

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-K

Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended December 31, 2018

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 001-12658

ALBEMARLE CORPORATION
(Exact name of registrant as specified in its charter)

VIRGINIA
(State or other jurisdiction of
incorporation or organization)

54-1692118
(I.R.S. Employer
Identification No.)

4250 Congress Street, Suite 900
Charlotte, North Carolina 28209
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (980) 299-5700

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

Title of each class	Name of each exchange on which registered
COMMON STOCK, \$.01 Par Value	NEW YORK STOCK EXCHANGE

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 at least the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its Corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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. (Check one):

Large accelerated filer

Non-accelerated filer

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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

The aggregate market value of the voting and non-voting common equity stock held by non-affiliates of the registrant was approximately \$10.2 billion based on the last reported sale price of common stock on June 30, 2018, the last business day of the registrant's most recently completed second quarter.

Number of shares of common stock outstanding as of February 20, 2019: 105,753,864

Documents Incorporated by Reference

Portions of Albemarle Corporation's definitive Proxy Statement for its 2019 Annual Meeting of Shareholders to be filed with the U.S. Securities and Exchange Commission pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended, are incorporated by reference into Part III of this Form 10-K.

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PART I

Item 1. Business.

Albemarle Corporation was incorporated in Virginia in 1993. Our principal executive offices are located at 4250 Congress Street, Suite 900, Charlotte, North Carolina 28209. Unless the context otherwise indicates, the terms “Albemarle,” “we,” “us,” “our” or “the Company” mean Albemarle Corporation and its consolidated subsidiaries.

We are a leading global developer, manufacturer and marketer of highly-engineered specialty chemicals that are designed to meet our customers’ needs across a diverse range of end markets. The end markets we serve include energy storage, petroleum refining, consumer electronics, construction, automotive, lubricants, pharmaceuticals, crop protection and custom chemistry services. We believe that our commercial and geographic diversity, technical expertise, innovative capability, flexible, low-cost global manufacturing base, experienced management team and strategic focus on our core base technologies will enable us to maintain leading market positions in those areas of the specialty chemicals industry in which we operate.

We and our joint ventures currently operate 29 production and research and development (“R&D”) facilities, as well as a number of administrative and sales offices, around the world. As of December 31, 2018, we served approximately 2,300 customers, none of which individually represents more than 10% of net sales of the Company, in approximately 100 countries. For information regarding our unconsolidated joint ventures see Note 10, “Investments,” to our consolidated financial statements included in Part II, Item 8 of this report.

Business Segments

Effective January 1, 2018, the PCS product category merged with our former Refining Solutions reportable segment to form a global business focused on catalysts. As a result, our three reportable segments include Lithium, Bromine Specialties and Catalysts. Each segment has a dedicated team of sales, research and development, process engineering, manufacturing and sourcing, and business strategy personnel and has full accountability for improving execution through greater asset efficiency, market focus, agility and responsiveness. We expect this change to provide further clarity into the performance of each business. Financial results and discussion about our segments included in this Annual Report on Form 10-K are organized according to these categories except where noted.

For financial information regarding our reportable segments and geographic area information, see Note 24, “Segment and Geographic Area Information,” to our consolidated financial statements included in Part II, Item 8 of this report.

Lithium Segment

Our Lithium business develops lithium materials for a wide range of industries and end markets. We are a low-cost producer of one of the most diverse product portfolios of lithium derivatives in the industry.

We develop and manufacture a broad range of basic lithium compounds, including lithium carbonate, lithium hydroxide, lithium chloride, and value-added lithium specialties and reagents, including butyllithium and lithium aluminum hydride. Lithium is a key component in products and processes used in a variety of applications and industries, which include lithium batteries used in consumer electronics and electric vehicles, high performance greases, thermoplastic elastomers for car tires, rubber soles and plastic bottles, catalysts for chemical reactions, organic synthesis processes in the areas of steroid chemistry and vitamins, various life science applications, as well as intermediates in the pharmaceutical industry, among other applications. We also develop and manufacture cesium products for the chemical and pharmaceutical industries, and zirconium, barium and titanium products for various pyrotechnical applications, including airbag initiators.

In addition to developing and supplying lithium compounds, we provide technical services, including the handling and use of reactive lithium products. We also offer our customers recycling services for lithium-containing by-products resulting from synthesis with organolithium products, lithium metal and other reagents. We plan to continue to focus on the development of new products and applications.

Competition

The global lithium market consists of producers primarily located in the Americas, Asia and Australia. Major competitors in lithium compounds include Livent Corporation, Sociedad Quimica y Minera de Chile S.A., Sichuan Tianqi Lithium, and Jiangxi Ganfeng Lithium. In the cesium and other specialty metal business, key competitors include Cabot Corporation and Sigma-Aldrich Corporation. Competition in the global lithium market is largely based on product quality, product diversity, reliability of supply and customer service.

Raw Materials and Significant Supply Contracts

We obtain lithium through solar evaporation of our ponds at the Salar de Atacama, in Chile, and in Silver Peak, Nevada. After we obtain the lithium brine from the Salar de Atacama, we process it into lithium carbonate and lithium chloride at a plant in nearby La Negra, Chile. The lithium brine from our Silver Peak site is processed into lithium carbonate at our plant in Silver Peak. Subsequently, in other locations in the United States (“U.S.”), Germany, France and Taiwan, we further process the materials into various derivatives, depending on the markets we serve. In addition, in December 2018, we purchased undeveloped land with access to a lithium resource in Antofalla, within the Catamarca Province of Argentina from Bolland Minera S.A. If necessary, we can also obtain lithium from other sources.

Our mineral rights with respect to the Salar de Atacama in Chile consist exclusively of our right to access lithium brine, covering an area of approximately 16,700 hectares, pursuant to a long-term contract with the Chilean government, originally entered into in January 1975 by one of our predecessors and subsequently amended and restated. The amended agreement provides us with sufficient lithium to produce over 80,000 metric tons annually of technical and battery grade lithium salts over the next 25 years at our expanding battery grade manufacturing facilities in La Negra, Chile. In addition, the amended agreement provides for commission payments to the Chilean government based on sales price/metric ton, our support of research and development in Chile in lithium applications and solar energy, and our support of local communities in Northern Chile. In March 2018, we received approval from Chilean Economic Development Agency (“CORFO”) to increase lithium production quota in Chile to as much as 145,000 metric tons of lithium carbonate equivalent annually through 2043, after developing an innovative technology that could lead to a sustainable increase in total lithium production in Chile without the need for additional brine pumping at the Salar de Atacama.

Our mineral rights in Silver Peak, Nevada consist of our right to access lithium brine pursuant to our permitted and certified senior water rights, a settlement agreement with the U.S. government, originally entered into in June 1991, and our patented and unpatented land claims. Pursuant to the 1991 agreement, our water rights and our land claims, we have rights to all lithium that we can remove economically from the Clayton Valley Basin in Nevada. We have been operating at the Silver Peak site since 1966. Our Silver Peak site covers a surface of approximately 15,301 acres, 10,826 acres of which we own through a subsidiary. The remaining acres are owned by the U.S. government from whom we lease the land pursuant to unpatented land claims that are renewed annually. Based on our 2018 production levels, we believe that the amount of lithium brine we can economically obtain from our Silver Peak, Nevada site pursuant to our rights could support the current levels of lithium carbonate production for approximately 20 years. Assuming certain operating conditions are satisfied, our annual lithium carbonate production capacity is estimated to be at least 6,000 metric tons at our Silver Peak facility. However, no assurance can be given that the indicated levels of production of lithium carbonate at either Silver Peak or La Negra will be realized.

We also obtain lithium through hard rock mining via our 49% interest in Windfield Holdings Pty. Ltd., which directly owns 100% of the equity of Talison Lithium Pty. Ltd., a company incorporated in Australia (“Talison”). Talison, through its wholly-owned subsidiaries, owns and operates a lithium mine in Greenbushes, Western Australia and mines lithium ore, which is then milled and processed to separate lithium concentrate from the rest of the ore. The ore is processed into battery-grade lithium carbonate and lithium hydroxide at our Jiangxi and Sichuan, China facilities. Talison currently sells the lithium concentrate to its shareholders. Talison has a leading position in two categories of lithium concentrates: (i) technical-grade lithium concentrates which have low iron content for use in the manufacture of glass, ceramics and heat-proof cookware; and (ii) a high-yielding chemical-grade lithium concentrate, used to produce lithium chemicals which form the basis for the manufacture of lithium-ion batteries for laptop computers, mobile phones, electric bicycles and electric vehicles. Assuming certain operating conditions are satisfied, the annual lithium carbonate equivalent production capacity at the Talison facility is estimated to be approximately 105,000 metric tons and will be approximately 190,000 metric tons upon completion of an expansion currently underway, with commissioning expected in 2019. However, no assurance can be given that the indicated levels of production of lithium concentrate at Talison will be realized.

In December 2018, we entered into a definitive agreement to acquire a 50% interest in Mineral Resources Limited's Wodgina hard rock lithium mine project (“Wodgina Project”) and form a joint venture with Mineral Resources Limited to own and operate the Wodgina Project to produce spodumene concentrate and battery grade lithium hydroxide. Under this agreement, we would jointly fund, design, build and operate a battery grade lithium hydroxide plant in stages at Wodgina, located in the Pilbara region of Western Australia. This transaction is subject to regulatory approvals and other customary closing conditions, and is expected to close in the second half of 2019.

Bromine Specialties Segment

Our bromine and bromine-based business includes products used in fire safety solutions and other specialty chemicals applications. Our fire safety technology enables the use of plastics in high performance, high heat applications by enhancing the flame resistant properties of these materials. End market products that benefit from our fire safety technology include plastic

enclosures for consumer electronics, printed circuit boards, wire and cable products, electrical connectors, textiles and foam insulation. Our bromine-based business also includes specialty chemicals products such as elemental bromine, alkyl bromides, inorganic bromides, brominated powdered activated carbon and a number of bromine fine chemicals. These specialty products are used in chemical synthesis, oil and gas well drilling and completion fluids, mercury control, water purification, beef and poultry processing and various other industrial applications. Other specialty chemicals that we produce include tertiary amines for surfactants, biocides, and disinfectants and sanitizers. A number of customers of our bromine business operate in cyclical industries, including the consumer electronics and oil field industries. As a result, demand from our customers in such industries is also cyclical.

Competition

Our bromine business serves the markets in the Americas, Asia, Europe and the Middle East, each of which is highly competitive. Product performance and quality, price and contract terms are the primary factors in determining which qualified supplier is awarded a contract. Research and development, product and process improvements, specialized customer services, the ability to attract and retain skilled personnel and maintenance of a good safety record have also been important factors to compete effectively in the marketplace. Our most significant competitors are Lanxess AG and Israel Chemicals Ltd.

Raw Materials and Significant Supply Contracts

The bromine we use is sourced from two locations: Arkansas and the Dead Sea. Our bromine production operations in Arkansas are supported by an active brine rights leasing program. We estimate that, at current production levels, we will be able to produce bromine in Arkansas for decades. In addition, through our 50% interest in Jordan Bromine Company Limited (“JBC”), a consolidated joint venture with operations in Safi, Jordan, we source bromine from the Dead Sea, which is believed to have indefinite quantities of brine.

Catalysts Segment

Our three main product lines in this segment are (i) Clean Fuels Technologies (“CFT”), which is primarily composed of hydroprocessing catalysts (“HPC”) together with isomerization and akylation catalysts; (ii) fluidized catalytic cracking (“FCC”) catalysts and additives; and (iii) performance catalyst solutions (“PCS”), which is primarily composed of organometallics and curatives.

We offer a wide range of HPC products, which are applied throughout the refining industry. Their application enables the upgrading of oil fractions to clean fuels and other usable oil feedstocks and products by removing sulfur, nitrogen and other impurities from the feedstock. In addition, they improve product properties by adding hydrogen and in some cases improve the performance of downstream catalysts and processes. We continuously seek to add more value to refinery operations by offering HPC products that meet our customers’ requirements for profitability and performance in the very demanding refining market.

We provide our customers with customized FCC catalyst systems. FCC catalysts assist in the high yield cracking of refinery petroleum streams into derivative, higher-value products such as transportation fuels and petrochemical feedstocks like propylene. Our FCC additives are used to reduce emissions of sulfur dioxide and nitrogen oxide in FCC units and to increase liquefied petroleum gas olefins yield, such as propylene, and to boost octane in gasoline. Albemarle offers unique refinery catalysts to crack and treat the lightest to the heaviest feedstocks while meeting refinery yield and product needs.

Within our PCS product line, we manufacture organometallic co-catalysts (e.g., aluminum, magnesium and zinc alkyls) used in the manufacture of alpha-olefins (i.e., hexene, octene, decene), polyolefins (polyethylene and polypropylene) and electronics. Our curatives include a range of curing agents used in polyurethanes, epoxies and other engineered resins.

In 2018, the number of refineries world-wide was approximately 615. Over the long-term, we expect to see some smaller refineries shutting down and being replaced by larger scale and more complex refineries, with growth concentrated in the Middle East and Asia. Oil refining has again increased moderately compared to the previous year. We estimate that there are currently approximately 565 FCC units being operated globally, each of which requires a constant supply of FCC catalysts. In addition, we estimate that there are approximately 3,200 HPC units being operated globally, or a capacity of approximately 46 million barrels per day, each of which typically requires replacement HPC catalysts once every one to four years.

On April 3, 2018, we completed the sale of the polyolefin catalysts and components portion of the PCS business (“Polyolefin Catalysts Divestiture”) to W.R. Grace & Co. for net cash proceeds of \$413.6 million. The transaction included Albemarle’s Process Development Center located in Baton Rouge, Louisiana, and operations at the Yeosu, South Korea site. The sale did not include our organometallics or curatives portion of the PCS business. The Polyolefin Catalysts Divestiture reflects the Company’s commitment to investing in the future growth of its high priority businesses and returning capital to shareholders.

Competition

Our Catalysts segment serves the global market including the Americas, Asia, Europe and the Middle East, each of which is highly competitive. Competition in these markets is driven by a variety of factors. Product performance and quality, price and contract terms, product and process improvements, specialized customer services, the ability to attract and retain skilled personnel, and the maintenance of a good safety record are the primary factors to compete effectively in the catalysts marketplace. In addition, through our research and development programs, we strive to differentiate our business by developing value-added products and products based on proprietary technologies.

Our major competitors in the CFT catalysts market include Criterion Catalysts and Technologies, Advanced Refining Technologies and Haldor Topsoe. Our major competitors in the FCC catalysts market include W.R. Grace & Co., BASF Corporation and China Petrochemical Corporation (Sinopec). In the PCS market, our major competitors include Nouryon, Lanxess AG and Lonza.

Raw Materials and Significant Supply Contracts

The major raw materials we use in our Catalysts operations include sodium silicate, sodium aluminate, kaolin, aluminum, ethylene, alpha-olefins, isobutylene, toluene and rare earths and metals, such as molybdenum, nickel and cobalt, most of which are readily available from numerous independent suppliers and are purchased or provided under contracts at prices we believe are competitive. The cost of raw materials is generally based on market prices, although we may use contracts with price caps or other tools, as appropriate, to mitigate price volatility.

Sales, Marketing and Distribution

We have an international strategic account program that uses cross-functional teams to serve large global customers. This program emphasizes creative strategies to improve and strengthen strategic customer relationships with emphasis on creating value for customers and promoting post-sale service. Complementing this program are regional Albemarle sales personnel around the world who serve numerous additional customers globally. We also utilize commissioned sales representatives and specialists in specific market areas.

Research and Development

We believe that in order to generate revenue growth, maintain our margins and remain competitive, we must continually invest in research and development, product and process improvements and specialized customer services. Our research and development efforts support each of our business segments. The objective of our research and development efforts is to develop innovative chemistries and technologies with applications relevant within targeted key markets through both process and new product development. Through research and development, we continue to seek increased margins by introducing value-added products and proprietary processes and innovative green chemistry technologies. Our green chemistry efforts focus on the development of products in a manner that minimizes waste and the use of raw materials and energy, avoids the use of toxic reagents and solvents and utilizes safe, environmentally friendly manufacturing processes. Green chemistry is encouraged with our researchers through periodic focus group discussions and special rewards and recognition for outstanding new green developments.

Intellectual Property

Our intellectual property, including our patents, licenses and trade names, is an important component of our business. As of December 31, 2018, we owned approximately 2,100 active patents and approximately 600 pending patent applications in key strategic markets worldwide. We also have acquired rights under patents and inventions of others through licenses, and we license certain patents and inventions to third parties.

Regulation

Our business is subject to a broad array of employee health and safety laws and regulations, including those under the Occupational Safety and Health Act (“OSHA”). We also are subject to similar state laws and regulations as well as local laws and regulations for our non-U.S. operations. We devote significant resources and have developed and implemented comprehensive programs to promote the health and safety of our employees and we maintain an active health, safety and environmental program. We finished 2018 with an OSHA occupational injury and illness incident rate of 0.58 for Albemarle employees and nested contractors, compared to 0.63 in 2017.

Our business and our customers are subject to significant requirements under the European Community Regulation for the Registration, Evaluation, Authorization and Restriction of Chemicals (“REACH”). REACH imposes obligations on European Union manufacturers and importers of chemicals and other products into the European Union to compile and file comprehensive reports, including testing data, on each chemical substance, and perform chemical safety assessments.

Additionally, substances of high concern, as defined under REACH, are subject to an authorization process. Authorization may result in restrictions in the use of products by application or even banning the product. REACH regulations impose significant additional responsibilities on chemical producers, importers, downstream users of chemical substances and preparations, and the entire supply chain. Our significant manufacturing presence and sales activities in the European Union require significant compliance costs and may result in increases in the costs of raw materials we purchase and the products we sell. Increases in the costs of our products could result in a decrease in their overall demand; additionally, customers may seek products that are not regulated by REACH, which could also result in a decrease in the demand of certain products subject to the REACH regulations.

In June 2016, modifications to the Toxic Substances Control Act (“TSCA”) in the U.S. were signed into law, requiring chemicals to be assessed against a risk-based safety standard and calling for the elimination of unreasonable risks identified during risk evaluation. Other pending initiatives potentially will require toxicological testing and risk assessments of a wide variety of chemicals, including chemicals used or produced by us. These initiatives include the Voluntary Children's Chemical Evaluation Program, and High Production Volume Chemical Initiative in the U.S., as well as new initiatives in Asia and other regions. These assessments may result in heightened concerns about the chemicals involved and additional requirements being placed on the production, handling, labeling or use of the subject chemicals. Such concerns and additional requirements could also increase the cost incurred by our customers to use our chemical products and otherwise limit the use of these products, which could lead to a decrease in demand for these products.

Historically, there has been scrutiny of certain brominated flame retardants by regulatory authorities, legislative bodies and environmental interest groups in various countries. We manufacture a broad range of brominated flame retardant products, which are used in a variety of applications. Concern about the impact of some of our products on human health or the environment may lead to regulation or reaction in our markets independent of regulation.

Environmental Regulation

We are subject to numerous foreign, federal, state and local environmental laws and regulations, including those governing the discharge of pollutants into the air and water, the management and disposal of hazardous substances and wastes and the cleanup of contaminated properties. Ongoing compliance with such laws and regulations is an important consideration for us. Key aspects of our operations are subject to these laws and regulations. In addition, we incur substantial capital and operating costs in our efforts to comply with them.

We use and generate hazardous substances and wastes in our operations and may become subject to claims for personal injury and/or property damage relating to the release of such substances into the environment. In addition, some of our current properties are, or have been, used for industrial purposes, which could contain currently unknown contamination that could expose us to governmental requirements or claims relating to environmental remediation, personal injury and/or property damage. Liabilities associated with the investigation and cleanup of hazardous substances, as well as personal injury, property damages or natural resource damages arising from the release of, or exposure to, such hazardous substances, may be imposed in many situations without regard to violations of laws or regulations or other fault, and may also be imposed jointly and severally (so that a responsible party may be held liable for more than its share of the losses involved, or even the entire loss). Such liabilities also may be imposed on many different entities with a relationship to the hazardous substances at issue, including, for example, entities that formerly owned or operated the property affected by the hazardous substances and entities that arranged for the disposal of the hazardous substances at the affected property, as well as entities that currently own or operate such property. We are subject to such laws, including the federal Comprehensive Environmental Response, Compensation and Liability Act, commonly known as CERCLA or Superfund, in the U.S., and similar foreign and state laws. We may have liability as a potentially responsible party (“PRP”) with respect to active off-site locations under CERCLA or state equivalents. We have sought to resolve our liability as a PRP at these sites through indemnification by third parties and settlements, which would provide for payment of our allocable share of remediation costs. Because the cleanup costs are estimates and are subject to revision as more information becomes available about the extent of remediation required, and in some cases we have asserted a defense to any liability, our estimates could change. Moreover, liability under CERCLA and equivalent state statutes may be joint and several, which could require us to pay in excess of our pro rata share of remediation costs. Our understanding of the financial strength of other PRPs has been considered, where appropriate, in estimating our liabilities. Accruals for these matters are included in the environmental reserve. Our management is actively involved in evaluating environmental matters and, based on information currently available to us, we have concluded that our outstanding environmental liabilities for unresolved waste sites currently known to us should not have a material effect on our operations.

See “Safety and Environmental Matters” in Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations for further details.

Climate Change

The growing concerns about climate change and the related increasingly stringent regulations may provide us with new or expanded business opportunities. We provide solutions to companies pursuing alternative fuel products and technologies (such as renewable fuels, gas-to-liquids and others), emission control technologies (including mercury emissions), alternative transportation vehicles and energy storage technologies and other similar solutions. As demand for, and legislation mandating or incentivizing the use of, alternative fuel technologies that limit or eliminate greenhouse gas emissions increase, we continue to monitor the market and offer solutions where we have appropriate technology and believe we are well positioned to take advantage of opportunities that may arise from such demand or legislation.

Recent Acquisitions, Joint Ventures and Divestitures

During recent years, we have devoted resources to acquisitions and joint ventures, including the subsequent integration of acquired businesses. These acquisitions and joint ventures have expanded our base business, provided our customers with a wider array of products and presented new alternatives for discovery through additional chemistries. In addition, we have pursued opportunities to divest businesses which do not fit our high priority business growth profile. Following is a summary of our significant acquisitions, joint ventures and divestitures over the last three years.

In December 2018, we entered into a definitive agreement to acquire a 50% interest in Mineral Resources Limited's Wodgina Project, located in the Pilbara region of Western Australia, and form a joint venture with Mineral Resources Limited to own and operate the Wodgina Project to produce spodumene concentrate and battery grade lithium hydroxide, for a purchase price of \$1.15 billion. This transaction is subject to regulatory approvals and other customary closing conditions, and is expected to close in the second half of 2019.

On April 3, 2018, we completed the Polyolefin Catalysts Divestiture to W.R. Grace & Co. for net cash proceeds of approximately \$413.6 million. The transaction includes Albemarle's Product Development Center located in Baton Rouge, Louisiana, and operations at our Yeosu, South Korea site. The sale does not include the organometallics or curatives portion of the PCS business.

On December 31, 2016, we completed the acquisition of the lithium hydroxide and lithium carbonate conversion assets of Jiangxi Jiangli New Materials Science and Technology Co. Ltd. ("Jiangli New Materials") for a purchase price of approximately \$145 million. This includes manufacturing assets and supporting business functions located in both Jiangxi and Sichuan, China focused on the production of battery-grade lithium carbonate and lithium hydroxide. We believe this acquisition will enable us to supply premium lithium salts to an expanded global customer base while solidifying our leading position in the lithium industry.

On December 14, 2016, we completed the sale of the Chemetall Surface Treatment business to BASF SE for net cash proceeds of approximately \$3.1 billion. The Chemetall Surface Treatment business was originally part of our previously reported 2015 acquisition of Rockwood Holdings, Inc. ("Rockwood").

On January 4, 2016, we completed the sale of our metal sulfides business to Treibacher Industrie AG for net proceeds of approximately \$137 million. Included in the transaction were sites in Vienna and Arnoldstein, Austria, and Tribotec's proprietary sulfide synthesis process. On February 1, 2016, we completed the sale of our minerals-based flame retardants and specialty chemicals business to Huber Engineered Materials, a division of J.M. Huber Corporation, for net proceeds of approximately \$187 million. The transaction included Albemarle's Martinswerk GmbH subsidiary and manufacturing facility located in Bergheim, Germany, and Albemarle's 50% ownership interest in Magnifin Magnesiaprodukte GmbH, a joint-venture with Radex Heraklith Industriebeteiligung AG at Breitenau, Austria.

These transactions reflect our commitment to investing in future growth of our high priority businesses, maintaining leverage flexibility and returning capital to our shareholders.

Employees

As of December 31, 2018, we had approximately 5,900 employees, including employees of our consolidated joint ventures, of whom 2,800, or 48%, are employed in the U.S. and Latin America; 1,500, or 25%, are employed in Europe; 1,200, or 20%, are employed in Asia and 400, or 7%, are employed in the Middle East or other areas. Approximately 35% of these employees are represented by unions or works councils. We believe that we generally have a good relationship with our employees, and with those unions and works councils.

Available Information

Our website address is www.albemarle.com. We make available free of charge through our website our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (“Exchange Act”), as well as beneficial ownership reports on Forms 3, 4 and 5 filed pursuant to Section 16 of the Exchange Act, as soon as reasonably practicable after such documents are electronically filed with, or furnished to, the Securities and Exchange Commission (“SEC”). The information on our website is not, and shall not be deemed to be, a part of this report or incorporated into any other filings we make with the SEC. The SEC also maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding SEC registrants, including Albemarle.

Our Corporate Governance Guidelines, Code of Conduct and the charters of the Audit and Finance, Health, Safety and Environment, Executive Compensation, and Nominating and Governance Committees of our Board of Directors are also available on our website and are available in print to any shareholder upon request by writing to Investor Relations, 4250 Congress Street, Suite 900, Charlotte, North Carolina 28209, or by calling (980) 299-5700.

Item 1A. Risk Factors.

You should consider carefully the following risks when reading the information, including the financial information, contained in this Annual Report on Form 10-K.

Risks Related to Our Business

Our substantial international operations subject us to risks of doing business in foreign countries, which could adversely affect our business, financial condition and results of operations.

We conduct a substantial portion of our business outside the U.S., with approximately 74% of our sales to foreign countries. We operate and/or sell our products to customers in approximately 100 countries. We currently have many production facilities, research and development and administrative facilities, as well as sales offices located outside the U.S., as detailed in Item 2. Properties. Accordingly, our business is subject to risks related to the differing legal, political, social and regulatory requirements and economic conditions of many jurisdictions. Risks inherent in international operations include the following:

- fluctuations in foreign currency exchange rates may affect product demand and may adversely affect the profitability in U.S. dollars of products and services we provide in international markets where payment for our products and services is made in the local currency;
- transportation and other shipping costs may increase, or transportation may be inhibited;
- increased cost or decreased availability of raw materials;
- changes in foreign laws and tax rates or U.S. laws and tax rates with respect to foreign income may unexpectedly increase the rate at which our income is taxed, impose new and additional taxes on remittances, repatriation or other payments by subsidiaries, or cause the loss of previously recorded tax benefits;
- foreign countries in which we do business may adopt other restrictions on foreign trade or investment, including currency exchange controls;
- trade sanctions by or against these countries could result in our losing access to customers and suppliers in those countries;
- unexpected adverse changes in foreign laws or regulatory requirements may occur;
- our agreements with counterparties in foreign countries may be difficult for us to enforce and related receivables may be difficult for us to collect;
- compliance with the variety of foreign laws and regulations may be unduly burdensome;
- compliance with anti-bribery and anti-corruption laws (such as the Foreign Corrupt Practices Act) as well as anti-money-laundering laws may be costly;
- unexpected adverse changes in export duties, quotas and tariffs and difficulties in obtaining export licenses may occur;
- general economic conditions in the countries in which we operate could have an adverse effect on our earnings from operations in those countries;
- our foreign operations may experience staffing difficulties and labor disputes;
- termination or substantial modification of international trade agreements may adversely affect our access to raw materials and to markets for our products outside the U.S.;

- foreign governments may nationalize or expropriate private enterprises;
- increased sovereign risk (such as default by or deterioration in the economies and credit worthiness of local governments) may occur; and
- political or economic repercussions from terrorist activities, including the possibility of hyperinflationary conditions and political instability, may occur in certain countries in which we do business.

In addition, certain of our joint ventures operate, and we have ongoing capital projects, in regions of the world such as the Middle East and South America, that are of high risk due to significant civil, political and security instability. Unanticipated events, such as geopolitical changes, could result in a write-down of our investment in the affected joint venture or a delay or cause cancellation of those capital projects, which could negatively impact our future growth and profitability. Our success as a global business will depend, in part, upon our ability to succeed in differing legal, regulatory, economic, social and political conditions by developing, implementing and maintaining policies and strategies that are effective in each location where we and our joint ventures do business.

Furthermore, we are subject to rules and regulations related to anti-bribery and anti-trust prohibitions of the U.S. and other countries, as well as export controls and economic embargoes, violations of which may carry substantial penalties. For example, export control and economic embargo regulations limit the ability of our subsidiaries to market, sell, distribute or otherwise transfer their products or technology to prohibited countries or persons. Failure to comply with these regulations could subject our subsidiaries to fines, enforcement actions and/or have an adverse effect on our reputation and the value of our common stock.

Our inability to secure key raw materials, or to pass through increases in costs and expenses for other raw materials and energy, on a timely basis or at all, could have an adverse effect on the margins of our products and our results of operations.

The long-term profitability of our operations will, in part, depend on our ability to continue to economically obtain resources, including energy and raw materials. For example, our lithium and bromine businesses rely upon our continued ability to produce, or otherwise obtain, lithium and bromine of sufficient quality and in adequate amounts to meet our customers' demand. If we fail to secure and retain the rights to continue to access these key raw materials, we may have to restrict or suspend our operations that rely upon these key resources, which could harm our business, results of operations and financial condition. In addition, in some cases access to these raw materials by us and our competitors is subject to decisions or actions by governmental authorities, which could adversely impact us. Furthermore, other raw material and energy costs account for a significant percentage of our total costs of products sold, even if they can be obtained on commercially reasonable terms. Our raw material and energy costs can be volatile and may increase significantly. Increases are primarily driven by tightening of market conditions and major increases in the pricing of key constituent materials for our products such as crude oil, chlorine and metals (including molybdenum and rare earths which are used in the refinery catalysts business). We generally attempt to pass through changes in the prices of raw materials and energy to our customers, but we may be unable to do so (or may be delayed in doing so). In addition, raising prices we charge to our customers in order to offset increases in the prices we pay for raw materials could cause us to suffer a loss of sales volumes. Our inability to efficiently and effectively pass through price increases, or inventory impacts resulting from price volatility, could adversely affect our margins.

Competition within our industry may place downward pressure on the prices and margins of our products and may adversely affect our businesses and results of operations.

We compete against a number of highly competitive global specialty chemical producers. Competition is based on several key criteria, including product performance and quality, product price, product availability and security of supply, and responsiveness of product development in cooperation with customers and customer service. Some of our competitors are larger than we are and may have greater financial resources. These competitors may also be able to maintain significantly greater operating and financial flexibility. As a result, these competitors may be better able to withstand changes in conditions within our industry. Competitors' pricing decisions could compel us to decrease our prices, which could negatively affect our margins and profitability. Our ability to maintain or increase our profitability is, and will continue to be, dependent upon our ability to offset decreases in the prices and margins of our products by improving production efficiency and volume and other productivity enhancements, shifting to production of higher margin chemical products and improving existing products through innovation and research and development. If we are unable to do so or to otherwise maintain our competitive position, we could lose market share to our competitors.

In addition, Albemarle's brands, product image and trademarks represent the unique product identity of each of our products and are important symbols of the Company's reputation. Accordingly, the performance of our business could be adversely affected by any marketing and promotional materials used by our competitors that make adverse claims, whether with or without merit, against our Company or its products, imply or assert immoral or improper conduct by us, or are otherwise

disparaging of our Company or its products. Further, our own actions could hurt such brands, product image and trademarks if our products underperform or we otherwise draw negative publicity.

Our research and development efforts may not succeed in addressing changes in our customers' needs, and our competitors may develop more effective or successful products.

Our industries and the end markets into which we sell our products experience technological change and product improvement. Manufacturers periodically introduce new products or require new technological capacity to develop customized products. Our future growth depends on our ability to gauge the direction of the commercial and technological progress in all key end markets in which we sell our products and upon our ability to fund and successfully develop, manufacture and market products in such changing end markets. As a result, we must commit substantial resources each year to research and development. There is no assurance that we will be able to continue to identify, develop, market and, in certain cases, secure regulatory approval for, innovative products in a timely manner or at all, as may be required to replace or enhance existing products, and any such inability could have a material adverse effect on our profit margins and our competitive position.

In addition, our customers use our specialty chemicals for a broad range of applications. Changes in our customers' products or processes may enable our customers to reduce consumption of the specialty chemicals that we produce or make our specialty chemicals unnecessary. Customers may also find alternative materials or processes that do not require our products. Should a customer decide to use a different material due to price, performance or other considerations, we may not be able to supply a product that meets the customer's new requirements. Consequently, it is important that we develop new products to replace the sales of products that mature and decline in use. Our business, results of operations, cash flows and margins could be materially adversely affected if we are unable to manage successfully the maturation of our existing products and the introduction of new products.

Despite our efforts, we may not be successful in developing new products and/or technology, either alone or with third parties, or licensing intellectual property rights from third parties on a commercially competitive basis. Our new products may not be accepted by our customers or may fail to receive regulatory approval. Moreover, new products may have lower margins than the products they replace. Furthermore, ongoing investments in research and development for the future do not yield an immediate beneficial impact on our operating results and therefore could result in higher costs without a proportional increase in revenues.

Adverse conditions in the economy, and volatility and disruption of financial markets can negatively impact our customers, suppliers and other business partners and therefore have a material adverse effect on our business and results of operations.

A global, regional or localized economic downturn may reduce customer demand or inhibit our ability to produce our products, negatively impacting our operating results. Our business and operating results have been and will continue to be sensitive to the many challenges that can affect national, regional and global economies, including economic downturns (including credit market tightness, which can impact our liquidity as well as that of our customers, suppliers and other business partners), declining consumer and business confidence, fluctuating commodity prices and volatile exchange rates. Our customers may experience deterioration of their businesses, cash flow shortages and difficulty obtaining financing, leading them to delay or cancel plans to purchase products, and they may not be able to fulfill their obligations in a timely fashion. Further, suppliers and other business partners may experience similar conditions, which could impact their ability to fulfill their obligations to us. Also, it could be difficult to find replacements for business partners without incurring significant delays or cost increases.

Downturns in our customers' industries could adversely affect our sales and profitability.

Downturns in the businesses that use our specialty chemicals may adversely affect our sales. Many of our customers are in industries, including the electronics, building and construction, oilfield and automotive industries, which are cyclical in nature, or which are subject to secular market downturns. Historically, cyclical or secular industry downturns have resulted in diminished demand for our products, excess manufacturing capacity and lower average selling prices, and we may experience similar problems in the future. A decline in our customers' industries may have a material adverse effect on our sales and profitability.

Our results are subject to fluctuation because of irregularities in the demand for our HPC catalysts and certain of our agrichemicals.

Our HPC catalysts are used by petroleum refiners in their processing units to reduce the quantity of sulfur and other impurities in petroleum products. The effectiveness of HPC catalysts diminishes with use, requiring the HPC catalysts to be replaced, on average, once every one to four years. The sales of our HPC catalysts, therefore, are largely dependent on the

useful life cycle of the HPC catalysts in the processing units and may vary materially by quarter. In addition, the timing and profitability of HPC catalysts sales can have a significant impact on revenue and profit in any one quarter. Sales of our agrichemicals are also subject to fluctuation as demand varies depending on climate and other environmental conditions, which may prevent or reduce farming for extended periods. In addition, crop pricing and the timing of when farms alternate from one crop to another crop in a particular year can also alter sales of agrichemicals.

Regulation, or the threat of regulation, of some of our products could have an adverse effect on our sales and profitability.

We manufacture or market a number of products that are or have been the subject of attention by regulatory authorities and environmental interest groups. For example, over the past decade, there has been increasing scrutiny of certain brominated flame retardants by regulatory authorities, legislative bodies and environmental interest groups in various countries. We manufacture a broad range of brominated flame retardant products, which are used in a variety of applications to protect people, property and the environment from injury and damage caused by fire. Concern about the impact of some of our products on human health or the environment may lead to regulation, or reaction in our markets independent of regulation, that could reduce or eliminate markets for such products.

Agencies in the European Union (“E.U.”) continue to evaluate the risks to human health and the environment associated with certain brominated flame retardants such as tetrabromobisphenol A and decabromodiphenylethane, both of which we manufacture. Additional government regulations, including limitations or bans on the use of brominated flame retardants, could result in a decline in our net sales of brominated flame retardants and have an adverse effect on our sales and profitability. In addition, the threat of additional regulation or concern about the impact of brominated flame retardants on human health or the environment could lead to a negative reaction in our markets that could reduce or eliminate our markets for these products, which could have an adverse effect on our sales and profitability.

Our business and our customers are subject to significant requirements under REACH, which imposes obligations on E.U. manufacturers and importers of chemicals and other products into the E.U. to compile and file comprehensive reports, including testing data, on each chemical substance, and perform chemical safety assessments. Additionally, substances of high concern, as defined under REACH, are subject to an authorization process, which may result in restrictions in the use of products by application or even banning the product. REACH regulations impose significant additional burdens on chemical producers, importers, downstream users of chemical substances and preparations, and the entire supply chain. See “Regulation” in Item 1. Business. Our significant manufacturing presence and sales activities in the E.U. requires significant compliance costs and may result in increases in the costs of raw materials we purchase and the products we sell. Increases in the costs of our products could result in a decrease in their overall demand; additionally, customers may seek products that are not regulated by REACH, which could also result in a decrease in the demand of certain products subject to the REACH regulations.

In June 2016, modifications to the TSCA in the U.S. were signed into law, requiring chemicals to be assessed against a risk-based safety standard and for the elimination of unreasonable risks identified during risk evaluation. Other pending initiatives potentially will require toxicological testing and risk assessments of a wide variety of chemicals, including chemicals used or produced by us. These initiatives include the Voluntary Children's Chemical Evaluation Program, and High Production Volume Chemical Initiative in the U.S., as well as new initiatives in Asia and other regions. These assessments may result in heightened concerns about the chemicals involved and additional requirements being placed on the production, handling, labeling or use of the subject chemicals. Such concerns and additional requirements could also increase the cost incurred by our customers to use our chemical products and otherwise limit the use of these products, which could lead to a decrease in demand for these products. Such a decrease in demand would likely have an adverse impact on our business and results of operations.

We could be subject to damages based on claims brought against us by our customers or lose customers as a result of the failure of our products to meet certain quality specifications.

Our products provide important performance attributes to our customers' products. If a product fails to perform in a manner consistent with quality specifications or has a shorter useful life than guaranteed, a customer of ours could seek the replacement of the product or damages for costs incurred as a result of the product failing to perform as guaranteed. These risks apply to our refinery catalysts in particular because, in certain instances, we sell our refinery catalysts under agreements that contain limited performance and life cycle guarantees. Also, because many of our products are integrated into our customers' products, we may be requested to participate in, or fund in whole or in part the costs of, a product recall conducted by a customer. For example, some of our businesses supply products to customers in the automotive industry. In the event one of these customers conducts a product recall that it believes is related to one of our products, we may be asked to participate in, or fund in whole or in part, such a recall.

Our customers often require our subsidiaries to represent that our products conform to certain product specifications provided by our customers. Any failure to comply with such specifications could result in claims or legal action against us.

A successful claim or series of claims against us could have a material adverse effect on our financial condition and results of operations and could result in our loss of one or more customers.

Our business is subject to hazards common to chemical and natural resource extraction businesses, any of which could injure our employees or other persons, damage our facilities or other properties, interrupt our production and adversely affect our reputation and results of operations.

Our business is subject to hazards common to chemical manufacturing, storage, handling and transportation, as well as natural resource extraction, including explosions, fires, severe weather, natural disasters, mechanical failure, unscheduled downtime, transportation interruptions, remediation, chemical spills, discharges or releases of toxic or hazardous substances or gases and other risks. These hazards can cause personal injury and loss of life to our employees and other persons, severe damage to, or destruction of, property and equipment and environmental contamination. In addition, the occurrence of disruptions, shutdowns or other material operating problems at our facilities due to any of these hazards may diminish our ability to meet our output goals. Accordingly, these hazards and their consequences could adversely affect our reputation and have a material adverse effect on our operations as a whole, including our results of operations and cash flows, both during and after the period of operational difficulties.

Our business could be adversely affected by environmental, health and safety laws and regulations.

The nature of our business, including historical operations at our current and former facilities, exposes us to risks of liability under environmental laws and regulations due to the production, storage, use, transportation and sale of materials that can cause contamination or personal injury if released into the environment. In the jurisdictions in which we operate, we are subject to numerous U.S. and non-U.S. national, federal, state and local environmental, health and safety laws and regulations, including those governing the discharge of pollutants into the air and water, the management and disposal of hazardous substances and wastes and the cleanup of contaminated properties. We currently use, and in the past have used, hazardous substances at many of our facilities, and we have in the past been, and may in the future be, subject to claims relating to exposure to hazardous materials. We also have generated, and continue to generate, hazardous wastes at a number of our facilities. Some of our facilities also have lengthy histories of manufacturing or other activities that may have resulted in site contamination. Liabilities associated with the investigation and cleanup of hazardous substances, as well as personal injury, property damages or natural resource damages arising from the release of, or exposure to, such hazardous substances, may be imposed in many situations without regard to violations of laws or regulations or other fault, and may also be imposed jointly and severally (so that a responsible party may be held liable for more than its share of the losses involved, or even the entire loss). Such liabilities may also be imposed on many different entities, including, for example, current and prior property owners or operators, as well as entities that arranged for the disposal of the hazardous substances. Such liabilities may be material and can be difficult to identify or quantify.

Further, some of the raw materials we handle are subject to government regulation. These regulations affect the manufacturing processes, handling, uses and applications of our products. In addition, our production facilities and a number of our distribution centers require numerous operating permits. Due to the nature of these requirements and changes in our operations, our operations may exceed limits under permits or we may not have the proper permits to conduct our operations. Ongoing compliance with such laws, regulations and permits is an important consideration for us and we incur substantial capital and operating costs in our compliance efforts.

Compliance with environmental laws generally increases the costs of manufacturing, registration/approval requirements, transportation and storage of raw materials and finished products, and storage and disposal of wastes, and could have a material adverse effect on our results of operations. We may incur substantial costs, including fines, damages, criminal or civil sanctions and remediation costs, or experience interruptions in our operations, for violations arising under these laws or permit requirements. Additional information may arise in the future concerning the nature or extent of our liability with respect to identified sites, and additional sites may be identified for which we are alleged to be liable, that could cause us to materially increase our environmental accrual or the upper range of the costs we believe we could reasonably incur for such matters. Furthermore, environmental laws are subject to change and have become increasingly stringent in recent years. We expect this trend to continue and to require materially increased capital expenditures and operating and compliance costs.

We may be subject to indemnity claims and liable for other payments relating to properties or businesses we have divested.

In connection with the sale of certain properties and businesses, we have agreed to indemnify the purchasers of such properties for certain types of matters, such as certain breaches of representations and warranties, taxes and certain environmental matters. With respect to environmental matters, the discovery of contamination arising from properties that we have divested may expose us to indemnity obligations under the sale agreements with the buyers of such properties or cleanup obligations and other damages under applicable environmental laws. We may not have insurance coverage for such indemnity

obligations or cash flows to make such indemnity or other payments. Further, we cannot predict the nature of and the amount of any indemnity or other obligations we may have to the applicable purchaser. Such payments may be costly and may adversely affect our financial condition and results of operations.

At several of our properties where hazardous substances are known to exist (including some sites where hazardous substances are being investigated or remediated), we believe we are entitled to contractual indemnification from one or more former owners or operators; however, in the event we make a claim, the indemnifier may disagree with us regarding, or not have the financial capacity to fulfill, its indemnity obligation. If our contractual indemnity is not upheld or effective, our accrual and/or our costs for the investigation and cleanup of hazardous substances could increase materially.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act and similar foreign anti-corruption laws.

The U.S. Foreign Corrupt Practices Act (the “FCPA”) and similar foreign anti-corruption laws in other jurisdictions around the world generally prohibit companies and their intermediaries from making improper payments or providing anything of value to non-U.S. government officials for the purpose of obtaining or retaining business or securing an unfair advantage. We operate in some parts of the world that have experienced governmental corruption to some degree, and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. Although we have established formal policies or procedures for prohibiting or monitoring this conduct, we cannot assure you that our employees or other agents will not engage in such conduct for which we might be held responsible. In the event that we believe or have reason to believe that our employees, agents or distributors have or may have violated applicable anti-corruption laws, including the FCPA, we may be required to investigate or have outside counsel investigate the relevant facts and circumstances, which can be expensive and require significant time and attention from senior management. If we are found to be liable for violations of the FCPA or other applicable anti-corruption laws (either due to our own acts or our inadvertence, or due to the acts or inadvertence of others, including employees of our joint ventures), we could suffer from civil and criminal penalties or other sanctions, which could have a material adverse effect on our business and results of operations.

As previously reported in 2018, following receipt of information regarding potential improper payments being made by third party sales representatives of our Refining Solutions business, within our Catalysts segment, we promptly retained outside counsel and forensic accountants to investigate potential violations of the Company’s Code of Conduct, the FCPA, and other potentially applicable laws. Based on this internal investigation, we have voluntarily self-reported potential issues relating to the use of third party sales representatives in our Refining Solutions business, within our Catalysts segment, to the U.S. Department of Justice (“DOJ”), the SEC, and Dutch Public Prosecutor (“DPP”), and are cooperating with the DOJ, the SEC, and the DPP in their review of these matters. In connection with our internal investigation, we have implemented, and are continuing to implement, appropriate remedial measures.

At this time, we are unable to predict the duration, scope, result or related costs associated with the investigations by the DOJ, the SEC, or DPP. We also are unable to predict what, if any, action may be taken by the DOJ, the SEC, or DPP, or what penalties or remedial actions they may seek. Any determination that our operations or activities are not in compliance with existing laws or regulations could result in the imposition of fines, penalties, disgorgement, equitable relief, or other losses.

We are subject to extensive foreign government regulation that can negatively impact our business.

We are subject to government regulation in non-U.S. jurisdictions in which we conduct our business. The requirements for compliance with these laws and regulations may be unclear or indeterminate and may involve significant costs, including additional capital expenditures or increased operating expenses, or require changes in business practice, in each case that could result in reduced profitability for our business. Our having to comply with these foreign laws or regulations may provide a competitive advantage to competitors who are not subject to comparable restrictions or prevent us from taking advantage of growth opportunities. Determination of noncompliance can result in penalties or sanctions that could also adversely impact our operating results and financial condition.

Our inability to protect our intellectual property rights could have a material adverse effect on our business, financial condition and results of operations.

Protection of our proprietary processes, methods and compounds and other technology is important to our business. We generally rely on patent, trade secret, trademark and copyright laws of the U.S. and certain other countries in which our products are produced or sold, as well as licenses and nondisclosure and confidentiality agreements, to protect our intellectual property rights. The patent, trade secret, trademark and copyright laws of some countries, or their enforcement, may not protect our intellectual property rights to the same extent as the laws of the U.S. Failure to protect our intellectual property rights may result in the loss of valuable proprietary technologies. Additionally, some of our technologies are not covered by any patent or

patent application and, even if a patent application has been filed, it may not result in an issued patent. If patents are issued to us, those patents may not provide meaningful protection against competitors or against competitive technologies. We cannot assure you that our intellectual property rights will not be challenged, invalidated, circumvented or rendered unenforceable.

We also conduct research and development activities with third parties and license certain intellectual property rights from third parties and we plan to continue to do so in the future. We endeavor to license or otherwise obtain intellectual property rights on terms favorable to us. However, we may not be able to license or otherwise obtain intellectual property rights on such terms or at all. Our inability to license or otherwise obtain such intellectual property rights could have a material adverse effect on our ability to create a competitive advantage and create innovative solutions for our customers, which will adversely affect our net sales and our relationships with our customers.

We could face patent infringement claims from our competitors or others alleging that our processes or products infringe on their proprietary technologies. If we are found to be infringing on the proprietary technology of others, we may be liable for damages and we may be required to change our processes, redesign our products partially or completely, pay to use the technology of others, stop using certain technologies or stop producing the infringing product entirely. Even if we ultimately prevail in an infringement suit, the existence of the suit could prompt customers to switch to products that are not the subject of infringement suits. We may not prevail in intellectual property litigation and such litigation may result in significant legal costs or otherwise impede our ability to produce and distribute key products.

We also rely upon unpatented proprietary manufacturing expertise, continuing technological innovation and other trade secrets to develop and maintain our competitive position. While we generally enter into confidentiality agreements with our employees and third parties to protect our intellectual property, we cannot assure you that our confidentiality agreements will not be breached, that they will provide meaningful protection for our trade secrets and proprietary manufacturing expertise or that adequate remedies will be available in the event of an unauthorized use or disclosure of our trade secrets or manufacturing expertise. In addition, our trade secrets and know-how may be improperly obtained by other means, such as a breach of our information technologies security systems or direct theft.

Our inability to acquire or develop additional reserves that are economically viable could have a material adverse effect on our future profitability.

Our lithium reserves will, without more, decline as we continue to extract these raw materials. Accordingly, our future profitability depends upon our ability to acquire additional lithium reserves that are economically viable to replace the reserves we will extract. Exploration and development of lithium resources are highly speculative in nature. Exploration projects involve many risks, require substantial expenditures and may not result in the discovery of sufficient additional resources that can be extracted profitably. Once a site with potential resources is discovered, it may take several years of development until production is possible, during which time the economic viability of production may change. Substantial expenditures are required to establish recoverable proven and probable reserves and to construct extraction and production facilities. As a result, there is no assurance that current or future exploration programs will be successful and there is a risk that depletion of reserves will not be offset by discoveries or acquisitions.

We utilize feasibility studies to estimate the anticipated economic returns of an exploration project. The actual project profitability or economic feasibility may differ from such estimates as a result of factors such as, but not limited to, changes in volumes, grades and characteristics of resources to be mined and processed; changes in labor costs or availability of adequate and skilled labor force; the quality of the data on which engineering assumptions were made; adverse geotechnical conditions; availability, supply and cost of water and power; fluctuations in inflation and currency exchange rates; delays in obtaining environmental or other government permits or approvals or changes in the laws and regulations related to our operations or project development; changes in royalty agreements, laws and/or regulations around royalties and other taxes; and weather or severe climate impacts.

For our existing operations, we utilize geological and metallurgical assumptions, financial projections and price estimates. These estimates are periodically updated to reflect changes in our operations, including modifications to our proven and probable reserves and mineralized material, revisions to environmental obligations, changes in legislation and/or social, political or economic environment, and other significant events associated with natural resource extraction operations. There are numerous uncertainties inherent in estimating quantities and qualities of lithium and costs to extract recoverable reserves, including many factors beyond our control, that could cause results to differ materially from expected financial and operating results or result in future impairment charges.

There is risk to the growth of lithium markets.

Our lithium business is significantly dependent on the development and adoption of new applications for lithium power and the growth in demand for plug-in hybrid electric vehicles and battery electric vehicles. To the extent that such development, adoption and growth do not occur in the volume and/or manner that we contemplate, the long-term growth in the markets for lithium products may be adversely affected, which would have a material adverse effect on our business, financial condition and operating results.

Our business and operations could suffer in the event of cybersecurity breaches, information technology system failures, or network disruptions.

Attempts to gain unauthorized access to our information technology systems become more sophisticated over time. These attempts, which might be related to industrial or other espionage, include covertly introducing malware to our computers and networks and impersonating authorized users, among others. We seek to detect and investigate all security incidents and to prevent their recurrence, but in some cases we might be unaware of an incident or its magnitude and effects. The theft, unauthorized use or publication of our intellectual property and/or confidential business information could harm our competitive position, reduce the value of our investment in research and development and other strategic initiatives or otherwise adversely affect our business. To the extent that any cybersecurity breach results in inappropriate disclosure of our customers' or licensees' confidential information, we may incur liability as a result. The devotion of additional resources to the security of our information technology systems in the future could significantly increase the cost of doing business or otherwise adversely impact our financial results.

In addition, risks associated with information technology systems failures or network disruptions, including risks associated with upgrading our systems or in successfully integrating information technology and other systems in connection with the integration of businesses we acquire, could disrupt our operations by impeding our processing of transactions, financial reporting and our ability to protect our customer or company information, which could adversely affect our business and results of operations.

The occurrence or threat of extraordinary events, including domestic and international terrorist attacks, may disrupt our operations and decrease demand for our products.

Chemical-related assets may be at greater risk of future terrorist attacks than other possible targets in the U.S. and around the world. As a result, we are subject to existing federal rules and regulations (and may be subject to additional legislation or regulations in the future) that impose site security requirements on chemical manufacturing facilities, which increase our overhead expenses.

We are also subject to federal regulations that have heightened security requirements for the transportation of hazardous chemicals in the U.S. We believe we have met these requirements but additional federal and local regulations that limit the distribution of hazardous materials are being considered. We ship and receive materials that are classified as hazardous. Bans on movement of hazardous materials through cities, like Washington, D.C., could affect the efficiency of our logistical operations. Broader restrictions on hazardous material movements could lead to additional investment to produce hazardous raw materials and change where and what products we manufacture.

The Chemical Facility Anti-Terrorism Standards program ("CFATS Program"), which is administered by the Department of Homeland Security ("DHS"), identifies and regulates chemical facilities to ensure that they have security measures in place to reduce the risks associated with potential terrorist attacks on chemical plants located in the U.S. In December 2014, the Protecting and Securing Chemical Facilities from Terrorist Attacks Act of 2014 ("CFATS Act") was enacted. The CFATS Act reauthorizes the CFATS Program for four years. DHS has released an interim final rule under the CFATS Program that imposes comprehensive federal security regulations for high-risk chemical facilities in possession of specified quantities of chemicals of interest. This rule establishes risk-based performance standards for the security of the U.S.'s chemical facilities. It requires covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans, which include measures that satisfy the identified risk-based performance standards. We cannot determine with certainty the costs associated with any security measures that DHS may require.

The occurrence of extraordinary events, including future terrorist attacks and the outbreak or escalation of hostilities, cannot be predicted, and their occurrence can be expected to continue to negatively affect the economy in general, and the markets for our products in particular. The resulting damage from a direct attack on our assets, or assets used by us, could include loss of life and property damage. In addition, available insurance coverage may not be sufficient to cover all of the damage incurred or, if available, may be prohibitively expensive.

Natural disasters and weather-related matters could impact our results of operations.

Historically, major hurricanes have caused significant disruption to the operations on the U.S. Gulf Coast for many of our customers and our suppliers of certain raw materials, which had an adverse impact on volume and cost for some of our products. Our operations in Chile could be subject to significant rain events and earthquakes. If similar weather-related matters or other natural disasters occur in the future, they could negatively affect the results of operations at our sites in the affected regions as well as have adverse impacts on the global economy.

Our insurance may not fully cover all potential exposures.

We maintain property, business interruption, casualty, and other insurance, but such insurance may not cover all risks associated with the hazards of our business and is subject to limitations, including deductibles and coverage limits. We may incur losses beyond the limits, or outside the coverage, of our insurance policies, including liabilities for environmental remediation. In addition, from time to time, various types of insurance for companies in the specialty chemical industry have not been available on commercially acceptable terms or, in some cases, have not been available at all. We are potentially at additional risk if one or more of our insurance carriers fail. Additionally, severe disruptions in the domestic and global financial markets could adversely impact the ratings and survival of some insurers. Future downgrades in the ratings of enough insurers could adversely impact both the availability of appropriate insurance coverage and its cost. In the future, we may not be able to obtain coverage at current levels, if at all, and our premiums may increase significantly on coverage that we maintain.

We may be exposed to certain regulatory and financial risks related to climate change.

Growing concerns about climate change may result in the imposition of additional regulations or restrictions to which we may become subject. Climate changes include changes in rainfall and in storm patterns and intensities, water shortages, significantly changing sea levels and increasing atmospheric and water temperatures, among others. For example, there have been concerns regarding the declining water level of the Dead Sea, from which our joint venture, JBC, produces bromine. A number of governments or governmental bodies have introduced or are contemplating regulatory changes in response to climate change, including regulating greenhouse gas emissions. Potentially, additional U.S. federal regulation will be forthcoming with respect to greenhouse gas emissions (including carbon dioxide) and/or “cap and trade” legislation that could impact our operations. In addition, we have operations in the E.U., Brazil, China, Japan, Jordan, Saudi Arabia, Singapore and the United Arab Emirates, which have implemented measures to achieve objectives under the Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change (“UNFCCC”), which set binding targets for reducing greenhouse gas emissions.

The outcome of new legislation or regulation in the U.S. and other jurisdictions in which we operate may result in new or additional requirements, additional charges to fund energy efficiency activities, and fees or restrictions on certain activities. While certain climate change initiatives may result in new business opportunities for us in the area of alternative fuel technologies and emissions control, compliance with these initiatives may also result in additional costs to us, including, among other things, increased production costs, additional taxes, reduced emission allowances or additional restrictions on production or operations. Any adopted future climate change regulations could also negatively impact our ability to compete with companies situated in areas not subject to such limitations. Even without such regulation, increased public awareness and adverse publicity about potential impacts on climate change emanating from us or our industry could harm us. We may not be able to recover the cost of compliance with new or more stringent laws and regulations, which could adversely affect our business and negatively impact our growth. Furthermore, the potential impact of climate change and related regulation on our customers is highly uncertain and there can be no assurance that it will not have an adverse effect on our financial condition and results of operations.

Economic conditions and regulatory changes relating to the United Kingdom’s withdrawal from the European Union could adversely impact our business.

Following a referendum in 2016, voters in the United Kingdom (“U.K.”) approved that country’s exit from the E.U., a process often referred to as “Brexit.” Subsequently, in March 2017, the U.K. invoked Article 50 of the Lisbon Treaty, which provides a two-year time period through March 2019 for the U.K. and the remaining E.U. countries to negotiate a withdrawal agreement. The future effects of Brexit will depend on any agreements the U.K. makes to retain access to the E.U. or other markets either during a transitional period or more permanently. Given the lack of comparable precedent and the uncertainty around the terms upon which the U.K. will leave the E.U., it is unclear what financial, trade and legal implications Brexit would have and how such withdrawal would affect our Company. We derive a significant portion of our revenues from sales outside the U.S., including 16% from E.U. countries. The consequences of Brexit, together with what may be protracted negotiations around the terms of Brexit (including the possibility of a so-called “Hard Brexit,” where no formal agreement is made between the E.U. and U.K. prior to the U.K.’s exit from the E.U.), could introduce significant uncertainties into global financial markets,

including volatility in foreign currencies, and adversely impact the markets in which we and our customers operate. Although we are not experiencing any immediate adverse impact on our financial condition as a result of Brexit, adverse consequences such as deterioration in economic conditions, volatility in currency exchange rates or adverse changes in regulation could have a negative impact on our future operations, operating results and financial condition. All of these potential consequences could be further magnified if additional countries were to exit the E.U.

If we are unable to retain key personnel or attract new skilled personnel, it could have an adverse effect on our business.

Our success depends on our ability to attract and retain key personnel, including our management team. In light of the specialized and technical nature of our business, our performance is dependent on the continued service of, and on our ability to attract and retain, qualified management, scientific, technical, marketing and support personnel. Competition for such personnel is intense, and we may be unable to continue to attract or retain such personnel. In addition, because of our reliance on our senior management team, the unanticipated departure of any key member of our management team could have an adverse effect on our business. Our future success depends, in part, on our ability to identify and develop or recruit talent to succeed our senior management and other key positions throughout the organization. If we fail to identify and develop or recruit successors, we are at risk of being harmed by the departures of these key employees. Effective succession planning is also important to our long-term success. Failure to ensure effective transfer of knowledge and smooth transitions involving key employees could hinder our strategic planning and execution.

Some of our employees are unionized, represented by works councils or are employed subject to local laws that are less favorable to employers than the laws of the U.S.

As of December 31, 2018, we had approximately 5,900 employees, including employees of our consolidated joint ventures. Approximately 35% of these employees are represented by unions or works councils. In addition, a large number of our employees are employed in countries in which employment laws provide greater bargaining or other rights to employees than the laws of the U.S. Such employment rights require us to work collaboratively with the legal representatives of those employees to effect any changes to labor arrangements. For example, most of our employees in Europe are represented by works councils that must approve any changes in conditions of employment, including salaries and benefits and staff changes, and may impede efforts to restructure our workforce. Although we believe that we have a good working relationship with our employees, a strike, work stoppage, slowdown or significant dispute with our employees could result in a significant disruption of our operations or higher labor costs.

Our joint ventures may not operate according to their business plans if our partners fail to fulfill their obligations, which may adversely affect our results of operations and may force us to dedicate additional resources to these joint ventures.

We currently participate in a number of joint ventures and may enter into additional joint ventures in the future. The nature of a joint venture requires us to share control with unaffiliated third parties. If our joint venture partners do not fulfill their obligations, the affected joint venture may not be able to operate according to its business plan. In that case, our results of operations may be adversely affected and we may be required to materially change the level of our commitment to the joint venture. Also, differences in views among joint venture participants may result in delayed decisions or failures to agree on major issues. If these differences cause the joint ventures to deviate from their business plans, our results of operations could be adversely affected.

Risks Related to Our Financial Condition

Our required capital expenditures can be complex, may experience delays or other difficulties, and the costs may exceed our estimates.

Our capital expenditures generally consist of expenditures to maintain and improve existing equipment, facilities and properties, and substantial investments in new or expanded equipment, facilities and properties. Execution of these capital expenditures can be complex, and commencement of production requires start-up, commission and certification of product quality by our customers, which may impact the expected output and timing of sales of product from such facilities. Construction of large chemical operations is subject to numerous risks and uncertainties, including, among others, the ability to complete a project on a timely basis and in accordance with the estimated budget for such project and our ability to estimate future demand for our products. In addition, our returns on these capital expenditures may not meet our expectations.

Future capital expenditures may be significantly higher, depending on the investment requirements of each of our business lines, and may also vary substantially if we are required to undertake actions to compete with new technologies in our industry. We may not have the capital necessary to undertake these capital investments. If we are unable to do so, we may not be able to effectively compete in some of our markets.

We will need a significant amount of cash to service our indebtedness and our ability to generate cash depends on many factors beyond our control.

Our ability to generate sufficient cash flow from operations or use existing cash balances to make scheduled payments on our debt depends on a range of economic, competitive and business factors, many of which are outside our control. Our business may not generate sufficient cash flow from operations to service our debt obligations. If we are unable to service our debt obligations, we may need to refinance all or a portion of our indebtedness on or before maturity, reduce or delay capital expenditures, sell assets or raise additional equity. We may not be able to refinance any of our indebtedness, sell assets or raise additional equity on commercially reasonable terms or at all, which could cause us to default on our obligations and impair our liquidity. Our inability to generate sufficient cash flow or use existing cash balances to satisfy our debt obligations, or to refinance our obligations on commercially reasonable terms, could have a material adverse effect on our business and financial condition.

Restrictive covenants in our debt instruments may adversely affect our business.

Our senior credit facilities and the indentures governing our senior notes contain select restrictive covenants. These covenants provide constraints on our financial flexibility. The failure to comply with these or other covenants governing other indebtedness, including indebtedness incurred in the future, could result in an event of default, which, if not cured or waived, could have a material adverse effect on our business, financial condition and results of operations, including cross-defaults to other debt facilities. See “Financial Condition and Liquidity—Long-Term Debt” in Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

Changes in credit ratings issued by nationally recognized statistical rating organizations could adversely affect our cost of financing, the market price of our securities and our debt service obligations.

Credit rating agencies rate our debt securities on factors that include our operating results, actions that we take, their view of the general outlook for our industry and their view of the general outlook for the economy. Actions taken by the rating agencies can include maintaining, upgrading or downgrading the current rating or placing us on a watch list for possible future downgrades. Downgrading the credit rating of our debt securities or placing us on a watch list for possible future downgrades would likely increase our cost of future financing, limit our access to the capital markets and have an adverse effect on the market price of our securities.

Borrowings under a portion of our debt facilities bear interest at floating rates, and are subject to adjustment based on the ratings of our senior unsecured long-term debt. The downgrading of any of our ratings or an increase in any of the benchmark interest rates would result in an increase of the interest expense on our variable rate borrowings.

We are exposed to fluctuations in currency exchange rates, which may adversely affect our operating results and net income.

We conduct our business and incur costs in the local currency of most of the countries in which we operate. Changes in exchange rates between foreign currencies and the U.S. Dollar will affect the recorded levels of our assets, liabilities, net sales, cost of goods sold and operating margins and could result in exchange losses. The primary currencies to which we have exposure are the E.U. Euro, Japanese Yen, Chinese Renminbi, South Korean Won, Australian Dollar, Chilean Peso and Taiwan Dollar. Exchange rates between these currencies and the U.S. Dollar in recent years have fluctuated significantly and may do so in the future. With respect to our potential exposure to foreign currency fluctuations and devaluations, for the year ended December 31, 2018, approximately 32% of our net sales were denominated in currencies other than the U.S. Dollar. Significant changes in these foreign currencies relative to the U.S. Dollar could also have an adverse effect on our ability to meet interest and principal payments on any foreign currency-denominated debt outstanding. In addition to currency translation risks, we incur currency transaction risks whenever one of our operating subsidiaries or joint ventures enters into either a purchase or a sales transaction using a different currency from its functional currency. Our operating results and net income may be affected by any volatility in currency exchange rates and our ability to manage effectively our currency transaction and translation risks.

Changes in, or the interpretation of, tax legislation or rates throughout the world could materially impact our results.

Our effective tax rate and related tax balance sheet attributes could be impacted by changes in tax legislation throughout the world. Currently, the majority of our net sales are generated from customers located outside the U.S., and a substantial portion of our assets and employees are located outside of the U.S.

We have not accrued income taxes or foreign withholding taxes on undistributed earnings for most non-U.S. subsidiaries, because those earnings are intended to be indefinitely reinvested in the operations of those subsidiaries. Certain tax proposals

with respect to such earnings could substantially increase our tax expense, which would substantially reduce our income and have a material adverse effect on our results of operations and cash flows from operating activities.

Our future effective tax rates could be affected by changes in the mix of earnings in countries with differing statutory tax rates, expirations of tax holidays or rulings, changes in the assessment regarding the realization of the valuation of deferred tax assets, or changes in tax laws and regulations or their interpretation. Recent developments, including the European Commission's investigations on illegal state aid, the Organisation for Economic Co-operation and Development ("OECD") project on Base Erosion and Profit Shifting and the enacted U.S. tax reform legislation commonly referred to as the U.S. Tax Cuts and Jobs Act ("TCJA") during the fourth quarter of 2017 may result in changes to long-standing tax principles, which could adversely affect our effective tax rates or result in higher cash tax liabilities.

We are subject to the regular examination of our income tax returns by various tax authorities. Examinations in material jurisdictions or changes in laws, rules, regulations or interpretations by local taxing authorities could result in impacts to tax years open under statute or to foreign operating structures currently in place. We regularly assess the likelihood of adverse outcomes resulting from these examinations or changes in laws, rules, regulations or interpretations to determine the adequacy of our provision for taxes. It is possible the outcomes from these examinations will have a material adverse effect on our financial condition and operating results.

We may be subject to increased tax exposure resulting from Rockwood pre-acquisition periods.

Under the terms of certain purchase agreements, third party sellers have agreed to substantially indemnify us for tax liabilities pertaining to Rockwood's periods prior to its acquisition by us. These indemnity obligations will continue generally until the applicable statutes of limitations expire. To the extent that such companies fail to indemnify or satisfy their obligations, or if any amount is not covered by the terms of the indemnity, our earnings could be negatively impacted in future periods through increased tax expense.

Future events may impact our deferred tax asset position and U.S. deferred federal income taxes on undistributed earnings of international affiliates that are considered to be indefinitely reinvested.

We evaluate our ability to utilize deferred tax assets and our need for valuation allowances based on available evidence. This process involves significant management judgment about assumptions that are subject to change from period to period based on changes in tax laws or variances between future projected operating performance and actual results. We are required to establish a valuation allowance for deferred tax assets if we determine, based on available evidence at the time the determination is made, that it is more likely than not that some portion or all of the deferred tax assets will not be utilized. In making this determination, we evaluate all positive and negative evidence as of the end of each reporting period. Future adjustments (either increases or decreases), to the deferred tax asset valuation allowance are determined based upon changes in the expected realization of the net deferred tax assets. The utilization of our deferred tax assets ultimately depends on the existence of sufficient taxable income in either the carry-back or carry-forward periods under the applicable tax law. Due to significant estimates used to establish the valuation allowance and the potential for changes in facts and circumstances, it is reasonably possible that we will be required to record adjustments to the valuation allowance in future reporting periods. Changes to the valuation allowance or the amount of deferred tax liabilities could have a materially adverse effect on our business, financial condition and results of operations. Further, should we change our assertion regarding the permanent reinvestment of the undistributed earnings in foreign operations, a deferred tax liability may need to be established.

Our business and financial results may be adversely affected by various legal and regulatory proceedings.

We are involved from time to time in legal and regulatory proceedings, which may be material in the future. The outcome of proceedings, lawsuits and claims may differ from our expectations, leading us to change estimates of liabilities and related insurance receivables.

Legal and regulatory proceedings, whether with or without merit, and associated internal investigations, may be time-consuming and expensive to prosecute, defend or conduct, may divert management's attention and other resources, inhibit our ability to sell our products, result in adverse judgments for damages, injunctive relief, penalties and fines, and otherwise negatively affect our business.

Because a significant portion of our operations is conducted through our subsidiaries and joint ventures, our ability to service our debt may be dependent on our receipt of distributions or other payments from our subsidiaries and joint ventures.

A significant portion of our operations is conducted through our subsidiaries and joint ventures. As a result, our ability to service our debt may be partially dependent on the earnings of our subsidiaries and joint ventures and the payment of those

earnings to us in the form of dividends, loans or advances and through repayment of loans or advances from us. Payments to us by our subsidiaries and joint ventures are contingent upon our subsidiaries' or joint ventures' earnings and other business considerations and may be subject to statutory or contractual restrictions. In addition, there may be significant tax and other legal restrictions on the ability of our non-U.S. subsidiaries or joint ventures to remit money to us.

Although our pension plans currently meet minimum funding requirements, events could occur that would require us to make significant contributions to the plans and reduce the cash available for our business.

We have several defined benefit pension plans around the world, including in the U.S., U.K., Germany, Belgium and Japan. We are required to make cash contributions to our pension plans to the extent necessary to comply with minimum funding requirements imposed by the various countries' benefit and tax laws. The amount of any such required contributions will be determined annually based on an actuarial valuation of the plans as performed by the plans' actuaries.

In previous years, we have made voluntary contributions to our U.S. qualified defined benefit pension plans. We anticipate approximately \$7.0 million of required cash contributions during 2019 for our defined benefit pension plans. Additional voluntary pension contributions in and after 2019 may vary depending on factors such as asset returns, interest rates, and legislative changes. The amounts we may elect or be required to contribute to our pension plans in the future may increase significantly. These contributions could be substantial and would reduce the cash available for our business.

Further, an economic downturn or recession or market disruption in the capital and credit markets may adversely impact the value of our pension plan assets, our results of operations, our statement of changes in stockholders' equity and our liquidity. Our funding obligations could change significantly based on the investment performance of the pension plan assets and changes in actuarial assumptions for local statutory funding valuations. Any deterioration of the capital markets or returns available in such markets may negatively impact our pension plan assets and increase our funding obligations for one or more of these plans and negatively impact our liquidity. We cannot predict the impact of this or any further market disruption on our pension funding obligations.

We may not be able to consummate future acquisitions or integrate acquisitions into our business, which could result in unanticipated expenses and losses.

We believe that our customers are increasingly looking for strong, long-term relationships with a few key suppliers that help them improve product performance, reduce costs, and support new product development. To satisfy these growing customer requirements, our competitors have been consolidating within product lines through mergers and acquisitions.

As part of our business growth strategy, we have acquired businesses and entered into joint ventures in the past and intend to pursue acquisitions and joint venture opportunities in the future. Our ability to implement this component of our growth strategy will be limited by our ability to identify appropriate acquisition or joint venture candidates and our financial resources, including available cash and borrowing capacity. The expense incurred in consummating acquisitions or entering into joint ventures, the time it takes to integrate an acquisition or our failure to integrate businesses successfully, could result in unanticipated expenses and losses. Furthermore, we may not be able to realize any of the anticipated benefits from acquisitions or joint ventures.

The process of integrating acquired operations into our existing operations may result in unforeseen operating difficulties and may require significant financial resources that would otherwise be available for the ongoing development or expansion of existing operations. Some of the risks associated with the integration of acquisitions include:

- potential disruption of our ongoing business and distraction of management;
- unforeseen claims and liabilities, including unexpected environmental exposures;
- unforeseen adjustments, charges and write-offs;
- problems enforcing the indemnification obligations of sellers of businesses or joint venture partners for claims and liabilities;
- unexpected losses of customers of, or suppliers to, the acquired business;
- difficulty in conforming the acquired businesses' standards, processes, procedures and controls with our operations;
- in the case of foreign acquisitions, the need to integrate operations across different cultures and languages and to address the particular economic, currency, political and regulatory risks associated with specific countries;
- variability in financial information arising from the implementation of purchase price accounting;
- inability to coordinate new product and process development;

- loss of senior managers and other critical personnel and problems with new labor unions and cultural challenges associated with integrating employees from the acquired company into our organization; and
- challenges arising from the increased scope, geographic diversity and complexity of our operations.

We may continue to expand our business through acquisitions and we may incur additional indebtedness, including indebtedness related to acquisitions.

We have historically expanded our business primarily through acquisitions. A part of our business strategy is to continue to grow through acquisitions that complement our existing technologies and accelerate our growth. Our credit facilities have limited financial maintenance covenants. In addition, the indenture and other agreements governing our senior notes do not limit our ability to incur additional indebtedness in connection with acquisitions or otherwise. As a result, we may incur substantial additional indebtedness in connection with acquisitions.

Any such additional indebtedness and the related debt service obligations could have important consequences and risks for us, including:

- reducing flexibility in planning for, or reacting to, changes in our businesses, the competitive environment and the industries in which we operate, and to technological and other changes;
- lowering credit ratings;
- reducing access to capital and increasing borrowing costs generally or for any additional indebtedness to finance future operating and capital expenses and for general corporate purposes;
- reducing funds available for operations, capital expenditures, share repurchases, dividends and other activities; and
- creating competitive disadvantages relative to other companies with lower debt levels.

If our goodwill, intangible assets or long-lived assets become impaired, we may be required to record a significant charge to earnings.

Under U.S. Generally Accepted Accounting Principles (“GAAP”), we review our intangible assets and long-lived assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Goodwill is tested for impairment on October 31 of each year, or more frequently if required. Factors that may be considered a change in circumstances, indicating that the carrying value of our goodwill, intangible assets or long-lived assets may not be recoverable, include, but are not limited to, a decline in our stock price and market capitalization, reduced future cash flow estimates, and slower growth rates in our industry. We may be required to record a significant charge in our financial statements during the period in which any impairment of our goodwill, intangible assets or long-lived assets is determined, negatively impacting our results of operations and financial condition.

Item 1B. Unresolved Staff Comments.

NONE

Item 2. Properties.

We operate globally, with our principal executive offices located in Charlotte, NC, our corporate office located in Baton Rouge, LA and regional shared services offices located in Budapest, Hungary and Dalian, China. All of these properties are leased. We and our affiliates also operate regional sales and administrative offices in various locations throughout the world, which are generally leased.

We believe that our production facilities, research and development facilities, and sales and administrative offices are generally well maintained, effectively used and are adequate to operate our business. During 2018, the Company’s manufacturing plants operated at approximately 78% capacity, in the aggregate.

