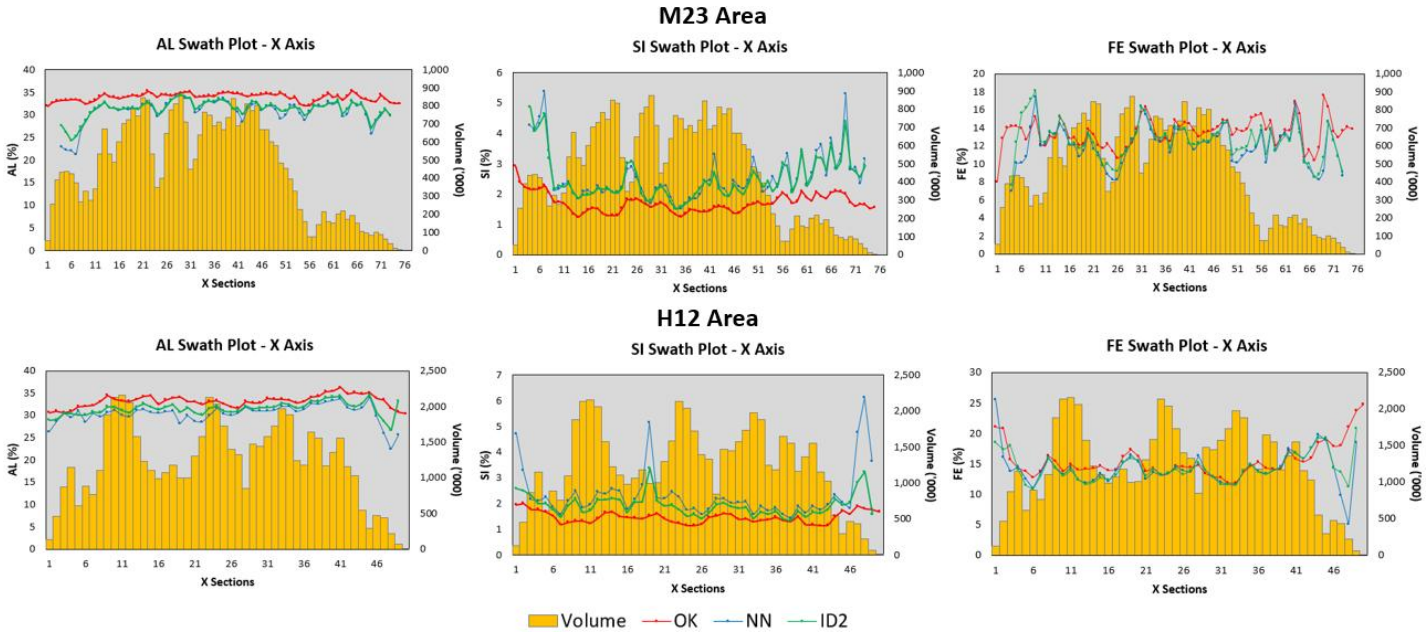
Swath plots were built comparing the OK, ID^2 and NN estimations on the X, Y and Z directions.

AL and SI exhibit opposite behaviors, showing higher values for AL and lower values for SI when compared with ID^2 and NN for the bauxite layer. These differences are around +8% and – 5%, respectively, and are also identified in the statistical validation. Additionally, the ID^2 and NN estimates show a more variable average grade locally, while the OK behavior is more constant, which indicates a potential over smoothing of the estimation for these variables. FE shows a similar local and global trend between the different estimation methods.

As mentioned before, although some variation is expected due to the differences in the estimation workflows, SLR recommends that additional estimation validation procedures be incorporated to the current validation workflow, such as the comparison with ID^2 and NN, and a smoothing degree evaluation.

Figure 11-15 illustrates the AL, SI, and FE swath plots in the X direction for the bauxite domain of both areas. Sections of 5 and 10 meters were used for the M23 and H12 areas respectively.

igure 11-15: Swath Plots in X direction for AL, SI and FE for the M23 and H12 areas – bauxite layer



11.12 Cut-off Grade and Mining Constraints

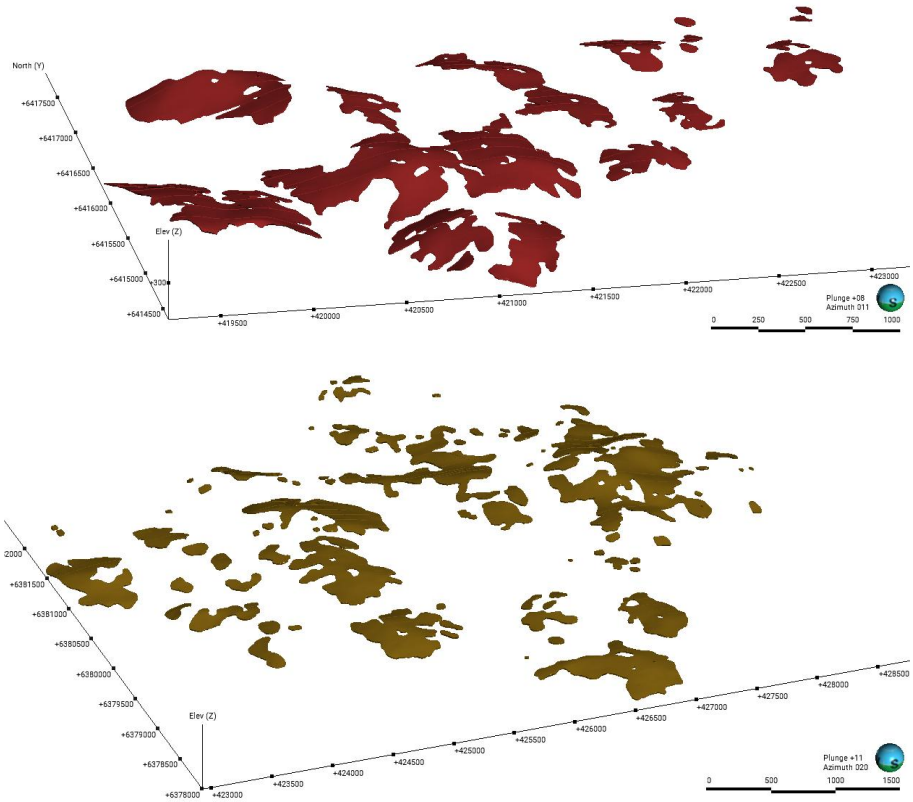
Darling Range uses a historically accepted economic Mineral Resource cut-off grade of ≥27.5% AL, ≤3.5% SI, and ≤4kg/t OX, that is implicit in the delineation of the bauxite layer in the geological modelling stage. A minimum thickness of 2 m is also used to improve the Mineral Resource definition.

In addition to the geological modelling cut-offs criteria, the constraints described below are applied to the GSM and 3DBM Mineral Resource definition:

- a minimum area of 1 ha.
- a minimum face height of 1.5 m (distance from mining floor to the base of overburden).
- face heights exceeding 4 m are treated as multiple benches.
- an overburden to face height ratio ≤1.
- a maximum floor gradient of 1 in 7 over a minimum of 15 m for the first cut, and 1 in 5 for second and third cuts.
- a minimum access corridor of 45 m for mining equipment.

However, bauxite resources can include material outside the geological modelling grade cut-offs that may also be considered as mineable, and a cut-off depth basis is used when AL grade is lower to define whether or not a block is economic. Mineral Resources have been estimated using a LOM price of $21.46/t representing an average arms-length sale of bauxite from Darling Range. The price that constrains the estimate for optimization was discounted to exclude export logistics costs, i.e. the base price was $21.46/t, and the discounted price was $16/t. Mineral Resource optimized pits are presented in Figure 11-16.

igure 11-16: Mineral Resource Pits for the M23 (top) and H12 (bottom) areas. Vertical exaggeration 3x



Source: SLR, 2023.

The grade cut-off criteria to report the Mineral Resources is a common approach for the bauxite mines, and the QP is of the opinion that to improve the recoverable resources reporting, a re-blocked block model to a minimum practical mining scale or single mining unit should be considered. Economical parameters considering more flexible costs and bauxite prices related to the Mineral Reserves can also be implemented in the Mineral Resources workflow, aiming to optimize the bauxite mineable portion including potential marginal grades.

l1.13 Reconciliation

Alcoa's staff is working on an integrated reconciliation process, for all the operating mines, that will standardize the reconciliation terminology, metrics, and standards. For the current year, the methodology is being developed, as well as the key performance indicators.

The following sections describe the current reconciliation methodology and results.

11.13.1 Sampling Tower Data

Refinery feed grade is monitored for the Huntly and Willowdale mining regions using material collected prior the arrival of the stockpile stackers at the Pinjarra and Wagerup sampling towers.

Alcoa mine planning personnel rely upon historical comparisons between the As Mined estimates, which means the tonnage and grade based on the block model using a mined-out perimeter or surface, and the sampling tower data to apply adjustment factors to mine design estimates, to assist with scheduling and stockpile planning activities. The adjustments are not applied to the global reported Mineral Resource estimates as they are considered to be local factors.

Sampling tower performance was discussed in SLR, 2022.

11.13.2 Resource to Sampling Tower Comparison

Alcoa reconciles the resource (mine design) estimates with the sampling tower estimates once mining is completed for each mining zone. It is important to note that the majority of the Mineral Resources are prepared using 30 m or 60 m spaced data, whereas As Mined to sampling tower reconciliation is based on mine planning models constructed from 15 m spaced data that include additional mining constraints.

Figure 11-17 and Figure 11-18 show the annual relative grade differences for both Huntly and Willowdale respectively. These plots indicate:

- A clear reactive silica trend from higher differences (above 20%) to lower differences (around 10%) from 2011 to 2021.
- The most variable pattern of reactive silica compared with the other elements.
- That most As Mined grades are currently within 10% of the sample grades.

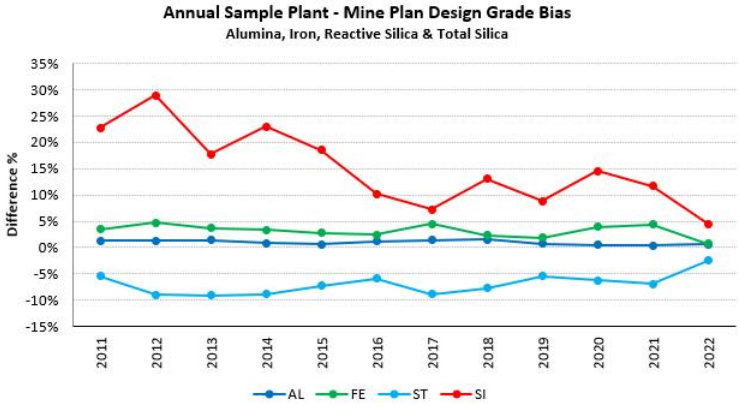
The sources of the reconciliation differences shown in Figure 11-17 and Figure 11-18 are not known, but the following factors could contribute:

- Resource models were prepared using FTIR assay data, whereas the sampling tower samples are assayed using the same techniques as the REF Method (see Table 8-1 in Section 8.3.2.1) but with BD rather than MD. Alcoa assumes that this is more accurate, but that is difficult to confirm for partial digestion methods such as AL, SI, and OX.
- Changes in the resource modelling procedures from Polygonal, to GSM, to 3DBM. The latter method has only recently been introduced and represents limited material processed in recent years.
- The As Mined grades and tonnages could include some additional dilution and ore loss relative to the planned mine design.
- Differences between the Pinjarra (inspected and validated by SLR, see Section 8.4.3.7) and Wagerup sampling towers.

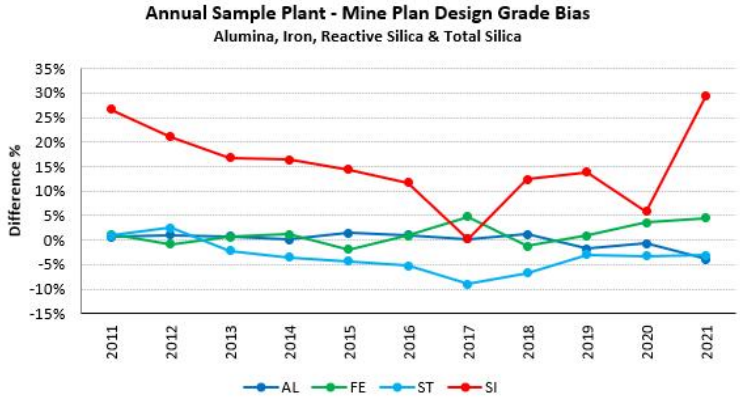
Incremental reconciliation improvements appear to have started around 2010, which may reflect an improvement in data quality (drilling and assaying procedures) around this time. Consequently, Mineral Resources using data collected prior to approximately 2010 are considered to be of lower confidence and the classification of resource models constructed from this data has been downgraded accordingly.

Reconciliation data in recent years falls within acceptable limits on an annual basis to support the classifications used for reporting of Alcoa's Darling Range Mineral Resource.

igure 11-17: Resource versus Sample Plant Reconciliation – Huntly (SLR, 2022)



igure 11-18: Resource versus Sample Plant Reconciliation – Willowdale (SLR, 2022)



l1.14 Mineral Resource Estimation Risk

The estimation of Mineral Resources for any commodity, including bauxite, is subject to significant risks, including those described below and elsewhere in the discussion of risks associated with mining and processing of bauxite to produce alumina (see Section 12.9). An investor should carefully consider these risks. If any of the described risks occur, the Darling Range bauxite mining and processing business, financial position and operational results could be materially affected adversely.

The purpose of Technical Report Summaries issued under S-K 1300 and other similarly purposed International Codes (JORC, 2012; NI 43-101, 2014) is to ensure that known risks are disclosed by the QP subject to expectations of Transparency, Materiality and Competency. This Technical Report Summary addresses the technical risks associated with the Geology, Sampling, Assaying, Data Management in Sections 6.0 to 9.0 and Mineral Resource Estimation in Section 11.0. The QP considers that no material technical risks are identified in those Sections.

The risks described below are not comprehensive and there may be additional risks and uncertainties not presently known, for example due to market or technology changes, that

are currently deemed immaterial but may also affect the business. The QP considers that the following risks specifically pertain to the Mineral Resources declared for Alcoa's Darling Rang operations.

1.14.1 Specific Identified Risks

- Continuous improvement of all aspects of Alcoa's resource delineation programs means that changes have been incremental as refinement to previous procedures. Thus, estimates for the majority of the Mineral Resources are essentially variants of those devised in the late 1980s and early 1990s and are not consistent with current conventional practices. This is reflected in the large tonnage of Inferred Resources declared. The demonstrated successful operation of the Alcoa operations over an extended period indicates that it is unlikely that any aspects of the data collection and resource delineation process are significantly flawed, although there are recognized shortcomings.
- Drill sampling is essentially the extraction of small volumes of material taken to be representative of the large tonnages being estimated. There are always local errors of precision and biases that are not recognized. Robust sample preparation and geostatistical estimation are used to identify and overcome these errors, backed up by closed-loop reconciliation with the stockpile tower samplers. These systems may not identify changes in the underlying geology or other data as the area to be delineated expands over time.
- The Mineral Resource estimates may not contain adequate or relevant data if the bauxite is supplied to other refineries, or if processing methods change, or if some new analyte is required.
- The older ResTag and GSM estimation procedures, which represent the bulk of the Inferred Mineral Resources, are relatively inflexible, and may not contain the level of detail necessary to adequately support mining optimization studies. This has been largely addressed by the recent move to 3DBM resource estimation technique, which more easily enable the preparation of models that contain sufficient resolution and detail to support conventional mining optimization studies. These models will allow incremental improvements to address any challenges in meeting target grade specification, resolving reconciliation issues, or tailoring the estimation parameters and procedures to prepare models that better reflect local changes in mineralization characteristics. The 3DBM modelling procedures offer more flexibility in moderating any adverse effects of sampling imprecision compared to the older procedures and in producing grade tonnage curves to meet various impurity constraints (when modelled).
- Further advances in geostatistical estimation may be expected including more use of directional anisotropy (through variograms), and conditional simulation to quantify estimation risk and optimize drill sampling grids.
- A comprehensive program is required to resolve the issue of density estimation. Estimates in the resource models use a simplistic linear regression algorithm for iron rich material based on very few data, and otherwise assumed values. This deficiency is overcome by reconciliation of tonnages of material fed to stockpiles and the subsequent adoption of a downgrading factor (currently 5%) to account for differences to the model estimated density. Technology now available, including volume surveys using drones and truck gantry scanning, infra-red moisture determination, wet mass measurement using weightometers on conveyors and LoadRite sensors on mining equipment, mean that better in situ dry density estimation may become possible if the operation requires it for better refinery feedstock control.

- The grade characteristics of the bauxite profile could be reproduced in the model, enabling optimization techniques to be used for the definition of mining floors and boundaries, better support for ore loss and dilution studies, and more accurate reconciliation studies.
- There is currently significant reliance upon the sample plant results for production scheduling and blending, as well as for assessing the reliability of the Mineral Resource estimates.

The current drill sampling methods have been improved over time, based on independent review, and the requirements for minimum impact on the Darling Range. The assaying methods, including the use of FTIR, have been comprehensively reviewed and validated. The geostatistical estimates of in situ dry tonnages and grades are reasonable and validated by comprehensive reconciliation. The SLR QP considers that these methods are appropriate to produce the declared Mineral Resources and Mineral Reserves.

1.14.2 Generic Mineral Resource Uncertainty

- Estimates of Measured and Indicated Mineral Resources are uncertain. The volume and grade of ore actually defined from these as Mineral Reserves is not predictable until mine planning is done to account for all the identified Modifying Factors. Forecasts based on the current transfer price of bauxite, current interpretations of geological data obtained from drill holes, and other information regarding the Modifying Factors, may not necessarily be indicative of future results. A significantly lower bauxite transfer price as a result of a decrease in aluminum prices, increases in operating costs, reductions in metallurgical recovery, or other changes to the Modifying Factors, could result in material write-downs of the value of the Darling Range mines.
- Should changes be required due to exigent circumstances, it may take some years from exploration until commencement of production, during which time the economic feasibility of production may change.
- Alcoa cannot be certain that any part or parts of a deposit or Mineral Resource estimate will ever be confirmed or converted into Regulation S-K Subpart 1300 compliant Mineral Reserves or that mineralization can in the future be economically or legally extracted.

To ameliorate such risks the Mineral Reserves declaration is limited to material for which extraction is currently planned within the LTMP. The Mineral Resources excluding Mineral Reserves indicate the likely potential beyond that time frame, given all the limitations on future knowledge outlined above.

1.15 Classification

Definitions for resource categories used in this report are those defined by the SEC in S-K 1300. Mineral Resources are classified into Measured, Indicated, and Inferred categories.

The Mineral Resource estimate for Darling Range is produced by aggregating many different models, produced using data of different qualities at different drilling densities, and modelled using different estimation procedures. The Mineral Resource classification has been applied to the various resource models based on consideration of the quality and quantity of the input data, confidence in the geological interpretation, and confidence in the outcomes from the various estimation methods. The main factors that drive the Mineral Resource classification are the drill hole spacing, the quality of data collected, and the resource modelling technique. These elements will be explored in greater detail in the following paragraphs.

A drill hole spacing study (SRK, 2019a) aimed at quantifying the differences in the reliability of local estimates with different drill spacings was undertaken in 2019 using a similar

approach to Alcoa's 3DBM procedures. The study concluded that drill spacings of 30 m by 30 m and 60 m by 60 m were adequate to support the delineation of Measured and Indicated Resources respectively.

Due to the different block model types, the following adjustments in the classification were done aiming to best reflect the uncertainty for each one:

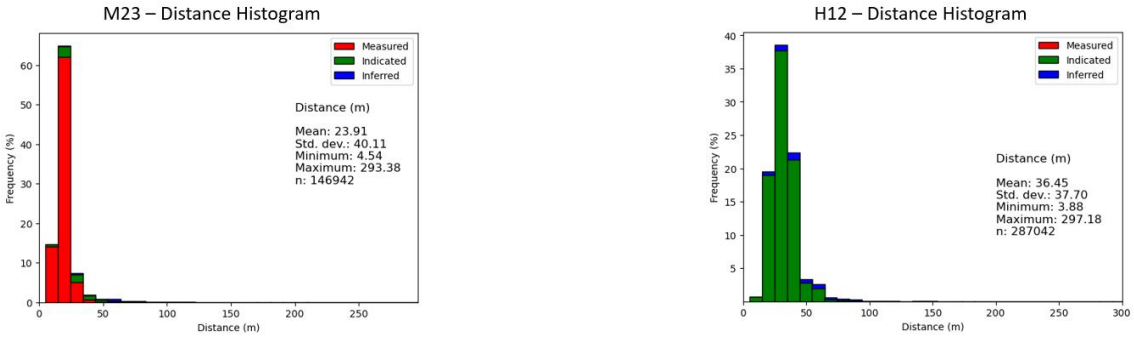
- For the GSM models where the drill hole spacing is 30x30 m, the Measured material was downgraded to Indicated, unless on a tighter 15 by 15 m drilling grid. The additional data density overcomes the potential deficiency of the GSM method. Some of the defined Measured material estimated using a significant amount of older (pre-2010) drill sampling was also downgraded to Indicated, reflecting the lower confidence in that older drilling data, since data quality (due to drilling, sampling, and assaying procedures) has been upgraded since then.
- For the GSM and Polygonal models, where the drill hole spacing is 60x60 m, the Indicated category was downgraded to Inferred category.
- For the Polygonal models where the drill hole spacing is 60 by 60 m, the resource estimate was classified as Inferred.

The Mineral Resource material has mining constraints applied, as detailed in the Cut-off Grade and Mining Constraints section, effectively ensuring that reasonable prospects for economic extraction are assured.

Resource classification criteria are applied in the horizontal plane and are consistent for the entire laterite vertical profile. Thus, interpretation of the roof and floor of the Bauxite Zone are implicitly assumed to be of similar confidence. In some areas, the geological floor may be erratic for Polygonal models and of lower confidence than the roof, but these areas are typically excluded when mining constraints are applied to the GSM and 3DBM resource models.