Set forth below is information regarding our significant production facilities operated by us and our affiliates:

<u>Location</u>	<u>Business Segment</u>	<u>Principal Use</u>	<u>Owned/Leased</u>
Amsterdam, the Netherlands	Catalysts	Production of refinery catalysts, research and product development activities	Owned
Baton Rouge, Louisiana	Bromine Specialties	Research and product development activities, and production of flame retardants	Leased

Location	Business Segment	Principal Use	Owned/Leased
Bitterfeld, Germany	Catalysts	Refinery catalyst regeneration, rejuvenation, and sulfiding	Owned by Eurecat S.A., a joint venture owned 50% by each of Axens Group and us
Greenbushes, Australia	Lithium	Production of lithium spodumene minerals and lithium concentrate	Owned by Windfield Holdings Pty Ltd, a joint venture in which we own 49%, and Sichuan Tianqi Lithium Industries Inc. which owns the remaining interest
Jubail, Saudi Arabia	Catalysts	Manufacturing and marketing of organometallics	Owned by Saudi Organometallic Chemicals Company LLC, a joint venture owned 50% by each of Saudi Specialty Chemicals Company (a SABIC affiliate) and us
Kings Mountain, North Carolina	Lithium	Production of technical and battery grade lithium hydroxide, lithium salts and battery grade lithium metal products	Owned
La Negra, Chile	Lithium	Production of lithium carbonate and lithium chloride	Owned
Langelsheim, Germany	Lithium	Production of butyllithium, lithium chloride, specialty products, lithium hydrides, cesium and special metals	Owned
Louvain-la-Neuve, Belgium	Lithium; Bromine Specialties; Catalysts; All Other	Regional offices and research and customer technical service activities	Owned
La Voulte, France	Catalysts	Refinery catalysts regeneration and treatment, research and development activities	Owned by Eurecat S.A., a joint venture owned 50% by each of Axens Group and us
Magnolia, Arkansas	Bromine Specialties	Production of flame retardants, bromine, inorganic bromides, agricultural intermediates and tertiary amines	Owned
McAlester, Oklahoma	Catalysts	Refinery catalyst regeneration, rejuvenation, pre-reclaim burn off, as well as specialty zeolites and additives marketing activities	Owned by Eurecat S.A., a joint venture owned 50% by each of Axens Group and us
Meishan, China	Lithium	Production of lithium carbonate and lithium hydroxide	Owned
Mobile, Alabama	Catalysts	Production of tin stabilizers	Owned by PMC Group, Inc. which operates the plant for Stannica LLC, a joint venture owned 50% by each of PMC Group Inc. and us
New Johnsonville, Tennessee	Lithium	Production of specialty products	Owned
Niihama, Japan	Catalysts	Production of refinery catalysts	Leased by Nippon Ketjen Company Limited, a joint venture owned 50% by each of Sumitomo Metal Mining Company Limited and us
Pasadena, Texas	Catalysts; All Other	Production of aluminum alkyls, alkenyl succinic anhydride, orthoalkylated anilines, and other specialty chemicals	Owned
Pasadena, Texas	Catalysts	Production of refinery catalysts, research and development activities	Owned

Location	Business Segment	Principal Use	Owned/Leased
Pasadena, Texas	Catalysts	Refinery catalysts regeneration services	Owned by Eurecat U.S. Incorporated, a joint venture in which we own a 57.5% interest and a consortium of entities in various proportions owns the remaining interest
Safi, Jordan	Bromine Specialties	Production of bromine and derivatives and flame retardants	Owned and leased by JBC, a joint venture owned 50% by each of Arab Potash Company Limited and us
Salar de Atacama, Chile	Lithium	Production of lithium brine and potash	Owned; however ownership will revert to the Chilean government once we have sold all remaining amounts under our contract with the Chilean government pursuant to which we obtain lithium brine in Chile
Santa Cruz, Brazil	Catalysts	Production of catalysts, research and product development activities	Owned by Fábrica Carioca de Catalisadores S.A, a joint venture owned 50% by each of Petrobras Quimica S.A.—PETROQUISA and us
Silver Peak, Nevada	Lithium	Production of lithium brine and lithium carbonate	Owned
South Haven, Michigan	All Other	Production of custom fine chemistry products including pharmaceutical actives	Owned
Taichung, Taiwan	Lithium	Production of butyllithium	Owned
Takaishi City, Osaka, Japan	Catalysts	Production of aluminum alkyls	Owned by Nippon Aluminum Alkyls, a joint venture owned 50% by each of Mitsui Chemicals, Inc. and us
Twinsburg, Ohio	Bromine Specialties	Production of bromine-activated carbon	Leased
Tyrone, Pennsylvania	All Other	Production of custom fine chemistry products, agricultural intermediates, performance polymer products and research and development activities	Owned
Xinyu, China	Lithium	Production of lithium carbonate and lithium hydroxide	Owned

Item 3. Legal Proceedings.

We are involved in litigation incidental to our business and are a party to a number of legal actions and claims, various governmental proceedings and private civil lawsuits, including, but not limited to, those related to environmental and hazardous material exposure matters, product liability, and breach of contract. Some of the legal proceedings include claims for compensatory as well as punitive damages. While the final outcome of these matters cannot be predicted with certainty, considering, among other things, the legal defenses available and liabilities that have been recorded along with applicable insurance, it is currently the opinion of management that none of these pending items will have a material adverse effect on our financial condition, results of operations or liquidity.

As previously reported in 2018, following receipt of information regarding potential improper payments being made by third party sales representatives of our Refining Solutions business, within our Catalysts segment, we promptly retained outside counsel and forensic accountants to investigate potential violations of the Company's Code of Conduct, the FCPA, and other potentially applicable laws. Based on this internal investigation, we have voluntarily self-reported potential issues relating to the use of third party sales representatives in our Refining Solutions business, within our Catalysts segment, to the DOJ, the SEC, and DPP, and are cooperating with the DOJ, the SEC, and DPP in their review of these matters. In connection with our internal investigation, we have implemented, and are continuing to implement, appropriate remedial measures.

At this time, we are unable to predict the duration, scope, result or related costs associated with the investigations by the DOJ, the SEC, or DPP. We also are unable to predict what, if any, action may be taken by the DOJ, the SEC or DPP, or what

penalties or remedial actions they may seek to impose. Any determination that our operations or activities are not in compliance with existing laws or regulations could result in the imposition of fines, penalties, disgorgement, equitable relief, or other losses. We do not believe, however, that any such fines, penalties, disgorgement, equitable relief or other losses would have a material adverse effect on our financial condition or liquidity.

An unexpected adverse resolution of one or more of these items, however, could have a material adverse effect on our financial condition, results of operations or liquidity in that particular period.

Item 4. Mine Safety Disclosures.

Not applicable.

Executive Officers of the Registrant.

The names, ages and biographies of our executive officers, as of February 20, 2019, are set forth below. The term of office of each officer is until the meeting of the Board of Directors following the next annual shareholders' meeting (May 7, 2019).

Name	Age	Position
Luther C. Kissam IV	54	Chairman, President and Chief Executive Officer
Karen G. Narwold	59	Executive Vice President, Chief Administrative Officer, Corporate Secretary
Scott A. Tozier	53	Executive Vice President, Chief Financial Officer
Donald J. LaBauve, Jr.	52	Vice President, Corporate Controller, Chief Accounting Officer

Luther C. Kissam IV was elected as Chairman of the Board of Directors in November 2016. Mr. Kissam was first elected to our Board of Directors effective November 2011. He was elected as Chief Executive Officer effective September 2011 and as our President effective May 2013. Previously, Mr. Kissam served as President from March 2010 until March 2012, Executive Vice President, Manufacturing, Law and HS&E from May 2009 until March 2010, and as Senior Vice President, Manufacturing and Law and Corporate Secretary from January 2008 until May 2009. Mr. Kissam joined us in October 2003 and served as Vice President, General Counsel and Corporate Secretary from that time until December 2005, when he was promoted to Senior Vice President, General Counsel and Corporate Secretary. Before joining us, Mr. Kissam served as Vice President, General Counsel and Secretary of Merisant Company (manufacturer and marketer of sweetener and consumer food products), having previously served as Associate General Counsel of Monsanto Company (provider of agricultural products and solutions). Mr. Kissam serves on the Advisory Committee of the Specialty Products Division at DowDupont since June 2018.

Karen G. Narwold joined us in September of 2010 and currently serves as Executive Vice President, Chief Administrative Officer, General Counsel and Corporate Secretary. Ms. Narwold has over 25 years of legal, management and business experience with global industrial and chemical companies. After five years in private practice, she served as Vice President, General Counsel, Human Resources and Secretary of GrafTech International Ltd., a global graphite and carbon manufacturer and former subsidiary of Union Carbide. She then served as Vice President and Strategic Counsel of Barzel Industries, a North American steel processor and distributor. Ms. Narwold resigned from Barzel in November 2009, after Barzel reached an agreement to sell substantially all of its assets in a planned transaction that was consummated in a sale pursuant to Section 363 of the U.S. Bankruptcy Code. Prior to joining Albemarle, Ms. Narwold served as Special Counsel with Kelley Drye & Warren LLP and with Symmetry Advisors where she worked in the areas of strategic, financial and capital structure planning and restructuring for public and private companies. Ms. Narwold was appointed as a member of the Board of Directors of Ingevity Corporation on February 20, 2019.

Scott A. Tozier was elected as our Executive Vice President and Chief Financial Officer effective January 2011. Mr. Tozier also served as our Chief Accounting Officer from January 2013 until February 2014. Mr. Tozier has over 25 years of diversified international financial management experience. Following four years of assurance services with the international firm Ernst & Young, LLP, Mr. Tozier joined Honeywell International, Inc., where his 16 year career spanned senior financial positions in the U.S., Australia and Europe. His roles of increasing responsibilities included management of financial planning, analysis and reporting, global credit and treasury services and Chief Financial Officer of Honeywell's Transportation Systems, Turbo Technologies and Building Solutions divisions. Most recently, Mr. Tozier served as Vice President of Finance, Operations and Transformation of Honeywell International, Inc. Mr. Tozier has served as a member of the board of directors of Garrett Motion Inc. since October 2018.

Donald J. LaBauve Jr. was elected Vice President, Corporate Controller effective February 2013, and Chief Accounting Officer effective February 2014, after having previously served as Vice President, Finance - Business Operations since April

2009. Mr. LaBauve served as Chief Financial Officer, Fine Chemistry from April 2007 until April 2009, and prior to that time held the role of Controller, Polymer Solutions from January 2006 through March 2007. Since joining the Company in 1990, Mr. LaBauve has held various staff and leadership positions of increasing responsibility within the finance function, including an assignment to our European headquarters in Belgium in April 2000, where he held the regional finance leadership role from July 2002 through June 2005.

PART II

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

Our common stock trades on the New York Stock Exchange (“NYSE”) under the symbol “ALB.” There were 105,753,864 shares of common stock held by 2,444 shareholders of record as of February 20, 2019. On February 26, 2019, we declared a dividend of \$0.3675 per share of common stock, payable April 1, 2019. We expect to continue to declare and pay dividends to our shareholders in the future, however, dividends are declared solely at the discretion of our Board of Directors and there is no guarantee that the Board of Directors will continue to declare dividends in the future.

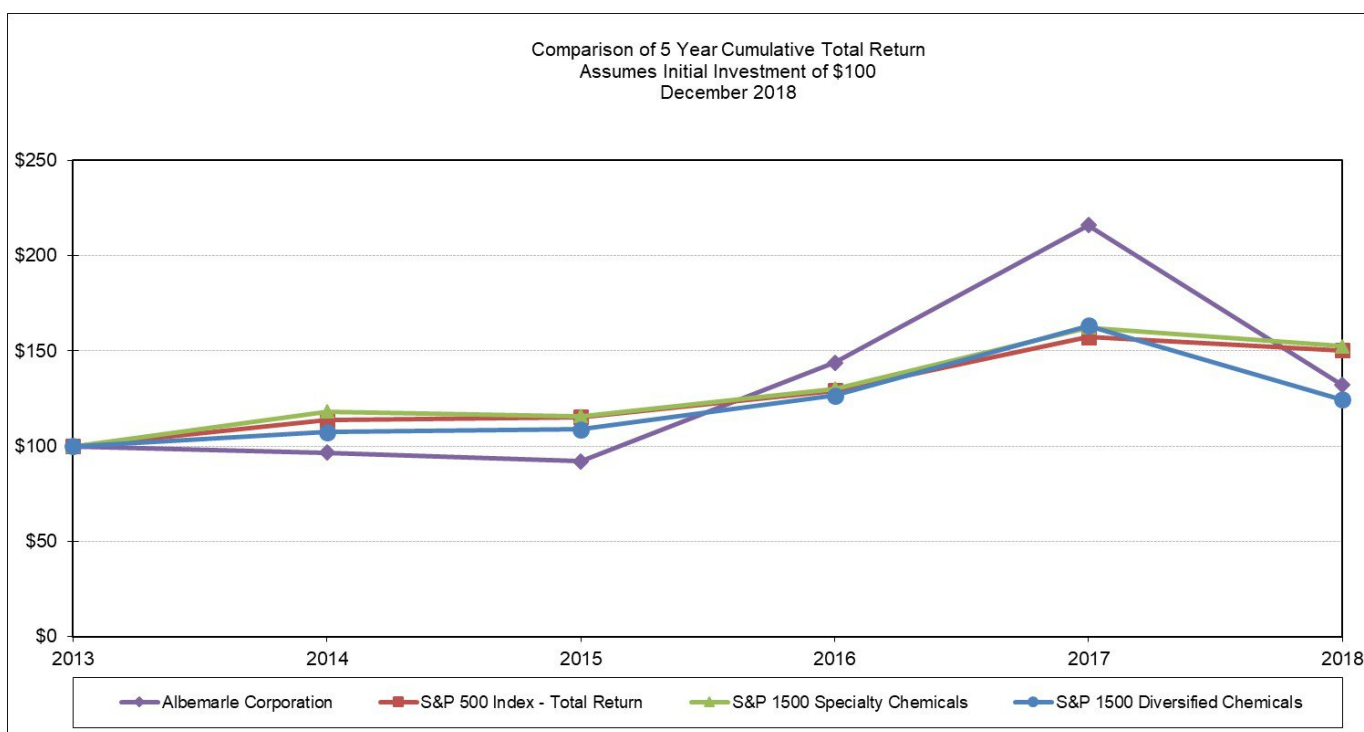
The following table summarizes our repurchases of equity securities for the three-month period ended December 31, 2018:

Period	Total Number of Shares Repurchased	Average Price Paid Per Share	Total Number of Shares Repurchased as Part of Publicly Announced Plans or Programs ^(a)	Maximum Number of Shares that May Yet Be Repurchased Under the Plans or Programs
October 1, 2018 to October 31, 2018	—	\$ —	—	7,993,299
November 1, 2018 to November 30, 2018	—	—	—	7,993,299
December 1, 2018 to December 31, 2018 ^(b)	597,036	96.83	597,036	7,396,263
Total	<u>597,036</u>		<u>597,036</u>	

- (a) Our stock repurchase plan, which was authorized by our Board of Directors, permits the Company to repurchase up to a maximum of 15,000,000 shares. The stock repurchase plan will expire when we have repurchased all shares authorized for repurchase thereunder, unless the stock repurchase plan is earlier terminated by action of our Board of Directors or further shares are authorized for repurchase.
- (b) In the third quarter of 2018, we paid \$250 million under the accelerated share repurchase (“ASR”) agreement. Under the terms of the agreement, in December 2018, the ASR agreement was completed and we received and retired a final settlement of 597,036 shares. The Average Price Paid Per Share was calculated using the daily Rule 10b-18 volume-weighted average prices of our common stock over the term of the ASR agreement, less an agreed discount. See Note 5, “Earnings Per Share,” to our consolidated financial statements included in Part II, Item 8 of this report.

Stock Performance Graph

The graph below shows the cumulative total shareholder return assuming the investment of \$100 in our common stock on December 31, 2013 and the reinvestment of all dividends thereafter. The information contained in the graph below is furnished and therefore not to be considered “filed” with the SEC, and is not incorporated by reference into any document that incorporates this Annual Report on Form 10-K by reference.



Item 6. Selected Financial Data.

The information for the five years ended December 31, 2018, is contained in the “Five-Year Summary” included in Part IV, Item 15, Exhibit 99.1 and incorporated herein by reference.

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

Forward-looking Statements

Some of the information presented in this Annual Report on Form 10-K, including the documents incorporated by reference, may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements are based on our current expectations, which are in turn based on assumptions that we believe are reasonable based on our current knowledge of our business and operations. We have used words such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “should,” “would,” “will” and variations of such words and similar expressions to identify such forward-looking statements.

These forward-looking statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions, which are difficult to predict and many of which are beyond our control. There can be no assurance that our actual results will not differ materially from the results and expectations expressed or implied in the forward-looking statements. Factors that could cause actual results to differ materially from the outlook expressed or implied in any forward-looking statement include, without limitation, information related to:

- changes in economic and business conditions;
- changes in financial and operating performance of our major customers and industries and markets served by us;
- the timing of orders received from customers;
- the gain or loss of significant customers;
- competition from other manufacturers;
- changes in the demand for our products or the end-user markets in which our products are sold;
- limitations or prohibitions on the manufacture and sale of our products;
- availability of raw materials;
- increases in the cost of raw materials and energy, and our ability to pass through such increases to our customers;
- changes in our markets in general;

- fluctuations in foreign currencies;
- changes in laws and government regulation impacting our operations or our products;
- the occurrence of regulatory actions, proceedings, claims or litigation;
- the occurrence of cyber-security breaches, terrorist attacks, industrial accidents, natural disasters or climate change;
- hazards associated with chemicals manufacturing;
- the inability to maintain current levels of product or premises liability insurance or the denial of such coverage;
- political unrest affecting the global economy, including adverse effects from terrorism or hostilities;
- political instability affecting our manufacturing operations or joint ventures;
- changes in accounting standards;
- the inability to achieve results from our global manufacturing cost reduction initiatives as well as our ongoing continuous improvement and rationalization programs;
- changes in the jurisdictional mix of our earnings and changes in tax laws and rates;
- changes in monetary policies, inflation or interest rates that may impact our ability to raise capital or increase our cost of funds, impact the performance of our pension fund investments and increase our pension expense and funding obligations;
- volatility and uncertainties in the debt and equity markets;
- technology or intellectual property infringement, including through cyber-security breaches, and other innovation risks;
- decisions we may make in the future;
- the ability to successfully execute, operate and integrate acquisitions and divestitures; and
- the other factors detailed from time to time in the reports we file with the SEC.

We assume no obligation to provide revisions to any forward-looking statements should circumstances change, except as otherwise required by securities and other applicable laws. The following discussion should be read together with our consolidated financial statements and related notes included in this Annual Report on Form 10-K.

The following is a discussion and analysis of our results of operations for the years ended December 31, 2018, 2017 and 2016. A discussion of our consolidated financial condition and sources of additional capital is included under a separate heading “Financial Condition and Liquidity” on page 49.

Overview

We are a leading global developer, manufacturer and marketer of highly-engineered specialty chemicals that are designed to meet our customers’ needs across a diverse range of end markets. The end markets we serve include energy storage, petroleum refining, consumer electronics, construction, automotive, lubricants, pharmaceuticals, crop protection and custom chemistry services. We believe that our commercial and geographic diversity, technical expertise, innovative capability, flexible, low-cost global manufacturing base, experienced management team and strategic focus on our core base technologies will enable us to maintain leading market positions in those areas of the specialty chemicals industry in which we operate.

Secular trends favorably impacting demand within the end markets that we serve combined with our diverse product portfolio, broad geographic presence and customer-focused solutions will continue to be key drivers of our future earnings growth. We continue to build upon our existing green solutions portfolio and our ongoing mission to provide innovative, yet commercially viable, clean energy products and services to the marketplace. We believe our disciplined cost reduction efforts and ongoing productivity improvements, among other factors, position us well to take advantage of strengthening economic conditions as they occur, while softening the negative impact of the current challenging global economic environment.

2018 Highlights

- In the first quarter, we increased our quarterly dividend for the 24th consecutive year, to \$0.335 per share.
- We received approval from CORFO for an increase in our lithium quota to sustainably increase lithium production in Chile to as much as 145,000 metric tons of lithium carbonate equivalent annually through 2043.
- On April 3, 2018, we completed the Polyolefin Catalysts Divestiture to W.R. Grace & Co. for net cash proceeds of approximately \$413.6 million and recorded a gain of \$210.4 million before income taxes related to the sale of this business.

- In June 2018, we entered into a revolving, unsecured credit agreement that provides for borrowings of up to \$1.0 billion and matures on June 21, 2023 (the “2018 Credit Agreement”) to replace our existing revolving, unsecured credit agreement.
- We announced our exclusive collaboration with DuPont as the primary hydroprocessing catalyst manufacturer for the DuPont™ IsoTherming® hydroprocessing technology, making clean fuels production more cost efficient for refiners. IsoTherming® is an innovative hydroprocessing technology that can lower capital and operational costs.
- We launched XPLORE™, a new platform for the clean transportation fuels market. The XPLORE catalyst platform is the result of breakthrough research in hydroprocessing catalyst technology allowing refineries to produce clean transportation fuels in a more efficient way. The new PULSAR family, with KF 787 PULSAR™ as its first grade product, is a cutting-edge, premium catalyst line, designed for the production of clean diesel.
- We entered into two separate \$250 million ASR agreements in May and August 2018, respectively. We completed these ASR agreements in September and December 2018, respectively, receiving and retiring a total of 5,262,654 shares.
- We successfully completed the commissioning of our La Negra facility in Chile (“La Negra II”), which has a nameplate capacity of 20,000 metric tons of lithium carbonate. Upon completion of the ramp-up of La Negra II, the total capacity of our facilities in La Negra, Chile will be 44,000 metric tons.
- We completed pre-commissioning activities related to our new facility in Xinyu, China and began start-up activities. This expansion will result in an additional 20,000 metric tons of lithium hydroxide, bringing total site capacity to 30,000 metric tons, with significant volumes expected from the new unit in 2019.
- We entered into a definitive agreement to acquire a 50% interest in Mineral Resources Limited's Wodgina Project in Western Australia and form a joint venture with Mineral Resources Limited to own and operate the Wodgina Project to produce spodumene concentrate and battery grade lithium hydroxide, for a purchase price of \$1.15 billion. The joint venture will ultimately construct a battery grade lithium hydroxide plant at the resource site. This transaction is subject to regulatory approvals and other customary closing conditions, and is expected to close in the second half of 2019.
- We received the required environmental approvals from Australian federal and state government for the Company’s proposed Kemerton lithium hydroxide conversion site in Western Australia. This plant will have an initial capacity of 60,000 metric tons of lithium hydroxide with an ability to expand to 100,000 metric tons over time. The commissioning of this site is expected to start in stages during the course of 2021.
- In December 2018, we exercised an \$18 million option to purchase undeveloped land with access to a lithium resource in Antofalla, within the Catamarca Province of Argentina from Bolland Minera S.A. We believe this asset could be certified as the largest lithium resource in Argentina.
- We achieved earnings of \$693.6 million during 2018 as compared to \$54.9 million for 2017. Cash flows from operations in 2018 were \$546.2 million. Earnings for 2018 included a \$169.9 million after-tax gain from the Polyolefin Catalysts Divestiture, while earnings for 2017 were negatively impacted by the \$366.9 million net income tax expense resulting from the enactment of the TCJA. In addition, earnings for 2018 includes pension and other postretirement benefit (“OPEB”) actuarial losses of \$10.6 million after income taxes, compared to pension and OPEB actuarial gains of \$7.3 million after income taxes in 2017.

Outlook

The current global business environment presents a diverse set of opportunities and challenges in the markets we serve. In particular, the market for lithium battery and energy storage continues to accelerate, providing the opportunity to continue to develop high quality and innovative products while managing the high cost of expanding capacity. The other markets we serve continue to present various opportunities for value and growth as we have positioned ourselves to manage the impact on our business of changing global conditions, such as slow and uneven global growth, currency exchange volatility, crude oil price fluctuation, a dynamic pricing environment, an ever-changing landscape in electronics, the continuous need for cutting edge catalysts and technology by our refinery customers and increasingly stringent environmental standards. Amidst these dynamics, we believe our business fundamentals are sound and that we are strategically well-positioned as we remain focused on increasing sales volumes, optimizing and improving the value of our portfolio primarily through pricing and product development, managing costs and delivering value to our customers and shareholders. We believe that our businesses remain well-positioned to capitalize on new business opportunities and long-term trends driving growth within our end markets and to respond quickly to changes in economic conditions in these markets.

Lithium: We expect a similar rate of growth in 2019 as in 2018 in Lithium, led by continued strong demand in battery-grade applications, price improvement and increased conversion capacity.

On a longer term basis, we believe that demand for lithium will continue to grow as new lithium applications advance and the use of plug-in hybrid electric vehicles and full battery electric vehicles increases. This demand for lithium is supported against a favorable backdrop of steadily declining lithium ion battery costs, increasing battery performance and an increasingly favorable global public policy toward acceptance of e-mobility/renewable energy usage. Our long-term outlook is also bolstered by our successful negotiation of long-term supply agreements with our key strategic customers, reflecting our standing as a preferred global lithium partner, highlighted by our scale, access to geographically diverse, low-cost resource base and long-term focus on execution.

Bromine Specialties: We expect to see continued growth in net sales and profitability in 2019, due to healthy demand and pricing for our flame retardants and other derivatives. However, with sustained low oil prices, we expect stable, albeit low, drilling completion fluid demand throughout the year. While it is possible oil prices could continue to rebound some in 2019, the short-term impact will be to increase raw material costs. Offshore well completions lag oil pricing, so any benefit in completion fluid volumes would likely extend throughout the year.

On a longer term basis, we continue to believe that improving global standards of living, widespread digitization, increasing demand for data management capacity and the potential for increasingly stringent fire safety regulations in developing markets are likely to drive continued demand for fire safety products. Absent an increase in regulatory pressure on offshore drilling, we would expect this business to follow a long-term growth trajectory once oil prices recover from recent levels as we expect that deep water drilling will continue to increase around the world. We are focused on profitably growing our globally competitive bromine and derivatives production network to serve all major bromine consuming products and markets. We believe the global supply/demand gap could tighten as demand for existing and possible new uses of bromine expands over time. The combination of solid, long-term business fundamentals, with our strong cost position, product innovations and effective management of raw material costs will enable us to manage our business through end market challenges and to capitalize on opportunities that are expected with favorable market trends in select end markets.

Catalysts: We expect to see continued headwinds from rising raw material costs in both our CFT and FCC businesses, similar to 2018.

On a longer term basis, we believe increased global demand for transportation fuels, new refinery start-ups and ongoing adoption of cleaner fuels will be the primary drivers of growth in our Catalysts business. We believe delivering superior end-use performance continues to be the most effective way to create sustainable value in the refinery catalysts industry. We believe our technologies continue to provide significant performance and financial benefits to refiners challenged to meet tighter regulations around the world, including those managing new contaminants present in North America tight oil, and those in the Middle East and Asia seeking to use heavier feedstock while pushing for higher propylene yields. Longer term, we believe that the global crude supply will get heavier and more sour, a trend that bodes well for our catalysts portfolio. With superior technology and production capacities, and expected growth in end market demand, we believe that Catalysts remains well-positioned for the future. In PCS, we expect growth in our organometallic business due to growing global demand for plastics driven by rising standards of living and infrastructure spending.

On April 3, 2018, we completed the Polyolefin Catalysts Divestiture to W.R. Grace & Co. for net cash proceeds of approximately \$413.6 million.

All Other: The fine chemistry services business will continue to be reported outside the Company's reportable segments as it does not fit in the Company's core businesses. We expect the near future to be impacted by a challenging agriculture industry environment and the timing of customer orders in pharmaceuticals. We continue to work to reinvigorate the pipeline of new products and services to these markets.

Corporate: We continue to focus on cash generation, working capital management and process efficiencies. We expect our global effective tax rate for 2019 to be between 23% and 24%; however, our rate will vary based on the locales in which income is actually earned and remains subject to potential volatility from changing legislation in the U.S., including the TCJA, and other tax jurisdictions.

In the first quarter of 2019, we increased our quarterly dividend rate to \$0.3675 per share. During 2018, we received and retired approximately 5.3 million shares of our common stock under our share repurchase program and ASR agreements, and we may periodically repurchase shares in the future on an opportunistic basis as approved by our share repurchase program.

Actuarial gains and losses related to our defined benefit pension and OPEB plan obligations are reflected in Corporate as a component of non-operating pension and OPEB plan costs under mark-to-market accounting. Results for the year ended

December 31, 2018 include an actuarial loss of \$14.0 million (\$10.6 million after income taxes), as compared to a gain of \$11.4 million (\$7.3 million after income taxes) for the year ended December 31, 2017.

We remain committed to evaluating the merits of any opportunities that may arise for acquisitions or other business development activities that will complement our business footprint. Additional information regarding our products, markets and financial performance is provided at our web site, www.albemarle.com. Our web site is not a part of this document nor is it incorporated herein by reference.

Results of Operations

The following data and discussion provides an analysis of certain significant factors affecting our results of operations during the periods included in the accompanying consolidated statements of income.

Selected Financial Data	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
	(In thousands, except percentages and per share amounts)				
NET SALES	\$ 3,374,950	\$ 3,071,976	\$ 2,677,203	10 %	15 %
Cost of goods sold	2,157,694	1,965,700	1,706,897	10 %	15 %
GROSS PROFIT	1,217,256	1,106,276	970,306	10 %	14 %
GROSS PROFIT MARGIN	36.1%	36.0%	36.2%		
Selling, general and administrative expenses	446,090	450,286	353,765	(1)%	27 %
Research and development expenses	70,054	84,330	80,475	(17)%	5 %
Gain on sales of businesses, net	(210,428)	—	(122,298)	*	(100)%
Acquisition and integration related costs	—	—	57,384	— %	(100)%
OPERATING PROFIT	911,540	571,660	600,980	59 %	(5)%
OPERATING PROFIT MARGIN	27.0%	18.6%	22.4%		
Interest and financing expenses	(52,405)	(115,350)	(65,181)	(55)%	77 %
Other expenses, net	(64,434)	(9,512)	(20,535)	577 %	(54)%
INCOME FROM CONTINUING OPERATIONS BEFORE INCOME TAXES AND EQUITY IN NET INCOME OF UNCONSOLIDATED INVESTMENTS	794,701	446,798	515,264	78 %	(13)%
Income tax expense	144,826	431,817	96,263	(66)%	349 %
Effective tax rate	18.2%	96.6%	18.7%		
INCOME FROM CONTINUING OPERATIONS BEFORE EQUITY IN NET INCOME OF UNCONSOLIDATED INVESTMENTS	649,875	14,981	419,001	*	(96)%
Equity in net income of unconsolidated investments (net of tax)	89,264	84,487	59,637	6 %	42 %
NET INCOME FROM CONTINUING OPERATIONS	739,139	99,468	478,638	643 %	(79)%
Income from discontinued operations (net of tax)	—	—	202,131	— %	(100)%
NET INCOME	739,139	99,468	680,769	643 %	(85)%
Net income attributable to noncontrolling interests	(45,577)	(44,618)	(37,094)	2 %	20 %
NET INCOME ATTRIBUTABLE TO ALBEMARLE CORPORATION	\$ 693,562	\$ 54,850	\$ 643,675	*	(91)%
NET INCOME FROM CONTINUING OPERATIONS AS A PERCENTAGE OF NET SALES	21.9%	3.2%	17.9%		
Basic earnings per share:					
Continuing operations	\$ 6.40	\$ 0.49	\$ 3.93	*	(88)%
Discontinued operations	—	—	1.80	— %	(100)%
	\$ 6.40	\$ 0.49	\$ 5.73	*	(91)%
Diluted earnings per share:					
Continuing operations	\$ 6.34	\$ 0.49	\$ 3.90	*	(87)%
Discontinued operations	—	—	1.78	— %	(100)%
	\$ 6.34	\$ 0.49	\$ 5.68	*	(91)%

* Percentage calculation is not meaningful.

Comparison of 2018 to 2017

Net Sales

For the year ended December 31, 2018, we recorded net sales of \$3.37 billion, a 10% increase compared to net sales of \$3.07 billion for the corresponding period of 2017. Net sales increased, including in all three reportable segments, due to \$210.6 million of higher volumes, \$141.0 million of favorable pricing impacts and \$30.6 million of favorable currency exchange. This was partially offset by \$78.9 million of net sales from the Polyolefin Catalysts Divestiture.

Gross Profit

For the year ended December 31, 2018, our gross profit increased \$111.0 million, or 10%, compared to the corresponding period of 2017. Cost of goods sold for the year ended December 31, 2018 included a decrease of \$13.4 million in acquisition, integration and restructuring related costs from various significant projects compared to the corresponding period in 2017, and \$8.8 million related to non-routine labor and compensation related costs in Chile that are outside normal compensation arrangements. In addition, Gross profit for the year ended December 31, 2017 included a \$23.1 million charge related to the markup of inventory purchased as part of the acquisition of Jiangli New Materials and \$30.4 million of gross profit from the Polyolefin Catalysts Divestiture. In addition, gross profit increased \$19.6 million in Catalysts and Bromine Specialties due to the year over year impact of hurricane Harvey, which includes a partial insurance claim reimbursement of \$4.2 million in 2018. Excluding the impact of these items, gross profit increased by \$93.9 million, or 8.3%, due to \$141.0 million in favorable pricing impacts and approximately \$77 million of higher volumes, more than offsetting higher material and utility costs of approximately \$60 million and price-related royalties of approximately \$30 million. Additionally higher production costs and the negative impact of currency exchange on material and production costs in foreign locations resulted in approximately \$30 million in offsets. Overall, these factors contributed to a gross profit margin for the years ended December 31, 2018 and 2017 of 36.1% and 36.0%, respectively.

Selling, General and Administrative Expenses

For the year ended December 31, 2018, our selling, general and administrative (“SG&A”) expenses decreased \$4.2 million, or 1%, from the year ended December 31, 2017. SG&A expenses for the year ended December 31, 2018 included \$16.2 million of charitable contributions beyond the Company’s ordinary, recurring charitable contributions, a decrease in restructuring and other costs related to several locations of \$4.7 million and \$3.9 million less acquisition and integration related costs for various significant projects. The remaining decrease was primarily due to lower compensation related costs, particularly incentive compensation, and professional fees. As a percentage of net sales, SG&A expenses were 13.2% in 2018, compared to 14.7% in 2017.

Research and Development Expenses

For the year ended December 31, 2018, our R&D expenses decreased \$14.3 million, or 17%, from the year ended December 31, 2017. Included in R&D expenses for the year ended December 31, 2017 are \$5.7 million of restructuring costs related to our Lithium sites in Germany. The remaining decrease was primarily due to \$4.5 million of R&D expenses related to the Polyolefin Catalysts Divestiture. As a percentage of net sales, R&D expenses were 2.1% in 2018, compared to 2.7% in 2017.

Gain on Sales of Businesses, Net

The year ended December 31, 2018 included a gain before income taxes of \$210.4 million related to the Polyolefin Catalysts Divestiture, which we completed in the second quarter of 2018.

Interest and Financing Expenses

Interest and financing expenses for the year ended December 31, 2018 decreased \$62.9 million to \$52.4 million from the corresponding 2017 period, due mainly to a loss on early extinguishment of debt of \$52.8 million in 2017 relating to the tender premiums, fees, unamortized discounts and unamortized deferred financing costs from the repayment of the 3.00% Senior notes in full, €307.0 million of the 1.875% Senior notes and \$174.7 million of the 4.50% Senior notes. The remaining difference is primarily related to the impact of higher capitalized interest from increased capital expenditures in 2018.

Other Expenses, Net

Other expenses, net, for the year ended December 31, 2018 was \$64.4 million compared to \$9.5 million for the corresponding 2017 period. Other expenses, net for 2018 included approximately \$5.3 million of pension and OPEB costs (including mark-to-market actuarial losses of \$14.0 million) as compared to \$16.1 million of pension and OPEB benefits

(including mark-to-market actuarial gains of \$11.4 million) in 2017. In addition, during the year ended December 31, 2018, we incurred \$27.0 million of legal expenses related to products that Albemarle no longer manufactures and a previously disposed business, \$19.7 million to increase an indemnification liability related to the settlement of an ongoing audit of a previously disposed business in Germany and \$15.6 million of environmental charges related to a site formerly owned by Albemarle, partially offset by a \$2.1 million gain in the fair value of our investment in private equity securities. During the year ended December 31, 2017, we recorded a \$28.7 million reserve recorded against a note receivable in one of our European entities no longer deemed probable of collection, \$11.0 million of charges related to previously disposed properties or businesses, partially offset by a \$10.6 million gain related to the reversal of liabilities recorded as part of purchase accounting from a previous acquisition, a \$6.2 million gain related to the acquisition of the 50% interest of an equity investment and \$1.1 million related to a reversal of a liability associated with the previous disposal of a property. The remaining change was primarily due to a decrease in foreign exchange losses totaling \$0.6 million and a decrease in interest income.

The mark-to-market actuarial loss in 2018 is primarily attributable to a lower return on pension plan assets in 2018 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was (4.55)% versus an expected return of 6.73%. The mark-to-market actuarial loss in 2018 was partially offset by an increase in the weighted-average discount rate to 4.59% from 4.03% for our U.S. pension plans and to 2.15% from 1.94% for our foreign pension plans to reflect market conditions as of the December 31, 2018 measurement date.

The mark-to-market actuarial gain in 2017 is primarily attributable to a higher return on pension plan assets in 2017 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was 14.31% versus an expected return of 6.73%. The mark-to-market actuarial gain in 2017 was partially offset by a decrease in the weighted-average discount rate to 4.03% from 4.43% for our U.S. pension plans and to 1.94% from 2.00% for our foreign pension plans to reflect market conditions as of the December 31, 2017 measurement date.

Income Tax Expense

The effective income tax rate for 2018 was 18.2% compared to 96.6% for 2017. Our effective income tax rate for 2018 was primarily affected by a tax benefit of \$42.3 million related to the refinement of the one-time transition tax during the period defined by Staff Accounting Bulletin No. 118 (“SAB 118”). In addition, our effective income tax rate was impacted by the mix of earnings in countries with differing statutory rates.

Our effective income tax rate for 2017 was primarily affected by the enactment of the TCJA in December 2017. During 2017, provisional tax effects of the TCJA were recorded in connection with the one-time transition tax expense of \$429.2 million, partially offset by the remeasurement of deferred tax assets and liabilities due to a decrease in corporate tax rate from 35% to 21% of \$62.3 million tax benefit. Exclusive of the enactment of the TCJA, the Company’s effective tax rate differs from the U.S. Federal statutory income tax rate due to the impact of earnings from outside the U.S., mainly attributable to our share of the income of our JBC joint venture, a Free Zones company under the laws of the Hashemite Kingdom of Jordan. In addition, income tax expense for the year ended December 31, 2017, included foreign rate changes of \$16.2 million and a \$5.1 million out-of-period adjustment due to changes in our deferred tax liabilities for basis differences in Chilean fixed assets, partially offset by a \$10.9 million benefit from the release of valuation allowances due to a foreign restructuring plan that was initiated during the second quarter of 2017 and a \$8.8 million benefit from excess tax benefits realized from stock-based compensation arrangements.

See Note 20, “Income Taxes” to our consolidated financial statements included in Part II, Item 8 of this report for a reconciliation of the U.S. Federal statutory income tax rate to our effective rate for 2018 and 2017.

Equity in Net Income of Unconsolidated Investments

Equity in net income of unconsolidated investments was \$89.3 million for the year ended December 31, 2018 compared to \$84.5 million in the same period last year. This increase of \$4.8 million was primarily due to higher equity income reported by our Lithium segment joint venture, Windfield Holdings Pty. Ltd., partially offset by a decrease in equity income in our Catalysts segment.

Net Income Attributable to Noncontrolling Interests

For the year ended December 31, 2018, net income attributable to noncontrolling interests was \$45.6 million compared to \$44.6 million in the same period of 2017. This increase of \$1.0 million was primarily due to an increase in consolidated income related to our JBC joint venture from higher sales volumes in the current year.

Net Income Attributable to Albemarle Corporation

Net income attributable to Albemarle Corporation increased to \$693.6 million for the year ended December 31, 2018, from \$54.9 million for the corresponding period of 2017. The increase is primarily due to the net impact to income tax expense of \$366.9 million as a result of the enactment of the TCJA and a \$52.8 million loss on early extinguishment of debt related to the repayment of senior notes recorded in 2017, as well as the after-tax gain of \$169.9 million related to the Polyolefin Catalysts Divestiture in 2018. In addition, the increase was driven by favorable pricing impacts of \$141.0 million and increased sales volumes in all reportable segments, reduced acquisition and integration, and restructuring and other costs in 2018. This was partially offset by \$27.0 million of legal expenses related to products that Albemarle no longer manufactures and a previously disposed business, \$16.2 million of charitable contributions beyond the Company's ordinary, recurring charitable contributions, \$15.6 million related to environmental charges related to a site formerly owned by Albemarle recorded in 2018 and a \$6.2 million gain related to the acquisition of the 50% interest of an equity investment in 2017.

Other Comprehensive (Loss) Income, Net of Tax

Total other comprehensive loss, after income taxes, was \$125.2 million in 2018 compared to \$187.6 million in 2017. This change is primarily due to changes in foreign currency translations. We translate our foreign subsidiary financial statements from their local currencies to U.S. Dollars. In 2018, other comprehensive loss from foreign currency translation adjustments was \$150.3 million, mainly as a result of unfavorable movements in the Euro of approximately \$114 million, the Chinese Renminbi of approximately \$14 million, the Brazilian Real of approximately \$12 million, the Korean Won of approximately \$5 million and a net unfavorable variance in various other currencies totaling approximately \$5 million. Also included in total other comprehensive loss for 2018 is a gain of \$25.8 million in connection with the revaluation of our Euro-based 1.875% Senior notes which have been designated as a hedge of our net investment in foreign operations. In 2017, other comprehensive income from foreign currency translation adjustments was \$227.4 million, mainly as a result of favorable movements in the Euro of approximately \$192 million, the Korean Won of approximately \$16 million, the Chinese Renminbi of approximately \$13 million and the Taiwan Dollar of approximately \$4 million. Also included in total other comprehensive income for 2017 is a loss of \$41.8 million in connection with the revaluation of our Euro-based 1.875% Senior notes which have been designated as a hedge of our net investment in foreign operations.

Segment Information Overview. We have identified three reportable segments according to the nature and economic characteristics of our products as well as the manner in which the information is used internally by the Company's chief operating decision maker to evaluate performance and make resource allocation decisions. Our reportable business segments consist of: (1) Lithium, (2) Bromine Specialties and (3) Catalysts.

Summarized financial information concerning our reportable segments is shown in the following tables. Results for 2017 have been recast to reflect the change in segments previously noted. The "All Other" category includes only the fine chemistry services business, that does not fit into any of our core businesses.

The Corporate category is not considered to be a segment and includes corporate-related items not allocated to the operating segments. Pension and OPEB service cost (which represents the benefits earned by active employees during the period) and amortization of prior service cost or benefit are allocated to the reportable segments, All Other, and Corporate, whereas the remaining components of pension and OPEB benefits cost or credit ("Non-operating pension and OPEB items") are included in Corporate. Segment data includes intersegment transfers of raw materials at cost and allocations for certain corporate costs.

The Company's chief operating decision maker uses adjusted EBITDA (as defined below) to assess the ongoing performance of the Company's business segments and to allocate resources. The Company defines adjusted EBITDA as earnings before interest, taxes, depreciation and amortization, as adjusted on a consistent basis for certain non-recurring or unusual items in a balanced manner and on a segment basis. These non-recurring or unusual items may include acquisition and integration related costs, utilization of inventory markup, gains or losses on sales of businesses, restructuring charges, facility divestiture charges, non-operating pension and OPEB items and other significant non-recurring items. In addition, management uses adjusted EBITDA for business planning purposes and as a significant component in the calculation of performance-based compensation for management and other employees. The Company has reported adjusted EBITDA because management believes it provides transparency to investors and enables period-to-period comparability of financial performance. Adjusted EBITDA is a financial measure that is not required by, or presented in accordance with, U.S. GAAP. Adjusted EBITDA should not be considered as an alternative to Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with U.S. GAAP, or any other financial measure reported in accordance with U.S. GAAP.

	Year Ended December 31,				Percentage
	2018	%	2017	%	Change
(In thousands, except percentages)					
Net sales:					
Lithium	\$ 1,228,171	36.4 %	\$ 1,018,885	33.2 %	21 %
Bromine Specialties	917,880	27.2 %	855,143	27.8 %	7 %
Catalysts	1,101,554	32.6 %	1,067,572	34.7 %	3 %
All Other	127,186	3.8 %	128,914	4.2 %	(1)%
Corporate	159	— %	1,462	0.1 %	(89)%
Total net sales	<u>\$ 3,374,950</u>	<u>100.0 %</u>	<u>\$ 3,071,976</u>	<u>100.0 %</u>	<u>10 %</u>
Adjusted EBITDA:					
Lithium	\$ 530,773	52.7 %	\$ 446,652	50.4 %	19 %
Bromine Specialties	288,116	28.6 %	258,901	29.2 %	11 %
Catalysts	284,307	28.3 %	283,883	32.1 %	— %
All Other	14,091	1.4 %	13,878	1.6 %	2 %
Corporate	(110,623)	(11.0)%	(117,834)	(13.3)%	(6)%
Total adjusted EBITDA	<u>\$ 1,006,664</u>	<u>100.0 %</u>	<u>\$ 885,480</u>	<u>100.0 %</u>	<u>14 %</u>

See below for a reconciliation of adjusted EBITDA, the non-GAAP financial measure, from Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with U.S. GAAP, (in thousands):

	Lithium	Bromine Specialties	Catalysts	Reportable Segments Total	All Other	Corporate	Consolidated Total
2018							
Net income (loss) attributable to Albemarle Corporation	\$428,212	\$ 246,509	\$ 445,604	\$ 1,120,325	\$ 6,018	\$ (432,781)	\$ 693,562
Depreciation and amortization	95,193	41,607	49,131	185,931	8,073	6,694	200,698
Restructuring and other ^(a)	—	—	—	—	—	3,838	3,838
Gain on sale of business ^(b)	—	—	(210,428)	(210,428)	—	—	(210,428)
Acquisition and integration related costs ^(c)	—	—	—	—	—	19,377	19,377
Interest and financing expenses	—	—	—	—	—	52,405	52,405
Income tax expense	—	—	—	—	—	144,826	144,826
Non-operating pension and OPEB items	—	—	—	—	—	5,285	5,285
Legal accrual ^(d)	—	—	—	—	—	27,027	27,027
Environmental accrual ^(e)	—	—	—	—	—	15,597	15,597
Albemarle Foundation contribution ^(f)	—	—	—	—	—	15,000	15,000
Indemnification adjustments ^(g)	—	—	—	—	—	25,240	25,240
Other ^(h)	7,368	—	—	7,368	—	6,869	14,237
Adjusted EBITDA	<u>\$530,773</u>	<u>\$ 288,116</u>	<u>\$ 284,307</u>	<u>\$ 1,103,196</u>	<u>\$ 14,091</u>	<u>\$ (110,623)</u>	<u>\$ 1,006,664</u>
2017							
Net income (loss) attributable to Albemarle Corporation	\$342,992	\$ 218,839	\$ 230,665	\$ 792,496	\$ 5,521	\$ (743,167)	\$ 54,850
Depreciation and amortization	87,879	40,062	54,468	182,409	8,357	6,162	196,928
Utilization of inventory markup ⁽ⁱ⁾	23,095	—	—	23,095	—	—	23,095
Restructuring and other ^(j)	—	—	—	—	—	17,056	17,056
Gain on acquisition ^(k)	(6,221)	—	—	(6,221)	—	—	(6,221)
Acquisition and integration related costs ^(c)	—	—	—	—	—	33,954	33,954
Interest and financing expenses ^(l)	—	—	—	—	—	115,350	115,350
Income tax expense	—	—	—	—	—	431,817	431,817
Non-operating pension and OPEB items	—	—	—	—	—	(16,125)	(16,125)
Note receivable reserve ^(m)	—	—	—	—	—	28,730	28,730
Other ⁽ⁿ⁾	(1,093)	—	(1,250)	(2,343)	—	8,389	6,046
Adjusted EBITDA	<u>\$446,652</u>	<u>\$ 258,901</u>	<u>\$ 283,883</u>	<u>\$ 989,436</u>	<u>\$ 13,878</u>	<u>\$ (117,834)</u>	<u>\$ 885,480</u>

- (a) Expected severance payments as part of a business reorganization plan, \$0.1 million recorded in Cost of goods sold and \$3.7 million recorded in Selling, general and administrative expenses. These severance payments have been made during the year ended December 31, 2018.
- (b) See “Gain on Sale of Businesses, Net” on page 33 for a description of this gain.
- (c) Included amounts for the years ended December 31, 2018 and 2017 recorded in (1) Cost of goods sold of \$3.7 million and \$14.3 million, respectively; and (2) Selling, general and administrative expenses of \$15.7 million and \$19.6 million, respectively, relating to various significant projects.
- (d) Included in Other expenses, net is a \$16.2 million expense resulting from a jury rendered verdict against Albemarle related to certain business concluded under a 2014 sales agreement for products that Albemarle no longer manufactures and a \$10.8 million expense resulting from a settlement of a legal matter related to guarantees from a previously disposed business.
- (e) Increase in environmental reserve to indemnify the buyer of a formerly owned site recorded in Other expenses, net. As defined in the agreement of sale, this indemnification has a set cutoff date in 2024, at which point we will no longer be required to provide financial coverage.
- (f) Included in Selling, general and administrative expenses is a charitable contribution, using a portion of the proceeds received from the Polyolefin Catalysts Divestiture, to the Albemarle Foundation, a non-profit organization that sponsors grants, health and social projects, educational initiatives, disaster relief, matching gift programs, scholarships and other charitable initiatives in locations where our employees live and operate. This contribution is in addition to the ordinary annual contribution made to the Albemarle Foundation by the

Company, and is significant in size and nature in that it is intended to provide more long-term benefits in the communities where we live and operate.

- (g) Included in Other expenses, net is \$19.7 million related to the proposed settlement of an ongoing audit of a previously disposed business in Germany, and \$5.5 million related to the revision of indemnifications previously recorded from disposed businesses.
- (h) Included amounts for the year ended December 31, 2018 recorded in:
 - Cost of goods sold - \$4.9 million for the write-off of fixed assets related to a major capacity expansion in our Jordanian joint venture and \$8.8 million related to non-routine labor and compensation related costs in Chile that are outside normal compensation arrangements.
 - Selling, general and administrative expenses - \$2.3 million of shortfall contributions for our multiemployer plan financial improvement plan and a \$1.2 million contribution, using a portion of the proceeds received from the Polyolefin Catalysts Divestiture, to schools in the state of Louisiana for qualified tuition purposes. This contribution is significant in size and is intended to provide long-term benefits for families in the Louisiana community. This was partially offset by a \$1.5 million gain related to a refund from Chilean authorities due to an overpayment made in a prior year.
 - Other expenses, net - \$1.5 million gain related to the reversal of previously recorded liabilities of disposed businesses.
- (i) In connection with the acquisition of Jiangli New Materials, the Company valued inventory purchased from Jiangli New Materials at fair value, which resulted in a markup of the underlying net book value of the inventory totaling approximately \$23.1 million. The utilization of this inventory markup was included in Cost of goods sold during the year ended December 31, 2017, the estimated remaining selling period.
- (j) During 2017, we initiated action to reduce costs in each of our reportable segments at several locations, primarily at our Lithium sites in Germany. Based on the restructuring plans, we have recorded expenses of \$2.9 million in Cost of goods sold, \$8.4 million in Selling, general and administrative expenses, and \$5.7 million in Research and development expenses, primarily related to expected severance payments. The unpaid balance is recorded in Accrued expenses at December 31, 2018, with the expectation that the remaining balance will be paid by the end of 2019.
- (k) Gain recorded in Other expenses, net related to the acquisition of the remaining 50% interest in Salmag. See Note 2, "Acquisitions," to our consolidated financial statements included in Part II, Item 8 of this report for additional information.
- (l) Included in Interest and financing expenses is a loss on early extinguishment of debt of \$52.8 million. See Note 14, "Long-Term Debt," to our consolidated financial statements included in Part II, Item 8 of this report for additional information.
- (m) Reserve recorded in Other expenses, net against a note receivable on one of our European entities no longer deemed probable of collection.
- (n) Included amounts for the year ended December 31, 2017 recorded in:
 - Cost of goods sold - \$1.3 million reversal of deferred income related to an abandoned project at an unconsolidated investment.
 - Selling, general and administrative expenses - \$3.3 million of shortfall contributions for our multiemployer plan financial improvement plan, partially offset by \$1.0 million related to a reversal of an accrual recorded as part of purchase accounting from a previous acquisition.
 - Other expenses, net - \$3.2 million of asset retirement obligation charges related to the revision of an estimate at a site formerly owned by Albemarle, losses of \$8.7 million related to adjustments of settlements and indemnifications of previously disposed businesses, the revision of tax indemnification expenses of \$3.7 million primarily related to the filing of tax returns and a competent authority agreement for a previously disposed business and \$1.0 million related to the settlement of a legal claim. This is partially offset by gains of \$10.6 million and \$1.1 million related to the reversal of liabilities recorded as part of purchase accounting from a previous acquisition and the previous disposal of a property, respectively.

Lithium

Lithium segment net sales for the year ended December 31, 2018 were \$1.23 billion, up \$209.3 million, or 21%, compared to the corresponding period of 2017. The increase was primarily driven by \$105.3 million of higher sales volumes largely in battery grade salts and specialty downstream products due to strong demand, \$87.4 million of favorable pricing due to strong demand of our contracted customers for battery grade materials and \$17.0 million of favorable currency translation resulting from the weaker U.S. Dollar against the Euro. Adjusted EBITDA for Lithium increased 19%, or \$84.1 million, to \$530.8 million for the year ended December 31, 2018, compared to the corresponding period of 2017, primarily driven by favorable pricing due to strong demand, increases of approximately \$33 million from higher volumes and \$4.2 million of favorable currency translation. These increases were partially offset by approximately \$30 million in higher price-related royalties and approximately \$12 million of higher SG&A costs to support business growth.

Bromine Specialties

Bromine Specialties segment net sales for the year ended December 31, 2018 were \$917.9 million, up \$62.7 million, or 7%, compared to the corresponding period of 2017. The increase was driven primarily by \$36.9 million in favorable pricing due to continued constrained production of elemental bromine by Chinese bromine companies, \$19.9 million in higher sales volumes in flame-retardants and other bromine derivatives due to continued strong demand, and \$5.9 million of favorable currency translation resulting from the weaker U.S. Dollar against the Euro. Adjusted EBITDA for Bromine Specialties increased 11%, or \$29.2 million, to \$288.1 million for the year ended December 31, 2018, compared to the corresponding period of 2017, primarily due to favorable pricing across most products, which was partially offset by higher raw material costs

of approximately \$19 million. The improvement in adjusted EBITDA was also due to \$5.1 million of favorable currency translation related to the Euro, and higher sales volumes due to continued strong demand.

Catalysts

Catalysts segment net sales for the year ended December 31, 2018 were \$1.10 billion, an increase of \$34.0 million, or 3%, compared to the corresponding period of 2017. This increase was primarily due to \$83.5 million of higher sales volumes driven by refining catalyst products due to favorable mix in hydro-processing catalysts, \$21.6 million of favorable pricing, mainly in CFT and FCC catalysts as a result of strong demand for transportation fuels, and \$7.7 million of favorable currency translation resulting from the weaker U.S. Dollar against the Euro. These increases were partially offset by \$78.9 million of net sales impact from Polyolefin Catalysts Divestiture. Catalysts adjusted EBITDA increased \$0.4 million, to \$284.3 million for the year ended December 31, 2018 compared to the corresponding period of 2017. Strong volumes resulting in approximately \$57 million of adjusted EBITDA, including the 2017 negative impact of hurricane Harvey of \$13.8 million, were partially offset by \$30.4 million of adjusted EBITDA impact from the Polyolefin Catalysts Divestiture. Favorable pricing of \$21.6 million and partial insurance claim reimbursements of \$4.2 million received in 2018 related to hurricane Harvey, were more than offset by higher raw material and utility costs, resulting in a net unfavorable impact of approximately \$9 million.

All Other

All Other net sales for the year ended December 31, 2018 were \$127.2 million, a decrease of \$1.7 million compared to the year ended December 31, 2017. This decrease was primarily due to unfavorable pricing, partially offset by higher volumes for the fine chemistry services business. All Other adjusted EBITDA was up 2%, or \$0.2 million, for the year ended December 31, 2018 in comparison to the same period of 2017.

Corporate

Corporate adjusted EBITDA was a charge of \$110.6 million for the year ended December 31, 2018, a decrease of \$7.2 million, compared to the year ended December 31, 2017, primarily due to lower SG&A spend related to compensation related costs and professional fees.

Comparison of 2017 to 2016

Net Sales

For the year ended December 31, 2017, we recorded net sales of \$3.07 billion, a 15% increase compared to net sales of \$2.68 billion for the corresponding period of 2016. Net sales increased due to \$272.2 million of higher volumes, \$157.8 million of favorable pricing impacts and \$3.4 million of favorable currency exchange impacts, partially offset by the \$38.6 million impact of the sale of the minerals-based flame retardants and specialty chemicals business.

Gross Profit

For the year ended December 31, 2017, our gross profit increased \$136.0 million, or 14%, compared to the corresponding period of 2016. Included in Cost of goods sold for the year ended December 31, 2017 are: (1) a \$23.1 million charge related to the markup of inventory purchased as part of the acquisition of the lithium hydroxide and lithium carbonate conversion business of Jiangli New Materials; (2) \$14.3 million of acquisition and integration related costs resulting from the Jiangli New Materials acquisition; and (3) restructuring costs of \$2.9 million related to a plan to reduce costs at several locations. In addition, gross profit decreased \$3.1 million related to the divested minerals-based flame retardants and specialty chemicals business in the first quarter of 2016. Excluding the impact of these items, gross profit increased by \$179.4 million, or 19%, primarily due to higher overall sales volumes and favorable price impacts, partially offset by increased costs in Lithium and a \$15.4 million negative impact from hurricane Harvey. Overall, these factors contributed to a gross profit margin for the years ended December 31, 2017 and 2016 of 36.0% and 36.2%, respectively. Excluding the impact of the charges noted above, gross profit margin was 37.3% for the year ended December 31, 2017 as compared to 36.1% for the year ended December 31, 2016.

Selling, General and Administrative Expenses

For the year ended December 31, 2017, our SG&A expenses increased \$96.5 million, or 27%, from the year ended December 31, 2016. The year ended December 31, 2017 included \$19.6 million of acquisition and integration related costs, primarily resulting from the acquisition of Jiangli New Materials, \$8.4 million of restructuring costs related to several locations, primarily our Lithium sites in Germany and \$3.3 million of multiemployer plan financial improvement plan shortfall contributions for our employees. Excluding the impact of these charges, SG&A expenses increased by \$65.2 million, or 18%, primarily due to increased compensation costs, Lithium growth spending and professional fees, partially offset by savings from

our restructuring. As a percentage of net sales, SG&A expenses were 14.7% in 2017, compared to 13.2% in 2016. Excluding the impact of these charges, SG&A expenses as a percentage of net sales were 13.6% in 2017 and 13.2% in 2016.

Research and Development Expenses

For the year ended December 31, 2017, our R&D expenses increased \$3.9 million, or 5%, from the year ended December 31, 2016. Included in R&D expenses for the year ended December 31, 2017 are \$5.7 million of restructuring costs related to our Lithium sites in Germany. As a percentage of net sales, R&D expenses were 2.7% in 2017, compared to 3.0% in 2016.

Gain on Sales of Businesses, Net

The year ended December 31, 2016 included gains before income taxes of \$11.5 million and \$112.3 million related to the sales of the metal sulfides business and the minerals-based flame retardants and specialty chemicals business, respectively, both of which closed in the first quarter of 2016. In addition, Gain on sales of businesses, net, for the year ended December 31, 2016, included a loss of \$1.5 million on the sale of our wafer reclaim business.

Acquisition and Integration Related Costs

Acquisition and integration related costs for the year ended December 31, 2017 are reported in Cost of goods sold and SG&A expenses, as noted above. The year ended December 31, 2016 included \$52.1 million of acquisition and integration related costs directly related to the acquisition of Rockwood (mainly consisting of professional services, costs to achieve synergies, relocation costs, and other integration costs) and \$5.3 million of costs in connection with other significant projects.

Interest and Financing Expenses

Interest and financing expenses for the year ended December 31, 2017 increased \$50.2 million to \$115.4 million from the corresponding 2016 period, due mainly to a loss of \$52.8 million on early extinguishment of debt related to the tender premiums, fees, unamortized discounts and unamortized deferred financing costs from the repayment of the 3.00% Senior notes in full, €307.0 million of the 1.875% Senior notes and \$174.7 million of the 4.50% Senior notes.

Other Expenses, Net

Other expenses, net, for the year ended December 31, 2017 was \$9.5 million versus \$20.5 million for the corresponding 2016 period. Other expenses, net for 2017 included approximately \$16.1 million of pension and OPEB benefits (including mark-to-market actuarial gains of \$11.4 million) allocated to Other expenses, net, as compared to \$26.4 million of pension and OPEB costs (including mark-to-market actuarial losses of \$26.7 million) allocated to Other expenses, net in 2016. In addition, during the year ended December 31, 2017, we recorded a \$28.7 million reserve recorded against a note receivable in one of our European entities no longer deemed probable of collection, \$11.0 million of charges related to previously disposed properties or businesses, partially offset by a \$10.6 million gain related to the reversal of liabilities recorded as part of purchase accounting from a previous acquisition, a \$6.2 million gain related to the acquisition of the 50% interest of an equity investment and \$1.1 million related to a reversal of a liability associated with the previous disposal of a property. The remaining change was primarily due to an increase in foreign exchange losses of \$13.5 million and a \$2.9 million gain in the fair value of our investment in private equity securities recorded during the third quarter of 2016.

The mark-to-market actuarial gain in 2017 is primarily attributable to a higher return on pension plan assets in 2017 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was 14.31% versus an expected return of 6.73%. The mark-to-market actuarial gain in 2017 was partially offset by a decrease in the weighted-average discount rate to 4.03% from 4.43% for our U.S. pension plans and to 1.94% from 2.00% for our foreign pension plans to reflect market conditions as of the December 31, 2017 measurement date.

The mark-to-market actuarial loss in 2016 is primarily attributable to a decrease in the weighted-average discount rate to 4.43% from 4.67% for our U.S. pension plans and to 2.00% from 2.76% for our foreign pension plans to reflect market conditions as of the December 31, 2016 measurement date. The mark-to-market actuarial loss in 2016 was partially offset by a higher return on pension plan assets in 2016 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was 8.11% versus an expected return of 6.85%.

Income Tax Expense

The effective income tax rate for 2017 was 96.6% compared to 18.7% for 2016. Our effective income tax rate for 2017 was primarily affected by the enactment of the TCJA in December 2017. The tax effects of the TCJA are recorded in connection with the one-time transition tax expense of \$429.2 million, partially offset by the remeasurement of deferred tax assets and liabilities due to a decrease in corporate tax rate from 35% to 21% of \$62.3 million tax benefit. Exclusive of the enactment of the TCJA, the Company's effective tax rate differs from the U.S. Federal statutory income tax rate due to the impact of earnings from outside the U.S., mainly attributable to our share of the income of our JBC joint venture, a Free Zones company under the laws of the Hashemite Kingdom of Jordan. In addition, income tax expense for the year ended December 31, 2017, included foreign rate changes of \$16.2 million and a \$5.1 million out-of-period adjustment due to changes in our deferred tax liabilities for basis differences in Chilean fixed assets offset by a \$10.9 million benefit from the release of valuation allowances due to a foreign restructuring plan that was initiated during the second quarter of 2017 and a \$8.8 million benefit from excess tax benefits realized from stock-based compensation arrangements.

Our effective tax rate for 2016 was affected by discrete net tax expense items of \$20.2 million related mainly to a tax gain from restructuring the ownership of a foreign subsidiary, foreign tax rate changes, provision to return adjustments and changes in valuation allowances necessary due to the restructuring. See Note 20, "Income Taxes," to our consolidated financial statements included in Part II, Item 8 of this report for a reconciliation of the U.S. Federal statutory income tax rate to our effective rate for 2017 and 2016.

Equity in Net Income of Unconsolidated Investments

Equity in net income of unconsolidated investments was \$84.5 million for the year ended December 31, 2017 compared to \$59.6 million in the same period last year. This increase of \$24.9 million was primarily due to higher equity income reported by our Lithium segment joint venture, Windfield Holdings Pty. Ltd., resulting from favorable pricing and volumes in our lithium business.

Income from Discontinued Operations (Net of Tax)

The year ended December 31, 2016 income from discontinued operations, after income taxes, of \$202.1 million included a pre-tax gain of \$388.0 million (\$135.0 million after income taxes) related to the sale of our Chemetall Surface Treatment business, which closed on December 14, 2016. This gain represents the difference between the carrying value of the related assets and their fair value as determined by the sales price less estimated costs to sell, and included the reversal of \$81.4 million of foreign currency translation loss out of Accumulated other comprehensive loss.

Net Income Attributable to Noncontrolling Interests

For the year ended December 31, 2017, net income attributable to noncontrolling interests was \$44.6 million compared to \$37.1 million in the same period of 2016. This increase of \$7.5 million was due primarily to changes in consolidated income related to our JBC joint venture resulting from higher sales volumes.

Net Income Attributable to Albemarle Corporation

Net income attributable to Albemarle Corporation decreased to \$54.9 million for the year ended December 31, 2017, from \$643.7 million for the corresponding period of 2016. The year ended December 31, 2017 was negatively impacted by the one-time transition tax expense of \$429.2 million recorded as a result of the enactment of the TCJA in December 2017. In addition, the year ended December 31, 2017 included a \$52.8 million loss on early extinguishment of debt and \$17.1 million of restructuring and other costs, while the year ended December 31, 2016 included net gains of \$250.5 million after income taxes related to the sale of businesses, including discontinued operations. Excluding these items, net income attributable to Albemarle increased by \$160.8 million. The increase was primarily due to the increase in gross profit from higher overall sales volumes and favorable price impacts, the remeasurement of deferred tax assets and liabilities due to a decrease in corporate tax rate from 35% to 21% of \$62.3 million tax benefit resulting from the enactment of the TCJA, and lower acquisition and integration related costs, partially offset by an increase in SG&A expenses, income before taxes from discontinued operations in 2016 and the negative impact of hurricane Harvey.

Other Comprehensive Income, Net of Tax

Total other comprehensive income, after income taxes, was \$187.6 million in 2017 compared to \$8.3 million in 2016. This change is primarily due to changes in foreign currency translations. We translate our foreign subsidiary financial statements from their local currencies to U.S. Dollars. In 2017, other comprehensive income from foreign currency translation

adjustments was \$227.4 million, mainly as a result of favorable movements in the Euro of approximately \$192 million, the Korean Won of approximately \$16 million, the Chinese Renminbi of approximately \$13 million and the Taiwan Dollar of approximately \$4 million. Also included in total other comprehensive income for 2017 is a loss of \$41.8 million in connection with the revaluation of our Euro-based 1.875% Senior notes which have been designated as a hedge of our net investment in foreign operations. In 2016, other comprehensive loss from foreign currency translation adjustments was \$20.8 million, mainly as a result of unfavorable movements in the British Pound Sterling of approximately \$25 million, the Chinese Renminbi of approximately \$12 million, the Korean Won of approximately \$6 million, the Turkish Lira of approximately \$6 million, partially offset by favorable movements in the Euro of approximately \$15 million and the Brazilian Real of approximately \$13 million. Included in the currency movements for 2016 is the favorable effect of \$81.4 million in accumulated foreign currency translation losses that were reversed as a result of the sale of the Chemetall Surface Treatment business. Also included in total other comprehensive income for 2016 is income of \$26.1 million in connection with the revaluation of our Euro-based 1.875% Senior notes and which have been designated as a hedge of our net investment in foreign operations.

Segment Information Overview. Summarized financial information concerning our reportable segments is shown in the following tables. Results for 2017 and 2016 have been recast to reflect the change in segments previously noted.

	Year Ended December 31,				Percentage Change
	2017	%	2016	%	2017 vs. 2016
(In thousands, except percentages)					
Net sales:					
Lithium	\$ 1,018,885	33.2 %	\$ 668,852	25.0 %	52 %
Bromine Specialties	855,143	27.8 %	792,425	29.6 %	8 %
Catalysts	1,067,572	34.7 %	1,031,501	38.5 %	3 %
All Other	128,914	4.2 %	180,988	6.8 %	(29)%
Corporate	1,462	0.1 %	3,437	0.1 %	(57)%
Total net sales	<u>\$ 3,071,976</u>	<u>100.0 %</u>	<u>\$ 2,677,203</u>	<u>100.0 %</u>	<u>15 %</u>
Adjusted EBITDA:					
Lithium	\$ 446,652	50.4 %	\$ 285,714	37.7 %	56 %
Bromine Specialties	258,901	29.2 %	226,926	29.9 %	14 %
Catalysts	283,883	32.1 %	316,609	41.8 %	(10)%
All Other	13,878	1.6 %	14,772	1.9 %	(6)%
Corporate	(117,834)	(13.3)%	(85,804)	(11.3)%	37 %
Total adjusted EBITDA	<u>\$ 885,480</u>	<u>100.0 %</u>	<u>\$ 758,217</u>	<u>100.0 %</u>	<u>17 %</u>

See below for a reconciliation of adjusted EBITDA, the non-GAAP financial measure, from Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with GAAP, (in thousands):

	Lithium	Bromine Specialties	Catalysts	Reportable Segments Total	All Other	Corporate	Consolidated Total
2017							
Net income (loss) attributable to Albemarle Corporation	\$342,992	\$ 218,839	\$ 230,665	\$ 792,496	\$ 5,521	\$ (743,167)	\$ 54,850
Depreciation and amortization	87,879	40,062	54,468	182,409	8,357	6,162	196,928
Utilization of inventory markup ^(a)	23,095	—	—	23,095	—	—	23,095
Restructuring and other ^(b)	—	—	—	—	—	17,056	17,056
Gain on acquisition ^(c)	(6,221)	—	—	(6,221)	—	—	(6,221)
Acquisition and integration related costs ^(d)	—	—	—	—	—	33,954	33,954
Interest and financing expenses ^(e)	—	—	—	—	—	115,350	115,350
Income tax expense	—	—	—	—	—	431,817	431,817
Non-operating pension and OPEB items	—	—	—	—	—	(16,125)	(16,125)
Note receivable reserve ^(f)	—	—	—	—	—	28,730	28,730
Other ^(g)	(1,093)	—	(1,250)	(2,343)	—	8,389	6,046
Adjusted EBITDA	<u>\$446,652</u>	<u>\$ 258,901</u>	<u>\$ 283,883</u>	<u>\$ 989,436</u>	<u>\$ 13,878</u>	<u>\$ (117,834)</u>	<u>\$ 885,480</u>
2016							
Net income (loss) attributable to Albemarle Corporation	\$198,852	\$ 187,364	\$ 265,416	\$ 651,632	\$131,301	\$ (139,258)	\$ 643,675
Depreciation and amortization	86,862	39,562	51,193	177,617	7,302	6,056	190,975
(Gain) loss on sales of businesses, net ^(h)	—	—	—	—	(123,831)	1,533	(122,298)
Acquisition and integration related costs ⁽ⁱ⁾	—	—	—	—	—	57,384	57,384
Interest and financing expenses	—	—	—	—	—	65,181	65,181
Income tax expense	—	—	—	—	—	96,263	96,263
Income from discontinued operations (net of tax)	—	—	—	—	—	(202,131)	(202,131)
Non-operating pension and OPEB items	—	—	—	—	—	25,589	25,589
Other ⁽ⁱ⁾	—	—	—	—	—	3,579	3,579
Adjusted EBITDA	<u>\$285,714</u>	<u>\$ 226,926</u>	<u>\$ 316,609</u>	<u>\$ 829,249</u>	<u>\$ 14,772</u>	<u>\$ (85,804)</u>	<u>\$ 758,217</u>

- (a) In connection with the acquisition of Jiangli New Materials, the Company valued inventory purchased from Jiangli New Materials at fair value, which resulted in a markup of the underlying net book value of the inventory totaling approximately \$23.1 million. The utilization of this inventory markup was included in Cost of goods sold during the year ended December 31, 2017, the estimated remaining selling period.
- (b) During 2017, we initiated action to reduce costs in each of our reportable segments at several locations, primarily at our Lithium sites in Germany. Based on the restructuring plans, we have recorded expenses of \$2.9 million in Cost of goods sold, \$8.4 million in Selling, general and administrative expenses, and \$5.7 million in Research and development expenses, primarily related to expected severance payments. The unpaid balance is recorded in Accrued expenses at December 31, 2018, with the expectation that the remaining balance will be paid by the end of 2019.
- (c) Gain recorded in Other expenses, net related to the acquisition of the remaining 50% interest in Salmag. See Note 2, "Acquisitions," to our consolidated financial statements included in Part II, Item 8 of this report for additional information.
- (d) Acquisition and integration related costs of \$14.3 million and \$19.6 million were included in Cost of goods sold and Selling, general and administrative expenses, respectively, for the year ended December 31, 2017 primarily resulting from the Jiangli New Materials acquisition, including non-routine compensation related costs negotiated specifically as a result of this acquisition that are outside the Company's normal compensation arrangements.
- (e) Included in Interest and financing expenses is a loss on early extinguishment of debt of \$52.8 million. See Note 14, "Long-Term Debt," to our consolidated financial statements included in Part II, Item 8 of this report for additional information.
- (f) Reserve recorded in Other expenses, net against a note receivable on one of our European entities no longer deemed probable of collection.
- (g) Included amounts for the year ended December 31, 2017 recorded in:
- Cost of goods sold - \$1.3 million reversal of deferred income related to an abandoned project at an unconsolidated investment.

- Selling, general and administrative expenses - \$3.3 million of shortfall contributions for our multiemployer plan financial improvement plan, partially offset by \$1.0 million related to a reversal of an accrual recorded as part of purchase accounting from a previous acquisition.
 - Other expenses, net - \$3.2 million of asset retirement obligation charges related to the revision of an estimate at a site formerly owned by Albemarle, losses of \$8.7 million related to adjustments of settlements and indemnifications of previously disposed businesses, the revision of tax indemnification expenses of \$3.7 million primarily related to the filing of tax returns and a competent authority agreement for a previously disposed business and \$1.0 million related to the settlement of a legal claim. This is partially offset by gains of \$10.6 million and \$1.1 million related to the reversal of liabilities recorded as part of purchase accounting from a previous acquisition and the previous disposal of a property, respectively.
- (h) See “*Gain on Sales of Businesses, Net*” on page 40 for a description of these items.
- (i) See “*Acquisition and Integration Related Costs*” on page 40 for a description of these items.
- (j) Included amounts for the year ended December 31, 2016 recorded in:
- Selling, general and administrative expenses - \$0.9 million related to the net loss on the sales of properties.
 - Research and development expenses - \$1.4 million related to the write-off of fixed assets in China.
 - Other expenses, net - \$2.4 million related to environmental charges related to a site formerly owned by Albemarle, partially offset by a gain related to a previously disposed of site in China of \$1.1 million.

Lithium

Lithium segment net sales for the year ended December 31, 2017 were \$1.02 billion, up \$350.0 million, or 52%, in comparison to the same period in 2016. The increase was primarily driven by \$163.2 million of favorable Lithium sales volumes, largely from battery grade applications, due to market demand and \$186.3 million of favorable Lithium price impacts due primarily to price increases in our battery grade lithium salts. Adjusted EBITDA for Lithium increased 56%, or \$160.9 million, to \$446.7 million for the year ended December 31, 2017, compared to the corresponding period of 2016, primarily due to favorable pricing and higher overall sales volumes, partially offset by Lithium growth spending and \$0.4 million of unfavorable currency translation impacts.

Bromine Specialties

Bromine Specialties segment net sales for the year ended December 31, 2017 were \$855.1 million, up \$62.7 million, or 8%, compared to the corresponding period of 2016. The increase was driven primarily by \$60.4 million of higher sales volumes due to strong demand in flame retardants and reduced production in 2017 by Chinese bromine companies, and \$2.3 million of favorable pricing on certain bromine derivatives. Adjusted EBITDA for Bromine Specialties increased 14%, or \$32.0 million, to \$258.9 million for the year ended December 31, 2017, compared to the corresponding period of 2016, primarily due to higher overall sales volumes and favorable pricing, partially offset by higher variable and fixed costs and a \$1.5 million negative impact from hurricane Harvey.

Catalysts

Catalysts segment net sales for the year ended December 31, 2017 were \$1.07 billion, an increase of \$36.1 million, or 3%, compared to the corresponding period of 2016. This increase was primarily due to \$48.7 million of higher volumes from strong demand in our customer base and \$2.8 million of favorable currency exchange impacts, partially offset by \$15.5 million of unfavorable price impacts due to customer and product mix and the bankruptcy filing of one of our customers. Catalysts adjusted EBITDA decreased 10%, or \$32.7 million, to \$283.9 million for the year ended December 31, 2017 compared to the corresponding period of 2016, primarily due to unfavorable price and mix impacts, higher costs and a \$13.8 million negative impact from hurricane Harvey, partially offset by \$2.3 million of favorable currency translation impacts.

All Other

All Other net sales for the year ended December 31, 2017 were \$128.9 million, a decrease of \$52.1 million compared to the year ended December 31, 2016. This decrease was primarily due to the impact of the sale of the minerals-based flame retardants and specialty chemicals business of \$38.6 million, as well as unfavorable fine chemistry services pricing impacts due to a contract formula change which did not impact earnings. All Other adjusted EBITDA was down 6%, or \$0.9 million, for the year ended December 31, 2017 in comparison to the same period of 2016. The year ended December 31, 2016 included the impact of the sale of the minerals-based flame retardants and specialty chemicals business of \$3.4 million and a \$2.9 million gain in the fair value of our investment in private equity securities.

Corporate

Corporate adjusted EBITDA was a charge of \$117.8 million for the year ended December 31, 2017, an increase of \$32.0 million, compared to the year ended December 31, 2016, primarily due to increased compensation costs, professional fees and \$13.5 million of unfavorable currency impacts.

Summary of Critical Accounting Policies and Estimates

Estimates, Assumptions and Reclassifications

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements. Listed below are the estimates and assumptions that we consider to be critical in the preparation of our financial statements.

Certain amounts in the accompanying consolidated financial statements and notes thereto have been reclassified to conform to the current presentation.

Property, Plant and Equipment. We assign the useful lives of our property, plant and equipment based upon our internal engineering estimates which are reviewed periodically. The estimated useful lives of our property, plant and equipment range from two to sixty years and depreciation is recorded on the straight-line method, with the exception of our long-term mineral rights, which are depleted on a units-of-production method. We evaluate the recovery of our property, plant and equipment by comparing the net carrying value of the asset group to the undiscounted net cash flows expected to be generated from the use and eventual disposition of that asset group when events or changes in circumstances indicate that its carrying amount may not be recoverable. If the carrying amount of the asset group is not recoverable, the fair value of the asset group is measured and if the carrying amount exceeds the fair value, an impairment loss is recognized.