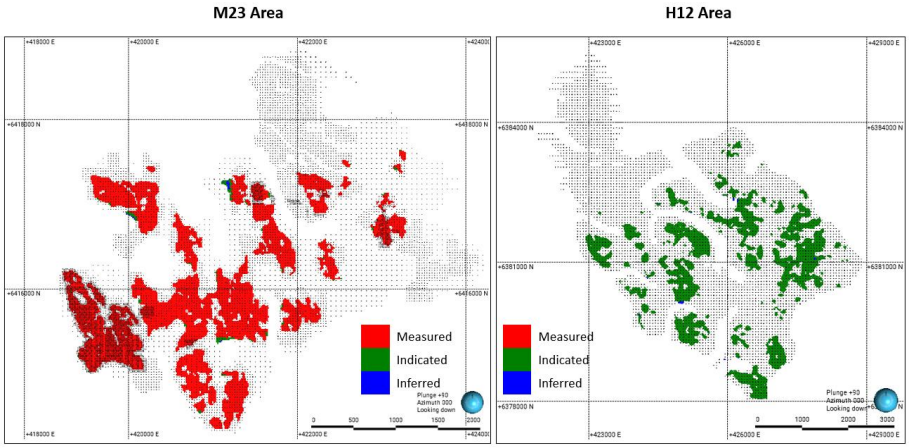
Figure 11-19 shows histograms of the resource classification and the distance of the closest sample for the M23 and H12 areas.

igure 11-19: Minimum distance histograms showing the resource classification by the distance of the closest sample



A visual example of the final Mineral Resource classification within the Mineral Resource pit is shown in Figure 11-20 for the M23 and H12 areas. The great majority of the blocks within the Mineral Resource pit in the M23 area are Measured due to the 15x15 and 30x30 m drill hole spacing, and for the H12 area the great majority is Indicated, due to the 60x60 m drill hole spacing. The final classification polygons can include small areas where the gaps between drill holes are at the next spacing increment, and they are used to assign resource classification for the full vertical profile of the laterite profile.

igure 11-20: Plan View of M23 and H12 Resource Classification. Block within the Mineral Resource Pit



Source: SLR, 2023.

l1.16 Mineral Resource Reporting

Key refinery target grade requirements for AL, SI, and OX along with practical mining considerations have been taken into account when defining resource blocks using GSM and 3DBM modelling methods. Polygonal resource models do not account for mining constraints other than a 1.5 m minimum thickness.

ML1SA contains some sub-regions for which mining permission has not been granted, due to forestry, environmental, social or other constraints, and Mineral Resources have not been defined in these areas by constraining the Mineral Resource model using ArcGIS software.

For Mineral Resource reporting, the block tonnage estimates have all been reduced by 5% on the basis that:

- the reconciliation data at both Huntly and Willowdale indicate that the As Mined tonnage estimates over the past 20 years have been consistently higher than the stockpile received tonnages after the sampling tower by approximately 5%; and
- the stockpile estimates are derived from weightometer readings, and the weightometers are regularly checked and calibrated.

A summary of the Mineral Resource estimates, exclusive of Mineral Reserves, for the three ML1SA mining regions is shown below.

able 11-13: Summary of Darling Range Mineral Resources exclusive of Mineral Reserves by Mining Region – 31 December 2023

Category	Mine	Tonnage (Mt)	AL (%)	SI (%)
Measured	Huntly	51.5	30.49	1.62
	North	0.0	0.00	0.00
	Willowdale	41.5	30.37	1.39
	Sub-total	**93.0**	**30.44**	**1.52**
Indicated	Huntly	66.3	30.97	1.50

	North	0.8	32.26	1.38
	Willowdale	38.3	30.35	1.05
	Sub-total	**105.4**	**30.75**	**1.34**
Measured + Indicated	Huntly	117.7	30.76	1.55
	North	0.8	32.26	1.38
	Willowdale	79.8	30.36	1.23
	Sub-total	**198.4**	**30.61**	**1.42**
Inferred	Huntly	11.2	34.36	1.35
	North	15.1	31.62	1.00
	Willowdale	80.6	32.17	1.24
	Sub-total	**106.9**	**32.32**	**1.22**

Notes:

1. The definitions for Mineral Resources in S-K 1300 were followed, which are consistent with JORC (2012) definitions.
2. Mineral Resources are 100% attributable to AWAC.
3. Mineral Resources are estimated at a geological cut-off grade, which generally approximates to nominal cut-off grades of 27.5% available alumina (AL) with less than 3.5% reactive silica (SI). Locally the cut-off grade may vary, depending on operating costs and ore quality for blending. The target grade for mine planning is 32.7% AL and 1.0% SI.
4. Mineral Resources have been estimated using a LOM price of $21.46/t representing an average arms-length sale of bauxite from Darling Range. The price that constrains the estimate for optimization was discounted to exclude export logistics costs, i.e. the base price was $21.46/t, and the discounted price was $16/t.
5. A minimum total mining thickness of 1.5 m was used.
6. In situ dry bulk density is variable and is defined for each block in the Mineral Resource model.
7. A global downwards adjustment of tonnes by 5% is made to account for density differences based on historic mining performance.
8. Mineral Resources are reported exclusive of Mineral Reserves.
9. The reference point for the Mineral Resource is the in situ predicted dry tonnage and grade of material to be delivered to the refinery stockpile following the application of Mineral Resource pit.
10. Metallurgical recovery has not been directly considered in the estimation of Mineral Resources as the Darling Range operations do not include a conventional processing plant, only crushing as described in Section 14.0. The metallurgical recovery of the three refineries (Kwinana, Pinjarra and Wagerup) are beyond the boundaries of the mining operations being the subject of the TRS.
11. Numbers may not add due to rounding.

ł1.17 QP Opinion

The SLR QP is of the opinion that Alcoa's Mineral Resource classification scheme is considered appropriate for delineating the expected relative confidence of the Mineral Resource, in accordance with the S-K 1300 definitions as follows:

- All sampling, sampling preparation, assaying and database management practices are compliant with current industry best practice and no fatal flaws were identified for all material classed as Mineral Resource.
- Appropriate industry best practice for geological modelling techniques and variography are used to establish geological and grade continuity from appropriately spaced drill holes.
- Industry standard estimation techniques (3D block modelling or seam block modelling) are used for all Measured and Indicated Mineral Resources, using appropriate drill spacings.

The SLR QP is of the opinion that the modelling work completed to date is deemed suitable for its intended purpose. Upon evaluation of diverse technical and economic factors, it's

concluded that the conditions stipulated under the Reasonable Prospects For Economic Extraction are met. This includes the effective constraint of the Mineral Resource model using the ArcGIS system, by ensuring that the model defines key parameters for the refinery, and by sound reconciliation practices reincorporating feedback into the geological model.

12.0 Mineral Reserve Estimates

12.1 Summary

A Mineral Reserve has been estimated for Alcoa's Darling Range bauxite mining operations in accordance SEC S-K 1300 definitions which are consistent with the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The JORC 2012 Code).

The QP inspected the Alcoa Huntly operations on 25 October 2023 and Willowdale on 24 October 2023. Alcoa's Mine Planning department was visited 26 & 27 October 2023, interviewing relevant personnel on these dates and on other occasions. A full account of the site visit to the mines, offices and the refineries is provided in Section 2.1.

The Mineral Reserve is classified with reference to the classification of the underlying Mineral Resource and with reference to confidence in the informing Modifying Factors. The QP considers the Proven and Probable classification to be appropriate to the deposit and associated mining operations.

The reference point for the Mineral Reserve is prior to the processing plant at the refinery.

The Proven Mineral Reserve is a subset of Measured Resources only. The Proven Mineral Reserve is included in the Long Term Mine Plan (LTMP) and is approved for mining.

The Probable Mineral Reserve is estimated from that part of the Mineral Resource that has been classified as Indicated or from Measured Resources that are not yet approved for mining.

Variable cut-off grades are applied in estimation of the Mineral Reserves, and these are related to operating cost and the nature of the Mineral Resource in relation to blending requirements. The Mineral Reserve estimate is expressed in relation to available aluminum oxide (AL) and reactive silica (SI), this being the critical contaminant in relation to the Refinery.

able 12-1: Summary of Darling Range Mineral Reserves – Effective 31 December 2023

Region	Class	Tonnage (Mt)	AL (%)	SI (%)
Huntly	Proven	26.2	27.8	1.87
	Probable	210.4	31.7	1.36
	Total	**236.6**	**31.2**	**1.42**
Willowdale	Proven	21.8	30.8	1.38
	Probable	85.6	32.4	1.04
	Total	**107.4**	**32.1**	**1.11**
Total	Proven	48.0	29.1	1.65
	Probable	296.0	31.9	1.27
	Total	**344.1**	**31.5**	**1.32**

Notes:

1. The definitions for Mineral Reserves in S-K 1300 were followed, which are consistent with JORC definitions.
2. Mineral Reserves are stated on a 100% ownership basis for AWAC although Alcoa Corporation's share is 60%.
3. Mineral Reserves are estimated at variable cut-off grades, dependent on operating costs and ore quality for blending. The target grade for mine planning is generally 32.7% available aluminum oxide (AL) and around 1.0% reactive silica (SI) but this may vary locally.

4. Mineral Reserves have been estimated using a LOM price of $21.46/t representing an average arms-length sale of bauxite from Darling Range. The price that constrains the estimate for optimization was discounted to exclude export logistics costs, i.e. the base price was $21.46/t, and the discounted price was $16/t.
5. Minimum mining widths are not used due to the surficial nature of the Mineral Resource, rather a minimum mining block size of 15m by 15m by 1m deep is applied.
6. The reference point for the Mineral Reserve is the refinery processing plant gate, with crushing, washing (as applicable), and transportation being the only process employed. As such metallurgical recovery factors are not applicable to the Mineral Reserve estimate.
7. Bulk density is variable, dependent on the nature of the Mineral Resource and is separately estimated in the Mineral Resource model.
8. Numbers may not add due to rounding.

The QP is not aware of any risk factors associated with, or changes to, any aspects of the Modifying Factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the current Mineral Reserve estimate. The Darling Range operations have however undergone some changes as related to the permitting requirements which are discussed in this report; namely the approvals process, river corridor constraints, restoration obligations, and any required adjustments to accommodate the recently announced curtailment of the Kwinana refinery.

The QP considers that the accuracy and confidence in the Mineral Reserve estimate to be appropriate for the classification applied, which is supported by both the conservative operational processes and the long operational history.

The Modifying Factors are summarized as follows:

- Only Measured and Indicated Mineral Resources are considered.
- Only mineralization defined in mine planning work has been considered. This includes Measured and Indicated material, subject to the application of mining Modifying Factors.
- Mineral Resources not scheduled for mining in the current LTMP are not considered.
- Indicated Mineral Resources are classified as Probable Mineral Reserves, subject to the Modifying Factors and mine scheduling constraints.
- Measured Mineral Resources are classified as Proven Mineral Reserves or Probable Mineral Reserves, subject to the Modifying Factors and mine scheduling constraints.

12.2 Comparison with Previous Estimate

A comparison of the current Alcoa Mineral Reserve estimate, to the previous 2022 Mineral Reserve estimate is presented in Table 12-2. Overall, the Proven and Probable Reserves decreased by 57.5 Mt (14%), from 401.6 to 344.1 Mt. The AL and SI grades decreased by 2% and 14% respectively over the same period.

The differences are primarily due to those outlined in Section 11.2 for the Resources, as well as the following:

- Mining depletion in 2023
- Movement of ore from reserve to resource after re-scheduling
- Depletion of ore in higher risk areas of drinking water catchments and RPZ in Myara
- Adjustment of the cut-off grades in Myara and parts of Larego to ensure continuity of bauxite supply

able 12-2: Comparison with Previous Mineral Reserve Estimates

Category	Mine	2023 Mineral Reserve			2022 Mineral Reserve			Difference (%)		
		Tonnage (Mt)	AL (%)	SI (%)	Tonnage (Mt)	AL (%)	SI (%)	Tonnage (Mt)	AL (%)	SI (%)
Proven	Huntly	26.2	27.81	1.87	71.2	30.00	1.360	-63%	-7%	38%
	Willowdale	21.8	30.75	1.38	74.7	32.70	0.980	-71%	-6%	40%
	Sub-total	48.0	29.14	1.65	145.9	31.38	1.165	-67%	-7%	41%
Probable	Huntly	210.4	31.66	1.36	180.3	32.40	1.200	17%	-2%	13%
	Willowdale	85.6	32.43	1.04	75.4	32.50	1.020	14%	0%	2%
	Sub-total	296.0	31.88	1.27	255.7	32.43	1.147	16%	-2%	10%
Proven & Probable	Huntly	236.6	31.23	10.73	251.5	31.72	9.873	-6%	-2%	9%
	Willowdale	107.4	32.09	1.11	150.1	32.60	1.000	-28%	-2%	11%
	Sub-total	344.1	31.50	1.32	401.6	32.05	1.154	-14%	-2%	14%

l2.3 Modifying Factors

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by application of Modifying Factors that demonstrate that, at the time of reporting, extraction could reasonably be justified.

- Mining – Alcoa's Darling Range mining operations are conventional open pit mines and have been operating for a long time. The practicalities of mining and associated sustaining capital and operating costs are well understood and have been incorporated in Alcoa's technical assessments to the satisfaction of the QP. For a more substantive description of Alcoa's Darling Range mining operations, refer to Section 13.0. The mining schedule is discussed further in Section 12.6.
- Processing – This Mineral Reserve is stated with reference to the refinery processing plant gate, with crushing and conveying being the sole processes employed. Bauxite is refined to alumina in the refinery using the Bayer process, which has been employed at the Darling Range operations for many years and a transfer price is used by Alcoa in its assessment of its mining operations. The QP is satisfied that the transfer price reasonably incorporates the costs associated with processing of the bauxite ore. For a more substantive description of Alcoa's Darling Range processing operations, refer to Section 14.0.
- Metallurgy – The mining operations are given an ore specification by the sole customers, the refineries. Blending is undertaken at the pit, before the crusher, to ensure that these specifications are met. The QP is satisfied that the procedures employed by mining technical staff have been developed over a lengthy period and are appropriate for the suppression of metallurgically deleterious material in ore sent to the refineries. For a more substantive description of Alcoa's Darling Range metallurgy, refer to Section 10.0.
- Infrastructure – The QP has observed the Darling Range infrastructure to be well established, maintained and to a high standard. The operations are located near a major city, with excellent transportation, facilities, and workforce. Provision is made in Alcoa's Life of Mine (LOM) plans for sustaining capital for infrastructure replacement. For a more substantive description of Alcoa's Darling Range infrastructure, refer to Section 15.0.

- Economic – Revenue for the mines is premised on a transfer price for bauxite ore at the refinery gate. Mining costs are well understood, as the mines have been operated for a long time. The QP is satisfied that the pit optimization, scheduling, and analysis undertaken by mine technical staff is appropriate to the operation and that the costs are well understood. For a more substantive description of Alcoa's Darling Range economics, refer to Section 19.0.
- Marketing – All bauxite is sold to Alcoa's Darling Range refineries, the sole customer for the mines. The refineries produce alumina, which is variously further refined into aluminum metal at Alcoa's aluminum plants or exported. Alumina and aluminum are internationally traded commodities and subject to normal market forces and cycles. For a more substantive description of Darling Range's market aspects, refer to Section 16.0.
- Legal – The QP observes that the Darling Range operations have been in operation for a long time and are licensed in relation to obligations under Western Australian legislation. Mining approval for the Darling Range operations is given by the statutory Mining and Management Program Liaison Group (MMPLG). The MMPLG consists of representatives from across government and is responsible for reviewing mine plans and associated activities and making recommendations to the Western Australian Minister for State Development.
- Environmental - The QP observes that the Darling Range operations have a long history of progressive rehabilitation of mined-out areas. There are restrictions placed on some mining areas that are related to proximity to water catchments, places of social importance and fauna habitat. Operation under these conditions is by approval of the MMPLG. For a more substantive description of Alcoa's Darling Range environmental obligations, refer to Section 17.0.
- Social – The QP observes that the Darling Range operations have long been a major employer and economic contributor to the region and that the operations have numerous well-established community and social initiatives. A skilled workforce resides in the area, as do many service industries. The QP does not consider social risk to be material to the Darling Range operations.
- Governmental – Western Australia and Australia in general are stable, developed democracies with an advanced economy. Governmental relations with the Darling Range operations are managed by the MMPLG, which has representation from the relevant government departments. The QP does not consider governmental risk to be material to the Darling Range operations.

l2.4 Basis of Estimate

Historically, Alcoa did not report material in the Measured Mineral Resource category, reporting mineralization in areas of 15 m by 15 m spaced drilling as Mineral Reserves reported to the prior SEC standard. Alcoa has subsequently incorporated S-K 1300 and JORC Modifying Factor considerations into its mine planning processes and this was observed and confirmed on site.

The QP has used the December 31, 2023 Mineral Resource estimate as the basis for its Mineral Reserve estimate. The bauxite operations are operating mining projects with a long history of production for which establishment capital has been repaid and for which sustaining capital and supported operating costs have been observed to be applied in economic analysis. Consequently, the QP considers that support by a Feasibility Study is demonstrated by the demonstrable history of profitable operation and the level of technical support for the Modifying Factors and Front-End Loading (FEL 2), or pre-project planning study, for the recent major Myara capital crusher move. The QP has reviewed the operating

and planning procedures and parameters for the operations and considers that the work completed is sufficient to allow definition of Mineral Reserves.

Proven Mineral Reserves are derived from scheduled Measured Mineral Resources which are included in the Long Term Mine Plan (LTMP) and approved for mining. Probable Mineral Reserves are derived from scheduled Measured Mineral Resources which are not yet approved for mining, or from scheduled Indicated Mineral Resources. The Mineral Resource estimate reported in this document (Section 11.0) is exclusive of the Mineral Reserve.

Consequently, Modifying Factors that relate to community and environmental considerations are formally assessed. The QP considers that as a result there is low risk to not establishing Proven Reserves relating to the project.

The Probable Mineral Reserve has been defined by 15 m by 15 m drilling. Application of the Modifying Factors is consistent with Proven Reserves.

The QP has formed an independent view of the Modifying Factors applied in the estimation of the Mineral Reserve. This view is supported by examination and verification of mine planning data and procedures and historic reconciliation information. The QP has interviewed technical staff responsible for Alcoa's operations and reviewed the operating, planning and forecast reports for the operations supplied by Alcoa.

The mine planning process excludes mineralization that is not considered recoverable due to various constraints, defining no Mineral Resource or Mineral Reserve within these zones. Such constrained zones include Aboriginal heritage sites and old-growth forest; however, are proactively and dynamically updated by Alcoa through engagement with stakeholders, such as the community, and in response to government requests.

12.5 Dilution and Ore Loss

Dilution and ore loss are not reported separately to the Mineral Reserve. Internal and edge dilution is modelled at the mine planning stage through the application of 15 m by 15 m mining blocks to the Mineral Resource model. These regularized blocks contain proportional estimates of ore and contaminants and are optimized through the application of a Lerchs-Grossman algorithm developed specifically for the operation. This variation of the conventional Lerchs-Grossman algorithm is applied vertically, given that the shallow nature of the mineralization precludes geotechnical considerations. Blocks that do not satisfy grade and contaminant parameters against revenue are thus excluded from the mine plan.

Mining dilution is controlled by excavation of dilution at the top of the mineralization (a source of oxalate or organic contamination) and the pit floor (SI contamination). The upper contact is a sharp geological contact on an undulating surface. GPS-controlled machinery is used to locate these intersections.

igure 12-1: Undulating Hanging Wall Hardcap Surface; and Footwall (white clay, lower right in the floor) (Left: Pearman, 2015 & Right: SLR, 2021)

Organic material reacts with sodium hydroxide in the refinery to form oxalate, which is considered to be a contaminant. Alcoa has developed a process known as Secondary Overburden Removal (SOBR) whereby the soil and clay on top of the hardcap that covers the mineralization and contains this organic material is removed by either scraper, surface miner or small excavator. This removes as much carbonaceous material overlying the undulating hardcap layer as possible. Further description of SOBR is given in Section 13.1.

A surface miner is employed as required at the Huntly mine to cut highly contaminated overburden to the hardcap contact. Historically, this results in a 2.9% ore loss, which is considered in the Mineral Reserve estimation.

The lower mineralization contact is gradational, and dilution is minimal on contaminants other than SI. This contact is defined through drilling and chemical analysis and excavation is controlled by GPS to modelled surfaces.

The Grade Control process checks the accuracy of excavation and assesses adherence to excavation of the target floor.

l2.6 Extraction and Mine Planning

l2.6.1 Long Term Mine Plan (LTMP)

Alcoa prepares an LTMP annually. The first five years of this plan is submitted to the statutory MMPLG for approval of mining areas. The LTMP includes a mine production schedule that demonstrates scheduling of mineralization classified as Mineral Resources for estimation as Mineral Reserves. This schedule contemplates higher confidence Mineral Resources during the early production periods, with lower confidence mineralization planned in subsequent periods (Figure 12-2 and Figure 12-3).

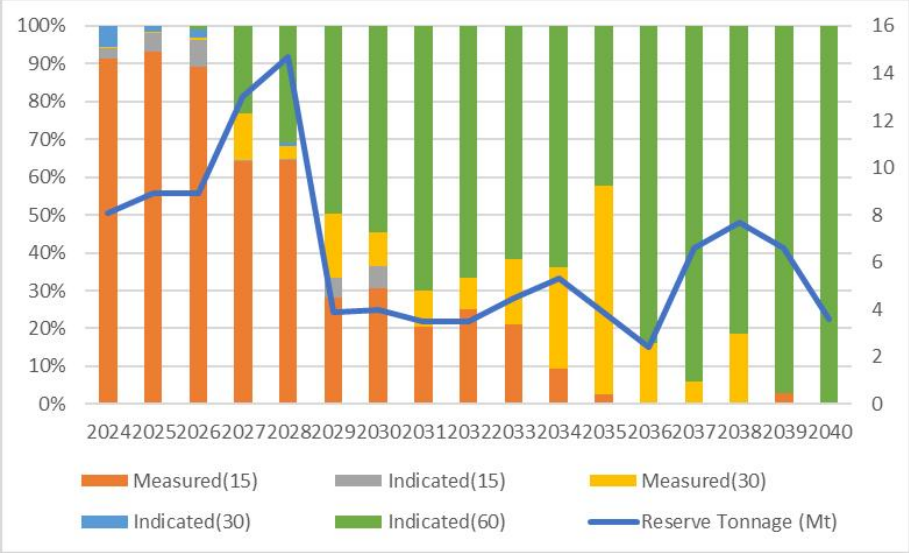
The schedule has several operational parameters in addition to statutory limitations (refer Section 12.3 above):

- The mineralization lies under haul roads and extraction is delayed until the road is no longer required.
- Mineralization is near a planned crusher location and mining has been delayed until the crusher is installed.
- Contaminants exclude a parcel from blending in the schedule.

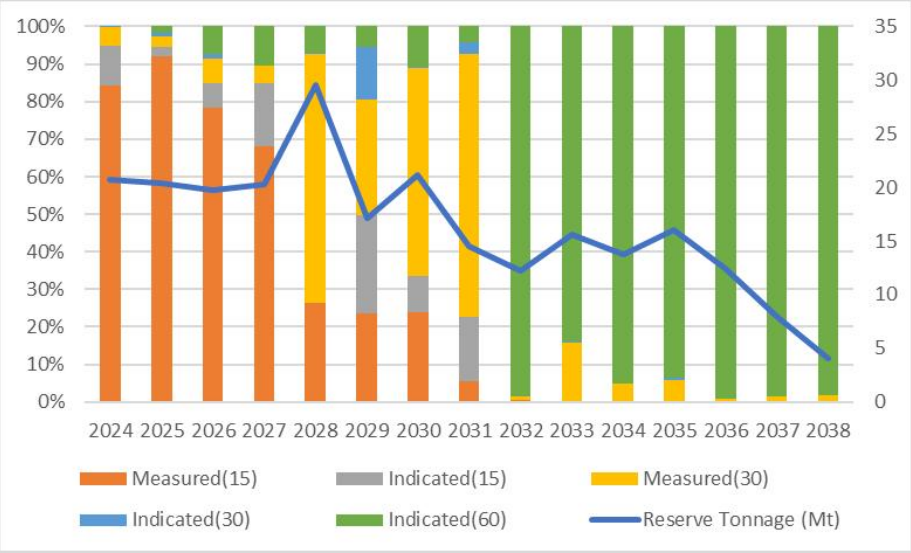
 The mining areas are small and demonstrate low mining efficiency and mining has been delayed.

Confidence in the Mineral Reserves is predicated on confidence in the underlying Mineral Resources in the mining schedule. Continuous Mineral Resource definition drilling maintains an inventory of sufficient confidence to maintain Mineral Reserves.

igure 12-2: Willowdale LTMP Resource Confidence (drill hole spacing in meters shown in brackets) (Alcoa, 2023)



igure 12-3: Huntly LTMP Resource Confidence (drill hole spacing in meters shown in brackets) (Alcoa, 2023)



l2.6.2 Mine Planning

Alcoa has been actively refining the mine planning process in such a way that the Mineral Resource and Mineral Reserve Models are updated continuously using various scripts and rationalizing of computer software. This process is mostly complete, the QP observed its progress both on the mine sites and at the Booragoon mine planning office.

The mine planning process commences with receipt by the mine planning department of the regularized and classified electronic Mineral Resource model from the geologists. The regularization process sees the Mineral Resource blocks agglomerated into blocks of 15 m by 15 m by 0.5 m vertically. Grade, bulk density and contaminant parameters are estimated into the model, which is expressed as a percentage model. This model is then manually checked and validated.

Electronic files are centrally stored, and the master versions are copied by relevant personnel for manipulation.

Optimization of the pits is undertaken using a bespoke variant of the Lerchs-Grossman algorithm designed to operate vertically. The algorithm accumulates blocks vertically on 0.5 m increments to find the pit floor.

The optimization is driven by Net Present Cost (NPC), rather than the conventional Net Present Value (NPV) due to the presence of a flat transfer price for product at the refinery gate.

Geotechnical constraints are not relevant, given that the pits are generally around 4 m in depth and placed on gently undulating country (Section 7.9). Contour mining is applied in areas of greater topographic relief, whereby mining progresses across the contour, maintaining as consistent a pit floor as possible.

Optimization parameters are calculated for each block, including costs associated with drilling, blasting and ripping and haulage cost, which is estimated from major haulage roads and minor pit access roads against gradient. Electronic surface models are prepared to

constrain the optimization; these are informed by LiDAR radar surveys and model the topography, the base of overburden and the base of mineralization, derived from chemical analysis of resource definition drilling samples. Caprock requires drilling and blasting, and modelled surfaces are contoured for thickness, which is derived from examination of drill logs and high-Fe assays.

Pit shells are visually assessed for practicality and minimum mining widths and any impractical pit shells removed. Minimum mining widths vary according to topography and material type.

Individual areas are optimized separately, and the resultant pit shells are combined to provide grade and contaminant specifications for Life of Mine (LOM) scheduling. Haul roads are divided into 50 m segments with appropriate cost increments applied to each segment using commercial haul road optimization software. This process electronically tags each block with haulage cost information as a function of distance of the relevant node (haul road) from the nearest crusher. The software then normalizes the data by calculating the equivalent flat haul distance, maintaining a gradient of less than 8% for all nodes.

The model is then depleted for mined material and blocks that have been otherwise committed for development or have been mined out and also for environmental constraints.

Environmental constraints include proximity to streams, designated heritage areas (both Aboriginal and European) and the water catchment offset. GIS software is used to continuously generate electronic shape files that are converted daily to string files for import into the mine design software. These are then used to deplete the model in relation to environmental constraints.

Mineralization that has been identified as being under infrastructure is scheduled for mining only after that infrastructure has been removed in the LOM plan.

Noise zones are those where noise from the mining operations will potentially exceed allowable levels and the operation actively seeks to maintain lower noise levels than those mandated. Mining in these areas is undertaken by contract miners on day shift only and attracts higher costs than conventional owner-operator mining, which is applied to most of the operation.

The regularized model is then coded for the above parameters and checked. All the above processes are logged, checked, and validated both electronically and visually. Electronic scripts are then run in the mine planning software, resulting in the reporting of Mineral Reserves.

Revenue for the Lerchs-Grossman optimization is applied as a transfer price obtained from Alcoa's Financial Department. This revenue is related to the export price gained for refined alumina and is related to penalties for reactive silica content. Current revenue is $21.46/t. The optimization uses $0.48 per unit alumina based on the average grades that are agreed with the refineries. A discount rate of 12.00% is mandated by the Finance Department and applied to the NPV scheduler during the mine planning process. The price that constrains the estimate for optimization was discounted to exclude export logistics costs, i.e., the base price was $21.46/t (updated annually to reflect a reasonable market expectation of arms-length sales of bauxite from Darling Range), and the discounted price was $16/t.

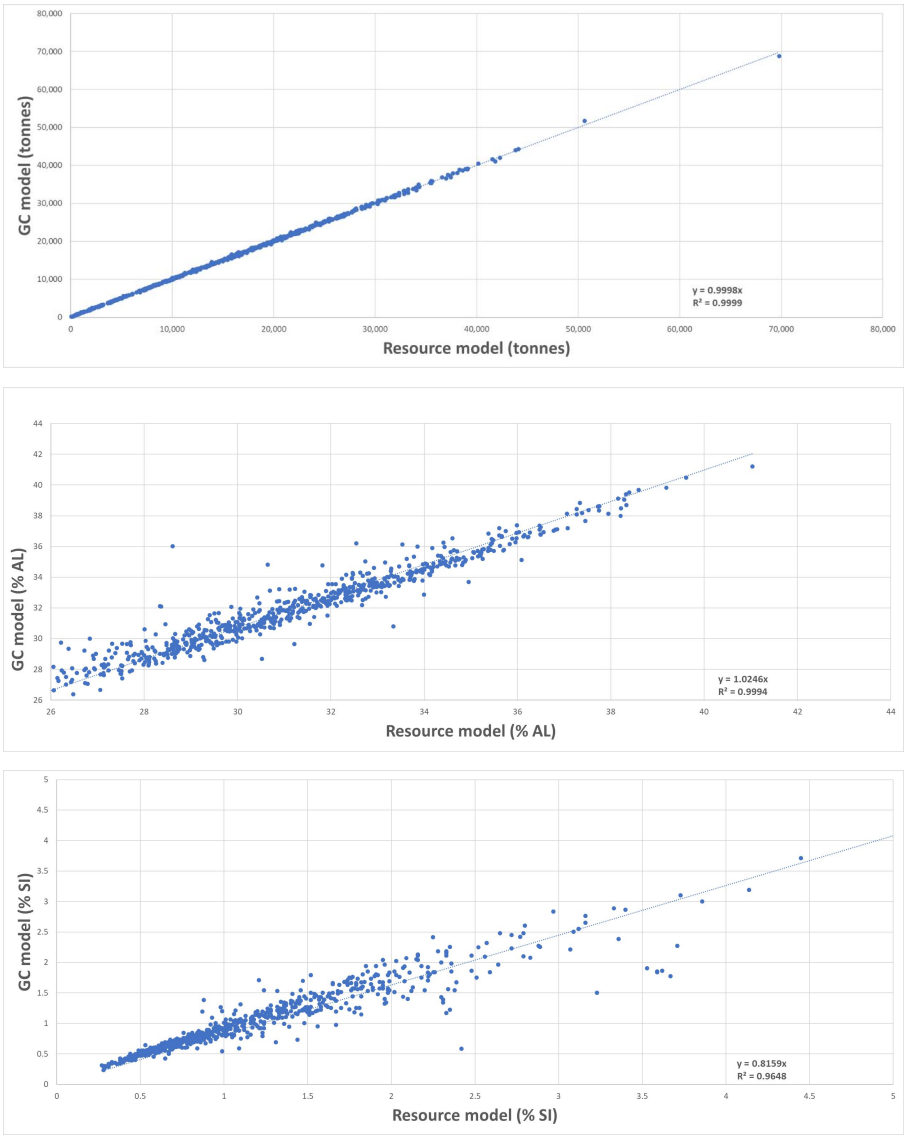
The QP notes that costs and revenues used in this process demonstrate reasonable variations consistent with market trends over time and that revenue has remained constant over the past year.

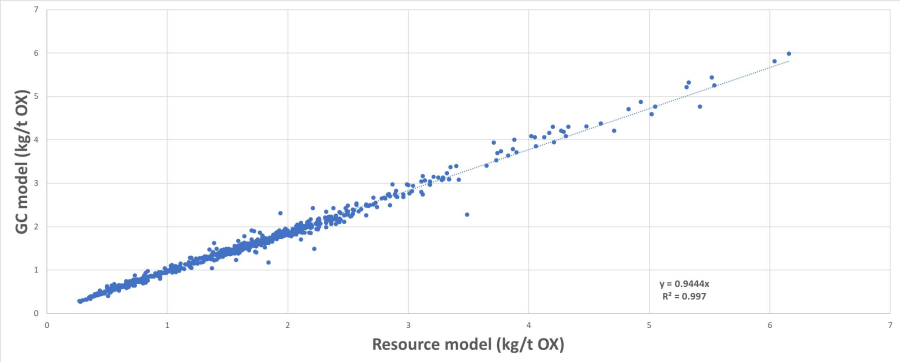
In practice, the Grade Control Model is used to direct mining at the bench scale, because it has more up-to-date drilling data than the Mineral Resource Model. Reconciliation is undertaken between the Mineral Resource, Mineral Reserve and Grade Control Models, with the QP observing the reconciliations between Mineral Resource and Grade Control Models

to be within acceptable parameters. Reconciliation of the Mineral Reserve model has not been regularly undertaken in the past and this process was observed to be in development.

Figure 12-4 shows an example of the reconciliation between Resource and Grade Control models undertaken regularly by Alcoa.

igure 12-4: Example of Reconciliation Between Mineral Resource and Grade Control Models for Tonnage, Al, Si, and OX (Alcoa, 2022)





The resultant pit shells are scheduled using specialist automated mine scheduling software. A text file containing the model and its parameters is exported to the scheduling software, which is programmed with current wait times and the current mining capacity of 26.5 Mtpa (Huntly) & 11 Mtpa (Willowdale). The software calculates and defers, as much as possible, capital haul road development costs for each block and identifies an optimal schedule.

Sustaining capital is calculated and added for haul road maintenance and equipment replacement. Not all machinery is capitalized, some being leased, and this is included in the operating cost. Review of ownership costs against leasing is constant and appropriate factors applied to the model.

The resultant model is coded for grade and contaminants and blocks are flagged with the appropriate mining sequence. Mineral Reserve blocks are contained within the LTMP schedule. The model is then re-exported as a text file to the mine planning software and distributed to the relevant mine planning departments and mine closure engineers for detailed planning.

L2.6.3 Abandoned Resources

Some planned mining areas that are included in the schedule are unable to be totally mined for a variety of operational reasons. These reasons usually relate to issues with rock outcrops, hard ground, contamination and access difficulties that are encountered when developing a new mining area. This process drives the continuous development of new mining areas to maintain production capacity.

Alcoa's recorded average abandoned mineralization between 2016 to 2019 (inclusive) is estimated at an average of 1.5% of Huntly and 2.0% of Willowdale planned production but can vary materially. These factors are applied to forecast production in the Mineral Reserve estimation process.

L2.7 Cut-off Grade

The cut-off grade used for mine production planning is a floating cut-off grade, dependent on capital and operating costs against a fixed product revenue at the refinery gate. These revenues are updated at least annually by Alcoa's Finance Department and are observed by the QP to be updated annually to reflect a reasonable market expectation of arms-length sales of bauxite from the Darling Range.

The cut-off grade is thus cost-driven rather than revenue driven. Operating costs are observed to be driven by haulage distance and the use of contract mining in areas where mining is undertaken on day shift only due to environmental restrictions. Haulage distance is related to the presence or absence of capital haul roads and their maintenance costs.

The current nominal cut-off grades for Alcoa's Darling Range operations are 27.5% for AL and 3.5% for SI. Commodity pricing is described previously in Section 12.6.2.

12.8 Metallurgical Factors

The Huntly and Willowdale Darling Range mining operations feed three refineries: Kwinana, Wagerup and Pinjarra. The Huntly mine provides feed for the Kwinana and Pinjarra refineries and the Willowdale mine provides feed for the Wagerup refinery. Ore is transported via conveyor belt from the relevant crushers, and the battery limit for the mining process is the refinery gate. All three refineries are established, mature and use the conventional low-temperature Bayer refining processes.

The refineries are designed to accommodate long-term average bauxite and impurity grades from the mines. Internal Alcoa specification contracts are established between the refineries and each of the mining operations and these contracts are updated annually and contemplate a five-year mine plan. These contracts set impurity targets, the key impurities being SI, oxalate, and iron. Mineral processing testing is discussed in Section 10.0, and processing and recovery in Section 14.0.

The internal LOM (nominally 2045) specification for bauxite is based on a 27.5% AL cut-off grade, which has not been optimized but is supported by the extensive operating history at the three refineries.

Deleterious elements are managed within contracted limits by blending at each mine, with the aim of minimizing variation. The refineries conduct metallurgical test work to ensure that any potential effects of variance caused by new mining areas are understood.

Geometallurgical analysis is conducted on drill hole samples using FTIR analysis as a primary method. A subset of the samples is assayed using conventional analytical procedures, with the results used for FTIR batch calibration and quality assurance purposes. The Mineral Resource model is coded for geometallurgical grades for available alumina and reactive silica. This information is reported in the Mineral Resource estimate as well as the Mineral Reserve estimate.

The Mineral Reserve is based on geometallurgical criteria that have been set by the refineries as suitable for producing alumina to agreed product marketing specifications.

It was announced in January 2024 that the Kwinana refinery will undergo phased curtailment beginning in the second quarter of 2024. Current mine plans do not accommodate this curtailment but will be amended to include a staged reduction of supply to the refinery through the third quarter of 2024.

12.9 QP Opinion

The QP considers that, because of the integrated process by which Measured and Indicated Mineral Resources translate to Mineral Reserves for Alcoa's Darling Range operation, there are no foreseeable risks associated with Modifying Factors (mining, processing, metallurgical, infrastructure, economic, marketing, legal, environment, social, or government) that materially affect the Mineral Reserve estimate at 31 December 2023.

The operations are sensitive to actual mined grade, as such lower alumina or higher reactive silica grades remain a risk to the overall economics. Alcoa have demonstrated through their Grade control program an effective control to minimizing the dilution and mining at their forecast grades. The grade control is particularly important along ore-waste boundaries to maintaining expected mined grades, Alcoa demonstrate processes to handle and define boundaries to mitigate these risks.

Haul distance is considered a risk factor due to the hauling cost making up a significant portion of the mining cost. Hauling is also directly linked to fuel cost and maintenance, the

combination of an increased hauling distance as well as an increase in fuel cost and maintenance would result in a significant impact on the operational costs. Haul distances to Reserve blocks typical increase over time until such time there is a plant relocation and so there is an expected increase in hauling distance in the medium term. Alcoa manage such risks by defining when then major plant needs to be relocated.

Alcoa may be unable to obtain or retain necessary permits, which could adversely affect its operations. The Darling Range operation is subject to extensive permitting requirements. The requirements to obtain and/or achieve or maintain full compliance with such permits can be costly and involve extended timelines and possible delays. Alcoa strives to obtain and comply with all required permits but there can be no assurance that all such permits can be obtained and/or always achieve or maintain full compliance with such permits.

13.0 Mining Methods

13.1 General Description of Operations

The Huntly and Willowdale mines employ conventional open pit mining practices and equipment. The fleet is mixed between contract and owner-operator, depending on the nature of the task at hand. Owner operator equipment is used for mining the bulk of the Mineral Reserve, operating in areas away from those subject to environmental restrictions. Contract mining operates smaller equipment, day shift only, in environmentally (noise) sensitive areas and at the perimeter of the mining area.

The Huntly mine currently operates at a nominal mining capacity up to 27 Mtpa. The Willowdale mine operates at a nominal production rate of 11 Mtpa.

The Darling Range operations currently have a nominal expected mine life until 2045 (when ML1SA expires), although provision exists for Alcoa to apply for a further mineral lease (Section 3.2). Long Term Mine Plans for scheduling of mineralization classified as Mineral Resources for estimation as Mineral Reserves (Section 12.6.1). Mining units of 15 m by 15 m by 0.5 m vertically are in use at the operations (Section 12.6.2).

Dilution and ore loss are not reported separately to the Mineral Reserve (Section 12.5). Internal and edge dilution is modelled at the mine planning stage through the application of 15 m by 15 m mining blocks to the Mineral Resource model. These regularized blocks contain proportional estimates of ore and contaminants and are optimized through the application of a Lerchs-Grossman algorithm developed specifically for the operation. This variation of the conventional Lerchs-Grossman algorithm is applied vertically, given that the shallow nature of the mineralization precludes geotechnical considerations. Blocks that do not satisfy grade and contaminant parameters against revenue are thus excluded from the mine plan.

Mining recovery from Huntly and Willowdale are estimated to be 96% and 98%, respectively.

Figure 3-3 shows the outlines of mined areas, Mineral Resources, and Mineral Reserves, which are collectively taken as representing the final pit outline, as currently understood. This does not account for any required extensions or additional licenses and assumes that all Mineral Resources and Mineral Reserves are ultimately mined.

13.1.1 Clearing

Following definition of Mineral Reserve blocks, vegetation is cleared ahead of mining by the Western Australian State Forest Products Commission (FPC), saleable timber being harvested for use. Clearing approval is sought ahead of mining allowing time for harvesting of saleable timber before vegetation clearing.

13.1.2 Stripping

On receipt of clearance to proceed from the FPC, Alcoa operations commence stripping topsoil and Secondary Overburden Removal (SOBR) using small excavators, scrapers, and trucks. Soil is stockpiled at the site, away from the proposed pit, for rehabilitation purposes. Soil is stockpiled in windrows in such a manner that it maintains its organic viability.

The dieback fungus (*Phytopthora spp*.) is endemic in parts of the mining areas, which are flagged by Alcoa and precautions are taken to contain the fungus, which is lethal to the eucalyptus forest. The QP observed these precautions, which include separation of machinery fleets in areas where dieback is present and washing of machinery before entry into different areas. This represents a minor short-term scheduling challenge, though it is well managed.

13.1.3 SOBR

The SOBR process is specialized and aims to remove as much overburden and organic material from the top of the mineralization as possible. This organic material reacts with NaOH in the refinery to produce oxalates, which are deleterious to the process. After scrapers have removed the topsoil and overburden, two small (60t class) excavators equipped with swivel buckets are used to scrape clay containing organic material from the undulating surface of the hardcap that sits on top of the mineralization. This is later used to backfill mined out areas.

Figure 13-1: SOBR (SLR, 2022)

The SOBR process is applied to those areas where hardcap has been identified by Resource definition drilling, using the drillers' logs. The hardcap is drilled and blasted before mining with the rest of the bauxite sequence.

In areas without hardcap, wheel tractor-scrapers of 24 m^3 capacity remove soil overburden, scraping directly to the top of the mineralization model surface, being controlled by GPS. This material is similarly stockpiled for rehabilitation or used as backfill in exhausted mining areas.

igure 13-2: Topsoil Removal (Background), Blasting of Hardcap and Marking of Ore (foreground) (SLR, 2021)

A surface miner is employed in limited areas of hardcap in the vicinity of blasting-sensitive infrastructure such as power lines. The surface mining is also employed in lieu of SOBR where appropriate, for example, where there are high levels of contaminants in the hardcap. During the 2023 visit the surface miner was not operational.

L3.1.4 Mining

Mining progresses on 4 m benches, utilizing a contour-mining sequence, cutting benches across the topography, working from top to bottom, maintaining the flattest floor obtainable to a maximum gradient of 1:7. Most of the mineralization lies beneath a gently undulating topography and contour mining is minimal.

igure 13-3: Contour Mining (SLR, 2021)

On completion of overburden removal, the exposed surfaces are sheeted with 0.25 m of suitable mineralized material taken from the dozed second cut in adjacent pits. Where hardcap is present, a drill rig is mobilized, and the hardcap drilled and blasted on an appropriate pattern to fragment the hardcap.

Trucks haul the mined ore to fixed crushers, which crush the material to varying sizes (refer to Section 14.0) before conveying down the escarpment to the refinery where it is stockpiled to give surge capacity.

No visual grade control is applied, the ore contacts being gradational. Grade control is achieved by mining to electronic ore surfaces derived from drill assays, control being achieved using GPS equipped equipment, the GPS being regularly calibrated.