Acquisition Method of Accounting. We recognize the identifiable assets acquired, the liabilities assumed and any noncontrolling interest in the acquiree at their estimated fair values on the date of acquisition for acquired businesses. Determining the fair value of these items requires management's judgment, the utilization of independent valuation experts and involves the use of significant estimates and assumptions with respect to the timing and amounts of future cash inflows and outflows, discount rates, customer attrition rates, royalty rates, market prices and tax rates, among other items. The judgments made in the determination of the estimated fair value assigned to the assets acquired, the liabilities assumed and any noncontrolling interest in the investee, as well as the estimated useful life of each asset and the duration of each liability, can materially impact the financial statements in periods after acquisition, such as through depreciation and amortization expense. For more information on our acquisitions and application of the acquisition method, see Note 2, "Acquisitions," to our consolidated financial statements included in Part II, Item 8 of this report.

Income Taxes. We assume the deductibility of certain costs in our income tax filings, and we estimate the future recovery of deferred tax assets, uncertain tax positions and indefinite investment assertions.

Environmental Remediation Liabilities. We estimate and accrue the costs required to remediate a specific site depending on site-specific facts and circumstances. Cost estimates to remediate each specific site are developed by assessing (i) the scope of our contribution to the environmental matter, (ii) the scope of the anticipated remediation and monitoring plan and (iii) the extent of other parties' share of responsibility.

Actual results could differ materially from the estimates and assumptions that we use in the preparation of our financial statements.

Revenue Recognition

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services, and is recognized when performance obligations are satisfied under the terms of contracts with our customers. A performance obligation is deemed to be satisfied when control of the product or service is transferred to our customer. The transaction price of a contract, or the amount we expect to receive upon satisfaction of all performance obligations, is determined by reference to the contract's terms and includes adjustments, if applicable, for any variable consideration, such as customer rebates, noncash consideration or consideration payable to the customer, although these adjustments are generally not material. Where a contract contains more than one distinct performance obligation, the transaction price is allocated to each performance obligation based on the standalone selling price of each performance obligation, although these situations do not occur frequently and are generally not built into our contracts. Any unsatisfied performance obligations are not material. Standalone selling prices are based on prices we charge to our customers, which in some cases is based on established market

prices. Sales and other similar taxes collected from customers on behalf of third parties are excluded from revenue. Our payment terms are generally between 30 to 90 days, however, they vary by market factors, such as customer size, creditworthiness, geography and competitive environment.

All of our revenue is derived from contracts with customers, and almost all of our contracts with customers contain one performance obligation for the transfer of goods where such performance obligation is satisfied at a point in time. Control of a product is deemed to be transferred to the customer upon shipment or delivery. Significant portions of our sales are sold free on board shipping point or on an equivalent basis, while delivery terms of other transactions are based upon specific contractual arrangements. Our standard terms of delivery are generally included in our contracts of sale, order confirmation documents and invoices, while the timing between shipment and delivery generally ranges between 1 and 45 days. Costs for shipping and handling activities, whether performed before or after the customer obtains control of the goods, are accounted for as fulfillment costs.

The Company currently utilizes the following practical expedients, as permitted by Accounting Standards Codification (“ASC”) 606, *Revenue from Contracts with Customers*:

- All sales and other pass-through taxes are excluded from contract value;
- In utilizing the modified retrospective transition method, no adjustment was necessary for contracts that did not cross over the reporting year;
- We will not consider the possibility of a contract having a significant financing component (which would effectively attribute a portion of the sales price to interest income) unless, if at contract inception, the expected payment terms (from time of delivery or other relevant criterion) are more than one year;
- If our right to customer payment is directly related to the value of our completed performance, we recognize revenue consistent with the invoicing right; and
- We expense as incurred all costs of obtaining a contract incremental to any costs/compensation attributable to individual product sales/shipments for contracts where the amortization period for such costs would otherwise be one year or less.

Certain products we produce are made to our customer’s specifications where such products have no alternative use or would need significant rework costs in order to be sold to another customer. In management’s judgment, control of these arrangements is transferred to the customer at a point in time (upon shipment or delivery) and not over the time they are produced. Therefore revenue is recognized upon shipment or delivery of these products.

Costs incurred to obtain contracts with customers are not significant and are expensed immediately as the amortization period would be one year or less. When the Company incurs pre-production or other fulfillment costs in connection with an existing or specific anticipated contract and such costs are recoverable through margin or explicitly reimbursable, such costs are capitalized and amortized to Cost of goods sold on a systematic basis that is consistent with the pattern of transfer to the customer of the goods or services to which the asset relates, which is less than one year. We record bad debt expense in specific situations when we determine the customer is unable to meet its financial obligation.

Goodwill and Other Intangible Assets

We account for goodwill and other intangibles acquired in a business combination in conformity with current accounting guidance which requires goodwill and indefinite-lived intangible assets to not be amortized.

We test goodwill for impairment by comparing the estimated fair value of our reporting units to the related carrying value. Our reporting units are either our operating business segments or one level below our operating business segments for which discrete financial information is available and for which operating results are regularly reviewed by the business management. We estimate the fair value based on present value techniques involving future cash flows. Future cash flows include assumptions about sales volumes, selling prices, raw material prices, labor and other employee benefit costs, capital additions, income taxes, working capital, and other economic or market-related factors. Significant management judgment is involved in estimating these variables, and they include inherent uncertainties since they are forecasting future events. We perform a sensitivity analysis by using a range of inputs to confirm the reasonableness of these estimates being used in the goodwill impairment analysis. We use a Weighted Average Cost of Capital (“WACC”) approach to determine our discount rate for goodwill recoverability testing. Our WACC calculation incorporates industry-weighted average returns on debt and equity from a market perspective. The factors in this calculation are largely external to the Company and, therefore, are beyond our control. We test our recorded goodwill for impairment in the fourth quarter of each year or upon the occurrence of events or changes in circumstances that would more likely than not reduce the fair value of our reporting units below their carrying amounts. The Company performed its annual goodwill impairment test as of October 31, 2018 and concluded there was no

impairment as of that date. In addition, no material indications of impairment in any of our reporting units were indicated by the sensitivity analysis.

We assess our indefinite-lived intangible assets, which include trade names, for impairment annually and between annual tests if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. The indefinite-lived intangible asset impairment standard allows us to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if we determine, based on the qualitative assessment, that it is more likely than not that the indefinite-lived intangible asset's fair value is less than its carrying amount. If we determine based on the qualitative assessment that it is more likely than not that the asset is impaired, an impairment test is performed by comparing the fair value of the indefinite-lived intangible asset to its carrying amount.

Definite-lived intangible assets, such as purchased technology, patents and customer lists, are amortized over their estimated useful lives generally for periods ranging from five to twenty-five years. Except for customer lists and relationships associated with the majority of our Lithium business, which are amortized using the pattern of economic benefit method, definite-lived intangible assets are amortized using the straight-line method. We evaluate the recovery of our definite-lived intangible assets by comparing the net carrying value of the asset group to the undiscounted net cash flows expected to be generated from the use and eventual disposition of that asset group when events or changes in circumstances indicate that its carrying amount may not be recoverable. If the carrying amount of the asset group is not recoverable, the fair value of the asset group is measured and if the carrying amount exceeds the fair value, an impairment loss is recognized. See Note 12, "Goodwill and Other Intangibles," to our consolidated financial statements included in Part II, Item 8 of this report.

Resource Development Expenses

We incur costs in resource exploration, evaluation and development during the different phases of our resource development projects. Exploration costs incurred before obtaining legal rights to explore an area are generally expensed as incurred. After obtaining legal rights, exploration costs are expensed in areas where we have uncertainty about obtaining proven resources. In areas where we have substantial knowledge about the area and consider it probable to obtain commercially viable proven resources, exploration and evaluation costs are capitalized.

If technical feasibility studies have been obtained, resource evaluation expenses are capitalized when the study demonstrates proven or probable resources for which future economic returns are expected, while costs for projects that are not considered viable are expensed. Development costs that are necessary to bring the property to commercial production or increase the capacity or useful life are capitalized. Costs to maintain the production capacity in a property under production are expensed as incurred.

Capitalized resource costs are depleted using the units-of-production method. Our resource development assets are evaluated for impairment when events or changes in circumstances indicate that the carrying amount may not be recoverable.

Pension Plans and Other Postretirement Benefits

Under authoritative accounting standards, assumptions are made regarding the valuation of benefit obligations and the performance of plan assets. As required, we recognize a balance sheet asset or liability for each of our pension and OPEB plans equal to the plan's funded status as of the measurement date. The primary assumptions are as follows:

- **Discount Rate**—The discount rate is used in calculating the present value of benefits, which is based on projections of benefit payments to be made in the future.
- **Expected Return on Plan Assets**—We project the future return on plan assets based on prior performance and future expectations for the types of investments held by the plans as well as the expected long-term allocation of plan assets for these investments. These projected returns reduce the net benefit costs recorded currently.
- **Rate of Compensation Increase**—For salary-related plans, we project employees' annual pay increases, which are used to project employees' pension benefits at retirement.
- **Mortality Assumptions**—Assumptions about life expectancy of plan participants are used in the measurement of related plan obligations.

Actuarial gains and losses are recognized annually in our consolidated statements of income in the fourth quarter and whenever a plan is determined to qualify for a remeasurement during a fiscal year. The remaining components of pension and OPEB plan expense, primarily service cost, interest cost and expected return on assets, are recorded on a monthly basis. The market-related value of assets equals the actual market value as of the date of measurement.

During 2018, we made changes to assumptions related to discount rates and expected rates of return on plan assets. We consider available information that we deem relevant when selecting each of these assumptions.

Our U.S. defined benefit plans for non-represented employees are closed to new participants, with no additional benefits accruing under these plans as participants' accrued benefits have been frozen. In selecting the discount rates for the U.S. plans, we consider expected benefit payments on a plan-by-plan basis. As a result, the Company uses different discount rates for each plan depending on the demographics of participants and the expected timing of benefit payments. For 2018, the discount rates were calculated using the results from a bond matching technique developed by Milliman, which matched the future estimated annual benefit payments of each respective plan against a portfolio of bonds of high quality to determine the discount rate. We believe our selected discount rates are determined using preferred methodology under authoritative accounting guidance and accurately reflect market conditions as of the December 31, 2018 measurement date.

In selecting the discount rates for the foreign plans, we look at long-term yields on AA-rated corporate bonds when available. Our actuaries have developed yield curves based on the yields of constituent bonds in the various indices as well as on other market indicators such as swap rates, particularly at the longer durations. For the Eurozone, we apply the Aon Hewitt yield curve to projected cash flows from the relevant plans to derive the discount rate. For the U.K., the discount rate is determined by applying the Aon Hewitt yield curve for typical schemes of similar duration to projected cash flows of Albemarle's U.K. plan. In other countries where there is not a sufficiently deep market of high-quality corporate bonds, we set the discount rate by referencing the yield on government bonds of an appropriate duration.

At December 31, 2018, the weighted-average discount rate for the U.S. and foreign pension plans was increased to 4.59% and 2.15%, respectively, from 4.03% and 1.94%, respectively, at December 31, 2017 to reflect market conditions as of the December 31, 2018 measurement date. The discount rate for the OPEB plans at December 31, 2018 and 2017 was 4.55% and 3.99%, respectively.

In estimating the expected return on plan assets, we consider past performance and future expectations for the types of investments held by the plan as well as the expected long-term allocations of plan assets to these investments. For the years 2018 and 2017, the weighted-average expected rate of return on U.S. pension plan assets was 6.89%, and the weighted-average expected rate of return on foreign pension plan assets was 5.52% and 6.16%, respectively. Effective January 1, 2019, the weighted-average expected rate of return on U.S. and foreign pension plan assets is 6.89% and 5.69%, respectively. The weighted-average expected rate of return on plan assets for our OPEB plans was 7.00% during 2018 and 2017.

In projecting the rate of compensation increase, we consider past experience in light of movements in inflation rates. At December 31, 2018 and 2017, the assumed weighted-average rate of compensation increase was 3.63% and 3.18%, respectively, for our foreign pension plans.

In October 2017, the Society of Actuaries ("SOA") published an updated Mortality Improvement Scale, MP-2017. The updated improvement scale incorporates an additional year of mortality data (2015). We utilized the same base, SOA RP-2014 Adjusted to 2006 Total Dataset Mortality, but we revised our mortality assumption to incorporate the MP-2017 Mortality Improvement Scale for purposes of measuring our U.S. pension and OPEB obligations at December 31, 2017. In October 2018, the SOA published an updated Mortality Improvement Scale, MP-2018. The updated Improvement Scale incorporates an additional year of mortality data (2016). We utilized the same base mortality, SOA RP-2014 Adjusted to 2006 Total Dataset Mortality, but we revised our mortality assumption to incorporate the MP-2018 Mortality Improvement Scale for purposes of measuring our U.S. pension and OPEB obligations at December 31, 2018.

At December 31, 2018, the assumed rate of increase in the pre-65 and post-65 per capita cost of covered health care benefits for U.S. retirees was zero as the employer-paid premium caps (pre-65 and post-65) were met starting January 1, 2013.

A variance in the assumptions discussed above would have an impact on the projected benefit obligations, the accrued OPEB liabilities, and the annual net periodic pension and OPEB cost. The following table reflects the sensitivities associated with a hypothetical change in certain assumptions, primarily in the U.S. (in thousands):

	(Favorable) Unfavorable			
	1% Increase		1% Decrease	
	Increase (Decrease) in Benefit Obligation	Increase (Decrease) in Benefit Cost	Increase (Decrease) in Benefit Obligation	Increase (Decrease) in Benefit Cost
Actuarial Assumptions				
Discount Rate:				
Pension	\$ (94,999)	\$ 3,492	\$ 116,592	\$ (5,024)
Other postretirement benefits	\$ (4,403)	\$ 239	\$ 5,226	\$ (298)
Expected return on plan assets:				
Pension	*	\$ (5,595)	*	\$ 5,595
Other postretirement benefits	*	\$ —	*	\$ —

* Not applicable.

Of the \$583.7 million total pension and postretirement assets at December 31, 2018, \$72.0 million, or approximately 12%, are measured using the net asset value as a practical expedient. Gains or losses attributable to these assets are recognized in the consolidated balance sheets as either an increase or decrease in plan assets. See Note 15, "Pension Plans and Other Postretirement Benefits," to our consolidated financial statements included in Part II, Item 8 of this report.

Income Taxes

We use the liability method for determining our income taxes, under which current and deferred tax liabilities and assets are recorded in accordance with enacted tax laws and rates. Under this method, the amounts of deferred tax liabilities and assets at the end of each period are determined using the tax rate expected to be in effect when taxes are actually paid or recovered. Future tax benefits are recognized to the extent that realization of such benefits is more likely than not. In order to record deferred tax assets and liabilities, we are following guidance under ASU 2015-17, which requires deferred tax assets and liabilities to be classified as noncurrent on the balance sheet, along with any related valuation allowance. Tax effects are released from Accumulated Other Comprehensive Income using either the specific identification approach or the portfolio approach based on the nature of the underlying item.

Deferred income taxes are provided for the estimated income tax effect of temporary differences between the financial statement carrying amounts and the tax basis of existing assets and liabilities. Deferred tax assets are also provided for operating losses, capital losses and certain tax credit carryovers. A valuation allowance, reducing deferred tax assets, is established when it is more likely than not that some portion or all of the deferred tax assets will not be realized. The realization of such deferred tax assets is dependent upon the generation of sufficient future taxable income of the appropriate character. Although realization is not assured, we do not establish a valuation allowance when we believe it is more likely than not that a net deferred tax asset will be realized.

We only recognize a tax benefit after concluding that it is more likely than not that the benefit will be sustained upon audit by the respective taxing authority based solely on the technical merits of the associated tax position. Once the recognition threshold is met, we recognize a tax benefit measured as the largest amount of the tax benefit that, in our judgment, is greater than 50% likely to be realized. Interest and penalties related to income tax liabilities are included in Income tax expense on the consolidated statements of income.

We are subject to income taxes in the U.S. and numerous foreign jurisdictions. Due to the statute of limitations, we are no longer subject to U.S. federal income tax audits by the Internal Revenue Service ("IRS") for years prior to 2011. Due to the statute of limitations, we also are no longer subject to U.S. state income tax audits prior to 2011.

With respect to jurisdictions outside the U.S., several audits are in process. We have audits ongoing for the years 2006 through 2017 related to Germany, Taiwan, Italy, India, Belgium, and Chile, some of which are for entities that have since been divested.

While we believe we have adequately provided for all tax positions, amounts asserted by taxing authorities could be greater than our accrued position. Accordingly, additional provisions on federal and foreign tax-related matters could be recorded in the future as revised estimates are made or the underlying matters are settled or otherwise resolved.

Since the timing of resolutions and/or closure of tax audits are uncertain, it is difficult to predict with certainty the range of reasonably possible significant increases or decreases in the liability related to uncertain tax positions that may occur within the next twelve months. Our current view is that it is reasonably possible that we could record a decrease in the liability related to uncertain tax positions, relating to a number of issues, up to approximately \$4.4 million as a result of closure of tax statutes. As a result of the sale of the Chemetall Surface Treatment business in 2016, we agreed to indemnify certain income and non-income tax liabilities, including uncertain tax positions, associated with the entities sold. The associated liability is recorded in Other noncurrent liabilities. See Note 16, “Other Noncurrent Liabilities,” and Note 20, “Income Taxes,” for further details.

We have designated the undistributed earnings of a portion of our foreign operations as indefinitely reinvested and as a result we do not provide for deferred income taxes on the unremitted earnings of these subsidiaries. Our foreign earnings are computed under U.S. federal tax earnings and profits (“E&P”) principles. In general, to the extent our financial reporting book basis over tax basis of a foreign subsidiary exceeds these E&P amounts, deferred taxes have not been provided, as they are essentially permanent in duration. The determination of the amount of such unrecognized deferred tax liability is not practicable. We provide for deferred income taxes on our undistributed earnings of foreign operations that are not deemed to be indefinitely invested. We will continue to evaluate our permanent investment assertion taking into consideration all relevant and current tax laws.

On December 22, 2017, the TCJA was signed into law in the U.S. The TCJA contains several key tax provisions including, among other things, the reduction of the corporate income tax rate from 35% to 21% effective January 1, 2018, the requirement of companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, and the creation of new taxes on certain foreign sourced earnings such as global intangible low-taxed income (“GILTI”). A company can elect an accounting policy to account for GILTI as a period charge in the future period the tax arises or as part of deferred taxes related to the investment or subsidiary. The Company has elected to account for GILTI as a period cost.

Stock-based Compensation Expense

The fair value of restricted stock awards, restricted stock unit awards and performance unit awards with a service condition are determined based on the number of shares or units granted and the quoted price of our common stock on the date of grant, and the fair value of stock options is determined using the Black-Scholes valuation model. The fair value of performance unit awards with a service and a market condition are estimated on the date of grant using a Monte Carlo simulation model. The fair value of these awards is determined after giving effect to estimated forfeitures. Such value is recognized as expense over the service period, which is generally the vesting period of the equity grant. To the extent restricted stock awards, restricted stock unit awards, performance unit awards and stock options are forfeited prior to vesting in excess of the estimated forfeiture rate, the corresponding previously recognized expense is reversed as an offset to operating expenses.

Financial Condition and Liquidity

Overview

The principal uses of cash in our business generally have been capital investments and resource development costs, funding working capital and service of debt. We also make contributions to our defined benefit pension plans, pay dividends to our shareholders and repurchase shares of our common stock. Historically, cash to fund the needs of our business has been principally provided by cash from operations, debt financing and equity issuances.

We are continually focused on working capital efficiency particularly in the areas of accounts receivable and inventory. We anticipate that cash on hand, cash provided by operating activities, proceeds from divestitures and borrowings will be sufficient to pay our operating expenses, satisfy debt service obligations, fund capital expenditures and other investing activities, fund pension contributions and pay dividends for the foreseeable future.

Cash Flow

Our cash and cash equivalents were \$555.3 million at December 31, 2018 as compared to \$1.14 billion at December 31, 2017. Cash provided by operating activities was \$546.2 million, \$304.0 million and \$735.5 million during the years ended December 31, 2018, 2017 and 2016, respectively.

The increase in cash provided by operating activities in 2018 versus 2017 was primarily due to higher income tax payments in 2017, including approximately \$257 million of income taxes from the gain on sale of the Chemetall Surface Treatment business. In addition, 2018 benefited from increased earnings in each of our reportable segments, increased dividends received from unconsolidated investments and lower interest payments. This was partially offset by increased

receivables from higher net sales during 2018 and the build-up of inventory in our Lithium and Catalysts segments due to higher forecasted sales. The decrease in cash provided by operating activities in 2017 versus 2016 was primarily due to the 2017 income tax payment noted above that was recorded in income taxes payable in 2016. In addition, the decrease resulted from the build-up of inventory in the Lithium reportable segment in 2017. This was partially offset by increased overall sales volumes and prices, lower acquisition and integration related costs and lower interest payments in 2017 as compared to 2016.

During 2018, cash on hand, cash provided by operations and \$413.6 million of net proceeds from divestitures funded \$114.7 million of commercial paper repayments, net of borrowings, \$500.0 million of accelerated share repurchase programs, \$700.0 million of capital expenditures for plant, machinery and equipment, and mining resource development, dividends to shareholders of \$144.6 million, and pension and postretirement contributions of \$15.2 million. During 2017, cash on hand, cash provided by operations and net borrowings of \$138.8 million funded \$778.2 million of debt repayments, \$317.7 million of capital expenditures for plant, machinery and equipment, a \$250.0 million accelerated share repurchase program, dividends to shareholders of \$140.6 million, and pension and postretirement contributions of \$13.3 million. During 2016, cash on hand, cash provided by operations and \$3.33 billion of cash proceeds from divestitures funded \$1.42 billion of debt repayments, \$196.7 million of capital expenditures for plant, machinery and equipment, dividends to shareholders of \$135.4 million, and pension and postretirement contributions of \$20.1 million. In addition, during the years ended December 31, 2018, 2017 and 2016, our consolidated joint venture, JBC, paid dividends of approximately \$40.0 million, \$102.5 million and \$105.0 million, respectively, which resulted in dividends to noncontrolling interests of \$14.8 million, \$36.8 million and \$35.9 million, respectively.

On April 3, 2018, we completed the Polyolefin Catalysts Divestiture to W.R. Grace & Co. for net cash proceeds of approximately \$413.6 million and recorded a gain of \$210.4 million before income taxes in 2018 related to the sale of this business. The transaction includes Albemarle's Product Development Center located in Baton Rouge, Louisiana, and operations at our Yeosu, South Korea site. The sale did not include the organometallics or curatives portion of the PCS business. The Polyolefin Catalysts Divestiture reflects our commitment to investing in the future growth of our high priority businesses and returning capital to our shareholders.

On December 14, 2016, we completed the sale of the Chemetall Surface Treatment business to BASF SE for cash proceeds of approximately \$3.1 billion, net of purchase price adjustments. As a result of the sale, we recorded a gain of \$388.0 million before income taxes and a tax liability of \$253.0 million related to the difference between the sales price and the proportionate carrying value of the interests sold in 2016. We used the proceeds to significantly reduce leverage, including repaying the outstanding balance of the September 2015 Term Loan in full and approximately \$153 million of Commercial Paper Notes in December 2016. In addition, during the first quarter of 2017, we repaid the 3.00% Senior notes in full, €307.0 million of the 1.875% Senior notes and \$174.7 million of the 4.50% Senior notes, as well as related redemption premiums of \$45.2 million.

In 2016, we also completed the sales of our metal sulfides business and our mineral-based flame retardants and specialty chemicals businesses for net proceeds of approximately \$137 million and \$187 million, respectively. The net proceeds from both sales were used to repay a portion of the outstanding balance under the September 2015 Term Loan Agreement.

Capital expenditures were \$700.0 million, \$317.7 million and \$196.7 million for the years ended December 31, 2018, 2017 and 2016, respectively, and were incurred mainly for plant, machinery and equipment, and mining resource development. The increase in capital expenditures during the year ended December 31, 2018 was primarily driven by expansion in our Lithium business. Capital expenditures for discontinued operations were \$19.3 million for the year ended December 31, 2016. We expect our capital expenditures to be between \$800 million and \$900 million in 2019 for Lithium growth, mining resource development and capacity increases, as well as productivity and continuity of operations projects in all segments. Of the total capital expenditures, our projects related to the continuity of operations is expected to remain in the range of 4-6% of net sales, similar to prior years.

During 2018, we incurred \$19.4 million of acquisition and integration related costs related to various significant projects. During 2017, we incurred \$33.9 million of acquisition and integration related costs related to various significant projects, including the Jiangli New Materials acquisition, which contains non-routine compensation related costs negotiated specifically as a result of this acquisition that are outside of the Company's ordinary course compensation arrangements. During 2016, we incurred \$52.1 million of acquisition and integration related costs directly related to the acquisition of Rockwood (mainly consisting of professional services, costs to achieve synergies, relocation costs, and other integration costs) and \$5.3 million of costs in connection with other significant projects.

In November 2016, our Board of Directors authorized an increase in the number of shares the Company is permitted to repurchase under our share repurchase program, pursuant to which the Company was permitted to repurchase up to a maximum

of 15,000,000 shares, including those previously authorized but not yet repurchased. Under our existing Board authorized share repurchase program, during 2018 and 2017, the Company repurchased approximately 5.3 million shares and 2.3 million shares of our common stock, respectively, which reduced the Company's weighted average shares outstanding for purposes of calculating basic and diluted earnings per share for the years ended December 31, 2018 and 2017, respectively. All of the shares repurchased in 2018 and 2017 were also repurchased pursuant to the terms of ASR agreements with major financial institutions. As of December 31, 2018, there were 7,396,263 remaining shares available for repurchase under the Company's authorized share repurchase program. There were no shares of our common stock repurchased during 2016.

Net current assets decreased to approximately \$815.2 million at December 31, 2018 from \$1.28 billion at December 31, 2017, with the decrease being largely due to the reduction in cash and cash equivalents to fund the ASR programs we entered into during 2018 and capital expenditure projects. Additional changes in the components of net current assets are primarily due to the timing of the sale of goods and other ordinary transactions leading up to the balance sheet dates and are not the result of any policy changes by the Company, and do not reflect any change in either the quality of our net current assets or our expectation of success in converting net working capital to cash in the ordinary course of business.

On February 26, 2019, we increased our quarterly dividend rate to \$0.3675 per share, a 10% increase from the quarterly rate of \$0.335 per share paid in 2018.

At December 31, 2018 and December 31, 2017, our cash and cash equivalents included \$525.8 million and \$1.10 billion, respectively, held by our foreign subsidiaries. The majority of these foreign cash balances are associated with earnings that we have asserted are indefinitely reinvested and which we plan to use to support our continued growth plans outside the U.S. through funding of capital expenditures, acquisitions, research, operating expenses or other similar cash needs of our foreign operations. From time to time, we repatriate cash associated with earnings from our foreign subsidiaries to the U.S. for normal operating needs through intercompany dividends, but only from subsidiaries whose earnings we have not asserted to be indefinitely reinvested or whose earnings qualify as "previously taxed income" as defined by the Internal Revenue Code. For the years ended December 31, 2018, 2017 and 2016, we repatriated approximately \$621.8 million, \$20.5 million and \$53.7 million of cash, respectively, as part of these foreign earnings cash repatriation activities. A portion of the cash repatriations was used to repay a net amount of \$114.7 million of commercial paper during 2018.

While we continue to closely monitor our cash generation, working capital management and capital spending in light of continuing uncertainties in the global economy, we believe that we will continue to have the financial flexibility and capability to opportunistically fund future growth initiatives. Additionally, we anticipate that future capital spending including business acquisitions, share repurchases and other cash outlays, should be financed primarily with cash flow provided by operations and cash on hand, with additional cash needed, if any, provided by borrowings. The amount and timing of any additional borrowings will depend on our specific cash requirements.

Long-Term Debt

We currently have the following senior notes outstanding:

Issue Month/Year	Principal (in millions)	Interest Rate	Interest Payment Dates		Maturity Date
December 2014	€393.0	1.875%	December 8		December 8, 2021
November 2014	\$425.0	4.15%	June 1	December 1	December 1, 2024
November 2014	\$350.0	5.45%	June 1	December 1	December 1, 2044
December 2010	\$175.3	4.50%	June 15	December 15	December 15, 2020

Our senior notes are senior unsecured obligations and rank equally with all our other senior unsecured indebtedness from time to time outstanding. The senior notes are effectively subordinated to any of our existing or future secured indebtedness and to the existing and future indebtedness of our subsidiaries. As is customary for such long-term debt instruments, each senior note outstanding has terms that allow us to redeem the notes before its maturity, in whole at any time or in part from time to time, at a redemption price equal to the greater of (i) 100% of the principal amount of the senior notes to be redeemed, or (ii) the sum of the present values of the remaining scheduled payments of principal and interest thereon (exclusive of interest accrued to the date of redemption) discounted to the redemption date on a semi-annual basis using the comparable government rate (as defined in the indentures governing the senior notes) plus between 25 and 40 basis points, depending on the note, plus, in each case, accrued interest thereon to the date of redemption. Holders may require us to purchase such notes at 101% upon a change of control triggering event, as defined in the indentures. The senior notes are subject to typical events of default, including bankruptcy and insolvency events, nonpayment and the acceleration of certain subsidiary indebtedness of \$40 million or more caused by a nonpayment default.

On June 21, 2018, we entered into the 2018 Credit Agreement to replace our revolving, unsecured credit agreement dated as of February 7, 2014, as amended. The 2018 Credit Agreement currently provides for borrowings of up to \$1.0 billion and matures on June 23, 2023. Borrowings under the 2018 Credit Agreement bear interest at variable rates based on an average London inter-bank offered rate (“LIBOR”) for deposits in the relevant currency plus an applicable margin which ranges from 0.910% to 1.500%, depending on the Company’s credit rating from Standard & Poor’s Rating Services, Moody’s Investors Services and Fitch Ratings. The applicable margin on the facility was 1.125% as of December 31, 2018. There were no borrowings outstanding under the 2018 Credit Agreement as of December 31, 2018.

Borrowings under the 2018 Credit Agreement are conditioned upon satisfaction of certain conditions precedent, including the absence of defaults. The Company is subject to one financial covenant, as well as customary affirmative and negative covenants. The financial covenant requires that the Company’s consolidated funded debt to consolidated EBITDA ratio (as such terms are defined in the 2018 Credit Agreement) to be less than or equal to 3.50:1.00, subject to adjustments in accordance with the terms of the 2018 Credit Agreement relating to a consummation of an acquisition where the consideration includes cash proceeds from issuance of funded debt in excess of \$500 million. The 2018 Credit Agreement also contains customary default provisions, including defaults for non-payment, breach of representations and warranties, insolvency, non-performance of covenants and cross-defaults to other material indebtedness. The occurrence of an event of default under the 2018 Credit Agreement could result in all loans and other obligations becoming immediately due and payable and the credit facility being terminated.

On May 29, 2013, we entered into agreements to initiate a commercial paper program on a private placement basis under which we may issue unsecured commercial paper notes (the “Commercial Paper Notes”) from time-to-time up to a maximum aggregate principal amount outstanding at any time of \$750.0 million. The proceeds from the issuance of the Commercial Paper Notes are expected to be used for general corporate purposes, including the repayment of other debt of the Company. Our 2018 Credit Agreement is available to repay the Commercial Paper Notes, if necessary. Aggregate borrowings outstanding under the 2018 Credit Agreement and the Commercial Paper Notes will not exceed the \$1.0 billion current maximum amount available under the 2018 Credit Agreement. The Commercial Paper Notes will be sold at a discount from par, or alternatively, will be sold at par and bear interest at rates that will vary based upon market conditions at the time of issuance. The maturities of the Commercial Paper Notes will vary but may not exceed 397 days from the date of issue. The definitive documents relating to the commercial paper program contain customary representations, warranties, default and indemnification provisions. At December 31, 2018, we had \$306.6 million of Commercial Paper Notes outstanding bearing a weighted-average interest rate of approximately 2.91% and a weighted-average maturity of 38 days. During 2018, we repaid a net amount of \$114.7 million of commercial paper notes using cash on hand. The Commercial Paper Notes are classified as Current portion of long-term debt in our consolidated balance sheets at December 31, 2018 and December 31, 2017.

The non-current portion of our long-term debt amounted to \$1.40 billion at December 31, 2018, compared to \$1.42 billion at December 31, 2017. In addition, at December 31, 2018, we had the ability to borrow \$693.4 million under our commercial paper program and the 2018 Credit Agreement, and \$251.0 million under other existing lines of credit, subject to various financial covenants under our 2018 Credit Agreement. We have the ability and intent to refinance our borrowings under our other existing credit lines with borrowings under the 2018 Credit Agreement, as applicable. Therefore, the amounts outstanding under those credit lines, if any, are classified as long-term debt. We believe that as of December 31, 2018 we were, and currently are, in compliance with all of our debt covenants. For additional information about our long-term debt obligations, see Note 14, “Long-Term Debt,” to our consolidated financial statements included in Part II, Item 8 of this report.

Off-Balance Sheet Arrangements

In the normal course of business with customers, vendors and others, we have entered into off-balance sheet arrangements, including bank guarantees and letters of credit, which totaled approximately \$71.8 million at December 31, 2018. None of these off-balance sheet arrangements has, or is likely to have, a material effect on our current or future financial condition, results of operations, liquidity or capital resources.

Other Obligations

The following table summarizes our contractual obligations for capital projects, various take or pay and throughput agreements, long-term debt, operating leases and other commitments as of December 31, 2018 (in thousands):

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Thereafter</u>
Long-term debt obligations ^(a)	\$ 307,294	\$ 175,302	\$ 446,996	\$ —	\$ 7,216	\$ 778,720
Expected interest payments on long-term debt obligations ^(b)	53,004	53,004	45,119	36,738	36,738	418,213
Operating lease obligations (rental)	25,608	17,918	12,478	10,794	10,109	87,085
Take or pay / throughput agreements ^(c)	26,570	17,293	9,018	7,541	5,595	15,737
Letters of credit and guarantees	45,342	12,924	1,883	1,277	—	10,389
Transition tax on foreign earnings ^(d)	14,379	14,379	30,230	30,442	44,497	198,197
Capital projects	256,165	89	—	—	—	—
Total	<u>\$ 728,362</u>	<u>\$ 290,909</u>	<u>\$ 545,724</u>	<u>\$ 86,792</u>	<u>\$ 104,155</u>	<u>\$1,508,341</u>

- (a) Amounts represent the expected principal payments of our long-term debt and do not include any fair value adjustments, premiums or discounts. Obligations in 2019 include our outstanding Commercial Paper Notes of \$306.6 million with a weighted average maturity of 38 days.
- (b) Interest on our fixed rate borrowings was calculated based on the stated rates of such borrowings. A weighted average interest rate of approximately 0.35% was used for our remaining long-term debt obligations.
- (c) These amounts primarily relate to contracts entered into with certain third party vendors in the normal course of business to secure raw materials for our production processes. In order to secure materials, sometimes for long durations, these contracts mandate a minimum amount of product to be purchased at predetermined rates over a set timeframe.
- (d) In December 2017, the TCJA was signed into law imposing a one-time transition tax on foreign earnings, payable over an eight-year period. The one-time transition tax imposed by the TCJA is based on our total post-1986 earnings and profits that we previously deferred from U.S. income taxes.

Amounts in the table above exclude required employer pension contributions. Contributions to our domestic and foreign qualified and nonqualified pension plans, including our supplemental executive retirement plan (“SERP”), are expected to approximate \$12 million in 2019. We may choose to make additional pension contributions in excess of this amount. We made contributions of approximately \$12.9 million to our domestic and foreign pension plans (both qualified and nonqualified) during the year ended December 31, 2018.

The liability related to uncertain tax positions, including interest and penalties, recorded in Other noncurrent liabilities totaled \$22.9 million and \$24.4 million at December 31, 2018 and 2017, respectively. Related assets for corresponding offsetting benefits recorded in Other assets totaled \$13.0 million and \$14.6 million at December 31, 2018 and 2017, respectively. We cannot estimate the amounts of any cash payments during the next twelve months associated with these liabilities and are unable to estimate the timing of any such cash payments in the future at this time.

Liquidity Outlook

We anticipate that cash on hand and cash provided by operating activities, divestitures, including the Polyolefin Catalysts Divestiture, and borrowings will be sufficient to pay our operating expenses, satisfy debt service obligations, fund any capital expenditures and share repurchases, make acquisitions, make pension contributions and pay dividends for the foreseeable future. Our main focus over the next three years, in terms of uses of cash, will be investing in growth of the businesses and the return of value to shareholders. Additionally, we will continue to evaluate the merits of any opportunities that may arise for acquisitions of businesses or assets, which may require additional liquidity. For example, we expect that the purchase price for the announced acquisition of the Wodgina Project, of approximately \$1.15 billion, will be funded with available cash and new debt borrowings.

Our cash flows from operations may be negatively affected by adverse consequences to our customers and the markets in which we compete as a result of moderating global economic conditions and reduced capital availability.

While we maintain business relationships with a diverse group of financial institutions, an adverse change in their credit standing could lead them to not honor their contractual credit commitments, decline funding under existing but uncommitted lines of credit, not renew their extensions of credit or not provide new financing. While the global corporate bond and bank loan markets remain strong, periods of elevated uncertainty related to global economic and/or geopolitical concerns may limit

efficient access to such markets for extended periods of time. If such concerns heighten, we may incur increased borrowing costs and reduced credit capacity as our various credit facilities mature. When the U.S. Federal Reserve or similar national reserve banks in other countries decide to tighten the monetary supply in response, for example, to improving economic conditions, we may incur increased borrowing costs as interest rates increase on our variable rate credit facilities, as our various credit facilities mature or as we refinance any maturing fixed rate debt obligations, although these cost increases would be partially offset by increased income rates on portions of our cash deposits.

Overall, with generally strong cash-generative businesses and no significant long-term debt maturities before 2020, we believe we have, and will maintain, a solid liquidity position.

As previously reported in 2018, following receipt of information regarding potential improper payments being made by third party sales representatives of our Refining Solutions business, within our Catalysts segment, we promptly retained outside counsel and forensic accountants to investigate potential violations of the Company's Code of Conduct, the FCPA, and other potentially applicable laws. Based on this internal investigation, we have voluntarily self-reported potential issues relating to the use of third party sales representatives in our Refining Solutions business, within our Catalysts segment, to the DOJ, the SEC, and the DPP, and are cooperating with the DOJ, the SEC, and DPP in their review of these matters. In connection with our internal investigation, we have implemented, and are continuing to implement, appropriate remedial measures.

At this time, we are unable to predict the duration, scope, result or related costs associated with the investigations by the DOJ, the SEC, or DPP. We are unable to predict what, if any, action may be taken by the DOJ, the SEC, or DPP, or what penalties or remedial actions they may seek to impose. Any determination that our operations or activities are not in compliance with existing laws or regulations could result in the imposition of fines, penalties, disgorgement, equitable relief, or other losses. We do not believe, however, that any such fines, penalties, disgorgement, equitable relief or other losses would have a material adverse effect on our financial condition or liquidity.

We had cash and cash equivalents totaling \$555.3 million as of December 31, 2018, of which \$525.8 million is held by our foreign subsidiaries. This cash represents an important source of our liquidity and is invested in bank accounts or money market investments with no limitations on access. The cash held by our foreign subsidiaries is intended for use outside of the U.S. We anticipate that any needs for liquidity within the U.S. in excess of our cash held in the U.S. can be readily satisfied with borrowings under our existing U.S. credit facilities or our commercial paper program.

Safety and Environmental Matters

We are subject to federal, state, local and foreign requirements regulating the handling, manufacture and use of materials (some of which may be classified as hazardous or toxic by one or more regulatory agencies), the discharge of materials into the environment and the protection of the environment. To our knowledge, we are currently complying and expect to continue to comply in all material respects with applicable environmental laws, regulations, statutes and ordinances. Compliance with existing federal, state, local and foreign environmental protection laws is not expected to have a material effect on capital expenditures, earnings or our competitive position, but the costs associated with increased legal or regulatory requirements could have an adverse effect on our operating results.

Among other environmental requirements, we are subject to the federal Superfund law, and similar state laws, under which we may be designated as a PRP, and may be liable for a share of the costs associated with cleaning up various hazardous waste sites. Management believes that in cases in which we may have liability as a PRP, our liability for our share of cleanup is de minimis. Further, almost all such sites represent environmental issues that are quite mature and have been investigated, studied and in many cases settled. In de minimis situations, our policy generally is to negotiate a consent decree and to pay any apportioned settlement, enabling us to be effectively relieved of any further liability as a PRP, except for remote contingencies. In other than de minimis PRP matters, our records indicate that unresolved PRP exposures should be immaterial. We accrue and expense our proportionate share of PRP costs. Because management has been actively involved in evaluating environmental matters, we are able to conclude that the outstanding environmental liabilities for unresolved PRP sites should not have a material adverse effect upon our results of operations or financial condition.

Our environmental and safety operating costs charged to expense were \$42.9 million, \$40.1 million and \$34.4 million in 2018, 2017 and 2016, respectively, excluding depreciation of previous capital expenditures, and are expected to be in the same range in the next few years. Costs for remediation have been accrued and payments related to sites are charged against accrued liabilities, which at December 31, 2018 totaled approximately \$49.6 million, an increase of \$9.8 million from \$39.8 million at December 31, 2017. See Note 17, "Commitments and Contingencies" to our consolidated financial statements included in Part II, Item 8 of this report for a reconciliation of our environmental liabilities for the years ended December 31, 2018, 2017 and 2016.

We believe that any sum we may be required to pay in connection with environmental remediation and asset retirement obligation matters in excess of the amounts recorded should occur over a period of time and should not have a material adverse effect upon our results of operations, financial condition or cash flows on a consolidated annual basis, although any such sum could have a material adverse impact on our results of operations, financial condition or cash flows in a particular quarterly reporting period.

Capital expenditures for pollution-abatement and safety projects, including such costs that are included in other projects, were approximately \$47.3 million, \$28.1 million and \$28.8 million in 2018, 2017 and 2016, respectively. In the future, capital expenditures for these types of projects may increase due to more stringent environmental regulatory requirements and our efforts in reaching sustainability goals. Management's estimates of the effects of compliance with governmental pollution-abatement and safety regulations are subject to (a) the possibility of changes in the applicable statutes and regulations or in judicial or administrative construction of such statutes and regulations and (b) uncertainty as to whether anticipated solutions to pollution problems will be successful, or whether additional expenditures may prove necessary.

Recently Issued Accounting Pronouncements

See Note 1, "Summary of Significant Accounting Policies" to our consolidated financial statements included in Part II, Item 8 of this report for a discussion of our Recently Issued Accounting Pronouncements.

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

The primary currencies to which we have foreign currency exchange rate exposure are the Euro, Japanese Yen, Chinese Renminbi, South Korean Won, Australian Dollar, Chilean Peso and Taiwan Dollar. In response to greater fluctuations in foreign currency exchange rates in recent periods, we have increased the degree of exposure risk management activities to minimize the potential impact on earnings.

We manage our foreign currency exposures by balancing certain assets and liabilities denominated in foreign currencies and through the use, from time to time, of foreign currency forward contracts. The principal objective of such contracts is to minimize the financial impact of changes in foreign currency exchange rates. The counterparties to these contractual agreements are major financial institutions with which we generally have other financial relationships. We are exposed to credit loss in the event of nonperformance by these counterparties. However, we do not anticipate nonperformance by the counterparties. We do not utilize financial instruments for trading or other speculative purposes.

The primary method we use to reduce foreign currency exposure is to identify natural hedges, in which the operating activities denominated in respective currencies across various subsidiaries balance in respect to timing and the underlying exposures. In the event a natural hedge is not available, we may employ a forward contract to reduce exposure, generally expiring within one year. While these contracts are subject to fluctuations in value, such fluctuations are intended to offset the changes in the value of the underlying exposures being hedged. Unless otherwise noted, gains and losses on foreign currency forward contracts are recognized currently in Other expenses, net, and generally do not have a significant impact on results of operations.

At December 31, 2018, our financial instruments subject to foreign currency exchange risk consisted of foreign currency forward contracts with an aggregate notional value of \$626.5 million and with a fair value representing a net asset position of \$0.4 million. Fluctuations in the value of these contracts are intended to offset the changes in the value of the underlying exposures being hedged. We conducted a sensitivity analysis on the fair value of our foreign currency hedge portfolio assuming an instantaneous 10% change in select foreign currency exchange rates from their levels as of December 31, 2018, with all other variables held constant. A 10% appreciation of the U.S. Dollar against foreign currencies that we hedge would result in a decrease of approximately \$24.4 million in the fair value of our foreign currency forward contracts. A 10% depreciation of the U.S. Dollar against these foreign currencies would result in an increase of approximately \$26.8 million in the fair value of our foreign currency forward contracts. The sensitivity of the fair value of our foreign currency hedge portfolio represents changes in fair values estimated based on market conditions as of December 31, 2018, without reflecting the effects of underlying anticipated transactions. When those anticipated transactions are realized, actual effects of changing foreign currency exchange rates could have a material impact on our earnings and cash flows in future periods.

On December 18, 2014, the carrying value of our 1.875% Euro-denominated senior notes was designated as an effective hedge of our net investment in foreign subsidiaries where the Euro serves as the functional currency, and beginning on the date of designation, gains or losses on the revaluation of these senior notes to our reporting currency have been and will be recorded in Accumulated other comprehensive loss. In January 2017, we repaid €307.0 million of these senior notes using proceeds from

the sale of the Chemetall Surface Treatment business. This repayment did not impair the designated hedge of our net investment in foreign subsidiaries where the Euro serves as the functional currency.

We are exposed to changes in interest rates that could impact our results of operations and financial condition. We manage global interest rate and foreign exchange exposure as part of our regular operational and financing strategies. We had variable interest rate borrowings of \$313.8 million and \$426.6 million outstanding at December 31, 2018 and 2017, respectively. These borrowings represented 18% and 23% of total outstanding debt and bore average interest rates of 2.85% and 1.78% at December 31, 2018 and 2017, respectively. A hypothetical 10% increase (approximately 29 basis points) in the average interest rate applicable to these borrowings would change our annualized interest expense by approximately \$0.9 million as of December 31, 2018. We may enter into interest rate swaps, collars or similar instruments with the objective of reducing interest rate volatility relating to our borrowing costs.

Our raw materials are subject to price volatility caused by weather, supply conditions, political and economic variables and other unpredictable factors. Historically, we have not used futures, options or swap contracts to manage the volatility related to the above exposures. However, the refinery catalysts business has used financing arrangements to provide long-term protection against changes in metals prices. We seek to limit our exposure by entering into long-term contracts when available, and we seek price increase limitations through contracts. These contracts do not have a significant impact on our results of operations.

Item 8. Financial Statements and Supplementary Data.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Exchange Act Rule 13a-15(f) and 15d-15(f). Our 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 accounting principles generally accepted in the United States. Our 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 assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States, and that receipts and expenditures of the Company are being made only in accordance with management’s and our directors’ authorizations; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2018. In making this assessment, management used the criteria for effective internal control over financial reporting described in the *Internal Control—Integrated Framework 2013* set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on the assessment, management concluded that, as of December 31, 2018, our internal control over financial reporting was effective 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 in the United States. The concept of reasonable assurance is based on the recognition that there are inherent limitations in all systems of internal control. 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.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

/s/ LUTHER C. KISSAM IV

Luther C. Kissam IV
Chairman, President and Chief Executive Officer
(principal executive officer)
February 27, 2019

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Albemarle Corporation:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Albemarle Corporation and its subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income (loss), changes in equity and cash flows for each of the three years in the period ended December 31, 2018, 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, 2018, 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, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 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, 2018, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2018.

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.

/s/ PricewaterhouseCoopers LLP

Charlotte, North Carolina

February 27, 2019

We have served as the Company's auditor since 1994.

CONSOLIDATED STATEMENTS OF INCOME*(In Thousands, Except Per Share Amounts)*

Year Ended December 31	2018	2017	2016
Net sales	\$ 3,374,950	\$ 3,071,976	\$ 2,677,203
Cost of goods sold	2,157,694	1,965,700	1,706,897
Gross profit	1,217,256	1,106,276	970,306
Selling, general and administrative expenses	446,090	450,286	353,765
Research and development expenses	70,054	84,330	80,475
Gain on sales of businesses, net	(210,428)	—	(122,298)
Acquisition and integration related costs	—	—	57,384
Operating profit	911,540	571,660	600,980
Interest and financing expenses	(52,405)	(115,350)	(65,181)
Other expenses, net	(64,434)	(9,512)	(20,535)
Income from continuing operations before income taxes and equity in net income of unconsolidated investments	794,701	446,798	515,264
Income tax expense	144,826	431,817	96,263
Income from continuing operations before equity in net income of unconsolidated investments	649,875	14,981	419,001
Equity in net income of unconsolidated investments (net of tax)	89,264	84,487	59,637
Net income from continuing operations	739,139	99,468	478,638
Income from discontinued operations (net of tax)	—	—	202,131
Net income	739,139	99,468	680,769
Net income attributable to noncontrolling interests	(45,577)	(44,618)	(37,094)
Net income attributable to Albemarle Corporation	\$ 693,562	\$ 54,850	\$ 643,675
Basic earnings per share:			
Continuing operations	\$ 6.40	\$ 0.49	\$ 3.93
Discontinued operations	—	—	1.80
	\$ 6.40	\$ 0.49	\$ 5.73
Diluted earnings per share:			
Continuing operations	\$ 6.34	\$ 0.49	\$ 3.90
Discontinued operations	—	—	1.78
	\$ 6.34	\$ 0.49	\$ 5.68
Weighted-average common shares outstanding—basic	108,427	110,914	112,379
Weighted-average common shares outstanding—diluted	109,458	112,380	113,239

See accompanying notes to the consolidated financial statements.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME*(In Thousands)*

Year Ended December 31	2018	2017	2016
Net income	\$ 739,139	\$ 99,468	\$ 680,769
Other comprehensive (loss) income, net of tax:			
Foreign currency translation	(150,258)	227,439	(20,825)
Pension and postretirement benefits	(138)	(97)	834
Net investment hedge	25,786	(41,827)	26,133
Interest rate swap	(585)	2,116	2,116
Total other comprehensive (loss) income, net of tax	(125,195)	187,631	8,258
Comprehensive income	613,944	287,099	689,027
Comprehensive income attributable to noncontrolling interests	(45,396)	(45,505)	(36,477)
Comprehensive income attributable to Albemarle Corporation	\$ 568,548	\$ 241,594	\$ 652,550

See accompanying notes to the consolidated financial statements.

CONSOLIDATED BALANCE SHEETS*(In Thousands)*

December 31	2018	2017
Assets		
Current assets:		
Cash and cash equivalents	\$ 555,320	\$ 1,137,303
Trade accounts receivable, less allowance for doubtful accounts (2018—\$4,460; 2017—\$10,425)	605,712	534,326
Other accounts receivable	52,059	37,937
Inventories	700,540	592,781
Other current assets	84,790	136,064
Assets held for sale	—	39,152
Total current assets	1,998,421	2,477,563
Property, plant and equipment, at cost	4,799,063	4,124,335
Less accumulated depreciation and amortization	1,777,979	1,631,025
Net property, plant and equipment	3,021,084	2,493,310
Investments	528,722	534,064
Noncurrent assets held for sale	—	139,813
Other assets	80,135	74,164
Goodwill	1,567,169	1,610,355
Other intangibles, net of amortization	386,143	421,503
Total assets	\$ 7,581,674	\$ 7,750,772
Liabilities and Equity		
Current liabilities:		
Accounts payable	\$ 522,516	\$ 418,537
Accrued expenses	257,323	268,336
Current portion of long-term debt	307,294	422,012
Dividends payable	35,169	35,165
Liabilities held for sale	—	1,938
Income taxes payable	60,871	54,937
Total current liabilities	1,183,173	1,200,925
Long-term debt	1,397,916	1,415,360
Postretirement benefits	46,157	52,003
Pension benefits	285,396	294,611
Noncurrent liabilities held for sale	—	614
Other noncurrent liabilities	526,942	599,174
Deferred income taxes	382,982	370,389
Commitments and contingencies (Note 17)		
Equity:		
Albemarle Corporation shareholders' equity:		
Common stock, \$.01 par value (authorized 150,000 shares), issued and outstanding — 105,616 in 2018 and 110,547 in 2017	1,056	1,105
Additional paid-in capital	1,368,897	1,863,949
Accumulated other comprehensive loss	(350,682)	(225,668)
Retained earnings	2,566,050	2,035,163
Total Albemarle Corporation shareholders' equity	3,585,321	3,674,549
Noncontrolling interests	173,787	143,147
Total equity	3,759,108	3,817,696
Total liabilities and equity	\$ 7,581,674	\$ 7,750,772

See accompanying notes to the consolidated financial statements.

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY*(In Thousands, Except Share Data)*

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive (Loss) Income	Retained Earnings	Total Albemarle Shareholders' Equity	Noncontro lling Interests	Total Equity
	Shares	Amounts						
Balance at January 1, 2016	112,219,351	\$ 1,122	\$ 2,059,151	\$ (421,288)	\$1,615,407	\$ 3,254,392	\$ 146,921	\$3,401,313
Net income					643,675	643,675	37,094	680,769
Other comprehensive income (loss)				8,876		8,876	(618)	8,258
Cash dividends declared, \$1.22 per common share					(137,151)	(137,151)	(35,855)	(173,006)
Stock-based compensation and other			16,251			16,251		16,251
Exercise of stock options	212,343	2	9,400			9,402		9,402
Tax benefit related to stock plans			1,811			1,811		1,811
Issuance of common stock, net	131,596	1	(1)			—		—
Shares withheld for withholding taxes associated with common stock issuances	(39,500)	—	(2,194)			(2,194)		(2,194)
Balance at December 31, 2016	112,523,790	\$ 1,125	\$ 2,084,418	\$ (412,412)	\$2,121,931	\$ 3,795,062	\$ 147,542	\$3,942,604
Balance at January 1, 2017	112,523,790	\$ 1,125	\$ 2,084,418	\$ (412,412)	\$2,121,931	\$ 3,795,062	\$ 147,542	\$3,942,604
Net income					54,850	54,850	44,618	99,468
Other comprehensive income				186,744		186,744	887	187,631
Cash dividends declared, \$1.28 per common share					(141,618)	(141,618)	(36,756)	(178,374)
Stock-based compensation and other			16,505			16,505		16,505
Exercise of stock options	210,432	2	8,236			8,238		8,238
Shares repurchased	(2,341,083)	(23)	(249,977)			(250,000)		(250,000)
Issuance of common stock, net	243,024	2	(2)			—		—
Termination of Tianqi Lithium Corporation option agreement			13,144			13,144	(13,144)	—
Shares withheld for withholding taxes associated with common stock issuances	(89,489)	(1)	(8,375)			(8,376)		(8,376)
Balance at December 31, 2017	110,546,674	\$ 1,105	\$ 1,863,949	\$ (225,668)	\$2,035,163	\$ 3,674,549	\$ 143,147	\$3,817,696
Balance at January 1, 2018	110,546,674	\$ 1,105	\$ 1,863,949	\$ (225,668)	\$2,035,163	\$ 3,674,549	\$ 143,147	\$3,817,696
Net income					693,562	693,562	45,577	739,139
Other comprehensive loss				(125,014)		(125,014)	(181)	(125,195)
Cash dividends declared, \$1.34 per common share					(144,601)	(144,601)	(14,756)	(159,357)
Cumulative adjustments from adoption of income tax standard updates (Note 1)					(18,074)	(18,074)		(18,074)
Stock-based compensation and other			18,506			18,506		18,506
Exercise of stock options	94,031	1	3,632			3,633		3,633
Shares repurchased	(5,262,654)	(53)	(499,947)			(500,000)		(500,000)
Issuance of common stock, net	383,974	4	(4)			—		—
Shares withheld for withholding taxes associated with common stock issuances	(145,997)	(1)	(17,239)			(17,240)		(17,240)
Balance at December 31, 2018	105,616,028	\$ 1,056	\$ 1,368,897	\$ (350,682)	\$2,566,050	\$ 3,585,321	\$ 173,787	\$3,759,108

See accompanying notes to the consolidated financial statements.

CONSOLIDATED STATEMENTS OF CASH FLOWS*(In Thousands)*

Year Ended December 31	2018	2017	2016
Cash and cash equivalents at beginning of year	\$ 1,137,303	\$ 2,269,756	\$ 213,734
Cash flows from operating activities:			
Net income	739,139	99,468	680,769
Adjustments to reconcile net income to cash flows from operating activities:			
Depreciation and amortization	200,698	196,928	226,169
Gain on acquisition	—	(6,221)	—
Gain on sales of businesses, net	(210,428)	—	(510,278)
Stock-based compensation	15,228	19,404	17,031
Equity in net income of unconsolidated investments (net of tax)	(89,264)	(84,487)	(61,534)
Dividends received from unconsolidated investments and nonmarketable securities	57,415	39,386	43,759
Pension and postretirement expense (benefit)	10,410	(12,436)	41,546
Pension and postretirement contributions	(15,236)	(13,341)	(20,068)
Unrealized gain on investments in marketable securities	(527)	(3,135)	(3,655)
Loss on early extinguishment of debt	—	52,801	1,921
Deferred income taxes	49,164	(41,941)	21,121
Changes in current assets and liabilities, net of effects of acquisitions and divestitures:			
(Increase) in accounts receivable	(97,448)	(74,545)	(42,816)
(Increase) decrease in inventories	(124,067)	(101,545)	25,974
(Increase) decrease in other current assets	(2,181)	(213)	1,808
Increase in accounts payable	73,730	53,421	43,953
(Decrease) increase in accrued expenses and income taxes payable	(1,999)	(269,381)	210,276
Other, net	(58,469)	449,816	59,548
Net cash provided by operating activities	546,165	303,979	735,524
Cash flows from investing activities:			
Acquisitions, net of cash acquired	(11,403)	(44,367)	(126,747)
Cash payments related to acquisitions and other	—	—	(81,987)
Capital expenditures	(699,991)	(317,703)	(196,654)
Cash proceeds from divestitures, net	413,569	6,857	3,325,571
(Investments in) sales of marketable securities, net	(270)	(275)	305
Repayments from joint ventures	—	1,250	—
Investments in equity and other corporate investments	(5,600)	(3,565)	—
Net cash (used in) provided by investing activities	(303,695)	(357,803)	2,920,488
Cash flows from financing activities:			
Proceeds from borrowings of other long-term debt	—	27,000	—
Repayments of long-term debt	—	(778,209)	(1,252,302)
Other (repayments) borrowings, net	(113,567)	138,751	(163,721)
Fees related to early extinguishment of debt	—	(46,959)	—
Dividends paid to shareholders	(144,596)	(140,557)	(135,353)
Dividends paid to noncontrolling interests	(14,756)	(36,756)	(35,855)
Repurchases of common stock	(500,000)	(250,000)	—
Proceeds from exercise of stock options	3,633	8,238	9,401
Withholding taxes paid on stock-based compensation award distributions	(17,240)	(8,376)	(2,194)
Net cash used in financing activities	(786,526)	(1,086,868)	(1,580,024)
Net effect of foreign exchange on cash and cash equivalents	(37,927)	8,239	(19,966)
(Decrease) increase in cash and cash equivalents	(581,983)	(1,132,453)	2,056,022
Cash and cash equivalents at end of year	\$ 555,320	\$ 1,137,303	\$ 2,269,756

See accompanying notes to the consolidated financial statements.

NOTE 1—Summary of Significant Accounting Policies:*Basis of Consolidation*

The consolidated financial statements include the accounts and operations of Albemarle Corporation and our wholly owned, majority owned and controlled subsidiaries. Unless the context otherwise indicates, the terms “Albemarle,” “we,” “us,” “our” or “the Company” mean Albemarle Corporation and its consolidated subsidiaries. For entities that we control and are the primary beneficiary, but own less than 100%, we record the minority ownership as noncontrolling interest. We apply the equity method of accounting for investments in which we have an ownership interest from 20% to 50% or where we exercise significant influence over the related investee’s operations. All significant intercompany accounts and transactions are eliminated in consolidation.

Discontinued Operations

A component or group of components that is classified as held for sale or that has been disposed of by sale, and which represents a strategic shift that has or will have a major effect on our operations and financial results, is reported as discontinued operations beginning in the period when these criteria are met. Our assets and liabilities held for sale at December 31, 2017 related to the polyolefin catalysts and components business did not meet the criteria to be presented as discontinued operations.

On December 14, 2016, the Company closed the sale of the Chemetall Surface Treatment business to BASF SE. In accordance with the applicable accounting guidance, the Company began accounting for this business as discontinued operations in the consolidated statements of income and excluded the business from segment results for the year ended December 31, 2016. See Note 3, “Divestitures,” for additional information.

Estimates, Assumptions and Reclassifications

The preparation of financial statements in conformity with generally accepted accounting principles (“GAAP”) in the United States (“U.S.”) requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

Certain amounts in the accompanying consolidated financial statements and notes thereto have been reclassified to conform to the current presentation. Income tax expense for the year ended December 31, 2017 includes expense of \$5.1 million due to an adjustment in the Company’s deferred tax liabilities for basis differences in Chilean fixed assets related to the year ended December 31, 2016. The Company does not believe this adjustment is material to the consolidated financial statements for the years ended December 31, 2017 or 2016. In addition, for the year ended December 31, 2017, the Company began reporting its acquisition and integration related costs and restructuring and other costs in Cost of goods sold, Selling, general and administrative expenses and Research and development expenses. See Note 2, “Acquisitions,” and Note 24, “Segment and Geographic Area Information,” for further details.

Revenue Recognition

Effective January 1, 2018, we adopted Accounting Standards Update (“ASU”) No. 2014-09, “Revenue from Contracts with Customers” and all related amendments using the modified retrospective method. There was no material impact to our results of operations or financial position upon adoption, and no adjustment was made to Retained earnings in our consolidated balance sheets because such adjustment was determined to be immaterial. In addition, new presentation requirements, including separate disclosure of net sales from sources other than customers on our consolidated statements of income and separate disclosures of contract assets or liabilities on our consolidated balance sheets, generally did not have a material impact. However, business circumstances, including the nature of customer contracts, can change and as such, we have expanded processes and controls to recognize such changes, and as necessary, consider whether any of these currently immaterial items might differ in the future.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services, and is recognized when performance obligations are satisfied under the terms of contracts with our customers. A performance obligation is deemed to be satisfied when control of the product or service is transferred to our customer. The transaction price of a contract, or the amount we expect to receive upon satisfaction of all performance obligations, is determined by reference to the contract’s terms and includes adjustments, if applicable, for any variable consideration, such as customer rebates, noncash consideration or consideration payable to the customer, although these adjustments are generally not material. Where a contract contains more than one distinct performance obligation, the transaction price is allocated to each performance obligation based on the standalone selling price of each performance obligation, although these situations do not

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

occur frequently and are generally not built into our contracts. Any unsatisfied performance obligations are not material. Standalone selling prices are based on prices we charge to our customers, which in some cases is based on established market prices. Sales and other similar taxes collected from customers on behalf of third parties are excluded from revenue. Our payment terms are generally between 30 to 90 days, however, they vary by market factors, such as customer size, creditworthiness, geography and competitive environment.

All of our revenue is derived from contracts with customers, and almost all of our contracts with customers contain one performance obligation for the transfer of goods where such performance obligation is satisfied at a point in time. Control of a product is deemed to be transferred to the customer upon shipment or delivery. Significant portions of our sales are sold free on board shipping point or on an equivalent basis, while delivery terms of other transactions are based upon specific contractual arrangements. Our standard terms of delivery are generally included in our contracts of sale, order confirmation documents and invoices, while the timing between shipment and delivery generally ranges between 1 and 45 days. Costs for shipping and handling activities, whether performed before or after the customer obtains control of the goods, are accounted for as fulfillment costs.

The Company currently utilizes the following practical expedients, as permitted by Accounting Standards Codification (“ASC”) 606, *Revenue from Contracts with Customers*:

- All sales and other pass-through taxes are excluded from contract value;
- In utilizing the modified retrospective transition method, no adjustment was necessary for contracts that did not cross over the reporting year;
- We will not consider the possibility of a contract having a significant financing component (which would effectively attribute a portion of the sales price to interest income) unless, if at contract inception, the expected payment terms (from time of delivery or other relevant criterion) are more than one year;
- If our right to customer payment is directly related to the value of our completed performance, we recognize revenue consistent with the invoicing right; and
- We expense as incurred all costs of obtaining a contract incremental to any costs/compensation attributable to individual product sales/shipments for contracts where the amortization period for such costs would otherwise be one year or less.

Certain products we produce are made to our customer’s specifications where such products have limited alternative use or would need significant rework costs in order to be sold to another customer. In management’s judgment, control of these arrangements is transferred to the customer at a point in time (upon shipment or delivery) and not over the time they are produced. Therefore revenue is recognized upon shipment or delivery of these products.

Costs incurred to obtain contracts with customers are not significant and are expensed immediately as the amortization period would be one year or less. When the Company incurs pre-production or other fulfillment costs in connection with an existing or specific anticipated contract and such costs are recoverable through margin or explicitly reimbursable, such costs are capitalized and amortized to Cost of goods sold on a systematic basis that is consistent with the pattern of transfer to the customer of the goods or services to which the asset relates, which is less than one year. We record bad debt expense in specific situations when we determine the customer is unable to meet its financial obligation.

Included in Trade accounts receivable at December 31, 2018 is approximately \$590.3 million arising from contracts with customers. The remaining balance of Trade accounts receivable at December 31, 2018 primarily includes value-added taxes collected from customers on behalf of various taxing authorities.

Cash and Cash Equivalents

Cash and cash equivalents include cash and money market investments with insignificant interest rate risks and no limitations on access.

Inventories

Inventories are stated at lower of cost and net realizable value with cost determined primarily on the first-in, first-out basis. Cost is determined on the weighted-average basis for a small portion of our inventories at foreign plants and our stores, supplies and other inventory. A portion of our domestic produced finished goods and raw materials are determined on the last-in, first-out basis.

Property, Plant and Equipment

Property, plant and equipment include costs of assets constructed, purchased or leased under a capital lease, related delivery and installation costs and interest incurred on significant capital projects during their construction periods. Expenditures for renewals and betterments also are capitalized, but expenditures for normal repairs and maintenance are expensed as incurred. Costs associated with yearly planned major maintenance are generally deferred and amortized over 12 months or until the same major maintenance activities must be repeated, whichever is shorter. The cost and accumulated depreciation applicable to assets retired or sold are removed from the respective accounts, and gains or losses thereon are included in income.

We assign the useful lives of our property, plant and equipment based upon our internal engineering estimates which are reviewed periodically. The estimated useful lives of our property, plant and equipment range from two to sixty years and depreciation is recorded on the straight-line method, with the exception of our long-term mineral rights, which are depleted on a units-of-production method.

We evaluate the recovery of our property, plant and equipment by comparing the net carrying value of the asset group to the undiscounted net cash flows expected to be generated from the use and eventual disposition of that asset group when events or changes in circumstances indicate that its carrying amount may not be recoverable. If the carrying amount of the asset group is not recoverable, the fair value of the asset group is measured and if the carrying amount exceeds the fair value, an impairment loss is recognized.

Resource Development Expenses

We incur costs in resource exploration, evaluation and development during the different phases of our resource development projects. Exploration costs incurred before obtaining legal rights to explore an area are generally expensed as incurred. After obtaining legal rights, exploration costs are expensed in areas where we have uncertainty about obtaining proven resources. In areas where we have substantial knowledge about the area and consider it probable to obtain commercially viable proven resources, exploration and evaluation costs are capitalized.

If technical feasibility studies have been obtained, resource evaluation expenses are capitalized when the study demonstrates proven or probable resources for which future economic returns are expected, while costs for projects that are not considered viable are expensed. Development costs that are necessary to bring the property to commercial production or increase the capacity or useful life are capitalized. Costs to maintain the production capacity in a property under production are expensed as incurred.

Capitalized resource costs are depleted using the units-of-production method. Our resource development assets are evaluated for impairment when events or changes in circumstances indicate that the carrying amount may not be recoverable.

Investments

Investments are accounted for using the equity method of accounting if the investment gives us the ability to exercise significant influence, but not control, over the investee. Significant influence is generally deemed to exist if we have an ownership interest in the voting stock of the investee between 20% and 50%, although other factors, such as representation on the investee's board of directors and the impact of commercial arrangements, are considered in determining whether the equity method of accounting is appropriate. Under the equity method of accounting, we record our investments in equity-method investees in the consolidated balance sheets as Investments and our share of investees' earnings or losses together with other-than-temporary impairments in value as Equity in net income of unconsolidated investments in the consolidated statements of income. We evaluate our equity method investments for impairment whenever events or changes in circumstances indicate that the carrying amounts of such investments may be impaired. If a decline in the value of an equity method investment is determined to be other than temporary, a loss is recorded in earnings in the current period.

Certain mutual fund investments are accounted for as trading equities and are marked-to-market on a periodic basis through the consolidated statements of income. Investments in joint ventures and nonmarketable securities of immaterial entities are estimated based upon the overall performance of the entity where financial results are not available on a timely basis.

Environmental Compliance and Remediation

Environmental compliance costs include the cost of purchasing and/or constructing assets to prevent, limit and/or control pollution or to monitor the environmental status at various locations. These costs are capitalized and depreciated based on estimated useful lives. Environmental compliance costs also include maintenance and operating costs with respect to pollution

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

prevention and control facilities and other administrative costs. Such operating costs are expensed as incurred. Environmental remediation costs of facilities used in current operations are generally immaterial and are expensed as incurred. We accrue for environmental remediation costs and post-remediation costs that relate to existing conditions caused by past operations at facilities or off-plant disposal sites in the accounting period in which responsibility is established and when the related costs are estimable. In developing these cost estimates, we evaluate currently available facts regarding each site, with consideration given to existing technology, presently enacted laws and regulations, prior experience in remediation of contaminated sites, the financial capability of other potentially responsible parties and other factors, subject to uncertainties inherent in the estimation process. If the amount and timing of the cash payments for a site are fixed or reliably determinable, the liability is discounted, if the calculated discount is material. Additionally, these estimates are reviewed periodically, with adjustments to the accruals recorded as necessary.

Research and Development Expenses

Our research and development expenses related to present and future products are expensed as incurred. These expenses consist primarily of personnel-related costs and other overheads, as well as outside service and consulting costs incurred for specific programs. Our U.S. facilities in Michigan, Pennsylvania, Texas and Louisiana and our global facilities in the Netherlands, Germany, Belgium and Korea form the capability base for our contract research and custom manufacturing businesses. These business areas provide research and scale-up services primarily to innovative life science companies.

Goodwill and Other Intangible Assets

We account for goodwill and other intangibles acquired in a business combination in conformity with current accounting guidance that requires that goodwill and indefinite-lived intangible assets not be amortized.

We test goodwill for impairment by comparing the estimated fair value of our reporting units to the related carrying value. Our reporting units are either our operating business segments or one level below our operating business segments for which discrete financial information is available and for which operating results are regularly reviewed by the business management. We estimate the fair value based on present value techniques involving future cash flows. Future cash flows include assumptions about sales volumes, selling prices, raw material prices, labor and other employee benefit costs, capital additions, income taxes, working capital, and other economic or market-related factors. Significant management judgment is involved in estimating these variables and they include inherent uncertainties since they are forecasting future events. We perform a sensitivity analysis by using a range of inputs to confirm the reasonableness of these estimates being used in the goodwill impairment analysis. We use a Weighted Average Cost of Capital (“WACC”) approach to determine our discount rate for goodwill recoverability testing. Our WACC calculation incorporates industry-weighted average returns on debt and equity from a market perspective. The factors in this calculation are largely external to the Company and, therefore, are beyond our control. We test our recorded goodwill for impairment in the fourth quarter of each year or upon the occurrence of events or changes in circumstances that would more likely than not reduce the fair value of our reporting units below their carrying amounts. The Company performed its annual goodwill impairment test as of October 31, 2018 and concluded there was no impairment as of that date. In addition, no material indications of impairment in any of our reporting units were indicated by the sensitivity analysis.

We assess our indefinite-lived intangible assets, which include trade names, for impairment annually and between annual tests if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. The indefinite-lived intangible asset impairment standard allows us to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if we determine, based on the qualitative assessment, that it is more likely than not that the indefinite-lived intangible asset’s fair value is less than its carrying amount. If we determine based on the qualitative assessment that it is more likely than not that the asset is impaired, an impairment test is performed by comparing the fair value of the indefinite-lived intangible asset to its carrying amount.

Definite-lived intangible assets, such as purchased technology, patents and customer lists, are amortized over their estimated useful lives generally for periods ranging from five to twenty-five years. Except for customer lists and relationships associated with the majority of our Lithium business, which are amortized using the pattern of economic benefit method, definite-lived intangible assets are amortized using the straight-line method. We evaluate the recovery of our definite-lived intangible assets by comparing the net carrying value of the asset group to the undiscounted net cash flows expected to be generated from the use and eventual disposition of that asset group when events or changes in circumstances indicate that its carrying amount may not be recoverable. If the carrying amount of the asset group is not recoverable, the fair value of the asset group is measured and if the carrying amount exceeds the fair value, an impairment loss is recognized. See Note 12, “Goodwill and Other Intangibles.”

Pension Plans and Other Postretirement Benefits

Under authoritative accounting standards, assumptions are made regarding the valuation of benefit obligations and the performance of plan assets. As required, we recognize a balance sheet asset or liability for each of our pension and other postretirement benefit (“OPEB”) plans equal to the plan’s funded status as of the measurement date. The primary assumptions are as follows:

- **Discount Rate**—The discount rate is used in calculating the present value of benefits, which is based on projections of benefit payments to be made in the future.
- **Expected Return on Plan Assets**—We project the future return on plan assets based on prior performance and future expectations for the types of investments held by the plans, as well as the expected long-term allocation of plan assets for these investments. These projected returns reduce the net benefit costs recorded currently.
- **Rate of Compensation Increase**—For salary-related plans, we project employees’ annual pay increases, which are used to project employees’ pension benefits at retirement.
- **Mortality Assumptions**—Assumptions about life expectancy of plan participants are used in the measurement of related plan obligations.

Actuarial gains and losses are recognized annually in our consolidated statements of income in the fourth quarter and whenever a plan is determined to qualify for a remeasurement during a fiscal year. The remaining components of pension and OPEB plan expense, primarily service cost, interest cost and expected return on assets, are recorded on a monthly basis. The market-related value of assets equals the actual market value as of the date of measurement.

During 2018, we made changes to assumptions related to discount rates and expected rates of return on plan assets. We consider available information that we deem relevant when selecting each of these assumptions.

In selecting the discount rates for the U.S. plans, we consider expected benefit payments on a plan-by-plan basis. As a result, the Company uses different discount rates for each plan depending on the demographics of participants and the expected timing of benefit payments. For 2018, the discount rates were calculated using the results from a bond matching technique developed by Milliman, which matched the future estimated annual benefit payments of each respective plan against a portfolio of bonds of high quality to determine the discount rate. We believe our selected discount rates are determined using preferred methodology under authoritative accounting guidance and accurately reflect market conditions as of the December 31, 2018 measurement date.

In selecting the discount rates for the foreign plans, we look at long-term yields on AA-rated corporate bonds when available. Our actuaries have developed yield curves based on the yields on the constituent bonds in the various indices as well as on other market indicators such as swap rates, particularly at the longer durations. For the Eurozone, we apply the Aon Hewitt yield curve to projected cash flows from the relevant plans to derive the discount rate. For the United Kingdom (“U.K.”), the discount rate is determined by applying the Aon Hewitt yield curve for typical schemes of similar duration to projected cash flows of Albemarle’s U.K. plan. In other countries where there is not a sufficiently deep market of high-quality corporate bonds, we set the discount rate by referencing the yield on government bonds of an appropriate duration.

In estimating the expected return on plan assets, we consider past performance and future expectations for the types of investments held by the plan as well as the expected long-term allocation of plan assets to these investments. In projecting the rate of compensation increase, we consider past experience in light of movements in inflation rates.

In October 2017, the Society of Actuaries (“SOA”) published an updated Mortality Improvement Scale, MP-2017. The updated improvement scale incorporates an additional year of mortality data (2015). We utilized the same base mortality, SOA RP-2014 Adjusted to 2006 Total Dataset Mortality, but we revised our mortality assumption to incorporate the MP-2017 Mortality Improvement Scale for purposes of measuring our U.S. pension and OPEB obligations at December 31, 2017. In October 2018, the SOA published an updated Mortality Improvement Scale, MP-2018. The updated Improvement Scale incorporates an additional year of mortality (2016). We utilized the same base mortality, SOA RP-2014 Adjusted to 2006 Total Dataset Mortality, but we revised our mortality assumption to incorporate the MP-2018 Mortality Improvement Scale for purposes of measuring our U.S. pension and OPEB obligations at December 31, 2018.

Stock-based Compensation Expense

The fair value of restricted stock awards, restricted stock unit awards and performance unit awards with a service condition are determined based on the number of shares or units granted and the quoted price of our common stock on the date of grant, and the fair value of stock options is determined using the Black-Scholes valuation model. The fair value of performance unit awards with a service condition and a market condition are estimated on the date of grant using a Monte Carlo

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simulation model. The fair value of these awards is determined after giving effect to estimated forfeitures. Such value is recognized as expense over the service period, which is generally the vesting period of the equity grant. To the extent restricted stock awards, restricted stock unit awards, performance unit awards and stock options are forfeited prior to vesting in excess of the estimated forfeiture rate, the corresponding previously recognized expense is reversed as an offset to operating expenses.

Income Taxes

We use the liability method for determining our income taxes, under which current and deferred tax liabilities and assets are recorded in accordance with enacted tax laws and rates. Under this method, the amounts of deferred tax liabilities and assets at the end of each period are determined using the tax rate expected to be in effect when taxes are actually paid or recovered. Future tax benefits are recognized to the extent that realization of such benefits is more likely than not. In order to record deferred tax assets and liabilities, we are following guidance under Financial Accounting Standards Board (“FASB”) ASU 2015-17, which requires deferred tax assets and liabilities to be classified as noncurrent on the balance sheet, along with any related valuation allowance. Tax effects are released from Accumulated Other Comprehensive Income using either the specific identification approach or the portfolio approach based on the nature of the underlying item.