Blending takes place at the pit face before which the crushed ore from different pits is assessed using specialist short-term mine planning software and pit production is scheduled to achieve the desired blend.

The QP is of the opinion that considering the style of mineralization, the average depth of the deposit, and the material characteristics of the overburden material whereby it is amenable to ripping / excavation using conventional earth-moving equipment, the open pit mining method adopted at Darling Range is the most appropriate method for the Mineral Reserves.

l3.2 Haul Roads and Infrastructure

l3.2.1 Haul Roads

Haul roads are the limiting factor to the mining operations. Major haul roads are established to each mining area, honoring the topography at the least possible gradient. Roads are unsealed and formed by conventional bulldozer and grader and sheeted with appropriate material. Once established, haul road maintenance was observed to be continuous and forms part of the operating cost for each mining area. Haul roads are observed by the QP to be treated as sustaining capital in an appropriate manner.

igure 13-4: Truck on Haul Road (SLR, 2021)

igure 13-5: Haul Roads with Berms (SLR, 2021)

Secondary haul roads to individual mining areas are formed in the same manner, with provision for rehabilitation once mining is complete.

The Darling Range climate is subject to wet winter months and trafficability of haul roads during these months is included in mine planning. Redundancy during wet months is planned for, allowing well drained areas to be mined in the wet.

There are some restrictions to the establishment and operation of haul roads, and these are incorporated into the road design and operation:

- Water runoff from the roads is impounded in sumps and these were observed to be well formed and appropriate, being regularly dewatered, emptied of sediment and cleaned. This water is either re-used for dust suppression or road-forming purposes or is decanted for release in an approved manner.
- Dieback control necessitates separation of machinery between that which operates in dieback-prone and dieback-free areas. This presents short-term scheduling challenges that were observed to be well controlled.
- Proximity to a major water catchment restricts the volume of hydrocarbons that may be taken into particular areas around the catchment. This was observed to be adhered to, with particular road rules and scheduled delivery of approved volumes of hydrocarbons along haul roads that are specially formed with impoundments in the event of spillage.

The QP has observed that Alcoa's Darling Range operations have a well-established system for haul road design, construction, maintenance and regulation and that this does not present a major impediment to mining efficiency.

13.2.2 Infrastructure

The main elements of infrastructure at Alcoa's Darling Range mining operations are the location of crushers and conveyors to the refineries. These crushers form hubs for the mining operations, connected by the primary haul roads and are scheduled to be moved every ten years or so, in accordance with the requirements of the mining schedule and the location of ore as the mines progress. This crusher movement is planned well in advance and is treated as sustaining capital expenditure.

The crushers seem relatively light duty for a mining operation and are well maintained. Similarly, the conveyors, which operate all year round and are covered, negating any potential effect of weather.

igure 13-6: Covered Conveyor (SLR, 2021)

Both the crushers and conveyors were observed to be in excellent condition and subject to scheduled maintenance, including replacement of conveyor belts.

Other ancillary equipment includes offices, ablutions, crib-rooms, and workshops, all of which were observed to be in excellent condition.

L3.3 Geotechnical and Hydrogeology Considerations

Based on their long operating history, Alcoa's approach to mine stability has largely been based on strong pit performance. Mining at Alcoa's Darling Range operations is very shallow, pits being an average of 4 m deep. Consequently, geotechnical considerations are negligible other than immaterial localized batter failures. Similarly, the mining areas are elevated and well drained and groundwater and surface water hydrology is not material in these areas other than the catchment, impoundment, and decantation of runoff during the wet winter months. No drainage diversion occurs or is necessary because the mineralization sits between the stream beds and the bauxite occurs above the groundwater table. Deeper bauxite may be seasonally affected by the water table and is scheduled to be mined in summer. Backfilling of these places occurs before the rain raises the water table.

Contour mining (Figure 13-7) is practiced in areas of relatively steep topography, maintaining access ramps at less than 1:8 gradient and mining across the contour and downwards, creating a flat working floor. Hydrological considerations in these areas include management of runoff during the wet winter months and trafficability.

Mine overburden is progressively backfilled into adjacent exhausted pits (Figure 13-8), topsoiled, landscaped (Figure 13-9), and rehabilitated by re-establishment of native vegetation (Figure 13-10), creating a stable post-mining landform that replicates the pre-existing environment. Recommended pit design constraints are shown in Table 13-1.

able 13-1: Alcoa Recommended Pit Design Constraints

Feature	Constraint
Pit total void Crest/Toe offset	0.15m
Maximum floor cut for a digger	4m. Recommended 3.5m
Maximum floor cut for a loader (depending on loader size)	7m. Recommended 6m (depending on loader size)
Dozer Push	Recommended 50m but can be dependent on the pit and extraction
Minimum Cut depth (non terrace)	Huntly 2m, WDL 1.5m
Maximum Cut depth before a berm	8m cut, then a 7.5m berm is required
Offset to Non blasted ground	7.5m

WSP-Golder were engaged by Alcoa to undertake a desktop study and gap analyses in February 2023 as part of broader scope to develop a ground control management plan for their Huntly and Willowdale operations. As part of the study, critical geotechnical hazards were identified with any associated failure mechanisms. These include rock fall, excavator stability whilst loading, dump / stockpile stability and land slips / rotational failure of batters. Surface water and groundwater are closely interlinked and are considered a major trigger for initiating all of these events. A geotechnical training package has been developed in order to provide training to mine operating staff. Ideally, all employees should be able to identify warning signals and are responsible for making the mine a safe place to work. All hazards

are site specific related to Huntley and Willowdale operations. Recommendations for controls have been provided and can be applied as part of standard work procedures.

Alcoa intends to start mining in areas with steeper terrain and where mine plans indicate potentially higher walls adopting multi batter slopes. WSP-Golder consider more in-depth design is required for these proposed cuts given there is no precedent to predict slope performance. It is recommended this include investigation work to collect samples and carry out laboratory testing for material strength characterization and stability analyses. This would be recommended in areas with planned high walls. A forward work plan with more detailed recommendations is available.

igure 13-7: Contour Mining (SLR, 2021)

igure 13-8: Soil Being Returned for Backfilling and Landscaping the Pit (Alcoa, 2018)

igure 13-9: Landscaped Mining Area, Prior to Replanting of Forest (SLR, 2021)

igure 13-10: Rehabilitated Pit Through Re-plantation of Native Vegetation (SLR, 2021)

l3.4 Mine Equipment

Mining is undertaken by 300 t and 200 t-class excavators top-loading 190 t capacity rigid-bodied mining trucks (Figure 13-11). This fleet was observed by the QP at Huntly to be aged. The equipment has undergone relatively light duties for a mining fleet, which prolongs its life. Sustaining capital is being invested in equipment replacement and modernization at Willowdale, progressively working toward Huntly. New equipment includes 250 t-class excavators and 190 t-class trucks.

A full list of equipment at Darling Range is provided in Table 13-2.

igure 13-11: Ore Mining at Darling Range (SLR, 2021)

able 13-2: Darling Range Operations Equipment List

Location	Classification	Type	No. Units
Huntly	Primary	Excavator	7x CAT 336D 2x Komatsu PC3000 4x Hitachi 2600-7
		Haul truck 1	8x CAT 789C (190T) 9x CAT 789D (190T)
	Ancillary	Bulldozer / Loader	3x CAT D11R 1x CAT 992K 2x CAT 993K 2x CAT 980 Loaders
		Grader	2x CAT 16M 1x CAT 24M
		Scrapers	5x CAT 637G
		Low Loaders	1x CAT 785C (250T) 1x CAT 777G (150T)
		Water truck	3x CAT 785C
		Drills	3x Atlas Copco L6 (Blast) 5x WB93 (Exploration)

Willowdale	Primary	Excavator	2x Hitachi ZX360 1x CAT 336D 2x Komatsu PC2000 2x Komatsu PC3400
		Haul truck 1	12x Komatsu 730E (190T)
		Haul truck 2	1x HD1500 (150T)
	Ancillary	Bulldozer / Loader	3x CAT D11T 1x CAT 993K 1x CAT 992G 1x Komatsu WA320
		Grader	1x CAT 16H 1x CAT 18M
		Scrapers	3x CAT 637K 1x CAT 637G 1x CAT 637E
		Low Loaders	1x CAT 785D (220T)
		Water truck	2x CAT 777F 2x Komatsu 730E
		Drills	2x Epiroc D50 (Blast)

3.4.1 Contractors

Alcoa's practice in noise sensitive areas such as the perimeter of the operation near residents is to engage contractors. These areas operate on day shift only and attract higher operating costs than the main production areas. The flexibility required in these areas precludes the use of the primary owner-operator fleet and equipment is dry or wet hired or mining takes place under conventional schedule of rates contracts.

Alcoa also engages contractors for aspects of haul road construction services, in select areas of pit development, and during landscaping activities for rehabilitation after mining.

This practice has led to the establishment of a secondary contracting industry around the Darling Range operations. Contractors are overseen by Alcoa personnel.

3.4.2 Ancillary Equipment

Ancillary equipment at Alcoa's Darling Range operations includes a fleet of bulldozers, graders and loaders that are primarily used for haul road formation, pit development (for the removal of overburden and blasted caprock) and ground preparation for digging, landscaping, clean-up, and road maintenance.

The SOBR process requires small excavators, articulated trucks, scrapers, and specialist skills to grub organic-containing clay from the top of the mineralization.

igure 13-12: Blasthole Drill Working on Hardcap (SLR, 2021)

All ancillary equipment was observed to be in good and well-maintained conditions, the conditions being relatively light duty in comparison to other Western Australian mining operations. The current mining areas are shown in Figure 3-2.

l3.5 Personnel

The main production mining operations are primarily Owner-operated using Alcoa equipment and employees. Contractors are also used for certain activities on site.

Three unions are recognized at the operations:

 The Australian Workers Union (AWU), which covers most of the operations workers

 Australian Metal Workers Union (AMWU), which covers the metal trades, being fitters, boilermakers and mechanics

 Electrical Trades Union (ETU), which covers the electricians

Lost time during strikes is generally uncommon. The Enterprise Agreements (EA) have varied timing for expiration. The AMWU Agreement, negotiated in early 2023, will expire in April 2027. The ETU EA was negotiated at the end of 2021, with a 4 year term and the AWU Agreement was negotiated in the fourth quarter of 2023, with a 2.5 year term.

Alcoa's Darling Range operations were observed to have a stable workforce, drawn from the surrounding areas. The location is highly desirable in the Western Australian mining context and skilled personnel are readily attracted to the operations. Primary haul roads are named after personnel with greater than forty years' service and there are many of these.

Employee turnover is below industry standard, as the drive in, drive out nature of the work attracts many to work at Alcoa.

As of December 2023, the Huntly and Willowdale operations together employ 899 employees consisting of 48 technical, 80 management and 771 operations employees. Additionally, 98 employees are centrally employed on the combined operations.

A breakdown is shown in Table 13-3 (current vacancies not accounted for).

able 13-3: Darling Range Personnel

Location	Classification	No Personnel
Huntly 606	Technical	37
	Management	51
	Operations	518
Willowdale 293	Technical	11
	Management	29
	Operations	253
Central 98	Technical	18
	Management	25
	Operations	55
	Total	**997**

14.0 Processing and Recovery Methods

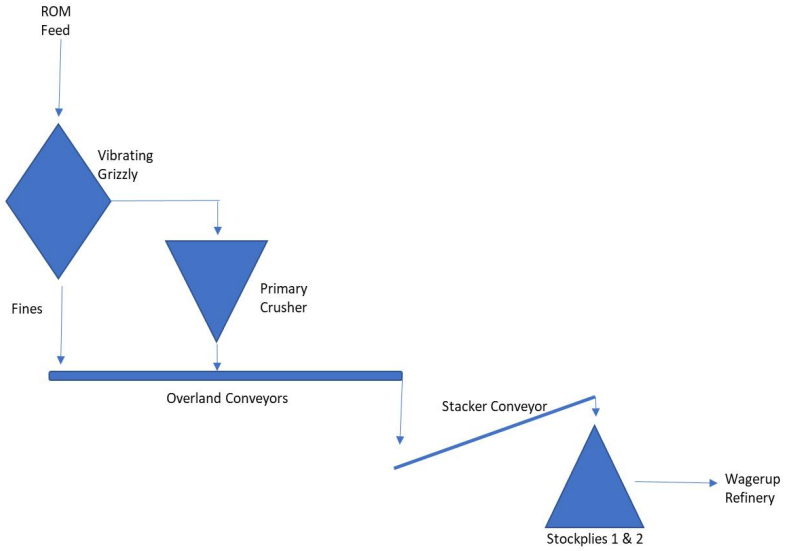
14.1 Process Description

The process plant for the Darling Range operations consists of two separate crushing facilities at the Huntly and Willowdale mines. Both facilities crush the ROM and convey the crushed ore to three separate refineries.

The Willowdale operation consists of a single stage crushing flowsheet and includes a series of conveyors to transport the crushed ore at an annual throughput of 10 Mtpa. The ROM is discharged from trucks on a dump hopper. An apron feeder transfers the ore from the dump hopper to a vibrating grizzly with an aperture of 180 mm. The grizzly oversize is discharged into a single toggle jaw crusher which crushes the ore to a top size of 180 mm. A hydraulic rock breaker is installed at the crusher to break the larger rocks that do not pass through the crusher opening. The crushed product and the grizzly undersize are discharged on to a discharge conveyor and subsequently discharged on to an overland conveyor. The discharge conveyor is fitted with a tramp magnet to remove any metal that is present along with the crushed ore product. The overland conveyor, which is 9.4 km long, transports the crushed ore to an intermediate transfer station. The ore is then transported by a second overland conveyor, 8.8 km long, to the transfer station located at Wagerup. An apron feeder is used to transfer the crushed ore from the Wagerup transfer station on to a stockpile conveyor and subsequently discharge on a stacker conveyor. The stacker conveyor discharges the ore into two separate stockpiles. The crushed ore is then reclaimed from there for processing in the Wagerup refinery. The total capacity of the stockpiles is approximately 0.7 Mt and sufficient for three weeks of feed to the refineries.

A simplified block flow diagram of the Willowdale operation is shown in Figure 14-1.

igure 14-1: Simplified Block Flow Diagram of the Willowdale Operation



The Huntly operation consists of multiple stages of crushing and includes a series of conveyors to transport the crushed ore to the refineries at an annual throughput of 25 Mtpa.

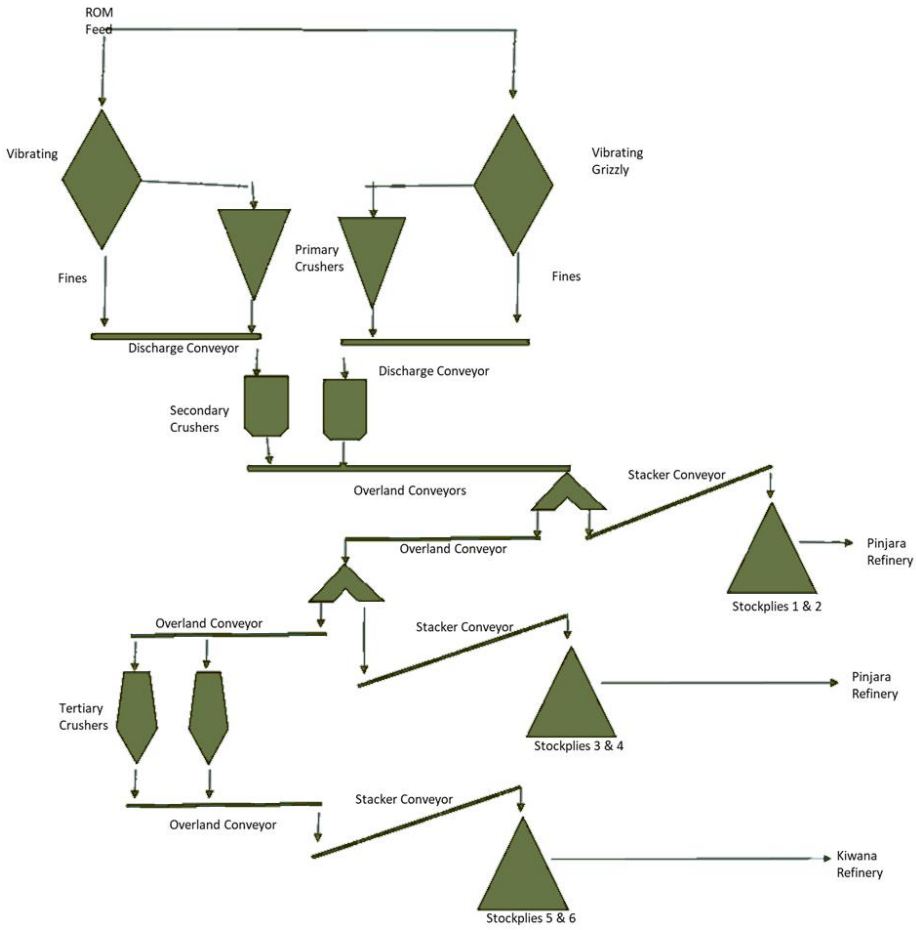
The primary crushing is achieved by two similar crushing circuits operating in a parallel configuration. The ROM is discharged from trucks on dump hoppers. Apron feeders transfer the ore from the dump hopper to vibrating grizzlies with an aperture of 180 mm. The grizzly oversize fractions are fed to jaw crushers which crush the ore to a top size of 200 mm. The crushed product and the grizzly undersize are discharged on to discharge conveyors and transferred to the secondary crushers (sizers). The discharge conveyors are each fitted with a tramp magnet to remove any metal that is present in the crushed ore. Secondary crushing is achieved in sizers with the objective of reducing the ore particle size to a top size of 100 mm. The secondary crusher product is transported by three overland conveyors (operating in series with two intermediate transfer stations in between) to a transfer station and randomly split into two by a splitter bin.

One fraction from the splitter bin is transferred by another overland conveyor and discharged into a stockpile conveyor via an apron feeder. The stockpile conveyor transfers the ore and subsequently discharges onto a stacker conveyor. The stacker conveyor discharges the ore into two separate stockpiles identified as Stockpile 1 and Stockpile 2. The crushed ore is then reclaimed from there for processing in the Pinjarra refinery. The second fraction of the ore is transported by an overland conveyor to an apron feeder, to a transfer conveyor and then split again to two fractions by a splitter chute located at a separate transfer station. One of the splits from the splitter chute is currently destined for Kwinana refinery and the other split is destined for Pinjarra refinery.

The fraction for the Pinjarra refinery is transported by stockpile conveyor and subsequently discharged on to two sperate stockpiles (identified as Stockpile 3 and Stockpile 4) via a stacker conveyor. The ore is then reclaimed from the stockpiles for processing in Pinjarra refinery along with the ore from Stockpile 1 and Stockpile 2.

The split for Kwinana refinery is transported by a conveyor and processed by a tertiary crushing circuit consisting of two roller crushers operating in parallel configuration. The tertiary crusher product with a top size of 25 mm is transferred by a stockpile conveyor and discharged into two separate stockpiles identified as Stockpile 5 and Stockpile 6 via a stacker conveyor. The crushed ore from Stockpiles 5 and Stockpile 6 is reclaimed and transferred by a reclaim conveyor to a surge bin for subsequent loading and transport to the refinery by train. A simplified block flow diagram of the Huntly operation is shown in Figure 14-2.

igure 14-2: Simplified Block Flow Diagram of the Huntly Operation



l4.2 Primary Equipment List

The primary equipment lists of the Willowdale, and Huntly operations are shown in Table 14-1 and Table 14-2.

able 14-1: Primary Equipment List (Willowdale)

Equipment	Quantity	Installed Power (kW)
Apron feeder	1	264
Vibrating grizzly	1	75
Primary Crusher	1	355
Discharge conveyor	1	132
Overland conveyor	1	2500
Overland conveyor	1	1800

Apron feeder	1	75
Stockpile conveyor	1	300
Stacker boom conveyor	1	110

able 14-2: Primary Equipment List (Huntly)

Equipment	Quantity	Installed Power (kW)
Apron feeder	1	260
Vibrating grizzly	1	55
Primary Crusher	1	250
Discharge conveyor	1	140
Secondary crusher	1	1000
Apron feeder	1	260
Vibrating grizzly	1	75
Primary Crusher	1	250
Discharge conveyor	1	140
Secondary crusher	1	1000
Overland conveyor	1	7500
Overland conveyor	1	5000
Overland conveyor	1	6100
Apron feeder	1	75
Overland conveyor	1	1500
Apron feeder	1	55
Apron feeder	1	75
Overland conveyor	1	1350
Apron feeder	1	110
Stockpile conveyor	1	225
Stacker boom conveyor	1	110
Yard conveyor	1	250
Stockpile conveyor	1	150
Stacker boom conveyor	1	110
Conveyor	1	250
Apron feeder	1	75
Tertiary crusher	1	370
Apron feeder	1	75
Tertiary crusher	1	370
Stockpile conveyor	1	300
Stockpile boom conveyor	1	110
Bucket wheel reclaimer	1	264

Reclaim bridge conveyor	1	110
Transfer conveyor	1	280
Reclaim conveyor	1	280
Reclaim conveyor	1	900

14.3 Consumables and Power

The power consumption of the Huntly operation is approximately 8,000 MWh to 9,000 MWh per month. The Willowdale power consumption is approximately 2,000 MWh per month.

The process plant is a dry crushing operation and therefore water is only required for dust suppression and is included as part of mine water consumption. Water is not required as a consumable for the plant.

Other consumables of the process plant include crusher liners, screen panels and spares for feeders and conveyors. These are kept on site and replaced as part of the routine maintenance schedule according to manufacturer's guidelines.

Personnel requirements for the operation and maintenance of the plant as described are included in Table 13-3.

14.4 QP Opinion

The QP is of the opinion that the selected processing method and the flowsheet are suitable for Darling Range operations. It is important to note that the ore head grades meet the refinery specifications for processing in terms of Al_2O_3 grades and SiO_2 grades, this means the ore can be directly shipped to the refinery for further processing without any upgrading in the mineral processing plant. The crushing circuit reduces the particle size suitable for conveying as well as to meet particle size specified by the refinery.

15.0 Infrastructure

The infrastructure for the mining operations is established and operational. In 2021, the infrastructure hub for Willowdale was relocated 16 km southwards from Orion (after having been based there for 21 years) to the Larego Hub which is located about 20 km north-east of the town of Harvey. The hub hosts administrative offices, as well as crushing facilities and maintenance facilities. The Orion Hub site is currently being rehabilitated with infrastructure decommissioning planned for 2024.