Deferred income taxes are provided for the estimated income tax effect of temporary differences between the financial statement carrying amounts and the tax basis of existing assets and liabilities. Deferred tax assets are also provided for operating losses, capital losses and certain tax credit carryovers. A valuation allowance, reducing deferred tax assets, is established when it is more likely than not that some portion or all of the deferred tax assets will not be realized. The realization of such deferred tax assets is dependent upon the generation of sufficient future taxable income of the appropriate character. Although realization is not assured, we do not establish a valuation allowance when we believe it is more likely than not that a net deferred tax asset will be realized.

We only recognize a tax benefit after concluding that it is more likely than not that the benefit will be sustained upon audit by the respective taxing authority based solely on the technical merits of the associated tax position. Once the recognition threshold is met, we recognize a tax benefit measured as the largest amount of the tax benefit that, in our judgment, is greater than 50% likely to be realized. Under current accounting guidance for uncertain tax positions, interest and penalties related to income tax liabilities are included in Income tax expense on the consolidated statements of income.

We have designated the undistributed earnings of a portion of our foreign operations as indefinitely reinvested and as a result we do not provide for deferred income taxes on the unremitted earnings of these subsidiaries. Our foreign earnings are computed under U.S. federal tax earnings and profits, or E&P, principles. In general, to the extent our financial reporting book basis over tax basis of a foreign subsidiary exceeds these E&P amounts, deferred taxes have not been provided as they are essentially permanent in duration. The determination of the amount of such unrecognized deferred tax liability is not practicable. We provide for deferred income taxes on our undistributed earnings of foreign operations that are not deemed to be indefinitely invested. Management’s assertion of indefinite reinvestment of undistributed foreign earnings was unchanged within the measurement period ending December 22, 2018, as allowed under Staff Accounting Bulletin (“SAB”) 118. We will continue to evaluate our permanent investment assertion taking into consideration all relevant, current tax laws.

On December 22, 2017, the Tax Cuts and Jobs Act (“TCJA”) was signed into law in the U.S. The TCJA contains several key tax provisions including, among other things, the reduction of the corporate income tax rate from 35% to 21% effective January 1, 2018, the requirement of companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, and the creation of new taxes on certain foreign sourced earnings such as global intangible low-taxed income (“GILTI”). A company can elect an accounting policy to account for GILTI as a period charge in the future period the tax arises or as part of deferred taxes related to the investment or subsidiary. The Company has elected to account for GILTI as a period cost.

Accumulated Other Comprehensive Loss

Accumulated other comprehensive loss comprises principally foreign currency translation adjustments, amounts related to the revaluation of our euro-denominated senior notes which were designated as a hedge of our net investment in foreign operations in 2014, a realized loss on a forward starting interest rate swap entered into in 2014 which was designated as a cash flow hedge, and deferred income taxes related to the aforementioned items.

Foreign Currency Translation

The assets and liabilities of all foreign subsidiaries were prepared in their respective functional currencies and translated into U.S. Dollars based on the current exchange rate in effect at the balance sheet dates, while income and expenses were

translated at average exchange rates for the periods presented. Translation adjustments are reflected as a separate component of equity.

Foreign exchange transaction and revaluation (losses) gains were (\$10.5) million, (\$11.1) million and \$2.4 million for the years ended December 31, 2018, 2017 and 2016, respectively, and are included in Other expenses, net, in our consolidated statements of income, with the unrealized portion included in Other, net, in our consolidated statements of cash flows.

Derivative Financial Instruments

We manage our foreign currency exposures by balancing certain assets and liabilities denominated in foreign currencies and through the use of foreign currency forward contracts from time to time, which generally expire within one year. The principal objective of such contracts is to minimize the financial impact of changes in foreign currency exchange rates. While these contracts are subject to fluctuations in value, such fluctuations are generally expected to be offset by changes in the value of the underlying foreign currency exposures being hedged. Unless otherwise noted, gains and losses on foreign currency forward contracts are recognized currently in Other expenses, net, and generally do not have a significant impact on results of operations.

We may also enter into interest rate swaps, collars or similar instruments from time to time, with the objective of reducing interest rate volatility relating to our borrowing costs.

The counterparties to these contractual agreements are major financial institutions with which we generally have other financial relationships. We are exposed to credit loss in the event of nonperformance by these counterparties. However, we do not anticipate nonperformance by the counterparties. We do not utilize financial instruments for trading or other speculative purposes. Our foreign currency forward contracts outstanding at December 31, 2018 and 2017 have not been designated as hedging instruments under ASC 815, *Derivatives and Hedging*.

Recently Issued Accounting Pronouncements

In May 2014, the FASB issued accounting guidance designed to enhance comparability of revenue recognition practices across entities, industries, jurisdictions and capital markets. The core principle of the guidance is that revenue recognized from a transaction or event that arises from a contract with a customer should reflect the consideration to which an entity expects to be entitled in exchange for goods or services provided. To achieve that core principle the new guidance sets forth a five-step revenue recognition model that will need to be applied consistently to all contracts with customers, except those that are within the scope of other topics in the ASC. Also required are new disclosures to help users of financial statements better understand the nature, amount, timing and uncertainty of revenues and cash flows from contracts with customers. The new disclosures include qualitative and quantitative information about contracts with customers, significant judgments made in applying the revenue guidance, and assets recognized related to the costs to obtain or fulfill a contract. During 2016, the FASB issued amendments to this new guidance that provided clarification, technical corrections and practical expedients. Topics of potential relevance to the Company include principal versus agent considerations, collectability, presentation of sales tax from customers, contract modifications at transition and accounting transition. These new requirements became effective on January 1, 2018 and did not have a material impact on our consolidated financial statements. We adopted the new standard using the modified retrospective method. We have implemented appropriate changes to the business processes, controls and control activities to support recognition, presentation and disclosure under the new standard for the first quarter of 2018, however, we have not made any significant changes to our existing systems as a result of this new standard.

In February 2016, the FASB issued accounting guidance that requires assets and liabilities arising from leases to be recorded on the balance sheet. Additional disclosures are required regarding the amount, timing, and uncertainty of cash flows from leases. This new guidance will be effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years, and is to be applied using a modified retrospective approach. In July 2018, the FASB issued an amendment which would allow entities to initially apply this new standard at the adoption date and recognize a cumulative effect adjustment to the opening balance of retained earnings. The Company adopted this standard on January 1, 2019 using this transition method. We evaluated our existing lease contracts and believe this standard will have a material impact on the consolidated financial statements and related disclosures. The implementation of this standard will result in the addition of right-of-use assets and lease liabilities on our balance sheet by approximately \$135 million. We have made the decision to adopt several practical expedients as allowed by this new standard, such as the short-term lease exemption and the relief package. In addition, we have implemented new software, as well as changes to controls that support recognition and disclosure under this new standard.

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In June 2016, the FASB issued accounting guidance that, among other things, changes the way entities recognize impairment of financial assets by requiring immediate recognition of estimated credit losses expected to occur over the remaining life of the financial asset. Additional disclosures are required regarding an entity's assumptions, models and methods for estimating the expected credit loss. This guidance will be effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years, and is to be applied using a modified retrospective approach. Early adoption is permitted. We currently do not expect this guidance to have a significant impact on our consolidated financial statements.

In October 2016, the FASB issued accounting guidance that eliminated the deferral of tax effects of intra-entity asset transfers other than inventory. As a result, the tax expense from the intercompany sale of assets, other than inventory, and associated changes to deferred taxes will be recognized when the sale occurs even though the pre-tax effects of the transaction have not been recognized as they are eliminated in consolidation. This guidance was effective using the modified retrospective method as of January 1, 2018, which resulted in an \$11.2 million cumulative adjustment to decrease Retained earnings and is not reflected in periods prior to this date.

In November 2016, the FASB issued accounting guidance that requires restricted cash and restricted cash equivalents to be included with cash and cash equivalents when reconciling the beginning and end of period total amounts shown on the statement of cash flows. This guidance became effective on January 1, 2018 and did not have a significant impact on our consolidated financial statements.

In January 2017, the FASB issued accounting guidance to clarify the definition of a business for determining whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. This guidance became effective on January 1, 2018 and did not have a significant impact on our consolidated financial statements.

In January 2017, the FASB issued accounting guidance to simplify the accounting for goodwill impairment. The guidance removes Step 2 of the goodwill impairment test, which requires a reporting unit to calculate the implied fair value of goodwill by assigning the fair value of a reporting unit to all of its assets and liabilities as if that reporting unit has been acquired in a business combination. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. This guidance will be effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years, and is to be applied on a prospective basis. Early adoption is permitted for goodwill impairment tests performed after January 1, 2017. We expect to adopt this guidance on January 1, 2020 and do not expect it to have a significant impact on our consolidated financial statements.

In March 2017, the FASB issued accounting guidance that changes the presentation of net periodic pension and postretirement benefit cost ("net benefit cost") in the income statement. This new guidance requires service cost to be presented as part of operating income (expense) and all other components of net benefit cost are to be shown outside of operations. This guidance became effective on January 1, 2018 and did not have a significant impact on our consolidated financial statements. The consolidated statements of income for the years ended December 31, 2017 and 2016 have been recast to conform to the current presentation required by this guidance. See Note 15, "Pension Plans and Other Postretirement Benefits," for additional details.

In May 2017, the FASB issued accounting guidance to clarify when to account for a change to the terms or conditions of a share-based payment award as a modification. Under the new guidance, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. This new guidance became effective on January 1, 2018 and did not have a significant impact on our consolidated financial statements.

In August 2017, the FASB issued accounting guidance to better align an entity's risk management activities with hedge accounting, simply the application of hedge accounting, and increase transparency as to the scope and results of hedging programs. This guidance will make more financial and nonfinancial hedging strategies eligible for hedge accounting. It also amends the presentation and disclosure requirements and changes how companies assess effectiveness. In October 2018, the FASB issued additional guidance that permits the use of the Overnight Index Swap Rate based on the Secured Overnight Financing Rate as a U.S. benchmark interest rate for hedge accounting purposes under ASC 815, *Derivatives and Hedging*. These new requirements will be effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years, and are to be applied on a prospective basis. Early adoption is permitted. We currently do not expect this guidance to have a significant impact on our consolidated financial statements.

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In February 2018, the FASB issued accounting guidance that gives companies the option to reclassify stranded tax effects caused by the TCJA from accumulated other comprehensive income to retained earnings. As allowed by its provisions, we early-adopted this new guidance in the fourth quarter of 2018, which resulted in a \$6.9 million cumulative adjustment to decrease Retained earnings and is not reflected in periods prior to this date.

In August 2018, the FASB issued accounting guidance that, among other things, eliminates certain disclosure requirements for fair value measurements. Under the new guidance, entities will no longer be required to disclose (a) the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy and (b) the policy for timing of transfers between levels of the fair value hierarchy. As allowed by its provisions, we early-adopted this new guidance in the third quarter of 2018. The adoption of this new guidance did not have a significant impact on our consolidated financial statements.

In August 2018, the FASB issued accounting guidance that, among other things, eliminates certain disclosure requirements for defined benefit pension and other postretirement benefit plans. Under the new guidance, entities will no longer be required to disclose the amounts in accumulated other comprehensive income expected to be recognized as components of net periodic benefit cost over the next fiscal year. As allowed by its provisions, we early-adopted this new guidance in the third quarter of 2018. The adoption of this new guidance did not have a significant impact on our consolidated financial statements.

In August 2018, the FASB issued accounting guidance that requires implementation costs incurred in a cloud computing arrangement that is a service contract to be capitalized. Entities will be required to recognize the capitalized implementation costs to expense over the noncancellable term of the cloud computing arrangement. As allowed by its provisions, we early-adopted this new guidance in the first quarter of 2019, although we do not expect it to have a material impact on our consolidated financial statements.

NOTE 2—Acquisitions:*Sales de Magnesio, Ltda.*

On February 1, 2017, the Company acquired the remaining 50% interest in the Sales de Magnesio Ltda. (“Salmag”) joint venture in Chile from SQM Salar S.A. for approximately \$8.3 million, net of cash acquired. In connection with the acquisition, the Company recorded a gain of \$6.2 million, calculated based on the difference between the purchase price and the book value of the investment in Other expenses, net on the consolidated statements of income for the year ended December 31, 2017.

Jiangxi Jiangli New Materials Science and Technology Co. Ltd.

On December 31, 2016, we completed the acquisition of all equity interests in the lithium hydroxide and lithium carbonate conversion business of Jiangxi Jiangli New Materials Science and Technology Co. Ltd. (“Jiangli New Materials”) for a cash purchase price of approximately \$145 million. This includes manufacturing assets located in both Jiangxi and Sichuan, China focused on the production of battery-grade lithium carbonate and lithium hydroxide. This acquisition has enabled us to supply premium lithium salts to an expanded global customer base, while solidifying our leading position in the lithium industry.

The aggregate purchase price was allocated to the major categories of assets and liabilities acquired based upon their estimated fair values as of December 31, 2016, which were based, in part, upon outside preliminary appraisals for certain assets. The allocation of the Jiangli New Materials acquisition was finalized in the fourth quarter of 2017. The fair values of the assets and liabilities acquired were primarily related to Accounts receivable of \$0.6 million, Property, plant and equipment of \$24.1 million, Other intangibles of \$46.3 million, Accounts payable of \$2.8 million and Deferred tax liabilities of \$6.3 million. In addition, the estimated fair value of the remaining net working capital acquired was \$6.2 million, however, an equal liability was recorded in Accrued expenses, as it will be repaid to the previous owners of the acquired business. The excess of the purchase price over the estimated fair value of the net assets acquired was approximately \$83.1 million and was recorded as goodwill.

During the year ended December 31, 2017, the Company purchased inventory with a fair value of \$37.1 million in connection with the Jiangli New Materials acquisition. The fair value included the markup of the underlying book value of \$23.1 million, which was expensed in Cost of goods sold during the year ended December 31, 2017, the estimated remaining selling period.

Goodwill arising from the acquisition consists largely of the anticipated synergies and economies of scale from the combined assets and the overall strategic importance of the acquired assets to Albemarle. The goodwill attributable to the acquisition will not be amortizable or deductible for tax purposes. The weighted-average amortization periods for the other

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intangible assets acquired are 20 years for patents and technology, 13 years for customer lists and relationships and 20 years for other. The weighted-average amortization period for all definite-lived intangible assets acquired is 17 years.

Acquisition and integration related costs for the years ended December 31, 2018 and 2017 of \$3.7 million and \$14.3 million, respectively, were included in Cost of goods sold and \$15.7 million and \$19.6 million, respectively, were included in Selling, general and administrative expenses on our consolidated statements of income. These acquisition and integration related costs relate to various significant projects, including the Jiangli New Materials acquisition, which contains non-routine compensation related costs negotiated specifically as a result of this acquisition that are outside of the Company's ordinary compensation arrangements. Included in Acquisition and integration related costs on our consolidated statements of income for the year ended December 31, 2016 is \$52.1 million of integration costs resulting from the acquisition of Rockwood Holdings, Inc. ("Rockwood") (mainly consisting of professional services fees, costs to achieve synergies, relocation costs, and other integration costs) and \$5.3 million of costs in connection with other significant projects.

NOTE 3—Divestitures:*Polyolefin Catalysts and Components Business*

On December 14, 2017, the Company signed a definitive agreement to sell the polyolefin catalysts and components portion of its Performance Catalyst Solutions ("PCS") business ("Polyolefin Catalysts Divestiture") to W.R. Grace & Co., with the sale closing on April 3, 2018. We received net cash proceeds of approximately \$413.6 million and have recorded a gain of \$210.4 million before income taxes in 2018 related to the sale of this business. The transaction includes Albemarle's Product Development Center located in Baton Rouge, Louisiana, and operations at its Yeosu, South Korea site. The sale does not include the Company's organometallics or curatives portion of its PCS business. The Polyolefin Catalysts Divestiture reflects the Company's commitment to investing in the future growth of its high priority businesses and returning capital to shareholders.

In the fourth quarter of 2017, we determined that the assets held for sale criteria in accordance with ASC 360, *Property, Plant and Equipment*, were met for this business. As such, the assets and liabilities of this business were included in Assets held for sale and Liabilities held for sale, respectively, in the consolidated balance sheet as of December 31, 2017.

The carrying amounts of the major classes of assets and liabilities that were classified as held for sale at December 31, 2017, are as follows (in thousands):

	December 31, 2017
Assets	
Current assets	\$ 39,152
Net property, plant and equipment	121,759
Goodwill	14,422
Other intangibles, net of amortization	3,632
Assets held for sale	<u>\$ 178,965</u>
Liabilities	
Current liabilities	\$ 1,938
Noncurrent liabilities	614
Liabilities held for sale	<u>\$ 2,552</u>

The results of operations of the business classified as held for sale is included in continuing operations within the consolidated statements of income. This business did not qualify for discontinued operations treatment because the Company's management does not consider the sale as representing a strategic shift that had or will have a major effect on the Company's operations and financial results.

Chemetall Surface Treatment Business

On June 17, 2016, we entered into a definitive agreement to sell the Chemetall Surface Treatment business to BASF SE. On December 14, 2016, the Company closed the sale of this business and received cash proceeds of approximately \$3.1 billion.

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Included in Income from discontinued operations (net of tax) for the year ended December 31, 2016 is a pre-tax gain of \$388.0 million (\$135.0 million after income taxes) related to the sale of this business, which included a reversal of \$81.4 million of foreign currency translation loss out of Accumulated other comprehensive loss. This gain represents the difference between the carrying value of the related net assets and their fair value as determined by the sales price less estimated costs to sell. During the second quarter of 2017, we received a final working capital settlement of \$6.9 million related to the sale of this business. The sale of the Chemetall Surface Treatment business reflects the Company's commitment to investing in the future growth of its high priority businesses, maintaining leverage flexibility and returning capital to shareholders.

The Chemetall Surface Treatment business, a separate reportable segment, was acquired on January 12, 2015 as part of the acquisition of Rockwood. This sale qualified for discontinued operations treatment because it represented a strategic shift that will have a major effect on the Company's operations and financial results. As a result, in the second quarter of 2016, the Company accounted for this business as discontinued operations in the consolidated statements of income and excluded the business from segment results for the year ended December 31, 2016. As of the date this business qualified for discontinued operations treatment, the Company stopped recording depreciation and amortization expense on assets of the Chemetall Surface Treatment business.

The major components of Income from discontinued operations (net of tax) for the year ended December 31, 2016 were as follows (in thousands):

	Year Ended December 31, 2016
Net sales	\$ 813,285
Cost of goods sold	416,934
Operating expenses, net ^(a)	268,402
Interest and financing expenses ^(b)	38,227
Other income, net	(2,485)
Gain on sale of discontinued operations	(387,980)
Income before income taxes	480,187
Income tax expense ^(c)	278,056
Income from discontinued operations (net of tax)	\$ 202,131

- (a) Operating expenses, net for discontinued operations includes mark-to market actuarial losses of \$8.5 million during the year ended December 31, 2016.
- (b) Interest and financing expenses included the allocation of interest expense not directly attributable to other operations as well as interest expense related to debt to be assumed by the buyer. The allocation of interest expense to discontinued operations was based on the ratio of net assets held for sale to the sum of total net assets plus consolidated debt.
- (c) Income tax expense for the year ended December 31, 2016 included a charge of \$253.0 million related to the gain on sale of discontinued operations.

Depreciation and amortization and capital expenditures from discontinued operations for the year ended December 31, 2016 were as follows (in thousands):

	Year Ended December 31, 2016
Depreciation and amortization	\$ 35,194
Capital expenditures	\$ 19,281

Other Divestitures

On January 4, 2016, we completed the sale of our metal sulfides business to Treibacher Industrie AG for net proceeds of \$137 million and recorded a gain of \$11.5 million before income taxes in 2016 related to the sale of this business. Included in the transaction were sites in Vienna and Arnoldstein, Austria, and Triboteco's proprietary sulfide synthesis process. In addition, on February 1, 2016, we completed the sale of our minerals-based flame retardants and specialty chemicals business to Huber Engineered Materials, a division of J.M. Huber Corporation, for net proceeds of approximately \$187 million and recorded a gain of \$112.3 million before income taxes in 2016 related to the sale of these businesses. The transaction included Albemarle's Martinswerk GmbH subsidiary and manufacturing facility located in Bergheim, Germany, and Albemarle's 50% ownership

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interest in Magnifin Magnesiaprodukte GmbH, a joint-venture with Radex Heraklith Industriebeteiligung AG at Breitenau, Austria. Also included in Gain on sales of businesses, net, for the year ended December 31, 2016 was a loss of \$1.5 million on the sale of our wafer reclaim business.

These businesses did not qualify for discontinued operations treatment because the Company's management did not consider their sale as representing a strategic shift that had or will have a major effect on the Company's operations and financial results.

NOTE 4—Supplemental Cash Flow Information:

Supplemental information related to the consolidated statements of cash flows is as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Cash paid during the year for:			
Income taxes (net of refunds of \$21,459, \$17,522 and \$9,270 in 2018, 2017 and 2016, respectively) ^(a)	\$ 157,758	\$ 320,222	\$ 143,404
Interest (net of capitalization)	\$ 49,762	\$ 61,243	\$ 96,948
Supplemental non-cash disclosures related to investing activities:			
Capital expenditures included in Accounts payable	\$ 134,784	\$ 89,188	\$ 33,622

- (a) Includes approximately \$41 million of income taxes paid in 2018 from the gain on sale of the Polyolefin Catalysts Divestiture, and \$257 million of income taxes paid in 2017 from the gain on sale of the Chemetall Surface Treatment business.

Other, net within Cash flows from operating activities on the consolidated statements of cash flows for the year ended December 31, 2018 included \$28.4 million representing the reclassification of the current portion of the one-time transition tax resulting from the enactment of the TCJA, from Other noncurrent liabilities to Income taxes payable within current liabilities. Included in Other, net for the year ended December 31, 2017 is \$394.9 million related to the noncurrent portion of the one-time transition tax resulting from the enactment of the TCJA. For additional information, see Note 20, "Income Taxes." In addition, included in Other, net for the years ended December 31, 2018, 2017 and 2016 is \$10.5 million, \$11.1 million and \$40.8 million, respectively, related to losses on fluctuations in foreign currency exchange rates.

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NOTE 5—Earnings Per Share:

Basic and diluted earnings per share from continuing operations are calculated as follows (in thousands, except per share amounts):

	Year Ended December 31,		
	2018	2017	2016
Basic earnings per share from continuing operations			
Numerator:			
Net income from continuing operations	\$ 739,139	\$ 99,468	\$ 478,638
Net income from continuing operations attributable to noncontrolling interests	(45,577)	(44,618)	(37,094)
Net income from continuing operations attributable to Albemarle Corporation	<u>\$ 693,562</u>	<u>\$ 54,850</u>	<u>\$ 441,544</u>
Denominator:			
Weighted-average common shares for basic earnings per share	108,427	110,914	112,379
Basic earnings per share from continuing operations	<u>\$ 6.40</u>	<u>\$ 0.49</u>	<u>\$ 3.93</u>
Diluted earnings per share from continuing operations			
Numerator:			
Net income from continuing operations	\$ 739,139	\$ 99,468	\$ 478,638
Net income from continuing operations attributable to noncontrolling interests	(45,577)	(44,618)	(37,094)
Net income from continuing operations attributable to Albemarle Corporation	<u>\$ 693,562</u>	<u>\$ 54,850</u>	<u>\$ 441,544</u>
Denominator:			
Weighted-average common shares for basic earnings per share	108,427	110,914	112,379
Incremental shares under stock compensation plans	1,031	1,466	860
Weighted-average common shares for diluted earnings per share	<u>109,458</u>	<u>112,380</u>	<u>113,239</u>
Diluted earnings per share from continuing operations	<u>\$ 6.34</u>	<u>\$ 0.49</u>	<u>\$ 3.90</u>

At December 31, 2018, there were 123,730 common stock equivalents not included in the computation of diluted earnings per share because their effect would have been anti-dilutive.

Included in the calculation of basic earnings per share are unvested restricted stock awards that contain nonforfeitable rights to dividends. At December 31, 2018, there were 8,400 unvested shares of restricted stock awards outstanding.

We have the authority to issue 15 million shares of preferred stock in one or more classes or series. As of December 31, 2018, no shares of preferred stock have been issued.

In November 2016, our Board of Directors authorized an increase in the number of shares the Company is permitted to repurchase under our share repurchase program, pursuant to which the Company is now permitted to repurchase up to a maximum of 15 million shares, including those previously authorized but not yet repurchased.

Under our existing Board authorized share repurchase program, during 2018, the Company entered into two separate accelerated share repurchase (“ASR”) agreements with financial institutions. Under each ASR agreement, the Company paid \$250 million from available cash on hand. Under the terms of the first ASR agreement, which was completed on September 28, 2018, the Company received and retired a total of 2,680,704 shares, calculated based on the daily Rule 10b-18 volume-weighted average prices of the Company’s common stock over the term of the ASR agreement, less an agreed discount. Under the terms of the second ASR agreement, which was completed on December 7, 2018, the company received and retired a total of 2,581,950 shares, calculated based on the daily Rule 10b-18 weighted average prices of the Company’s common stock over the terms of the ASR agreement, less an agreed discount. The Company determined that each ASR agreement met the criteria to be accounted for as a forward contract indexed to its stock and was therefore treated as an equity instrument. In total, we received and retired 5,262,654 shares under these agreements, which reduced the Company’s weighted average shares outstanding for purposes of calculating basic and diluted earnings per share for the year ended December 31, 2018.

Under our existing Board authorized share repurchase program, the Company entered into an ASR agreement with a financial institution on March 1, 2017. Under the ASR agreement, in March 2017, the Company paid \$250 million from available cash on hand and received and retired an initial delivery of 1,948,178 shares of our common stock. Under the terms of

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

the ASR agreement, on June 16, 2017, the transaction was completed and we received and retired a final settlement of 392,905 shares, calculated based on the daily Rule 10b-18 volume-weighted average prices of the Company's common stock over the term of the ASR agreement, less an agreed discount. The Company determined that the ASR agreement met the criteria to be accounted for as a forward contract indexed to its stock and was therefore treated as an equity instrument. In total, we received and retired 2,341,083 shares under the ASR agreement, which reduced the Company's weighted average shares outstanding for purposes of calculating basic and diluted earnings per share for the year ended December 31, 2017.

There were no shares of the Company's common stock repurchased during the year ended December 31, 2016. As of December 31, 2018, there were 7,396,263 remaining shares available for repurchase under the Company's authorized share repurchase program.

NOTE 6—Other Accounts Receivable:

Other accounts receivable consist of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Value added tax/consumption tax	\$ 40,480	\$ 23,158
Other	11,579	14,779
Total	<u>\$ 52,059</u>	<u>\$ 37,937</u>

NOTE 7—Inventories:

The following table provides a breakdown of inventories at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Finished goods ^(a)	\$ 482,355	\$ 404,239
Raw materials and work in process ^(b)	158,290	132,891
Stores, supplies and other	59,895	55,651
Total ^(c)	<u>\$ 700,540</u>	<u>\$ 592,781</u>

- (a) Increase primarily due to the build-up of inventory in our Lithium segment for a forecasted increase in sales in 2019.
 (b) Included \$71.4 million and \$59.6 million at December 31, 2018 and 2017, respectively, of work in process related to lithium brine.
 (c) As of December 31, 2017, \$24.7 million of Inventories were classified as Assets held for sale in the consolidated balance sheets. See Note 3, "Divestitures," for additional information.

Approximately 10% and 17% of our inventories are valued using the last-in, first-out ("LIFO") method at December 31, 2018 and 2017, respectively. The portion of our domestic inventories stated on the LIFO basis amounted to \$69.2 million and \$99.6 million at December 31, 2018 and 2017, respectively, which are below replacement cost by approximately \$32.8 million and \$33.1 million, respectively.

NOTE 8—Other Current Assets:

Other current assets consist of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Income tax receivables	\$ 40,116	\$ 47,130
Prepaid expenses	43,172	86,348
Other	1,502	2,586
Total	<u>\$ 84,790</u>	<u>\$ 136,064</u>

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NOTE 9—Property, Plant and Equipment:

Property, plant and equipment, at cost, consist of the following at December 31, 2018 and 2017 (in thousands):

	Useful Lives (Years)	December 31,	
		2018	2017
Land	—	\$ 123,518	\$ 118,428
Land improvements	10 – 30	63,349	63,328
Buildings and improvements	10 – 45	251,980	245,482
Machinery and equipment ^(a)	2 – 45	2,780,478	2,627,667
Long-term mineral rights and production equipment costs	7 – 60	696,033	675,832
Construction in progress	—	883,705	393,598
Total ^(b)		\$ 4,799,063	\$ 4,124,335

- (a) Consists primarily of (1) short-lived production equipment components, office and building equipment and other equipment with estimated lives ranging 2 – 7 years, (2) production process equipment (intermediate components) with estimated lives ranging 8 – 19 years, (3) production process equipment (major unit components) with estimated lives ranging 20 – 29 years, and (4) production process equipment (infrastructure and other) with estimated lives ranging 30 – 45 years.
- (b) As of December 31, 2017, \$215.9 million of Property, plant and equipment, at cost, was classified as Assets held for sale in the consolidated balance sheets. See Note 3, “Divestitures,” for additional information.

The cost of property, plant and equipment is depreciated generally by the straight-line method. Depletion of long-term mineral rights is based on the units-of-production method. Depreciation expense, including depletion, amounted to \$170.0 million, \$169.5 million and \$178.8 million during the years ended December 31, 2018, 2017 and 2016, respectively. Depreciation expense related to discontinued operations was \$8.9 million during the year ended December 31, 2016. Interest capitalized on significant capital projects in 2018, 2017 and 2016 was \$19.3 million, \$7.4 million and \$6.8 million, respectively.

NOTE 10—Investments:

Investments include our share of unconsolidated joint ventures, nonmarketable securities and marketable equity securities. The following table details our investment balances at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Joint ventures	\$ 486,032	\$ 499,756
Nonmarketable securities	9,177	3,655
Marketable equity securities	33,513	30,653
Total	\$ 528,722	\$ 534,064

Our ownership positions in significant unconsolidated investments are shown below:

	December 31,		
	2018	2017	2016
* Windfield Holdings Pty. Ltd. - a joint venture with Sichuan Tianqi Lithium Industries, Inc., that mines lithium ore and produces lithium concentrate	49%	49%	49%
* Nippon Aluminum Alkyls - a joint venture with Mitsui Chemicals, Inc. that produces aluminum alkyls	50%	50%	50%
* Nippon Ketjen Company Limited - a joint venture with Sumitomo Metal Mining Company Limited that produces refinery catalysts	50%	50%	50%
* Eurecat S.A. - a joint venture with Axens Group for refinery catalysts regeneration services	50%	50%	50%
* Fábrica Carioca de Catalisadores S.A. - a joint venture with Petrobras Quimica S.A. - PETROQUISA that produces catalysts and includes catalysts research and product development activities	50%	50%	50%

Our investment in the significant unconsolidated joint ventures above amounted to \$466.1 million and \$479.1 million as of December 31, 2018 and 2017, respectively, and the amount included in Equity in net income of unconsolidated investments (net of tax) in the consolidated statements of income totaled \$88.8 million, \$86.8 million and \$56.8 million for the years ended

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

December 31, 2018, 2017 and 2016, respectively. Undistributed earnings attributable to our significant unconsolidated investments represented approximately \$159.9 million and \$127.5 million of our consolidated retained earnings at December 31, 2018 and 2017, respectively. All of the unconsolidated joint ventures in which we have investments are private companies and accordingly do not have a quoted market price available.

The following summary lists the assets, liabilities and results of operations for our significant unconsolidated joint ventures presented herein (in thousands):

	December 31,	
	2018	2017
Summary of Balance Sheet Information:		
Current assets	\$ 476,460	\$ 503,043
Noncurrent assets	1,159,866	1,041,519
Total assets	<u>\$ 1,636,326</u>	<u>\$ 1,544,562</u>
Current liabilities	\$ 191,971	\$ 133,670
Noncurrent liabilities	422,769	405,662
Total liabilities	<u>\$ 614,740</u>	<u>\$ 539,332</u>

	Year Ended December 31,		
	2018	2017	2016
Summary of Statements of Income Information:			
Net sales	\$ 829,590	\$ 687,561	\$ 590,980
Gross profit	\$ 456,518	\$ 353,577	\$ 267,241
Income before income taxes	\$ 332,632	\$ 267,805	\$ 189,016
Net income	\$ 225,791	\$ 184,777	\$ 126,872

We have evaluated each of the unconsolidated investments pursuant to current accounting guidance and none qualify for consolidation. Dividends received from our significant unconsolidated investments were \$56.4 million, \$38.1 million and \$42.1 million in 2018, 2017 and 2016, respectively.

At December 31, 2018 and 2017, the carrying amount of our investments in unconsolidated joint ventures differed from the amount of underlying equity in net assets by approximately \$0.4 million and \$13.8 million, respectively. These amounts represent the differences between the value of certain assets of the joint ventures and our related valuation on a U.S. GAAP basis. As of December 31, 2018 and 2017, \$0.1 million and \$0.4 million, respectively, remained to be amortized over the remaining useful lives of the assets with the balance of the difference primarily representing our share of the joint ventures' goodwill.

The Company holds a 49% equity interest in Windfield Holdings Pty. Ltd. ("Windfield"), which we acquired in the Rockwood acquisition. With regards to the Company's ownership in Windfield, the parties share risks and benefits disproportionate to their voting interests. As a result, the Company considers Windfield to be a variable interest entity ("VIE"). However, the Company does not consolidate Windfield as it is not the primary beneficiary. The carrying amount of our 49% equity interest in Windfield, which is our most significant VIE, was \$349.6 million and \$355.2 million at December 31, 2018 and December 31, 2017, respectively. The Company's aggregate net investment in all other entities which it considers to be VIE's for which the Company is not the primary beneficiary was \$8.1 million and \$8.7 million at December 31, 2018 and December 31, 2017, respectively. Our unconsolidated VIEs are reported in Investments in the consolidated balance sheets. The Company does not guarantee debt for, or have other financial support obligations to, these entities, and its maximum exposure to loss in connection with its continuing involvement with these entities is limited to the carrying value of the investments.

As part of the original Windfield joint venture agreement, Tianqi Lithium Corporation ("Tianqi") was granted an option to purchase from 20% to 30% of the equity interests in Rockwood Lithium GmbH, a wholly-owned German subsidiary of Albemarle, and its subsidiaries. In February 2017, Albemarle and Tianqi terminated the option agreement, and as a result, we will retain 100% of the ownership interest in Rockwood Lithium GmbH and its subsidiaries. Following the termination of the option agreement, the \$13.1 million fair value of the option agreement originally recorded in Noncontrolling interests was reversed and recorded as an adjustment to Additional paid-in capital.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The Company holds a 50% equity interest in Jordan Bromine Company Limited (“JBC”), reported in the Bromine Specialties segment. The Company consolidates this venture as it is considered the primary beneficiary due to its operational and financial control.

We maintain a Benefit Protection Trust (the “Trust”) that was created to provide a source of funds to assist in meeting the obligations of our Executive Deferred Compensation Plan (“EDCP”), subject to the claims of our creditors in the event of our insolvency. Assets of the Trust, in conjunction with our EDCP, are accounted for as trading securities in accordance with authoritative accounting guidance. The assets of the Trust consist primarily of mutual fund investments and are marked-to-market on a monthly basis through the consolidated statements of income. As of December 31, 2018 and 2017, these marketable securities amounted to \$26.3 million and \$25.5 million, respectively.

NOTE 11—Other Assets:

Other assets consist of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Deferred income taxes ^(a)	\$ 17,029	\$ 25,108
Assets related to unrecognized tax benefits ^(a)	12,984	14,601
Other ^(b)	50,122	34,455
Total	\$ 80,135	\$ 74,164

(a) See Note 1, “Summary of Significant Accounting Policies” and Note 20, “Income Taxes.”

(b) As of December 31, 2018 and 2017, a \$28.7 million reserve was recorded against a note receivable on one of our European entities no longer deemed probable of collection.

NOTE 12—Goodwill and Other Intangibles:

The following table summarizes the changes in goodwill by reportable segment for the years ended December 31, 2018 and 2017 (in thousands):

	Lithium	Bromine Specialties	Catalysts	All Other	Total
Balance at December 31, 2016 ^(a)	\$1,326,980	\$ 20,319	\$ 186,147	\$ 6,586	\$1,540,032
Acquisitions ^(b)	(26,151)	—	—	—	(26,151)
Reclass to assets held for sale ^(c)	—	—	(14,422)	—	(14,422)
Foreign currency translation adjustments and other	88,260	—	22,636	—	110,896
Balance at December 31, 2017 ^(a)	1,389,089	20,319	194,361	6,586	1,610,355
Foreign currency translation adjustments and other	(34,310)	—	(8,876)	—	(43,186)
Balance at December 31, 2018	\$1,354,779	\$ 20,319	\$ 185,485	\$ 6,586	\$1,567,169

(a) The December 31, 2016 and 2017 balances have been recast to reflect a change in segments. See Note 24, “Segment and Geographic Area Information,” for additional information.

(b) Primarily represents final purchase price adjustments for the Jiangli New Materials acquisition recorded for the year ended December 31, 2017. See Note 2, “Acquisitions,” for additional information.

(c) Represents Goodwill of the Polyolefin Catalysts Divestiture. See Note 3, “Divestitures,” for additional information.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Other intangibles consist of the following at December 31, 2018 and 2017 (in thousands):

	Customer Lists and Relationships	Trade Names and Trademarks ^(a)	Patents and Technology	Other	Total
Gross Asset Value					
Balance at December 31, 2016	\$ 387,893	\$ 16,514	\$ 38,434	\$ 18,844	\$ 461,685
Acquisitions ^(b)	19,225	1,429	20,381	18,847	\$ 59,882
Reclass to assets held for sale ^(c)	—	—	—	(4,228)	(4,228)
Foreign currency translation adjustments and other	32,194	1,038	2,803	3,793	39,828
Balance at December 31, 2017	439,312	18,981	61,618	37,256	557,167
Foreign currency translation adjustments and other	(10,940)	(528)	(5,817)	6,452	(10,833)
Balance at December 31, 2018	<u>\$ 428,372</u>	<u>\$ 18,453</u>	<u>\$ 55,801</u>	<u>\$ 43,708</u>	<u>\$ 546,334</u>
Accumulated Amortization					
Balance at December 31, 2016	\$ (49,165)	\$ (7,952)	\$ (31,683)	\$ (18,321)	\$ (107,121)
Amortization	(21,288)	—	(1,412)	(2,379)	(25,079)
Reclass to assets held for sale ^(c)	—	—	—	596	596
Foreign currency translation adjustments and other	(4,251)	(343)	(2,108)	2,642	(4,060)
Balance at December 31, 2017	(74,704)	(8,295)	(35,203)	(17,462)	(135,664)
Amortization	(23,402)	—	(1,450)	(3,127)	(27,979)
Foreign currency translation adjustments and other	2,309	119	1,405	(381)	3,452
Balance at December 31, 2018	<u>\$ (95,797)</u>	<u>\$ (8,176)</u>	<u>\$ (35,248)</u>	<u>\$ (20,970)</u>	<u>\$ (160,191)</u>
Net Book Value at December 31, 2017	<u>\$ 364,608</u>	<u>\$ 10,686</u>	<u>\$ 26,415</u>	<u>\$ 19,794</u>	<u>\$ 421,503</u>
Net Book Value at December 31, 2018	<u>\$ 332,575</u>	<u>\$ 10,277</u>	<u>\$ 20,553</u>	<u>\$ 22,738</u>	<u>\$ 386,143</u>

(a) Includes only indefinite-lived intangible assets.

(b) Represents final purchase price adjustments for the Jiangli New Materials acquisition and the acquisition of the remaining equity interest in Salmag. See Note 2, "Acquisitions," for additional information.

(c) Represents Other intangibles and related amortization of the Polyolefin Catalysts Divestiture. See Note 3, "Divestitures," for additional information.

Useful lives range from 13 – 25 years for customer lists and relationships; 8 – 20 years for patents and technology; and primarily 5 – 25 years for other.

Amortization of other intangibles amounted to \$28.0 million, \$25.1 million and \$19.0 million for the years ended December 31, 2018, 2017 and 2016, respectively. Included in amortization for the years ended December 31, 2018, 2017 and 2016 is \$19.7 million, \$17.7 million and \$15.9 million, respectively, of amortization using the pattern of economic benefit method. Amortization of other intangibles related to discontinued operations was \$26.3 million for the year ended December 31, 2016.

Total estimated amortization expense of other intangibles for the next five fiscal years is as follows (in thousands):

	Estimated Amortization Expense
2019	\$ 27,219
2020	\$ 24,878
2021	\$ 24,600
2022	\$ 24,006
2023	\$ 23,395

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NOTE 13—Accrued Expenses:

Accrued expenses consist of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Employee benefits, payroll and related taxes	\$ 77,814	\$ 93,393
Other ^(a)	179,509	174,943
Total	\$ 257,323	\$ 268,336

(a) No individual component exceeds 5% of total current liabilities.

NOTE 14—Long-Term Debt:

Long-term debt consisted of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
1.875% Senior notes, net of unamortized discount and debt issuance costs of \$2,841 at December 31, 2018 and \$3,971 at December 31, 2017	444,155	463,575
4.15% Senior notes, net of unamortized discount and debt issuance costs of \$2,884 at December 31, 2018 and \$3,372 at December 31, 2017	422,116	421,628
4.50% Senior notes, net of unamortized discount and debt issuance costs of \$589 at December 31, 2018 and \$891 at December 31, 2017	174,626	174,325
5.45% Senior notes, net of unamortized discount and debt issuance costs of \$4,004 at December 31, 2018 and \$4,159 at December 31, 2017	345,996	345,841
Commercial paper notes	306,606	421,321
Variable-rate foreign bank loans	7,216	5,298
Other	4,495	5,384
Total long-term debt	1,705,210	1,837,372
Less amounts due within one year	307,294	422,012
Long-term debt, less current portion	\$ 1,397,916	\$ 1,415,360

Aggregate annual maturities of long-term debt as of December 31, 2018 are as follows (in millions): 2019—\$307.3; 2020—\$175.3; 2021—\$447.0; 2022—\$0.0; 2023—\$7.2; thereafter—\$778.7.

Senior Notes

In the fourth quarter of 2014, we issued a series of senior notes (collectively, the “2014 Senior Notes”) as follows:

- €700.0 million aggregate principal amount of senior notes, issued on December 8, 2014, bearing interest at a rate of 1.875% payable annually on December 8 of each year, beginning in 2015. The effective interest rate on these senior notes is approximately 2.10%. These senior notes mature on December 8, 2021.
- \$250.0 million aggregate principal amount of senior notes, issued on November 24, 2014, bearing interest at a rate of 3.00% payable semi-annually on June 1 and December 1 of each year, beginning June 1, 2015. The effective interest rate on these senior notes is approximately 3.18%. These senior notes mature on December 1, 2019.
- \$425.0 million aggregate principal amount of senior notes, issued on November 24, 2014, bearing interest at a rate of 4.15% payable semi-annually on June 1 and December 1 of each year, beginning June 1, 2015. The effective interest rate on these senior notes is approximately 5.06%. These senior notes mature on December 1, 2024.
- \$350.0 million aggregate principal amount of senior notes, issued on November 24, 2014, bearing interest at a rate of 5.45% payable semi-annually on June 1 and December 1 of each year, beginning June 1, 2015. The effective interest rate on these senior notes is approximately 5.50%. These senior notes mature on December 1, 2044.

Our \$350.0 million aggregate principal amount of senior notes, issued on December 10, 2010, bear interest at a rate of 4.50% payable semi-annually on June 15 and December 15 of each year. The effective interest rate on these senior notes is approximately 4.70%. These senior notes mature on December 15, 2020.

In the first quarter of 2017, using a portion of the proceeds from the sale of the Chemetall Surface Treatment business, we repaid the 3.00% Senior notes in full, €307.0 million of the 1.875% Senior notes and \$174.7 million of the 4.50% Senior notes,

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as well as related tender premiums of \$45.2 million. As a result, Interest and financing expenses on the consolidated statements of income includes a loss on early extinguishment of debt of \$52.8 million for the year ended December 31, 2017, representing the tender premiums, fees, unamortized discounts and unamortized deferred financing costs from the redemption of these senior notes.

On January 22, 2014, we entered into a pay fixed, receive variable rate forward starting interest rate swap, with a notional amount of \$325.0 million, with J.P. Morgan Chase Bank, N.A., to be effective October 15, 2014. Our risk management objective and strategy for undertaking this hedge was to eliminate the variability in the interest rate and partial credit spread on the 20 future semi-annual coupon payments that we will pay in connection with our 4.15% senior notes. On October 15, 2014, the swap was settled, resulting in a payment to the counterparty of \$33.4 million. This amount was recorded in Accumulated other comprehensive loss and is being amortized to interest expense over the life of the 4.15% senior notes. The amount to be reclassified to interest expense from Accumulated other comprehensive loss during the next twelve months is approximately \$3.3 million.

On December 18, 2014, the carrying value of the 1.875% Euro-denominated senior notes was designated as an effective hedge of our net investment in foreign subsidiaries where the Euro serves as the functional currency, and beginning on the date of designation, gains or losses on the revaluation of these senior notes to our reporting currency have been and will be recorded in Accumulated other comprehensive loss. During the years ended December 31, 2018, 2017 and 2016, gains (losses) of \$25.8 million, (\$41.8) million and \$26.1 million (net of income taxes), respectively, were recorded in Accumulated other comprehensive loss in connection with the revaluation of these senior notes to our reporting currency.

September 2015 Term Loan Agreement

On September 14, 2015, we entered into a new \$1.25 billion term loan agreement (the “September 2015 Term Loan Agreement”) with JPMorgan Chase Bank, N.A. (the “Administrative Agent”) and certain other lenders. During the year ended December 31, 2016, the Company repaid the September 2015 Term Loan Agreement in full, primarily with proceeds from the sales of the Chemetall Surface Treatment business, the metal sulfides business and the minerals-based flame retardants and specialty chemicals business. The interest rate on both Term loan facilities was LIBOR plus 1.375%.

Credit Agreement

On June 21, 2018, we entered into a revolving, unsecured credit agreement (“2018 Credit Agreement”) to replace our revolving, unsecured credit agreement dated as of February 7, 2014, as amended. The 2018 Credit Agreement currently provides for borrowings of up to \$1.0 billion and matures on June 21, 2023. Borrowings under the 2018 Credit Agreement bear interest at variable rates based on an average London inter-bank offered rate (“LIBOR”) for deposits in the relevant currency plus an applicable margin which ranges from 0.910% to 1.500%, depending on the Company’s credit rating from Standard & Poor’s Ratings Services (“S&P”), Moody’s Investors Services (“Moody’s”) and Fitch Ratings (“Fitch”). The applicable margin on the facility was 1.125% as of December 31, 2018. There were no borrowings outstanding under the 2018 Credit Agreement as of December 31, 2018.

Borrowings under the 2018 Credit Agreement are conditioned upon satisfaction of certain conditions precedent, including the absence of defaults. The Company is subject to one financial covenant, as well as customary affirmative and negative covenants. The financial covenant requires that the Company’s consolidated funded debt to consolidated EBITDA ratio (as such terms are defined in the 2018 Credit Agreement) to be less than or equal to 3.50:1.00, subject to adjustments in accordance with the terms of the 2018 Credit Agreement relating to a consummation of an acquisition where the consideration includes cash proceeds from issuance of funded debt in excess of \$500 million. The 2018 Credit Agreement also contains customary default provisions, including defaults for non-payment, breach of representations and warranties, insolvency, non-performance of covenants and cross-defaults to other material indebtedness. The occurrence of an event of default under the 2018 Credit Agreement could result in all loans and other obligations becoming immediately due and payable and the credit facility being terminated.

Commercial Paper Notes

On May 29, 2013, we entered into agreements to initiate a commercial paper program on a private placement basis under which we may issue unsecured commercial paper notes (the “Commercial Paper Notes”) from time-to-time up to a maximum aggregate principal amount outstanding at any time of \$750.0 million. The proceeds from the issuance of the Commercial Paper Notes are expected to be used for general corporate purposes, including the repayment of other debt of the Company. Our 2018 Credit Agreement is available to repay the Commercial Paper Notes, if necessary. Aggregate borrowings outstanding under the 2018 Credit Agreement and the Commercial Paper Notes will not exceed the \$1.0 billion current maximum amount available under the 2018 Credit Agreement. The Commercial Paper Notes will be sold at a discount from par, or alternatively, will be

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sold at par and bear interest at rates that will vary based upon market conditions at the time of issuance. The maturities of the Commercial Paper Notes will vary but may not exceed 397 days from the date of issue. The definitive documents relating to the commercial paper program contain customary representations, warranties, default and indemnification provisions. At December 31, 2018, we had \$306.6 million of Commercial Paper Notes outstanding bearing a weighted-average interest rate of approximately 2.91% and a weighted-average maturity of 38 days. During the year ended December 31, 2018, we repaid a net amount of \$114.7 million of commercial paper notes using cash on hand.

Other

We have additional uncommitted credit lines with various U.S. and foreign financial institutions that provide for borrowings of up to approximately \$263 million at December 31, 2018. Outstanding borrowings under these agreements were \$7.2 million and \$5.3 million at December 31, 2018 and 2017, respectively. The average interest rate on borrowings under these agreements during 2018, 2017 and 2016 was approximately 0.69%, 1.26% and 0.94%, respectively.

At December 31, 2018 and 2017, we had the ability and intent to refinance our borrowings under our other existing credit lines with borrowings under the 2018 Credit Agreement. Therefore, the amounts outstanding under those credit lines, if any, are classified as long-term debt at December 31, 2018 and 2017. At December 31, 2018, we had the ability to borrow \$693.4 million under our commercial paper program and the 2018 Credit Agreement.

We believe that as of December 31, 2018, we were, and currently are, in compliance with all of our debt covenants.

NOTE 15—Pension Plans and Other Postretirement Benefits:

We maintain various noncontributory defined benefit pension plans covering certain employees, primarily in the U.S., the U.K., Germany and Japan. We also have a contributory defined benefit plan covering certain Belgian employees. The benefits for these plans are based primarily on compensation and/or years of service. Our U.S. and U.K. defined benefit plans for non-represented employees are closed to new participants, with no additional benefits accruing under these plans as participants' accrued benefits have been frozen. The funding policy for each plan complies with the requirements of relevant governmental laws and regulations. The pension information for all periods presented includes amounts related to salaried and hourly plans.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following provides a reconciliation of benefit obligations, plan assets and funded status, as well as a summary of significant assumptions, for our defined benefit pension plans (in thousands):

	Year Ended December 31, 2018		Year Ended December 31, 2017	
	U.S. Pension Plans	Foreign Pension Plans	U.S. Pension Plans	Foreign Pension Plans
Change in benefit obligations:				
Benefit obligation at January 1	\$ 685,963	\$ 275,006	\$ 665,688	\$ 246,280
Service cost	1,043	3,919	985	2,547
Interest cost	26,804	5,144	28,614	5,128
Plan amendments	—	233	—	—
Actuarial (gain) loss	(36,844)	(17,885)	30,539	2,783
Benefits paid	(41,100)	(9,974)	(39,863)	(9,524)
Employee contributions	—	182	—	215
Foreign exchange (gain) loss	—	(12,632)	—	30,711
Settlements/curtailments	—	(3,628)	—	(3,065)
Other	—	(62)	—	(69)
Benefit obligation at December 31	<u>\$ 635,866</u>	<u>\$ 240,303</u>	<u>\$ 685,963</u>	<u>\$ 275,006</u>
Change in plan assets:				
Fair value of plan assets at January 1	\$ 580,396	\$ 79,478	\$ 538,082	\$ 68,875
Actual return on plan assets	(28,457)	(1,593)	80,613	6,260
Employer contributions	2,236	10,700	1,564	9,316
Benefits paid	(41,100)	(9,974)	(39,863)	(9,524)
Employee contributions	—	182	—	215
Foreign exchange (loss) gain	—	(4,519)	—	7,470
Settlements/curtailments	—	(3,628)	—	(3,065)
Other	—	(62)	—	(69)
Fair value of plan assets at December 31	<u>\$ 513,075</u>	<u>\$ 70,584</u>	<u>\$ 580,396</u>	<u>\$ 79,478</u>
Funded status at December 31	<u>\$ (122,791)</u>	<u>\$ (169,719)</u>	<u>\$ (105,567)</u>	<u>\$ (195,528)</u>
December 31, 2018				
	U.S. Pension Plans	Foreign Pension Plans	U.S. Pension Plans	Foreign Pension Plans
Amounts recognized in consolidated balance sheets:				
Current liabilities (accrued expenses)	\$ (1,342)	\$ (5,772)	\$ (1,267)	\$ (5,217)
Noncurrent liabilities (pension benefits)	(121,449)	(163,947)	(104,300)	(190,311)
Net pension liability	<u>\$ (122,791)</u>	<u>\$ (169,719)</u>	<u>\$ (105,567)</u>	<u>\$ (195,528)</u>
Amounts recognized in accumulated other comprehensive (loss) income:				
Prior service benefit	\$ —	\$ (409)	\$ (60)	\$ (269)
Net amount recognized	<u>\$ —</u>	<u>\$ (409)</u>	<u>\$ (60)</u>	<u>\$ (269)</u>
Weighted-average assumptions used to determine benefit obligations at December 31:				
Discount rate	4.59%	2.15%	4.03%	1.94%
Rate of compensation increase	—%	3.63%	—%	3.18%

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The accumulated benefit obligation for all defined benefit pension plans was \$867.4 million and \$949.0 million at December 31, 2018 and 2017, respectively.

Postretirement medical benefits and life insurance is provided for certain groups of U.S. retired employees. Medical and life insurance benefit costs have been funded principally on a pay-as-you-go basis. Although the availability of medical coverage after retirement varies for different groups of employees, the majority of employees who retire before becoming eligible for Medicare can continue group coverage by paying a portion of the cost of a monthly premium designed to cover the claims incurred by retired employees subject to a cap on payments allowed. The availability of group coverage for Medicare-eligible retirees also varies by employee group with coverage designed either to supplement or coordinate with Medicare. Retirees generally pay a portion of the cost of the coverage. Plan assets for retiree life insurance are held under an insurance contract and are reserved for retiree life insurance benefits. In 2005, the postretirement medical benefit available to U.S. employees was changed to provide that employees who are under age 50 as of December 31, 2005 would no longer be eligible for a company-paid retiree medical premium subsidy. Employees who are of age 50 and above as of December 31, 2005 and who retire after January 1, 2006 will have their retiree medical premium subsidy capped. Effective January 1, 2008, our medical insurance for certain groups of U.S. retired employees is now insured through a medical carrier.

The following provides a reconciliation of benefit obligations, plan assets and funded status, as well as a summary of significant assumptions, for our postretirement benefit plans (in thousands):

	Year Ended December 31,	
	2018	2017
	Other Postretirement Benefits	Other Postretirement Benefits
Change in benefit obligations:		
Benefit obligation at January 1	\$ 56,647	\$ 56,141
Service cost	117	121
Interest cost	2,168	2,340
Actuarial (gain) loss	(5,661)	2,008
Benefits paid	(2,881)	(3,963)
Benefit obligation at December 31	<u>\$ 50,390</u>	<u>\$ 56,647</u>
Change in plan assets:		
Fair value of plan assets at January 1	\$ 834	\$ 2,232
Actual return on plan assets	(253)	104
Employer contributions	2,300	2,461
Benefits paid	(2,881)	(3,963)
Fair value of plan assets at December 31	<u>\$ —</u>	<u>\$ 834</u>
Funded status at December 31	<u>\$ (50,390)</u>	<u>\$ (55,813)</u>

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

	December 31,	
	2018	2017
	Other Postretirement Benefits	Other Postretirement Benefits
Amounts recognized in consolidated balance sheets:		
Current liabilities (accrued expenses)	\$ (4,233)	\$ (3,810)
Noncurrent liabilities (postretirement benefits)	(46,157)	(52,003)
Net postretirement liability	<u>\$ (50,390)</u>	<u>\$ (55,813)</u>
Amounts recognized in accumulated other comprehensive (loss) income:		
Prior service benefit	\$ —	\$ 48
Net amount recognized	<u>\$ —</u>	<u>\$ 48</u>
Weighted-average assumptions used to determine benefit obligations at December 31:		
Discount rate	4.55%	3.99%
Rate of compensation increase	3.50%	3.50%

The components of pension benefits cost (credit) from continuing operations are as follows (in thousands):

	Year Ended December 31, 2018		Year Ended December 31, 2017		Year Ended December 31, 2016	
	U.S. Pension Plans	Foreign Pension Plans	U.S. Pension Plans	Foreign Pension Plans	U.S. Pension Plans	Foreign Pension Plans
Service cost	\$ 1,043	\$ 3,919	\$ 985	\$ 2,547	\$ 1,028	\$ 3,133
Interest cost	26,804	5,144	28,614	5,128	30,514	6,570
Expected return on assets	(38,621)	(4,204)	(36,243)	(4,441)	(36,445)	(4,027)
Actuarial loss (gain)	30,234	(10,833)	(13,910)	483	5,988	19,418
Amortization of prior service benefit	60	34	75	56	75	859
Total net pension benefits cost (credit) ^(a)	<u>\$ 19,520</u>	<u>\$ (5,940)</u>	<u>\$ (20,479)</u>	<u>\$ 3,773</u>	<u>\$ 1,160</u>	<u>\$ 25,953</u>
Weighted-average assumption percentages:						
Discount rate	4.03%	1.94%	4.43%	2.00%	4.67%	2.76%
Expected return on plan assets	6.89%	5.52%	6.89%	6.16%	6.89%	6.66%
Rate of compensation increase	—%	3.18%	—%	3.18%	—%	3.16%

- (a) For the year ended December 31, 2016, \$10.8 million of net pension benefits credit is included in Income from discontinued operations (net of tax) in the consolidated statements of income. See Note 3, "Divestitures," for additional information.

Effective January 1, 2019, the weighted-average expected rate of return on plan assets for the U.S. and foreign defined benefit pension plans is 6.89% and 5.69%, respectively.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The components of postretirement benefits (credit) cost from continuing operations are as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
	Other Postretirement Benefits	Other Postretirement Benefits	Other Postretirement Benefits
Service cost	\$ 117	\$ 121	\$ 115
Interest cost	2,168	2,340	2,483
Expected return on assets	(7)	(110)	(187)
Actuarial (gain) loss	(5,400)	2,014	1,275
Amortization of prior service benefit	(48)	(95)	(95)
Total net postretirement benefits (credit) cost	<u>\$ (3,170)</u>	<u>\$ 4,270</u>	<u>\$ 3,591</u>
Weighted-average assumption percentages:			
Discount rate	3.99%	4.35%	4.59%
Expected return on plan assets	7.00%	7.00%	7.00%
Rate of compensation increase	3.50%	3.50%	3.50%

As a result of the adoption of new accounting guidance effective January 1, 2018, on a retrospective basis, all components of net benefit cost (credit), other than service cost, are to be shown outside of operations on the consolidated statements of income. We recast these components of net benefit cost (credit), which resulted in an increase (reduction) of \$3.7 million and \$0.3 million in Cost of goods sold, respectively, and \$12.4 million and (\$26.7) million in Selling, general and administrative expenses, respectively, with an offsetting impact of \$16.1 million and (\$26.4) million in Other expenses, net, respectively, for the years ended December 31, 2017 and 2016. There was no impact to Net income attributable to Albemarle Corporation.

The mark-to-market actuarial loss in 2018 is primarily attributable to a lower return on pension plan assets in 2018 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was (4.55)% versus an expected return of 6.73%. The mark-to-market actuarial loss in 2018 was partially offset by an increase in the weighted-average discount rate to 4.59% from 4.03% for our U.S. pension plans and to 2.15% from 1.94% for our foreign pension plans to reflect market conditions as of the December 31, 2018 measurement date.

The mark-to-market actuarial gain in 2017 is primarily attributable to a higher return on pension plan assets in 2017 than was expected, as a result of overall market and investment portfolio performance. The weighted-average actual return on our U.S. and foreign pension plan assets was 14.31% versus an expected return of 6.73%. The mark-to-market actuarial gain in 2017 was partially offset by a decrease in the weighted-average discount rate to 4.03% from 4.43% for our U.S. pension plans and to 1.94% from 2.00% for our foreign pension plans to reflect market conditions as of the December 31, 2017 measurement date.

The mark-to-market actuarial loss in 2016 is primarily attributable to a decrease in the weighted-average discount rate to 4.43% from 4.67% for our U.S. pension plans and to 2.00% from 2.76% for our foreign pension plans to reflect market conditions as of the December 31, 2016 measurement date. The mark-to-market actuarial loss in 2016 was partially offset by a higher return on pension plan assets in 2016 than was expected, as a result of overall market and investment portfolio performance. The weighted-average return on our U.S. and foreign pension plan assets was 8.11% versus an expected return of 6.85%.

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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 (exit price). The inputs used to measure fair value are classified into the following hierarchy:

- Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities
- Level 2 Unadjusted quoted prices in active markets for similar assets or liabilities, or unadjusted quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs other than quoted prices that are observable for the asset or liability
- Level 3 Unobservable inputs for the asset or liability

We endeavor to utilize the best available information in measuring fair value. Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. Investments for which market quotations are readily available are valued at the closing price on the last business day of the year. Listed securities for which no sale was reported on such date are valued at the mean between the last reported bid and asked price. Securities traded in the over-the-counter market are valued at the closing price on the last business day of the year or at bid price. The net asset value of shares or units is based on the quoted market value of the underlying assets. The market value of corporate bonds is based on institutional trading lots and is most often reflective of bid price. Government securities are valued at the mean between bid and ask prices. Holdings in private equity securities are typically valued using the net asset valuations provided by the underlying private investment companies.

The following tables set forth the assets of our pension and postretirement plans that were accounted for at fair value on a recurring basis as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	Quoted Prices in Active Markets for Identical Items (Level 1)	Quoted Prices in Active Markets for Similar Items (Level 2)	Unobservable Inputs (Level 3)
Pension Assets:				
Domestic Equity ^(a)	\$ 113,355	\$ 111,665	\$ 1,690	\$ —
International Equity ^(b)	114,554	90,651	23,903	—
Fixed Income ^(c)	254,437	219,124	35,313	—
Absolute Return Measured at Net Asset Value ^(d)	71,987	—	—	—
Cash	29,326	29,326	—	—
Total Pension Assets	\$ 583,659	\$ 450,766	\$ 60,906	\$ —
	December 31, 2017	Quoted Prices in Active Markets for Identical Items (Level 1)	Quoted Prices in Active Markets for Similar Items (Level 2)	Unobservable Inputs (Level 3)
Pension Assets:				
Domestic Equity ^(a)	\$ 163,160	\$ 160,976	\$ 2,184	\$ —
International Equity ^(b)	130,935	101,366	29,569	—
Fixed Income ^(c)	269,365	231,506	37,859	—
Absolute Return Measured at Net Asset Value ^(d)	96,414	—	—	—
Total Pension Assets	\$ 659,874	\$ 493,848	\$ 69,612	\$ —
Postretirement Assets:				
Fixed Income ^(c)	\$ 834	\$ —	\$ 834	\$ —

- (a) Consists primarily of U.S. stock funds that track or are actively managed and measured against the S&P 500 index.
- (b) Consists primarily of international equity funds which invest in common stocks and other securities whose value is based on an international equity index or an underlying equity security or basket of equity securities.
- (c) Consists primarily of debt obligations issued by governments, corporations, municipalities and other borrowers. Also includes insurance policies.
- (d) Consists primarily of funds with holdings in private investment companies. See additional information about the Absolute Return investments below. Holdings in private investment companies are measured at fair value using the net asset value per share as a practical expedient and have not been categorized in the fair value hierarchy. The fair value amounts of \$72.0 million and \$96.4 million as of

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December 31, 2018 and 2017, respectively, are included in this table to permit reconciliation to the reconciliation of plan assets table above.

The Company's pension plan assets in the U.S. and U.K. represent approximately 97% of the total pension plan assets. The investment objective of these pension plan assets is to achieve solid returns while preserving capital to meet current plan cash flow requirements. Assets should participate in rising markets, with defensive action in declining markets expected to an even greater degree. Depending on market conditions, the broad asset class targets may range up or down by approximately 10%. These asset classes include but are not limited to hedge fund of funds, bonds and other fixed income vehicles, high yield fixed income securities, equities and distressed debt. At December 31, 2018 and 2017, equity securities held by our pension and OPEB plans did not include direct ownership of Albemarle common stock.

The weighted-average target allocations as of the measurement date are as follows:

	Target Allocation
Equity securities	43%
Fixed income	44%
Absolute return	13%

Our Absolute Return investments consist primarily of our investments in hedge fund of funds. These are holdings in private investment companies with fair values that are based on significant unobservable inputs including assumptions where there is little, if any, market activity for the investment. Investment managers or fund managers associated with these investments provide valuations of the investments on a monthly basis utilizing the net asset valuation approach for determining fair values. These valuations are reviewed by the Company for reasonableness based on applicable sector, benchmark and company performance to validate the appropriateness of the net asset values as a fair value measurement. Where available, audited financial statements are obtained and reviewed for the investments as support for the manager's investment valuation. In general, the investment objective of these funds is high risk-adjusted returns with an emphasis on preservation of capital. The investment strategies of each of the funds vary; however, the objective of our Absolute Return investments is complementary to the overall investment objective of our U.S. pension plan assets.

We made contributions to our defined benefit pension and OPEB plans of \$15.2 million, \$13.3 million and \$20.1 million during the years ended December 31, 2018, 2017 and 2016, respectively, related to continuing and discontinued operations. We expect contributions to our domestic nonqualified and foreign qualified and nonqualified pension plans to approximate \$12 million in 2019. Also, we expect to pay approximately \$4 million in premiums to our U.S. postretirement benefit plan in 2019. However, we may choose to make additional voluntary pension contributions in excess of these amounts.

The current forecast of benefit payments, which reflects expected future service, amounts to (in millions):

	U.S. Pension Plans	Foreign Pension Plans	Other Postretirement Benefits
2019	\$ 42.0	\$ 12.9	\$ 4.2
2020	\$ 43.0	\$ 9.4	\$ 4.0
2021	\$ 43.5	\$ 9.7	\$ 3.8
2022	\$ 43.9	\$ 9.2	\$ 3.8
2023	\$ 44.3	\$ 12.1	\$ 3.7
2024-2028	\$ 220.6	\$ 52.1	\$ 17.4

We have a supplemental executive retirement plan ("SERP"), which provides unfunded supplemental retirement benefits to certain management or highly compensated employees. The SERP provides for incremental pension benefits to offset the limitations imposed on qualified plan benefits by federal income tax regulations. (Credits) costs relating to our SERP were (\$0.8) million, \$2.6 million and \$1.6 million for the years ended December 31, 2018, 2017 and 2016, respectively. The projected benefit obligation for the SERP recognized in the consolidated balance sheets at December 31, 2018 and 2017 was \$21.9 million and \$24.8 million, respectively. The benefit expenses and obligations of this SERP are included in the tables above. Benefits of \$1.3 million are expected to be paid to SERP retirees in 2019. On October 1, 2012, our Board of Directors approved amendments to the SERP, such that effective December 31, 2014, no additional benefits shall accrue under this plan

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and participants' accrued benefits shall be frozen as of that date to reflect the same changes as were made under the U.S. qualified defined benefit plan.

At December 31, 2018, the assumed rate of increase in the pre-65 and post-65 per capita cost of covered health care benefits for U.S. retirees was zero as the employer-paid premium caps (pre-65 and post-65) were met starting January 1, 2013.

Defined Contribution Plans

On March 31, 2004, a new defined contribution pension plan benefit was adopted under the qualified defined contribution plan for U.S. non-represented employees hired after March 31, 2004. On October 1, 2012 our Board of Directors approved certain plan amendments, such that effective January 1, 2013, the defined contribution pension plan benefit is expanded to include non-represented employees hired prior to March 31, 2004, and revised the contribution for all participants to be based on 5% of eligible employee compensation. The employer portion of contributions to our U.S. defined contribution pension plan amounted to \$11.8 million, \$10.3 million, and \$15.1 million in 2018, 2017 and 2016, respectively, related to continuing and discontinued operations.

Certain of our employees participate in our defined contribution 401(k) employee savings plan, which is generally available to all U.S. full-time salaried and non-union hourly employees and to employees who are covered by a collective bargaining agreement that provides for such participation. This U.S. defined contribution plan is funded with contributions made by the participants and us. Our contributions to the 401(k) plan amounted to \$12.7 million, \$11.3 million and \$12.7 million in 2018, 2017 and 2016, respectively, related to continuing and discontinued operations.

In 2006, we formalized a new plan in the Netherlands similar to a collective defined contribution plan. The collective defined contribution plan is supported by annuity contracts through an insurance company. The insurance company unconditionally undertakes the legal obligation to provide specific benefits to specific individuals in return for a fixed amount of premiums. Our obligation under this plan is limited to a variable calculated employer match for each participant plus an additional fixed amount of contributions to assist in covering estimated cost of living and salary increases (indexing) and administrative costs for the overall plan. We paid approximately \$10.2 million, \$9.9 million and \$9.5 million in 2018, 2017 and 2016, respectively, in annual premiums and related costs pertaining to this plan.

Multiemployer Plan

Certain current and former employees participate in a multiemployer plan in Germany, the Pensionskasse Dynamit Nobel Versicherungsverein auf Gegenseitigkeit, Troisdorf ("DN Pensionskasse") that provides monthly payments in the case of disability, death or retirement. The risks of participating in a multiemployer plan are different from single-employer plans in the following ways: (a) assets contributed to the multiemployer plan by one employer may be used to provide benefits to employees of other participating employers, and (b) if a participating employer stops contributing to the plan due to financial inability to provide funding, the unfunded obligation of the plan may be borne by remaining participating employers.

Some participants in the plan are subject to collective bargaining arrangements, which have no fixed expiration date. The contribution and benefit levels are not negotiated or significantly influenced by these collective bargaining arrangements. Also, the benefit levels generally are not subject to reduction. Under German insurance law, the DN Pensionskasse must be fully funded at all times. The DN Pensionskasse was fully funded as of December 31, 2017, the date of the most recently available information for the plan. This funding level would correspond to the highest funding zone status (at least 80% funded) under U.S. pension regulation. Since the plan liabilities need to be fully funded at all times according to local funding requirements, it is unlikely that the DN Pensionskasse plan will fail to fulfill its obligations, however, in such an event, the Company is liable for the benefits of its employees who participate in the plan. Additional information of the DN Pensionskasse is available in the public domain.

The majority of the Company's contributions are tied to employees' contributions, which are generally calculated as a percentage of base compensation, up to a certain statutory ceiling. Our normal contributions to this plan for continuing operations were approximately \$1.5 million in 2018 and 2017 and \$1.7 million in 2016. Contributions for discontinued operations were approximately \$1.3 million in 2016. The Company's contributions represented more than 5% of total contributions to the DN Pensionskasse in 2018.

Effective July 1, 2016, the DN Pensionskasse is subject to a financial improvement plan which expires on December 31, 2022, with the final contribution in the second quarter of 2023. This financial improvement plan calls for increased capital reserves to avoid future underfunding risk. During the years ended December 31, 2018 and 2017, we made contributions for our employees covered under this plan of approximately \$2.3 million and \$3.3 million, respectively, recorded in Selling, general and administrative expenses, as a result of this financial improvement plan. The value of the additional funding required under

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the financial improvement plan each year is determined upon the completion of the annual financial statements and are payable in the second quarter of the following year. A portion of the additional funding necessary for the year will be based on an estimate prepared on September 30 of each year and payable in the fourth quarter of that same year.

NOTE 16—Other Noncurrent Liabilities:

Other noncurrent liabilities consist of the following at December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Transition tax on foreign earnings ^(a)	\$ 317,745	\$ 394,878
Liabilities related to uncertain tax positions ^(b)	22,877	24,369
Executive deferred compensation plan obligation	26,292	25,494
Environmental liabilities ^(c)	40,376	37,518
Asset retirement obligations ^(c)	41,489	40,450
Tax indemnification liability ^(d)	45,347	42,707
Other ^(e)	32,816	33,758
Total	<u>\$ 526,942</u>	<u>\$ 599,174</u>

(a) Noncurrent portion of one-time transition tax on foreign earnings. See Note 20, “Income Taxes,” for additional information.

(b) See Note 20, “Income Taxes.”

(c) See Note 17, “Commitments and Contingencies.”

(d) Indemnification of certain income and non-income tax liabilities associated with the Chemetall Surface Treatment entities sold, as well as the proposed settlement of an ongoing audit of a previously disposed business in Germany.

(e) No individual component exceeds 5% of total liabilities.

NOTE 17—Commitments and Contingencies:

In the ordinary course of business, we have commitments in connection with various activities. We believe that amounts recorded are adequate for known items which might become due in the current year. The most significant commitments are as follows:

Environmental

We had the following activity in our recorded environmental liabilities for the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Balance, beginning of year	\$ 39,808	\$ 34,919	\$ 31,436
Expenditures	(6,885)	(1,818)	(2,667)
Accretion of discount	1,283	896	793
Additions and changes in estimates ^(a)	17,039	3,344	4,004
Foreign currency translation adjustments and other	(1,676)	2,467	1,353
Balance, end of year	<u>49,569</u>	<u>39,808</u>	<u>34,919</u>
Less amounts reported in Accrued expenses	9,193	2,290	2,324
Amounts reported in Other noncurrent liabilities	<u>\$ 40,376</u>	<u>\$ 37,518</u>	<u>\$ 32,595</u>

(a) Increase in additions primarily related to the indemnification of the buyer of a formerly owned site. As defined in the agreement of sale, this indemnification has a set cutoff date in 2024, at which point we will no longer be required to provide financial coverage.

Environmental remediation liabilities included discounted liabilities of \$40.4 million and \$28.1 million at December 31, 2018 and 2017, respectively, discounted at rates with a weighted-average of 3.7% and 3.6%, respectively, with the undiscounted amount totaling \$74.5 million and \$68.2 million at December 31, 2018 and 2017, respectively. For certain locations where the Company is operating groundwater monitoring and/or remediation systems, prior owners or insurers have assumed all or most of the responsibility.

The amounts recorded represent our future remediation and other anticipated environmental liabilities. These liabilities typically arise during the normal course of our operational and environmental management activities or at the time of

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acquisition of the site, and are based on internal analysis as well as input from outside consultants. As evaluations proceed at each relevant site, changes in risk assessment practices, remediation techniques and regulatory requirements can occur, therefore such liability estimates may be adjusted accordingly. The timing and duration of remediation activities at these sites will be determined when evaluations are completed. Although it is difficult to quantify the potential financial impact of these remediation liabilities, management estimates (based on the latest available information) that there is a reasonable possibility that future environmental remediation costs associated with our past operations, could be an additional \$10 million to \$35 million before income taxes, in excess of amounts already recorded. The variability of this range is primarily driven by possible environmental remediation activity at a formerly owned site where we indemnify the buyer through a set cutoff date in 2024.

We believe that any sum we may be required to pay in connection with environmental remediation matters in excess of the amounts recorded would likely occur over a period of time and would likely not have a material adverse effect upon our results of operations, financial condition or cash flows on a consolidated annual basis although any such sum could have a material adverse impact on our results of operations, financial condition or cash flows in a particular quarterly reporting period.

Asset Retirement Obligations

The following is a reconciliation of our beginning and ending asset retirement obligation balances for 2018 and 2017 (in thousands):

	Year Ended December 31,	
	2018	2017
Balance, beginning of year	\$ 40,450	\$ 36,296
Additions and changes in estimates	740	3,859
Accretion of discount	1,500	1,532
Liabilities settled	(786)	(789)
Foreign currency translation adjustments and other	(415)	(448)
Balance, end of year	<u>\$ 41,489</u>	<u>\$ 40,450</u>

Our asset retirement obligations are recorded in Other noncurrent liabilities in the consolidated balance sheets. Asset retirement obligations primarily relate to post-closure reclamation of brine wells and sites involved in the surface mining and manufacturing of lithium. We are not aware of any conditional asset retirement obligations that would require recognition in our consolidated financial statements.

Rental Expense

Our rental expenses include a number of operating lease agreements, primarily for office space, transportation equipment and storage facilities. The following schedule details the future non-cancelable minimum lease payments for the next five years and thereafter (in thousands):

	Operating Leases
2019	\$ 25,608
2020	\$ 17,918
2021	\$ 12,478
2022	\$ 10,794
2023	\$ 10,109
Thereafter	\$ 87,085

Rental expense was approximately \$37.6 million, \$31.2 million, and \$31.4 million for 2018, 2017 and 2016, respectively. Rental expense related to discontinued operations was approximately \$11.8 million for 2016. Rental expense is shown net of sublease income which was minimal during 2018, 2017 and 2016.

Litigation

We are involved from time to time in legal proceedings of types regarded as common in our business, including administrative or judicial proceedings seeking remediation under environmental laws, such as the federal Comprehensive Environmental Response, Compensation and Liability Act, commonly known as CERCLA or Superfund, products liability,

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breach of contract liability and premises liability litigation. Where appropriate, we may establish financial reserves for such proceedings. We also maintain insurance to mitigate certain of such risks. Costs for legal services are generally expensed as incurred.

As previously reported in 2018, following receipt of information regarding potential improper payments being made by third party sales representatives of our Refining Solutions business, within our Catalysts segment, we promptly retained outside counsel and forensic accountants to investigate potential violations of the Company's Code of Conduct, the Foreign Corrupt Practices Act ("FCPA"), and other potentially applicable laws. Based on this internal investigation, we have voluntarily self-reported potential issues relating to the use of third party sales representatives in our Refining Solutions business, within our Catalysts segment, to the U.S. Department of Justice ("DOJ"), the Securities and Exchange Commission ("SEC"), and the Dutch Public Prosecutor ("DPP"), and are cooperating with the DOJ, the SEC, and DPP in their review of these matters. In connection with our internal investigation, we have implemented, and are continuing to implement, appropriate remedial measures.