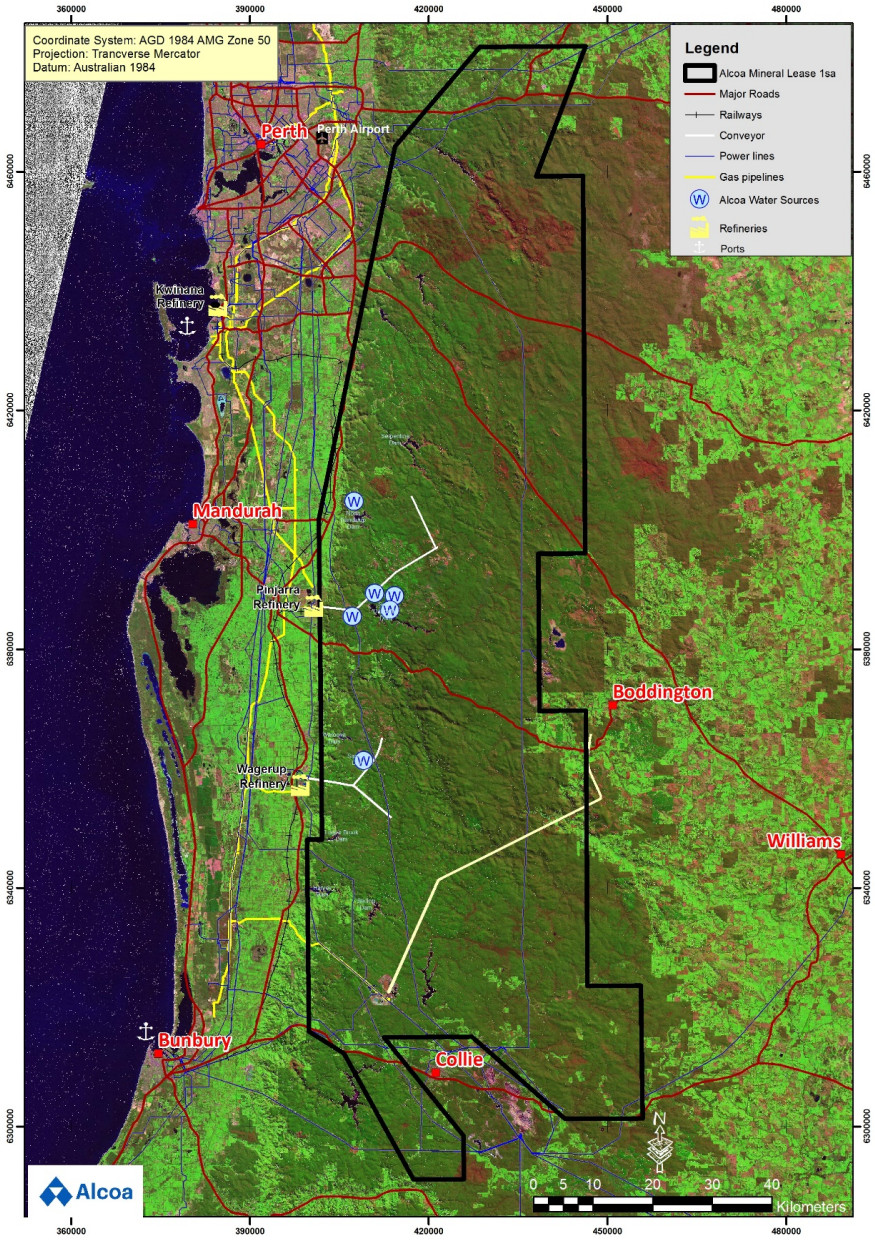
The mining hubs are relocated periodically as production moves away from the hub and thus transportation costs increase. Alcoa plans for the Larego Hub to be in place for approximately 20 years, though this is the fourth relocation since the mines opened in the 1970s/80s (approximately 13 years on average). The mining hub relocations are well-understood with planning and associated budgeting occurring well in advance of relocations; production restarted seven days after the most recent shutdown.

An extensive haul road network, rail, and overland conveyors transport crushed bauxite from the Hub to the refineries on the coast (namely Kwinana, Wagerup and Pinjarra). Bauxite is transferred from each mine to the refineries primarily via long distance conveyor belt, apart from the Kwinana refinery which receives bauxite via railway. The Alumina produced by the three refineries is then shipped to external and internal smelter customers through the Kwinana and Bunbury ports.

It was announced in January 2024 that the Kwinana refinery will undergo phased curtailment beginning in the second quarter of 2024. Current mine plans do not accommodate this curtailment but will be amended to include a staged reduction of supply to the refinery through the third quarter of 2024.

The infrastructure layout for the Darling Range operations is shown below (Figure 15-1).

igure 15-1: Infrastructure Layout (Alcoa, 2022)



I5.1 Access Roads

The Darling Range is readily accessible via road from Perth and surrounding areas. The mines are near the towns of Pinjarra and Waroona. Both towns are easily accessible via the

national South Western Highway, a sealed single carriageway road, which starts on the southern side of Perth and continues for almost 400 km to the southwest corner of Western Australia.

The Huntly mining area is accessible from the South Western Highway via Del Park Road, a sealed single carriageway road which connects the town of North Dandalup in the north with Dwellingup in the south. From Del Park Road, a further sealed road which follows the route of the bauxite conveyor to the Pinjarra refinery provides access to the Huntly site.

The Willowdale mining area is similarly accessible from the South Western Highway via Willowdale Road, a sealed single carriageway road to the south of Waroona.

Major haul roads have been established to each mining area. Roads are unsealed and require continuous ongoing maintenance which was observed during the site visit. Secondary haul roads, also unsealed, cross-cut each individual mining plateau.

15.2 Power

The Darling Range's Pinjarra refinery receives power from the South West Interconnected System (SWIS). The refinery also has internal generation capacity of 100 MW from 4 steam driven turbine alternators, with steam produced by gas fired boilers and a gas turbine Heat Recovery Steam Generator (HRSG). The refinery supplies power to the Huntly Mine by three different power supply lines (a single 33 kV and two 13.8 kV).

Willowdale Mine has a single 22 kV power supply fed from the Wagerup refinery. The Wagerup refinery is a net exporter of power to the SWIS, with internal generation capacity of 108 MW from three steam driven turbine alternators and one gas turbine. The steam is produced by gas fired boilers.

The power consumption of the Huntly operation is approximately 8,000 MWh to 9,000 MWh per month. The Willowdale power consumption is approximately 2,000 MWh per month.

15.3 Water

Water is used on the mines for dust suppression, dieback washdown, vehicle washdown, workshops, conveyor belt wash, construction, and domestic purposes. The water supplies for mining consist of licensed surface water sources supplemented with treated wastewater from vehicle washdowns, stormwater runoff and maintenance workshops.

The WA mines are licensed by the Department of Water and Environmental Regulation (DWER) to draw surface water from five locations to meet their water supply requirements. The Huntly mine draws water from Banksiadale Dam and Boronia Waterhole. Huntly mine also holds a license to draw water from Pig Swamp and Marrinup, however these resources are retained as a backup water supply and have not been utilized in recent years. Huntly mine is also permitted to draw water from South Dandalup Dam under an agreement with the Water Corporation. A pumpback facility from South Dandalup Dam to Banksiadale Dam is used to raise levels in Banksiadale Dam during periods of low rainfall runoff. Willowdale Mine draws water from Samson Dam.

Table 15-1 summarizes the license allocation for water usage. In 2022, water abstraction comprised approximately:

- 53% of the annual entitlement from Boronia Dam
- 22% from Banksiadale Dam
- 70% from Samson Dam.

An additional 651,840.7 kL was also abstracted from South Dandalup Dam under the agreement with Water Corporation.

able 15-1: Water Abstraction License Volumes

Site	Water Source	Surface Water License	Annual Water Entitlement
Huntly	South Dandalup Dam	N/A	N/A
Huntly	Banksiadale Dam	SWL63409	500,000
Huntly	Pig Swamp Waterhole	SWL153635	30,000
Huntly	Boronia Waterholeon Marrinup Brook	SWL83356	70,000
Marrinup Nursery	Lot 908 on Marrinup Brook	SWL68893	45,000
Willowdale	Samson Dam	SWL61024	450,000

l5.4 Accommodation Camp

There are no Alcoa accommodation facilities within the Darling Range. As described above, the Huntly and Willowdale mining areas are within proximity to established population centers including Pinjarra approximately 30 km to the southwest of Huntly and Waroona approximately 20 km northwest of Willowdale.

On site facilities includes offices, ablutions, crib-rooms, and workshops, all of which were observed to be in excellent condition.

l5.5 Mine Waste Management

l5.5.1 Tailings Disposal

No tailings are generated within the boundaries of the mining operations. The management of tailings generated downstream at the refineries is beyond the boundaries of the Darling Range mining operations and are therefore not considered in this TRS.

l5.5.2 Waste Rock Disposal

Alcoa's Darling Range mining operations do not produce mine waste or "mullock" in the same manner as conventional mining operations and waste dumps are not constructed.

Topsoil and overburden from Darling Range ore blocks is carefully segregated for later rehabilitation of adjacent, completed mining operations. Overburden is used to backfill these shallow, completed pits and the topsoil spread on top and contoured. Maximum slopes (angle and length) are defined in the Completion Criteria. If topsoil has been harvested and stored for up to three months prior to use as a rehabilitation input it is considered 'direct-return' and seeding may not be undertaken. If it is older than 3 months, it is considered 'fallow' and requires seeding. Nursery-raised seedlings are also used in rehabilitated areas.

To date, some 20,000 ha of mined areas have been backfilled and reforested, which represents around 75% of the area mined since 1966, including areas reserved for long-term infrastructure. Rehabilitation standards are described in Alcoa's 2016 statutory Bauxite Mine Rehabilitation Completion Criteria. These completion criteria have been progressively revised since inception in the 1990s.

16.0 Market Studies

16.1 Overview

Alcoa Corporation is a vertically integrated aluminum company comprising bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation.

Through direct and indirect ownership, Alcoa Corporation has 27 locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

There are three commodities in the vertically integrated system: bauxite, alumina, and aluminum, with each having their own market and related price and impacted by their own market fundamentals. Bauxite, which contains various aluminum hydroxide minerals, is the principal raw material used to produce alumina. Bauxite is refined using the Bayer process to produce alumina, a compound of aluminum and oxygen, which in turn is the raw material used by smelters to produce aluminum metal.

Alcoa obtains bauxite from its own resources and processes over 80% of its combined bauxite production into alumina. The remainder is sold to the third-party market. In 2023, total Alcoa production was 41.0 million dmt (dry metric tonne) of bauxite.

Aluminum is a commodity that is traded freely on the London Metal Exchange (LME) and priced daily. Pricing for primary aluminum products is typically composed of three components:

i. The published LME aluminum price for commodity grade P1020 aluminum;

ii. The published regional premium applicable to the delivery locale; and

iii. A negotiated product premium that accounts for factors such as shape and alloy.

Further, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price; Platts Metals Daily Alumina PAX Price; and Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the price of both aluminum and alumina is subject to significant volatility and, therefore, influences the operating results of Alcoa Corporation.

Unlike alumina and aluminum, bauxite is not a standard commodity traded on an index. Bauxite's grades and characteristics vary significantly by deposit location and the value of bauxite deposits for each downstream refinery could be different, based upon:

- refinery technology;
- the location of each refinery in relation to the ore deposit; and
- the cost of related raw materials to each refinery.

As such, there is no widely accepted index for bauxite. Most bauxite traded on the third-party market is priced using a value-in-use methodology. The key assumption for the value-in-use methodology is that both the (1) offered bauxite and the (2) comparative bauxite being used in the target refinery will generate the same refining cost. As such, using the known price for the comparative bauxite used in the target refinery, the offered bauxite price will then be derived by considering the bauxite characteristics and quality differences between the offered and comparative bauxite.

16.1.1 Market Fundamentals

Bauxite is the principal ore of alumina (Al_2O_3), which is used to produce aluminum. Bauxite mining and alumina refining are the upstream operations of primary aluminum production. China is the largest third-party seaborne bauxite market and accounts for more than 90% of all bauxite traded. Bauxite is sourced primarily from Australia and Guinea on the third-party market. In the long run, China is expected to continue to be the largest consumer of third-party bauxite with Guinea expected to be the majority supplier. Further, third-party traded bauxite is expected to be tight over the next decade, driven by China demand together with new supplies coming from Guinea.

Bauxite characteristics and variations in quality heavily impact the selection of refining technology and refinery operating cost. A market bauxite with high impurities could limit the customer volume an existing refinery could use, resulting in a discount applied to the value-in-use price basis.

Besides quality and geography, market fundamentals, including macroeconomic trends – the prices of raw materials, like caustic soda and energy, the prices of Alumina and Aluminum, and the cost of freight – will also play a role in bauxite prices.

16.2 Market: Darling Range

16.2.1 Operation

The Darling Range mines are part of an integrated operation of two mines, three refineries and two ports. Subsequent to 2021, production from the Darling Range mines (Huntly and Willowdale) was used exclusively for consumption by the integrated refineries.

Bauxite is transferred from each mine to the refineries primarily via long distance conveyor belt, apart from the Kwinana refinery, which receives bauxite via railway. The Alumina produced by the three refineries is then shipped to external and internal smelter customers through two ports, based in Kwinana and Bunbury.

16.2.2 Pricing

In 2016, Darling Range entered into a 5-year third-party sales contract with a major alumina producer in China. Following the expiration of the third-party sales contract at the end of 2021, all bauxite production from Huntly and Willowdale was consumed internally by the Darling Range.

The pricing mechanism of the third-party sales contract was based on a value-in-use methodology (as described in Section 16.1) that was anchored to the customer's other bauxite sources at the time of execution, with a market adjustment factor linked to the Alumina price.

A price of $19.38/t was utilized for 2023 with an estimate for economic market-based factors applied throughout the LOM.

16.3 Contracts

All Darling Range production is shipped via conveyor or train to one of the Alcoa's three Western Australia refineries.

Material operational contracts that are in place include:

- Railway contract: Alcoa has a long-term contractual agreement with a third-party to deliver bauxite to one of its refineries. Pricing is based on a fixed rate schedule, payable on volume of bauxite delivered.

- Mining contractor contract: Alcoa has a current contractual agreement with a third-party to operate a designated mine region. The contractor is responsible for development, mining, hauling and rehabilitation of the designated mine pits; the contract runs a day-only operation. Pricing is based on a fixed rate schedule, payable on production tonnes.
- Rehabilitation contracts: Alcoa has long-term contractual agreements with third-party suppliers to rehabilitate certain mined areas, ready for closure. Pricing is based on fixed rate schedules, payable either per hectare or on equipment and labor hire rates.
- Fuel contract: Alcoa has a mid-term contractual agreement with a third-party to supply diesel fuel for mining operations. Pricing is based on market pricing for diesel, payable on volume consumed.

These types of contracts are typical of other similar mining operations.

17.0 Environmental Studies, Permitting, and Plans, Negotiations, or Agreements with Local Individuals or Groups

17.1 Environmental Studies

17.1.1 Existing Operations

Alcoa has established practices and processes for enabling conformance to environmental requirements. Sensitive areas are identified and managed ahead of disturbance. Environmental factors are taken into account prior to infill drilling; hence, mining blocks carrying environmental risks do not feature in the Mineral Reserves (for example, areas around granite outcrops and water courses have a buffer applied and are considered no-go areas from a mining perspective). Mining in some areas became more constrained in 2023 as a result of internal and external factors:

- Alcoa's ongoing consultation with the MMPLG
- A third-party referral of Alcoa's annual rolling five-year Mining and Management Programs (MMP) approval (required under the State Agreement Act framework)
- Alcoa's progress on the EP and EPBC Act assessment (beyond the scope of the MMP) to increase refinery production by 5% through the transition of mining from Huntly to the Myara North and Holyoake areas, as described in Section 3.6.

The Final 2023-2027 MMP was developed by Alcoa and approved by the Minister for State Development in December 2023. The MMP describes the way in which Alcoa mines within Mining Lease ML1SA. For example, Alcoa undertakes surveys to inform the mine plan development, characterization of ore quality and volumes, assess geotechnical conditions, identify constraints and protect or manage important environmental, cultural heritage and social values. Surveys include:

- Vegetation mapping to delineate vegetation community types, ensure clearing does not have cumulative impacts on underrepresented species assemblages and identify critical habitat for known threatened species.
- Establishment of forest reference vegetation monitoring plots to enable representative comparison with post-mining rehabilitation. Mean species richness of forest reference sites is utilized to measure the effectiveness of rehabilitation.
- Black cockatoo surveys to locate trees that will be protected from disturbance, to minimize impact on these species. All nest trees and significant trees (as defined under technical guidance from the Department of Climate Change, Energy, the Environment and Water [DCCEEW]) are conserved with a buffer wherever they occur in the landscape. Habitat trees are conserved on haul road alignments, where the alignment can be adjusted to avoid these trees.
- Assessment of Phytophthora dieback to inform activities which may cause soil disturbance, to manage dieback soils and prevent contamination of dieback free areas. This data is also utilized in soil movement and rehabilitation planning.
- Baseline hydrology data acquisition to inform detailed design of mine pit and infrastructure.

Based on ongoing consultation with the MMPLG, significant work has been undertaken to improve the structure of the MMP to provide more comprehensive technical content to support ongoing and future mine operations. Alcoa acknowledges that future MMPs will continue to improve and evolve, based on feedback from review and consultation processes.

The MMP describes Alcoa's proposed mining operations for the Huntly and Willowdale mines within ML1SA from 1 January 2023 to 31 December 2027. It excludes mine development activities associated with the Myara North and Holyoake mining regions currently under consideration by the EPA and DCCEEW. Changes from what was reported in the 2022 TRS under the previous MMP include but are not limited to:

- Reduce mining activities inside higher risk areas within drinking water catchments.
- Alcoa will not undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
- Increase rehabilitation and reduce open areas where possible, with priority in higher risk areas.
- Maximum annual clearing footprint of 800 ha.
- Revise the Rehabilitation Completion Criteria by 31 December 2024, in consultation with DBCA.

These changes have resulted in a presumed temporary decrease in operability and associated decrease in Reserve estimation.

Regarding existing operations, the threat of bushfires is the only significant naturally occurring risk identified to the Reserve estimation.

Bushfire mitigation and firefighting activities within state forest are managed by the Department of Biodiversity Conservation and Attractions (DBCA). Alcoa maintains fire access tracks as required by the working arrangement with DBCA and complies with requirements of the Bushfires Act including seeking exemptions for certain activities during Total Fire Bans. Asset protection zones are not mandated although Alcoa does maintain them around infrastructure as per internal standards to mitigate risk. Alcoa owned private property is maintained to local government requirements as per the requirements of the Bushfire Act.

Bushfires have occurred in the past, but to date have not had a material impact on production.

Overall SLR are of the opinion that the current plans address any issues related to environmental compliance, permitting, and local individuals or groups.

7.1.2 Future Mining Operations

Alcoa is modernizing its environmental approvals framework for its Huntly Bauxite Mine and Pinjarra Alumina Refinery, by referring future mining plans for assessment under Part IV of the Western Australian *Environmental Protection Act 1986* (EP) and the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The future mining plans that have currently been referred to both State and Federal departments propose to transition the Huntly Mine into the proposed Myara North and Holyoake mine regions within Alcoa's Mining Lease ML1SA.

The Western Australian Environmental Protection Authority (State) has determined that the Pinjarra Alumina Refinery Revised Proposal (Assessment No. 2253), which includes the Huntly Bauxite Mine, will be assessed via a Public Environmental Review (PER).

Alcoa referred two separate Proposed Actions under the EPBC Act (Federal) for the following components:

- Huntly Bauxite Mine Transition – Myara North and Holyoake; and
- Pinjarra Alumina Refinery – development of water storage ponds and associated borrow pits.

The referred actions have been determined as Controlled Actions under the EPBC Act, and as such, require formal assessment.

In 2023, Alcoa proposed changes to the proposal while it was under assessment:

- Changes to the development envelope within which future activities will be contained
- Reduction in proposed disturbance within the overall Mine Development Envelope by 950 ha to total 8,323 ha
- Removal of the supply of 2.5 Mtpa of bauxite for export from the proposal scope.

The EPA has recognized:

- The reduction to the proposed disturbance and net reduction to the development envelope will decrease/avoid impacts to flora and vegetation, terrestrial fauna, inland waters and social surroundings.
- There are no new environmental factors likely to be significantly affected as a result of the amendments, and no additional EPA functions need to be performed to assess the amended proposal.
- The environmental review document to be released for public comment will be based on the proposal as amended.
- The amendment would not, if the proposal were already approved, be a significant amendment. In considering this, the effects of the amendment on its own, the effect of the amendment in the context of the existing referred proposal, cumulative and holistic impacts have been considered.
- The amended proposal will be substantially the same character as the existing referred proposal.

The EPA has enabled the altered proposal to be assessed as part of assessment 2253 already in progress. DCCEEW made a complementary decision and the assessment under the EPBC Act also continues.

The resulting Environmental Impact Assessments (EIAs) under State and Federal legislation will inform stakeholders on long-term mine plans and environmental management requirements and facilitate the setting of approval conditions.

As reported in the TRS for 2022, numerous baseline studies have been completed to support approvals for future extensions to the mining footprint to the Myara North and Holyoake regions. Baseline studies are guided by the requirements of the Western Australian Environmental Protection Authority (EPA) and guidelines under the EPBC Act which are well understood. Studies have been undertaken to define the environmental values and constraints associated with:

- Flora and vegetation
- Short-range endemic vertebrates
- Aquatic and subterranean fauna
- Phytophthora dieback
- Terrestrial vertebrate fauna including Black Cockatoos
- Surface water
- Groundwater quality and dewatering drawdown
- Air quality
- Noise

 Landscape and visual impacts

 Historical and aboriginal heritage

 Greenhouse gas emissions.

Construction for Myara North will be commenced pursuant to the requirements of the Ministerial Decision, which will be issued upon completion of the EPA assessment process indicatively forecast for completion in approximately mid-2025, as opposed to the third quarter of 2024 as reported in the TRS for 2022. Alcoa plans to commence construction, to facilitate the transition to Holyoake Central, from approximately 2028 and commence operation from approximately 2030, as reported in the MMP dated 10 November 2023. The timeframe to approval of Myara North and Holyoake under the EP and EPBC Act can be estimated, but not predicted with certainty; further delays are possible.