At this time, we are unable to predict the duration, scope, result or related costs associated with the investigations by the DOJ, the SEC, or DPP. We are unable to predict what, if any, action may be taken by the DOJ, the SEC, or DPP, or what penalties or remedial actions they may seek to impose. Any determination that our operations or activities are not in compliance with existing laws or regulations could result in the imposition of fines, penalties, disgorgement, equitable relief, or other losses. We do not believe, however, that any such fines, penalties, disgorgement, equitable relief or other losses would have a material adverse effect on our financial condition or liquidity.

During the year ended December 31, 2018, we recorded a charge of \$16.2 million in Other expenses, net resulting from a jury rendering a verdict against Albemarle in a legal matter related to certain business concluded under a 2014 sales agreement for products that Albemarle no longer manufactures. In addition, during the year ended December 31, 2018, we recorded a charge of \$10.8 million in Other expenses, net due to a settlement of a legal matter related to guarantees from a previously disposed business. Both matters have been resolved and paid during the year ended December 31, 2018.

Indemnities

We are indemnified by third parties in connection with certain matters related to acquired and divested businesses. Although we believe that the financial condition of those parties who may have indemnification obligations to the Company is generally sound, in the event the Company seeks indemnity under any of these agreements or through other means, there can be no assurance that any party who may have obligations to indemnify us will adhere to their obligations and we may have to resort to legal action to enforce our rights under the indemnities.

The Company may be subject to indemnity claims relating to properties or businesses it divested, including properties or businesses of acquired businesses that were divested prior to the completion of the acquisition. In the opinion of management, and based upon information currently available, the ultimate resolution of any indemnification obligations owed to the Company or by the Company is not expected to have a material effect on the Company's financial condition, results of operations or cash flows. See Note 16, "Other Noncurrent Liabilities," for the tax indemnification liability related to the sale of the Chemetall Surface Treatment business and other divested businesses.

Other

The Company has standby letters of credit and guarantees with various financial institutions. The following table summarizes our letters of credit and guarantee agreements (in thousands):

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Thereafter</u>
Letters of credit and other guarantees	\$ 45,342	\$ 12,924	\$ 1,883	\$ 1,277	\$ —	\$ 10,389

The outstanding letters of credit are primarily related to insurance claim payment guarantees. The majority of the Company's other guarantees have terms of one year and mainly consist of performance and environmental guarantees, as well as guarantees to customs and port authorities. The guarantees arose during the ordinary course of business.

We do not have recorded reserves for the letters of credit and guarantees as of December 31, 2018. We are unable to estimate the maximum amount of the potential future liability under guarantees and letters of credit. However, we accrue for any potential loss for which we believe a future payment is probable and a range of loss can be reasonably estimated. We believe our liability under such obligations is immaterial.

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We currently, and are from time to time, subject to transactional audits in various taxing jurisdictions and to customs audits globally. We do not expect the financial impact of any of these audits to have a material adverse effect on the Company's results of operations, financial condition or cash flows.

NOTE 18—Stock-based Compensation Expense:*Incentive Plans*

We have various share-based compensation plans that authorize the granting of (i) stock options to purchase shares of our common stock, (ii) restricted stock and restricted stock units, (iii) performance unit awards and (iv) stock appreciation rights (“SARs”) to employees and non-employee directors. The plans provide for payment of incentive awards in one or more of the following at our option: cash, shares of our common stock, qualified and non-qualified stock options, SARs, restricted stock awards, restricted stock unit awards and performance unit awards. The share-based awards granted by us generally contain vesting provisions ranging from one to five years, and with respect to stock options granted by us, have a term of not more than ten years from the date of grant. Stock options granted to employees generally vest over three years and have a term of ten years. Restricted stock and restricted stock unit awards vest in periods ranging from one to five years from the date of grant. Performance unit awards are earned at a level ranging from 0% to 200% contingent upon the achievement of specific performance criteria over periods ranging from one to three years. Distribution of earned units occurs generally 50% upon completion of the applicable measurement period with the remaining 50% distributed one year thereafter.

We granted 63,259, 82,204 and 141,661 stock options during 2018, 2017 and 2016, respectively. There were no significant modifications made to any share-based grants during these periods.

In May 2017, the Company adopted the Albemarle Corporation 2017 Incentive Plan (the “Incentive Plan”), which replaced the Albemarle Corporation 2008 Incentive Plan. The maximum number of shares available for issuance to participants under the Incentive Plan is 4,500,000 shares. The adoption of the Incentive Plan did not affect awards already granted under the Albemarle Corporation 2008 Incentive Plan. Under the Albemarle Corporation 2013 Stock Compensation and Deferral Election Plan for Non-Employee Directors (the “Non-Employee Directors Plan”), a maximum aggregate number of 500,000 shares of our common stock is authorized for issuance to the Company's non-employee directors; any shares remaining available for issuance under the prior plans were canceled. The aggregate fair market value of shares that may be issued to a director during any compensation year (as defined in the agreement, generally July 1 to June 30) shall not exceed \$150,000. At December 31, 2018, there were 4,280,607 shares available for grant under the Incentive Plan and 388,179 shares available for grant under the Non-Employee Directors Plan.

Total stock-based compensation expense associated with our incentive plans for the years ended December 31, 2018, 2017 and 2016 amounted to \$15.2 million, \$19.4 million and \$17.0 million, respectively, and is included in Cost of goods sold and Selling, general and administrative expenses in the consolidated statements of income. Total related recognized tax benefits for the years ended December 31, 2018, 2017 and 2016 amounted to \$2.6 million, \$7.0 million and \$6.2 million, respectively. As a result of the sale of the Chemetall Surface Treatment business in 2016, we converted previously granted incentive awards owed to Chemetall employees to a cash liability to be paid on the original vesting dates of the awards. The Company recognized expense of \$5.8 million, included in Income from discontinued operations for the year ended December 31, 2016 related to these awards. At December 31, 2018, \$2.2 million and \$1.2 million of this cash liability were included in Accrued liabilities and Other noncurrent liabilities, respectively.

The following table summarizes information about the Company's fixed-price stock options as of and for the year ended December 31, 2018:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2017	1,401,718	\$ 56.10	5.1	\$ 100,632
Granted	63,259	118.75		
Exercised	(94,031)	38.64		
Forfeited	(54,213)	75.72		
Outstanding at December 31, 2018	<u>1,316,733</u>	\$ 59.55	4.3	\$ 26,438
Exercisable at December 31, 2018	<u>911,011</u>	\$ 54.28	3.2	\$ 20,872

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The fair value of each option granted during the years ended December 31, 2018, 2017 and 2016 was estimated on the date of grant using the Black-Scholes option-pricing model with the following weighted-average assumptions:

	Year Ended December 31,		
	2018	2017	2016
Dividend yield	1.44%	1.56%	1.84%
Volatility	32.48%	32.70%	33.08%
Average expected life (years)	6	6	6
Risk-free interest rate	3.06%	2.51%	1.96%
Fair value of options granted	\$ 37.35	\$ 27.99	\$ 16.06

Dividend yield is the average of historical yields and those estimated over the average expected life. The stock volatility is based on historical volatilities of our common stock. The average expected life represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and our historical exercise patterns. The risk-free interest rate is based on the U.S. Treasury strip rate with stripped coupon interest for the period equal to the contractual term of the share option grant in effect at the time of grant.

The intrinsic value of options exercised during the years ended December 31, 2018, 2017 and 2016 was \$6.2 million, \$15.6 million and \$7.9 million, respectively. The intrinsic value of a stock option is the amount by which the market value of the underlying stock exceeds the exercise price of the option.

Total compensation cost not yet recognized for nonvested stock options outstanding as of December 31, 2018 is approximately \$3.0 million and is expected to be recognized over a remaining weighted-average period of 1.5 years. Cash proceeds from stock options exercised and tax benefits related to stock options exercised were \$3.6 million and \$1.5 million for the year ended December 31, 2018, respectively. The Company issues new shares of common stock upon exercise of stock options and vesting of restricted common stock awards.

The following table summarizes activity in performance unit awards as of and for the year ended December 31, 2018:

	Shares	Weighted-Average Grant Date Fair Value Per Share
Nonvested, beginning of period	433,003	\$ 75.55
Granted	70,274	155.65
Vested	(164,303)	61.72
Forfeited	(21,537)	120.49
Nonvested, end of period	317,437	97.39

The weighted average grant date fair value of performance unit awards granted in 2018, 2017 and 2016 was \$10.9 million, \$9.6 million and \$10.9 million, respectively. The fair value of each performance unit awards was estimated on the date of grant using the Monte Carlo simulation model as these equity awards are tied to a service and market condition. The calculation used the following weighted-average assumptions:

	Year Ended December 31,		
	2018	2017	2016
Volatility	29.92%	30.34%	27.69%
Risk-free interest rate	2.36%	1.34%	0.91%

The weighted average fair value of performance unit awards that vested during 2018, 2017 and 2016 was \$20.0 million, \$11.9 million and \$4.6 million, respectively, based on the closing prices of our common stock on the dates of vesting. Total compensation cost not yet recognized for nonvested performance unit awards outstanding as of December 31, 2018 is approximately \$11.6 million, calculated based on current expectation of specific performance criteria, and is expected to be recognized over a remaining weighted-average period of approximately 1.0 years. Each performance unit represents one share of common stock.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following table summarizes activity in non-performance based restricted stock and restricted stock unit awards as of and for the year ended December 31, 2018:

	Shares	Weighted-Average Grant Date Fair Value Per Share
Nonvested, beginning of period	223,338	\$ 71.95
Granted	104,513	104.36
Vested	(48,178)	66.93
Forfeited	(22,155)	78.98
Nonvested, end of period	<u>257,518</u>	85.44

The weighted average grant date fair value of restricted stock and restricted stock unit awards granted in 2018, 2017 and 2016 was \$10.9 million, \$8.2 million and \$8.8 million, respectively. The weighted average fair value of restricted stock and restricted stock unit awards that vested in 2018, 2017 and 2016 was \$4.9 million, \$3.1 million and \$3.2 million, respectively, based on the closing prices of our common stock on the dates of vesting. Total compensation cost not yet recognized for nonvested, non-performance based restricted stock and restricted stock units as of December 31, 2018 is approximately \$12.6 million and is expected to be recognized over a remaining weighted-average period of 2.0 years. The fair value of the non-performance based restricted stock and restricted stock units was estimated on the date of grant adjusted for a dividend factor, if necessary.

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NOTE 19—Accumulated Other Comprehensive (Loss) Income:

The components and activity in Accumulated other comprehensive (loss) income (net of deferred income taxes) consisted of the following during the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Foreign Currency Translation ^(a)	Pension and Post- Retirement Benefits ^(b)	Net Investment Hedge	Interest Rate Swap ^(c)	Total
Accumulated other comprehensive (loss) income - balance at December 31, 2015	\$ (463,914)	\$ (758)	\$ 62,245	\$ (18,861)	\$ (421,288)
Other comprehensive (loss) income before reclassifications	(102,246)	—	26,133	—	(76,113)
Amounts reclassified from accumulated other comprehensive loss	81,421	834	—	2,116	84,371
Other comprehensive (loss) income, net of tax	(20,825)	834	26,133	2,116	8,258
Other comprehensive loss attributable to noncontrolling interests	618	—	—	—	618
Accumulated other comprehensive (loss) income - balance at December 31, 2016	\$ (484,121)	\$ 76	\$ 88,378	\$ (16,745)	\$ (412,412)
Other comprehensive income (loss) before reclassifications	227,439	—	(41,827)	—	185,612
Amounts reclassified from accumulated other comprehensive loss	—	(97)	—	2,116	2,019
Other comprehensive income (loss), net of tax	227,439	(97)	(41,827)	2,116	187,631
Other comprehensive income attributable to noncontrolling interests	(887)	—	—	—	(887)
Accumulated other comprehensive (loss) income - balance at December 31, 2017	\$ (257,569)	\$ (21)	\$ 46,551	\$ (14,629)	\$ (225,668)
Other comprehensive (loss) income before reclassifications	(150,258)	—	15,695	—	(134,563)
Amounts reclassified from accumulated other comprehensive loss ^(d)	—	(138)	10,091	(585)	9,368
Other comprehensive (loss) income, net of tax	(150,258)	(138)	25,786	(585)	(125,195)
Other comprehensive loss attributable to noncontrolling interests	181	—	—	—	181
Accumulated other comprehensive (loss) income - balance at December 31, 2018	<u>\$ (407,646)</u>	<u>\$ (159)</u>	<u>\$ 72,337</u>	<u>\$ (15,214)</u>	<u>\$ (350,682)</u>

- (a) Amount reclassified from accumulated other comprehensive loss for the year ended December 31, 2016 is included in Income from discontinued operations (net of tax) for the year ended December 31, 2016 and resulted from the release of cumulative foreign currency translation adjustments into earnings upon the sale of our Chemetall Surface Treatment business which closed on December 14, 2016. See Note 3, "Divestitures," for additional information.
- (b) The pre-tax portion of amounts reclassified from accumulated other comprehensive loss consists of amortization of prior service benefit, which is a component of pension and postretirement benefits cost (credit). See Note 15, "Pension Plans and Other Postretirement Benefits," for additional information.
- (c) The pre-tax portion of amounts reclassified from accumulated other comprehensive loss is included in interest expense.
- (d) Amounts reclassified from accumulated other comprehensive loss include a net benefit of \$6.9 million, which was reclassified to Retained earnings for stranded tax effects caused by the TCJA. See "Recently Issued Accounting Pronouncements," included in Note 1, "Summary of Significant Accounting Policies," for additional information.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The amount of income tax benefit (expense) allocated to each component of Other comprehensive (loss) income for the years ended December 31, 2018, 2017 and 2016 is provided in the following tables (in thousands):

	Foreign Currency Translation	Pension and Postretireme nt Benefits	Net Investment Hedge	Interest Rate Swap
2018				
Other comprehensive (loss) income, before tax	\$ (150,262)	\$ (128)	\$ 20,424	\$ 3,336
Income tax benefit (expense)	4	(10)	5,362	(3,921)
Other comprehensive (loss) income, net of tax	<u>\$ (150,258)</u>	<u>\$ (138)</u>	<u>\$ 25,786</u>	<u>\$ (585)</u>
2017				
Other comprehensive income (loss), before tax	\$ 228,508	\$ (96)	\$ (65,958)	\$ 3,336
Income tax (expense) benefit	(1,069)	(1)	24,131	(1,220)
Other comprehensive income (loss), net of tax	<u>\$ 227,439</u>	<u>\$ (97)</u>	<u>\$ (41,827)</u>	<u>\$ 2,116</u>
2016				
Other comprehensive (loss) income, before tax	\$ (20,849)	\$ 839	\$ 41,209	\$ 3,336
Income tax benefit (expense)	24	(5)	(15,076)	(1,220)
Other comprehensive (loss) income, net of tax	<u>\$ (20,825)</u>	<u>\$ 834</u>	<u>\$ 26,133</u>	<u>\$ 2,116</u>

NOTE 20—Income Taxes:

On December 22, 2017, the TCJA was signed into law in the U.S. The TCJA contains several key tax provisions including, among other things, the reduction of the corporate income tax rate from 35% to 21% effective January 1, 2018, the requirement of companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, and the creation of new taxes on certain foreign sourced earnings such as GILTI.

Under ASC 740, *Income Taxes*, the effect of changes in tax rates and laws are recognized in the period in which the new legislation is enacted. However, the SEC staff issued SAB 118, which allowed us to record provisional amounts during a measurement period ending December 22, 2018. In accordance with SAB 118, income tax effects of the TCJA could be refined as additional analysis was completed based on obtaining, preparing, or analyzing additional information about facts and circumstances that existed as of the enactment date that were not initially reported as provisional amounts. In addition, the provisional amounts could also be affected upon additional TCJA guidance issued during the measurement period.

As of December 31, 2018, we have completed our accounting for the effects of enactment of the TCJA and adjustments made to the provisional amounts allowed under SAB 118 were identified and recorded. During the year ended December 31, 2018, we recorded income tax expense of \$0.4 million related to the remeasurement of our deferred tax assets and liabilities for the reduction in the Federal statutory tax rate. We also recognized an income tax benefit of \$42.3 million for the refinement of the tax liability calculation related to the one-time transition tax. Additionally, during the year ended December 31, 2018 we recognized income tax expense of \$2.1 million related to excess executive employee remuneration for awards determined not to be grandfathered consistent with Notice 2018-68.

The TCJA provides for a territorial tax system, beginning in 2018, which includes tax imposed on GILTI. The Company has elected to account for GILTI tax in the period in which it is incurred. The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. As of December 31, 2018, we recorded income tax expense of \$6.4 million for GILTI, as well as \$4.1 million related to excess employee remuneration that became effective in 2018 under the TCJA.

As additional regulations or guidance in relation to TCJA continues to be issued, the Company will analyze and record the necessary impacts in the quarter in which guidance is received.

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Income from continuing operations before income taxes and equity in net income of unconsolidated investments, and current and deferred income tax expense (benefit) are composed of the following (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Income from continuing operations before income taxes and equity in net income of unconsolidated investments:			
Domestic	\$ 223,702	\$ (8,293)	\$ 49,630
Foreign	570,999	455,091	465,634
Total	<u>\$ 794,701</u>	<u>\$ 446,798</u>	<u>\$ 515,264</u>
Current income tax expense (benefit):			
Federal	\$ (2,712)	\$ 394,747	\$ 7,717
State	6,793	323	1,407
Foreign	91,581	78,688	63,957
Total	<u>\$ 95,662</u>	<u>\$ 473,758</u>	<u>\$ 73,081</u>
Deferred income tax (benefit) expense:			
Federal	\$ 15,573	\$ (58,640)	\$ 12,230
State	1,614	(2,288)	(1,715)
Foreign	31,977	18,987	12,667
Total	<u>\$ 49,164</u>	<u>\$ (41,941)</u>	<u>\$ 23,182</u>
Total income tax expense	<u>\$ 144,826</u>	<u>\$ 431,817</u>	<u>\$ 96,263</u>

The decrease in the current income tax expense is primarily related to the tax impact of the one-time transition tax imposed by the TCJA in 2017. The increase in the deferred tax expense in 2018 is primarily related to the tax impact associated with the remeasurement of deferred tax assets and liabilities under the recently enacted tax legislation from a statutory rate of 35% to 21% recorded in 2017.

The reconciliation of the U.S. federal statutory rate to the effective income tax rate is as follows:

	% of Income Before Income Taxes		
	2018	2017	2016
Federal statutory rate	21.0%	35.0%	35.0%
State taxes, net of federal tax benefit	0.9	(0.5)	(0.1)
Change in valuation allowance ^(a)	0.7	(1.4)	3.7
Impact of foreign earnings, net ^(b)	(0.3)	(13.5)	(19.3)
Global intangible low tax inclusion	0.8	—	—
Change in U.S. federal statutory rate ^(c)	0.1	(14.0)	—
Transition tax on deferred foreign earnings ^(d)	(5.3)	96.1	—
Subpart F income	0.9	2.0	0.2
Undistributed earnings of foreign subsidiaries	—	(2.2)	0.1
Stock-based compensation	(0.7)	(1.9)	—
Depletion	(0.6)	(1.4)	(1.0)
Revaluation of unrecognized tax benefits/reserve requirements	—	(0.7)	(0.4)
Domestic manufacturing tax deduction	—	—	(0.9)
Other items, net	0.7	(0.9)	1.4
Effective income tax rate	<u>18.2%</u>	<u>96.6%</u>	<u>18.7%</u>

(a) The year ended December 31, 2018 includes an \$8.2 million expense due to the establishment of a valuation allowance due to a foreign restructuring plan and a \$1.5 million benefit due to the release of a foreign valuation allowance due to changes in expected profitability. 2017 includes a \$10.9 million benefit from the release of valuation allowances due to a foreign restructuring plan.

(b) Our statutory rate is decreased by our share of the income of JBC, a Free Zones company under the laws of the Hashemite Kingdom of Jordan. The applicable provisions of the Jordanian law, and applicable regulations thereunder, do not have a termination provision and

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the exemption is indefinite. As a Free Zones company, JBC is not subject to income taxes on the profits of products exported from Jordan, and currently, substantially all of the profits are from exports. This resulted in a rate benefit of 3.3%, 8.9%, and 7.3% for 2018, 2017, and 2016, respectively.

- (c) At December 31, 2017 we have made a reasonable estimate of the tax impact of the U.S. enacted tax law on our business and our consolidated financial statements and have recorded a provisional tax benefit of \$62.3 million related to the remeasurement of our deferred tax assets and liabilities for the reduction in the Federal statutory tax rate from 35% to 21%. In 2018, the updates to our calculation of the remeasurement of deferred tax assets and liabilities resulted in income tax expense of \$0.4 million.
- (d) At December 31, 2017 we made a reasonable estimate of the tax impact of the U.S. enacted tax law on our business and our consolidated financial statements and recognized a provisional tax expense of \$429.2 million for the one-time transition tax. During 2018, the impact of the refined one-time transition tax calculation was an income tax benefit of \$42.3 million.

Deferred income tax assets and liabilities recorded on the consolidated balance sheets as of December 31, 2018 and 2017 consist of the following (in thousands):

	December 31,	
	2018	2017
Deferred tax assets:		
Accrued employee benefits	\$ 18,462	\$ 21,463
Operating loss carryovers ^(a)	1,210,377	459,644
Pensions	61,308	64,799
Tax credit carryovers	1,270	11,634
Other	35,895	44,714
Gross deferred tax assets	1,327,312	602,254
Valuation allowance ^(a)	(1,213,750)	(458,288)
Deferred tax assets	113,562	143,966
Deferred tax liabilities:		
Depreciation	(337,503)	(334,162)
Intangibles	(88,871)	(113,792)
Hedge of net investment of foreign subsidiary	(21,854)	(17,028)
Other	(31,287)	(24,265)
Deferred tax liabilities	(479,515)	(489,247)
Net deferred tax liabilities	\$ (365,953)	\$ (345,281)
Classification in the consolidated balance sheets:		
Noncurrent deferred tax assets	\$ 17,029	\$ 25,108
Noncurrent deferred tax liabilities	(382,982)	(370,389)
Net deferred tax liabilities	\$ (365,953)	\$ (345,281)

- (a) During 2018, the Company recognized intercompany losses at a foreign entity related to international restructuring resulting in an increase to the deferred tax asset for net operating losses and an associated and equal valuation allowance of \$749.8 million.

Changes in the balance of our deferred tax asset valuation allowance are as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Balance at January 1	\$ (458,288)	\$ (69,900)	\$ (84,137)
Additions	(766,012)	(408,252)	(20,568)
Deductions	10,550	19,864	34,805
Balance at December 31	\$ (1,213,750)	\$ (458,288)	\$ (69,900)

At December 31, 2018, we had approximately \$1.3 million of domestic credits available to offset future payments of income taxes, expiring in varying amounts between 2019 and 2027. We have established valuation allowances for \$0.3 million of those domestic credits since we believe that it is more likely than not that the related deferred tax assets will not be realized. We believe that sufficient taxable income will be generated during the carryover period in order to utilize the other remaining credit carryovers.

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At December 31, 2018, we have on a pre-tax basis, domestic state net operating losses of \$152.7 million, expiring between 2019 and 2038, which have pre-tax valuation allowances of \$58.3 million established. In addition, we have on a pre-tax basis \$4.64 billion of foreign net operating losses, of which a majority have an indefinite life, which have pre-tax valuation allowances for \$4.61 billion established. We have established valuation allowances for these deferred tax assets since we believe that it is more likely than not that the related deferred tax assets will not be realized. For the same reason, we established pre-tax valuation allowances of \$9.9 million and \$55.2 million for other state and foreign deferred tax assets, respectively, unrelated to net operating losses. The realization of the deferred tax assets is dependent on the generation of sufficient taxable income in the appropriate tax jurisdictions. Although realization is not assured, we believe it is more likely than not that the remaining deferred tax assets will be realized. However, the amount considered realizable could be reduced if estimates of future taxable income change.

As of December 31, 2018, we have not recorded taxes on approximately \$505.6 million of cumulative undistributed earnings of our non-U.S. subsidiaries and joint ventures. We generally do not provide for taxes related to our undistributed earnings because such earnings either would not be taxable when remitted or they are considered to be indefinitely reinvested. If in the foreseeable future, we can no longer demonstrate that these earnings are indefinitely reinvested, a deferred tax liability will be recognized. A determination of the amount of the unrecognized deferred tax liability related to these undistributed earnings is not practicable due to the complexity and variety of assumptions necessary based on the manner in which the undistributed earnings would be repatriated.

Liabilities related to uncertain tax positions were \$22.9 million and \$24.4 million at December 31, 2018 and 2017, respectively, inclusive of interest and penalties of \$3.2 million and \$2.9 million at December 31, 2018 and 2017, respectively, and are reported in Other noncurrent liabilities as provided in Note 16, "Other Noncurrent Liabilities." These liabilities at December 31, 2018 and 2017 were reduced by \$13.0 million and \$14.6 million, respectively, for offsetting benefits from the corresponding effects of potential transfer pricing adjustments, state income taxes and rate arbitrage related to foreign structure. These offsetting benefits are recorded in Other assets as provided in Note 11, "Other Assets." The resulting net liabilities of \$6.7 million and \$6.9 million at December 31, 2018 and 2017, respectively, if recognized and released, would favorably affect earnings.

The liabilities related to uncertain tax positions, exclusive of interest, were \$19.7 million and \$21.4 million at December 31, 2018 and 2017, respectively. The following is a reconciliation of our total gross liability related to uncertain tax positions for 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Balance at January 1	\$ 21,438	\$ 25,384	\$ 95,715
Divestitures ^(a)	—	—	(55,881)
Additions for tax positions related to prior years	874	—	548
Reductions for tax positions related to prior years	—	(1,933)	(1,253)
Additions for tax positions related to current year	1,091	1,132	1,271
Lapses in statutes of limitations/settlements	(3,578)	(4,198)	(12,591)
Foreign currency translation adjustment	(83)	1,053	(2,425)
Balance at December 31	<u>\$ 19,742</u>	<u>\$ 21,438</u>	<u>\$ 25,384</u>

(a) Reclassified to Other noncurrent liabilities as a result of the indemnification of certain income tax liabilities associated with the Chemetall Surface Treatment entities sold. See Note 16, "Other Noncurrent Liabilities."

We are subject to income taxes in the U.S. and numerous foreign jurisdictions. Due to the statute of limitations, we are no longer subject to U.S. federal income tax audits by the Internal Revenue Service ("IRS") for years prior to 2011. Due to the statute of limitations, we also are no longer subject to U.S. state income tax audits prior to 2011.

With respect to jurisdictions outside the U.S., several audits are in process. We have audits ongoing for the years 2006 through 2017 related to Germany, Taiwan, Italy, India, Belgium, and Chile, some of which are for entities that have since been divested.

While we believe we have adequately provided for all tax positions, amounts asserted by taxing authorities could be greater than our accrued position. Accordingly, additional provisions on federal and foreign tax-related matters could be recorded in the future as revised estimates are made or the underlying matters are settled or otherwise resolved.

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Since the timing of resolutions and/or closure of tax audits is uncertain, it is difficult to predict with certainty the range of reasonably possible significant increases or decreases in the liability related to uncertain tax positions that may occur within the next twelve months. Our current view is that it is reasonably possible that we could record a decrease in the liability related to uncertain tax positions, relating to a number of issues, up to approximately \$4.4 million as a result of closure of tax statutes.

NOTE 21—Fair Value of Financial Instruments:

In assessing the fair value of financial instruments, we use methods and assumptions that are based on market conditions and other risk factors existing at the time of assessment. Fair value information for our financial instruments is as follows:

Long-Term Debt—the fair values of our senior notes are estimated using Level 1 inputs and account for the difference between the recorded amount and fair value of our long-term debt. The carrying value of our remaining long-term debt reported in the accompanying consolidated balance sheets approximates fair value as substantially all of such debt bears interest based on prevailing variable market rates currently available in the countries in which we have borrowings.

	December 31,			
	2018		2017	
	Recorded Amount	Fair Value	Recorded Amount	Fair Value
	(In thousands)			
Long-term debt	\$ 1,712,003	\$ 1,731,271	\$ 1,845,309	\$ 1,949,638

Foreign Currency Forward Contracts—we enter into foreign currency forward contracts in connection with our risk management strategies in an attempt to minimize the financial impact of changes in foreign currency exchange rates. These derivative financial instruments are used to manage risk and are not used for trading or other speculative purposes. The fair values of our foreign currency forward contracts are estimated based on current settlement values. At December 31, 2018 and 2017, we had outstanding foreign currency forward contracts with notional values totaling \$626.5 million and \$357.4 million, respectively, hedging our exposure to various currencies including the Euro and Chinese Renminbi. Our foreign currency forward contracts outstanding at December 31, 2018 and 2017 have not been designated as hedging instruments under ASC 815, *Derivatives and Hedging*. The following table summarizes the fair value of our foreign currency forward contracts included in the consolidated balance sheets as of December 31, 2018 and 2017 (in thousands):

	December 31,	
	2018	2017
Foreign currency forward contracts - Other accounts receivable	\$ 431	\$ —
Foreign currency forward contracts - Accrued expenses	\$ —	\$ 4,954

Gains and losses on foreign currency forward contracts are recognized currently in Other expenses, net; further, fluctuations in the value of these contracts are generally expected to be offset by changes in the value of the underlying exposures being hedged, which are also reported in Other expenses, net. The following table summarizes these net (losses) gains recognized in our consolidated statements of income during the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Foreign currency forward contracts (losses) gains	\$ (19,851)	\$ 4,588	\$ 16,095

In addition, for the years ended December 31, 2018, 2017 and 2016, we recorded losses (gains) of \$19.9 million, (\$4.6) million and (\$16.1) million, respectively, related to the change in the fair value of our foreign currency forward contracts, and net cash (settlements) receipts of (\$25.2) million, \$9.4 million and \$16.0 million, respectively, in Other, net, in our consolidated statements of cash flows.

The counterparties to our foreign currency forward contracts are major financial institutions with which we generally have other financial relationships. We are exposed to credit loss in the event of nonperformance by these counterparties. However, we do not anticipate nonperformance by the counterparties.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

NOTE 22—Fair Value Measurement:

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 (exit price). The inputs used to measure fair value are classified into the following hierarchy:

- Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities
- Level 2 Unadjusted quoted prices in active markets for similar assets or liabilities, or unadjusted quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs other than quoted prices that are observable for the asset or liability
- Level 3 Unobservable inputs for the asset or liability

We endeavor to utilize the best available information in measuring fair value. Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The following tables set forth our financial assets and liabilities that were accounted for at fair value on a recurring basis as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	Quoted Prices in Active Markets for Identical Items (Level 1)	Quoted Prices in Active Markets for Similar Items (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Investments under executive deferred compensation plan ^(a)	\$ 26,292	\$ 26,292	\$ —	\$ —
Private equity securities ^(b)	\$ 26	\$ 26	\$ —	\$ —
Private equity securities measured at net asset value ^{(b)(c)}	\$ 7,195	\$ —	\$ —	\$ —
Foreign currency forward contracts ^(d)	\$ 431	\$ —	\$ 431	\$ —

Liabilities:

Obligations under executive deferred compensation plan ^(a)	\$ 26,292	\$ 26,292	\$ —	\$ —
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	December 31, 2017	Quoted Prices in Active Markets for Identical Items (Level 1)	Quoted Prices in Active Markets for Similar Items (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Investments under executive deferred compensation plan ^(a)	\$ 25,494	\$ 25,494	\$ —	\$ —
Private equity securities ^(b)	\$ 38	\$ 38	\$ —	\$ —
Private equity securities measured at net asset value ^{(b)(c)}	\$ 5,121	\$ —	\$ —	\$ —
Liabilities:				
Obligations under executive deferred compensation plan ^(a)	\$ 25,494	\$ 25,494	\$ —	\$ —
Foreign currency forward contracts ^(d)	\$ 4,954	\$ —	\$ 4,954	\$ —

- (a) We maintain an EDCP that was adopted in 2001 and subsequently amended. The purpose of the EDCP is to provide current tax planning opportunities as well as supplemental funds upon the retirement or death of certain of our employees. The EDCP is intended to aid in attracting and retaining employees of exceptional ability by providing them with these benefits. We also maintain a Benefit Protection Trust (the "Trust") that was created to provide a source of funds to assist in meeting the obligations of the EDCP, subject to the claims of our creditors in the event of our insolvency. Assets of the Trust are consolidated in accordance with authoritative guidance. The assets of the Trust consist primarily of mutual fund investments (which are accounted for as trading securities and are marked-to-market on a monthly basis through the consolidated statements of income) and cash and cash equivalents. As such, these assets and obligations are classified within Level 1.
- (b) Primarily consists of private equity securities classified as available-for-sale and are reported in Investments in the consolidated balance sheets. The changes in fair value are reported in Other expenses, net, in our consolidated statements of income.
- (c) Holdings in private equity securities are measured at fair value using the net asset value per share (or its equivalent) practical expedient and have not been categorized in the fair value hierarchy. The fair value amounts of \$7.2 million and \$5.1 million as of December 31,

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

2018 and 2017, respectively, are included in this table to permit reconciliation to the marketable equity securities presented in Note 10, "Investments."

- (d) As a result of our global operating and financing activities, we are exposed to market risks from changes in foreign currency exchange rates, which may adversely affect our operating results and financial position. When deemed appropriate, we minimize our risks from foreign currency exchange rate fluctuations through the use of foreign currency forward contracts. Unless otherwise noted, these derivative financial instruments are not designated as hedging instruments under ASC 815, *Derivatives and Hedging*. The foreign currency forward contracts are valued using broker quotations or market transactions in either the listed or over-the-counter markets. As such, these derivative instruments are classified within Level 2.

NOTE 23—Related Party Transactions:

Our consolidated statements of income include sales to and purchases from unconsolidated affiliates in the ordinary course of business as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Sales to unconsolidated affiliates	\$ 35,094	\$ 29,514	\$ 29,651
Purchases from unconsolidated affiliates ^(a)	\$ 256,701	\$ 209,266	\$ 130,287

- (a) Purchases from unconsolidated affiliates primarily relate to purchases from our Windfield joint venture.

Our consolidated balance sheets include accounts receivable due from and payable to unconsolidated affiliates in the ordinary course of business as follows (in thousands):

	December 31,	
	2018	2017
Receivables from related parties ^(a)	\$ 14,348	\$ 2,406
Payables to related parties	\$ 68,357	\$ 55,801

- (a) Increase in receivables from related parties balance due to timing of payments in the normal course of business from one of our Catalysts joint ventures.

NOTE 24—Segment and Geographic Area Information:

In the first quarter of 2018, the PCS product category merged with our former Refining Solutions reportable segment to form a global business focused on catalysts. As a result, our three reportable segments include: (1) Lithium; (2) Bromine Specialties; and (3) Catalysts. On June 17, 2016, the Company signed a definitive agreement to sell its Chemetall Surface Treatment business, a separate reportable segment, to BASF SE. This business was classified as discontinued operations and its results are excluded from segment results for all periods presented. Each segment has a dedicated team of sales, research and development, process engineering, manufacturing and sourcing, and business strategy personnel and has full accountability for improving execution through greater asset and market focus, agility and responsiveness. This business structure aligns with the markets and customers we serve through each of the segments. This structure also facilitates the continued standardization of business processes across the organization, and is consistent with the manner in which information is presently used internally by the Company's chief operating decision maker to evaluate performance and make resource allocation decisions.

Summarized financial information concerning our reportable segments is shown in the following tables. Results for 2017 and 2016 have been recast to reflect the change in segments noted above.

The "All Other" category includes only the fine chemistry services business that does not fit into any of our core businesses.

The Corporate category is not considered to be a segment and includes corporate-related items not allocated to the operating segments. Pension and OPEB service cost (which represents the benefits earned by active employees during the period) and amortization of prior service cost or benefit are allocated to the reportable segments, All Other, and Corporate, whereas the remaining components of pension and OPEB benefits cost or credit ("Non-operating pension and OPEB items") are included in Corporate. Segment data includes intersegment transfers of raw materials at cost and allocations for certain corporate costs.

The Company's chief operating decision maker uses adjusted EBITDA (as defined below) to assess the ongoing performance of the Company's business segments and to allocate resources. The Company defines adjusted EBITDA as

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

earnings before interest, taxes, depreciation and amortization, as adjusted on a consistent basis for certain non-recurring or unusual items in a balanced manner and on a segment basis. These non-recurring or unusual items may include acquisition and integration related costs, utilization of inventory markup, gains or losses on sales of businesses, restructuring charges, facility divestiture charges, non-operating pension and OPEB items and other significant non-recurring items. In addition, management uses adjusted EBITDA for business planning purposes and as a significant component in the calculation of performance-based compensation for management and other employees. The Company has reported adjusted EBITDA because management believes it provides transparency to investors and enables period-to-period comparability of financial performance. Adjusted EBITDA is a financial measure that is not required by, or presented in accordance with, U.S. GAAP. Adjusted EBITDA should not be considered as an alternative to Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with U.S. GAAP, or any other financial measure reported in accordance with U.S. GAAP.

	Year Ended December 31,		
	2018	2017	2016
	(In thousands)		
Net sales:			
Lithium	\$ 1,228,171	\$ 1,018,885	\$ 668,852
Bromine Specialties	917,880	855,143	792,425
Catalysts	1,101,554	1,067,572	1,031,501
All Other	127,186	128,914	180,988
Corporate	159	1,462	3,437
Total net sales	<u>\$ 3,374,950</u>	<u>\$ 3,071,976</u>	<u>\$ 2,677,203</u>
Adjusted EBITDA:			
Lithium	\$ 530,773	\$ 446,652	\$ 285,714
Bromine Specialties	288,116	258,901	226,926
Catalysts	284,307	283,883	316,609
All Other	14,091	13,878	14,772
Corporate	(110,623)	(117,834)	(85,804)
Total adjusted EBITDA	<u>\$ 1,006,664</u>	<u>\$ 885,480</u>	<u>\$ 758,217</u>

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

See below for a reconciliation of adjusted EBITDA, the non-GAAP financial measure, from Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with U.S. GAAP (in thousands):

	Lithium	Bromine Specialties	Catalysts	Reportable Segments Total	All Other	Corporate	Consolidated Total
2018							
Net income (loss) attributable to Albemarle Corporation	\$428,212	\$ 246,509	\$ 445,604	\$ 1,120,325	\$ 6,018	\$ (432,781)	\$ 693,562
Depreciation and amortization	95,193	41,607	49,131	185,931	8,073	6,694	200,698
Restructuring and other ^(a)	—	—	—	—	—	3,838	3,838
Gain on sale of business ^(b)	—	—	(210,428)	(210,428)	—	—	(210,428)
Acquisition and integration related costs ^(c)	—	—	—	—	—	19,377	19,377
Interest and financing expenses	—	—	—	—	—	52,405	52,405
Income tax expense	—	—	—	—	—	144,826	144,826
Non-operating pension and OPEB items	—	—	—	—	—	5,285	5,285
Legal accrual ^(d)	—	—	—	—	—	27,027	27,027
Environmental accrual ^(e)	—	—	—	—	—	15,597	15,597
Albemarle Foundation contribution ^(f)	—	—	—	—	—	15,000	15,000
Indemnification adjustments ^(g)	—	—	—	—	—	25,240	25,240
Other ^(h)	7,368	—	—	7,368	—	6,869	14,237
Adjusted EBITDA	<u>\$530,773</u>	<u>\$ 288,116</u>	<u>\$ 284,307</u>	<u>\$ 1,103,196</u>	<u>\$ 14,091</u>	<u>\$ (110,623)</u>	<u>\$ 1,006,664</u>
2017							
Net income (loss) attributable to Albemarle Corporation	\$342,992	\$ 218,839	\$ 230,665	\$ 792,496	\$ 5,521	\$ (743,167)	\$ 54,850
Depreciation and amortization	87,879	40,062	54,468	182,409	8,357	6,162	196,928
Utilization of inventory markup ⁽ⁱ⁾	23,095	—	—	23,095	—	—	23,095
Restructuring and other ^(j)	—	—	—	—	—	17,056	17,056
Gain on acquisition ^(k)	(6,221)	—	—	(6,221)	—	—	(6,221)
Acquisition and integration related costs ^(c)	—	—	—	—	—	33,954	33,954
Interest and financing expenses ^(l)	—	—	—	—	—	115,350	115,350
Income tax expense	—	—	—	—	—	431,817	431,817
Non-operating pension and OPEB items	—	—	—	—	—	(16,125)	(16,125)
Note receivable reserve ^(m)	—	—	—	—	—	28,730	28,730
Other ⁽ⁿ⁾	(1,093)	—	(1,250)	(2,343)	—	8,389	6,046
Adjusted EBITDA	<u>\$446,652</u>	<u>\$ 258,901</u>	<u>\$ 283,883</u>	<u>\$ 989,436</u>	<u>\$ 13,878</u>	<u>\$ (117,834)</u>	<u>\$ 885,480</u>
2016							
Net income (loss) attributable to Albemarle Corporation	\$198,852	\$ 187,364	\$ 265,416	\$ 651,632	\$131,301	\$ (139,258)	\$ 643,675
Depreciation and amortization	86,862	39,562	51,193	177,617	7,302	6,056	190,975
(Gain) loss on sales of businesses, net ^(b)	—	—	—	—	(123,831)	1,533	(122,298)
Acquisition and integration related costs ^(c)	—	—	—	—	—	57,384	57,384
Interest and financing expenses	—	—	—	—	—	65,181	65,181
Income tax expense	—	—	—	—	—	96,263	96,263
Income from discontinued operations (net of tax)	—	—	—	—	—	(202,131)	(202,131)
Non-operating pension and OPEB items	—	—	—	—	—	25,589	25,589
Other ^(o)	—	—	—	—	—	3,579	3,579
Adjusted EBITDA	<u>\$285,714</u>	<u>\$ 226,926</u>	<u>\$ 316,609</u>	<u>\$ 829,249</u>	<u>\$ 14,772</u>	<u>\$ (85,804)</u>	<u>\$ 758,217</u>

(a) Expected severance payments as part of a business reorganization plan, \$0.1 million recorded in Cost of goods sold and \$3.7 million recorded in Selling, general and administrative expenses. These severance payments have been made during the year ended December 31, 2018.

(b) See Note 3, "Divestitures," for additional information.

(c) See Note 2, "Acquisitions," for additional information.

(d) Included in Other expenses, net. See Note 17, "Commitments and Contingencies," for additional information.

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- (e) Increase in environmental reserve to indemnify the buyer of a formerly owned site recorded in Other expenses, net. As defined in the agreement of sale, this indemnification has a set cutoff date in 2024, at which point we will no longer be required to provide financial coverage.
- (f) Including in Selling, general and administrative expenses is a charitable contribution, using a portion of the proceeds received from the Polyolefin Catalysts Divestiture, to the Albemarle Foundation, a non-profit organization that sponsors grants, health and social projects, educational initiatives, disaster relief, matching gift programs, scholarships and other charitable initiatives in locations where our employees live and operate. This contribution is in addition to the normal annual contribution made to the Albemarle Foundation by the Company, and is significant in size and nature in that it is intended to provide more long-term benefits in the communities where we live and operate.
- (g) Included in Other expenses, net is \$19.7 million related to the proposed settlement of an ongoing audit of a previously disposed business in Germany, and \$5.5 million related to the revision of indemnifications previously recorded from disposed businesses.
- (h) Included amounts for the year ended December 31, 2018 recorded in:
- Cost of goods sold - \$4.9 million for the write-off of fixed assets related to a major capacity expansion in our Jordanian joint venture and \$8.8 million related to non-routine labor and compensation related costs in Chile that are outside normal compensation arrangements.
 - Selling, general and administrative expenses - \$2.3 million of shortfall contributions for our multiemployer plan financial improvement plan and a \$1.2 million contribution, using a portion of the proceeds received from the Polyolefin Catalysts Divestiture, to schools in the state of Louisiana for qualified tuition purposes. This contribution is significant in size and is intended to provide long-term benefits for families in the Louisiana community. This was partially offset by a \$1.5 million gain related to a refund from Chilean authorities due to an overpayment made in a prior year.
 - Other expenses, net - \$1.5 million gain related to the reversal of previously recorded liabilities of disposed businesses.
- (i) In connection with the acquisition of Jiangli New Materials, the Company valued inventory purchased from Jiangli New Materials at fair value, which resulted in a markup of the underlying net book value of the inventory totaling approximately \$23.1 million. The utilization of this inventory markup was included in Costs of goods sold during the year ended December 31, 2017, the estimated remaining selling period.
- (j) During 2017, we initiated action to reduce costs in each of our reportable segments at several locations, primarily at our Lithium sites in Germany. Based on the restructuring plans, we have recorded expenses of \$2.9 million in Cost of goods sold, \$8.4 million in Selling, general and administrative expenses, and \$5.7 million in Research and development expenses, primarily related to expected severance payments. The unpaid balance is recorded in Accrued expenses at December 31, 2018, with the expectation that the remaining balance will be paid by the end of 2019.
- (k) Gain recorded in Other expenses, net related to the acquisition of the remaining 50% interest in Salmag. See Note 2, "Acquisitions," for additional information.
- (l) Included in Interest and financing expenses is a loss on early extinguishment of debt of \$52.8 million. See Note 14, "Long-Term Debt," for additional information.
- (m) Reserve recorded in Other expenses, net against a note receivable on one of our European entities no longer deemed probable of collection.
- (n) Included amounts for the year ended December 31, 2017 recorded in:
- Cost of goods sold - \$1.3 million reversal of deferred income related to an abandoned project at an unconsolidated investment.
 - Selling, general and administrative expenses - \$3.3 million of shortfall contributions for our multiemployer plan financial improvement plan, partially offset by \$1.0 million related to a reversal of an accrual recorded as part of purchase accounting from a previous acquisition.
 - Other expenses, net - \$3.2 million of asset retirement obligation charges related to the revision of an estimate at a site formerly owned by Albemarle, losses of \$8.7 million related to adjustments of settlements and indemnifications of previously disposed businesses, the revision of tax indemnification expenses of \$3.7 million primarily related to the filing of tax returns and a competent authority agreement for a previously disposed business and \$1.0 million related to the settlement of a legal claim. This is partially offset by gains of \$10.6 million and \$1.1 million related to the reversal of liabilities recorded as part of purchase accounting from a previous acquisition and the previous disposal of a property, respectively.
- (o) Included amounts for the year ended December 31, 2016 recorded in:
- Selling, general and administrative expenses - \$0.9 million related to the net loss on the sales of properties.
 - Research and development expenses - \$1.4 million related to the write-off of fixed assets in China.
 - Other expenses, net - \$2.4 million related to environmental charges related to a site formerly owned by Albemarle, partially offset by a gain related to a previously disposed of site in China of \$1.1 million.

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	December 31,		
	2018	2017	2016
	(In thousands)		
Identifiable assets:			
Lithium ^(a)	\$ 4,605,070	\$ 3,979,615	\$ 3,499,302
Bromine Specialties	753,157	745,007	724,218
Catalysts	1,134,975	1,332,599	1,224,504
All Other	128,185	126,486	130,595
Corporate ^{(a)(b)}	960,287	1,567,065	2,582,588
Total identifiable assets	<u>\$ 7,581,674</u>	<u>\$ 7,750,772</u>	<u>\$ 8,161,207</u>
Goodwill:			
Lithium	\$ 1,354,779	\$ 1,389,089	\$ 1,326,980
Bromine Specialties	20,319	20,319	20,319
Catalysts	185,485	194,361	186,147
All Other	6,586	6,586	6,586
Total goodwill	<u>\$ 1,567,169</u>	<u>\$ 1,610,355</u>	<u>\$ 1,540,032</u>

- (a) The identifiable assets at December 31, 2017, have been revised to correct an error in the previously reported amounts, which understated the Lithium segment and overstated the Corporate category by \$238.5 million. There is no impact to the financial statements or total identifiable assets at December 31, 2017.
- (b) Decrease in Corporate identifiable assets at December 31, 2018 primarily due to the net use of cash and cash equivalents for items such as capital expenditures, share repurchases and commercial paper repayments. As of December 31, 2016, Corporate included the net proceeds received from the sale of the Chemetall Surface Treatment business completed on December 14, 2016, less the repayment of the term loans and commercial paper using those proceeds. See Note 3, "Divestitures," and Note 14, "Long-Term Debt" for additional details about these transactions.

	Year Ended December 31,		
	2018	2017	2016
	(In thousands)		
Depreciation and amortization:			
Lithium	\$ 95,193	\$ 87,879	\$ 86,862
Bromine Specialties	41,607	40,062	39,562
Catalysts	49,131	54,468	51,193
Discontinued Operations	—	—	35,194
All Other	8,073	8,357	7,302
Corporate	6,694	6,162	6,056
Total depreciation and amortization	<u>\$ 200,698</u>	<u>\$ 196,928</u>	<u>\$ 226,169</u>
Capital expenditures:			
Lithium	\$ 500,849	\$ 192,318	\$ 72,038
Bromine Specialties	79,357	46,427	46,414
Catalysts	52,019	46,808	47,475
Discontinued Operations	—	—	19,281
All Other	5,232	3,657	9,251
Corporate	62,534	28,493	2,195
Total capital expenditures	<u>\$ 699,991</u>	<u>\$ 317,703</u>	<u>\$ 196,654</u>

	Year Ended December 31,		
	2018	2017	2016
	(In thousands)		
Net Sales^(a):			
United States	\$ 887,416	\$ 840,589	\$ 797,267
Foreign ^(b)	2,487,534	2,231,387	1,879,936
Total	<u>\$ 3,374,950</u>	<u>\$ 3,071,976</u>	<u>\$ 2,677,203</u>

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- (a) Net sales are attributed to countries based upon shipments to final destination.
- (b) In 2018, net sales to Korea, China and Japan represented 13%, 12%, and 10%, respectively, of total net sales. In 2017 and 2016, net sales to China represented 15% and 13%, respectively, of total net sales. No net sales in any other foreign country exceed 10% of total net sales.

	As of December 31,		
	2018	2017	2016
	(In thousands)		
Long-Lived Assets^(a):			
United States	\$ 929,291	\$ 833,002	\$ 850,689
Chile	1,406,478	1,069,859	922,878
Australia	407,141	364,624	288,553
Jordan	254,800	242,626	227,222
Netherlands	166,853	171,980	145,917
Germany	101,168	115,305	117,027
China	91,160	50,532	31,564
France	43,698	40,852	39,470
Brazil	40,464	47,255	46,380
Korea ^(b)	111	495	65,963
Other foreign countries	65,826	60,131	57,936
Total	<u>\$ 3,506,990</u>	<u>\$ 2,996,661</u>	<u>\$ 2,793,599</u>

- (a) Long-lived assets are comprised of the Company's Property, plant and equipment and Investments.
- (b) The reduction as of December 31, 2017, relates to the assets of the Polyolefin Catalysts Divestiture that are included in Assets held for sale in the consolidated balance sheet.

NOTE 25—Quarterly Financial Summary (Unaudited):

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
	(In thousands, except per share amounts)			
2018				
Net sales	\$ 821,629	\$ 853,874	\$ 777,748	\$ 921,699
Gross profit	\$ 304,979	\$ 311,356	\$ 280,537	\$ 320,384
(Gain) loss on sales of businesses, net ^(a)	\$ —	\$ (218,705)	\$ —	\$ 8,277
Net income	\$ 138,925	\$ 310,686	\$ 143,479	\$ 146,049
Net income attributable to noncontrolling interests	(7,165)	(8,225)	(13,734)	(16,453)
Net income attributable to Albemarle Corporation	<u>\$ 131,760</u>	<u>\$ 302,461</u>	<u>\$ 129,745</u>	<u>\$ 129,596</u>
Basic earnings per share	\$ 1.19	\$ 2.76	\$ 1.21	\$ 1.22
Shares used to compute basic earnings per share	110,681	109,671	107,315	106,042
Diluted earnings per share	\$ 1.18	\$ 2.73	\$ 1.20	\$ 1.21
Shares used to compute diluted earnings per share	111,867	110,659	108,302	107,005

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

	<u>First Quarter</u>	<u>Second Quarter</u>	<u>Third Quarter</u>	<u>Fourth Quarter</u>
	(In thousands, except per share amounts)			
2017				
Net sales	\$ 722,063	\$ 737,258	\$ 754,866	\$ 857,789
Gross profit	\$ 254,956	\$ 271,960	\$ 275,657	\$ 303,703
Net income (loss)	\$ 62,657	\$ 113,689	\$ 130,193	\$ (207,071)
Net income attributable to noncontrolling interests	(11,444)	(10,356)	(11,523)	(11,295)
Net income (loss) attributable to Albemarle Corporation	<u>\$ 51,213</u>	<u>\$ 103,333</u>	<u>\$ 118,670</u>	<u>\$ (218,366)</u>
Basic earnings (loss) per share	<u>\$ 0.46</u>	<u>\$ 0.93</u>	<u>\$ 1.07</u>	<u>\$ (1.98)</u>
Shares used to compute basic earnings per share	111,986	110,686	110,476	110,510
Diluted earnings (loss) per share	\$ 0.45	\$ 0.92	\$ 1.06	\$ (1.95)
Shares used to compute diluted earnings per share	113,289	112,105	111,975	112,152

(a) Represents the gain (loss) on the Polyolefin Catalysts Divestiture. See Note 3, "Divestitures," for additional information.

As discussed in Note 1, "Summary of Significant Accounting Policies," actuarial gains and losses related to our defined benefit pension and OPEB plan obligations are recognized annually in our consolidated statements of income in the fourth quarter and whenever a plan is determined to qualify for a remeasurement during a fiscal year. During the year ended December 31, 2018, actuarial losses were recognized as follows: fourth quarter—\$14.0 million (\$10.6 million after income taxes) as a result of the annual remeasurement process. During the year ended December 31, 2017, actuarial gains were recognized as follows: fourth quarter—\$11.4 million (\$7.3 million after income taxes) as a result of the annual remeasurement process.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

NONE

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act), as of the end of the period covered by this report. Based on this evaluation, our principal executive officer and principal financial officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures are effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Design and Evaluation of Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Exchange Act Rule 13a-15(f) and 15d-15(f). Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018. In making this assessment, management used the criteria for effective internal control over financial reporting described in the "Internal Control-Integrated Framework" (2013) set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on the assessment, management concluded that, as of December 31, 2018, our internal control over financial reporting was effective based on those criteria.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which is included herein. Management's report and the independent registered public accounting firm's report are included in Item 8 under the captions entitled "Management's Report on Internal Control over Financial Reporting" and "Report of Independent Registered Public Accounting Firm" and are incorporated herein by reference.

Changes in Internal Control over Financial Reporting

No change in our internal control over financial reporting (as such term is defined in Exchange Act Rule 13a-15(f)) occurred during the fiscal quarter ended December 31, 2018 that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

NONE

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item 10 will be contained in the Proxy Statement and is incorporated herein by reference. In addition, the information in "Executive Officers of the Registrant" appearing after Item 4 in Part I of this Annual Report, is incorporated herein by reference.

Code of Conduct

We have adopted a code of conduct and ethics for directors, officers and employees, known as the Albemarle Code of Conduct. The Albemarle Code of Conduct is available on our website, www.albemarle.com. Shareholders may also request a free copy of the Albemarle Code of Conduct from: Albemarle Corporation, Attention: Investor Relations, 4250 Congress Street, Suite 900, Charlotte, North Carolina 28209. We will disclose any amendments to, or waivers from, a provision of our Code of Conduct that applies to the principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions that relates to any element of the Code of Conduct as defined in Item 406 of Regulation S-K by posting such information on our website.

New York Stock Exchange Certifications

Because our common stock is listed on the New York Stock Exchange (“NYSE”), our Chief Executive Officer is required to make, and he has made, an annual certification to the NYSE stating that he was not aware of any violation by us of the corporate governance listing standards of the NYSE. Our Chief Executive Officer made his annual certification to that effect to the NYSE as of June 7, 2018. In addition, we have filed, as exhibits to this Annual Report on Form 10-K, the certifications of our principal executive officer and principal financial officer required under Sections 906 and 302 of the Sarbanes-Oxley Act of 2002 to be filed with the Securities and Exchange Commission regarding the quality of our public disclosure.

Additional information will be contained in the Proxy Statement and is incorporated herein by reference.

Item 11. Executive Compensation.

The information required by this Item 11 will be contained in the Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item 12 will be contained in the Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item 13 will be contained in the Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by this Item 14 will be contained in the Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)(1) The following consolidated financial and informational statements of the registrant are included in Part II Item 8 on pages 58 to 113:

Management’s Report on Internal Control Over Financial Reporting

Report of Independent Registered Public Accounting Firm

Consolidated Balance Sheets as of December 31, 2018 and 2017

Consolidated Statements of Income, Comprehensive Income, Changes in Equity and Cash Flows for the years ended December 31, 2018, 2017 and 2016

Notes to the Consolidated Financial Statements

(a)(2) No Financial Statement Schedules are provided in accordance with Item 15(a)(2) as the information is either not applicable, not required or has been furnished in the Consolidated Financial Statements or Notes thereto.

(a)(3) Exhibits

The following documents are filed as exhibits to this Annual Report on Form 10-K pursuant to Item 601 of Regulation S-K:

2.1 [Agreement and Plan of Merger, dated as of July 15, 2014, among Albemarle Corporation, Albemarle Holdings Corporation and Rockwood Holdings, Inc. \[filed as Exhibit 2.1 to the Company’s Current Report on Form 8-K \(No. 1-12658\) filed on July 18, 2014, and incorporated herein by reference\].](#)

- [2.2](#) [Share Purchase Agreement, dated as of June 17, 2016, between Albemarle Corporation and BASF SE \[filed as Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016 \(No. 1-12658\), filed on August 5, 2016, and incorporated herein by reference\].](#)
- [2.3](#) [First Amendment to the Share Purchase Agreement, dated December 7, 2016, between Albemarle Corporation and BASF SE \[filed as Exhibit 2.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [2.4](#) [Second Amendment to the Share Purchase Agreement, dated December 14, 2016, between Albemarle Corporation and BASF SE \[filed as Exhibit 2.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [3.1](#) [Amended and Restated Articles of Incorporation \(including Amendment thereto\) of Albemarle Corporation \[filed as Exhibit 4.1 to the Company's Registration Statement on Form S-3 \(No. 333-119723\) filed on October 13, 2004, and incorporated herein by reference\].](#)
- [3.2](#) [Amended and Restated Articles of Incorporation of Albemarle Corporation \[filed as Exhibit 3.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on May 12, 2017, and incorporated herein by reference\].](#)
- [3.3](#) [Amended and Restated Bylaws, effective May 12, 2017, of Albemarle Corporation \[filed as Exhibit 3.2 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on May 12, 2017, and incorporated herein by reference\].](#)
- [4.1](#) [Indenture, dated as of January 20, 2005, between Albemarle Corporation and The Bank of New York, as trustee \[filed as Exhibit 4.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on January 20, 2005, and incorporated herein by reference\].](#)
- [4.2](#) [Second Supplemental Indenture, dated as of December 10, 2010, between Albemarle Corporation and The Bank of New York Mellon Trust Company, N.A., as successor trustee to The Bank of New York \[filed as Exhibit 4.2 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 10, 2010, and incorporated herein by reference\].](#)
- [4.3](#) [Third Supplemental Indenture, dated as of November 24, 2014, among Albemarle Corporation, Albemarle Holdings Corporation \(now Rockwood Holdings, Inc.\) and Albemarle Holdings II Corporation \(now Rockwood Specialties Group, Inc.\) and U.S. Bank National Association, as trustee \[filed as Exhibit 4.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on November 24, 2014, and incorporated herein by reference\].](#)
- [4.4](#) [Fourth Supplemental Indenture, dated as of January 29, 2015, among Albemarle Corporation, Rockwood Holdings, Inc. \(as successor by merger to Albemarle Holdings Corporation\), Rockwood Specialties Group, Inc. \(as successor by merger to Albemarle Holdings II Corporation\), The Bank of New York Mellon Trust Company, N.A., a national banking association, as successor to The Bank of New York, as resigning trustee, and U.S. Bank National Association, as successor trustee \[filed as Exhibit 4.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on January 29, 2015, and incorporated herein by reference\].](#)
- [4.5](#) [Form of Global Security for the 4.50% Senior Notes due 2020 \[filed as Exhibit 4.3 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 10, 2010, and incorporated herein by reference\].](#)
- [4.6](#) [Form of Global Security for the 4.150% Senior Notes due 2024 \[filed as Exhibit 4.3 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on November 24, 2014, and incorporated herein by reference\].](#)
- [4.7](#) [Form of Global Security for the 5.450% Senior Notes due 2044 \[filed as Exhibit 4.4 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on November 24, 2014, and incorporated herein by reference\].](#)
- [4.8](#) [Form of Global Security for the 1.875% Senior Notes due 2021 \[filed as Exhibit 4.8 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)

- [#10.1 2013 Stock Compensation and Deferral Election Plan for Non-Employee Directors of Albemarle Corporation \[filed as Annex A to the Company's definitive Proxy Statement on Schedule 14A \(No. 1-12658\) filed on March 28, 2013, and incorporated herein by reference\].](#)
- [#10.2 First Amendment to the Albemarle Corporation Stock Compensation and Deferral Election Plan \[filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.3 Compensation Arrangement with Luther C. Kissam, IV, dated August 29, 2003 \[filed as Exhibit 10.10 to the Company's Annual Report on Form 10-K for the year ended December 31, 2005 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.4 Notice of Option Grant \[filed as Exhibit 10.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on February 25, 2013, and incorporated herein by reference\].](#)
- [#10.5 Notice of Option Grant \[filed as Exhibit 10.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on February 28, 2014, and incorporated herein by reference\].](#)
- [#10.6 Notice of Option Grant \[filed as Exhibit 10.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on March 2, 2015, and incorporated herein by reference\].](#)
- [#10.7 Notice of Option Grant \[filed as Exhibit 10.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on March 2, 2016, and incorporated herein by reference\].](#)
- [#10.8 Notice of Restricted Stock Unit Award \[filed as Exhibit 10.2 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on March 2, 2016, and incorporated herein by reference\].](#)
- [#10.9 Notice of TSR Performance Unit Award \[filed as Exhibit 10.3 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on March 2, 2016, and incorporated herein by reference\].](#)
- [#10.10 Form Notice of Option Grant under the Albemarle Corporation 2008 Incentive Plan \[filed as Exhibit 10.3 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 9, 2016, and incorporated herein by reference\].](#)
- [#10.11 Form Notice of Restricted Stock Unit Award under the Albemarle Corporation 2008 Incentive Plan \[filed as Exhibit 10.4 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 9, 2016, and incorporated herein by reference\].](#)
- [#10.12 Form Notice of TSR Performance Unit Award under the Albemarle Corporation 2008 Incentive Plan \[filed as Exhibit 10.5 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 9, 2016, and incorporated herein by reference\].](#)
- [#10.13 Notice of TSR Performance Unit Award \[filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q \(No. 1-12658\) filed on May 9, 2018, and incorporated herein by reference\].](#)
- [#10.14 Notice of Option Grant \[filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q \(No. 1-12658\) filed on May 9, 2018, and incorporated herein by reference\].](#)
- [#10.15 Notice of Restricted Stock Unit Award \[filed as Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q \(No. 1-12658\) filed on May 9, 2018, and incorporated herein by reference\].](#)
- [#10.16 Amended and Restated Albemarle Corporation Supplemental Executive Retirement Plan, effective as of January 1, 2005 \[filed as Exhibit 10.13 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.17 First Amendment to the Albemarle Corporation Supplemental Executive Retirement Plan, dated December 1, 2010 \[filed as Exhibit 10.14 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)

- [#10.18](#) [Second Amendment to the Albemarle Corporation Supplemental Executive Retirement Plan, dated December 18, 2011 \[filed as Exhibit 10.15 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.19](#) [Third Amendment to the Albemarle Corporation Supplemental Executive Retirement Plan, dated December 2, 2013 \[filed as Exhibit 10.16 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.20](#) [Form of Severance Compensation Agreement \(Pension-Eligible Employees\) \[filed as Exhibit 10.19 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.21](#) [Form of Severance Compensation Agreement \(Non-Pension-Eligible Employees\) \[filed as Exhibit 10.20 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.22](#) [Form of Amendment to Severance Compensation Agreement \[filed as Exhibit 10.21 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.23](#) [Second Amendment to Severance Compensation Agreement between Luther C. Kissam, IV and Albemarle Corporation \[filed as Exhibit 10.1 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 9, 2016, and incorporated herein by reference\].](#)
- [#10.24](#) [Form of Second Amendment to Severance Compensation Agreement between each of Karen Narwold and Scott Tozier, and Albemarle Corporation \[filed as Exhibit 10.2 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 9, 2016, and incorporated herein by reference\].](#)
- [#10.25](#) [Albemarle Corporation Severance Pay Plan, as revised effective as of December 13, 2006 \[filed as Exhibit 10.6 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 18, 2006, and incorporated herein by reference\].](#)
- [#10.26](#) [Amended and Restated Albemarle Corporation Benefits Protection Trust, effective as of December 13, 2006 \[filed as Exhibit 10.9 to the Company's Current Report on Form 8-K \(No. 1-12658\) filed on December 18, 2006, and incorporated herein by reference\].](#)
- [#10.27](#) [Albemarle Corporation Employee Relocation Policy \[filed as Exhibit 10.33 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2008 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.28](#) [Albemarle Corporation 2008 Incentive Plan, as amended and restated as of April 20, 2010 \[filed as Exhibit 10.1 to the Company's Registration Statement on Form S-8 \(No. 333-166828\) filed on May 14, 2010, and incorporated herein by reference\].](#)
- [#10.29](#) [Amended and Restated Albemarle Corporation Executive Deferred Compensation Plan, effective as of January 1, 2013 \[filed as Exhibit 10.23 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.30](#) [First Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of November 14, 2014 \[filed as Exhibit 10.24 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.31](#) [Second Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of February 12, 2015 \[filed as Exhibit 10.28 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.32](#) [Third Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of July 31, 2015 \[filed as Exhibit 10.29 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)

- [#10.33](#) [Fourth Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of December 17, 2015 \[filed as Exhibit 10.30 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.34](#) [Fifth Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of March 31, 2017 \[filed as Exhibit 10.38 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.35](#) [Sixth Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of July 5, 2017 \[filed as Exhibit 10.39 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.36](#) [Seventh Amendment to the Albemarle Corporation Executive Deferred Compensation Plan, dated as of November 9, 2017 \[filed as Exhibit 10.40 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.37](#) [Albemarle Corporation 2017 Incentive Plan, adopted May 12, 2017 \[filed as Appendix A to the Company's Definitive Proxy Statement filed on March 30, 2017, and incorporated herein by reference\].](#)
- [#10.38](#) [Albemarle Corporation Compensation Recoupment and Forfeiture Policy effective July 10, 2017 \[filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [#10.39](#) [Form of letter agreement dated February 26, 2018 between the Company and each of Luther C. Kissam, IV, Karen Narwold, Scott Tozier and Donald J. LaBauve, Jr. \[filed as Exhibit 10.43 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 \(No. 1-12658\), and incorporated herein by reference\].](#)
- [10.40](#) [Credit Agreement, dated as of June 21, 2018, among Albemarle Corporation, Albemarle Global Finance Company SCA and Albemarle Europe SPRL, as borrowers, certain of the Company's subsidiaries that from time to time become parties thereto, the several banks and other financial institutions as may from time to time become parties thereto, and Bank of America, N.A., as Administrative Agent and Swing Line Lender \[filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q \(No. 1-12658\) filed on August 7, 2018, and incorporated herein by reference\].](#)
- [*10.41](#) [Asset Sale and Share Subscription Agreement, dated December 14, 2018, by and among Albemarle Corporation, Albemarle Wodgina Pty Ltd, a wholly-owned subsidiary of Albemarle Corporation, Mineral Resources Limited and Wodgina Lithium Pty Ltd, a wholly-owned subsidiary of Mineral Resources Limited.](#)
- [*10.42](#) [Form of Wodgina Joint Venture Agreement by and among Wodgina Lithium Pty Ltd, Albemarle Wodgina Pty Ltd and Wodgina Lithium Operations Pty Ltd.](#)
- [*21.1](#) [Subsidiaries of the Company.](#)
- [*23.1](#) [Consent of PricewaterhouseCoopers LLP.](#)
- [*31.1](#) [Certification of Chief Executive Officer pursuant to Rule 13a-15\(e\) and 15d-15\(e\) of the Securities Exchange Act of 1934, as amended.](#)
- [*31.2](#) [Certification of Chief Financial Officer pursuant to Rule 13a-15\(e\) and 15d-15\(e\) of the Securities Exchange Act of 1934, as amended.](#)
- [*32.1](#) [Certification of Chief Executive Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.](#)
- [*32.2](#) [Certification of Chief Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.](#)
- [*99.1](#) [Five-Year Summary.](#)

- *101 Interactive Data Files (Annual Report on Form 10-K, for the fiscal year ended December 31, 2018, furnished in XBRL (eXtensible Business Reporting Language)).

Attached as Exhibit 101 to this report are the following documents formatted in XBRL: (i) the Consolidated Statements of Income for the fiscal years ended December 31, 2018, 2017 and 2016, (ii) the Consolidated Statements of Comprehensive Income for the fiscal years ended December 31, 2018, 2017 and 2016, (iii) the Consolidated Balance Sheets at December 31, 2018 and 2017, (iv) the Consolidated Statements of Changes in Equity for the fiscal years ended December 31, 2018, 2017 and 2016, (v) the Consolidated Statements of Cash Flows for the fiscal years ended December 31, 2018, 2017 and 2016 and (vi) the Notes to Consolidated Financial Statements.

Management contract or compensatory plan or arrangement.

* Included with this filing.

Item 16. Form 10-K Summary.

NONE

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.

ALBEMARLE CORPORATION
(Registrant)

By: /S/ LUTHER C. KISSAM IV
 (Luther C. Kissam IV)
 Chairman, President and Chief Executive Officer

Dated: February 27, 2019

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 as of February 27, 2019.

Signature	Title
<u>/s/ LUTHER C. KISSAM IV</u> (Luther C. Kissam IV)	Chairman, President and Chief Executive Officer (principal executive officer)
<u>/s/ SCOTT A. TOZIER</u> (Scott A. Tozier)	Executive Vice President, Chief Financial Officer (principal financial officer)
<u>/s/ DONALD J. LABAUVE, JR.</u> (Donald J. LaBauve, Jr.)	Vice President, Corporate Controller and Chief Accounting Officer (principal accounting officer)
<u>/s/ LAURIE BRLAS</u> (Laurie Brlas)	Director
<u>/s/ WILLIAM H. HERNANDEZ</u> (William H. Hernandez)	Director
<u>/s/ DOUGLAS L. MAINE</u> (Douglas L. Maine)	Director
<u>/s/ J. KENT MASTERS</u> (J. Kent Masters)	Director
<u>/s/ JAMES J. O'BRIEN</u> (James J. O'Brien)	Director
<u>/s/ DIARMUID B. O'CONNELL</u> (Diarmuid B. O'Connell)	Director
<u>/s/ DEAN L. SEAVERS</u> (Dean L. Seavers)	Director
<u>/s/ GERALD A. STEINER</u> (Gerald A. Steiner)	Director
<u>/s/ HARRIETT TEE TAGGART</u> (Harriett Tee Taggart)	Director
<u>/s/ ALEJANDRO D. WOLFF</u> (Alejandro D. Wolff)	Director

Asset Sale and Share Subscription Agreement

Wodgina Project

Wodgina Lithium Pty Ltd
Albemarle Wodgina Pty Ltd
Mineral Resources Limited
Albemarle Corporation

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Attachment A	Agreed form JVA
Attachment B	Mine Development Plan
Attachment C	Parent Guarantee
Attachment D	Deed of Cross Security
Attachment E	Chargee's Priority Deed

Parties

- 1 **Wodgina Lithium Pty Ltd** ACN 611 488 932 of 1 Sleat Road, Applecross WA 6153
(Seller)
- 2 **Albemarle Wodgina Pty Ltd** ABN 69 630 509 303 of Minter Ellison Building, Level 3, 25 National Circuit, Forrest ACT 2603 (Buyer)
- 3 **Mineral Resources Limited** ACN 118 549 910 of 1 Sleat Road, Applecross WA 6153
(Seller Guarantor)
- 4 **Albemarle Corporation** of 4350 Congress Street, Suite 700, Charlotte, NC 28209
(Buyer Guarantor)

Background

- A The Seller is the beneficial and (except where expressly provided in this agreement) legal owner of the Sale Interest.
- B The Seller has agreed to sell to the Buyer, and the Buyer has agreed to purchase from the Seller, the Sale Interest on the terms and conditions set out in this agreement.
- C The Buyer has agreed to subscribe for, and the Seller has agreed to procure that WLOPL will allot and issue, the Subscription Shares on the terms and conditions set out in this agreement such that on and from Completion, the Buyer and the Seller will each hold 50% of the Ordinary Shares in WLOPL.
- D The Seller Guarantor has agreed to guarantee the obligations of the Seller under this agreement.
- E The Buyer Guarantor has agreed to guarantee the obligations of the Buyer under this agreement.

The parties agree

1 Defined terms and interpretation

1.1 Definitions in the Dictionary

A term or expression starting with a capital letter:

- (a) which is defined in the Dictionary in Schedule 1, has the meaning given to it in the Dictionary;
- (b) which is defined in the Corporations Act, but is not defined in the Dictionary, has the meaning given to it in the Corporations Act; and
- (c) which is defined in the GST Law, but is not defined in the Dictionary or the Corporations Act, has the meaning given to it in the GST Law.

1.2 Interpretation

The interpretation clause in Schedule 1 sets out rules of interpretation for this agreement.

2 Conditions to Completion

2.1 Conditions precedent

Clauses 3, 4 and 7 do not become binding on the parties and are of no force and effect until each of the following Conditions have been satisfied or waived in accordance with clauses 2.2 and 2.4:

(a) **Regulatory approvals:**

- (i) either:
 - (A) the Buyer receiving notice in writing from the Federal Treasurer or his or her agent to the effect that there are no objections under the Australian Government's foreign investment policy or under FATA to the Buyer acquiring the Sale Interest and the Subscription Shares in accordance with this agreement; or
 - (B) the Treasurer being, by reason of lapse of time, no longer empowered to make an order under FATA in respect of the acquisition contemplated by this agreement; and
- (ii) either:
 - (A) a merger filing, if required, having been made by the parties to, and accepted by, SAMR pursuant to the Anti-Monopoly Law and SAMR having issued a decision confirming that it will not conduct further review of the transactions evidenced by this agreement or it will allow the transactions evidenced by this agreement to proceed without conditions or, subject to clause 2.2(b) on conditions reasonably acceptable to the parties; or
 - (B) that all applicable waiting periods under the Anti-Monopoly Law in respect of the review of the transaction contemplated by this agreement have expired.
- (b) **Ministerial consent for Tenements:** the Seller and the Buyer have received all necessary consents and approvals by the Minister under the Mining Act to the transfer of the Tenements (to the extent of the Sale Interest) on terms reasonably acceptable to the Seller and Buyer.
- (c) **Title Agreements:** the consents or approvals of all Counterparties which are required under or pursuant to the Title Agreements in relation to the transactions evidenced by this agreement have been obtained on terms reasonably acceptable to the Buyer and the Seller, including the provision of duly executed unconditional and irrevocable releases of caveats, mortgages and other encumbrances over the Tenements the subject of the Title Agreements.

2.2 Satisfaction of the Conditions

- (a) The Buyer must use all reasonable endeavours to satisfy the Condition in clause 2.1(a)(i) by the Conditions Precedent Date.
- (b) Each of the Buyer and the Seller must use all reasonable endeavours to satisfy the Conditions in clauses 2.1(a)(ii), 2.1(b) and 2.1(c) by the Conditions Precedent Date, provided that in respect of the Condition in clause 2.1(a)(ii), neither party will be required to offer, propose or agree to any conditions to SAMR's approval of the transaction evidenced by this agreement until the impact on the Project of such conditions have been agreed between the parties and the Transaction Documents have been revised to reflect such impact, if necessary, on terms reasonably satisfactory to each party.

- (c) The Buyer and the Seller must cooperate with each other in doing anything reasonably necessary to satisfy the Conditions.
- (d) The Seller must duly seek all necessary consents and approvals by the Minister under the Mining Act in connection with the Condition in clauses 2.1(b) within 10 Business Days following the Execution Date.

2.3 Extension of the Conditions Precedent Date

- (a) If a Condition has not been satisfied, or is unlikely to be satisfied by the Conditions Precedent Date, the Seller or the Buyer may, by giving a written notice (**Extension Notice**) to the other party at any time prior to the Conditions Precedent Date, extend the Conditions Precedent Date in respect of that Condition to any date on or before the Final Conditions Precedent Date.
- (b) The Seller and the Buyer may only issue one Extension Notice each and provided that the date specified in any Extension Notice is no later than the Final Conditions Precedent Date.

2.4 Waiver

- (a) The Conditions in clause 2.1(a) and 2.1(b) are for the benefit of both the Seller and the Buyer and may only be waived by written agreement between the Seller and the Buyer.
- (b) The Condition in clause 2.1(c) is for the benefit of both Seller and the Buyer and may be waived by either the Seller or the Buyer.

2.5 Notice

The Buyer and the Seller must:

- (a) keep the other party fully informed (by notices in writing) in relation to progress towards the satisfaction of the Conditions; and
- (b) promptly notify the other in writing if it becomes aware that a Condition is satisfied or incapable of being satisfied before the Conditions Precedent Date.

2.6 Termination and failure to Complete

- (a) The Buyer or the Seller may terminate this agreement before Completion by giving written notice to the other of the Buyer or the Seller (as the case may be) if:
 - (i) a Condition is not satisfied or waived by the Conditions Precedent Date;
 - (ii) a Condition (which has not been waived) becomes incapable of being satisfied by the Final Conditions Precedent Date;
 - (iii) the parties agree that a Condition cannot be satisfied by the Conditions Precedent Date (unless that Condition is satisfied before termination of this agreement); or

- (iv) the other of the Buyer or the Seller (as is relevant) suffers an Insolvency Event,

and provided that the terminating party is not in breach of a material obligation under this agreement (including that the terminating party must have complied with its obligations in clause 2.2).
- (b) Provided the Conditions have been satisfied or waived, if either the Seller Group or the Buyer Group (**Defaulting Party**) does not Complete when required to do so under this agreement, other than as a result of default by the other group (**Non-Defaulting Party**), the Non-Defaulting Party may give the Defaulting Party notice requiring it to Complete within 10 Business Days of receipt of the notice. When a notice is given under this clause 2.6(b), time will be of the essence under this agreement in all respects.
- (c) If the Defaulting Party does not Complete within the period specified in clause 2.6(b), the Non-Defaulting Party may choose either to seek specific performance or terminate this agreement, without limitation to any accrued rights.
- (d) If this agreement is terminated, then:
 - (i) if any Transaction Document does not automatically terminate in accordance with its terms on termination of this agreement, the parties will procure that each other Transaction Document that has been executed is terminated;
 - (ii) each party is released from its obligations to further perform its obligations under this agreement and each Transaction Document, except those expressed to survive termination; and
 - (iii) each party retains the rights it has against the other in respect of any breach of this agreement occurring before termination.

3 Subscription and allotment of Subscription Shares

3.1 Registration of WLOPL

The parties acknowledge and agree that the Seller will procure the registration of WLOPL under the Corporations Act no earlier than 2 Business Days prior to the Completion Date or as otherwise agreed in writing between the Seller and the Buyer.

3.2 Subscription

Subject to the terms and conditions of this agreement, the Seller will procure that WLOPL allots and issues, and the Buyer must subscribe for, the Subscription Shares:

- (a) for the Subscription Amount;
- (b) with effect on and from Completion;
- (c) free from any Security Interest; and
- (d) on the terms and conditions of this agreement.

3.3 Constitution

The Buyer agrees to be bound by the WLOPL Constitution upon issue of the Subscription Shares.

3.4 Equal ranking

The Subscription Shares rank equally in all respects with all other Ordinary Shares.

4 Sale and purchase of Sale Interest

4.1 Sale and purchase

The Seller agrees to sell the Sale Interest to the Buyer and the Buyer agrees to buy the Sale Interest:

- (a) for the Purchase Price;
- (b) with effect from Completion;
- (c) free from any Security Interest (other than a Permitted Security Interest); and
- (d) on the terms and conditions of this agreement.

4.2 Reserved Rights

The parties acknowledge that the Tantalum Rights and the Iron Ore Rights do not form part of the Sale Interest.

4.3 Purchase Price

The consideration for the sale and purchase of the Sale Interest is the payment by the Buyer of the Purchase Price.

4.4 Payments to reduce Purchase Price

Any payment received by the Buyer after Completion in relation to any breach by the Seller of a Seller Group Warranty or under an Indemnity must be treated as a reduction in and refund of the Purchase Price.

4.5 Method of making payments

- (a) All payments required to be made under this agreement must be paid without deduction or set-off in Immediately Available Funds to the bank account or accounts nominated in writing before the due date for payment by the party to whom the payment is due.
- (b) Any nomination referred to in clause 4.5(a) must be made at least 2 Business Days before the payment is due.

5 Incomplete Infrastructure and Tantalum Assets

5.1 Construction and commissioning by Seller

- (a) Subject to clause 5.2(c), the Seller must at its cost construct and successfully Commission, or must procure the construction and successful Commissioning of, all Incomplete Infrastructure.
- (b) The Seller must use all reasonable endeavours to complete the construction and successful Commissioning, or to procure the completion of the construction and successful Commissioning, of all Incomplete Infrastructure by no later than 30 September 2019 (or, if not possible by that date, as soon as possible after that date).
- (c) The Seller must, at its cost, take all steps required to obtain the Approvals required for the construction and operation of the Incomplete Infrastructure (including those set out in Schedule 5) and must (on Completion or if later following construction and successful commissioning) transfer all Approvals for the Incomplete Infrastructure to the Buyer, to the extent of the Sale Interest, or to WLOPL (as applicable).

5.2 CCC Handover

- (a) On completion of construction and successful Commissioning of each item of Incomplete Infrastructure the Seller must hand over care, custody and control of the relevant item of Incomplete Infrastructure to WLOPL (**CCC Handover**).
- (b) At the later of Completion or the date of CCC Handover for each item of Incomplete Infrastructure:
 - (i) the Seller must transfer title to each item of Incomplete Infrastructure to the Buyer in proportion to the Sale Interest;
 - (ii) to the extent not provided at Completion where Completion occurs prior to CCC Handover for an item of Incomplete Infrastructure, the Seller must provide a duly executed deed of release of security in respect of 50% of the item of Incomplete Infrastructure from the Security Trustee; and
 - (iii) the Seller and the Buyer will procure that WLOPL undertakes operational ramp up of that item of Incomplete Infrastructure.
- (c) Without limiting clause 5.1(a), in respect of each item of Incomplete Infrastructure (including to satisfy clause 5.2(d)), the Seller is solely responsible for rectifying any defects (including omissions) in the construction and supply of goods, materials and equipment incorporated within the Incomplete Infrastructure that exist or become apparent prior to the later of Completion and the date of CCC Handover of the Incomplete Infrastructure.
- (d) In order to be considered to have been constructed and successfully Commissioned, each item of Incomplete Infrastructure must meet the requirements and pass the commissioning tests set out in Schedule 5 to the extent applicable to that item of Incomplete Infrastructure.

5.3 Warranties from suppliers and manufacturers

- (a) On or about the date of the CCC Handover, the Seller must assign or use all reasonable endeavours to procure the assignment of the benefit of all guarantees, representations, warranties and indemnities given in favour of the Seller or its Related Bodies Corporate (or which the Seller or its Related Bodies Corporate have a right to assignment of) and which are capable of assignment in respect of the Incomplete Infrastructure and from subcontractors, manufacturers and suppliers of plant, equipment and materials incorporated into the Incomplete Infrastructure (**Subcontractors**) (including where such warranties continue to operate beyond the expiration of any applicable defects liability period), to WLOPL which guarantees, representations, warranties and indemnities may, at the direction of the Buyer be, held on trust by WLOPL for the Seller and the Buyer (or to the extent not able to be assigned or transferred to WLOPL, held on trust by the Seller or its Related Bodies Corporate).
- (b) The Seller must use all reasonable endeavours to procure that the agreements entered into with Subcontractors after the Execution Date allow for all guarantees, representations, warranties and indemnities (including guarantees, representations, warranties and indemnities given by the Subcontractors' contractors) to be directly enforced by the Seller and Buyer against the parties giving the warranties.
- (c) For any guarantees, representations, warranties and indemnities not able to be assigned or transferred to WLOPL under clause 5.3(a), the Seller or its Related Bodies Corporate (as applicable) must, for and on behalf of WLOPL, pursue and seek to enforce its rights against under those guarantees, representations, warranties and indemnities in good faith and acting reasonably (and taking account of the Buyer's and WLOPL's interest under this clause 5).

5.4 Tantalum Assets

The parties acknowledge and agree that any Deed of Assignment and Assumption in relation to the contract for the construction, installation and operation of the Tantalum Assets will bind the Buyer only in respect of matters relating to the operation and maintenance (but not the construction and installation) of the Tantalum Assets.

6 Interim Period

6.1 Third Party Agreements

Without limiting clause 10, during the Interim Period:

- (a) the Seller and the Buyer must each use all reasonable endeavours to obtain from the relevant Counterparties all necessary approvals, consents to the assignment or novation of the relevant Third Party Agreement and/or waivers of any pre-emptive rights arising as a result of the transactions contemplated by this agreement; and
- (b) to the extent required by the terms of a Third Party Agreement, the Seller, the Buyer and each Counterparty must enter into a Deed of Assignment and Assumption on terms acceptable to the Buyer and the Seller (acting reasonably).

6.2 Information and access

- (a) The Seller must provide to the Buyer, as soon as reasonably practicable after it becomes aware of the information, details (including copies where relevant) of all material information in relation to the Project, the Sale Interest or the Subscription Shares that the Seller, its Related Bodies Corporate or Representative become aware of during the Interim Period (including copies of all notices in respect of the Sale Interest and Subscription Shares received during the Interim Period, including from Government Agencies, contract counterparties or any other party).
- (b) During the Interim Period, the Seller must, to the extent permitted by law and subject to clauses 6.2(c) and 18:
 - (i) give the Buyer and its representatives reasonable access to the Tenements, the Records and the Sale Interest during normal business hours and on reasonable notice (provided that the Buyer complies with the Seller's reasonable safety requirements); and
 - (ii) provide information relating to the Project, the Sale Interest and WLOPL as the Buyer reasonably requires to enable the Buyer to become familiar with the Project (and the Buyer may make copies of such information).
- (c) The Buyer may only exercise its rights under clause 6.2(b) to the extent it does not unreasonably interfere with the conduct of the activities and operations of the Seller.
- (d) During the Interim Period, two Representatives of each of the Seller and the Buyer must meet not less than once every fortnight at such time and place (which may be by teleconference) agreed between the Seller and the Buyer to discuss the Project (including the progress regarding the construction of the Incomplete Infrastructure).

6.3 General Conduct – Sale Interest and Project

During the Interim Period, except as expressly provided in, or permitted or contemplated by this agreement or as consented to by the Buyer in writing, the Seller must, and must procure that the Seller's other Related Bodies Corporate involved in the operation of the Project, use all reasonable endeavours to carry on the Project (including construction and successful Commissioning of the Incomplete Infrastructure), and hold the Sale Interest, in the ordinary course, in good faith and substantially consistent with past practice and must:

- (a) use all reasonable endeavours to carry on the Project in accordance with the Mine Development Plan and the Operational Spares Plan, in each case as amended with the written approval of the Buyer;
- (b) comply with all applicable laws in relation to the Sale Interest and Subscription Shares and the terms and conditions of the Tenements, the Petroleum Pipeline Licences and the Approvals;
- (c) not, and not take any steps to, surrender or relinquish the Tenements or the Petroleum Pipeline Licences, or agree to a variation of the terms of the Tenements or the Petroleum Pipeline Licences, except to the extent required by law;
- (d) use all reasonable endeavours to procure the grant of the Tenement Applications and the transfer of the Assigned Tenements to the Seller;
- (e) consult the Buyer and take utmost account of the Buyer's views for the contracting and procurement strategy for the Project having regard to the Mine Development Plan, including with respect to the gas supply and water supply arrangements for the Project;

- (f) not transfer, grant or permit the registration of any Security Interest over (other than a Permitted Security Interest) or otherwise deal with the Tenements, Sale Interest or Subscription Shares or its interest in them;
- (g) not vary in a material manner, voluntarily terminate, take any action that might give rise to a termination right or waive any right under a Third Party Agreement, other than the amendment and restatement of the agreement referred to in items 23 and 25 of Schedule 7 on arm's length terms in respect of the Project following consultation with the Buyer of whose views the Seller shall take utmost account;
- (h) comply with its obligations under the Third Party Agreements;
- (i) not enter into any joint venture, partnership, unincorporated association, alliance or similar arrangement with any person in respect of the Sale Interest or the Project;
- (j) except as permitted under clause 6.3(o), not enter into any agreement with respect to the Product or Ore (or any other material derived from the Product or Ore) which relates to the period after the Completion Date;
- (k) not take any steps which would frustrate, impede or reduce the benefit of any Transaction Document;
- (l) without limiting clause 6.3(g), not enter into, amend or terminate (or agree to enter into, amend or terminate) a contract or commitment in respect of the Sale Interest or the Project that will result in aggregate annual receipts or expenditure in excess of \$100,000, otherwise than in the ordinary course of business (which includes any gas transportation agreement on arm's length terms);
- (m) not enter into or amend (or agree to enter into or amend) a contract or commitment with a Related Body Corporate of the Seller in respect of the Sale Interest or the Project;
- (n) not enter into any agreement otherwise than on arm's length or enter into any abnormal or unusual transaction, in each case in respect of the Sale Interest or the Project; and
- (o) not enter into any agreement for the sale of Product or Ore, except for spot agreements for the sale of single shipments of Product or Ore mined or produced prior to the Completion Date, and which do not include any obligation to deliver Product or Ore after the date that is one month after the date of execution of such agreement.

6.4 Initial Mine Plan and Budget

- (a) On or before 28 February 2019, the Seller must provide to the Buyer a draft business plan for the Life of Mine, including the amount of any proposed Called Sum for each of the Buyer and the Seller on the basis of, and in accordance with, the JVA (as if the JVA was in place) to be called from and paid to WLOPL by each of the Seller and the Buyer at Completion.
- (b) Within 20 Business Days after provision of the draft business plan to the Buyer in accordance with clause 6.4(a), the Buyer must, acting reasonably, either approve the business plan or give the Seller any comments or amendments to the draft business plan.
- (c) If the Buyer gives any comments or amendments to the draft business plan or if either party reasonably requests a change to a business plan approved or agreed

between the parties (including the amount of any proposed Called Sum at Completion), the Seller and the Buyer must use all reasonable endeavours to agree the terms of the draft business plan as soon as is reasonably practicable and in any case prior to Completion.

- (d) The last draft business plan for the Life of Mine approved by the Buyer in accordance with clause 6.4(b) or agreed between the Seller and the Buyer in accordance with clause 6.4(c) (if any) is the **Initial Mine Plan and Budget**.
- (e) During the Interim Period, the Buyer and the Seller must meet within 5 Business Days of the end of each month in order to review and update (where necessary) the Initial Mine Plan and Budget. Any variations to an approved Initial Mine Plan and Budget (including any changes to the amount of any proposed Called Sum at Completion), must be approved by the Buyer acting reasonably or otherwise agreed between the Seller and the Buyer in accordance with clause 6.4(c) (as applicable).
- (f) For the avoidance of doubt neither party will be bound to implement, or take any steps towards implementation of, the Initial Mine Plan and Budget, unless and until Completion occurs.

6.5 Registration of this agreement

- (a) The Buyer must within 60 days of the Execution Date make an application as required by section 47 of the Petroleum Pipelines Act for:
 - (i) approval of the dealings evidenced by this agreement; and
 - (ii) the entry of such dealings into the register maintained under the Petroleum Pipelines Act.
- (b) Without limiting the generality of clause 6.5(a), the Buyer and the Seller:
 - (i) must cooperate with each other and supply all necessary and appropriate information for the purpose of enabling registration of the dealings evidenced by this agreement to be obtained in the manner set out in clause 6.5(a);
 - (ii) must supply to each other copies of all applications made and all information supplied for the purpose of obtaining registration of the dealings evidenced by this agreement as required by this clause 6.5; and
 - (iii) inform each other once notice of approval and registration of the dealings is obtained.

6.6 General Conduct – WLOPL

Except as expressly provided in, or permitted or contemplated by this agreement or as consented to by the Buyer in writing, the Seller must not take any action in respect of WLOPL, and must procure that WLOPL does not take any action, prior to Completion except as expressly authorised by a Transaction Document and must not, and must procure that WLOPL does not:

- (a) issue any shares, options or securities that are convertible into shares in WLOPL;
- (b) buy back any of WLOPL's shares;

- (c) trade or undertake any activity or enter into any agreement except as expressly authorised by a Transaction Document; and
- (d) alter the WLOPL Constitution.

6.7 Compliance with clause 6 and Permitted Acts

- (a) In complying with its obligations under this clause 6, the Seller:
 - (i) is not required to do, to omit to do, or allow to be done anything which would breach, or would reasonably be expected to breach:
 - (A) any law or regulation (including any competition or anti-trust laws); or
 - (B) a Third Party Agreement; and
 - (ii) may take such action as is:
 - (A) required to reasonably and prudently respond to an emergency or disaster (including a situation giving rise to a risk of personal injury or damage to property);
 - (B) authorised by a Transaction Document; or
 - (C) agreed in writing between the Seller and the Buyer.
- (b) The Buyer must not unreasonably withhold or delay any consent required under clause 6.3.
- (c) The Seller and the Buyer must each ensure that at all times during the Interim Period it has nominated one or more persons as its Representative (each a **Seller's Nominee** or **Buyer's Nominee**, as is relevant) for the purpose of clause 6.2(d). The Seller's Nominee and Buyer's Nominee shall have authority to act on behalf of the Seller and Buyer (respectively) in relation to any queries, consents or approvals required under clause 6.3.

6.8 Tax Notice

To the extent any part of the Sale Interest constitutes capital works within the meaning of Division 43 of the Tax Act, the Seller must, give the Buyer as and when requested, to its satisfaction, a notice under section 262A(4AJA) of the Tax Act that contains enough information about the Seller's holding of that part of the Sale Interest to enable the Buyer to determine how Division 43 of the Tax Act will apply to the Buyer in respect of that part of the Sale Interest.

7 Completion

7.1 Date and place for Completion

Subject to clause 2, Completion will commence at or around 11am (Perth time) on the Completion Date, and will take place at the office of the Seller in Perth (or at such other time and place as the parties may agree).

7.2 Obligations of the Seller and WLOPL at Completion

- (a) At Completion, the Seller must:

- (i) give the Buyer:
 - (A) Transfer Instruments duly executed by the Seller;
 - (B) such signed original counterparts of each Deed of Assignment and Assumption duly executed by the Seller and the relevant Counterparty as the Seller has been able to obtain in accordance with clause 6.1;
 - (C) letters to the Department from, or on behalf of, the holders of each of the consent caveats in respect of the Tenements that are included as a Permitted Security Interest, stating that they have no objection to the transfer of the relevant Tenements to the Buyer and seeking the consent of the Warden pursuant to section 122D(1) of the Mining Act;
 - (D) a duly executed deed of release in respect of the Sale Interest from any person holding a Security Interest over the Petroleum Pipeline Licences;
 - (E) all forms required to transfer all Approvals which the Buyer will be required to hold from Completion in connection with the Sale Interest, completed and executed by the Seller;
 - (F) the documents and information referred to in clause 7.4;
 - (G) any other documents required to register the transfer or assignment to the Buyer of any component of the Sale Interest, provided that the Seller will not be required to deliver instruments of title where they are already lodged with the relevant Government Agency for the registration of other dealings provided the Seller gives an undertaking to the Buyer to so deliver on receipt of possession or control of such documents;
 - (H) a Tax Invoice in respect of the payment of the Purchase Price;
 - (I) signed original counterparts of each Transaction Document duly executed by the Seller or relevant Seller Group Member that is a party thereto; and
 - (J) copies of the Records; and
 - (K) to the extent required by clause 5.2(b)(ii), a duly executed deed of release of security in respect of the Sale Interest from the Security Trustee; and
 - (ii) if an Initial Mine Plan and Budget has been approved or agreed in accordance with clause 6.4, pay WLOPL (or as WLOPL directs) the amount of the Called Sum proposed at Completion as set out in the Initial Mine Plan and Budget.
- (b) At Completion, the Seller must procure that:
 - (i) a meeting of the directors of WLOPL is held at which the directors resolve:
 - (A) to allot and issue the Subscription Shares to the Buyer in consideration of the Subscription Amount; and

- (B) to approve the appointment of the persons nominated by the Buyer as directors of WLOPL in accordance with the JVA with effect from Completion;
- (ii) WLOPL gives to the Buyer a certified copy of the resolution referred to in clause 7.2(b)(i);
- (iii) upon receipt of the Subscription Amount and the Share Subscription Application, WLOPL:
 - (A) issues and allots the Subscription Shares to the Buyer; and
 - (B) registers the Subscription Shares in WLOPL's register of shareholders, in the name of the Buyer, free from any Security Interest; and
- (iv) WLOPL gives to the Seller and the Buyer signed original counterparts of each Transaction Document duly executed by WLOPL.

7.3 Buyer's obligations at Completion

At Completion, the Buyer must:

- (a) pay to the Seller the Purchase Price:
 - (i) plus the amount of the absolute value of the Completion Adjustment if the Completion Adjustment is negative; or
 - (ii) less the amount of the Completion Adjustment if the Completion Adjustment is positive,
 - in accordance with clause 4.5;
- (b) if an Initial Mine Plan and Budget has been approved or agreed in accordance with clause 6.4, pay WLOPL (or as WLOPL directs) the amount of the Called Sum proposed at Completion as set out in the Initial Mine Plan and Budget;
- (c) give the Seller signed original counterparts of each Transaction Document duly executed by the Buyer;
- (d) to the extent not signed and exchanged between the parties prior to Completion give to the Seller signed original counterparts of each Deed of Assignment and Assumption duly executed by the Buyer;
- (e) provide WLOPL with an application to subscribe for the Subscription Shares in the form set out in Schedule 12 (**Share Subscription Application**); and
- (f) pay the Subscription Amount to WLOPL in accordance with clause 4.5.

7.4 Security Interest

The Seller must in respect of each PPS Security Interest over the Sale Interest (other than a Permitted Security Interest) which is registered on the PPS Register immediately before Completion, give to the Buyer at Completion a deed executed by the person named in the PPS Register as the Secured Party in relation to the PPS Security Interest releasing the PPS Security Interest over the Sale Interest with effect from Completion and:

- (a) except in relation to the Security Trustee Security, an undertaking to procure the removal of the PPS Security Interest over the Sale Interest from the PPS Register as soon as practicable and in any event no later than 5 Business Days after Completion; and
- (b) in relation to the Security Trustee Security any undertaking or document required for the transfer of legal title to the Sale Interest to the Buyer, to the extent that the Buyer is entitled to such legal title.

7.5 Interdependence

- (a) The obligations of the Buyer and the Seller under this clause 7 are interdependent.
- (b) Unless otherwise stated, all actions required to be performed by a party at Completion are taken to have occurred simultaneously at Completion.
- (c) Completion will not occur unless all of the obligations of the Buyer and the Seller to be performed at Completion under this clause 7 are complied with and fully effective.

7.6 Effect of Completion – title and risk

- (a) Risk in and possession of the Sale Interest passes to the Buyer upon Completion and, subject to the registration of the Transfer Instruments and subject to clause 7.7 and clause 7.8, title to the Sale Interest passes to the Buyer upon Completion.
- (b) For the avoidance of doubt, beneficial title to a 50% interest in the Tenements and the Petroleum Pipeline Licences passes to the Buyer upon Completion regardless of whether the registration of the relevant Transfer Instruments has occurred and the Seller holds the legal title to a 50% interest in the Tenements and the Petroleum Pipeline Licences on trust for the Buyer until the registration of the relevant Transfer Instruments has occurred.

7.7 Tenement Applications

- (a) Where a Tenement Application has not been granted prior to Completion, the Seller will account to the Buyer, to the extent of the Sale Interest, for all amounts or other benefits (of whatsoever nature) it receives, or is otherwise entitled to receive, in respect of the relevant Tenement Application (**Granted Tenement**) the Seller and Buyer shall do all things necessary to transfer the relevant Sale Interest portion in the Granted Tenement to the Buyer and have that transfer registered under the Mining Act.
- (b) The Buyer acknowledges and agrees that the Seller makes no warranty or representation, and gives no assurance, in respect of the likelihood of grant, or the terms of grant, of any exploration or mining tenement pursuant to any Tenement Application.

7.8 Assigned Tenements

Where an Assigned Tenement has not been transferred to the Seller prior to Completion, the Seller will account to the Buyer, to the extent of the Sale Interest, for all amounts or other benefits (of whatsoever nature) it receives, or is otherwise entitled to receive, in respect of the Assigned Tenements and upon the transfer of the Assigned Tenement to the Seller, the Seller and the Buyer shall do all things necessary to transfer the relevant Sale Interest in the portion of the Assigned Tenement to the Buyer and have that transfer registered under the Mining Act.

8 Completion Adjustment

8.1 Completion Adjustment

The Purchase Price will be adjusted by the Completion Adjustment by way of a decrease to the Purchase Price (if the amount of the Completion Adjustment is positive) or by way of an increase to the Purchase Price (if the amount of the Completion Adjustment is negative).

8.2 Completion Statement

- (a) Within 20 Business Days after the Completion Date, the Seller must provide the Buyer with a written statement containing the Completion Accounts and giving the Seller's calculation of the final amount of the Completion Adjustment (**Completion Statement**).
- (b) The Completion Accounts must be prepared, and the Completion Adjustment calculated, in accordance with Schedule 13.
- (c) The Seller must provide (and the Seller and the Buyer must procure that WLOPL provide) the Buyer with such information and documents as are reasonably requested by the Buyer in relation to the Completion Statement.
- (d) If the Buyer does not issue any notice (**Completion Adjustment Dispute Notice**) to the Seller that it disagrees with the amount of the Completion Adjustment set out in the Completion Statement within 30 Business Day after receipt of the Completion Statement, then the Completion Statement shall become final and binding.
- (e) If the Buyer issues a Completion Adjustment Dispute Notice, the Seller and the Buyer must use all reasonable endeavours to seek to agree on the amount of the Completion Adjustment.

8.3 Dispute

- (a) If the Seller and Buyer fail to agree the amount of the Completion Adjustment within 10 Business Days of the Completion Adjustment Dispute Notice, the parties' Representatives must meet at least once and confer in good faith in attempt to agree the amount of the Completion Adjustment.
- (b) If the parties' Representatives do not resolve the Dispute in respect of the Completion Adjustment Dispute Notice, or otherwise fail to meet, then each party shall within 20 Business Days after the Completion Adjustment Dispute Notice refer the Dispute to the Chief Executive Officers of their respective Ultimate Holding Companies to settle the Dispute. The Chief Executive Officers must meet within 30 Business Days of the Completion Adjustment Dispute Notice (or such longer period agreed in writing) and confer in good faith until such time that they resolve the Dispute.
- (c) If the Chief Executive Officers have met but not resolved the Dispute, or otherwise fail to meet, within 40 Business Days from the date of the Completion Adjustment Dispute Notice (or such longer period agreed in writing) the Completion Statement must promptly be submitted for determination to the Independent Accountant to determine the matter or matters in dispute in accordance with the following provisions of this clause 8.3.

- (d) The Independent Accountant must be agreed by the Seller and the Buyer. If the Seller and the Buyer cannot agree the Independent Accountant within 45 Business Days of a Completion Adjustment Dispute Notice, then either the Seller or the Buyer may request that the Chair of the Resolution Institute (Chair) nominate the Independent Accountant. If it is not possible for the parties to request that the Chair nominate the Independent Accountant or the Chair otherwise fails to nominate the Independent Accountant, either the Buyer or the Seller may request that the President of the Western Australia Law Society (President) nominate the Independent Accountant (in which case all references to 'Chair' in clause 8.3(e) and clause 8.3(i) are to be read as references to 'President').
- (e) If the Seller or the Buyer requests that the Chair nominate the Independent Accountant, the parties must comply with all requirements of the Chair for the provision of that nomination including to provide the Chair with:
 - (i) a copy of relevant provisions of this agreement;
 - (ii) an executed copy of any release or similar document required by the Chair;
 - (iii) a description of the dispute or issue to be resolved by the Independent Accountant, being the dispute in relation to the Completion Statement; and
 - (iv) the approximate value of, and the technical area involved in, the dispute.

If the Chair nominates a list of persons to be the Independent Accountant rather than one particular person, the first person named on that list will be the Independent Accountant.

- (f) The disputed matters must be referred to the Independent Accountant by written submission which must include the Completion Statement, the Completion Adjustment Dispute Notice, any response to the Completion Adjustment Dispute Notice and an extract of the relevant provisions of this agreement. The Independent Accountant must also be instructed to finish its determination no later than 20 Business Days after its appointment (or another period agreed by the Seller and the Buyer).
- (g) The Seller and the Buyer must promptly supply the Independent Accountant with any information, assistance and cooperation requested in writing by the Independent Accountant in connection with its determination. All correspondence from the Independent Accountant to a party must be copied to the other parties. The Independent Accountant must promptly provide the parties with any correspondence received from other parties, provided that if the Independent Accountant has requested submissions or information from the Seller and the Buyer on the same topic, it must only provide such correspondence to the Seller and the Buyer after it has received a substantive response from both the Seller and the Buyer.
- (h) The Independent Accountant must act as an expert and not as an arbitrator and its written determination will be final and binding on the parties in the absence of manifest error and the Completion Statement will be deemed to be amended accordingly and will be taken to comprise the final Completion Statement and will be final and binding on the parties.
- (i) The costs of the:
 - (i) Chair (if requested) in providing his or her nomination of the Independent Accountant; and

- (ii) Independent Accountant (if instructed),

will be borne by the Seller as to one half, and the Buyer as to one half unless, in respect of the costs of the Independent Accountant only, the Independent Accountant decides otherwise having regard to the relative position of the parties on the disputed matters.

8.4 Payment of Completion Adjustment

- (a) If the amount of the Completion Adjustment is:
 - (i) positive, the Seller must pay the amount of the Completion Adjustment to the Buyer; or
 - (ii) negative, the Buyer must pay the amount of the Completion Adjustment to the Seller.
- (b) Payment of the Completion Adjustment must be made within 10 Business Days after the Completion Adjustment is final and binding or otherwise following agreement or determination of the Completion Adjustment under clause 8.3.
- (c) Where some, but not all items of the Completion Statement are in dispute, the relevant party must make payment (within 5 Business Days of the Buyer giving a Dispute Notice) of an interim Completion Adjustment calculated based on the value of the Completion Statement, excluding all items that are not in dispute. Once any dispute the subject of a Dispute Notice has been resolved, the parties must, within 5 Business Days of such resolution, make such payment as between them as are necessary (taking into account any interim Completion Adjustments paid).

9 Conduct after Completion

9.1 Duty

- (a) Subject to clause 9.1(b), the Buyer must lodge this agreement, the Transfer Instruments and any other instrument contemplated by this agreement for assessment of Duty (and must pay the Duty assessed) within the time required under the relevant legislation.
- (b) The Seller:
 - (i) must pay to the Buyer, prior to the due date for payment, the amount of any Duty payable in respect of this agreement, the Transfer Instruments and any other instrument contemplated by this agreement which is assessed by reference to, or is otherwise attributable to, the value of rights that the Seller or any other person other than the Buyer has to mine or otherwise benefit from Iron Ore and Tantalum in the Tenements, including any Duty on any transfer of the Iron Ore and Tantalum Rights contemplated by this agreement; and
 - (ii) indemnifies the Buyer from and against any Liabilities suffered or incurred by the Buyer arising from, or in connection with such Duty.
- (c) To the extent that the Buyer is not entitled to a tax deduction in respect of any Duty or Liability, the amount payable under this indemnity must be increased by an amount calculated as:

$$\frac{1}{(1 - \text{Tax Rate})}$$

where **Tax Rate** means the applicable Australian income tax rate for the Buyer, other than to the extent that such increase has already been taken into account in calculating the amount of the Liability for which the Buyer has been indemnified.

- (d) The Buyer will lodge the stamped Transfer Instruments and any other instrument contemplated by this agreement at the Department for registration against the Tenements and the Petroleum Pipeline Licences (as applicable) as soon as reasonably practicable after payment of the Duty assessment.
- (e) The Buyer will pay the costs of registering the Transfer Instruments at the Department.

9.2 Transfer of Petroleum Pipeline Licences

- (a) The Buyer must within 5 Business Days of the Completion Date submit the Transfer Instruments in relation to the Petroleum Pipeline Licences to the Department to be approved and registered as required by section 44 of the Petroleum Pipelines Act.
- (b) The Buyer and the Seller must co-operate with each other and do all things reasonably necessary to obtain approval and registration of the Transfer Instruments in relation to the Petroleum Pipeline Licences as soon as practicable after the Completion Date.

9.3 Registration

- (a) The Buyer must notify the Seller as soon as reasonably practicable, and in any case within 5 Business Days, after the Buyer becomes aware that registration of the Transfer Instruments has occurred.
- (b) The Seller will provide all assistance reasonably required (including providing its consent) to enable the Buyer to register a caveat over the Assigned Tenements in respect of the Sale Interest.

9.4 Dealings

- (a) The Buyer must within 60 days of the Execution Date make an application as required by section 47 of the Petroleum Pipelines Act for:
 - (i) approval of the dealings evidenced by the JVA; and
 - (ii) the entry of such dealings into the register maintained under the Petroleum Pipelines Act.
- (b) Without limiting the generality of clause 9.4, the Buyer and the Seller:
 - (i) must cooperate with each other and supply all necessary and appropriate information for the purpose of enabling registration of the dealings evidenced by the JVA to be obtained in the manner set out in clause 9.4;
 - (ii) must supply to each other copies of all applications made and all information supplied for the purpose of obtaining registration of the dealings evidenced by the JVA as required by clause 9.4; and

- (iii) inform each other once notice of approval and registration of the dealings is obtained.

9.5 Non-Transferring Approvals

After Completion, the Seller will hold the Non-Transferring Approvals for the Seller and the Buyer and will authorise WLOPL to act under the Non-Transferring Approvals.

10 Third Party Agreements

10.1 Assignment and Novation of Third Party Agreements

- (a) Subject to clause 2, in respect of each Third Party Agreement, the Seller and the Buyer must, to the extent required by the terms of a Third Party Agreement, use all reasonable endeavours to:
 - (i) procure the novation or assignment of the rights and liabilities of the Seller, to the extent of the Sale Interest, under the Third Party Agreement to the Buyer; and
 - (ii) procure that the novation or assignment takes effect on and from Completion on a several and not joint and several basis.
- (b) The obligation in this clause 10.1 to use all reasonable endeavours does not require any party to make any payment to procure the novation or assignment other than its out of pocket expenses directly referable to the novation or assignment.
- (c) Where the novation or assignment of a Third Party Agreement required under clause 10.1(a) has not occurred by Completion, the parties must each continue to use all reasonable endeavours to procure the novation or assignment of the Third Party Agreement in accordance with clause 10.1(a) as soon as reasonably practicable after Completion.
- (d) The Seller indemnifies the Buyer from and against any Liabilities suffered or incurred by the Buyer arising from, or in connection with a Deed of Assignment and Assumption in respect of any Key Third Party Agreement or any Title Agreement not having been executed at or before Completion, except to the extent arising from a breach of clause 7.3(d) by the Buyer or if the Buyer has waived the Condition in clause 2.1(c) in accordance with clause 2.4(b).

10.2 Obligations pending or if no novation

If any of the Third Party Agreements are not novated or assigned by Completion under clause 10.1 then, from Completion until novation or assignment occurs:

- (a) if the Seller is not prohibited from delegating or subcontracting performance of obligations under the Third Party Agreement, the Buyer must perform on behalf of the Seller all obligations of the Seller, to the extent of the Sale Interest, under the Third Party Agreement in respect of the period following Completion;
- (b) if the Seller is prohibited under the Third Party Agreement from delegating or subcontracting performance of obligations under the Third Party Agreement, then:
 - (i) the Seller must perform or discharge those obligations in accordance with the terms of the Third Party Agreement;

- (ii) the Buyer must, to the extent of the Sale Interest, pay to the Seller on demand the Seller's direct costs and expenses of performing or discharging those obligations in accordance with the terms of the Third Party Agreement; and
- (iii) the Buyer must provide to the Seller all reasonable assistance as the Seller may reasonably request to enable the Seller to comply with its obligations under clause 10.2(b)(i);
- (c) the Seller must account to the Buyer for any amounts paid by a Counterparty to the Seller to the extent they relate to the Sale Interest and for any other benefits received by the Seller after Completion in respect of the Third Party Agreement to the extent they relate to the Sale Interest; and
- (d) the Seller must perform and pay all of the Liabilities of the Seller under the Third Party Agreement in respect of the period following Completion that do not relate to the Sale Interest.

10.3 Third Party Agreements

Upon Completion and subject to clause 10.1(d) and 11.3, save in respect of the obligations to be performed by the Seller in relation to the Iron Ore Rights, the Buyer accepts and assumes responsibility for 50% of all Liabilities of the Seller incurred or arising on and from Completion (including, for the avoidance of doubt, the Liability for payments due by the Seller on and from Completion under the Equipment Leases) in relation to any Third Party Agreements which are not novated or assigned by Completion under clause 10.1 (**Third Party Agreement Liabilities**).

10.4 Indemnity by Buyer in respect of Third Party Agreement Liabilities

- (a) From Completion and subject to clause 10.1(d) and 11.3, the Buyer indemnifies the Seller, its Related Bodies Corporate and their Representatives from and against all Liabilities suffered or incurred by the Seller arising from or in connection with any Third Party Agreement Liability.
- (b) If the Seller or any person on behalf of the Seller pays, performs or discharges a Third Party Agreement Liability (as applicable), the Buyer must reimburse or compensate the Seller for the Third Party Agreement Liability within 5 Business Days after the Buyer receives evidence of that payment, performance or discharge.

10.5 No liability

Save in relation to any Title Agreement, without limiting the Seller's obligations under clauses 10.1 and 10.2, the Buyer:

- (a) accepts that it is not entitled to withhold or delay:
 - (i) Completion; or
 - (ii) the payment of the whole or part of the Purchase Price,
 - if the novation or assignment of a Third Party Agreement in accordance with clause 10.1 does not occur by Completion (or at all); and
- (b) acknowledges and agrees that, subject to compliance by the Seller with its obligations under this agreement (including this clause 10), it has no rights whatsoever against the Seller in relation to, or in connection with, any requirement under the terms of any Third Party Agreement to obtain any consent to assignment

or novation, or the consequences arising from any such consent not having been obtained by Completion or at all.

10.6 Indemnity from Buyer and Seller

- (a) The Buyer indemnifies the Seller from and against any Liabilities suffered or incurred by the Seller arising from, or in connection with, a breach of this clause 10 by the Buyer.
- (b) The Seller indemnifies the Buyer from and against any Liabilities suffered or incurred by the Buyer arising from, or in connection with, a breach of this clause 10 by the Seller.

10.7 Implementation of documents

- (a) The Buyer and the Seller must sign all documents which are required in order to effect a novation or assignment of the Sale Interest under the Third Party Agreement including without limitation all such documents as required to be signed to effect the novation or assignment in accordance with the terms of the relevant Third Party Agreement.
- (b) The Buyer and Seller acknowledge that the process of novation of the Third Party Agreements under clause 10.1 may reflect the parties' preference that the Seller hold a Third Party Agreement as agent for and on behalf the Buyer and the Seller in accordance with their percentage interest on Completion on a several and not joint and several basis.

11 Liabilities

11.1 Acknowledgment

The Seller and the Buyer acknowledge that, subject to and as set out in this agreement, Liabilities incurred in relation to the Project on and from Completion will be addressed under the JVA.

11.2 Benefit of pre-existing warranties, representations and indemnities

- (a) The Seller must pursue and seek to enforce its rights against GAM, GAMG, GAMW or Atlas (as applicable) under the GAM Sale Agreement or Atlas Exit Agreement in good faith and acting reasonably (and taking account of the Buyer's interest under this clause 11.2), but only where such rights relate to or affect the value of the Project or the Sale Interest.
- (b) If the Seller receives any payment or other benefit under or in relation to the GAM Sale Agreement or Atlas Exit Agreement in relation to the Sale Interest after the Execution Date, the Seller must within 5 Business Days of receipt (or, if later, at Completion) pay 50% of that amount (less 50% of the costs incurred in securing payment thereof including reasonable legal costs) to the Buyer.
- (c) The Seller must not compromise or otherwise deal with any rights under the GAM Sale Agreement or Atlas Exit Agreement without the Buyer's prior written consent (such consent not to be unreasonably withheld or delayed).

11.3 Retained Liabilities

The Seller retains, accepts and assumes responsibility for and must assume, pay, perform and discharge any and all Liability in relation to the Project arising from or in connection with:

- (a) any conduct by the Seller or any Related Body Corporate or Representative of the Seller:
 - (i) in breach of any law, Approval or condition of a Tenement or Petroleum Pipeline Licence in the MRL Ownership Period;
 - (ii) in breach of a Third Party Agreement or other agreement with a Third Party in relation to the Project or Project Assets in the MRL Ownership Period; and
- (b) any Claim by a Third Party relating to the Project or Project Assets to the extent related to the MRL Ownership Period,

(Retained Liability).

11.4 Indemnity by Seller in respect of Retained Liability

- (a) From Completion, the Seller indemnifies the Buyer, its Related Bodies Corporate and their Representatives from and against all Liabilities to the extent suffered or incurred by the Buyer, its Related Bodies Corporate and their Representatives:
 - (i) arising from or in connection with any Retained Liability; or
 - (ii) arising from or in connection with the Seller failing to comply with clause 11.3.
- (b) Without limitation, if the Buyer or any person on behalf of the Buyer pays, performs or discharges a Retained Liability, the Seller must reimburse or compensate the Buyer for the Retained Liability within 5 Business Days after the Seller receives evidence of that payment, performance or discharge.

12 Transferring Employees

12.1 Transferring Employees

- (a) The Seller and the Buyer must use all reasonable endeavours to agree on the list of Employees who will be offered employment by WLOPL and the terms of such employment.
- (b) The Seller must procure that no Employee is offered employment by WLOPL otherwise than in accordance with the agreement of the Buyer in accordance with clause 12.1(a), acting reasonably.

12.2 Seller's payment obligations

On the Completion Date, the Seller must, in respect of each Transferring Employee, pay or procure payment:

- (a) to the Transferring Employee, all amounts to which that Transferring Employee is or may become entitled by law, statute or under any industrial instrument, award, agreement or arrangement, on termination of employment in connection with

wages, salary, leave entitlements, notice, redundancy, commission, bonuses or allowances accruing or arising in respect of the period up to and including the Completion Date; and

- (b) to the Transferring Employee's nominated superannuation fund, all employer Superannuation Commitments due to be made by the Seller in respect of the period of employment up to and including the Completion Date in respect of that Transferring Employee.

12.3 Seller's indemnity

Subject to Completion occurring, the Seller must indemnify and agree to hold harmless the Buyer and WLOPL against all Liabilities suffered, paid or incurred by the Buyer or WLOPL from or in relation to:

- (a) any entitlement owed or accruing to a Transferring Employee arising from the Transferring Employee's service with the Seller (which has not been paid in accordance with clause 12.2(a)), including any transferring or contingent entitlements or benefit arising in relation to a Transferring Employee under law, contract or industrial agreement of award;
- (b) any Claim by or in relation to any Transferring Employee or class of Transferring Employee for any wages, salary, leave, notice, redundancy, commission, bonuses, Superannuation Commitments and other benefits or entitlements accruing to the Transferring Employee in respect of the period before, on or after the Completion Date; and
- (c) any Claim by or in relation to any Transferring Employee in relation to their employment status, rights or entitlements arising from any service provided to the Seller prior to the Completion; and
- (d) any breach by the Seller or its Related Bodies Corporate or the WLOPL of statutory, contractual or other legal obligations to or in relation to any Transferring Employee before or on Completion or relating to Completion.

13 Insurance

13.1 Insurance policies to remain in force

- (a) The Seller must or must procure that its Related Bodies Corporate, maintain in force (or procure and maintain as appropriate) the Insurances (in all material respects on the same terms and similar level of cover prevailing at the Execution Date) until the Completion Date, save that the Seller or its Related Bodies Corporate may amend the Insurances maintained for the benefit of the Seller if such amended policies are substantially the same as those generally applicable to the Seller Group as a whole (provided reasonable prior notice of any such change is given to the Buyer); and
- (b) The Seller must procure that, within 7 Business Days of the Execution Date, an endorsement is issued for any Insurances which provide coverage in respect of property damage to or loss of use of any asset forming part of the Sale Interest noting the interest of the Buyer (subject to Completion).

13.2 Making of claims

- (a) The Seller must use all reasonable endeavours to make (or procure that its Related Bodies Corporate make) all claims under the Insurances in respect of losses or liabilities covered by such policies arising in the Interim Period, at the cost of the Seller, promptly and in accordance with the requirements of the relevant policy.
- (b) To the extent that the Seller (or its Related Bodies Corporate) receives the proceeds of any claim under the Insurances described in clause 13.2(a), the Seller must use all reasonable endeavours to apply (or procure that the relevant Related Body Corporate applies) the proceeds to, as appropriate:
 - (i) repair the damage or otherwise replace or reinstate the property;
 - (ii) extinguish or reduce the relevant first party loss; or
 - (iii) discharge the relevant liability,

and to the extent not so applied, the proceeds, less the Seller's reasonable costs in pursuing the relevant claim, will be for the benefit of the Buyer and the Seller together and will, if received by the Seller (or its Related Bodies Corporate), be paid to the Buyer in proportion to the Sale Interest.

13.3 Provision of information relevant to future insurances

In the Interim Period, the Seller must, within a reasonable time of a request by the Buyer, provide (or procure the provision of) the following to enable the Buyer to arrange insurance coverage from the Completion Date for the Sale Interest:

- (a) loss histories in respect of the Sale Interest;
- (b) insurance notifications and claims histories (including, for the avoidance of doubt, current claims) for the Seller in connection with Insurances which provide cover for liabilities; and
- (c) declarations of written complaints or written claims by third parties in respect of the Seller or the Sale Interest.

14 Seller Group Warranties and limitations of Claims

14.1 Definition

For the purposes of this clause 14 a reference to “**Claim**” means a Claim for breach of a Seller Group Warranty.

14.2 Giving of Seller Group Warranties

- (a) The Seller:
 - (i) warrants to the Buyer that each of the Seller Group Warranties:
 - (A) is true, accurate and complete and not misleading as at the Execution Date; and
 - (B) will be true, accurate and complete and not misleading as at the Completion Date; and

- (ii) acknowledges that the Buyer has entered into this agreement in reliance on the Seller Group Warranties.
- (b) Each Seller Group Warranty must be construed independently and is not limited by reference to another Seller Group Warranty.
- (c) The Seller Group Warranties survive Completion of this agreement.

14.3 Matters disclosed

- (a) The Seller Group Warranties are given subject to and are qualified by, and the Liability of the Seller in respect of any breach of any Seller Group Warranty or for any Claim or Loss by the Buyer in respect of a Seller Group Warranty, will be reduced or extinguished (as the case may be) to the extent that the facts, matter or circumstance giving rise to the breach:
 - (i) arise in connection with the transactions contemplated or authorised by this agreement or the Transaction Documents;
 - (ii) have been fairly disclosed to the Buyer in the information contained in the Disclosure Material;
 - (iii) are within the actual knowledge of the Buyer Individuals;
 - (iv) would have been disclosed to the Buyer had the Buyer conducted searches in respect of GAM, the Seller, the Seller Guarantor, PMI or CSI (**Identified Group**) of records open to public inspection maintained by:
 - (A) ASIC and which are available as a current company extract, or as part of the insolvency notices publication website only in respect of any member of the Identified Group;
 - (B) the Australian Financial Security Authority on the PPS Register only in respect of any member of the Identified Group;
 - (C) IP Australia only in respect of trade marks, patents and designs in respect of any member of the Identified Group;
 - (D) the Department on its "Mineral Titles Online" or "Tengraph" system database only in respect of the Tenements; and
 - (E) the High Court of Australia, the Federal Court of Australia, the Supreme Court of Western Australia and the District Court of Western Australia only in respect of any member of the Identified Group,

in each case, at the Cut-off Time.

- (b) To the extent any of the Seller Group Warranties are given in relation to facts, matters or circumstances occurring prior to the commencement of the MRL Ownership Period, such Seller Group Warranties are given subject to and are qualified by the Seller's awareness of the relevant matter as at the Execution Date (on the basis that the Seller's awareness of the relevant matter is deemed to include such awareness as the Seller would have had if the Seller had made reasonable enquiries in relation to the matter for a person in the position of the Seller as the owner or Seller of the Sale Interest).

14.4 No liability

The Seller is not liable to the Buyer for any Claim or Loss under this agreement:

- (a) to the extent that the Claim or Loss would not have arisen but for anything done or not done after Completion by the Buyer or a Related Body Corporate of the Buyer or any person acting, or purporting to act, on behalf of the Buyer or a Related Body Corporate of the Buyer including any failure by the Buyer or a Related Body Corporate of the Buyer after Completion to seek to mitigate its Loss, except to the extent the things done or not done were required by law or a contractual obligation to a third party arising prior to Completion to be done or not done, as the case may be;
- (b) to the extent that the Claim or the Loss would not have arisen but for:
 - (i) the enactment or amendment of any legislation or regulations;
 - (ii) a change in the judicial or administrative interpretation of the law; or
 - (iii) a change in the practice or policy of any Government Agency,
after the Execution Date, including legislation, regulations, amendments, interpretation, practice or policy that has a retrospective effect;
- (c) to the extent that the Buyer recovers any amount in respect of the Claim or Loss or from the circumstances out of which the Claim or Loss arises (net of costs of the recovery) from any third party (including under any insurance policy);
- (d) to the extent that the Claim or Loss would not have arisen but for an act, omission, transaction or arrangement carried out by the Seller with the express written approval of the Buyer before Completion; or
- (e) except in relation to any Indemnity, if the Liability for that Claim or Loss is a contingent liability, unless and until the Liability is an actual liability and is due and payable.

14.5 Consequential Loss

Notwithstanding any other provision of this agreement and to the maximum extent permitted by law, neither the Seller or the Buyer is liable for or with respect to any Consequential Loss arising in connection with this agreement, except:

- (a) in the case of fraud of the Seller or the Buyer (as applicable); or
- (b) if a Defaulting Party does not Complete within the period specified in clause 2.6(b) and the Non-Defaulting Party has elected to terminate this agreement in accordance with clause 2.6(c).

14.6 Tax or other benefit

In calculating the Loss of the Buyer in relation to a Claim under, in relation to or arising out of this agreement, there must be taken into account:

- (a) any benefit received by the Buyer or any of its Related Bodies Corporate (including any Tax Relief obtained by the Buyer or any of its Related Bodies Corporate and any amount by which any Tax or Duty for which the Buyer or any of its Related

Bodies Corporate is liable to be assessed or accountable is reduced or extinguished); and

- (b) any Tax that would be payable in relation to the payment to be made by the Seller to the Buyer in relation to the Loss under this agreement,

arising as a result of the subject matter of that Claim.

14.7 Disclaimer

The Buyer acknowledges that, in considering whether or not to make an offer for the Sale Interest and Subscription Shares and in proceeding to engage in due diligence enquiries, it did so on the basis that all the information it received from or on behalf of the Seller concerning the Sale Interest and Subscription Shares (including without limitation the Disclosure Material) expressly excluded any reliance on information given to the Buyer or statements (including resources and reserve estimates) or representations of the Seller (whether verbal or written), other than the Seller Group Warranties. The Buyer acknowledges and represents and warrants to the Seller that:

- (a) in conducting its due diligence and in entering into this agreement and proceeding to Completion, it did not rely and is not relying on any statement (including resources and reserve estimates), representation, warranty, forecast, opinion or statement of belief made by or on behalf of the Seller or its Representatives or on any other conduct engaged in by the Seller or its Representatives, other than the Seller Group Warranties;
- (b) it has read and understood the information fairly disclosed in the Information Memorandum and has had the opportunity to review the materials in the Data Room and otherwise conduct its own due diligence in relation to the Sale Interest and Subscription Shares (including to ask questions in a question and answer facility);
- (c) it understands the risks and uncertainties of the mining industry and the general economic, regulatory and other risks that impact on or could impact on the Sale Interest, and its results, operations, financial position and prospects;
- (d) any estimates (including resources and reserve estimates), budgets or forecasts made, or opinion expressed, in relation to the prospects of the Sale Interest (whether written or oral) were made or expressed to and accepted by the Buyer, and this agreement is entered into, on the basis and condition that, except as provided for in the Seller Group Warranties:
 - (i) neither the Seller nor its Representatives have made nor makes any representation or warranty as to the accuracy or completeness of such estimate (including resources and reserve estimates), budget, forecast or expression of opinion or that any such estimate (including resources and reserve estimates), budget, forecast or expression of opinion will be achieved; and
 - (ii) neither the Seller nor its Representatives will be liable to the Buyer or its Representatives in the event that, for whatever reason, such estimate (including resources and reserve estimates), budget, forecast or expression of opinion is or becomes inaccurate, incomplete or misleading in any respect; and
- (e) neither the Seller nor its Officers, agents, employees or advisers has made or makes any representation or warranty as to the accuracy or completeness of the disclosures regarding the Sale Interest and Subscription Shares (including, the information, forecasts and statements of intent contained in the Disclosure Material

or made in management presentations), other than as contained in the Seller Group Warranties

14.8 Exclusion of warranties and statutory actions

The Buyer agrees that:

- (a) any Claim by the Buyer must be based solely on and limited to express provisions of this agreement and, to the maximum extent permitted by law, all terms and conditions that may be implied by law or under statute in any jurisdiction and which are not expressly set out in this agreement are excluded (and to the extent that any terms and conditions of this type cannot be excluded then the Buyer irrevocably waives all rights and remedies that it may have in relation to, and releases the Seller from any terms and conditions of this type); and
- (b) to the maximum extent permitted by law, the Buyer will not make and waives any right it may have to make any Claim against the Seller under the Australian Consumer Law (including sections 4, 18 and 29 of the Australian Consumer Law), the Corporations Act (including section 1041H of that Act), the *Australian Securities and Investments Commission Act 2001* (Cth) or the corresponding provision of any other federal, state or territory legislation, or a similar provision under any applicable law, for any act or omission concerning the transactions contemplated by this agreement or for any statement or representation concerning any of those things.

14.9 Notice and time limits on Claims

- (a) The Buyer must notify the Seller in writing of any Claim it has against the Seller under this agreement (including any breach of any Seller Group Warranty), setting out reasonable details of the facts, matters or circumstances giving rise to the Claim and the nature of the Claim as soon as practicable after it becomes aware of it.
- (b) The Buyer may not make, and the Seller is not liable for, any Claim for a breach of a Seller Group Warranty unless full details of the Claim have been notified to the Seller within 15 months after the Completion Date. For the purposes of this clause, the Buyer may give details of a Claim even if that Claim is contingent, or if the Buyer is temporarily prevented from making a Claim under another clause of this agreement.
- (c) A Claim will not be enforceable against the Seller and is to be taken for all purposes to have been withdrawn unless legal proceedings in connection with the Claim are commenced within 12 months after written notice of the Claim is served on the Seller in accordance with clause 14.9(a).

14.10 Minimum amount of Claims

The Seller is not liable for any Claim unless:

- (a) the amount finally agreed or determined to be payable in respect of that Claim or a series of related Claims exceeds US\$1,000,000 (each such Claim, a **Permitted Claim**); and
- (b) the aggregate amount of all such Permitted Claims against the Seller exceeds US \$5,000,000,

in which event the Seller is liable for the full amount of the Permitted Claims, and not just the amount in excess of US\$1,000,000 or US\$5,000,000 (as applicable).

14.11 Maximum liability

- (a) Subject to clause 14.11(b) the Seller's total Liability for Loss (in aggregate) arising in respect of all Claims under or in connection with this agreement is limited in aggregate to the amount of 50% of the sum of the Purchase Price and the Subscription Amount.
- (b) The Seller's total Liability for Loss or damage arising in respect of a breach of a Seller Group Warranty in items 1, 7(a), 7(b), 7(c), 8(a), 8(b), 8(c) and 8(d) of Schedule 2 is limited in aggregate to the sum of the Purchase Price and the Subscription Amount.

14.12 No double recovery

The Buyer is not entitled to recover Loss or obtain payment, reimbursement, restitution or Indemnity more than once in respect of any one Liability or Loss.

14.13 Disclosure regarding Third Party Claims

- (a) The Buyer must notify the Seller if:
 - (i) a Third Party Claim is made against the Buyer; or
 - (ii) the Buyer becomes aware of any events, matters or circumstances (including any potential threatened Third Party Claim) against the Buyer that may give rise to a Claim against the Seller.
- (b) The Buyer must include in a notice under clause 14.13(a) all relevant details (including the amount) then known to the Buyer of:
 - (i) the Third Party Claim; and
 - (ii) the events, matters or circumstances giving rise or which may give rise to the Claim (as appropriate).
- (c) The Buyer must also include in a notice given under clause 14.13(a) an extract of:
 - (i) any part of a Demand that identifies the Liability or amount to which the Claim relates or other evidence of the amount of the Demand to which the Claim relates; and
 - (ii) if available or relevant, any corresponding part of any adjustment sheet or other explanatory material issued by a Government Agency that specifies the basis for the Demand to which the Claim relates or other evidence of that basis.
- (d) The Buyer must provide a copy of any document referred to in clause 14.13(c) to the Seller as soon as practicable and, in any event, within 10 Business Days after the receipt of that document by the Buyer.
- (e) The Buyer must also, on an ongoing basis, keep the Seller informed of all developments in relation to the Claim notified under clause 14.13(a).

14.14 Conduct in respect of Third Party Claims

- (a) Subject to the Seller first accepting liability for and agreeing to indemnify the Buyer without limit in relation to a Third Party Claim, the Buyer will not:
 - (i) accept, compromise or pay;
 - (ii) agree to arbitrate, compromise or settle; or
 - (iii) make any admission or take any action in relation to,
 - a Third Party Claim without the Seller's prior written approval (which must not be unreasonably withheld or delayed).
- (b) Following receipt of a notice in respect of a Claim which arises from or involves a Third Party Claim, the Seller may, by written notice to the Buyer, assume the conduct of the defence of the Third Party Claim.
- (c) If the Seller advises the Buyer that the Seller wishes to assume the conduct of the defence of the Third Party Claim:
 - (i) provided that the Seller provides the Buyer with an Indemnity against all Liabilities which the Buyer shall incur or which may result from the Third Party Claim, the Buyer must take all action reasonably requested by the Seller to avoid, contest, compromise or defend the Third Party Claim; and
 - (ii) in conducting any proceedings or actions in respect of that Third Party Claim, the Seller must:
 - (A) act in good faith;
 - (B) liaise with the Buyer in relation to the defence of the Third Party Claim; and
 - (C) provide the Buyer with reasonable access to a copy of any notice, correspondence or other document relating to the Third Party Claim.
 - (d) If the Seller advises the Buyer that the Seller does not wish to assume the conduct of the defence of the Third Party Claim, then the Buyer must:
 - (i) act in good faith;
 - (ii) liaise with the Seller in relation to the defence of the Third Party Claim; and
 - (iii) provide the Seller with reasonable access to a copy of any notice, correspondence or other document relating to the Third Party Claim.

14.15 Recovery

Where the Buyer is or may be entitled to recover from some other person any sum in respect of any matter or event which could give rise to a Claim, the Buyer must co-operate with the Seller and:

- (a) use all reasonable endeavours to recover that sum before making the Claim;
- (b) keep the Seller at all times fully and promptly informed of the conduct of such recovery; and

- (c) reduce the amount of the Claim to the extent that sums are recovered.

If the recovery is delayed until after the Claim has been paid by the Seller to the Buyer, the recovered sum will be paid to the Seller to the extent that the Claim would have been reduced under this clause 14.15 had the recovery occurred prior to the payment of the Claim by the Seller and less the costs (including reasonable legal costs and disbursements of the Buyer's lawyers) incurred by the Buyer in relation to the Claim.

14.16 Insured Claim or loss

The Seller will not be liable for any claim under or in relation to or arising out of this agreement including a breach of any Seller Group Warranty to the extent the Buyer has the right to claim under any insurance policy held by the Buyer to cover that claim, unless and until that claim has been denied in whole or partly by the relevant insurer, or if the claim is allowed by the relevant insurer, to the extent the claim is paid by the insurer.

14.17 Duty to mitigate

Each party is under a duty to act reasonably to mitigate its Loss in relation to any Claim and the Seller's Liability in respect of any breach of any Seller Group Warranty or in respect of an Indemnity will be reduced or extinguished (as the case may be) to the extent that the Buyer has failed to so act.

14.18 Independent limitations

Each qualification and limitation in this clause 14 is to be construed independently of the others and is not limited by any other qualification or limitation.

14.19 Damages only remedy

If any of the Seller Group Warranties are incorrect, untrue or misleading, the Buyer's only remedy is in damages and the Buyer may not rescind, terminate or revoke the agreement.

14.20 No knowledge of breach

The Buyer:

- (a) has not already formulated an intention to make a Seller Group Warranty Claim; and
- (b) does not presently have actual knowledge (except as disclosed in the Disclosure Material) of any circumstances which it believes may entitle it to make a Claim in respect of a Seller Group Warranty.

15 Buyer Warranties

15.1 Buyer Warranties

The Buyer represents and warrants to the Seller that each of the following statements is true, accurate and complete and not misleading, as at the Execution Date and will be true, accurate and complete and not misleading as at the Completion Date:

- (a) it is duly incorporated and validly exists under the law of its place of incorporation;

- (b) the execution and delivery of this agreement has been properly authorised by all necessary corporate action of the Buyer;
- (c) it has full corporate power and lawful authority to execute and deliver this agreement and to consummate and perform or cause to be performed its obligations under this agreement;
- (d) this agreement constitutes a legal, valid and binding obligation of the Buyer enforceable in accordance with its terms;
- (e) the execution, delivery and performance by the Buyer of this agreement does not or will not (with or without the lapse of time, the giving of notice or both) contravene, conflict with or result in a breach of or default under:
 - (i) any provision of the constitution of the Buyer;
 - (ii) any material term or provision of any security arrangement (including any Security Interest), undertaking, agreement or agreement to which it is bound;
 - (iii) any writ, order or injunction, judgement, or law to which it is a party or is subject or by which it is bound;
- (f) no Insolvency Event has occurred in relation to the Buyer; and
- (g) so far as it is aware, there are no facts, matters or circumstances which give any person the right to apply to liquidate or wind up the Buyer.

15.2 Reliance

The Buyer acknowledges that the Seller has entered into this agreement in reliance on the Buyer Warranties.

15.3 Independent Buyer Warranties

Each Buyer Warranty must be construed independently and is not limited by reference to another Buyer Warranty.

15.4 Survival

The Buyer Warranties survive Completion of this agreement.

16 Seller Guarantor Warranties

16.1 Seller Guarantor Warranties

The Seller Guarantor represents and warrants to the Buyer that each of the following statements is true, accurate and complete and not misleading, as at the Execution Date and will be true, accurate and complete and not misleading as at the Completion Date:

- (a) it is duly incorporated and validly exists under the law of its place of incorporation;
- (b) the execution and delivery of this agreement has been properly authorised by all necessary corporate action of the Seller Guarantor;

- (c) it has full corporate power and lawful authority to execute and deliver this agreement and to consummate and perform or cause to be performed its obligations under this agreement;
- (d) this agreement constitutes a legal, valid and binding obligation of the Seller Guarantor enforceable in accordance with its terms;
- (e) the execution, delivery and performance by the Seller Guarantor of this agreement does not or will not (with or without the lapse of time, the giving of notice or both) contravene, conflict with or result in a breach of or default under:
 - (i) any provision of the constitution of the Seller Guarantor;
 - (ii) any material term or provision of any security arrangement (including any Security Interest), undertaking, agreement or agreement to which it is bound;
 - (iii) any writ, order or injunction, judgement, or law to which it is a party or is subject or by which it is bound;
- (f) no Insolvency Event has occurred in relation to the Seller Guarantor; and
- (g) so far as it is aware, there are no facts, matters or circumstances which give any person the right to apply to liquidate or wind up the Seller Guarantor.

16.2 Reliance

The Seller Guarantor acknowledges that the Buyer has entered into this agreement in reliance on the Seller Guarantor Warranties.

16.3 Independent Seller Guarantor Warranties

Each Seller Guarantor Warranty must be construed independently and is not limited by reference to another Seller Guarantor Warranty.

16.4 Survival

The Seller Guarantor Warranties survive Completion of this agreement.

16.5 Indemnity

The Seller Guarantor indemnifies the Buyer against any Loss which the Buyer may incur to the extent caused by any breach of the Seller Guarantor Warranties.

17 Buyer Guarantor Warranties

17.1 Buyer Guarantor Warranties

The Buyer Guarantor represents and warrants to the Seller that each of the following statements is true, accurate and complete and not misleading, as at the Execution Date and will be true, accurate and complete and not misleading as at the Completion Date:

- (a) it is duly incorporated and validly exists under the law of its place of incorporation;
- (b) the execution and delivery of this agreement has been properly authorised by all necessary corporate action of the Buyer Guarantor;

- (c) it has full corporate power and lawful authority to execute and deliver this agreement and to consummate and perform or cause to be performed its obligations under this agreement;
- (d) this agreement constitutes a legal, valid and binding obligation of the Buyer Guarantor enforceable in accordance with its terms;
- (e) the execution, delivery and performance by the Buyer Guarantor of this agreement does not or will not (with or without the lapse of time, the giving of notice or both) contravene, conflict with or result in a breach of or default under:
 - (i) any provision of the constitution of the Buyer Guarantor;
 - (ii) any material term or provision of any security arrangement (including any Security Interest), undertaking, agreement or agreement to which it is bound;
 - (iii) any writ, order or injunction, judgement, or law to which it is a party or is subject or by which it is bound;
- (f) no Insolvency Event has occurred in relation to the Buyer Guarantor; and
- (g) so far as it is aware, there are no facts, matters or circumstances which give any person the right to apply to liquidate or wind up the Buyer Guarantor.

17.2 Reliance

The Buyer Guarantor acknowledges that the Seller has entered into this agreement in reliance on the Buyer Guarantor Warranties.

17.3 Independent Buyer Guarantor Warranties

Each Buyer Guarantor Warranty must be construed independently and is not limited by reference to another Buyer Guarantor Warranty.

17.4 Survival

The Buyer Guarantor Warranties survive Completion of this agreement.

17.5 Indemnity

The Buyer Guarantor indemnifies the Seller against any Loss which the Seller may incur to the extent caused by any breach of the Buyer Guarantor Warranties.

18 Confidentiality

18.1 Confidentiality obligation

Each party (**Information Recipient**):

- (a) may use Confidential Information of a Disclosing Party only for the purposes of this agreement and the transactions contemplated by this agreement; and
- (b) must keep confidential all Confidential Information of each Disclosing Party except for disclosures permitted under clause 18.2.

18.2 Exceptions

Clause 18.1 does not apply to an Information Recipient to the extent that the relevant disclosure or use:

- (a) has the prior written consent of the Disclosing Party;
- (b) is a media announcement in the form agreed between the Buyer and the Seller in accordance with clause 18.4;
- (c) is to its Officers, employees, professional advisers, consultants, financiers and Related Bodies Corporate to whom (and to the extent to which) it is necessary to disclose the information in order to properly perform its obligations under this agreement;
- (d) is necessary to enforce its rights or to defend any Claim or Action under this agreement or for use in legal proceedings regarding this agreement or the transaction contemplated by this agreement;
- (e) is necessary to obtain any consent or approval contemplated by this agreement; or
- (f) is necessary to comply with any applicable law, legal process, any order or rule of any Government Agency, the rules of a recognised stock exchange or in a prospectus or other document with statutory content requirements prepared for a transaction involving a party, after first consulting with the other party to the extent practicable having regard to those obligations about the form and content of the disclosure,

and provided that, before disclosure:

- (g) in the case of the Information Recipient's (and their Related Body Corporate's) Officers and employees, those persons have been directed by the Information Recipient to keep confidential all Confidential Information of the Disclosing Party; and
- (h) in the case of other persons (except those disclosures under clauses 18.2(b), 18.2(d), 18.2(e) and 18.2(f)), those persons have agreed in writing with the Information Recipient to comply with substantially the same obligations in respect of Confidential Information of the Disclosing Party as those imposed on the Information Recipient under this agreement,

(each a **Direction**).

18.3 Information Recipient's obligations

An Information Recipient must:

- (a) ensure that each person to whom it discloses Confidential Information of a Disclosing Party under clause 18.2 complies with its Direction; and
- (b) notify the Disclosing Party of, and take all reasonable steps to prevent or stop, any suspected or actual breach of a Direction.

18.4 Media announcement

- (a) No party may, before or after Completion, make or send a public announcement, communication or circular concerning this agreement or the transactions referred

to in this agreement unless it has first obtained the written consent of the other party, which consent is not to be unreasonably withheld or delayed.

- (b) Clause 18.4(a) does not apply to a public announcement, communication or circular required by law or the requirements of a regulatory body (including the ASX and any other relevant stock exchange), if the party required to make or send it has, if practicable, first consulted and taken into account the reasonable requirements of the other parties, provided that the party must only disclose such information necessary to comply with the requirements of law or the applicable regulatory body.

18.5 Confidentiality Agreement

The parties acknowledge and agree that the Confidentiality Agreement terminates in accordance with its terms on the Execution Date.

19 Seller Guarantee and indemnity

19.1 Consideration

The Seller Guarantor acknowledges that the Buyer is acting in reliance on the Seller Guarantor incurring obligations and giving rights under this Seller Guarantee.

19.2 Seller Guarantee

- (a) The Seller Guarantor unconditionally and irrevocably guarantees to the Buyer the due and punctual performance by the Seller of all its obligations under this agreement, including each obligation to pay money (the **Seller Guaranteed Obligations**).
- (b) If the Seller fails to perform the Seller Guaranteed Obligations in full and on time, the Seller Guarantor agrees to comply with the Seller Guaranteed Obligations on demand from the Buyer. A demand may be made whether or not the Buyer has made demand on the Seller.

19.3 Indemnity

- (a) The Seller Guarantor:
 - (i) unconditionally and irrevocably indemnifies the Buyer against any Loss or Claim which may be incurred or sustained by the Buyer arising from or in relation to any default or delay by the Seller in the due and punctual performance of any of the Seller Guaranteed Obligations, including any Loss or Claim incurred or sustained by the Buyer arising from or in relation to the enforcement of this Seller Guarantee; and
 - (ii) agrees to pay amounts due under this clause 19.3 on demand from the Buyer.
- (b) The Buyer need not incur expense or make payment before enforcing this right of indemnity.

19.4 Extent of Seller Guarantee and indemnity

- (a) The Seller Guarantor will be responsible to the Buyer in respect of the Seller Guaranteed Obligations in the same manner as if the Seller Guarantor was the Seller under this agreement.
- (b) The rights given to the Buyer pursuant to this Seller Guarantee, and the Seller Guarantor's liability under it, are not affected by any act, omission or other thing which might otherwise affect it in law or in equity including one or more of the following:
 - (i) an Insolvency Event affecting a person or the death of a person;
 - (ii) a change in the constitution, membership, or partnership of a person;
 - (iii) the partial performance of the Seller Guaranteed Obligations;
 - (iv) the Seller Guaranteed Obligations not being enforceable at any time against any person other than the Seller Guarantor;
 - (v) the Buyer granting any time or other indulgence or concession to, compounding or compromising with, or wholly or partially releasing the Seller or Seller Guarantor of an obligation;
 - (vi) any novation of a right of the Buyer;
 - (vii) acquiescence, delay, acts, omissions or mistakes on the part of the Buyer; or
 - (viii) the occurrence of any other thing which might otherwise release, discharge or affect the obligations of the Seller Guarantor under this agreement, except to the extent that that thing also releases, discharges or affects the obligations of the Seller to the Buyer.

19.5 Payments

The Seller Guarantor agrees to make payments under this clause 19:

- (a) in full without set-off or counterclaim, and without any deduction in respect of Taxes unless prohibited by law; and
- (b) in the currency in which the payment is due, and otherwise in Australian dollars, in Immediately Available Funds.

19.6 Continuing guarantee and indemnity

This clause 19:

- (a) extends to cover this agreement as amended, varied or replaced, whether with or without the consent of the Seller Guarantor;
- (b) is a principal obligation and is not to be treated as ancillary or collateral to another right or obligation;
- (c) is independent of and not in substitution for or affected by any other security interest or guarantee or other document or agreement which the Buyer may hold concerning the Seller Guaranteed Obligations; and

- (d) is a continuing guarantee and indemnity despite any intervening payment, settlement or other thing and extends to all of the Seller's obligations arising from or in relation to this agreement and, despite Completion, remains in full force and effect for so long as the Seller has any liability or obligation to the Buyer under this agreement and until all of those liabilities or obligations have been fully discharged.

19.7 Enforcement against Seller Guarantor

The Seller Guarantor waives any right it has of first requiring the Buyer to commence proceedings or enforce any other right against the Seller or any other person before claiming from the Seller Guarantor under this Seller Guarantee.

19.8 Limitation

In no event will the Seller Guarantor's Liability under this agreement exceed the amount that would have been recoverable from the Seller in respect of the same subject matter.

20 Buyer Guarantee and indemnity

20.1 Consideration

The Buyer Guarantor acknowledges that the Seller is acting in reliance on the Buyer Guarantor incurring obligations and giving rights under this Buyer Guarantee.

20.2 Buyer Guarantee

- (a) The Buyer Guarantor unconditionally and irrevocably guarantees to the Seller the due and punctual performance by the Buyer of all its obligations under this agreement, including each obligation to pay money (the **Buyer Guaranteed Obligations**).
- (b) If the Buyer fails to perform the Buyer Guaranteed Obligations in full and on time, the Buyer Guarantor agrees to comply with the Buyer Guaranteed Obligations on demand from the Seller. A demand may be made whether or not the Seller has made demand on the Buyer.

20.3 Indemnity

- (a) The Buyer Guarantor:
 - (i) unconditionally and irrevocably indemnifies the Seller against any Loss or Claim which may be incurred or sustained by the Seller arising from or in relation to any default or delay by the Buyer in the due and punctual performance of any of the Buyer Guaranteed Obligations, including any Loss or Claim incurred or sustained by the Seller arising from or in relation to the enforcement of this Buyer Guarantee; and
 - (ii) agrees to pay amounts due under this clause 20.3 on demand from the Seller.
- (b) The Seller need incur expense or make payment before enforcing this right of indemnity.

20.4 Extent of Buyer Guarantee and indemnity

- (a) The Buyer Guarantor will be responsible to the Seller in respect of the Buyer Guaranteed Obligations in the same manner as if the Buyer Guarantor was the Buyer under this agreement.
- (b) The rights given to the Seller pursuant to this Buyer Guarantee, and the Buyer Guarantor's liability under it, are not affected by any act, omission or other thing which might otherwise affect it in law or in equity including one or more of the following:
 - (i) an Insolvency Event affecting a person or the death of a person;
 - (ii) a change in the constitution, membership, or partnership of a person;
 - (iii) the partial performance of the Buyer Guaranteed Obligations;
 - (iv) the Buyer Guaranteed Obligations not being enforceable at any time against any person other than the Buyer Guarantor;
 - (v) the Seller granting any time or other indulgence or concession to, compounding or compromising with, or wholly or partially releasing the Buyer or Buyer Guarantor of an obligation;
 - (vi) any novation of a right of the Seller;
 - (vii) acquiescence, delay, acts, omissions or mistakes on the part of the Seller; or
 - (viii) the occurrence of any other thing which might otherwise release, discharge or affect the obligations of the Buyer Guarantor under this agreement, except to the extent that that thing also releases, discharges or affects the obligations of the Buyer to the Seller.

20.5 Payments

The Buyer Guarantor agrees to make payments under this clause 20:

- (a) in full without set-off or counterclaim, and without any deduction in respect of Taxes unless prohibited by law; and
- (b) in the currency in which the payment is due, and otherwise in Australian dollars, in Immediately Available Funds.

20.6 Continuing guarantee and indemnity

This clause 20:

- (a) extends to cover this agreement as amended, varied or replaced, whether with or without the consent of the Buyer Guarantor;
- (b) is a principal obligation and is not to be treated as ancillary or collateral to another right or obligation;
- (c) is independent of and not in substitution for or affected by any other security interest or guarantee or other document or agreement which the Seller may hold concerning the Buyer Guaranteed Obligations; and

- (d) is a continuing guarantee and indemnity despite any intervening payment, settlement or other thing and extends to all of the Buyer's obligations arising from in relation to this agreement and, despite Completion, remains in full force and effect for so long as the Buyer has any liability or obligation to the Seller under this agreement and until all of those liabilities or obligations have been fully discharged.

20.7 Enforcement against Buyer Guarantor

The Buyer Guarantor waives any right it has of first requiring the Seller to commence proceedings or enforce any other right against the Buyer or any other person before claiming from the Buyer Guarantor under this Buyer Guarantee.

20.8 Limitation

In no event will the Buyer Guarantor's Liability under this agreement exceed the amount that would have been recoverable from the Buyer in respect of the same subject matter.

21 Dispute resolution

21.1 Dispute Notice

- (a) If a Dispute arises then either party may give to the other party a Dispute Notice.
- (b) Within 14 days after service of a Dispute Notice, the parties' Representatives must meet at least once and confer in good faith to attempt to resolve the Dispute.
- (c) If the parties' Representatives cannot resolve the Dispute, then each party shall within 21 days after service of a Dispute Notice refer the Dispute to their respective Chief Executive Officers to settle the Dispute. The Chief Executive Officers must meet within 14 days of the Dispute being referred to them (or such longer period agreed in writing) and confer in good faith until such time that they resolve the Dispute.
- (d) If the Chief Executive Officers have met but not resolved the Dispute, or otherwise fail to meet, within 2 months from the date the Dispute was referred to them (or such longer period agreed in writing) either party may commence legal proceedings.

21.2 Continuance of Contract

- (a) Compliance with this clause 21 is a condition precedent to a party being entitled to commence legal proceedings in any court in respect of a Dispute except for proceedings seeking urgent injunctive relief.
- (b) Prior to the resolution of a Dispute, the parties must continue to perform their respective obligations in this agreement insofar as those obligations are not the subject matter of the Dispute.

22 Duty, costs and expenses

22.1 Duty

Subject to clause 9.1(b), all Duty which may be payable on or in connection with this agreement and any instrument executed under or in connection with or any transaction evidenced by this agreement is payable by the Buyer.

22.2 Costs and expenses

Each party must pay its own costs and expenses of negotiating, preparing, signing, delivering and registering this agreement and any other agreement or document entered into or signed under this agreement (including each novation or assignment agreement or agreement).