Supporting both the existing and future mining operations, additional environmental studies were further progressed in 2023 to identify regional environmental risks associated with low levels of PFAS in surface water catchments around the current and future Huntly and Willowdale operations. As is the case at most (if not all) mining operations in Western Australia, Per- and Poly-Fluoroalkyl Substances (PFAS) containing aqueous film-forming foams (AFFF) were used at Huntly and Willowdale Mines in vehicle fire suppression systems from approximately 2014 to 2021. Discharge of AFFF has occurred within the Operational Areas due to both testing and maintenance of fire suppression systems (at workshops) and activation (within Operational Areas) in response to vehicle fires or equipment malfunction. Alcoa reported areas around workshops at the Orion, Arundel, McCoy and Myara Operational Areas to the Department of Water and Environmental Regulation (DWER) under the obligations of the Contaminated Sites Act (2003) as possibly contaminated. These areas have subsequently been classified as *possibly contaminated – investigation required*. Stage 1 and 2 investigations have been endorsed by the DWER-appointed Contaminated Sites Auditor, a Stage 3 Detailed Site Investigation is in progress.

L7.2 Waste and Tailings Disposal, Site Monitoring, and Water Management

L7.2.1 Waste and Tailings Disposal

No tailings are generated within the boundaries of the mining operations as bauxite processing is undertaken at the refineries. Similarly, Alcoa's Darling Range mining operations do not produce mine waste or "mullock" in the same manner as conventional mining operations and as such waste dumps are not constructed.

Overburden from Darling Range ore blocks is carefully segregated for later contouring and rehabilitation of adjacent, completed mining operations. Caprock and other non-viable rock is used to backfill these shallow, completed pits and the viable topsoil is spread on top, contoured, and revegetated.

As such, there is no requirement for the monitoring of any tailings or mine waste dumps associated within the mining operations.

L7.2.2 Site Monitoring

Alcoa's mine sites are monitored in accordance with conditions of Government authorizations and its operational licenses at Huntly (L6210/1991/10) and Willowdale (L6465/1989/10). Environmental management and monitoring commitments exist for the following environmental aspects which have been assessed as being significant and therefore require operational controls as a minimum. The significant environmental aspects for which monitoring and/or management undertaken are:

- Chemical releases including loss of containment prevention and response and dangerous goods storage. All underground storage tanks have been removed from Alcoa's operations and are prohibited.
- Waste management and minimization.
- The management of mining within the lower rainfall zone to minimize risks of salinization of land and water resources.
- Surface water catchment protection for the nearby Public Drinking Water Source Areas (PDWSAs).
- Air emissions including:
    - Smoke pollution associated with wood waste (although wood waste burning has now largely been phased out, with a small amount of burning in 2022, and none in 2023)
    - An ambient dust monitoring program to identify and quantify fugitive dust emissions from operating areas
    - Ozone depleting substances
- Hazardous materials management including asbestos, synthetic mineral fiber, and polychlorinated biphenyls.
- Land including:
    - Recordkeeping and Geographical Information System (GIS) mapping of the location and timing of all soil removal, landscaping, soil return, ripping and seeding
    - Rehabilitation area monitoring to ensure the number of established plants meet the completion criteria targets associated with species richness, weed outbreaks and erosion
    - Dieback management, mapping and field identification
    - Forest and land clearing
- Flora and fauna
- Aboriginal and Historic (European) heritage
- Environmental value of national parks, nature reserves and native forests
- Visual amenity
- Noise.

Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa's Environmental Management System and reported within the Annual Environmental Review report. Review of the most recent report, JTSI Annual Environmental Review 2022 (dated May 2023), largely reported compliance with environmental commitments and success of operational controls to managed environmental objectives, with only the following reportable incidents noted:

- On 18 November 2022 Alcoa reported a potential heritage incident resulting from the installation of a groundwater monitoring bore within the recorded site boundary of MY08-11 to DPLH and Gnaala Karla Booja. An internal investigation into the incident was undertaken. Gnaala Karla Booja representatives undertook a site visit to the location on 19 January 2023. The results of the investigation and Gnaala Karla Booja consultation were provided to the DPLH on 20 February 2023. Alcoa has been advised that no further

investigation will be undertaken by DPLH into this matter. Alcoa will undertake further consultation with Gnaala Karla Booja with regard to the decommissioning of this bore.

- In relation to clearing:
  - On 16 September 2022 at Willowdale, a clearing contractor mistakenly cleared forest beyond the boundary of Alcoa's endorsed clearing boundary. A comparison between aerial survey data with Alcoa's currently approved 2021-2025 MMP was undertaken on 18 September 2022, Alcoa believes approximately 192 m^2 of cleared forest is outside the conceptual clearing areas approved in the MMP. Further, a black cockatoo nest tree, situated within the approved clearing boundary, was also unintentionally cleared as a result of this incident. Alcoa will prioritize rehabilitation of this area during the 2022/23 rehabilitation season in consultation with the DBCA.
  - On 21 November 2022 at Huntly, a clearing dozer was clearing vegetation within a 500 m^2 area for a sump to be installed. Whilst trying to sweep the fallen timber from the corner of the sump some of the timber fell outside of the clearing boundary. The investigation concluded that the machine used to complete the task was too large for the small area to be cleared. DBCA was contacted and completed an inspection of the incident on 22 December 2022. Corrective actions were implemented following the incident.
  - On 14 December 2022 at Huntly whilst clearing an area using GPS, the dozer veered off the track resulting in forest disturbance outside of the clearing approval buffer resulting in 20 m^2 of disturbance. DBCA was contacted and completed an inspection of the incident on 22 December 2022. Corrective actions were implemented following the incident.
- Seven dieback breaches were identified at Huntly in 2022, six of which were the result of incorrect identification of dieback lines by operators in the field, and the remaining resulted from a surface water flow event. The surface water related event was the result of bunding on a haul road being insufficient to retain surface water, resulting in surface water breaching a non-developed area housing dieback free stockpiles. No dieback breaches occurred at Willowdale during 2022.
- A total of 20 drainage events were recorded across Huntly (13) and Willowdale (7) in 2022. This was a significant reduction from 2021 at both sites.
- Several surface water recordings of elevated turbidity were recorded for a period exceeding 1 hour above the reporting criteria (25 NTU). There were 20 turbidity events recorded at Huntly in 2022, 3 of which were confirmed to have been affected by mine site contributions (compared to 20 with mining contributions in the previous year). There were 18 turbidity events at Willowdale recorded in 2022, none of which had identified mining contributions (compared to 2 with mining contributions in the previous year).
- A total of 1,042 kL of treated wastewater was discharged from Sump MC1 to Stormwater Sump 2 at Huntly between 29 December 2022 and 5 January 2023 with a pH of 9.4. The permitted range for discharge is 5.5 to 9.0 under Licence L6210/1991/10. This non-compliance was reported to the DWER on 24 February 2023 and included in the Annual Audit Compliance Report for the Huntly Mine. There is no known environmental impact identified as a result of this event. The other discharge conditions were met.
- The number and volume of spills decreased at Willowdale from 2021 to 2022, the opposite was true at Huntly. Huntly had 139 LOCs >20L and Willowdale had 36. A key contributor to spills at Huntly was the change-out of coolant hoses across the heavy vehicle fleet in January/February 2022. Following this, there were a large number of coolant LOC events which were common across all machines. In June, an investigation was launched as trends were developing, which found the new coolant hoses to be

faulty. Alcoa's hose supplier undertook an investigation and identified the cause of the hose failures as an issue in the manufacturing process. All trucks were stood down following the supplier investigation and the faulty hoses changed out. The coolant hose failure events were 34% of Huntly's LOC events between January and July.

- Section 72 (s.72) of the Environmental Protection Act 1986 (EP) outlines the obligation to report discharges of waste to the environment if the discharge of waste has caused or is likely to cause pollution, material environmental harm or serious environmental harm. There were no incidents reported under s.72 in 2022.

Alcoa is proactively working with relevant regulatory agencies to address operational incidents and implement operational improvements to reduce releases to the environment.

17.2.3 Water Management

Alcoa implements a comprehensive water management and monitoring program in accordance with the requirements of its surface water and operational licenses. Alcoa also identifies and acts on improvement opportunities, particularly in relation to water which is a key operational and environmental consideration for the Darling Range. For example:

- Alcoa is developing a Catchment Risk Assessment tool to improve Alcoa's understanding of inherent and residual catchment risk associated with mining operations. Development of the tool is occurring in iterations to facilitate continual improvement during development of the tool to improve accuracy. The Catchment Risk Assessment Tool will support the mine planning process and management of catchment risks associated with mining operations. Iteration 1 of the Catchment Risk Assessment Tool was completed in 2022 to demonstrate the proof of concept. The next iteration will include additional functionality and improvements with the intention to implement the assessment process on completion. Key stakeholders will be engaged in the development of future iterations of the tool.
- Alcoa revised its existing mining and haul road drainage design process into a documented *WA Mining and Haul Road Drainage Design Manual* which will be further refined in consultation with the Independent Technical Advisory Group (ITAG).

Key components of Alcoa's water management and monitoring program include:

- Treatment of stormwater that may contain traces of hydrocarbons via a wastewater treatment system to concentrations that meet DWER license requirements prior to release.
- Turbidity monitoring along tributaries to key catchments to prevent contaminated or turbid runoff into the drinking water supply.
- Wastewater treatment and monitoring to meet DWER license requirements prior to release including treated water quality monitoring prior to release and continuous discharge volumes.
- Surface water drainage management to prevent uncontrolled surface water runoff from operations to the surrounding forest and/or surface water bodies.
- Implementation of the *Interim PFAS Water Management Strategy*. The interim Strategy will remain in place until the Contaminated Sites process outlined in section 17.1.2 is complete.
- Drainage protection management through the implementation of a Drainage Control Management Plan.
- Sewage management though a biological aeration treatment unit (BioMAX).

- Monitoring of cumulative water abstraction volumes at licensed and unlicensed surface water abstraction points in accordance with the *Surface Water License Operating Strategies* for Huntly and Samson Dam.
- Potable water monitoring for identification of possible biological or chemical contamination.
- Ecological water requirements (EWRs) have not been defined for the site, however Alcoa undertakes monitoring of the downstream environments to ensure no unacceptable impact. This is completed via photographic monitoring for Banksiadale Dam, Pig Swamp Waterhole, Boronia Dam and Marrinup Nursery. Note the EPA has not explicitly required Alcoa to develop EWRs as part of the formal impact assessment process for Myara North and Holyoake to date.
- Water use efficiency programs are implemented pertaining to wastewater recycling, efficient watering of haul roads, pumping and reusing water from roadside sumps, and effective mining planning to reduce dust suppression requirements.
- Alcoa, in association with the former Water and Rivers Commission, has researched the hydrology and salinity in the Jarrah forest since the 1970s, as part of the Joint Intermediate Rainfall Zone Research Program (JIRZRP). The JIRZRP has included monitoring of surface water, groundwater and salinity as well as analysis and modelling of the Intermediate Rainfall Zone (IRZ). This work continues to evaluate potential impacts of clearing and rehabilitation on groundwater salinization.
- Alcoa will continue to expand its monitoring program, as necessary, if groundwater quality or quantity has been identified as potentially at risk due to operational or mining activities, or potential exists for mining to impact offsite/private groundwater supply quantity or quality.

Baseline water quality monitoring has been undertaken at Myara North and Holyoake as part of the Part IV approvals process for these mining areas. It is anticipated that groundwater monitoring will be required as part of the operational license for these deposits.

L7.3 Project Permitting

The environmental approvals and reviews / reporting form part of the MMPLG approvals process outlined in Section 3.6. Compliance with the MMP will be demonstrated through an annual Compliance Assessment Report submitted to the Department of Jobs, Tourism, Science and Innovation.

From 14 December 2023, Alcoa is also required to comply with the requirements of the section 6 exemption. A section 6 exemption under the Environmental Protection Act 1986 (EP) allow continued operations whilst the Environmental Protection Authority undertakes an assessment of the mining activities which were not previously referred. Compliance against the section 6 exemption is monitored on a weekly basis by an independent compliance monitor and reported monthly to the Department of Water and Environmental Regulation.

Operational matters at the Willowdale and Huntly mines are licensed by the Department of Water and Environmental Regulation via instruments L6465/1989/10 and L6210/1991/10, respectively. These licenses condition the processing of ore and reporting is required annually to DWER describing the total volume of bauxite crushed and any non-compliance. The latest available reporting at the time of writing is for the calendar year 2022.

Compliance with the Alcoa ISO14001 accredited EMS was audited in December 2021, with recertification issued in May 2022. This recertification is valid until May 2025.

The only known requirement to post performance or reclamation bonds is a $100M AUD bank guarantee to help fund the Western Australian Government's response in the unlikely

event of an impact to Perth's drinking water dams which is not rectified within the relevant time periods, announced as part of the Alcoa Transitional Approvals Framework (ATAF) on 14 December 2023.

L7.4 Social or Community Requirements

Alcoa has established systems and processes to support maintenance of its social license to operate and was admitted to ICMM in 2019. In addition, Alcoa's Western Australian operations are certified under the Aluminum Stewardship Initiative, valid until 16 January 2026. Related to the requirements of the MMPLG, Alcoa's actions include an annual 5-year consultation process aligned with the 5 Year Mine Plan. The consultation process involves engaging with affected landowners. Alcoa's consultation extends to state and local government and Gnaala Karla Booja Aboriginal Corporation representing the Traditional Owners of the area.

Where appropriate, the mine plan accommodates community requirements, in particular, concerns related to noise, dust, etc., and allows for buffer zones and modified working hours.

L7.4.1 Community Consultation

Community consultation results (both in-bound [e.g. noise complaints] and out-bound [e.g. Alcoa-initiated engagement with stakeholder groups]) are recorded in the Community Consultation System (CCS). Annual targets for consultation are set based on current and proposed mine plans. CCS allocates and tracks follow-up actions.

Alcoa's move towards formal, publicly scrutinized environmental impact assessment and approval under the State and Federal acts (Section 3.6) for the extraction of future resources will provide greater transparency around Alcoa's future operations that should go some way to addressing the challenges it faces.

Alcoa has formally consulted and engaged survey work from the relevant Traditional Owners across its operational footprint. Alcoa will prepare a Cultural Heritage Management Plan for ML1SA by 31 December 2024, in consultation with Gnaala Karla Booja.

Alcoa seeks to add value to the communities where it operates and beyond. Through a drive for sustainable development and desire to support reputable non-profit and community-based organizations, community investment supports partnerships and initiatives that look to deliver long-term community benefits.

Each year the community partnership program invests in a wide variety of programs at the local, state, and national level. Some of these partnerships, including the P242 initiative further discussed in Section 17.6 are supported by Alcoa's global Alcoa Foundation.

In addition to community partnerships, employees are encouraged to participate each year in Alcoa Volunteers (volunteering as teams during work time) and employee giving programs.

L7.4.2 Social Performance Management System

Alcoa is implementing a Social Performance Management System (SPMS) across its global operations. Alcoa has conducted a gap analysis of existing practices against best-in-class social management systems and defined a program to close these gaps, which are mostly related to developing a more structured approach to social risk management and formalizing Alcoa's social performance actions. Since 2022, Alcoa has focused on:

- Better understanding and engaging with our communities and stakeholder through:
    - Perception surveys (the next is planned for 2024)

- Community and stakeholder engagement plans
- Socio-economic baselines

 Understanding and managing our risks, impacts, and opportunities through:

- Social risk assessments
- Social investment reviews (see below for recent progress)
- Social impact assessments (see below for recent progress)

 Reviewing and improving existing processes including:

- Social records and obligations
- Grievances and complaints; a new global recording system “Social Licence 360” is being rolled out in 2024.

Stage 1 of a Social Investment Review was completed in late 2022 and focused on areas such as:

 What is the best approach for Alcoa and its local communities now and into the future (~10 year look ahead) including current and future operations?

 What is the best overarching framework/s for Alcoa’s social investment including how spend is defined and administered?

 How can the needs of individual Alcoa locations and individual local communities be addressed but also have a consistent and sustainable approach that meets Alcoa’s global, Australian, and Western Australian business drivers?

Stage 2 of the review is in progress in 2023.

In 2023 ERM commenced delivery of a Social Impact Assessment (SIA) for Alcoa’s operations in Australia. The key outcome of the SIA is a Social Management Plan (SMP) for each of Alcoa’s Australian operations. The SMPs are in progress and will contain management measures to enhance positive impacts and manage negative impacts, along with ongoing monitoring and reporting requirements for the Huntly and Willowdale mining areas.

17.5 Mine Closure Requirements

Alcoa’s Closure Planning group for Darling Range (located within the Global Planning Team) is responsible for developing the closure planning process as well as the subsequent Long-Term Mine Closure Plans (LTMCPs) of Alcoa’s WA Mining Operations (Huntly and Willowdale). Closure Strategies, Schedules and Cost Estimates are being developed across organizational divisions and includes multidisciplinary inputs from Operations, Mid- and Short-term Planning, Finance, Centre for Excellence, Environment and Asset Management (both Fixed and Mobile Plant).

As described in Section 15.5.2, overburden is used to backfill adjacent, completed mining operations and the topsoil spread on top and contoured.

Current rehabilitation practices and closure planning have evolved positively since the 1990s.

The agreed closure requirements for Darling Range centers around the return of Jarrah Forest across the site. End land uses are required to comply with the State’s Forest Management Plan and include water catchment protection, timber production and biodiversity conservation. Completion Criteria were revised in 2015 by the MMPLG for rehabilitation works commencing in and after 2016. These criteria do not apply to areas

which commenced rehabilitation prior to 2015 and represent a ‘step forward’ in rehabilitation practices at Darling Range.

The current 2023-2027 MMP, and EIA process being applied to Myara North and Holyoake represent another step forward in rehabilitation planning. Appropriate mine planning and closure implementation mitigates environmental risks to ecological, hydrological, social and physical receptors. In addition, the current Completion Criteria will be revised in consultation with DBCA by 31 December 2024

The current 2023-2027 MMP aims to establish, and return to the State, a self-sustaining Jarrah Forest ecosystem, that meets the agreed forest values that will support similar management practices as that employed in the surrounding Northern Jarrah Forest.

Mine closure costs are considered as part of Asset Retirement Obligations (ARO) described in Section 18.0.

I7.6 Local Procurement and Hiring

Alcoa’s Local Community Supplier Policy defines “local” as the localities of Dwellingup, Harvey, Pinjarra, Waroona, Coolup, North Dandalup, Jarrahdale and Yarloop. Within Alcoa’s guidelines of safe, ethical, and competitive business practices, they state they will:

 Invite capable local business to bid on locally supplied or manufactured goods or services.

 Give preference to local business in a competitive situation.

 Work with local business interest groups to identify and utilize local suppliers.

 Where possible, structure bids to enable local supplier participation.

Whilst the Policy does not specifically address local hiring, most of the mine’s workforce are based within the close vicinity.

Alcoa also endeavors to add value to Traditional Owners and the local economy through the use of businesses owned by Traditional Owners, businesses that employ and work with Traditional Owners and locally owned businesses. Alcoa will help Traditional Owner businesses and local businesses to do business with Alcoa and encourage the employment of Traditional Owner and local labor. Alcoa have made a policy commitment to:

 Invite capable local Traditional Owner, Aboriginal and Torres Strait Islander and Local businesses to bid on every locally supplied or manufactured good or service.

 Give preference to Traditional Owner, Aboriginal and Torres Strait Islander and Local businesses in a competitive situation.

 Tender evaluations shall apply a minimum weighting of 10 per cent for Traditional Owner, Aboriginal and Torres Strait Islander and Local businesses.

 Work with Traditional Owner, Aboriginal and Torres Strait Islander and Local business interest groups to identify, utilize and build local supplier capability.

 Offer reduced Payment Terms to support the growth and sustainability of Traditional Owner, Aboriginal and Torres Strait Islander and Local business.

Further, in relation to hiring and support of Aboriginal and Torres Strait Islander people, the Alcoa Foundation-supported, Waalitj Foundation’s Plan 2Day 4 2morrow (P242) employment program has successfully engaged 120 Aboriginal and Torres Strait Islander job seekers across Western Australia to develop their skills and work readiness since its launch in February 2022.

18.0 Capital and Operating Costs

Alcoa forecasts its capital and operating costs estimates based on annual budgets and historical actuals over the long life of the current operation. All values are presented in United States Dollars ($) unless otherwise stated.

18.1 Capital Costs

The operation is well-established, and the LOM plan does not envisage any significant change of the production rate over the LOM. Anticipated future major capital expenditure is related to major mine moves and sustaining the on-going operations.

Projected capital expenditure over the next nine years of mine life is estimated to total $833 million, although this will include capital outlay required to extend the mine life much beyond the nine-year period covered by the valuation. Of this total, it is understood that $216 million is associated with completing the mine move to the Myara North site. Capital for the Holyoake move is estimated to be $324 million.

A breakdown of the major expenditure areas and other sustaining capital expenditure over the next nine years of mine life (2024 – 2032) is shown below.

able 18-1: Nine Year LOM Sustaining Capital Costs by Area

Project	Cost $ Million	Percentage of Total
Mine Moves	541	65.0%
Conveyor Belt Replacements	31	3.7%
Haul Road Improvements	112	13.4%
Other Sustaining capital	149	17.9%
Total	**832.8**	**100%**

Other capital costs are for replacement of conveyors, haul road improvements and other sustaining capital needed to continue the operations.

Alcoa's sustaining capital estimates for Darling Range are derived from annual budgets and historical actuals over the long life of the current operation, as well as detailed feasibility studies where required (such as for the mine moves) that include costs and associated contingencies. These are noted to be less than 10% of the total capital costs. According to the American Association of Cost Engineers (AACE) International, these estimates would generally be classified as Class 1 or Class 2 with an expected accuracy range of -3% to -10% to +3% to +15%. The SLR QP is satisfied that the costs meet these accuracy requirements.

18.2 Operating Costs

The main production mining operations are primarily Owner-operated using Alcoa equipment and employees. Contractors are also used for certain activities on site.

The operating costs are based on historical actual site cost data and, in the opinion of the QP, represent an accuracy range of -10% to +15%, which is deemed appropriate.