22.3 Costs of performance

A party must bear the costs and expenses of performing its obligations under this agreement, unless otherwise provided in this agreement.

23 GST

23.1 Supply of a going concern

- (a) The parties agree that the Supply made by the Seller to the Buyer under this agreement (**Business Supply**) is a Supply of a Going Concern for the purposes of section 38-325 of the GST Act and will be treated as being a GST-free Supply such that clause 23.2 does not apply to it.
- (b) The Seller warrants and represents that it:
 - (i) will supply to the Buyer all of the things that are necessary for the continued operation of an Enterprise; and
 - (ii) will continue to carry on the Enterprise without interruption until and including the Completion Date.
- (c) The Buyer warrants that it is registered or required to be registered for GST under the GST Law as at the Completion Date.
- (d) If there is an assessment by the Commissioner of Taxation that GST is payable on the Business Supply, then clause 23.2 applies to the Business Supply such that an additional amount will be payable on account of GST (**Additional Amount**), except that:
 - (i) any Additional Amount payable under clause 23.2 is payable by the Buyer within 10 Business Days of receipt of a Tax Invoice for the Business Supply; and
 - (ii) the Additional Amount must be refunded to the Buyer if the assessment is overturned by the Commissioner of Taxation, a Court or tribunal.

23.2 Taxable Supplies

- (a) Any consideration or amount payable under this agreement, including any non-monetary consideration (as reduced in accordance with clause 23.2(e) if required) (**Consideration**) is exclusive of GST.
- (b) If GST is or becomes payable on a Supply made under or in connection with this agreement, an Additional Amount is payable by the party providing the

Consideration for the Supply (**Recipient**) equal to the amount of GST payable on that Supply as calculated by the party making the Supply (**Supplier**) in accordance with the GST Law.

- (c) The Additional Amount payable under clause 23.2(b) is payable without set off, demand or deduction at the same time and in the same manner as the Consideration for the Supply, and the Supplier must provide the Recipient with a Tax Invoice as a pre-condition to payment of the Additional Amount.
- (d) If for any reason (including, without limitation, the occurrence of an Adjustment Event) the amount of GST payable on a Supply made under or in connection with this agreement (taking into account any Decreasing or Increasing Adjustments in relation to the Supply) varies from the Additional Amount payable by the Recipient under clause 23.2(b):
 - (i) the Supplier must provide a refund or credit to the Recipient, or the Recipient must pay a further amount to the Supplier, as appropriate;
 - (ii) the refund, credit or further amount (as the case may be) will be calculated by the Supplier in accordance with the GST Law; and
 - (iii) the Supplier must notify the Recipient of the refund, credit or further amount within 10 Business Days after becoming aware of the variation to the amount of GST payable. Any refund or credit must accompany such notification or the Recipient must pay any further amount within 7 days after receiving such notification, as appropriate. If there is an Adjustment Event in relation to the Supply, the requirement for the Supplier to notify the Recipient will be satisfied by the Supplier issuing to the Recipient an Adjustment Note within 10 Business Days after becoming aware of the occurrence of the Adjustment Event.
- (e) Despite any other provision in this agreement:
 - (i) if an amount payable under or in connection with this agreement (whether by way of reimbursement, indemnity or otherwise) is calculated by reference to an amount incurred by a party, whether by way of cost, expense, outlay, disbursement or otherwise (**Amount Incurred**), the amount payable must be reduced by the amount of any Input Tax Credit to which that party is entitled in respect of that Amount Incurred; and
 - (ii) no Additional Amount is payable under clause 23.2(b) in respect of a Supply made under or in connection with this agreement to which section 84-5 of the GST Act applies.
- (f) Any reference in this clause to an Input Tax Credit to which a party is entitled includes an Input Tax Credit arising from a Creditable Acquisition by that party but to which the Representative Member of the GST Group of which that party is a member is entitled.

24 Foreign resident capital gains withholding

24.1 Application of foreign resident capital gains withholding

Clauses 24.3 to 24.6 do not apply if:

- (a) the sale of the Sale Interest and the subscription of the Subscription Shares is a transaction that is excluded under section 14-215(1); or

- (b) the Seller gives to the Buyer a Clearance Certificate for a period covering the Completion Date on or before the date that is 5 Business Days before Completion.

24.2 Clearance Certificate given by Seller

If clause 24.1(b) applies, the Buyer acknowledges and agrees that:

- (a) the Buyer is not required to pay a Withholding Amount; and
- (b) the Buyer may not withhold a Withholding Amount from the Purchase Price payable on Completion to the Seller.

24.3 Buyer entitled to withhold

If the Buyer is required to pay an amount to the Commissioner under section 14-200, the Buyer is entitled to withhold from the Purchase Price payable on Completion an amount equal to the Withholding Amount.

24.4 Buyer's obligation to pay Withholding Amount to the Commissioner

At Completion, the Buyer must either:

- (a) give to the Seller a copy of a receipt showing that the Withholding Amount has been paid to the Commissioner before Completion; or
- (b) produce a cheque, drawn on a Bank, payable to the Commissioner for an amount equal to the Withholding Amount.

24.5 Payment of the Withholding Amount after Completion

If clause 24.4(b) applies, the Buyer must:

- (a) pay the Withholding Amount to the Commissioner, by mailing or delivering the cheque to the Commissioner, before the end of the first Business Day after Completion; and
- (b) provide to the Seller within 2 Business Days after Completion, evidence showing that the Withholding Amount has been paid to the Commissioner.

24.6 Discharge of liability

On the payment of the Withholding Amount to the Commissioner, the Buyer is discharged from all liability to pay the Withholding Amount to the Seller.

24.7 Definitions and interpretation

For the purposes of this clause 24:

- (a) all section references are to those provisions of Schedule 1 to the *Taxation Administration Act 1953* (Cth);
- (b) **Clearance Certificate** means a certificate issued by the Commissioner under section 14-220 that applies to the Seller and is for a period covering the time that the transaction is entered into;
- (c) **Commissioner** means the Commissioner of Taxation of Australia; and

- (d) **Withholding Amount** means an amount that the Buyer is required to pay to the Commissioner, determined in accordance with section 14-200(3).

25 PPS Act registration

25.1 Protecting interests

- (a) The parties agree to do all things as may be reasonably necessary including:
- (i) providing information and executing or ensuring the execution of documents; and
 - (ii) ensuring that relevant third parties do all things reasonably necessary,

to protect the interests of a party to this agreement as a result of the application of the PPS Law to this agreement or the transactions the subject of this agreement, including, without limitation to ensure that a PPS Security Interest created under or in connection with this agreement is enforceable, perfected in accordance with the PPS Law and otherwise effective.

- (b) A grantor of a PPS Security Interest under or in connection with this agreement consents to the registration of the PPS Security Interest on any relevant register and any notification made or given in respect of that PPS Security Interest.

25.2 Notices

A party need not give any notice under the PPS Law (including notice of a verification statement) to the other party unless the notice is required by the PPS Law and cannot be excluded.

26 Notices

26.1 General

A notice, demand, certification, process or other communication relating to this agreement must be in writing in English and may be given by an agent of the sender.

26.2 How to give a communication

In addition to any other lawful means, a communication may be given by being:

- (a) personally delivered;
- (b) left at the party's current delivery address for notices;
- (c) sent to the party's current postal address for notices by pre-paid ordinary mail or, if the address is outside Australia, by pre-paid airmail;
- (d) sent by email to the party's current email address for notices; or
- (e) sent by such other form of communication as the parties and WLOPL may from time to time agree.

26.3 Particulars for delivery

(a) The particulars for delivery of notices are initially:

(i) in the case of the Seller:

Delivery address: 1 Sleat Road
APPLECROSS, WA 6153

Postal address: Locked Bag 3, Canning Bridge
APPLECROSS, WA 6153

Email: simon.rushton@mineralresources.com.au

Attention: Simon Rushton

(ii) in the case of the Buyer:

Delivery address: 4350 Congress Street, Suite 700, Charlotte, NC 28209

Postal address: 4350 Congress Street, Suite 700, Charlotte, NC 28209

Email: Ander.Krupa@albemarle.com

Copy: Brenda.Mareski@albemarle.com

Attention: Ander Krupa

Copy: Brenda Mareski

(iii) in the case of the Seller Guarantor:

Delivery address: 1 Sleat Road
APPLECROSS, WA 6153

Postal address: Locked Bag 3, Canning Bridge
APPLECROSS, WA 6153

Email: simon.rushton@mineralresources.com.au

Attention: Simon Rushton

(iv) in the case of the Buyer Guarantor:

Delivery address: 4350 Congress Street, Suite 700, Charlotte, NC
28209

Postal address: 4350 Congress Street, Suite 700, Charlotte, NC
28209

Email: terry.hammons@albemarle.com

Copy: Alex.Gutierrez@albemarle.com

Attention: Terrance Hammons

Copy: Alejandro Gutierrez

- (b) Each party may change its particulars for delivery of notices by notice to each other party.

26.4 Communications by post

Subject to clause 26.7, a communication is given if posted:

- (a) within Australia to an Australian postal address, three (3) Business Days after posting; or
- (b) outside of Australia to an Australian postal address or within Australia to an address outside of Australia, ten (10) Business Days after posting.

26.5 Communications by email

- (a) Subject to clause 26.7, a communication is given if sent by email, upon the earlier of:
 - (i) the time the sender receives an automated message from the intended recipient's information system confirming delivery of the email;
 - (ii) the time that the email is first opened or read by the intended recipient, or an employee or Officer of the intended recipient; and
 - (iii) four (4) hours after the time the email is sent (as recorded on the device from which the sender sent the email) unless the sender receives, within that four (4) hour period, an automated message that the email has not been delivered.
- (b) Despite anything to the contrary in this agreement, a notice given under clause 2.6 must not be given by email.

26.6 Process service

Any process or other document relating to litigation, administrative or arbitral proceedings in relation to this agreement may be served by any method contemplated by this clause 26 or in accordance with any applicable law.

26.7 After hours communications

If a communication is given:

- (a) after 5.00 pm in the place of receipt; or
- (b) on a day which is a Saturday, Sunday or bank or public holiday in the place of receipt,

it is taken to have been given at 9.00am on the next day which is not a Saturday, Sunday or bank or public holiday in that place.

27 General

27.1 Consents and approvals

Except as expressly provided in this agreement, a party may conditionally or unconditionally in its absolute discretion give or withhold any consent or approval under this agreement.

27.2 Entire agreement

- (a) This agreement is the entire agreement between the parties about its subject matter and replaces all previous agreements, understandings, representations and warranties about that subject matter.
- (b) Each party represents and warrants that it has not relied on any representations or warranties about the subject matter of this agreement except as expressly provided in this agreement.

27.3 Further assurances

Except as expressly provided in this agreement, each party must, at its own expense, do all things reasonably necessary to give full effect to this agreement and the matters contemplated by it.

27.4 Rights cumulative

Except as expressly provided in this agreement, the rights of a party under this agreement are cumulative and are in addition to any other rights of that party.

27.5 Survival and merger

- (a) No term of this agreement merges on completion of any transaction contemplated by this agreement.
- (b) Clauses 18, 22, 23, 26 and 27 survive termination or expiry of this agreement together with any other term which by its nature is intended to do so.

27.6 Variation

No variation of this agreement is effective unless made in writing and signed by each party.

27.7 Waiver

- (a) No waiver of a right or remedy under this agreement is effective unless it is in writing and signed by the party granting it. It is only effective in the specific instance and for the specific purpose for which it is granted.
- (b) A single or partial exercise of a right or remedy under this agreement does not prevent a further exercise of that or of any other right or remedy.
- (c) Failure to exercise or delay in exercising a right or remedy under this agreement does not operate as a waiver or prevent further exercise of that or any other right or remedy.

27.8 Governing law

- (a) This agreement is governed by the laws of Western Australia.

- (b) Each party irrevocably and unconditionally submits to the exclusive jurisdiction of the courts of Western Australia including, for the avoidance of doubt, the Federal Court of Australia sitting in Western Australia.

27.9 Counterparts

This agreement may be executed in any number of counterparts and all counterparts taken together constitute one document.

27.10 Default interest

- (a) If a party fails to pay any amount payable under this agreement on the due date for payment, that party must pay interest on the amount unpaid at the higher of:
 - (i) the Interest Rate; or
 - (ii) the rate of interest per annum (if any) fixed or payable under any judgment or other thing into which the liability to pay the amount becomes merged.
- (b) The interest payable under clause 27.10(a):
 - (i) accrues from day to day from and including the due date for payment up to the actual date of payment, before and, as an additional and independent obligation, after any judgment or other thing into which the liability to pay the amount becomes merged; and
 - (ii) may be capitalised by the person to whom it is payable at monthly intervals.
- (c) The right to require payment of interest under this clause is without prejudice to any other rights the non-defaulting party may have against the defaulting party at law or in equity.

27.11 Interest payable on overdue amounts

If any party fails to pay the whole or part of any amount payable under this agreement on or before the due date, such defaulting party must, on demand, pay to the party entitled to receive payment interest on such unpaid amount at the Interest Rate calculated on daily balances, and capitalised monthly, from (and including) the due date for payment to (but excluding) the date of actual payment.

27.12 Invalidity

- (a) If a provision of this agreement or a right or remedy of a party under this agreement is invalid or unenforceable in a particular jurisdiction:
 - (i) it is read down or severed in that jurisdiction only to the extent of the invalidity or unenforceability; and
 - (ii) it does not affect the validity or enforceability of that provision in another jurisdiction or the remaining provisions in any jurisdiction.
- (b) This clause is not limited by any other provision of this agreement in relation to severability, prohibition or enforceability.

27.13 Operation of indemnities

- (a) Each Indemnity contained in this agreement is an additional, separate and independent obligation and no one Indemnity limits the generality of another Indemnity.
- (b) Each Indemnity contained in this agreement survives Completion under this agreement.

27.14 Payments

A payment which is required to be made under this agreement must be in cash or by bank cheque or in other Immediately Available Funds and in Australian dollars.

27.15 Relationship

Except as expressly provided in this agreement:

- (a) nothing in this agreement is intended to constitute a relationship of employment, trust, agency or partnership or any other fiduciary relationship between the parties; and
- (b) no party has authority to bind any other party.

27.16 Assignment, novation and other dealings

- (a) Subject to clause 27.16(b), a party must not assign or novate this agreement or otherwise deal with the benefit of it or a right under it, or purport to do so, without the prior written consent of each other party which consent may be withheld at the absolute discretion of the party from whom consent is sought.
- (b) Clause 27.16(a) does not apply to any benefit or right under a Transaction Document from Completion.

27.17 Third party rights

Except as expressly provided in this agreement:

- (a) each person who executes this agreement does so solely in its own legal capacity and not as agent or trustee for or a partner of any other person; and
- (b) only those persons who execute this agreement have a right or benefit under it.

Schedule 1 Dictionary

1 Dictionary

In this agreement:

Accounting Standards means:

- (a) the accounting standards applicable for the purposes of the Corporations Act;
- (b) the requirements of the Corporations Act for the preparation and content of financial statements, directors' reports and auditor's reports; and
- (c) generally accepted and consistently applied accounting principles and practices in Australia (including Australian International Financial Reporting Standards), except those inconsistent with the standards of requirements referred to in paragraphs (a) or (b).

Action means an action, dispute, Claim, investigation, inquiry, prosecution, litigation, proceeding, arbitration, mediation or dispute resolution process.

Additional Amount has the same meaning as it does in clause 23.1(d) or 23.2(b) (as appropriate).

Amount Incurred has the same meaning as it does in clause 23.2(e)(i).

Approvals means any licence, consent, approval, permit, registration, accreditation, certification or other authorisation (or any variations thereof) given or issued by any Government Agency or any other person held by the Seller which relates to the Sale Interest or the Project and which is capable of being assigned to the Buyer or WLOPL (as applicable), including those specified in Schedule 10.

Anti-Monopoly Law means the Anti-Monopoly Law of the People's Republic of China.

Assigned Tenements means:

- (a) the mining tenements specified in Part 2 of Schedule 3; and
- (b) to the extent that they are held by the Seller, any renewals, conversions, amalgamations or substitutions of the mining tenements referred to in paragraph (a).

Associate has the meaning given to that term by sections 10 to 17 of the Corporations Act.

Associated Rights means:

- (a) a perpetual, royalty-free license to use and benefit from all Intellectual Property Rights in connection with the Project; and
- (b) the benefit of any contracts (whether written or oral) between the Seller and the provider of the Mining Information for production of that information, including any actual or implied warranties as to the accuracy of that information.

Atlas means Atlas Iron Limited ACN 110 396 168.

Atlas Exit Agreement means the exit agreement – Wodgina dated 13 April 2017 between the Seller and Atlas.

ASX means ASX Limited (ABN 98 008 624 691).

Australian Consumer Law means Schedule 2 of the *Competition and Consumer Act 2010* (Cth).

Business Day means a day on which banks are open for business excluding Saturdays, Sundays and public holidays in Perth, Western Australia.

Business Supply has the same meaning as it does in clause 23.1(a).

Buyer Group means the Buyer and Buyer Guarantor.

Buyer Guarantee means the guarantee and indemnity in clause 20.

Buyer Guaranteed Obligations has the meaning given in clause 20.2(a).

Buyer Guarantor Warranties means the representations and warranties set out in clause 17.1.

Buyer Individuals means:

- (a) Jeffrey Bachrach;
- (b) Kraig Houser;
- (c) Alex Gutierrez;
- (d) Matt Lynch;
- (e) Clint Parham;
- (f) Andrew Purvis;
- (g) Edward Tatum;
- (h) Brian Tessin; and
- (i) Chris Yandell.

Buyer Warranties means the representations and warranties set out in clause 15.1.

Called Sum has the meaning given in the JVA.

CCC Handover has the meaning given in clause 5.2(a).

Chargee's Priority Deed means a chargee's priority deed as defined in in the JVA, to be entered into between the Seller, the Buyer, WLOPL and the Security Trustee in the form scheduled as Attachment E.

Claim means any allegation, debt, cause of action, Liability, claim, proceeding, suit or demand of any nature howsoever arising and whether present or future, fixed or unascertained, actual or contingent whether at law, in equity, under statute or otherwise.

Commercial Terms Agreement means the agreement of that name between the Buyer and the Seller entered into on or around the date of this agreement which sets out the commercial terms agreed between the Buyer and the Seller in relation to certain of the Transaction Documents.

Commissioned means, in respect of each item of Incomplete Infrastructure:

- (a) the infrastructure being ready for use, having all necessary approvals and not requiring any further construction steps; and
- (b) the 'Requirements for Commissioning' set out in Schedule 5 being satisfied in respect of that item of Incomplete Infrastructure.

Completed Infrastructure means the assets described in Schedule 4.

Completion means completion of the sale and purchase of the Sale Interest and the allotment of the Subscription Shares under clause 7.

Completion Adjustment means the amount determined in accordance with clause Schedule 13.

Completion Adjustment Dispute Statement has the meaning given in clause 8.2(d).

Completion Date means the date which is 5 Business Days after the last of the Conditions are satisfied or waived in accordance with clause 2 or such other date as the parties may agree in writing.

Completion Statement has the meaning given in clause 8.2(a).

Concentrate means spodumene concentrate derived from Ore.

Condition means a condition precedent set out in clause 2.1.

Conditions Precedent Date means 15 June 2019, subject to extension under clause 2.3, or such other date as the parties may agree in writing.

Confidential Information of a party (**Disclosing Party**) means:

- (a) the nature and existence of this agreement and the terms of this agreement, its schedules and annexures; and
- (b) all information treated by the Disclosing Party as confidential and disclosed by the Disclosing Party to another party or of which another party becomes aware, whether before or after the Execution Date, except information:
 - (i) another party creates (whether alone or jointly with any third person) independently of the Disclosing Party;
 - (ii) which was lawfully obtained by a party before the Discloser disclosed it to the Recipient;
 - (iii) which is received in good faith by a party from a third party entitled to disclose it; or
 - (iv) is public knowledge (otherwise than as a result of a breach of confidentiality by another party or any of its permitted disclosees).

Confidentiality Agreement means the confidentiality deed between Albemarle Lithium Pty Ltd and Mineral Resources Limited dated 30 July 2018.

Consideration has the same meaning as it does in clause 23.2(a).

Consequential Loss means loss of revenue, loss of profit, loss or denial of opportunity, loss of access to markets or market share, loss of goodwill, loss of business reputation, loss of use of capital, increased overhead costs and whether arising in contract, tort (including negligence), equity or under statute.

Construction Equipment means all plant, assets and equipment used exclusively in connection with the construction of the Incomplete Infrastructure (but not operation of that infrastructure once complete), including any mobile vehicles and equipment used for such construction and which is not expressly defined as Mobile Equipment.

Consumables means oil, diesel, greases, lubricants, hydraulic fluids, cleaning products, explosives and all other consumables used in connection with the Project immediately prior to Completion.

Contracted Product means the Product located in the Stockpiles or in transit that is, as at 9am on the Completion Date, subject to an existing spot offtake arrangement entered into in accordance with clause 6.3(o).

Corporations Act means *Corporations Act 2001* (Cth).

Counterparty means a counterparty to a Third Party Agreement.

CSI means Crushing Services International Pty Ltd (ACN 069 303 377).

Cut-off Time means 10.00am (Perth time) on 12 December 2018.

Data Room means the Project Lion online data room located at <https://dataroom.ansarada.com/project.lion.dr>, maintained by or on behalf of the Seller and made available to the Buyer and its Representatives.

Data Room Index means the index attached to the Disclosure Letter.

Data Room Information means:

- (a) the information and documents made available to the Buyer and its Representatives on or before the Cut-off Time in the Data Room as listed in the Data Room Index; and
- (b) the written answers or written confirmations provided to the Buyer or its Representatives in the Data Room as attached to the Disclosure Letter on or before the Cut-off Time in response to requests for information.

Deed of Assignment and Assumption means each deed of assignment and assumption, deed of covenant or deed of novation required by the terms of each Third Party Agreement, and otherwise in the form reasonably required by the Seller and the Buyer, to effect the transfer to the Buyer of the rights, interests, liabilities and obligations of the Seller, to the extent of the Sale Interest on a several and not joint and several basis.

Deed of Cross Security has the meaning given in the JVA and scheduled as Attachment D.

Defaulting Party has the meaning given in clause 2.6(b).

Demand means a written notice of, or demand for, an amount payable or a written notice by a third party in relation to a Third Party Claim.

Department means the Department of Mines, Industry Regulation and Safety for the State of Western Australia or such other body, department or instrumentality responsible for administration of the Mining Act and the Petroleum Pipelines Act (as applicable) from time to time and includes any registrar or warden.

Disclosure Letter means the letter from the Seller addressed to the Buyer and dated and delivered to it prior to the execution of this agreement, disclosing matters in relation to the Seller Group Warranties, in the form agreed between the Seller and the Buyer and includes all of its schedules and annexures (as relevant).

Disclosure Material means the written information relating to the Sale Interest and the Subscription Shares provided to the Buyer prior to the Execution Date, comprising:

- (a) the Information Memorandum;
- (b) all written information and data provided or communicated to a Buyer Individual (whether by electronic mail, portable electronic advice or in any other manner) by Representatives of the Seller (directly or indirectly) prior to the Cut-off Time;
- (c) the Disclosure Letter;
- (d) this agreement, including the schedules and annexures thereto, and all documents referred to therein; and
- (e) the Data Room Information.

Dispute means any matter in dispute between the parties in connection with this agreement.

Dispute Notice means a written notice from one party to another regarding a Dispute, which includes the following details:

- (a) the party's position in respect of the Dispute;
- (b) the facts on which the party relies in support of its position;
- (c) the contractual or common law basis for the party's position; and
- (d) the remedy sought by the party.

Duty means any stamp, transfer, transaction or registration duty or similar charge imposed by any Government Agency and includes any interest, fine, penalty, charge or other amount imposed in respect of any of them, but excludes any Tax or Royalty.

Economic Effective Date means the date on which the first train of the Processing Plant has been Commissioned.

Employee means any employee of the Seller and any person who becomes an employee of the Seller between the date of this agreement and Completion and who, in either case, remains employed by the Seller immediately before Completion.

Environment means components of the earth including:

- (a) land, air and water;
- (b) any layer of the atmosphere;
- (c) any organic or inorganic matter and any living organism; and
- (d) human-made or modified structures and areas and includes interacting natural ecosystems that include any components of the kind referred to in paragraphs (a) to (c) of this definition.

Environmental Law means a provision of law, or a law, which relates to:

- (a) any aspect of the Environment; and
- (b) the use of substances or conduct which may harm the Environment or be hazardous or otherwise harmful to human health,

in each case in relation to activities on the Tenements or the Petroleum Pipeline Licences.

Equipment Leases means the equipment leases, hire purchase agreements, conditional purchase agreements and other hiring arrangements entered into by the Seller in relation to the Mobile Equipment.

Excluded Assets means:

- (a) the Contracted Product;
- (b) the Old Crusher;
- (c) the New Crusher;
- (d) the Excluded Infrastructure;
- (e) the Construction Equipment;
- (f) the Iron Ore Rights; and
- (g) the GAMG Assets.

Excluded Infrastructure means the plant, equipment, machinery, facilities and other infrastructure owned by a third party that is leased, hired or otherwise used in the Project that is set out in Schedule 6.

Execution Date means the date that the last party executes this agreement.

Extension Notice has the meaning given to that term in clause 2.3(a).

FATA means *Foreign Acquisitions and Takeovers Act 1975* (Cth).

Final Conditions Precedent Date means 15 December 2019.

GAM means Global Advanced Metals Pty Ltd (ACN 139 987 465).

GAM Sale Agreement means the asset sale agreement dated 27 June 2016 between GAMW, GAM, the Seller Guarantor and the Seller.

GAMG means Global Advanced Metals Greenbushes Pty Ltd (ACN 125 585 284).

GAMG Assets means the Tantalum Rights and the Tantalum Assets.

GAMG Mineral Rights Agreement means the document entitled 'Mineral Rights Agreement' originally between GAMW, GAMG and GAM dated 8 September 2016, as subsequently amended and assigned.

GAMW means Global Advanced Metals Wodgina Pty Ltd (ACN 125 585 239), formerly Talison Wodgina Pty Ltd.

Government Agency means a government or governmental, semi-governmental, legislative, administrative, fiscal, quasi-judicial or judicial entity, authority, department, commission, authority, tribunal, agency or entity or other body, whether foreign, federal, state, territorial or local (including any self-regulatory organisation established under statute or any recognised stock exchange).

GST means goods and services tax, or a similar value added tax, levied or imposed in Australia under the GST Law.

GST Act means the *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

GST Law has the meaning given to it in the GST Act.

Immediately Available Funds means cash, bank cheque or telegraphic or other electronic means of transfer of cleared funds into a bank account.

Incomplete Infrastructure means the facilities, installations and assets specified in Schedule 5, other than the Tantalum Assets.

Indemnity means an indemnity given under this agreement.

Information Memorandum means the information memorandum in relation to the Wodgina investment opportunity prepared and issued by the Seller dated July 2018 (including any supplement to it or replacement of it).

Information Recipient has the meaning given in clause 18.1.

Initial Mine Plan and Budget has the meaning given in clause 6.4(d).

Insolvency Event means the occurrence of any one or more of the following events in relation to any person:

- (a) an application is made to a court for an order, or an order is made, that it be wound up, declared bankrupt or that a provisional liquidator or receiver or receiver and manager be appointed, and the application is not withdrawn, struck out or dismissed within 15 Business Days of it being made;
- (b) a liquidator or provisional liquidator is appointed;
- (c) an administrator is appointed to it under sections 436A, 436B or 436C of the Corporations Act;
- (d) a Controller (as defined in section 9 of the Corporations Act) is appointed to it or any of its Sale Interest;
- (e) a receiver is appointed to it or any of its Sale Interest;

- (f) it enters into an arrangement or composition with one or more of its creditors, or an assignment for the benefit of one or more of its creditors, in each case other than to carry out a reconstruction or amalgamation while solvent;
- (g) it proposes a winding-up, dissolution or reorganisation, moratorium, agreement of company arrangement or other administration involving one or more of its creditors;
- (h) it is insolvent as disclosed in its accounts or otherwise, states that it is insolvent, is presumed to be insolvent under an applicable law (including under sub-section 459C(2) or section 585 of the Corporations Act) or otherwise is, or states that it is, unable to pay all its debts as and when they become due and payable;
- (i) it is taken to have failed to comply with a statutory demand as a result of sub-section 459F(1) of the Corporations Act;
- (j) a notice is issued under sections 601AA or 601AB of the Corporations Act and not withdrawn or dismissed within 15 Business Days;
- (k) a writ of execution is levied against it or its property which is not dismissed within 15 Business Days;
- (l) it ceases to carry on business or threatens to do so, other than for reorganisation or restructuring in accordance with the terms of this agreement; or
- (m) anything occurs under the law of any jurisdiction which has a substantially similar effect to any of the events set out in the above paragraphs of this definition.

Insurances has the meaning given in warranty 13.1 of Schedule 2.

Interest Rate means, for any day in a calendar month, the annual interest rate that is the sum of 3% and the “**Cash Rate Target**” quoted by the Reserve Bank of Australia on its public website for the last trading day of the previous calendar month.

Intellectual Property Rights means all intellectual property and proprietary rights (whether registered or unregistered) including any confidential information, trade secrets, copyright, letters patent, trade marks, service marks, trade names, designs, business names or other similar industrial, commercial or intellectual property rights, used in connection with the Project Assets.

Interim Period means the period from (and including) the Execution Date up to Completion or the earlier termination of this agreement.

Iron Ore means iron ore and any by-product that is directly associated with the form of iron ore mineralogy.

Iron Ore Rights means the right to explore for, mine or otherwise benefit from Iron Ore in the Tenements, whether arising under:

- (a) any Third Party Agreement; or
- (b) the terms of grant of the Tenements, including any right to apply for a variation to such terms to include the right to explore or mine for Iron Ore.

JVA means the unincorporated joint venture agreement between the Seller, the Buyer and WLOPL in relation to the Project substantially in the form set out in Attachment A.

Key Third Party Agreements means the Third Party Agreements numbered 4, 7, 15, 23, 25, 28, 36, 37, 38 and 39 in Schedule 7.

Liability means any Claims, liability, obligation, debts, losses, charges, expenses, costs, outgoings, payments and damages of any kind and however arising (whether actual, contingent or prospective), including for any Loss irrespective of when the acts, events or things giving rise to the liability occurred and those the amount of which for the time being is not ascertained or ascertainable.

Life of Mine has the meaning given in the JVA.

Loss means any cost, damages, debt, expense, liability or loss and includes Taxes and Duties.

Mine Development Plan means the mine development plan in relation to the Project in the form set out in Attachment B.

Minerals means all naturally occurring substances on or under the surface of the land that is the subject of the Tenements.

Mining Act means the *Mining Act 1978* (WA).

Mining Information means all technical information in the possession or control of the Seller or its Related Bodies Corporate relating to the Tenements including (without limitation) geological, geochemical and geophysical maps and reports, surveys, mosaics, aerial photographs, electromagnetic tapes, electromagnetic or optical disks, sketches, drawings, memoranda, samples, drill cores, drill logs, drill pulp, logs of drill cores, assay results, maps and plans, whether in physical, written or electronic form, but excluding data or information that relates in part to tenements other than the Tenements (except where it is reasonably practicable for the Seller to extract such information as relates only to the Tenements).

Mining Tenements means:

- (a) the mining tenements specified in Part 1 of Schedule 3; and
- (b) to the extent that they are held by the Seller, any renewals, conversions, amalgamations or substitutions of the mining tenements referred to in paragraph (a).

Minister means the Minister of the Crown in the right of the State of Western Australia responsible for the administration of the Mining Act and the Petroleum Pipelines Act (as applicable) from time to time.

Mobile Equipment means all heavy mobile and ancillary equipment (including tooling) which are listed in Schedule 8.

MRL Ownership Period means the period from 9 September 2016 to Completion.

New Crusher means the crusher that as of the date of this agreement is in the process of being built, and will be owned and operated by the Seller Guarantor or a Related Body Corporate of the Seller Guarantor for the benefit of the parties under the JVA pursuant to the contract referred to in paragraph (c) of the definition of Transaction Documents.

Non-Defaulting Party has the meaning given in clause 2.6(b).

Non-Transferring Approvals means any licence, consent, approval, permit, registration, accreditation, certification or other authorisation (or any variations thereof) given or issued by any Government Agency or any other person held by the Seller which relates to the Sale Interest and which is not capable of being assigned to the Buyer or WLOPL (as applicable), including those specified in Schedule 11.

Officer means, in relation to a body corporate, a director or company secretary assistant secretary, chief executive officer, chief financial officer, general manager or other officer of that body corporate.

Old Crusher means the crusher owned by the Seller Guarantor that was previously built and has been operated at the Project prior to the Execution Date.

Operational Spares Plan means the 'Wodgina Benefication Plant Operational Spares First Fill Requirements', as attached to the Disclosure Letter.

Ordinary Share means an ordinary share in the capital of WLOPL that carries both the economic and voting rights of an ordinary share.

Ore means the ore derived from the Project.

Parent Guarantee means the parent guarantee between the Seller, the Seller's Guarantor, the Buyer, the Buyer's Guarantor and WLOPL in relation to the guarantee of obligations under the JVA in the form set out in Attachment C.

Permitted Security Interest means the permitted security interests specified in Schedule 9.

Petroleum Pipeline Licences means petroleum pipeline licences PL 55, PL 56 and PL 116 granted under the Petroleum Pipelines Act which are held by the Seller and any renewals, conversions, amalgamations or substitutions of those petroleum pipeline licences.

Petroleum Pipelines Act means the *Petroleum Pipelines Act 1969 (WA)*.

PMI means Process Minerals International Pty Ltd ACN 063 988 894.

PPS Act means the *Personal Property Securities Act 2009 (Cth)*.

PPS Law means:

- (a) the PPS Act;
- (b) any regulations made at any time under the PPS Act;
- (c) any legislative instrument made at any time under the PPS Act;
- (d) any amendment to any of the above, made at any time; or
- (e) any amendment made at any time to any other legislation as a consequence of a PPS Law referred to in paragraphs (a) to (d).

PPS Register means the Personal Property Securities Register established under the PPS Act.

PPS Security Interest means a security interest as defined in the PPS Act.

Processing Plant means the components of plant and other infrastructure described under the heading “Processing Plant” in Schedule 5.

Product means Concentrate.

Project means the project to develop and operate, in accordance with this agreement and the Transaction Documents, the mine site known as the Wodgina Lithium mine site, located in the Pilbara region of Western Australia and situated on the Tenements.

Project Assets means the Completed Infrastructure, the Incomplete Infrastructure and the Mobile Equipment (but excluding the Excluded Assets).

Purchase Price means US\$1.15 billion.

Recipient has the meaning given in clause 23.2(b).

Records means the Mining Information and (to the extent in the possession or control of the Seller and WLOPL) all original and copy records, documents, books, files, reports, accounts and plans including (without limitation) certificates of registration, minute books, statutory books and registers, books of account, originals of any tenement instruments held by the Seller and WLOPL, in each case, belonging to any or all of the Seller and WLOPL.

Related Body Corporate has the meaning given to that term in the Corporations Act.

Representatives means, in relation to a person, that person’s Officers, employees, agents, professional advisers (including legal advisers) or financiers or any other person acting on behalf of that person in relation to the transactions contemplated by this agreement.

Retained Liabilities has the meaning given in clause 11.3.

Rights includes rights, benefits, powers, privileges, authorities, discretions, remedies and immunities, whether actual, prospective or contingent and, when used in respect of any item of property, includes all the relevant party’s right, title and interest in and to that property.

Royalty means any royalty payable to a Government Agency in relation to the mining or extraction of minerals, and includes any penalty or interest payable to a Government Agency in relation to such royalties, but excludes Duty and Tax.

Sale Interest means a 50% legal and beneficial interest as tenant in common in:

- (a) the Tenements;
- (b) the Mining Information;
- (c) the Approvals;
- (d) the Project Assets;
- (e) the Consumables and Spares;
- (f) the Third Party Agreements (subject to any exclusions identified in this agreement and to the extent that they relate to the Tenements only);
- (g) the Petroleum Pipeline Licences;

- (h) the Stockpiles (but excluding Contracted Product); and
- (i) the Associated Rights,

but excludes the Excluded Assets.

SAMR means the State Administration of Market Regulation of the People's Republic of China.

Secured Party has the meaning given under section 10 of the PPS Act.

Security Interest means:

- (a) any third party rights or interests including a mortgage, bill of sale, charge, lien, pledge, trust, encumbrance, power or title retention arrangement, right of set off, assignment of income, garnishee order, monetary claim, flawed deposit arrangement or any other arrangement having a similar effect; and
- (b) a PPS Security Interest,
- (c) and includes any agreement to create any of them or allow them to exist.

Security Trustee means National Australia Bank Limited ACN 004 044 937 of Level 25, 255 George Street, Sydney, New South Wales.

Security Trustee Security means the general security deed granted by the Seller in favour of the Security Trustee.

Seller Group means the Seller and Seller Guarantor.

Seller Group Warranty means the warranties in Schedule 2.

Seller Guarantee means the guarantee and indemnity in clause 19.

Seller Guaranteed Obligations has the meaning given in clause 19.2(a).

Seller Guarantor Warranties means the representations and warranties set out in clause 16.1.

Stockpiles means all Ore and Product held in the Wodgina stockpiles and stockyards and in the New Crusher, Old Crusher or Processing Plant at the Completion Date by or on behalf of the Seller.

Spares means spare parts that the Seller holds in connection with the Project Assets to ensure the continuous, efficient and safe operation of the Project Assets.

Subscription Amount means \$50.

Subscription Shares means that number of Ordinary Shares equal to the number of Ordinary Shares on issue at the time of the subscription referred to in clause 3.

Superannuation Commitment means any obligation, liability or duty to make any payment to any person in respect of any superannuation or retirement benefits or pensions that are or may be provided to any present or former employees of the Seller or their respective dependants or any present or former contractors of the Seller that are deemed to be employees.

Supplier has the same meaning as it does in clause 23.2(b).

Tantalum means tantalum pentoxide (Ta₂O₅) and tantalum pentoxide bearing ore.

Tantalum Assets means the assets known as the 'tantalum circuit' forming part of the Processing Plant and owned by GAMG pursuant to the Tantalum Circuit Installation and Processing Agreement dated 9 September 2016 between the Seller, the Seller Guarantor, GAM and GAMG.

Tantalum Rights means the rights to Tantalum retained by GAMG in relation to certain of the Mining Tenements pursuant to the GAMG Mineral Rights Agreement.

Tax means a tax, levy, charge, impost, fee, deduction, compulsory loan or withholding any nature, including, without limitation, any goods and services tax (including GST), value added tax or consumption tax, which is assessed, levied, imposed or collected by a Government Agency, except where the context requires otherwise. This includes, but is not limited to, any interest, fine, penalty, charge, fee or other amount imposed in addition to those amounts, but excludes any Duty and Royalty.

Tax Act means the *Income Tax Assessment Act 1936* (Cth) or the *Income Tax Assessment Act 1997* (Cth), as the context requires.

Tax Relief means any relief, allowance, exemption, exclusion, set-off, deduction, loss, rebate, refund, right to repayment or credit granted or available in respect of a Tax or Duty under any law.

Tenement Applications means:

- (a) the mining tenement applications specified in Part 3 of Schedule 3 and those applications once granted;
- (b) to the extent that they are held by the Seller, any renewals, conversions, amalgamations or substitutions of the mining tenements referred to in paragraph (a); and
- (c) any mining tenement applications relating to the Project during the Interim Period and those applications once granted.

Tenements means:

- (a) the Mining Tenements;
- (b) the Assigned Tenements; and
- (c) the Tenement Applications.

Third Party means a person that is not a party or an Associate of a party.

Third Party Agreement means the Equipment Leases, each of the agreements specified in Schedule 7 and any additional agreements entered into by the Seller in respect of the Project in the ordinary course of business and in accordance with this agreement during the Interim Period.

Third Party Claim means any Claim brought by a person or entity (other than the Seller or the Buyer) which may give rise, or otherwise relates, to a Claim by the Buyer against the Seller.

Title Agreements means the Third Party Agreements numbered 34 and 35 in Schedule 7.

Transaction Documents means, collectively:

- (a) the JVA;
- (b) the Deed of Cross Security;
- (c) the Chargee's Priority Deed;
- (d) the Commercial Terms Agreement;
- (e) the crushing contract for the provision of crushing, mining and processing services between WLOPL, CSI and the Seller Guarantor, to be entered into substantially on the terms described in the Commercial Terms Agreement;
- (f) the camp and accommodation contract for the provision of operating and maintenance services for the camp and airport between WLOPL, PMI and the Seller Guarantor, to be entered into substantially on the terms described in the Commercial Terms Agreement;
- (g) the logistics contract for the provision of haulage, port, loading and shipping services between the Seller, the Buyer, PMI and the Seller Guarantor, to be entered into substantially on the terms described in the Commercial Terms Agreement;
- (h) the marketing agreement for the provision of marketing services for the Product between the Seller and Albemarle US, Inc, to be entered into substantially on the terms described in the Commercial Terms Agreement;
- (i) the intellectual property licensing agreement for the licensing of intellectual property to the Project between the Seller, the Buyer, WLOPL and Albemarle US, Inc., to be entered into substantially on the terms described in the Commercial Terms Agreement;
- (j) the Parent Guarantee;
- (k) the WLOPL Shareholders Agreement
- (l) the WLOPL Constitution; and
- (m) any other agreement the parties agree is a Transaction Document for the purposes of this agreement.

Transfer Instruments means the instruments of transfer in registrable form (subject to stamping) which effect or record the transfer from the Seller to the Buyer of a 50% interest in each Tenement and each Petroleum Pipeline Licence.

Transferring Employee means any Employee who, by Completion or within 3 months of the Completion Date, has accepted an offer of employment from WLOPL.

Treasurer means the Treasurer of the Commonwealth of Australia.

Ultimate Holding Company has the meaning given to that term in section 9 of the Corporations Act.

WLOPL means Wodgina Lithium Operations Pty Ltd, being a proprietary company to be registered with that name under the Corporations Act as required under clause 3.1 of this agreement.

WLOPL Constitution means the constitution governing WLOPL in the form agreed between the parties and initialled for identification.

WLOPL Shareholders Agreement means the shareholders agreement between WLOPL, the Seller and the Buyer in the form agreed between the parties and initialled for identification.

2 Interpretation

In this agreement headings are for convenience only and do not affect the interpretation of this agreement and the following rules of interpretation apply unless the contrary intention appears:

- (a) the singular includes the plural and vice versa;
- (b) words that are gender neutral or gender specific include each gender;
- (c) where a word or phrase is given a particular meaning, other parts of speech and grammatical forms of that word or phrase have corresponding meanings;
- (d) the words 'such as', 'including', 'particularly' and similar expressions are not used as, nor are intended to be, interpreted as words of limitation;
- (e) a reference to:
 - (i) a person includes a natural person, partnership, joint venture, government agency, association, corporation or other body corporate;
 - (ii) a thing (including, but not limited to, a chose in action or other right) includes a part of that thing, unless the context denotes otherwise;
 - (iii) a party includes its successors and permitted assigns;
 - (iv) a document includes all amendments or supplements to that document;
 - (v) a clause, term, party, schedule or attachment is a reference to a clause or term of, or party, schedule or attachment to this agreement;
 - (vi) this agreement includes all schedules and attachments to it;
 - (vii) a law includes a constitutional provision, treaty, decree, convention, statute, regulation, ordinance, by-law, judgment, rule of common law or equity and is a reference to that law as amended, consolidated or replaced;
 - (viii) an agreement includes an undertaking, or legally enforceable arrangement or understanding, whether or not in writing; and
 - (ix) unless expressly stated otherwise in this agreement, a monetary amount is in Australian dollars;

- (f) when the day on which something must be done is not a Business Day, that thing must be done on the following Business Day;
- (g) in determining the time of day, where relevant to this agreement, the relevant time of day is:
 - (i) for the purposes of giving or receiving notices, the time of day where a party receiving a notice is located; or
 - (ii) for any other purpose under this agreement, the time of day in the place where the party required to perform an obligation is located;
- (h) no rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of this agreement or any part of it; and
- (i) a reference to so far as the Seller is aware, or words to that effect, in relation to a fact, matter or circumstance is to the actual knowledge of any of the following persons as at the Execution Date having made due and proper enquiries prior to 5.00 pm on the day prior to the Execution Date:
 - (i) Chris Ellison;
 - (ii) Mark Wilson;
 - (iii) Simon Rushton;
 - (iv) Tim Williams;
 - (v) Mark Mitchell;
 - (vi) Rohan O'Grady;
 - (vii) Darren Killeen;
 - (viii) Tim Berryman;
 - (ix) Dave Geraghty; and
 - (x) Nick Rohr.

Schedule 2 Seller Group Warranties

1 General

1.1 Incorporation

The Seller is duly incorporated and validly exists under the law of its place of incorporation.

1.2 Capacity

- (a) The Seller has full corporate power and authority to own the Project Assets, the Sale Interest and to sell and transfer the Sale Interest and cause the issue of the Subscription Shares.
- (b) The execution and delivery of this agreement has been properly authorised by all necessary corporate action of the Seller.
- (c) The Seller has full corporate power and lawful authority to execute and deliver this agreement and, subject to clause 2, to consummate and perform or cause to be performed its obligations under this agreement.
- (d) This agreement constitutes a legal, valid and binding obligation of the Seller, enforceable in accordance with its terms.

1.3 No default

- (a) The execution, delivery and (subject to satisfaction of the Conditions) performance by the Seller of this agreement does not or will not (with or without the lapse of time, the giving of notice or both) contravene, conflict with or result in a breach of or default under:
 - (i) any agreement or instrument to which the Seller is a party;
 - (ii) any provision of the constitution of the Seller; and
 - (iii) any writ, order or injunction, judgement, or law to which it is a party or is subject or by which it is bound.

1.4 Ownership

- (a) There are no Security Interests over the Sale Interest (other than a Permitted Security Interest or, prior to Completion, the Security Trustee Security).
- (b) Except as expressly provided in this agreement, the Seller has not granted any option or right of pre-emption or first refusal in respect of any of the Sale Interest to any other person and subject to clause 2 and clause 5.2, the Seller will:
 - (i) at Completion be able to transfer legal and beneficial ownership and title to all of the Sale Interest to the Buyer other than the Assigned Tenements and the Incomplete Infrastructure in each case which are not yet legally owned by the Seller, but in respect of which the Seller will transfer ownership of and a 50% beneficial interest; and

- (ii) immediately after Completion, hold the remaining 50% legal and beneficial interest in the Project other than the Assigned Tenements and the Incomplete Infrastructure, in which the Seller will hold the remaining 50% beneficial interest.

1.5 Insolvency

- (a) No Insolvency Event has occurred in relation to the Seller.
- (b) So far as it is aware, there are no facts, matters or circumstances which give any person the right to apply to liquidate or wind up the Seller.

1.6 Share capital

- (a) At Completion, the Subscription Shares will constitute 50% of the issued ordinary share capital of WLOPL.
- (b) At Completion, there will be no shares in WLOPL allotted or on issue apart from Ordinary Shares and the Ordinary Shares will be fully paid.
- (c) At Completion, other than in accordance with this agreement and the Transaction Documents, WLOPL is not obliged to issue or allot any Shares or other securities of WLOPL, and WLOPL has not granted any person the right to call for the issue or allotment of any Shares or other securities of WLOPL.

2 Operation of the assets

2.1 Licences, authorisations and consents

- (a) The Seller has all material licences, authorisations and consents required for the activities it carries on in respect of the Project and the Seller has not received a written notice that it is in default under any such licence, authorisation or consent.
- (b) So far as the Seller is aware, the Approvals comprise all of the material licences and authorisations which are legally capable of being transferred to the Buyer or WLOPL and which were used by the Seller in activities in respect of the Project as conducted immediately prior to Completion including, without limitation, all material licences and authorisations which are necessary for the Seller to discharge in all material respects its contractual obligations which it owed to any third party immediately prior to Completion (but excluding any licences and authorisations which are held by third parties as required by applicable law).

2.2 Compliance with laws and regulations

The Seller has not received written notice from any Government Agency that it is in violation of any applicable law or regulation or any order or judgment of any court with respect to its activities in respect of the Project Assets where such violation would have a material adverse effect on the assets or financial position of the Seller.

2.3 Litigation

Except as claimant in the collection of debts arising in the ordinary course of business, as at the Execution Date, the Seller is not engaged in any litigation, arbitration or administrative proceeding which is in progress with respect to any asset that forms part of the Sale Interest and which is material in relation to the Seller nor, so far as the Seller is aware, has any such proceeding been expressly threatened in writing by or against it.

3 Sale Interest

- (a) If the Economic Effective Date occurs prior to or on the Completion Date, at Completion the Sale Interest, together with the Seller's 50% interest in the Project, the Non-Transferring Approvals, the Excluded Assets and the Transaction Documents described in paragraph (e), (f) and (g) of the definition of Transaction Documents, comprises all of the material assets required for the production of Concentrate at the site of the Project, except for the supply of goods and services that can only be procured by WLOPL after Completion.
- (b) Save for the Excluded Assets and the Non-Transferring Approvals, at Completion, there are no material assets owned by the Seller or any of its Related Bodies Corporate which were used by the Seller to produce Concentrate at the site of the Project prior to Completion and which are not included in the Sale Interest and are required for the production of Concentrate at the site of the Project.
- (c) The Seller Group Warranties in this paragraph 3 are given only at Completion.

4 Disclosure

So far as the Seller is aware, the Data Room Information:

- (a) was submitted in, and (where the information was subject to judgments, estimates or assumptions of the Seller) prepared in, good faith; and
- (b) other than the information referred to in the parentheses in paragraph (a) above, as at the Execution Date, is true and accurate in all material respects.

5 Contracts

- (a) Except as disclosed in the Disclosure Material or otherwise disclosed to the Buyer by separate arrangement, copies of all Third Party Agreements as at the Execution Date are contained in the Data Room Information.
- (b) Aside from the Third Party Agreements, there are no agreements, arrangements or understandings to which the Seller is party which are material to the operation of the Project Assets having regard to their state of completion as at the Execution Date.
- (c) As at the Execution Date, the Seller has not received any notice of termination, rescission or, invalidation or claim pursuant to any actual or alleged breach or default of any Third Party Agreement to which the Seller is a party or any claim by any party to be able to terminate, rescind or invalidate any contract to which the Seller is a party by reason of any actual or alleged breach of that contract.
- (d) So far as the Seller is aware:
 - (i) all Third Party Agreements then in existence are in full force and effect and binding in accordance with their terms (subject to any applicable insolvency laws);
 - (ii) as at the Execution Date, there is no material default or material breach of any Third Party Agreement which may have a material adverse effect on the Project or the Project Assets;

- (iii) it is not in material default or material breach of any Third Party Agreement which may have a material adverse effect on the Project or the Project Assets; and
- (iv) as at the Execution Date, there are no current or threatened material disputes or material claims in respect of any Third Party Agreement.
 - (e) So far as the Seller is aware, with respect to each Equipment Lease:
 - (i) no party to the contract is in material breach of it or otherwise in default as described in such Equipment Leases;
 - (ii) there are no grounds for rescission, avoidance or repudiation of that Equipment Lease;
 - (iii) no party has given notice to terminate it or has sought to repudiate or disclaim it or intends to do so;
 - (iv) there are no facts or circumstances which are likely to give rise to any of the above; and
 - (v) it is not terminable by virtue of the sale of the Sale Interest.
 - (f) The Equipment Leases constitute all the equipment leases, hire purchase agreements, conditional purchase agreements and other hiring arrangements for assets used in the Project comprising part of the Sale Interest.
 - (g) The Disclosure Material contains copies of each Equipment Lease in existence at the Execution Date.

6 Environmental

- (a) In this warranty 6:
 - (i) **Dangerous Substance** means any natural or artificial substance likely to cause significant damage to the environment; and
 - (ii) **Environmental Licence** means any permit, licence, authorisation, consent or other approval required under or in relation to any Environmental Law.
- (b) The Seller has all Environmental Licences necessary to own and operate the Project Assets in the state they exist as at the Execution Date and the Seller has not received written notice that it is materially in default under any such licence and, so far as the Seller is aware, there are no circumstances likely to give rise to such material default.
- (c) As at the Execution Date, the Seller has not received any notice that it is in violation of any Environmental Law where such violation would have a material adverse effect on the Project, the Sale Interest or the Tenements.
- (d) As at the Execution Date, the Seller has not received any notices, orders or directions issued by any Government Authority under any Environmental Law in respect of the Tenements or the Petroleum Pipeline Licences that have not been completely satisfied, and so far as the Seller is aware no such notice, order or direction is pending or has been threatened by any Government Authority and the Seller is not aware of any circumstance that would cause or might reasonably be expected to cause, or contribute to, the issue of such a notice, order or direction.

- (e) So far as the Seller is aware, as at the Execution Date, there are no proceedings taken by any Government Authority in respect of the Tenements or the Petroleum Pipeline Licences and no such proceedings are pending or have been threatened by any Government Authority in writing, and the Seller is not aware of any investigations being carried out or proposed by any Government Agency in respect of any breach or alleged breach of or non-compliance with any Environmental Law relevant to the Tenements or the Petroleum Pipeline Licences by the Seller.
- (f) As at the Execution Date, the Seller is not engaged in any litigation, arbitration or administrative proceeding concerning Environmental Law or Dangerous Substances which is in progress and which is material in relation to the Project Assets or the Sale Interest nor, as far as the Seller is aware, have any such proceeding been threatened in writing by or against the Seller.

7 Tenements and Petroleum Pipeline Licences

- (a) Other than the Assigned Tenements and the Tenement Applications, the Tenements are legally and beneficially owned solely by the Seller and at Completion will be free and clear of all Security Interests (other than Permitted Security Interests).
- (b) The Assigned Tenements are beneficially owned by the Seller and the Seller is entitled to become the legal owner of the Assigned Tenements and after transfer to the Buyer will be free and clear of all Security Interests (other than the Permitted Security Interests).
- (c) The Seller will, on grant of the Tenement Applications, be the sole legal and beneficial owner of the Tenement Applications and at Completion, the Tenement Applications will be free and clear of all Security Interests (other than Permitted Security Interests).
- (d) There are no material breaches of any of the terms and conditions of the Tenements (other than the Assigned Tenements) or the Petroleum Pipeline Licences and, so far as the Seller is aware, the Assigned Tenements.
- (e) So far as the Seller is aware:
 - (i) each of the Tenements is in good standing and in full effect in accordance with its terms and the Mining Act;
 - (ii) each of the Petroleum Pipeline Licences is in good standing and in full effect in accordance with its terms and the Petroleum Pipelines Act;
 - (iii) except as disclosed in the Disclosure Material, as at the Execution Date, the Seller has not received any written notice of any potential native title claims which have been lodged in respect of any of the Tenements;
 - (iv) except as disclosed in the Disclosure Material, as at the Execution Date, there is not in existence any current compensation agreement with the owner or occupier of any land which is subject to the Tenements or the Petroleum Pipeline Licences; and

- (v) none of the Tenements or the Petroleum Pipeline Licences are liable to forfeiture, cancellation or suspension and there is no matter likely to prejudice the renewal of the Tenements or the Petroleum Pipeline Licences or which might adversely affect the rights or benefits conferred by the Tenements or the Petroleum Pipeline Licences.

8 Project Assets

- (a) The Seller is:
 - (i) the legal and beneficial owner of the Completed Infrastructure;
 - (ii) entitled to become the legal and beneficial owner of the Incomplete Infrastructure; and
 - (iii) the beneficial owner of all other Project Assets.
- (b) There will be no Security Interest (other than a Permitted Security Interest) over or affecting any Project Assets and the Seller is not party to any agreement to grant any Security Interest over any Project Assets.
- (c) So far as the Seller is aware, no person has a continuing claim of an entitlement to a Security Interest (other than a Permitted Security Interest) over or affecting any Project Assets other than as provided for in the Third Party Agreements.
- (d) Each item of Completed Infrastructure:
 - (i) is (to the extent any purchase moneys are due and payable) fully paid for;
 - (ii) is not the subject of any lease or hire purchase agreement or agreement for purchase on deferred terms, other than in the ordinary course of business;
 - (iii) is located at the Tenements or otherwise within the physical possession or control of the Seller;
 - (iv) is in the physical possession or control of the Seller; and
 - (v) not the subject of any agreements or arrangements to dispose or not to dispose or which otherwise restrict their use or disposal by the Seller.
- (e) Each item of the Project Assets, to the extent they are complete and operational:
 - (i) is as at the Execution Date in a good and safe state of repair and condition and is in satisfactory working order for its age; and
 - (ii) between the Execution Date and Completion, has in all material respects been operated and maintained in accordance with the standard that would reasonably be expected of persons operating and maintaining equipment similar to the Project Assets in the mining industry in Australia.

9 Records

So far as the Seller is aware, the Records:

- (a) have been properly maintained; and

- (b) do not contain material inaccuracies or discrepancies of any kind.

10 Real property

The Seller (and, at Completion, WLOPL) does not own, lease, sub-lease, licence or otherwise have any interest (other than under or in respect of the Tenements or the Petroleum Pipeline Licences) in any real property.

11 Intellectual Property Rights

- (a) So far as the Seller is aware, the Seller's use of any Intellectual Property Rights in connection with the Project Assets which are material in the context of the Project as a whole, does not infringe, breach an obligation of confidence or wrongfully use any confidential information, trade secrets, copyright, letters patent, trade marks, service marks, trade names, designs, business names or other similar industrial, commercial or intellectual property rights of any corporation or person.
- (b) So far as the Seller is aware, as at the Execution Date, no Claims have been asserted challenging the Seller's use of the Intellectual Property Rights.

12 Anti-bribery and corruption

- (a) So far as the Seller is aware, neither the Seller nor any of their Representatives has in relation to the Project Assets:
 - (i) offered, paid, promised to pay, or authorised the payment of any money, or has offered, given, promised to give, or authorised the giving of anything of value, including, but not limited to, cash, cheques, wire transfers, tangible and intangible gifts, favours, services, and those entertainment and travel expenses, to any Governmental Authority, political party or candidate for government office, nor provided or promised anything of value or which may constitute an undue advantage to any other person while knowing that all or a portion of that thing of value would or will be offered, given, or promised, directly or indirectly, to any Governmental Authority, political party or candidate for government office, for the purpose of improperly:
 - (A) influencing any act or decision of such official, party or candidate in his official capacity, inducing such official, party or candidate to do or omit to do any act in violation of their lawful duty, or securing any improper advantage; or
 - (B) inducing such official, party or candidate to use his influence with his government or instrumentality to affect or influence any act or decision of such government or instrumentality, in order to assist in obtaining or retaining business for or with, or directing business to, any person;
 - (ii) violated any applicable anti-corruption laws;
 - (iii) violated any applicable anti-money laundering laws; or
 - (iv) otherwise made, offered, sought, provided or received any bribe, payoff, influence payment, kickback, or other similar unlawful payment or an undue advantage to obtain favourable treatment in securing business for the Seller or the Project.

- (b) Without limiting the foregoing, there are and have been no enforcement actions or investigations (internal or governmental) involving or, so far as the Seller is aware, allegations or disclosures to, Governmental Authorities, related to actual or potential violations of any anti-corruption or anti-money laundering laws or regulations relating to any improper conduct of the Seller in relation to the Project Assets, and so far as the Seller is aware there are no circumstances likely to give rise to any Claim relating to any such improper conduct of the Seller in relation to the Project Assets. The Seller has not received any notice, request, or citation for any actual or potential non-compliance with any of the foregoing in this Warranty 12.2 as it relates to the Project.
- (c) The Seller maintains and utilises controls procedures and internal accounting control systems that are consistent with the requirements of any applicable anti-corruption laws.

13 Insurance

- (a) The Disclosure Materials contain, as at the Execution Date, complete and accurate particulars of all current insurance policies taken out in respect of the Project Assets (**Insurances**).
- (b) Each Insurance policy is currently in full force and effect.
- (c) So far as the Seller is aware, as at the Execution Date, nothing has been done or omitted to be done that would make any Insurance void or voidable or that would permit an insurer to cancel the Insurance or refuse or materially reduce a claim.

14 Tax

Any Tax (other than income tax), Duty or Royalty that is payable in relation to the ownership, occupation, or use for the mining or extraction of minerals on or in relation to:

- (a) the Tenements (other than the Assigned Tenements) has been paid; and
- (b) the Assigned Tenements, so far as the Seller is aware, has been paid.

Schedule 13 Completion Adjustment

1 Calculation

The **Completion Adjustment** will be determined as the following calculation, to be made in accordance with the principles set out in this Schedule 13, and provided that the Completion Adjustment cannot be less than negative US\$25 million or more than positive US\$25 million:

$$\text{Completion Adjustment} = 0.5 \times [\text{EBITDA} - \text{Inventory}]$$

where

EBITDA means the sum of all income earned less all expenses incurred by the Seller in respect of the Project during the period between the Effective Date and the Completion Date; and

Inventory means an amount equal to the sum of:

- (a) the value of all operational spares at Completion minus the value of all operational spares at the Economic Effective Date, in each case to the extent that the operational spares are for use in connection with the Project;
- (b) the value of all Ore and Product on the Stockpile as at the Economic Effective Date (valued at cost); and
- (c) the value of all oil, diesel, greases, lubricants, hydraulic fluids, cleaning products, explosives and all other consumables used in connection with the Project as at the Economic Effective Date (valued at cost).

2 Principles and Policies

2.1 General Principles

The Completion Statement used to determine the Completion Adjustment must be prepared in accordance with:

- (a) the pro-forma income statement set out in Schedule 14 and must:
 - (i) only include income and expenses falling within categories included in that pro-forma income statement;
 - (ii) exclude any income and expenses of a categories identified as 'EXCLUDED' in that pro-forma income statement; and
 - (iii) not include any expense incurred otherwise than in accordance with this agreement (including clause 6);and
- (b) except to the extent set out in clause 2.1(a) above, in accordance with the Accounting Standards.

2.2 Specific principles, policies and procedures

The following specific principles, policies and procedures will apply to the preparation of the Completion Statement used to determine the Completion Adjustment:

- (a) no item shall be included more than once;
- (b) no item shall be included or excluded solely on the grounds of materiality;
- (c) any item that has or will otherwise be provided for under any Transaction Document shall be excluded from the Completion Statement to the extent that the inclusion would result in two payments in respect of the same item; and
- (d) all amounts in a currency other than US dollars are to be converted to US dollars at the closing Reserve Bank of Australia rate on the Completion Date or as otherwise agreed between the parties.

Execution page

Executed as an agreement.

Executed by **Wodgina Lithium Pty Ltd** ACN
611 488 932 in accordance with section 127 of
the *Corporations Act 2001* (Cth) by:

/s/ Chris Ellison

Signature of director

Chris Ellison

Name of director (print)

/s/ Mark Gregory Wilson

Signature of director/secretary

Mark Gregory Wilson

Name of director/secretary (print)

Executed by **Albemarle Wodgina Pty Ltd** ACN
630 509 303 in accordance with section 127 of
the *Corporations Act 2001* (Cth) by:

/s/ Terrence Hammons

Signature of director

Terrence Hammons

Name of director (print)

/s/ Mathew Shane Zauner

Signature of director/secretary

Mathew Shane Zauner

Name of director/secretary (print)

Executed by **Mineral Resources Limited** ACN
118 549 910 in accordance with section 127 of
the *Corporations Act 2001* (Cth) by:

/s/ Chris Ellison

Signature of director

Chris Ellison

Name of director (print)

/s/ Mark Gregory Wilson

Signature of director/secretary

Mark Gregory Wilson

Name of director/secretary (print)

Executed by **Albemarle Corporation** in the presence of:

/s/ A. Chanler Krupa

Signature of witness

A. Chanler Krupa

Name of witness (print)

/s/ Ander Krupa

Signature of authorised signatory

Ander Krupa

Name of authorised signatory (print)

Wodgina Joint Venture Agreement

Wodgina Project

**Wodgina Lithium Pty Ltd
Albemarle Wodgina Pty Ltd
Wodgina Lithium Operations Pty Ltd**

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Date:

Parties

- 1 **Wodgina Lithium Pty Ltd**
ACN 611 488 932
of 1 Sleat Road, Applecross WA 6153
(WLPL)
- 2 **Albemarle Wodgina Pty Ltd**
ACN 630 509 303
of [insert address]
(AWPL)
- 3 **Wodgina Lithium Operations Pty Ltd**
ACN [insert ACN]
of [insert address]
(WLOPL)

The parties agree

1 Defined terms and interpretation

1.1 Definitions in the Dictionary

A term or expression starting with a capital letter:

- (a) which is defined in the Dictionary in Schedule 1, has the meaning given to it in the Dictionary;
- (b) which is defined in the Corporations Act, but is not defined in the Dictionary, has the meaning given to it in the Corporations Act; and
- (c) which is defined in the GST Law, but is not defined in the Dictionary or the Corporations Act, has the meaning given to it in the GST Law.

1.2 Interpretation

The interpretation clause in Schedule 1 sets out rules of interpretation for this agreement.

2 Joint Venture

2.1 Formation of Joint Venture

The Participants agree to associate themselves on and from the Effective Date as an unincorporated joint venture under which the initial Joint Venture Interests of the Participants are as follows:

WLPL's Joint Venture Interest	AWPL's Joint Venture Interest
50%	50%

2.2 Purposes of Joint Venture

The purposes of the Joint Venture are:

- (a) the exploration, development, mining, processing and production of Minerals from the Joint Venture Area upon the terms and conditions set out in this agreement;
- (b) the construction and operation of a Refinery Plant on such part of the Joint Venture Area as determined by the Management Committee upon the terms and conditions set out in this agreement;
- (c) to implement the Business Plan;
- (d) to carry out any other activities as the Participants may agree; and
- (e) all such other matters and things as may be incidental to the foregoing, including Rehabilitation of the Tenements and Mine Closure.

2.3 Reserved Rights

- (a) The parties acknowledge that:
 - (i) WLPL is the holder of Iron Ore Rights, and such rights permit WLPL to conduct certain exploration and mining activities on the Tenements in respect of Iron Ore, for so long as the Iron Ore Rights exist, and such rights do not form part of the Joint Venture Assets; and
 - (ii) pursuant to the GAMG Mineral Rights Agreement, rights to conduct certain exploration and mining activities on the Tenements in respect of Tantalum were granted to GAMG, and such rights do not form part of the Joint Venture Assets.
- (b) AWPL acknowledges that WLPL may apply for a variation to the terms of grant of the Tenements to the extent necessary so that the terms of grant include the right to explore or mine for Iron Ore and that upon such variation being granted, such Iron Ore Rights will be reserved to WLPL (and in such case AWPL will consent to such application and sign any required forms and applications in that regard), subject to WLPL indemnifying AWPL in relation to any taxes or duties (including stamp duty) payable by AWPL in relation to such variation or reservation).

2.4 Exercise of Iron Ore Rights

- (a) Except as may be expressly permitted under the terms of a Notice of Consent, WLPL must exercise its Iron Ore Rights in such a manner so as to not adversely interfere with or impair the Exploration Operations and/or Mining Operations of the Joint Venture, which WLPL acknowledges takes precedence over WLPL's rights to conduct Exploration Operations and Mining Operations in respect of Iron Ore.
- (b) If WLPL intends to commence any Exploration Operations or Mining Operations pursuant to its Iron Ore Rights it must first give a notice (**Notice of Proposed Activity**) to the Manager containing the following particulars (**Proposed Activity**):
 - (i) in the case of Exploration Operations:
 - (A) the general nature and methods of Exploration Operations proposed on any part of the area of the Tenements;
 - (B) the approximate number of Personnel and the general nature of the plant and machinery which it proposes to take on to the area of the Tenements for the purpose of conducting such Exploration Operations; and

- (C) the areas within each of the Tenements which it proposes to enter upon for the purpose of conducting such Exploration Operations; and
- (ii) in the case of Mining Operations:
 - (A) a proposed Mine Development plan;
 - (B) such relevant information as is reasonably necessary for the Manager to effectively consider the proposal to commence Mining Operations; and
 - (C) the date that it intends to commence Mining Operations.
- (c) Upon receipt of a Notice of Proposed Activity, the Manager must convene a meeting of the Management Committee to consider the Notice of Proposed Activity. The Manager will give the Participants at least 45 days' prior notice of such meeting.
- (d) If the Management Committee resolves (acting reasonably) that WLPL's Proposed Activity may adversely interfere with or impair the Joint Venture's Mining Operations or currently existing Exploration Operations or areas identified as prospective for Minerals other than Iron Ore and Tantalum (**Other Minerals**) through any prior Exploration Operations, then the Manager must within five (5) Business Days of such resolution give a notice of objection to WLPL (**Notice of Objection**).
- (e) If the Management Committee resolves (acting reasonably) that WLPL's Proposed Activity will not adversely interfere with or impair the Joint Venture's Mining Operations or currently existing Exploration Operations or areas identified as prospective for Other Minerals through any prior Exploration Operations (or, subject to clause 2.4(f)(ii), will not if WLPL complies with conditions determined by the Management Committee), the Manager must within five (5) Business Days of such resolution give a notice of consent to WLPL (**Notice of Consent**).
- (f) If the Manager:
 - (i) does not issue a notice in accordance with either clause 2.4(d) or clause 2.4(e); or
 - (ii) issues a notice in accordance with clause 2.4(e) and, within five (5) Business Days of receipt of such notice, WLPL notifies the Manager that it does not accept the conditions determined by the Management Committee which attach to such notice,

it shall be deemed to have issued a Notice of Objection.
- (g) A resolution of the Management Committee to issue a Notice of Objection or a Notice of Consent shall be by a Special Resolution.
- (h) WLPL may not proceed with its Proposed Activity unless it has received a Notice of Consent from the Manager.
- (i) Subject to clause 2.4(f), upon receipt of a Notice of Consent from the Manager, WLPL may proceed to implement its Exploration Operations or Mining Operations (as applicable) in accordance with the relevant Notice of Proposed Activity subject to and in compliance with any conditions set out in the Notice of Consent, and provided it continues to use its best endeavours to minimise any adverse interference with the Joint Venture Operations.

- (j) Within five (5) days of a Notice of Objection being given, the Manager, AWPL and WLPL shall meet and discuss WLPL's Proposed Activity and any objections to it in a bona fide endeavour to resolve the matter by agreement, and such discussions may include amendment or variation by:
 - (i) WLPL of the extent or timing of the Proposed Activity or conditions it will comply with in relation to the Proposed Activity; or
 - (ii) the Manager of the affected Mining Operations or Exploration Operations program given in its Notice of Objection.
- (k) If, notwithstanding the discussions between WLPL, AWPL and the Manager, they are unable to resolve the Manager's objections set out in the Notice of Objection within fourteen (14) days of the Notice of Objection being received by WLPL, then a Participant may issue a Dispute Notice in accordance with clause 18.2 to attempt to resolve the matter.
- (l) If the Participants are unable to resolve the matter in accordance with clause 18.2, then the Proposed Activity may not proceed.
- (m) The Participants agree that (as between themselves):
 - (i) the area of the Wodgina Resource is deemed to be a Development Area (as defined in the Mineral Rights Agreement) for Minerals other than Iron Ore and WLPL will not during the term of the Joint Venture issue a Notice of Proposed Activity in the exercise of its Iron Ore Rights in that area;
 - (ii) subject to clause 2.4(m)(i), the process in this clause 2.4 will apply in substitution of the 'Notice of Proposal to Mine' process in clause 6.9 of the Mineral Rights Agreement, which for the avoidance of doubt means that the Participants (including AWPL) are not required to comply clause 6.9 of the Mineral Rights Agreement; and
 - (iii) this agreement prevails to the extent of any inconsistency with the Iron Ore Rights.

2.5 Transfer of incomplete Project Facilities

The parties acknowledge that certain Project Facilities may not have reached practical completion at the Effective Date. The parties acknowledge that the transfer of ownership of such Project Facilities will occur in accordance with clause the Asset Sale and Share Subscription Agreement and will at that time become Joint Venture Assets.

2.6 Name

The name of the Joint Venture is the "Wodgina Joint Venture".

2.7 Relationship of Participants

- (a) Nothing contained in a Joint Venture Document will be deemed to constitute a Participant being the partner of any other Participant.
- (b) Except as otherwise specifically provided for in a Joint Venture Document, nothing contained in a Joint Venture Document will be construed so as to constitute a Participant an agent or representative of any other Participant or to create any trust for any purpose howsoever, except to the extent to which the Manager is the agent of the Participants.

- (c) No Participant shall be under any fiduciary or other duty to the other which will prevent it from engaging in or enjoying the benefits of any competing endeavours, subject to the express provisions of this agreement.

2.8 Entitlement to Product

- (a) Each Participant shall be entitled and obliged, unless otherwise agreed by the Participants, to take in kind and separately dispose of, in proportion to its Joint Venture Interest, all Product as and when produced by the Joint Venture.
- (b) The Manager must deliver each Participant's Joint Venture Interest share of Product to the Participant at the Delivery Point, and if separately delivered, by use of equipment and techniques which are specifically designed and intended not to favour any one Participant over another.
- (c) Title to, and the risk of loss of, or damage to, the Product passes to the relevant Participant at the Delivery Point.
- (d) Upon commencement of operation of the Refinery Plant, each Participant will cause such amount of its Lithium recovered from the Tenements to be refined using the Refinery Plant as specified in the Refinery Plant Business Plan.
- (e) If the Sole Risk Participant develops the Alternative Refinery Plant in accordance with clause 6.12(h), the Sole Risk Participant will not be obliged to refine any of the Non-consenting Participant's Product in the Alternative Refinery Plant.

2.9 Tenants in common

- (a) The Joint Venture Assets will be beneficially owned by the Participants as tenants in common in proportion to their respective Joint Venture Interests, notwithstanding that the legal title may be held by one or some only of the Participants or the Manager.
- (b) The Manager or any Participant which holds the legal title to any Joint Venture Asset, holds such Joint Venture Asset as agent for the Participants in proportion to their respective Joint Venture Interests.

2.10 No partition

Each Participant waives its rights to partition of the Joint Venture Assets and, to that end, agrees that it will not seek or be entitled to partition of any Joint Venture Asset, whether by way of physical partition, judicial sale or otherwise, until after termination of the Joint Venture.

2.11 Rights and obligations several

The rights and obligations of each Participant in respect of the Joint Venture will be, in every case, several in proportion to their respective Joint Venture Interests from time to time and will not be, or be construed to be, either joint or joint and several.

2.12 Mutual obligations

Each Participant will perform, observe and fulfil each and every one of its obligations under or arising out of each of the Joint Venture Documents.

2.13 Protection of Tenements and Pipeline Licences

A Participant will not knowingly do or omit to do, and will at all times take proper care to ensure that it does not do or omit to do, any act, deed, matter or thing which may place any Tenement or Pipeline Licences at risk of being cancelled, forfeited, lost, refused or surrendered, or which may otherwise jeopardise any Tenement in any way.

2.14 Maintain Tenements and Pipeline Licences

Unless otherwise determined by a Special Resolution of the Management Committee, the Tenements and Pipeline Licences will be maintained in force and renewed during the term of this agreement, and each Participant will take all action necessary on its part to maintain and renew the Tenements and the Pipeline Licences.

2.15 Rehabilitation

- (a) Subject to clause 2.15(b), with effect from the Effective Date, the Participants shall bear the responsibility for Rehabilitation Obligations and the payment of the Rehabilitation Levy applicable to the Tenements in accordance with their respective Joint Venture Interests.
- (b) WLPL agrees that it is responsible for such amount of the Rehabilitation Levy paid by AWPL under clause 2.15(a) (or by the Manager on behalf of AWPL) and any costs incurred by AWPL in respect of Rehabilitation Obligations which are attributable to:
 - (i) acts, errors or omissions of WLPL, its Affiliates or their Personnel which were in breach of a law, Approval or Tenement condition, during the WLPL Ownership Period;
 - (ii) any exploration for or mining of Iron Ore on the Tenements occurring after the Effective Date; and
 - (iii) any exploration for or mining of Tantalum on the Tenements occurring after the Effective Date pursuant to the exercise of mining or exploration rights for Tantalum in circumstances where GAMG is no longer the holder of the rights under the GAMG Mineral Rights Agreement and such rights have reverted to WLPL (including by WLPL becoming the successor to the GAMG under the GAMG Mineral Rights Agreement),

(Rehabilitation Liability Costs).

- (c) WLPL must reimburse AWPL within 5 Business Days after it receives evidence of the payment by AWPL of any Rehabilitation Liability Costs.
- (d) As soon as reasonably practicable after the Effective Date, WLPL must provide AWPL with any information WLPL has compiled in relation to the Tenements for the purposes of calculating the Rehabilitation Levy.
- (e) Without limitation to clause 2.15(a), WLPL must indemnify AWPL against any loss, cost, damage or liability in relation to the exploration, mining and other related activities occurring on or after the Effective Date in respect of:

- (i) Iron Ore; and
- (ii) Tantalum (but only in circumstances where GAMG is no longer the holder of the rights under the GAMG Mineral Rights Agreement and such rights have reverted to WLPL),

including in relation to the reservation of those rights to WLPL, any statutory and private royalties, any compensation payment to any persons, the holding of and exercise of the rights by WLPL, and taxes and duties (including stamp duty) on any dealing with such rights (whether before, on or after the Effective Date) by WLPL and any dealing by AWPL with its Joint Venture Interest to the extent related to the holding by and reservation of such rights to WLPL.

To the extent that AWPL is required to include any amount payable under the indemnity provided in this clause 2.15(e) for tax purposes as assessable income or capital gain in a year and is not entitled to a tax deduction in that year for the full amount of any such loss, cost, damage or liability, the amount payable under the indemnity provided in this clause 2.15(e) must be increased by a factor calculated as follows:

where **Tax Rate** means the applicable Australian income tax rate for AWPL.