No items have been identified that would significantly impact operating costs either positively or negatively over the life of mine. Minor year-to-year variations should be expected based upon maintenance outages and production schedules. Forecast costs for 2024 and average mine operating costs the nine-year LOM are shown below in Table 18-2. It should be noted

that the current mine plans and operational cost projections reviewed by the QP do not yet reflect the impact of the Kwinana refinery curtailment (announced 8th January 2024), Alcoa is working to provide mine planning updates and indicate these will be completed during 2024.

able 18-2: LOM Mine Operating Costs by Category*

Cost Centre	2024 ($/wmt)	Average LOM ($/wmt)	Percentage of Operating Cost (%)
Direct Labor	$4.38	$5.28	36%
Services	$3.58	$2.86	20%
Other	$1.89	$2.40	16%
Corporate Chargebacks for support services	$0.68	$0.64	4%
Energy	$0.33	$0.37	3%
Fuel	$0.37	$0.68	4%
Operating Supplies and Spare Parts	$0.58	$0.73	5%
Maintenance (fixed plant and mobile fleet)	$1.40	$1.77	12%
Mine Operating Cash Cost ($/wmt)	**$13.22**	**$14.72**	**100%**
Off-site Costs			
G & A, selling and other expenses	$0.26	$0.24	
R & D Corporate Chargebacks	$0.03	$0.03	
Total Cash Operating Costs	**$13.51**	**$14.99**	

** Due to rounding, numbers presented may not add up precisely to the totals provided.*

Services costs include contractor costs for certain mining activities such as in noise sensitive areas and for haul road construction services, in select areas of pit development, and during landscaping activities for rehabilitation after mining.

As of December 2023, the Huntly and Willowdale operations together employ 899 employees consisting of 48 technical, 80 management and 771 operations employees. Additionally, 98 employees are centrally employed on the combined operations.

Table 18-3 summarizes the current workforce for the operations.

able 18-3: Workforce Summary

Category	Technical	Management	Operations	Total
Huntly	37	51	518	**606**
Willowdale	11	29	253	**293**
Central	18	25	55	**98**
Total	**66**	**105**	**826**	**-**

As regards mine closure, compensation for vegetation clearing is paid in advance and rehabilitation is an ongoing process that is incorporated into the mining cost (as part of Asset Retirement Obligations (ARO)).

19.0 Economic Analysis

19.1 Economic Criteria

Alcoa prepares a rolling operational LTMP for the purposes of long-term mine and business planning.

In accordance with the requirements of SK-1300, the economic analysis presented in this section of the TRS is based on mining the estimated Proven and Probable Mineral Reserves, which generate a current mine life of nine years (2024 to 2032 inclusive) at an average production rate of 36.2 Mtpa (wet tonnes).

It is noted that production is driven by refinery requirements rather than mine plan output, so annual fluctuations in mined tonnage are constrained by refinery demand and operation rather than a mining schedule. Therefore, tonnages used in the model are based on forecasted refinery consumption rather than mine plan outputs. The QP is satisfied that this approach is standard operating practice for Alcoa and there is sufficient Proven and Probable Reserve tonnage available to cover the extent of the 9-year model life.

In addition, the QP recognizes that Alcoa undertakes on-going infill drilling to annually convert Mineral Resources to Reserves and based on Alcoa's long operating history at the mine, the scale of the deposits available, and the historical success of Resource to Reserve conversion, the QP sees no reason why the life of the operation will not be extended well beyond 2032.

The assumptions used in the analysis are current at the end of December 2023.

An un-escalated technical-economic model was prepared on an after-tax DCF basis, the results of which are presented in this section.

The cashflow is presented on a 100% attributable basis. Alcoa uses a 12.00% discount rate for DCF analysis. The QP is of the opinion that a 12.00% discount/hurdle rate for after-tax cash flow discounting of such large-scale bauxite operations in Western Australia is reasonable and appropriate.

Key criteria used in the analysis are discussed elsewhere throughout this TRS. General assumptions used are summarized in Table 19-1.

able 19-1: Technical-Economic Assumptions

Description	Value
Start Date	January 1, 2024
Mine Life based on Mineral Reserves	9 years
Average LOM Price Assumption	$21.46
Total Operating Costs	$4,887.7 million
Capital over nine years	$832.8 million
Income tax	$314.3 million
Discount Rate	12.00%
Discounting Basis	End of Period
Inflation	0%
Corporate Income Tax Rate	30%

Table 19-2 provides a summary of the estimated mine production over the nine-year mine life.

able 19-2: LOM Production Summary

Description	Units	Value
Total ROM Ore	Mt	326.0
Waste Mined	Mt	65.6
Total Material Moved	Mt	393.4
Annual Average Ore Mining Rate	Mtpa	36.2

l9.2 Cash Flow Analysis

The indicative economic analysis results, presented in Table 19-3, indicate an after-tax NPV of $121.6 million at a 12.00% discount rate and an average bauxite price of $21.46/t over LOM.

The cashflow is presented on a 100% attributable basis.

Capital identified in the economics is for sustaining operations and plant rebuilds as necessary.

Project economic results and estimated cash costs are summarized in Table 19-3. Annual estimates of mine production with associated cash flows are provided for years 2024 to 2032.

The economic analysis was performed using the estimates presented in this TRS and confirms that the outcome is a positive cash flow that supports the statement of Mineral Reserves.

able 19-3: LOM Indicative Economic Results

			1	2	3	4	5	6	7	8	9
			30/06/2023	30/06/2024	30/06/2025	30/06/2026	30/06/2027	30/06/2028	30/06/2029	30/06/2030	30/06/2031
	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
References:											
Intercompany Bx Price ($/Mt)	19.00	19.38	19.77	20.16	20.57	20.98	21.4	21.83	22.26	22.71	23.16
3rd Party FOB Bx Price ($/Mt)	23	24	24	25	25	25	26	27	27	27	27
3rd Party Freight Cost ($/Mt)	0	0	0	0	0	0	0	0	0	0	0
Tax Rate (%)	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
Minority Interest (% not owned by Alcoa)	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
Production											
Intercompany Production (Wet Kt)	34,372,643	33,452,599	33,563,422	34,504,214	35,501,468	36,295,560	37,778,450	37,441,247	36,923,130	36,934,145	37,035,336
3rd Party FOB Production (Wet Kt)	-	-	0	0	0	0	0	0	0	0	0
3rd Party CIF Production (Wet Kt)	-	-	0	0	0	0	0	0	0	0	0
Total Production (Wet Kt)	34,372,643	33,452,599	33,563,422	34,504,214	35,501,468	36,295,560	37,778,450	37,441,247	36,923,130	36,934,145	37,035,336
Shipments											
Intercompany Shipments (Wet Kt)	34,372,643	33,452,599	33,563,422	34,504,214	35,501,468	36,295,560	37,778,450	37,441,247	36,923,130	36,934,145	37,035,336
3rd Party FOB Shipments	0	0	0	0	0	0	0	0	0	0	0
3rd Party CIF Shipments(Wet Kt)	0	0	0	0	0	0	0	0	0	0	0
Total Shipments (Wet Kt)	34,372,643	33,452,599	33,563,422	34,504,214	35,501,468	36,295,560	37,778,450	37,441,247	36,923,130	36,934,145	37,035,336
--Income Statement--											
Sales	$ 653,080,222	$ 648,311,362	$ 663,468,293	$ 695,706,821	$ 730,130,675	$ 761,391,380	$ 808,348,738	$ 817,156,263	$ 821,965,294	$ 838,654,732	$ 857,771,492
Cost of goods sold	$ 351,026,889	$ 433,900,732	$ 443,643,874	$ 529,258,847	$ 547,178,337	$ 613,147,030	$ 630,667,668	$ 552,654,711	$ 479,971,883	$ 498,630,003	$ 504,855,243
Selling, general administrative, and other expenses	$ 8,272,242	$ 8,838,834	$ 8,865,431	$ 8,865,431	$ 8,847,735	$ 8,812,485	$ 8,777,376	$ 8,742,406	$ 8,707,575	$ 8,672,884	$ 8,863,687
Research and development expenses	$ 893,590	$ 954,795	$ 957,668	$ 957,668	$ 955,757	$ 951,948	$ 948,156	$ 944,378	$ 940,616	$ 936,869	$ 957,480
Provision for depreciation, depletion, and amortization	$ 84,542,950	$ 93,281,325	$ 91,648,100	$ 132,659,576	$ 131,127,232	$ 126,116,071	$ 123,942,941	$ 119,194,049	$ 114,395,603	$ 111,288,964	$ 108,749,360
Restructuring and other charges	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Interest expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other expenses (income), net	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total costs and expenses	$ 444,737,671	$ 536,975,686	$ 545,115,073	$ 671,741,522	$ 688,109,061	$ 749,027,534	$ 764,336,141	$ 681,535,544	$ 604,015,677	$ 619,528,720	$ 623,425,770
Income (loss) before income taxes	$ 208,342,552	$ 111,335,677	$ 118,353,220	$ 23,965,298	$ 42,021,613	$ 12,363,846	$ 44,012,597	$ 135,620,719	$ 217,949,616	$ 219,126,012	$ 234,345,722
Provision for income taxes	$ 62,502,765	$ 33,400,703	$ 35,505,966	$ 7,189,589	$ 12,606,484	$ 3,709,154	$ 13,203,779	$ 40,686,216	$ 65,384,885	$ 65,737,804	$ 70,303,717
Net income (loss)	$ 145,839,786	$ 77,934,974	$ 82,847,254	$ 16,775,709	$ 29,415,129	$ 8,654,692	$ 30,808,818	$ 94,934,503	$ 152,564,732	$ 153,388,209	$ 164,042,005
Less: Net income attributable to noncontrolling interest	$ 58,335,914	$ 31,173,989	$ 33,138,902	$ 6,710,283	$ 11,766,052	$ 3,461,877	$ 12,323,527	$ 37,973,801	$ 61,025,893	$ 61,355,283	$ 65,616,802
Net Income (Loss) Attributable to Alcoa Corporation	$ 87,503,872	$ 46,760,984	**$ 49,708,353**	**$ 10,065,425**	**$ 17,649,078**	**$ 5,192,815**	**$ 18,485,291**	**$ 56,960,702**	**$ 91,538,839**	**$ 92,032,925**	**$ 98,425,203**
EBITDA	$292,885,592	$284,617,862	**$210,001,320**	**$156,624,874**	**$173,148,845**	**$138,479,917**	**$167,955,538**	**$254,814,768**	**$332,345,219**	**$330,414,976**	**$343,095,082**
EBIT	$208,342,552	$111,335,677	**$118,353,220**	**$23,965,298**	**$42,021,613**	**$12,363,846**	**$44,012,597**	**$135,620,719**	**$217,949,616**	**$219,126,012**	**$234,345,722**
--Cash Flow Statement--											
CF Income before NCI	$ 145,839,786	$ 77,934,974	$ 82,847,254	$ 16,775,709	$ 29,415,129	$ 8,654,692	$ 30,808,818	$ 94,934,503	$ 152,564,732	$ 153,388,209	$ 164,042,005
CF Depreciation, depletion, and amortization	$ 84,542,950	$ 93,281,325	$ 91,648,100	$ 132,659,576	$ 131,127,232	$ 126,116,071	$ 123,942,941	$ 119,194,049	$ 114,395,603	$ 111,288,964	$ 108,749,360
CF Working capital change	$ (3,391,372)	$ 19,908,648	$ 824,717	$ 10,842,009	$ 2,441,193	$ 20,811,689	$ (4,957,264)	$ (22,861,677)	$ (13,946,909)	$ 1,669,754	$ 95,248
CF Equity earnings net of dividends	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Pension contributions net of accrual	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Tax payments net of accrual	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Other (Cash from Operations)	$ (50,442,390)	$ (63,638,365)	$ (66,725,066)	$ (69,172,310)	$ (68,240,990)	$ (71,072,005)	$ (70,503,752)	$ (69,769,309)	$ (70,777,867)	$ (71,269,875)	$ (71,590,110)
Cash from Operations	$ 176,548,975	$ 127,486,582	**$ 108,595,005**	**$ 91,104,983**	**$ 94,742,564**	**$ 84,510,447**	**$ 79,290,743**	**$ 121,497,566**	**$ 182,235,559**	**$ 195,077,052**	**$ 201,296,503**
CF Distributions to NCIs	$ 58,335,914	$ 31,173,989	$ 33,138,902	$ 6,710,283	$ 11,766,052	$ 3,461,877	$ 12,323,527	$ 37,973,801	$ 61,025,893	$ 61,355,283	$ 65,616,802
CF Contributions from NCIs	$ 19,232,995	$ 26,108,185	$ 33,900,343	$ 96,445,380	$ 88,463,730	$ 108,247,196	$ 76,247,196	$ 11,402,926	$ 8,689,930	$ 7,491,319	$ 7,191,666
CF Change in debt	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Stock issuances / repurchases	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Other (Cash from Financing)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cash from Financing	$ 77,568,909	$ 57,282,175	**$ 67,039,244**	**$ 103,155,664**	**$ 100,229,782**	**$ 111,709,073**	**$ 88,570,724**	**$ 49,376,727**	**$ 69,715,822**	**$ 68,846,602**	**$ 72,808,468**
CF Capital expenditures	$ (48,082,486)	$ (65,270,464)	$ (64,397,081)	$ (118,952,025)	$ (100,252,107)	$ (97,190,015)	$ (123,110,391)	$ (148,087,687)	$ (141,834,646)	$ (21,236,450)	$ (17,745,936)
CF Acquisitions/divestitures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Investments	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CF Other (Cash from Investing)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cash from Investing	$ (48,082,486)	$ (65,270,464)	**$ (64,397,081)**	**$ (118,952,025)**	**$ (100,252,107)**	**$ (97,190,015)**	**$ (123,110,391)**	**$ (148,087,687)**	**$ (141,834,646)**	**$ (21,236,450)**	**$ (17,745,936)**
Free Cash Flow	$128,466,488	$62,216,118	**$44,197,925**	**-$ 27,847,042**	**-$ 5,509,543**	**-$ 12,679,567**	**-$ 43,819,648**	**-$ 26,590,121**	**$40,400,913**	**$173,840,602**	**$183,550,567**
NPV	**$121,624,235**		$39,462,433	-$ 22,199,491	-$ 3,921,584	-$ 8,058,094	-$ 24,864,445	-$ 13,471,383	$18,275,321	$70,211,303	$66,190,175

19.3 Sensitivity Analysis

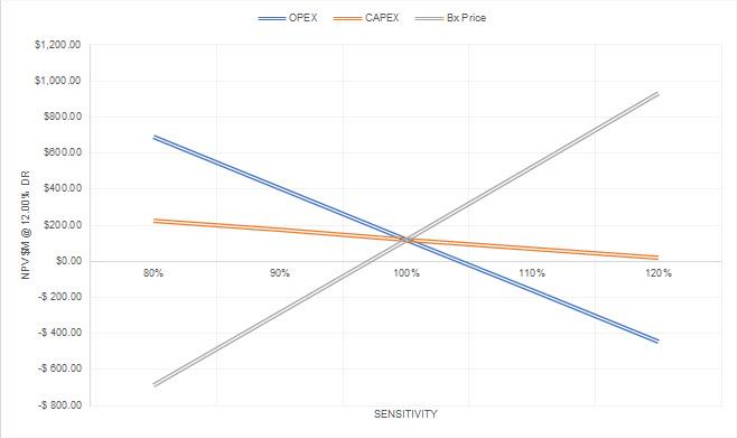
Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities. The operation is nominally most sensitive to market prices (revenues) followed by operating costs (Figure 19-1).

igure 19-1: Sensitivity Analysis (NPV)

NPV $M OPEX	80%	90%	100%	110%	120%
9.00%	$792.21	$472.80	$153.40	-$ 166.01	-$ 485.41
11.00%	$720.84	$426.05	$131.26	-$ 163.53	-$ 458.31
12.00%	$688.74	$405.18	**$121.62**	-$ 161.93	-$ 445.49
13.00%	$658.77	$385.80	$112.82	-$ 160.16	-$ 433.13
14.00%	$630.77	$367.77	$104.77	-$ 158.22	-$ 421.22

NPV $M CAPEX	80%	90%	100%	110%	120%
9.00%	$267.43	$210.42	$153.40	$96.38	$39.36
11.00%	$236.98	$184.12	$131.26	$78.40	$25.55
12.00%	$223.52	$172.57	**$121.62**	$70.68	$19.73
13.00%	$211.09	$161.96	$112.82	$63.68	$14.55
14.00%	$199.62	$152.20	$104.77	$57.35	$9.93

NPV $M Bx Price	80%	90%	100%	110%	120%
9.00%	($761.71)	-$ 304.16	$153.40	$610.95	$1,068.50
11.00%	($710.64)	-$ 289.69	$131.26	$552.22	$973.17
12.00%	($687.00)	-$ 282.69	**$121.62**	$525.93	$930.24
13.00%	($664.50)	-$ 275.84	$112.82	$501.48	$890.14
14.00%	($643.09)	-$ 269.16	$104.77	$478.71	$852.64



20.0 Adjacent Properties

The Darling Range has no material adjacent properties.

21.0 Other Relevant Data and Information

No additional information or explanation is necessary to make this Technical Report Summary understandable and not misleading.

22.0 Interpretation and Conclusions

22.1 Geology and Mineral Resources

- SLR is independently declaring the 31 December 2023 Mineral Resources for the defined bauxites located within Alcoa's Darling Range deposits. The Mineral Resource models were prepared by Alcoa using their in-house estimation procedures and reviewed extensively by SLR.
- As of December 31, 2023, exclusive of Mineral Reserves, as summarized in Table 11-13 at an appropriate level of precision reflecting confidence, the Measured Mineral Resources are estimated to be 93.0 Mt at a grade of 30.44% available alumina (AL) and 1.52% reactive silica (SI). Similarly, the Indicated Mineral Resources are estimated to be 105.4 Mt at 30.75% AL and 1.34% SI, and the Inferred Mineral Resources are estimated to be 106.9 Mt at 32.32% AL and 1.22% SI.
- Drill sampling and sample control procedures at Alcoa's Darling Range Bauxite Operations are adequate and appropriate for use in the estimation of Mineral Resources. The defined volumes and grades of mineralization are not expected to be systematically impacted (biased) by errors in either the collar location or the 3D sample location.
- The Quality Assurance / Quality Control (QA/QC) of sample preparation and assaying is adequate, and the assay results are suitable for use in Mineral Resource estimation
- Analytical procedures used for the Alcoa Mineral Resource comprises part of conventional industry practice. FTIR is not widely used yet in the bauxite industry but is becoming more widely accepted and applied to more operations. At Alcoa the method has been consistently applied successfully for a decade and is routinely validated by industry standard XRF and wet chemical procedures as discussed in Sections 8.3 and 8.4. It is the opinion of the QP from the studies on FTIR repeatability discussed above that the overall precision and accuracy of the FTIR assaying is acceptable.
- The database is adequate, and the data is appropriate for the purpose of Mineral Resource estimation.
- The continuous improvements in the geological modelling, estimation techniques, and block model migration to the 3D approach are appropriate and constantly improve the confidence level and precision of the Mineral Resources.
- The dry bulk density data is less well controlled than other analytes, although different attempts were taken since 1980. However, based on the different reconciliation approaches and on the fact that the polygonal and GSM model have lower confidence level, the density values are acceptable for the Resource estimation.
- The condition of Reasonable Prospects for Economic Extraction is met by constraining the Mineral Resource model using the ArcGIS system, by ensuring that the model defines key parameters for the refinery, and by sound reconciliation practices providing feedback that the modelling is appropriate for the purpose.

22.2 Mining and Mineral Reserves

- As of December 31, 2023, Proven Mineral Reserves are estimated to total 48.0 Mt at 29.1% AL and 1.65% SI and Probable Mineral Reserves are estimated to total 296.0 Mt at 31.9% AL and 1.27% SI.
- The QP has used the December 31, 2023 Mineral Resource estimate as the basis for its Mineral Reserve estimate, applying Modifying Factors only to those Resources classified as Measured Mineral Resources and Indicated Mineral Resources.

- The bauxite operations are operating mining projects with a long history of production for which establishment capital has been repaid and for which sustaining capital and supported operating costs have been observed to be applied in economic analysis. The review of the Capex Front End Loading (FEL) 2 Study report for the Myara North Crusher move has provided further support. Consequently, the QP considers that support by a Feasibility Study (FS) is demonstrated by the history of profitable operation and the level of technical support for the Modifying Factors. The QP has reviewed the operating and planning procedures and parameters for the operations.
- The QP considers that the accuracy and confidence in the Mineral Reserve estimate to be appropriate for the classification applied, which is supported by both the conservative operational processes and the long operational history.
- The QP is not aware of any risk factors associated with, or changes to, any aspects of the Modifying Factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the current Mineral Reserve estimate. The Darling Range operations have however undergone some changes as related to the permitting requirements which are discussed in this report; namely the approvals process, river corridor constraints, restoration obligations, and any required adjustments to accommodate the recently announced curtailment of the Kwinana refinery.

22.3 Mineral Processing

- The operating data between 2010 to 2023 indicates that the product from the Darling Range operations consisted of an average AL grade of 33%, with SI below the target for refinery feed.
- The QP is of the opinion that the Darling Range operation demonstrated that ore can be effectively crushed and supplied to a refinery for further upgrading to produce alumina. The historical operational data confirmed that the ore consistently met refinery specifications without any deleterious elements.
    - Based on this, and additional information provided by Alcoa regarding the mine plan, it is reasonable to assume that the ore from Darling Range will meet the refinery specifications for the next nine years.

22.4 Infrastructure

- The Darling Range mining operations have established and operational infrastructure, with mining hubs that host administrative offices, as well as crushing facilities and maintenance facilities.
    - Hubs are relocated periodically as production moves away from the hub and transportation costs increase. These relocations are well-understood with planning and associated budgeting occurring well in advance of relocations; production restarted seven days after the most recent shutdown.
- An extensive haul road network, rail, and overland conveyors transport crushed bauxite from the Hub to the refineries.
    - Bauxite is transferred from each mine to the refineries primarily via long distance conveyor belt, apart from the Kwinana refinery which receives bauxite via railway.
    - Alumina produced by the three refineries is then shipped to external and internal smelter customers through the Kwinana and Bunbury ports.
    - It was announced in January 2024 that the Kwinana refinery will undergo phased curtailment, which will be accommodated in mine planning going forwards.

- The Huntly and Willowdale mines are located near the towns of Pinjarra and Waroona respectively. These are easily accessible via the national South Western Highway, a sealed single carriageway road, spanning almost 400 km from the southern side of Perth to the southwest corner of Western Australia.
- Sealed access roads to the main hubs have been established, connecting Huntly and Willowdale to the road network.
- Major haul roads have been established to each mining area, while secondary haul roads, cross-cut each individual mining plateau. Roads are unsealed and require continuous maintenance.
- The Darling Range's Pinjarra refinery receives power from the South West Interconnected System (SWIS), but also has internal generation capacity of 100 MW from four steam driven turbine alternators, with steam produced by gas fired boilers and a gas turbine Heat Recovery Steam Generator (HRSG).
    - The refinery supplies power to the Huntly Mine by a 33,000 volt power supply line and two 13,800 volt lines.
- The Wagerup refinery is a net exporter of power to the SWIS, with internal generation capacity of 108 MW from three steam driven turbine alternators and one gas turbine; steam being generated by gas fired boilers.
    - The refinery supplies power to the Willowdale Mine by a single 22,000 volt power supply.
- Water is used on the mines for dust suppression, dieback washdown, vehicle washdown, workshops, conveyor belt wash, construction, and domestic purposes.
    - The water supplies for mining consist of licensed surface water sources supplemented with treated wastewater from vehicle washdowns, stormwater runoff and maintenance workshops.
    - The annual volume of freshwater abstracted under the Department of Water and Environmental Regulation (DWER) surface water licences and Water Corporation supply agreements decreased at Willowdale in 2022, and increased at Huntly, the combined volume for both mines has been reasonably consistent over the last three years.
    - In 2022, water abstraction comprised approximately:
        - 53% of the annual entitlement from Boronia Dam
        - 22% from Banksiadale Dam
        - 70% from Samson Dam.
    - An additional 651,840.7 kL was also abstracted from South Dandalup Dam under the agreement with Water Corporation.
- On site facilities include offices, ablutions, crib-rooms, and workshops, however there are no Alcoa accommodation facilities, as the Huntly and Willowdale mining areas are close to established population centers.
- No tailings are generated within the boundaries of the mining operations and waste dumps are not constructed. The management of tailings generated downstream at the refineries is beyond the boundaries of the Darling Range mining operations and are therefore not considered in this TRS.
- Overburden is segregated for later contouring and rehabilitation of adjacent, completed mining operations. Caprock and other non-viable rock is used to backfill these shallow, completed pits and the viable topsoil spread on top, contoured, and revegetated.

22.5 Environment

- Alcoa has established processes to facilitate conformance with environmental requirements, while identifying sensitive areas ahead of time enables them to be managed ahead of disturbance.
- Mining in some areas became more constrained in 2023 as a result of internal and external factors, which has resulted in a presumed temporary decrease in operability and associated decrease in Reserve estimation:
    - Alcoa's ongoing consultation with the MMPLG
    - A third-party referral of Alcoa's annual rolling five-year Mining and Management Programs (MMP) approval (required under the State Agreement Act framework)
    - Alcoa's progress on the EP and EPBC Act assessment (beyond the scope of the MMP) to transition mining from Huntly to the Myara North and Holyoake areas and increase Pinjarra refinery production by 5%.
- The 2023-2027 MMP describes Alcoa’s proposed mining operations for the Huntly and Willowdale mines within ML1SA from 1 January 2023 to 31 December 2027. It excludes mine development activities associated with Myara North or Holyoake mining regions currently under consideration by the EPA and DCCEEW.
- Changes from what was reported in the 2022 TRS under the previous MMP include but are not limited to:
    - Reduce mining activities inside higher risk areas within drinking water catchments.
    - Alcoa will not undertake any new pit clearing in any areas with an average pit slope greater than 16% within any Reservoir Protection Zone (RPZ, 2 km from reservoir top water level).
    - Increase rehabilitation and reduce open areas where possible, with priority in higher risk areas.
    - Maximum annual clearing footprint of 800 ha.
    - Revise the Rehabilitation Completion Criteria by 31 December 2024, in consultation with DBCA.
- Alcoa acknowledges that future MMPs will continue to improve and evolve, based on feedback from review and consultation processes.
- Alcoa is modernizing its environmental approvals framework for its Huntly Bauxite Mine and Pinjarra Alumina Refinery, by referring future mining plans for assessment under Part IV of the Western Australian *Environmental Protection Act 1986* (EP) and the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Construction for Myara North will be commenced pursuant to the requirements of the Ministerial Decision, which will be issued upon completion of the EPA assessment process indicatively forecast for completion in approximately mid-2025, as opposed to the third quarter of 2024 as reported in the TRS for 2022. The timeframe to approval of Myara North and Holyoake under the EP and EPBC Act can be estimated, but not predicted with certainty; further delays are possible.
- Importantly, on 14 December 2023 the State Government announced the *Alcoa Transitional Approvals Framework* which will enable Alcoa to continue mining as defined in the current 2023-2027 MMP while the formal EPA EIA is in progress. In most circumstances, activities under assessment must cease during the EPA’s process. Note,

that the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point.

- Alcoa's mine sites are monitored in accordance with the conditions of Government authorizations and its operational licenses at Huntly (L6210/1991/10) and Willowdale (L6465/1989/10) and the MMP. Compliance with the section 6 exemption is also required from 14 December 2023. Outcomes of and compliance with the management and monitoring programs are tracked within Alcoa's Environmental Management System and reported within the Annual Environmental Review report:
  - Review of the most recent report, JTSI Annual Environmental Review 2022 (dated May 2023), largely reported compliance with environmental commitments and success of operational controls to manage environmental objectives.
  - The one area with a substantial change in success was related to an increase in number and volume of spills at Huntly. A key contributor to spills at Huntly was the change-out of coolant hoses across the heavy vehicle fleet in January/February 2022. This was found to be the result of faulty new coolant hoses. Alcoa's hose supplier undertook an investigation and identified the cause of the hose failures as an issue in the manufacturing process. All trucks were stood down following the supplier investigation and the faulty hoses changed out. The coolant hose failure events were 34% (almost 3,000L) of Huntly's LOC events between January 2022 and July 2022 and were a significant contributor to the number of spills.
- Alcoa, in association with the former Water and Rivers Commission, has researched the hydrology and salinity in the Jarrah forest since the 1970s, as part of the Joint Intermediate Rainfall Zone Research Program (JIRZRP). The JIRZRP has included monitoring of surface water, groundwater and salinity as well as analysis and modelling of the Intermediate Rainfall Zone (IRZ). This work continues to evaluate potential impacts of clearing and rehabilitation on groundwater salinization.
- Alcoa implements a comprehensive water management and monitoring program in accordance with the requirements of its abstraction and operational licenses.
- A groundwater monitoring program commenced in the second half of 2022 across the Darling Range operations to support approvals and operational monitoring.
  - Alcoa will continue to expand its monitoring program, as necessary, if groundwater quality or quantity has been identified as potentially at risk due to operational or mining activities, or potential exists for mining to impact offsite/private groundwater supply quantity or quality.
  - Alcoa has a long-term groundwater research project within the Intermediate Rainfall Zone to evaluate potential impacts of clearing on groundwater salinization.
- Outcomes of and compliance with the management and monitoring programs have most recently been reported within the 2022 Annual Environmental Review report. Consistent with the outcomes reported between 2018 and 2021:
  - Review of the most recent report, published for 2022 largely reported compliance with environmental commitments and success of operational controls to managed environmental objectives.

23.0 Recommendations

23.1 Geology and Mineral Resources

It is apparent to the QP that the long history of exploration, development and mining of Alcoa's Darling Range bauxite tenements have established sound knowledge and understanding of the geology and mineral endowment. The QP has not identified any fatal flaws in the current practices of mapping (based on the ArcGIS system), drill sampling (based on progressive continuous improvement), assaying (based on calibrated and validated FTIR, with reasonable quality control), estimation (3D Block Model - 3DBM), database management (using acQuire), the application of mining criteria that assure RPEE, and the application of constraints establishing forestry, heritage and noise limits to the Mineral Resource definition. The following recommendations are offered as suggestions for further improvement, aligned with Alcoa's comprehensive approach to research and development (seen for example in the evolution of their drilling, sampling and assaying technologies). These recommendations are prioritized in terms of their perceived value to the overall operation:

- Continuing to replace the gridded seam model (GSM) and polygonal areas to the 3D block modelling methodology, using a script-based semi-automated approach, which enables more robust rapid model building. The validation of interpolation parameters using risk-based (conditional simulation) techniques to quantify confidence should be considered.
- To improve the reporting of recoverable resources, a re-blocked block model to a minimum practical mining scale or single mining unit (SMU) should be considered. Economical parameters considering more flexible costs and bauxite prices related to the Mineral Reserves can also be implemented in the Mineral Resources workflow, aiming to optimize the bauxite mineable portion including potential marginal grades.
- Investigate whether the 5% bias in the tonnage between the As Mined and sampling tower weightometers is persistent in the 3D block models.
- Further redrilling or where viable re-assaying of pulps.
- Implementation of a mine wide reconciliation system should be considered as a way to overcome the issue of density estimation. This could be integrated with the extensive production tracking data already available from the current fleet management system and operational control system (covering the mining equipment, crushers, conveyors, sampling towers, stockpile stackers and reclaimers).
- To include volume surveys using drones and truck gantry scanning, wet mass measurement using weightometers on conveyors and LoadRite sensors on mining equipment, and infra-red moisture determination, mean that better in situ dry density estimation may become possible if the operation requires it for better refinery feedstock control.
- The QP considers that twinned hole studies are of limited value and should only be implemented once the sample splitting and preparation demonstrates good repeatability, using field duplicates (or the equivalent sample to extinction [STE] samples). They may be of value to investigate specific issues under closely supervised conditions.
- While the STE procedure could be retained for specific studies, in the QP's opinion, the reintroduction of field duplicates using appropriate riffle splitters under supervision should be considered.
- The QP is of the opinion that the grade characteristics of the bauxite profile could be reproduced in the model, which enables optimization techniques to be used for the

definition of mining floors and boundaries, better support for ore loss and dilution studies, and more accurate reconciliation studies.

23.2 Mining and Mineral Reserves

- Currently a dilution and mining recovery factor is applied to the final Reserves to reconcile the tonnes and grade. The QP recommends applying dilution and ore loss at the re-blocked model level before performing the optimization and reporting these values independently.
- The life-of-mine scheduling requires further refinement with regards to sequencing of the different mining areas and assigning the scheduled years back to the OreBest model (the mining output that defines Reserves). Recommendations would be to provide a strategic schedule over a minimum of nine years and tactical schedule over 3 years. The tactical schedule should incorporate restoration and rehabilitation scheduling. The view of the QP is that additional optimization of the mine schedule would be possible with this approach to strategic and tactical scheduling.
- The QP recommends detailed haulage analysis focusing on haulage profiles and cycle times to provide more accurate operating costs.
- The QP noted the mining models were in both a 2D grid and 3D model system. Aligning all the mining models within the same 3D mining model system will provide clarity and consistency across the Darling Range project with regards to evaluation and reporting processes. Alcoa have been progressing this alignment to 3D as a follow on from the deeplime 2D to 3D conversion project.
- A reconciliation system should be implemented to allow the review of the mined tonnes to modelled geological model. Alcoa has been actively developing this reconciliation system with an intention to implement during 2024.

23.3 Mineral Processing

The historical operational data for the Darling Range demonstrates that ore consistently met refinery specifications.

- Ideally, independent verification of sample analysis is conducted, by a certified laboratory, on a structured program, to ensure the QA/QC aspects of the internal analysis. Within this process a proportion of samples from each batch could be sent to the independent laboratory for analysis and the results can be compared with the internal analysis.
- The QP is appreciative that the mine is operational, meaning a trade-off versus logistics / practicality would need to be carried out.

23.4 Infrastructure

The Darling Range mining operations have well established infrastructure, with mining hubs that are periodically moved to reduce transportation distances between mining operations and the hubs. The QP makes no recommendations regarding infrastructure.

23.5 Environment

Alcoa has established systems to facilitate adherence to environmental commitments and has made progress with modernizing environmental approvals and permits for Huntly, Willowdale and the future mining areas at Holyoake and Myara North. The QP recommends that the following action is taken:

- Continued close engagement with EPA, DCCEEW and MMPLG to best enable a prompt resolution to approval and permitting process to minimize impacts to the Reserve estimate into the future.
- Continued Compliance with all approval and permit requirements. Compliance with the conditions associated with the *Alcoa Transitional Approvals Framework* exemption is critical as the State Government reserves the right to, with reasonable notice, withdraw or amend the exemption at any point,
- Finalization of the Catchment Risk Assessment tool in consultation with DWER, DBCA and other regulators.
- Continued refinement of the WA Mining and Haul Road Drainage Design Manual in consultation with the Bauxite Hydrology Committee
- Close-out the Auditor-compliant contaminated sites process related to the identification of low levels of PFAS and AFFF on site.

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US Securities and Exchange Commission, 2018: Regulation S-K, Subpart 229.1300, Item 1300 Disclosure by Registrants Engaged in Mining Operations and Item 601 (b)(96) Technical Report Summary.

Xstract, 2016. Mineral Resource and Ore Reserve audit, Huntly and Willowdale Operations. Report prepared for Alcoa of Australia Limited by Xstract Mining Consultants Pty Ltd, project number P2173, May.

25.0 Reliance on Information Provided by the Registrant

This report has been prepared by SLR for Alcoa. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to SLR at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Alcoa and other third party sources.

For the purpose of this report (namely Section 1.3.3), SLR has relied on ownership information provided by Alcoa in a legal opinion by Paul Volich, Managing Counsel – Australia, dated 25 January 2024, entitled Technical Report Summary on the Darling Range, Western Australia S-K 1300 Report for Alcoa Corporation – that ML1SA in good standing. SLR has not researched property title or mineral rights for the Darling Range as we consider it reasonable to rely on Alcoa's legal counsel who is responsible for maintaining this information.

SLR has relied on Alcoa for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Darling Range in the Executive Summary and Sections 18.0 and 19.0. As Darling Range has been in operation for over ten years, Alcoa has considerable experience in this area.

The Qualified Persons have taken all appropriate steps, in their professional opinion, to ensure that the above information from Alcoa is sound.

Except for the purposes legislated under applicable securities laws, any use of this report by any third party is at that party's sole risk.

26.0 Date and Signature Page

This report titled “Technical Report Summary on the Darling Range, Western Australia, S-K 1300 Report” with an effective date of December 31, 2023 was prepared and signed by:

SLR International Corporation

John R. Walker, FGS, MIMMM, FIQ
Technical Director, Mining Advisory Europe

Dated in UK

Signature Date: 21 February 2024

Exhibit 97

Alcoa Corporation
Clawback Policy
Effective October 15, 2023

Purpose

As required pursuant to the listing standards of the New York Stock Exchange (the "***Stock Exchange***"), Section 10D of the Securities Exchange Act of 1934, as amended (the "***Exchange Act***"), and Rule 10D-1 under the Exchange Act, the Board of Directors (the "***Board***") of Alcoa Corporation (the "***Company***") has adopted this Clawback Policy (the "***Policy***") to empower the Company to recover Covered Compensation (as defined below) erroneously awarded to a Covered Officer (as defined below) in the event of an Accounting Restatement (as defined below).

Notwithstanding anything in this Policy to the contrary, at all times, this Policy remains subject to interpretation and operation in accordance with the final rules and regulations promulgated by the U.S. Securities and Exchange Commission (the "***SEC***"), the final listing standards adopted by the Stock Exchange, and any applicable SEC or Stock Exchange guidance or interpretations issued from time to time regarding such Covered Compensation recovery requirements (collectively, the "***Final Guidance***"). Questions regarding this Policy should be directed to the General Counsel and Chief Human Resources Officer.

Policy Statement

Unless a Clawback Exception (as defined below) applies, in the event that the Company is required to prepare an accounting restatement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including any required accounting restatement to correct an error in previously issued financial statements that is material to the previously issued financial statements, or that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period (each, an "***Accounting Restatement***"), the Company will recover reasonably promptly, from each Covered Officer, the Covered Compensation Received (as defined below) by such Covered Officer. If a Clawback Exception applies with respect to a Covered Officer, the Company may forgo such recovery under this Policy from such Covered Officer.

Covered Officers

For purposes of this Policy, "***Covered Officer***" is defined as any current or former "Section 16 officer" of the Company within the meaning of Rule 16a-1(f) under the Exchange Act, as determined by the Board or the Compensation and Benefits Committee (the "***Committee***") of the Board. Covered Officers include, at a minimum, "executive officers" as defined in Rule 3b-7 under the Exchange Act and identified under Item 401(b) of Regulation S-K.

Covered Compensation

For purposes of this Policy:

- "***Covered Compensation***" is defined as the amount of Incentive-Based Compensation (as defined below) Received during the applicable Recovery Period (as defined below) that exceeds the amount of Incentive-Based Compensation that otherwise would have been Received during such Recovery Period had it been determined based on the relevant restated amounts, and computed without regard to any taxes paid.

  Incentive-Based Compensation Received by a Covered Officer will only qualify as Covered Compensation if: (i) it is Received on or after October 2, 2023; (ii) it is Received after such Covered Officer begins service as a Covered Officer; (iii) such Covered Officer served as a Covered Officer at any time during the performance period for such Incentive-Based Compensation; and (iv) it is Received while the Company has a class of securities listed on a national securities exchange or a national securities association.

For Incentive-Based Compensation based on stock price or total shareholder return, where the amount of erroneously awarded Covered Compensation is not subject to mathematical recalculation directly from the information in an Accounting Restatement, the amount of such Incentive-Based Compensation that is deemed to be Covered Compensation will be based on a reasonable estimate of the effect of the Accounting Restatement on the stock price or total shareholder return upon which the Incentive-Based Compensation was Received, and the Company will maintain and provide to the Stock Exchange documentation of the determination of such reasonable estimate.

• "***Incentive-Based Compensation***" is defined as any compensation that is granted, earned, or vested based wholly or in part upon the attainment of a Financial Reporting Measure (as defined below). For purposes of clarity, Incentive-Based Compensation includes compensation that is in any plan, including long term disability, life insurance, and supplemental executive retirement plans other than tax-qualified retirement plans (collectively, "***Subject Plans***"), and any other compensation that is based on such Incentive-Based Compensation, such as earnings accrued on notional amounts of Incentive-Based Compensation contributed to such Subject Plans.

• "***Financial Reporting Measure***" is defined as a measure that is determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measures that are derived wholly or in part from such measures. Stock price and total shareholder return are also Financial Reporting Measures.

• Incentive-Based Compensation is deemed "***Received***" in the Company's fiscal period during which the Financial Reporting Measure specified in the Incentive-Based Compensation award is attained, even if the payment or grant of the Incentive-Based Compensation occurs after the end of that period.

Recovery Period

For purposes of this Policy, the applicable "***Recovery Period***" is defined as the three completed fiscal years immediately preceding the Trigger Date (as defined below) and, if applicable, any transition period resulting from a change in the Company's fiscal year within or immediately following those three completed fiscal years (provided, however, that if a transition period between the last day of the Company's previous fiscal year end and the first day of its new fiscal year comprises a period of nine to 12 months, such period would be deemed to be a completed fiscal year).

For purposes of this Policy, the "***Trigger Date***" as of which the Company is required to prepare an Accounting Restatement is the earlier to occur of: (i) the date that the Board, applicable Board committee, or officers authorized to take action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare the Accounting Restatement, or (ii) the date a court, regulator, or other legally authorized body directs the Company to prepare the Accounting Restatement.

Clawback Exceptions

The Company is required to recover all Covered Compensation Received by a Covered Officer in the event of an Accounting Restatement unless (i) one of the following conditions are met and (ii) the Committee has made a determination that recovery would be impracticable in accordance with Rule 10D-1 under the Exchange Act (under such circumstances, a "***Clawback Exception***" applies):

a) the direct expense paid to a third party to assist in enforcing this Policy would exceed the amount to be recovered (and the Company has already made a reasonable attempt to recover such erroneously awarded Covered Compensation from such Covered Officer, has documented such reasonable attempt(s) to recover, and has provided such documentation to the Stock Exchange);

b) recovery would violate home country law that was adopted prior to November 28, 2022 (and the Company has already obtained an opinion of home country counsel, acceptable to the Stock Exchange, that recovery would result in such a violation, and provided such opinion to the Stock Exchange); or

c) recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the Company, to fail to meet the requirements of Section 401(a)(13) or Section 411(a) of the Internal Revenue Code and regulations thereunder. For purposes of clarity, this Clawback Exception only applies to tax-qualified retirement plans and does not apply to Subject Plans, or any other compensation that is based on Incentive-Based Compensation in such Subject Plans, such as earnings accrued on notional amounts of Incentive-Based Compensation contributed to such plans].

Prohibitions

The Company is prohibited from paying or reimbursing the cost of insurance for, or indemnifying, any Covered Officer against the loss of erroneously awarded Covered Compensation.

Administration and Interpretation

The Committee will administer this Policy in accordance with the Final Guidance, and will have full and exclusive authority and discretion to supplement, amend, repeal, interpret, terminate, construe, modify, replace and/or enforce (in whole or in part) this Policy, including the authority to correct any defect, supply any omission or reconcile any ambiguity, inconsistency or conflict in the Policy, subject to the Final Guidance. This Policy is in addition to and is not intended to change or interpret (i) any federal or state law or regulation, including the Delaware General Corporation Law, (ii) the Amended and Restated Certificate of Incorporation of the Company, or (iii) the Amended and Restated Bylaws of the Company. The Committee will review the Policy from time to time and will have full and exclusive authority to take any action it deems appropriate.

The Committee will have the authority to offset any compensation or benefit amounts that become due to the applicable Covered Officers to the extent permissible under Section 409A of the Internal Revenue Code of 1986, as amended, and as it deems necessary or desirable to recover any Covered Compensation.

Disclosure

This Policy, and any recovery of Covered Compensation by the Company pursuant to this Policy that is required to be disclosed in the Company's filings with the SEC, will be disclosed as required by the Securities Act of 1933, as amended, the Exchange Act, and related rules and regulations, including the Final Guidance.