2.16 Party warranties

- (a) Each party represents and warrants to each of the other parties that each of the following statements is true, accurate and complete and not misleading as at the Effective Date:
 - (i) it is duly incorporated and validly exists under the law of its place of incorporation;
 - (ii) the execution and delivery of this agreement has been properly authorised by all necessary corporate action;
 - (iii) it has full corporate power and lawful authority to execute and deliver this agreement and to consummate and perform or cause to be performed its obligations under this agreement;
 - (iv) this agreement constitutes a legal, valid and binding obligation on it enforceable in accordance with its terms;
 - (v) the execution, delivery and performance by it of this agreement does not or will not (with or without the lapse of time, the giving of notice or both) contravene, conflict with or result in a breach of or default under:
 - (A) any provision of its constitution;
 - (B) any material term or provision of any security arrangement (including any Security Interest), undertaking, agreement or deed to which it is bound;
 - (C) any writ, order or injunction, judgement or law to which it is a party or is subject or by which it is bound;
 - (vi) no Insolvency Event has occurred in relation to it; and

- (vii) so far as it is aware, there are no facts, matters or circumstances which give any person the right to apply to liquidate it or wind it up.
- (b) Each party acknowledges that each of the other parties has entered into this agreement in reliance on the warranties provided in clause 2.16(a).
- (c) Each of the warranties in clause 2.16(a) must be construed independently and is not limited by reference to another warranty provided in clause 2.16(a).
- (d) Each party indemnifies each of the other parties against any Loss which the other party may incur to the extent caused by any breach of the warranties provided in clause 2.16(a).

3 Term and termination

3.1 Term of Joint Venture

This agreement and the Joint Venture will commence on the Effective Date and, subject to the provisions of this agreement, will continue until completion of the winding up of all Joint Venture Operations after the first to occur of:

- (a) the Participants agreeing to terminate the Joint Venture;
- (b) the Management Committee by a Special Resolution determining:
 - (i) that there are no economically recoverable reserves of Minerals in the Joint Venture Area and that the Tenements should be surrendered; or
 - (ii) that all the reserves of economically recoverable Minerals in the Joint Venture Area have been recovered; or
- (c) there being less than two (2) Participants holding an interest in the Joint Venture Assets.

3.2 Disposal of Joint Venture Assets upon termination

- (a) Upon the occurrence of a termination event under clause 3.1 (other than clause 3.1(c)), the Manager must commence winding up the Joint Venture Operations including:
 - (i) satisfying all Rehabilitation Obligations and Mine Closure Obligations;
 - (ii) taking such steps to dispose of the Joint Venture Assets in accordance with such instructions (if any) as the Manager may receive from the Management Committee; and
 - (iii) otherwise complying with the Approved Closure Plan.
- (b) The net proceeds of realisation of the Joint Venture Assets, after satisfying all Rehabilitation Obligations and Mine Closure Obligations, will be distributed to the Participants in proportion to their respective Joint Venture Interests.
- (c) For the avoidance of doubt, all costs and expenses incurred by the Manager as a result of the termination of the Joint Venture will be Joint Venture Costs and will be paid by the Participants in proportion to their respective Joint Venture Interests.

3.3 Certain obligations continue beyond termination

Upon termination of this agreement for any reason, all rights and obligations of the parties cease, other than:

- (a) the obligation to pay any actual or contingent liabilities relating to Joint Venture Operations, including the cost of all Rehabilitation Obligations and Mine Closure Obligations and any severance, sickness and other employee benefit costs incurred or imposed in connection with Joint Venture Operations, or otherwise arising from this agreement, that have not been discharged as at the date of termination; and
- (b) any other obligations expressed to survive termination.

4 Manager

4.1 Initial Manager

The Participants appoint WLOPL as the manager of the Joint Venture from the Effective Date, and WLOPL accepts that appointment upon and subject to the terms and conditions contained in this agreement.

4.2 Shareholding in the Manager

- (a) As at the date of this agreement, the entire issued share capital in the Manager is held by the Participants in the same proportions as their respective Joint Venture Interests.
- (b) If a Participant transfers the whole or any part of its Joint Venture Interest under clause 12 or clause 13, the transferring Participant must ensure that such number of shares in the Manager are transferred to the applicable transferee as is necessary to ensure that a Participant's shareholding in the Manager remains in proportion to its Joint Venture Interest.

4.3 Removal of Manager

- (a) The Manager may only be removed by Special Resolution of the Management Committee, provided that the Manager may only be removed if the Management Committee, in the same meeting, appoints a replacement Manager by Special Resolution as the new Manager on the terms and conditions contained in this agreement, provided that if no new Manager can be appointed by such a vote, then, in circumstances where the Participants do not hold equal Joint Venture Interests, the Participant with the largest Joint Venture Interest will be deemed to be the Manager. If there is more than one Participant with the largest Joint Venture Interest, then those Participants will appoint the Manager and failing agreement between them, the matter will be referred to an Expert to be determined in accordance with clause 17.
- (b) The removal of the Manager under clause 4.3(a) will take effect immediately, but such removal does not prevent the Manager from recovering Joint Venture Costs incurred up to that date from the Participants, as well as other unavoidable, pre-committed or existing Joint Venture Costs incurred after that date.

4.4 No transfer of Manager's interest

The Manager must not, without the prior written consent of the Participants, transfer any of its rights or interest under this agreement.

4.5 Delivery of property on change of Manager

On the effective date of the removal of the Manager under clause 4.3(a), the Manager will:

- (a) deliver to its successor (or as the Participants may otherwise direct):
 - (i) all Joint Venture Assets in its possession or under its control;
 - (ii) the Joint Venture Records and Accounts;
 - (iii) all Confidential Information;
 - (iv) the results of all work undertaken by or for the Manager for the purposes of the Joint Venture, including all Mining Information and the results of any tests undertaken by or for the Manager; and
 - (v) all exploration, mining, engineering and other reports or studies prepared by or for the Manager;
- (b) transfer title to any Joint Venture Assets to its successor (or as the Participants, acting unanimously, may otherwise direct);
- (c) transfer any Security Interest it holds over Joint Venture Assets to its successor;
- (d) deliver documents regarding the novation or assignment of the rights and liabilities of the Manager under any contract entered into in its capacity as Manager to the successor which takes effect on and from the effective date of the Manager's removal, and where the novation or assignment of such a contract has not occurred by the effective date of the Manager's removal, the Participants and the outgoing Manager must each continue to use all reasonable endeavours to procure the novation or assignment of the contract as soon as reasonably practicable;
- (e) to the maximum extent legally permissible, transfer any authorisations from any Government Agency that can be transferred in relation to the Joint Venture Assets, and in respect of any such authorisations which cannot be transferred by the Manager to its successor, it must do all things reasonably necessary to assist the successor in applying for new authorisations, and if requested by the successor, terminate, surrender or cancel those authorisations once the successor has obtained the relevant authorisation or to enable the successor to apply for a replacement authorisation; and
- (f) provide assistance to the Participants as requested, for up to 90 days and on a cost reimbursement basis, to allow the management, supervision and conduct of Joint Venture Operations to continue without interruption or adverse effect and to facilitate the orderly transfer of responsibility for and conduct of the Joint Venture Operations to its successor,

and the outgoing Manager and the Participants must sign, and must ensure the replacement Manager signs, all documents necessary to effect the assignment to the replacement Manager of the rights and interests of the outgoing Manager under the Deed

of Cross Security with effect as at the effective date of the appointment of the replacement Manager.

4.6 Liability of Manager and indemnity

The Manager shall not have any liability to the Participants for losses sustained or liabilities incurred by the Joint Venture, and the Manager, its directors, officers, employees, agents and contractors (**Indemnified Persons**) shall be indemnified by each Participant, severally to the extent of its Joint Venture Interest, in respect of the same except where such loss or liability arises as a direct result of the Indemnified Person's fraud, Wilful Misconduct or Gross Negligence.

4.7 Attorney

Each Participant hereby irrevocably appoints the Manager from time to time as its lawful attorney to act for it in its name or otherwise as the Manager (acting reasonably) deems fit for the purposes of doing all such acts and executing all such documents, as may reasonably appear to the Manager to be necessary or desirable to keep the Joint Venture Assets in good standing. The Participants shall be bound by all acts of the Manager as attorney pursuant to this clause 4.9 and shall, subject to clause 4.8, indemnify the Manager for all costs and liabilities incurred or arising from the exercise of the Manager's powers pursuant to this clause 4.9.

5 Powers and duties of Manager

5.1 Conduct of Joint Venture Operations

- (a) Subject to the terms and conditions of this agreement, and to such instructions as it may from time to time receive from the Management Committee, the Manager will, and is empowered to exercise all powers necessary to:
 - (i) manage, supervise and conduct Joint Venture Operations on behalf of, and as agent for, the Participants; and
 - (ii) implement the Business Plan and exercise and discharge its powers and duties under this agreement in accordance with the Business Plan.
- (b) Without limiting the generality of the foregoing, the Manager will:
 - (i) perform and attend to all acts, matters and things required of the Manager in accordance with the Joint Venture Documents;
 - (ii) subject to clause 5.1(d), perform on behalf of the Participants their obligations under the Tenements and the Pipeline Licences, and their obligations under any agreement entered into by the Participants (or by the Manager on behalf of the Participants) for the purposes of Joint Venture Operations;
 - (iii) pay:
 - (A) all rentals and other charges payable under the Tenements and the Pipeline Licences;
 - (B) all rates and taxes (other than taxes based upon or measured by income) payable on or assessed with respect to Joint Venture Operations or any Joint Venture Asset; and

- (c) the Rehabilitation Levy in respect of the Tenements, subject to the terms set out in clause 2.15(b);
- (iv) generally do all things necessary to maintain the Tenements and the Pipeline Licences in good standing and perform the Joint Venture Operations;
- (v) prepare and file all reports and returns (except returns with respect to taxes based upon or measured by income) required by law or by the Tenements, the Pipeline Licences or any agreement with the State, the Commonwealth or other Government Agency with respect to Joint Venture Operations or the Joint Venture Assets;
- (vi) comply with all laws applicable to Joint Venture Operations, including laws pertaining to safety and environmental protection;
- (vii) comply with any decision or instruction of the Management Committee or the Participants made or given in accordance with this agreement;
- (viii) maintain the Project Facilities and the Refinery Plant in good working order;
- (ix) act as the Participant's representative in respect of matters relating to Native Title Claims and Native Title Rights, and negotiate agreements with persons holding Native Title Rights and with parties to Native Title Claims, provided that the Manager may not execute any such agreements, without the prior approval of the Management Committee by Ordinary Resolution;
- (x) comply or procure compliance with all contracts entered into by the Manager or the Participants in relation to the Joint Venture Operations (including any native title or heritage agreement) and ensure any proposed Business Plans are prepared to ensure compliance with any requirements under those agreements;
- (xi) replace any Project Facilities as the Manager determines are necessary or desirable so that Joint Venture Operations may be safely, efficiently and lawfully conducted at all times;
- (xii) sell or otherwise dispose of any Project Facilities or supplies that may be worn out, surplus or no longer required for Joint Venture Operations, provided that any contract or arrangement for sale of such assets which have a book value, net of accumulated depreciation of:
 - (A) more than \$100,000 but less than \$250,000 must be first approved by the Management Committee by an Ordinary Resolution; and
 - (B) \$250,000 or more must be first approved by the Management Committee by a Special Resolution;
- (xiii) ensure that health, safety and environmental management systems are developed, implemented and maintained in respect of the Joint Venture Operations to the satisfaction of the Management Committee;
- (xiv) endeavour to ensure that contractors engaged for the Joint Venture Operations develop, implement and maintain health, safety and environmental management systems to standards that comply with health, safety and environment plans approved by the Management Committee;

- (xv) in the case of any emergency or accident, take such action as the Manager considers is necessary or advisable for the protection of life or the Joint Venture Assets;
- (xvi) acquire all materials, supplies, machinery, equipment and services necessary for the conduct of Joint Venture Operations;
- (xvii) subject to the requirements of Schedule 3, engage (which may be by secondment), dismiss, supervise and control all management, technical and labour personnel necessary for the performance of its obligations under this agreement including determining the terms and conditions of such engagement and conducting all industrial relations;
- (xviii) arrange for the transportation, handling, loading, treatment and delivery of Product to the Delivery Point;
- (xix) notify the Participants as soon as practicable after becoming aware of any event or circumstance of which it is aware which is likely to result in:
 - (A) litigation, arbitration or similar proceedings;
 - (B) a material breach of any licence, authority, approval, direction, instrument or other similar matter;
 - (C) a material breach of any applicable legal requirement;
 - (D) a material breach of any Joint Venture Document or of any other material agreement of the Joint Venture; or
 - (E) Force Majeure;
- (xx) subject to the requirements of Schedule 3, institute, defend, compromise or settle any court or arbitration proceedings or insurance claims commenced or threatened by or against the Manager or a Participant affecting or relating to Joint Venture Operations or Joint Venture Assets, provided that unless otherwise instructed by a Participant, the Manager may conduct such proceedings or claims for and on behalf of and in the name of each Participant;
- (xxi) subject to the requirements of Schedule 3, take forward cover for, or hedge, foreign currency obligations or pre-pay or take any other appropriate action to avoid currency losses, in each case in relation to Joint Venture Operations, but in no circumstances is the Manager responsible for or entitled to any currency gains and losses, such losses and gains being borne by or credited to the Participants pro rata in proportion to their respective Joint Venture Interests;
- (xxii) carry out the Rehabilitation Obligations and Mine Closure Obligations and comply with the Approved Closure Plan;
- (xxiii) keep each of the Participants fully informed on all current material matters and developments arising out of Joint Venture Operations; and
- (xxiv) generally do all such acts and things as may be necessary or desirable for the efficient conduct of Joint Venture Operations, the protection of the Joint Venture Assets and the attainment of the objects of the Joint Venture.

- (c) Subject always to this agreement, the Manager has the power to enter into agreements and bind the Participants in the exercise of its duties in accordance with this agreement.
- (d) Despite any other provision of this agreement, the Participants agree that if GAMG gives a notice of proposed activity under the GAMG Mineral Rights Agreement then:
 - (i) subject to 5.1(d)(ii), if the proposed activity might materially adversely affect a known or possible deposit of Iron Ore capable of commercial exploitation, then WLPL may determine whether to issue a notice of objection to GAMG and may have conduct of any expert determination process under the GAMG Mineral Rights Agreement on behalf of the tenement holders in relation to that notice of objection and will indemnify AWPL against the costs of any such expert determination process;
 - (ii) if the proposed activity might materially adversely affect known or possible deposits of both Iron Ore and any other Mineral (excluding Tantalum), which are each capable of commercial exploitation, including in respect of Iron Ore and any other Mineral (excluding Tantalum) in the Wodgina Resource, then either WLPL or AWPL may determine whether to issue a notice of objection to GAMG and have conduct of any expert determination under the GAMG Mineral Rights Agreement on behalf of the tenement holders in relation to that notice of objection, and if WLPL has issued a notice of objection in respect of Iron Ore only, WLPL will indemnify AWPL against the costs of any such expert determination process; and
 - (iii) in all other circumstances, the Participants agree to jointly exercise their rights under the GAMG Mineral Rights Agreement through the Manager.
- (e) A Participant has the right to participate, at its own expense, in litigation or administrative proceedings initiated by the Manager on behalf of the Participants.

5.2 Insurance

The Manager shall in respect of Joint Venture Operations and the Joint Venture Assets:

- (a) take out and keep in full force and effect, all in the name of the Participants, insurance required by the laws in force in Western Australia or by virtue of any contractual obligations entered into for the purposes of the Joint Venture;
- (b) effect and maintain in the name of the Participants public and product liability insurance for an amount of not less than \$50,000,000 in respect of each occurrence and unlimited in the aggregate in respect of all incidents occurring during the period of insurance;
- (c) without limiting clause 5.2(d), effect and maintain in the name of the Participants such other insurances suitable for the Joint Venture Operations which may (without limitation) include pollution legal liability insurance, excess liability insurance, motor vehicle insurance, transit insurance and mining operations insurance, each for amounts and on such terms as may be determined by the Management Committee from time to time;
- (d) effect and maintain in the name of the Participants such other insurances as may be determined by the Management Committee from time to time; and

- (e) if requested, provide full details of all such insurances and certificates of currency to a Participant.

5.3 Funding of the Manager

The performance by the Manager of its duties under this agreement will be subject to it receiving sufficient funds from each Participant in accordance with this agreement.

5.4 Conduct of operations

The Manager will perform all of its duties under this agreement in a good, safe, workmanlike and commercially reasonable manner in accordance with good exploration and mining and other applicable industry standards and practices.

5.5 Independent status of Manager

- (a) The Manager will report to, and be subject to, the general supervision and direction of the Management Committee. Subject to that supervision, and to the terms of this agreement, the Manager will have the authority, discretions and powers of an independent contractor in its management, supervision and conduct of Joint Venture Operations.
- (b) The Manager may perform its obligations under this agreement itself or through its employees or such agents or contractors as it may decide (subject to clause 5.8). However, the use of an agent or contractor by the Manager in the performance of any of the duties of the Manager will not relieve the Manager of responsibility to the Participants for those duties.

5.6 Delegation

The Manager may delegate its rights and obligations as Manager, provided that:

- (a) any delegation of the whole or a large part of its obligations requires the prior approval by Special Resolution of the Management Committee;
- (b) any delegation of any of its obligations to a Participant or an Affiliate of a Participant requires the prior approval by Special Resolution of the Management Committee;
- (c) it remains liable for any acts or omissions of its delegates as if they were the acts or omissions of the Manager;
- (d) the Manager promptly informs the Management Committee of the identity of the delegate and the matter which has been delegated; and
- (e) the delegation is at no additional cost to the Participants.

5.7 Manager's custody of Joint Venture Assets

- (a) Subject to the provisions of this agreement, the Manager will have the custody and control of the Joint Venture Assets.
- (b) The Manager will hold any Joint Venture Asset which stands in its name as agent for the Participants in proportion to their respective Joint Venture Interests.
- (c) Except:

- (i) where permitted by this agreement;
- (ii) with the prior approval of the Management Committee; or
- (iii) in the case of Permitted Security Interests,

the Manager must not mortgage, pledge, charge, encumber, sub-lease or otherwise dispose of or create any Security Interest or lien over or trust in respect of (or purport or attempt to do so) the Joint Venture Assets or any other real or personal property or money in which any Participant has an interest.

5.8 Contracts with Affiliates of Manager

- (a) Subject to clause 5.8(b), the Manager agrees that:
 - (i) any agreements which are entered into by the Manager in the performance of its duties under this agreement with any of its Affiliates or with a Participant or any of its Affiliates (**Related Party Contracts**), will be on normal 'arm's length' commercial terms consistent with the provisions of this clause;
 - (ii) the terms of such agreements will be no less commercially reasonable in the particular circumstances of such agreements than would have been the case had such agreements been entered into with Third Parties which are not Affiliates of the Manager or any Participant; and
 - (iii) any such agreements (or material amendments to such agreements) will be submitted to the Management Committee for approval by Special Resolution before the Manager enters into them.
- (b) The Participants will procure that the Manager enters into (as Manager for and on behalf of the Participants):
 - (i) the Crushing Services Agreement with the Crushing Services Provider;
 - (ii) the Camp Services Agreement with the Camp Services Provider; and
 - (iii) the Intellectual Property Licence Agreement with the Licence Provider,

on or after the Effective Date and acknowledge and agree that:
 - (iv) each of the Crushing Services Provider and the Camp Services Provider is an Affiliate of WLPL;
 - (v) the Licence Provider is an Affiliate of AWPL; and
 - (vi) the provisions of clause 5.8(a) do not apply in relation to the entry into the agreements listed in this clause 5.8(b).
- (c) Notwithstanding clause 5.8(b), the Manager agrees that any material amendment to any of the agreements listed in clause 5.8(b)(i) to 5.8(b)(iii) will be submitted to the Management Committee for approval by Special Resolution before the Manager agrees to such amendment.

5.9 Contracts with Third Parties

- (a) Unless otherwise decided by the Management Committee, all contracts or other arrangements with Third Parties entered into by the Manager for the purposes of or in the course of Joint Venture Operations will be entered into by the Manager as agent for the Participants, with the result that:
 - (i) wherever possible, using the Manager's reasonable endeavours, the Participants will be severally liable under such contracts and arrangements as principals in proportion to their respective Joint Venture Interests, and not jointly or jointly and severally liable; and
 - (ii) in the event of any breach or default on the part of a Third Party under such contracts and arrangements, proceedings may be brought against such Third Party to recover each Participant's loss.
- (b) Where, despite the Manager's reasonable endeavours under clause 5.9(a)(i), the Participants are or become jointly or jointly and severally liable under a contract or other arrangement with a Third Party, the Participants agree that as between themselves, all liabilities under or in respect of any such contract (Contract Liability) will be borne by the Participants in proportion to their respective Joint Venture Interests, notwithstanding the terms of the contract.
- (c) In respect of clause 5.9(b):
 - (i) if a Participant (**Discharging Participant**) or any person on behalf of a Participant pays, performs or discharges a Contract Liability of another Participant, then that Participant must reimburse or compensate the Discharging Participant within 5 Business Days after it receives evidence of that payment, performance or discharge; and
 - (ii) each Participant (**Indemnifying Participant**) indemnifies each of the other Participants (**Other Participants**) for and against all Contract Liability suffered or incurred by the Other Participants:
 - (A) arising from or in connection with the Other Participants taking any reasonable action to avoid, resist or defend themselves against any Contract Liability of the Indemnifying Participant; and
 - (B) arising from or in connection with the Indemnifying Participant failing to comply with this clause 5.9(c).
- (d) The Manager must not enter into any contract where:
 - (i) it does not have sufficient approval to commit to the Operating Costs or Capital Cost in accordance with clauses 7.7 or 7.8;
 - (ii) the expected expenditure would be worth greater than \$1,000,000 (annualised if applicable) unless the contract has first been submitted to the Management Committee and approved by an Ordinary Resolution; or
 - (iii) there is a multi-year expenditure commitment (whether by reason of minimum expenditure, take or pay, termination fees or inability to terminate the contract without a claim for damages) of at least \$1,000,000 (annualised), unless the contract has first been submitted to the Management Committee and approved by a Special Resolution.

- (e) The Manager must not enter into any contract requiring a Special Resolution unless the contract has first been submitted to the Management Committee and approved by a Special Resolution.
- (f) The Manager must, upon a request by any Participant, disclose to the Participants details and, if requested, copies of all contracts or other arrangements with Third Parties entered into by the Manager for the purposes of or in the course of Joint Venture Operations.

5.10 No profit or loss by Manager

Unless otherwise agreed between the Manager and all of the Participants, the Manager will perform its duties under this agreement on a no profit or loss basis to the intent that:

- (a) the Manager will neither gain nor lose by performing its duties under this agreement;
- (b) the Manager will not be entitled to any fee margin or other remuneration from the Participants for the performance of its duties under this agreement; and
- (c) all costs, expenses and liabilities of the Manager arising out of the proper performance by the Manager of its obligations under this agreement, in accordance with the terms of this agreement, will be Joint Venture Costs and will be borne by the Participants in proportion to their respective Joint Venture Interests.

5.11 Good faith

- (a) The Manager will at all times act reasonably and in good faith in all its dealings with the Participants and in the performance of its duties under this agreement.
- (b) The Manager will at all times act in the best interests of the Joint Venture as a whole.

5.12 Ratify actions of Manager

Each Participant agrees to ratify and confirm all actions taken by the Manager in the due and proper performance of its duties and in accordance with the terms of this agreement.

6 Management Committee

6.1 Establishment of Management Committee

- (a) The Participants will prior to the Effective Date establish a Management Committee in accordance with this clause 6.
- (b) The Management Committee is empowered to make all decisions in relation to matters within the scope of the Joint Venture, other than:
 - (i) matters expressly reserved by this agreement for the Participants' determination, decision, approval or consent; or
 - (ii) matters which have been expressly delegated in accordance with this agreement to a Participant or the Manager.

6.2 Composition of Management Committee

- (a) Each Participant will be entitled to appoint Representatives on the Management Committee as follows:
 - (i) a Participant with a Joint Venture Interest of 10% or greater, but less than 25%, may appoint one (1) Representative;
 - (ii) a Participant with a Joint Venture Interest of 25% or greater, but less than 50%, may appoint two (2) Representatives; and
 - (iii) a Participant with a Joint Venture Interest of 50% or greater may appoint three (3) Representatives.
- (b) Each Participant may also appoint an alternate for each of its Representatives who will be entitled to attend and vote at meetings of the Management Committee in which the relevant Representative does not participate.
- (c) Each Participant will appoint its Representatives and alternates (if any) by notice in writing to the Manager and the other Participants.
- (d) A Participant may replace any of its Representatives or alternates, or revoke any such appointment, at any time by giving notice in writing to the Manager and the other Participants. The relevant appointment or removal will take effect immediately on receipt of that notice.
- (e) A Participant whose Joint Venture Interest falls below 10% will cease to have any right to appoint Representatives to the Management Committee, and any such appointments will cease to have effect immediately upon its Joint Venture Interest falling below 10%.

6.3 Meetings

- (a) Meetings of the Management Committee will (unless otherwise agreed by Special Resolution of the Management Committee):
 - (i) be held at the Manager's office in Perth or at such other place in Perth as the Management Committee may from time to time determine; and
 - (ii) be held at least once in each Quarter or at such other intervals as the Management Committee may determine.
- (b) In addition, the Manager may at any time, and will within five (5) Business Days of being requested to do so by a Participant or Participants who, in aggregate, hold a Joint Venture Interest of 25% or more, convene a meeting of the Management Committee. Any request by a Participant or Participants for a meeting to be convened must set out the matters to be considered at the meeting.
- (c) Each Participant will bear the travel and other expenses of its Representatives attending meetings.
- (d) Meetings of the Management Committee may be held in person or by telephone, video conference or other means of instantaneous communication.
- (e) Each Participant will ensure its Representatives convene and attend meetings expeditiously to ensure the continuity of Joint Venture Operations.

6.4 Notice of meetings

- (a) Except as otherwise expressly stated otherwise in this agreement, the Manager will give to each Participant at least ten (10) Business Days' notice of each meeting of the Management Committee (or at least two (2) Business Days' notice for a reconvened meeting), which notice must outline the business to be conducted at the meeting. Such notice will not be required where the Representatives of each Participant agree to waive notice of the meeting. Each Participant may give a notice to the Manager and each other Participant at least five (5) Business Days prior to the meeting to include any additional items of business to be conducted at the meeting.
- (b) Business not mentioned in a notice of meeting will not be dealt with at the meeting unless all Representatives (not just those present at the meeting) unanimously agree.

6.5 Quorum

- (a) The quorum for a meeting of the Management Committee will be at least one Representative of each Participant entitled to vote.
- (b) If a quorum is not present within one hour after the time appointed for the meeting:
 - (i) the meeting will stand adjourned to the same hour on the next Business Day at the same venue; and
 - (ii) the Manager will endeavour to contact the Representatives who were not present at the first meeting to advise them of the adjourned meeting.
- (c) The quorum at an adjourned meeting will be those Representatives present at the adjourned meeting.

6.6 Chairperson

- (a) The chairperson at meetings of the Management Committee (Chairperson) will be selected by the Participant with the largest Joint Venture Interest from the Representatives of that Participant.
- (b) If two or more Participants have equal Joint Venture Interests and are the largest Joint Venture Interest holders, then the Chairperson will be selected by those Participants (from their appointed Representatives) respectively on a 12 month rotating basis (such 12 Month periods to cover a Financial Year).
- (c) From the Effective Date until 30 June 2020, one of the Representatives of WLPL shall be the Chairperson.
- (d) The Chairperson will not have a casting vote.

6.7 Senior management personnel of the Manager

- (a) WLPL will have the right to appoint the initial chief executive officer of the Manager from the Effective Date (for a period of no more than 2 years (unless agreed otherwise by AWPL) and after that AWPL, and then WLPL on rotation on the same basis.
- (b) AWPL will have the right to appoint the initial chief financial officer of the Manager from the Effective Date (for a period of no more than 2 years (unless agreed otherwise by WLPL) and after that WLPL, and then AWPL on rotation on the same basis.

- (c) The salary of any chief executive officer or chief financial officer to be paid by the Manager or secondment fee if seconded by the relevant appointor shall be capped at an equal amount agreed by the Participants or as otherwise determined by Ordinary Resolution of the Management Committee.
- (d) AWPL will have the right to appoint the manager of the Refinery Plant, other than any Alternative Refinery Plant developed by WLPL.
- (e) In exercising their appointment rights under this clause 6.7, WLPL and AWPL must consult with the other, and must appoint suitably qualified persons with the requisite expertise and demeanour.
- (f) Clauses 6.7(a) and 6.7(b) only apply while the Joint Venture Interest of each Participant is 50% of the aggregate Joint Venture Interests of all Participants.

6.8 Voting rights

- (a) The Representatives of a Participant present and entitled to vote at any meeting of the Management Committee will have between them that number of votes which is equal to the Joint Venture Interest of the Participant who appointed those Representatives. By way of example, the Representatives of a Participant whose Joint Venture Interest is 50% will have between them 50 votes. Any one Representative appointed by a Participant shall be entitled to cast all votes of the Representatives appointed by such Participant.
- (b) Subject to clause 6.8(d), a Representative may attend and vote on a matter at a meeting of the Management Committee notwithstanding there is a conflict of interest in respect of that matter with the Participant appointing that Representative. However at the start of the relevant meeting before the vote is taken, the existence of this conflict of interest must be declared if not already known by the other Participants. Subject to the foregoing, clause 6.8(d) does not prevent a Representative who has a personal conflict of interest in respect of a matter from attending and voting on a matter at a meeting of the Management Committee, provided that the matter does not relate to the matters described in clauses 6.8(d)(i) to 6.8(d)(v).
- (c) A Representative who decides (at his or her election) to withdraw from a meeting of the Management Committee due to a conflict of interest will be treated as not being entitled to vote at that meeting and such withdrawal will not result in the meeting lacking quorum.
- (d) In circumstances where there is a meeting of the Management Committee at which a resolution is proposed regarding:
 - (i) the enforcement by the Manager of a right against a Participant, or any Affiliate of the Participant, in relation to a right under or performance in accordance with any contract, or a liability, loss, cost, charge or expense paid, suffered or incurred by the Joint Venture from an act or omission of that person;
 - (ii) the execution of any Related Party Contract (other than the execution of the Related Party Contracts by the Manager in accordance with clause 5.8(b));

- (iii) the enforcement or waiver of any rights of the Manager under any Related Party Contract;
- (iv) the issuing by the Manager of a Notice of Objection or a Notice of Consent under clause 2.4; or
- (v) any delegation by the Manager under clause 5.6(b),
 - and the resolution is not passed at such meeting of the Management Committee, then the Deadlock procedure in clause 6.11 shall not apply and any Participant other than a Participant which is or is an Affiliate of the applicable person (including delegate or counterparty) referred to in sub-clauses (i) to (v) of this clause 6.8(d) (**Conflicted Participant**) may, immediately following such meeting, convene another meeting of the Management Committee. At the reconvened meeting, the Representatives of the Conflicted Participant:
- (vi) will not have the right to vote at the meeting;
- (vii) will not be counted for the purpose of determining the quorum for the meeting; and
- (viii) any resolution dealing with that matter may be passed pursuant to the decision making threshold applicable to that decision, with those thresholds being adjusted such that the voting entitlement of the Representatives appointed by the Participants other than the Conflicted Participant will in aggregate be deemed equal to 100% total votes of all Representatives present and entitled to vote (and which for the avoidance of doubt shall exclude the Representatives appointed by the Conflicted Participant).
- (e) For the purposes of clause 6.8(d), if the Manager resolves to commence enforcement action against a Conflicted Participant or any of its Affiliates in respect of a Related Party Contract, the Conflicted Participant and its Representatives shall have no involvement in (other than its independent rights to defend against such action), and no right to receive information in respect of the conduct of, that enforcement action by the Manager on behalf of the Joint Venture and the Manager shall implement appropriate information handling protocols.

6.9 Ordinary Resolutions

Subject to clause 6.10, decisions at any meeting of the Management Committee will be made by the affirmative vote of one or more Representatives of those Participants present and entitled to vote at the meeting having more than 50% of the total votes of all Representatives present and entitled to vote.

6.10 Special Resolutions

Decisions taken by the Management Committee with respect to the matters set out in Schedule 3 and as otherwise specified in this agreement will require the affirmative vote of one or more Representatives of those Participants present and entitled to vote at the meeting having 75% or more of the total votes of all Representatives present and entitled to vote.

6.11 Deadlocks

- (a) Following a meeting of the Management Committee at which one (or more) Participants (via their Representatives) have voted in favour of a proposed resolution and other Participants (via their Representatives) have voted against the proposed resolution of the decision that is the subject matter of the proposed resolution and such proposed resolution was not passed in accordance with the agreement (Deadlock), a Participant

(Initiating Participant) may give written notice (Deadlock Notice) to the other Participants (Other Participants) which:

- (i) identifies the proposed resolution which was not passed at the meeting of the Management Committee; and
 - (ii) designates a senior representative of the Initiating Participant who will have the authority to resolve the Deadlock on its behalf.
- (b) Within five (5) Business Days of the date of the Deadlock Notice, the Other Participants must promptly designate, by written notice to the Initiating Participant, senior representatives who will have authority to resolve the Deadlock on their behalf.
- (c) Each Participant's senior representatives designated under clauses 6.11(a) and 6.11(b) must meet and use all reasonable endeavours acting in good faith to resolve the Deadlock within ten (10) Business Days after the date of the Deadlock Notice.
- (d) If the Deadlock is not resolved under clause 6.11(c), then within fifteen (15) Business Days of the date of the Deadlock Notice, each chief executive officer of the Ultimate Holding Company of each Participant must (including by telephone or video conference) meet and use all reasonable endeavours acting in good faith to resolve the Deadlock.
- (e) Any resolution of a Deadlock under this clause 6.11 will be a valid resolution of the Management Committee to the extent that the senior representatives or chief executive officers (as applicable) agree that the resolution will have such effect.
- (f) If:
- (i) the Joint Venture Interest of each Participant is no longer 50% of the aggregate Joint Venture Interests of all Participants; or
 - (ii) Albemarle and MRL cease to be the Ultimate Holding Companies of AWPL and WLPL, respectively (or of any of their respective Transferee Subsidiaries under clause 12.2),

then the Participants will use reasonable endeavours to negotiate and agree to amend this agreement to make provision for the resolution of Deadlocks other than on, or in addition, to the terms of this clause 6.11.

6.12 Stage 2 Decision

- (a) Without limiting any other provision of this agreement, the Participants agree that they will proceed with the construction and commissioning of the Initial Refinery Plant.
- (b) The Participants agree to act reasonably and work together to progress the Initial Refinery Plant, including by agreeing the budget for preparation of and directing the Manager to prepare, as soon as reasonably practicable, a Refinery Plant Business Plan for a Refinery Plant Development for consideration and, if appropriate, approval by the Management Committee as soon as practicable after the Effective Date.

- (c) If following a meeting of the Management Committee at which one Participant (via its Representatives) has proposed a resolution regarding a Stage 2 Decision and voted in favour of such proposed resolution and the other Participant (via its Representatives) has voted against the proposed resolution, then if the Deadlock process in clause 6.11 has been followed and the Deadlock has not been resolved, or if the Participant who voted against the proposed resolution failed to comply with the Deadlock process, then subject to clause 6.12(e), the Participant who voted in favour of the resolution (Sole Risk Participant) may no later than 3 months after the date of the Management Committee meeting at which the proposed resolution was not passed, give written notice (Alternative Refinery Plant Notice) to the other Participant (Non-consenting Participant) of its intention to develop an Alternative Refinery Plant outside the terms of the Joint Venture, which such notice shall include a detailed design of the Alternative Refinery Plant.
- (d) If, after the Effective Date, a Participant or any of its Affiliates commences construction of any new facilities (or enters into contractual arrangements, including arrangements for the acquisition of such facilities, which have substantially the same effect as the construction of new facilities by that Participant or any of its Affiliates) located anywhere in the world (excluding AWPL and its Affiliates' modules with designed production capacity at Kemerton of up to 75ktpa plus debottlenecking or efficiency improvements) which will provide that Participant or any of its Affiliates with additional production capacity for lithium hydroxide monohydrate or lithium carbonate fed by spodumene of greater than 20ktpa, other than as a result of debottlenecking or efficiency improvements at existing or new lithium production facilities (Additional Production Capacity), that Participant must (in good faith) and as soon as reasonably practicable issue a notice in writing to the other Participant(s) notifying the other Participant(s) of such occurrence (Notice of Additional Production Capacity).
- (e) An Alternative Refinery Plant Notice may only be issued in circumstances where prior to the issue of the Alternative Refinery Plant Notice, the Non-consenting Participant or any of its Affiliates has issued a Notice of Additional Production Capacity, provided that a Notice of Additional Production Capacity will be deemed to have been issued if no Notice of Additional Production Capacity has been given and the Sole Risk Participant can provide evidence, acting reasonably, to each Non-consenting Participant that such Additional Production Capacity of the Non-consenting Participant has commenced construction and the Non-consenting Participant (acting reasonably) has not, within ten (10) Business Days of being provided with such evidence, issued a Dispute Notice to the Sole Risk Participant in relation to such matter.
- (f) Within twenty (20) Business Days of the date of the Alternative Refinery Plant Notice, the Non-consenting Participant must:
- (i) confirm in writing its intention to participate in the Stage 2 Refinery Plant, in which case the Stage 2 Decision will be deemed to have been passed;
 - (ii) confirm in writing that it will not participate in the Stage 2 Refinery Plant at that time; or
 - (iii) request in writing a meeting with the chief executive officer of the Ultimate Holding Company of the Sole Risk Participant.
- (g) If the Non-consenting Participant issues a request under clause 6.12(f)(iii), each chief executive officer of the Ultimate Holding Company of each Participant must meet within five (5) Business Days of the date of the request issued under clause 6.12(f)(iii) and use all reasonable endeavours (acting in good faith) to resolve the matter in respect of the proposed Stage 2 Decision. Any resolution of a matter under this clause 6.12(g) will be deemed to be a valid resolution of the Management Committee approving a Stage 2 Decision.

- (h) If:
- (i) the Non-consenting Participant does not comply with clause 6.12(d) and the Sole Risk Participant has given a notice to the Non-consenting Participant in accordance with clause 6.12(e) and in relation to which no Dispute Notice has been given to the Sole Risk Participant in accordance with clause 6.12(e);
 - (ii) the Non-consenting Participant issues a confirmation under clause 6.12(f)(ii) that it will not participate; or
 - (iii) the steps set out in clauses 6.12(f)(iii) and 6.12(g) have been taken and the matter in respect of the proposed Stage 2 Decision is not resolved within the ten (10) Business Days of the date of the request issued under clause 6.12(f)(iii),

then subject to clause 6.12(i) and clause 6.12(n), the Sole Risk Participant may (subject to clause (j)6.12(j)) in its absolute discretion construct, commission and operate the Alternative Refinery Plant outside the terms of the Joint Venture (such that the Alternative Refinery Plant will not be a Joint Venture Operation, will not form part of the Joint Venture Assets and this agreement will not govern the Alternative Refinery Plant) and the Non-consenting Participant will not participate in the Alternative Refinery Plant.

- (i) The Sole Risk Participant must not construct, commission and operate the Alternative Refinery Plant in circumstances where it would have an adverse impact on the costs of, operation of or production output of the Initial Refinery Plant or other Joint Venture Operations, including in relation to the availability of water, power, feedstock or other utilities, accommodation and site facilities. In such circumstances the Sole Risk Participant will be permitted to alter the method or design of construction, commissioning or operation of the Alternative Refinery Plant to the extent required to remedy such adverse impact.
- (j) If a Sole Risk Participant has not commenced construction of the Alternative Refinery Plant notified under an Alternative Refinery Plant Notice within 12 months of the date it is permitted to proceed with the construction, commissioning and operation of the Alternative Refinery Plant, then the right to do so will end, and the Sole Risk Participant may give another Alternative Refinery Plant Notice (without the need to first call a meeting of the Management Committee or propose a resolution regarding a Stage 2 Decision) and the Participants must again comply with this clause 6.12.
- (k) If the Sole Risk Participant, at its own cost and risk, develops the Alternative Refinery Plant outside of the Joint Venture in accordance with clause 6.12(h), it will be entitled to:
 - (i) construct and operate the Alternative Refinery Plant on an appropriate area of the Tenements which is suitable for a lithium hydroxide monohydrate plant (**Designated Area**), provided that the Sole Risk Participant must not deliver any of its share of Lithium recovered from the Tenements into the Alternative Refinery Plant unless the Sole Risk Participant delivers on an ongoing basis its proportionate share of Lithium recovered from the Tenements to facilitate the operation of the Initial Refinery Plant at its maximum production capacity;

- (ii) access (for itself, its Affiliates and its and its Affiliates' Personnel) the Designated Area for the purposes of constructing and operating the Alternative Refinery Plant;
- (iii) use any Intellectual Property Rights in any Joint Venture feasibility studies conducted in respect of the development of a lithium hydroxide monohydrate plant;
- (iv) receive from the Joint Venture all required goods and services which are requested by the Sole Risk Participant to construct and operate the Alternative Refinery Plant on a cost basis (including but not limited to power, accommodation and site facilities), provided that any expansion of any facilities which are required to accommodate the needs of the Sole Risk Participant will be borne solely by the Sole Risk Participant, and subject to such goods and services being available without adversely impacting on the production output of the Initial Refinery Plant; and
- (v) where WLPL is the Sole Risk Participant, enter into an agreement with the Licence Provider on terms equivalent to the Intellectual Property Licence Agreement.
- (l) The Sole Risk Participant must obtain any further Approvals required for the development of the Alternative Refinery Plant and must indemnify the Non-consenting Participant against:
 - (i) the costs of developing, operating and maintaining and ultimately closing the Sole Risk Participant's Alternative Refinery Plant; and
 - (ii) any:
 - (A) Rehabilitation Obligations; and
 - (B) any other losses sustained or liabilities incurred (except where such loss or liability arises as a direct result of the Non-Consenting Participant's fraud, Wilful Misconduct or Gross Negligence),

arising from or in connection with the Alternative Refinery Plant.

- (m) Prior to commencing construction of the Alternative Refinery Plant, the Sole Risk Participant must offer to the Non-consenting Participant to construct any foundations, pipework or other shared or potentially shared infrastructure at the cost of the Non-consenting Participant, which would facilitate the future construction by the Non-consenting Participant of a further Alternative Refinery Plant under clause 6.12(n) and facilitate its interconnection and integration with the Sole Risk Participant's Alternative Refinery Plant.
- (n) If the Sole Risk Participant develops an Alternative Refinery Plant in accordance with this clause 6.12, the Non-consenting Participant may at any time develop its own Alternative Refinery Plant, subject to the requirements and principles in clauses 6.12(i) to 6.12(l) at the cost and risk of the Non-consenting Participant, which shall not form part of the Joint Venture Assets and shall not be governed by this agreement. If the Non-consenting Participant has developed an Alternative Refinery Plant in accordance with this clause 6.12(n), the Participants may agree to include each Alternative Refinery Plant in the Joint Venture Assets, to be governed by the terms of this agreement.

- (o) No Alternative Refinery Plant Notice may be given and the Sole Risk Participant may not commence construction of an Alternative Refinery Plant the Joint Venture Interest of any Participant is less than 50% of the aggregate Joint Venture Interests of all Participants.
- (p) Upon request from the Sole Risk Participant, and subject to clause 6.12(q), the Manager shall, in good faith, acting reasonably, consider reasonable modifications to the manner in which it operates the Initial Refinery Plant in order to avoid an adverse impact on the production output of the Initial Refinery Plant resulting from the operation of the Alternative Refinery Plant.
- (q) The Sole Risk Participant agrees to indemnify the Manager and the Non- consenting Participant for the costs of any modifications to the Initial Refinery Plant and any related future costs (including in operation and maintenance) which are made under clause 6.12(p) (including any increase in the cost of goods and services procured by the Joint Venture in connection with the Initial Refinery Plant).

6.13 Advisers

A Participant may arrange at its own expense for consultants or other technical personnel (Advisers) and up to two other persons (Observers) to be present at meetings of the Management Committee to assist its Representatives, or in the case of the Observers to observe but not participate in the meeting, provided that:

- (a) the Participant must ensure that each Adviser and Observer is under a duty of confidentiality in relation to all information and materials to which the Adviser or Observer gains access as a consequence of the Adviser or Observer being present at a meeting of the Management Committee; and
- (b) a Participant must inform the other Participants of its intention to have an Adviser or Observer attend a meeting of the Management Committee on behalf of the Participant at least two (2) Business Days before the meeting (and such notice must include the name and origin of each Adviser and Observer).

6.14 Authority of Representatives

Each Representative will have full power and authority to represent the Participant who appointed the Representative in all matters within the powers of the Management Committee and all acts done by the Representative under this authority will be deemed to be the act of the Participant who appointed the Representative.

6.15 Resolution without meeting

- (a) A resolution of the Management Committee which is signed by a Representative of each Participant who is entitled to vote (Circular Resolution) will be as valid and effective as if it had been passed at a meeting of the Management Committee properly convened and held.
- (b) A Circular Resolution may consist of one or more documents in identical terms, signed by a Representative of each Participant.

6.16 Manager's delegate

- (a) The Manager will by notice in writing to the Participants designate a delegate to the Management Committee.

- (b) The Manager may change its delegate at any time by giving notice in writing to the Participants.
- (c) The Manager will cause its delegate, who may be accompanied by Advisers, to be present at each meeting of the Management Committee. Such delegate and Advisers will have no voting rights and the Manager must ensure that its delegate and Advisers are under a duty of confidentiality in relation to all information and materials to which the delegate or the Advisers gains access as a consequence of the Adviser or delegate being present at a meeting of the Management Committee.
- (d) The Manager's delegate is not entitled to vote at meetings of the Management Committee.

6.17 Minutes

- (a) The Manager must arrange for minutes of each Management Committee meeting and each sub-committee meeting as described under clause 6.18 to be taken. The Manager's costs and expenses in providing this service will be included in Joint Venture Costs.
- (b) A copy of the minutes of each Management Committee meeting and each sub-committee meeting must be given to each Participant as soon as practicable, but no later than 21 days after each meeting.
- (c) If a Participant wishes to make any comments in respect of the minutes, it must do so within 21 days after receiving the minutes by providing a notice to the Manager.
- (d) The minutes of a Management Committee meeting or subcommittee meeting, respectively, will be considered and approved (with or without amendments) at the next meeting of the Management Committee or relevant sub-committee (as applicable), and are to be signed by the Chairperson of the relevant Management Committee meeting or the chairperson of the relevant sub-committee meeting as described in clause 6.18(c), and are then conclusive evidence of the proceedings and decisions of the meeting to which they relate.

6.18 Sub-committees

- (a) The Management Committee may establish one or more sub-committees to consider and make recommendations or, if the Management Committee unanimously and expressly confers such a power, decisions on such matters as the Management Committee may from time to time refer to any such sub-committee.
- (b) Each Participant will be entitled, but will not be obliged, to be represented on each sub-committee.
- (c) The Participant who has nominated the Chairperson of the Management Committee will appoint the chairperson of any sub-committee.

6.19 Services

The Management Committee may:

- (a) require the Manager to provide it with such services as the Management Committee may request; and
- (b) engage advisers and consultants as required,

and all expenses incurred in connection with the exercise of this power will be regarded as Joint Venture Costs and may be paid by the Manager accordingly even if not included in an Approved Budget.

6.20 Recommendations and decisions of sub-committees

Recommendations and (where applicable) decisions of any sub-committee of the Management Committee must be by unanimous vote. If unanimity cannot be achieved on any matter, such inability and the reasons for that will be reported to the Management Committee.

7 Budgets, planning and contributions

7.1 Commencement under Initial Mine Plan and Budget

The parties agree that in respect of the period from the Effective Date until 30 June 2020, the Manager, on behalf of the Participants, will undertake Joint Venture Operations in accordance with the Initial Mine Plan and Budget.

7.2 Preparation and approval of the Business Plan

The parties agree that, subject to constraints of applicable competition rules:

- (a) prior to 28 February of each year, the Manager will consult with each of the Participants to discuss and agree the assumptions (including metal price, exchange rates, diesel price and other key commodities consumed, discount rate and inflation rate) to be used in preparing the draft Business Plan and Proposed Budget;
- (b) prior to 30 April of each year, the Manager will submit to each Participant a draft Business Plan (incorporating a Proposed Budget) which, among other periods, covers the period commencing on the following 1 July;
- (c) the Participants will promptly review the draft Business Plan (incorporating a Proposed Budget) in consultation with the Manager. The Manager will update the draft Business Plan (incorporating a Proposed Budget) to include agreed changes, prior to submission of the Business Plan (incorporating a Proposed Budget) to the Management Committee for consideration and approval at least a Month prior to the end of the current Financial Year; and
- (d) at the relevant meeting of the Management Committee in the final Quarter of each Financial Year, or at such other time as the Participants may otherwise agree, the Management Committee will consider and may approve all or part of the draft Business Plan and the Proposed Budget in accordance with clause 7.5(a), with or without amendment; and
- (e) the Participants agree to, and will procure that the Manager completes, a similar process to the process described in clauses 7.2(a) to 7.2(d) for the purpose of updating the Business Plan approved by the Management Committee under clause 7.2(d) to facilitate AWPL or its Affiliates' fiscal year (currently on a calendar year basis), if any are different (at no cost to AWPL or its Affiliates).

7.3 Contents of Business Plan

- (a) Each Business Plan will set out and cover the following separate areas:

- (i) detailed information in relation to the proposed Joint Venture Operations and Joint Venture Costs in each Month during the first two Financial Years covered by the Business Plan, which information must be presented in accordance with the relevant categories set out in clause 7.3(c) (in respect of the LOM Business Plan) and clause 7.3(d) (in respect of the Refinery Plant Business Plan); and
- (ii) to the extent reasonably practical, information in relation to proposed Joint Venture Operations and Joint Venture Costs for each subsequent Financial Year during the then estimated Life of Mine, which information must be presented in accordance with the relevant categories set out in clause 7.3(c) (in respect of the LOM Business Plan) and clause 7.3(d) (in respect of the Refinery Plant Business Plan).
 - (b) Each Proposed Budget will set out detailed information in relation to the proposed Joint Venture Operations and Joint Venture Costs in each Month during the new Financial Year, which information must be presented in accordance with the relevant categories set out in clause 7.3(c) (in respect of the LOM Business Plan) and clause 7.3(d) (in respect of the Refinery Plant Business Plan).
 - (c) For the purposes of clauses 7.3(a) and 7.3(b), the monthly and annual information set out in a LOM Business Plan must be divided into the following separate plan categories (except to the extent that no expenditure or activity is anticipated for the relevant category):
 - (i) **(Mine Development / evaluation plan)**: this must contain details of proposed Mine Development and reasonable justification for projects proposed for Mine Development and evaluation activities.
 - (ii) **(mining physicals / mine metal plan)**: this must contain details of ore tonnes moved, waste, production risk rating.
 - (iii) **(Capital Costs plan)**: this must contain details and reasonable justification for any proposed Capital Works and a ranking of the priority of each proposed Capital Work. Assets to be scrapped or disposed of as a result of proceeding with any new Capital Work should be identified.
 - (iv) **(Operating Costs plan)**: this must reflect the guidance and directions of the Management Committee as to the grade of ore to be mined, the amount of Minerals to be produced, and other matters relating to Operating Costs, including utilisation and availability of equipment.
 - (v) **(exploration plan)**: A plan for Exploration Operations including details and reasonable justification for projects together with a budget for those works, split into work on the Development Area (if appropriate) and work on other areas of the Tenements as proposed.
 - (vi) **(Rehabilitation plan)**: this must describe anticipated works to be carried out to meet Rehabilitation Obligations and clearly identify the expenditure to be charged against existing provisions and the expenditure which is not covered by existing provisions.
 - (vii) **(care and maintenance plan)**: this must describe the care and maintenance activities to be undertaken (if any) and the associated costs.
 - (viii) **(Closure Plan)**: this must describe the anticipated activities to be carried out to meet the Mine Closure Obligations.

- (ix) **(manpower plan)**: this must be a plan setting out the staffing and manpower required in connection with the implementation of any proposed Joint Venture Operations referred to in this clause 7.3(c) or any other approved work programme or Joint Venture Operations under this agreement.
- (x) **(budget)**: this must show:
 - (A) *working capital*: expected movement in the individual significant components of working capital for the following year.
 - (B) *cash flow*: the relevant periodic cash requirements for each of the categories in the LOM Business Plan and clearly distinguish between Capital Costs and Operating Costs.
 - (C) *Called Sum forecast*: the extent to which the periodic cash requirements can be satisfied from cash on hand, and will include a Called Sums forecast showing the estimated periodic contribution required from each Participant.
 - (d) For the purposes of clauses 7.3(a) and 7.3(b), the monthly and annual information set out in a Refinery Plant Business Plan must be divided into the following separate plan categories (except to the extent that no expenditure or activity is anticipated for the relevant category):
 - (i) **(Refinery Plant Development / evaluation plan)**: this must contain details of the proposed Refinery Plant Development and reasonable justification for projects proposed for Refinery Plant Development and evaluation activities.
 - (ii) **(Capital Costs plan)**: this must contain details and reasonable justification for any proposed Capital Works and a ranking of the priority of each proposed Capital Work. Assets to be scrapped or disposed of as a result of proceeding with any new Capital Work should be identified.
 - (iii) **(Operating Costs plan)**: this must reflect the guidance and directions of the Management Committee as to the grade and amount of lithium hydroxide monohydrate to be produced, and other matters relating to Operating Costs, including utilisation and availability of equipment.
 - (iv) **(manpower plan)**: this must be a plan setting out the staffing and manpower required in connection with the implementation of any proposed Joint Venture Operations referred to in this clause 7.3(d) or any other approved work programme or Joint Venture Operations under this agreement.
- (v) **(budget)**: this must show:
 - (A) *working capital*: expected movement in the individual significant components of working capital for the following year.
 - (B) *cash flow*: the relevant periodic cash requirements for each of the categories in the Refinery Plant Business Plan and clearly distinguish between Capital Costs and Operating Costs.
 - (C) *Called Sum forecast*: the extent to which the periodic cash requirements can be satisfied from cash on hand, and will include a Called Sums forecast showing the estimated periodic contribution required from each Participant.

7.4 Revision of Business Plan

- (a) At any time prior to the approval and adoption of the next succeeding Business Plan (including the Proposed Budget), the Manager may propose revisions to the Business Plan (incorporating the Approved Budget) for approval by the Management Committee in accordance with the terms of this agreement.
- (b) The Manager must prepare proposed revisions to the Business Plan (incorporating the Approved Budget) if, at any time, it becomes necessary to make a material alteration in respect of any of the plans specified in the most recent Business Plan and/or Approved Budget (including if there is a Refinery Plant Decision), or if the Management Committee otherwise requests such an amendment, and submit the proposed revisions for approval by the Management Committee in accordance with the terms of this agreement.
- (c) The Manager must promptly provide the Participants with any revisions to the Business Plan (incorporating the Approved Budget) approved by the Management Committee.

7.5 Approval of Business Plan and revisions

- (a) A proposed Business Plan (incorporating a Proposed Budget) may be approved in whole or in part by the Management Committee by Ordinary Resolution.
- (b) Subject to clause 7.7(d), a revision or variation to the approved Business Plan (including the Approved Budget) requires approval by the Management Committee by Ordinary Resolution.

7.6 Temporary operating plan if Business Plan not approved

If the Management Committee has not approved all or part of a proposed Business Plan (including the Proposed Budget) for the following Financial Year (**Relevant Year**), by no later than one Month prior to the commencement of the Relevant Year, the following provisions will apply for so long as the unapproved part of that proposed Business Plan or Proposed Budget has not been so approved:

- (a) the portions of the Business Plan and Proposed Budget for the Relevant Year which are approved by the Management Committee will apply (to the extent practicable);
- (b) the relevant portions of the Business Plan for the Relevant Year from the most recently approved Business Plan will apply (to the extent they are applicable and were approved and including, at a minimum, ensuring that the expenditure obligations prescribed under each of the Tenements and all unavoidable obligations contained in agreements related to the Joint Venture Operations are properly met) to the portions of the Business Plan and Proposed Budget for the Relevant Year which are not approved by the Management Committee;
- (c) the portions of the plans and budgets referred to in clauses 7.6(a) and 7.6(b) will together be deemed to be an Approved Budget for the Relevant Year and implemented by the Manager in accordance with this agreement; and
- (d) when the Management Committee approves any unapproved portion of the new Business Plan under the terms of this agreement, the Manager will, as soon as practicable, vary its activities and expenditure so as to continue in accordance with the new and approved Business Plan (including the Approved Budget).

7.7 Business Plan is binding on the Manager

- (a) The most recent Business Plan (including the component plans and Approved Budget), as approved or revised and amended by the Management Committee in accordance with this agreement, will be binding on the Manager and the Participants.
- (b) Except as otherwise required or allowed under this agreement, the Manager must carry on the development, construction, maintenance and conduct of the Joint Venture Operations in accordance with the Business Plan (including the Approved Budget).
- (c) The Manager is obliged and authorised to conduct Joint Venture Operations and to incur expenditure and make disbursements approved, or for which an allowance or provision is made, in an Approved Budget and in accordance with the Approved Budget.
- (d) The Manager must use all reasonable endeavours not to incur any expenditure (including Capital Costs and Operating Costs) in excess of the amount budgeted in an Approved Budget except as provided below:
 - (i) aggregate over-expenditure on Operating Costs of:
 - (A) 10% or less of the total expenditure under the Approved Budget is permitted without approval of the Management Committee;
 - (B) more than 10% but less than 20% of the total expenditure under the Approved Budget is permitted if approved in advance by Ordinary Resolution of the Management Committee; and
 - (C) 20% or more of the total expenditure under the Approved Budget is permitted if approved in advance by Special Resolution of the Management Committee;
 - (ii) aggregate unbudgeted Capital Costs (including any overruns on budgeted Capital Costs) of:
 - (A) the lesser of 20% of the individual line item or up to \$5,000,000 from that under the Approved Budget is permitted without approval of the Management Committee;
 - (B) between \$5,000,000 and \$25,000,000 from that under the Approved Budget is permitted if approved in advance by Ordinary Resolution of the Management Committee; and
 - (C) \$25,000,000 or more from that under the Approved Budget is permitted if approved in advance by Special Resolution of the Management Committee; and
 - (iii) reasonable expenditure to fund urgent action under clause 7.8 is permitted without approval of the Management Committee.

7.8 Urgent action

- (a) Subject to clause 7.8(c), the Manager may take such emergency action as, in the Manager's judgement, is necessary to preserve property, avoid, mitigate or prevent material risk of harm or damage to persons, property or the environment and to ensure Participants comply with their respective contractual and legal obligations in relation to the Joint Venture Operations.

- (b) The Manager must promptly notify the Participants as and when any costs of the nature referred to in clause 7.8(a) above are incurred.
 - (c) To the extent that time permits, the Manager must use reasonable endeavours to:
 - (i) seek the approval of the Management Committee as otherwise required of it under this agreement; or
 - (ii) consult with the Participants and the Management Committee,

as soon as reasonably practicable after becoming aware of the need to take urgent action.
-

8 Provision of funds

8.1 Obligation to contribute

Each Participant must contribute to Joint Venture Costs in proportion to their respective Joint Venture Interests, and Cash Calls issued under this clause 8 will be prepared accordingly.

8.2 Manager may apply funds held

The Manager will be entitled to apply funds held by the Manager for the account of a Participant under this agreement to satisfy that Participant's share of Joint Venture Costs.

8.3 Monthly Cash Call

- (a) At or prior to the Effective Date, the Manager will notify the Participants of the estimated funding requirements required by the Manager for the period from the Effective Date up to the date the next Called Sum is payable by Participants under clause 8.4(a), including details of the estimated disbursements to be made for Joint Venture Costs during that period. The amount specified will comprise a Called Sum and is payable within five (5) Business Days after the Effective Date in accordance with clause 8.4(b).
- (b) Based upon the Business Plan (including the Approved Budget, as revised by the Management Committee from time to time) or where applicable any Approved Budget under clause 7.6, the Manager must submit to each Participant, on or before the 15th day of each Month, a statement (**Cash Call**) showing:
 - (i) the estimated disbursements to be made for Joint Venture Costs during the following Month (showing Operating Costs and Capital Costs separately);
 - (ii) the extent, if any, to which such disbursements can be satisfied by funds already held by the Manager for the account of the Participants under this agreement;
 - (iii) the amount (**Called Sum**) required to be paid by each Participant (which, for the avoidance of doubt, is the cash amount which is required to be paid by a Participant after application of funds held by the Manager to the account of the Participant in accordance with clause 8.3(b)(ii));

- (iv) the place or places where, and manner in which, payment is to be made; and
- (v) such other details as the Management Committee may from time to time direct.

(c) Subject to clause 8.5, a Called Sum for a Month may be for an amount which is:

- (i) under 120% of the monthly Called Sum forecast for that Month under the then current Approved Budget without approval of the Management Committee;
- (ii) 120% or more, but less than 140%, of the monthly Called Sum forecast for that Month under the then current Approved Budget, if approved by an Ordinary Resolution of the Management Committee; or
- (iii) 140% or more of the monthly Called Sum forecast for that Month under the then current Approved Budget, if approved by a Special Resolution of the Management Committee,

provided that:

- (iv) if at any time after the first three (3) Months of the Financial Year, the “Year to Date” Called Sum and the proposed Called Sum for the next Month would be greater than 110% of the Called Sum forecast for that period under the then current Approved Budget, the proposed Called Sum requires approval by an Ordinary Resolution of the Management Committee; and
- (v) if at any time after the first three (3) Months of the Financial Year, the “Year to Date” Called Sum and the proposed Called Sum for the next Month would be greater than 120% of the Called Sum forecast for that period under the then current Approved Budget, the proposed Called Sum requires approval by a Special Resolution of the Management Committee.

8.4 Payment of Called Sum

(a) Each Participant must pay to the Manager the Called Sum applicable to it by the later of:

- (i) 10 Business Days after a Cash Call is made; and
- (ii) the fifth Business Day of the Month following the Month in which the Cash Call is made.

(b) Called Sums must be paid to the Manager:

- (i) within the timeframe prescribed by this clause 8.4;
- (ii) in Immediately Available Funds;
- (iii) free of set-off, deduction or counterclaim;
- (iv) unless specified in an Approved Budget or as otherwise agreed, in the currency requested by the Manager (**Requested Currencies**), it being agreed that unless otherwise agreed between the Participants, the Requested Currencies are limited to \$Australian, \$US, the Euro and Chinese Yuan and the breakdown of denominations requested must be consistent with the denomination of Manager expenditures; and

- (v) at the place or places, and in the manner, specified in the Cash Call.
- (c) Nothing in this clause 8.4 prevents a Participant paying a Called Sum on behalf of another Participant pursuant to any agreement which may exist between them or their Affiliates, and any such payment shall be credited as a payment by the Participant against whom the Cash Call was made.

8.5 Emergency Cash Call

- (a) If at any time the Manager is, or is likely to be, required to take urgent action under clause 7.8 which requires funds in excess of the funds then available to the Manager, and which have not been provided for in the most recent Cash Call, the Manager may issue an emergency Cash Call to each Participant stating:
 - (i) the amount of funds required for Joint Venture Costs;
 - (ii) the Called Sum required to be paid by each Participant;
 - (iii) the place or places where, and manner in which, payment is to be made; and
 - (iv) the circumstances, in reasonable detail, giving rise to the necessity for obtaining such funds.
- (b) Each Participant must, as soon as practicable (and in any event within five (5) Business Days) after receipt of an emergency Cash Call, pay to the Manager the Called Sum applicable to it.
- (c) The parties acknowledge that clause 8.3(a) does not apply to any Cash Calls made under this clause 8.5.

8.6 Bank account

- (a) All Called Sums and other moneys received or earned by the Manager on behalf of the Joint Venture will be deposited into a designated account or accounts in the name of the Manager, as manager of the Joint Venture, maintained at a branch or branches of a bank authorised to carry on a banking business under the *Banking Act 1959* (Cth) selected by the Manager. Such bank must offer full on-line account visibility (on a read-only basis) to Participants.
- (b) Subject to clause 8.6(d), the Manager alone will be entitled to operate such account or accounts and may from time to time temporarily invest any surplus funds in such account in accordance with such short term investment policies as may from time to time be approved by the Management Committee.
- (c) No such investment will have a maturity exceeding the time within which the funds so invested are required to be disbursed on account of Joint Venture Costs.
- (d) All funds in any account opened by the Manager (including any short term investments acquired with such funds) will remain the beneficial property of the Participants in proportion to their Joint Venture Interests until such time as those funds are disbursed on account of Joint Venture Costs.

- (e) The Manager may only open a bank account with the approval of the Participants by Special Resolution and must notify the Participants when the Manager opens or closes any such bank account acting as agent for the Participants.

8.7 Disbursements from bank accounts

The Manager will make from the accounts referred to in clause 8.6 all disbursements which are required to be made from time to time on account of Joint Venture Costs.

8.8 Repayment of surplus funds

- (a) The Manager will, if directed by the Management Committee, repay to each Participant (other than a Participant in respect of which there is an Event of Default or which is in default in the payment of any Called Sum) any funds which are in excess of that Participant's share of the estimated disbursements for the following Month and the amount of working capital deemed necessary by the Manager for Joint Venture Operations as set out in the Cash Call provided to that Participant in accordance with clause 8.3.
- (b) The Manager will not be obliged to repay any such funds to a Participant if the amount is less than \$100,000, unless requested to do so by that Participant.

8.9 Accounting for Called Sums

The Manager will use Called Sums, and any assets acquired by the use of such funds, for the purpose of Joint Venture Operations or for payment to Participants as provided in clause 8.8, and for no other purpose.

9 Records, accounts and reports

9.1 Manager to keep records and accounts

- (a) The Manager will, in accordance with the Accounting Procedure and generally accepted accounting principles and customary cost accounting practices in the mining industry, keep, or cause to be kept, comprehensive, true and accurate records and accounts of:
 - (i) Joint Venture Operations;
 - (ii) the Joint Venture Assets;
 - (iii) all Called Sums received by the Manager from (or on behalf of) each Participant;
 - (iv) all contracts and transactions entered into by or on behalf of the Participants in connection with the Joint Venture;
 - (v) the Joint Venture Cost and expenses of all transactions entered into by or on behalf of the Participants;
 - (vi) all approvals of requisitions, purchase orders, invoices, contracts, authorisation for capital expenditure requests;
 - (vii) all approvals required in connection with this agreement, including minutes of meetings, Ordinary Resolutions and Special Resolutions;

- (viii) agendas, minutes and documents provided to members for the Management Committee and any sub committees; and
- (ix) Personnel of the Manager subject to applicable laws, including in relation to privacy,

(Joint Venture Records and Accounts).

- (b) Without limiting the generality of the foregoing, the Joint Venture Records and Accounts will be maintained in such manner as may be reasonably necessary to enable each Participant to meet its reporting, accounting and tax return requirements (including deadlines).

9.2 Place for records

- (a) The Manager will determine the place or places within Australia where the Joint Venture Records and Accounts are kept.
- (b) The Manager must keep each Participant informed as to each location where the Joint Venture Records and Accounts are kept.
- (c) The Manager will make appropriate use of IT systems, including separate instances of systems and software utilised by the respective Participants, so as to maximise efficiency, effectiveness, transparency and visibility of the Joint Venture Records for the Participants and the Manager's costs in performing its obligations under this clause will form part of the Joint Venture Costs.

9.3 Annual financial statement

- (a) The Manager must, in respect of each Financial Year, provide to each Participant as soon as practicable (and no later than 30 days) after the end of each Financial Year (commencing with the Financial Year in which the Effective Date occurs) a financial statement reflecting:
 - (i) all receipts, expenditures and transactions made by the Manager on behalf of the Participants in connection with the Joint Venture during that Financial Year;
 - (ii) all Joint Venture Assets in the custody or control of the Manager as at the end of that Financial Year; and
 - (iii) all Joint Venture liabilities as at the end of that Financial Year.
- (b) The Manager will also provide comparable information to the information described in clause 9.3(a) as required by AWPL, including GAAP adjustments as applicable, as of the end of each AWPL or its Affiliates' fiscal years (currently ending 31 December).
- (c) All costs incurred by the Manager in complying with this clause will form part of Joint Venture Costs.

9.4 Monthly report

The Manager will provide to each Participant, within five (5) Business Days after the end of each Month, a written report detailing:

- (a) the progress and results of Joint Venture Operations during the Month just ended (with commentary on any material departures from the Business Plan, including the Approved Budget);
- (b) all outgoings incurred and payments made during that Month;
- (c) a running reconciliation of actual incurred expenditures to date against costs under the Approved Budget (with commentary on any material departures);
- (d) all proposed outgoings and payments to be incurred or made during the next Month (with commentary on any material proposed departures from the Approved Budget);
- (e) estimate on quantity of stockpiles and estimated Mineral content including Lithium; and
- (f) a statement of the assets and liabilities of the Joint Venture and each Participant's investment in the Joint Venture,

in sufficient detail to satisfy the respective Participant's (or if requested by the Participant those of its Ultimate Holding Company) corporate reporting requirements and to a level which is at least the same or similar to that which the Manager may provide to its senior management or Affiliates. Notwithstanding the foregoing, the Manager will make available sufficient financial information for each Participant to close their books within their normal procedures and timelines as will be communicated by each Participant to the other and to the Manager, and to avoid doubt, the Manager's costs in complying with this obligation will form part of the Joint Venture Costs.

9.5 Forecasts

The Manager will prepare the following forecasts each Month (except as otherwise specified below) and issue such forecasts to each Participant within five Business Days of Month end:

- (a) operational forecasting for the next three full calendar Months (broken down by Month) which includes:
 - (i) spodumene production forecast in metric tonnes per day;
 - (ii) maintenance plan on the Processing Plant; and
 - (iii) if the Initial Refinery Plant or other lithium hydroxide monohydrate plant that is a Joint Venture Asset is to operate in the relevant period:
 - (A) lithium hydroxide monohydrate production in metric tonnes per day;
 - (B) maintenance plan on lithium hydroxide monohydrate plant sodium; and
 - (C) sulphate production forecast in metric tonnes per day;
- (b) operational forecasting for the next 18 full calendar Months which includes:
 - (i) spodumene production forecast in metric tonnes per day;

- (ii) if the Initial Refinery Plant or other lithium hydroxide monohydrate plant that is a Joint Venture Asset is to operate in the relevant period, lithium hydroxide monohydrate production in metric tonnes per day; and
- (iii) timing of expected extended plant maintenance and turnarounds;
- (c) financial forecasting for the next 12 full calendar Months, including at a minimum:
 - (i) sales volume and cost of production by product family;
 - (ii) other cost of goods sold;
 - (iii) selling and administrative;
 - (iv) depreciation and amortisation;
 - (v) any other items that would be included in the income statement;
 - (vi) operational spending broken down by cost centre; and
 - (vii) capital project spending;
- (d) cash forecasting for the next full 12 calendar weeks, broken down by week, to be provided weekly; and
- (e) cash forecasting for the next full 12 calendar Months, broken down by Month.

9.6 Other reporting requirements

The Manager must provide the following reports to each Participant:

- (a) immediately after the occurrence of any event which causes, or is likely to cause, material damage to the Joint Venture Assets or delay or adversely affect the Joint Venture Operations, a report of the event and an estimate of likely resultant costs, to the extent it can be reasonably estimated at that time;
- (b) as soon as practicable after the occurrence of any lost time injury, any legal or threatened claim valued above \$250,000, significant environmental incident, damage or destruction of property valued at over \$250,000 or other event that requires a report to be filed or notification to be lodged with a Government Agency, notice of that occurrence or event;
- (c) within ten (10) Business Days after a written request from a Participant, all reports and information required by a Participant (or any of its Affiliates) to comply with its (or any of its Affiliates') periodic reporting and disclosure obligations under the rules of any applicable stock exchange, including in respect of mineral reserves and resources; and
- (d) as soon as practicable after notice to the Manager, a report on the status and conduct of any actual or threatened court or arbitration proceedings or insurance claims.

9.7 Information and data

- (a) The Manager will provide all information, data and material concerning Joint Venture Operations which the Participant (or its Affiliate) may reasonably require to meet its statutory reporting, audit and disclosure obligations under the

Corporations Act, the ASX Listing Rules, the rules and regulations of the New York Stock Exchange, the applicable laws or the rules of any other recognised stock exchange or Government Agency as applicable.

- (b) The Manager will ensure that Exploration Information and Resources and Reserves are calculated and reported to the Participants in a manner that complies with the JORC Code.
- (c) Subject to clause 9.9, the Manager will provide reports on the Exploration Information and Resources and Reserves that are in a format reasonably required by a Participant (or its Affiliate) to meet its reporting and disclosure requirements referred to in clause 9.7(a). To the extent compliance with those reporting and disclosure requirements requires the consent of a Competent Person, the Manager must obtain that consent on behalf of the Participants (or its Affiliate) in the form reasonably required by the Participant (or its Affiliate).
- (d) The Manager will (in conjunction with the relevant Competent Person) be responsible for determining the assumptions to be used for the calculation of Resources and Reserves but will, so far as is practical, notify the Participants of those assumptions in advance of finalising any estimates of Resources and Reserves. Subject to being advised by the Participants of the relevant deadlines, the Manager will use all reasonable endeavours to provide the details of those assumptions to enable the Participant to comply with applicable regulatory reporting deadlines (of the Participant and/or its Affiliates), if it disagrees with the assumptions adopted by the Manager. If any Participant does not agree with the assumptions used by the Manager, the Manager will, upon request of any Participant, promptly provide to the Participants an electronic copy of the model used to generate the estimates of Resources and Reserves in such a form and with such content as will enable the Participant (or its Affiliate) to alter the relevant assumptions and generate its own estimates of Resources and Reserves. The Manager must provide the Participant (or its Affiliate) with such reasonable assistance as the Participant (or its Affiliate) may require in order to operate and assess the model for that purpose. In that event, the Participant (or its Affiliate) will be responsible for obtaining the necessary Competent Person consent for the estimates of Resource and Reserves that it generates.
- (e) To enable Participants (and their Affiliates) who have a financial year end of 30 June, or 31 December, or is required to publish a half-yearly or quarterly report to comply with their statutory reporting obligations, the Manager will provide those Participants (and their Affiliates) with the following information in relation to the Joint Venture for (as applicable) the year ending on, or as at, 30 June and/or 31 December or half year ending 30 June, or quarter year ending 31 March, 30 June, 30 September:
 - (i) statement of financial position;
 - (ii) income statement;
 - (iii) cash flow statement;
 - (iv) trial balance;
 - (v) asset register of the Joint Venture Assets;
 - (vi) inventory;
 - (vii) employee leave balance, payroll tax returns and superannuation payments;

- (viii) cash balance;
- (ix) details of calculation of contingent liabilities and capital commitments;
- (x) Business Activity Statements, all sales tax, fringe benefits tax, customs duty, excise duty and diesel fuel rebates returns or statements;
- (xi) royalty statements in relation to the royalties payable to the State; and
- (xii) accounting policies,

prepared in accordance with International Financial Reporting Standards or GAAP (as applicable) and any supporting materials prepared by or on behalf of the Manager in preparing this information.

9.8 Copies of reports to Participants

Upon request by a Participant, the Manager must provide to the Participant:

- (a) copies of all reports prepared by the Manager in connection with Joint Venture Operations; and
- (b) copies of all material reports and other significant written communications to or from any government, government minister or Government Agency relating to any Tenement or Joint Venture Operations.

9.9 Format

The Manager must consult with the Participants, when requested by a Participant, in relation to the format of reports to be provided pursuant to this clause 9 and have regard to the information requirements of the Participants (and its Affiliates). The Manager also acknowledges that, accordingly, the format of the reports may change from time to time.

9.10 Additional reporting

Except where expressly provided otherwise, where a Participant (or its Affiliate) requires any particular reporting or information requirements that differ from that which the Manager would otherwise give under this clause, the additional external costs incurred by the Manager in providing information requested under this clause must be paid by the requesting Participant, provided that the costs are material. To the extent any costs are not required to be met by the requesting Participant under this clause, they will constitute Joint Venture Costs under this agreement.

10 Audit and access

10.1 Audit

- (a) The Manager must provide to each Participant, within 30 days (or such later date agreed by the Participants) after the relevant end of each Financial Year, a report by an internationally recognised and qualified independent auditor registered in accordance with Part 9.2 of the Corporations Act appointed by AWPL after having first obtained the consent of WLPL (not to be unreasonably withheld) (**Auditor**), in which the Auditor reports to the Participants that the Auditor has examined the Joint Venture Records and Accounts, the basis for provision of funds to the Manager and the financial statement for the relevant Financial Year and is satisfied

as to their accuracy or, if the Auditor is not so satisfied, the reason why the Auditor is not so satisfied.

- (b) The audit will be conducted in accordance with Australian Auditing Standards ASQC1 – Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, Other Assurance Engagements and Related Services Engagements (Complied) and will confirm that the financial report presents fairly, the financial position of the Joint Venture as at the balance date in accordance with the basis of preparation described in the Joint Venture financial statements. An objective of the audit is that the Participants and their Affiliates may rely on that audit for the purposes of preparing its audited financial statements as required by applicable laws. Notwithstanding, the audit will also be conducted in a manner consistent with the standards of the US PCAOB or of other US regulators applicable to audits of US publicly-held companies.
- (c) Each Participant will have the right of direct communication with the Auditor.
- (d) Without limiting this clause 10.2, AWPL has the right to request that in addition to the above audit, a similar audit be performed under GAAP and PCAOB auditing standards for relevant periods corresponding to AWPL or its Affiliates' fiscal years' end (currently ending 31 December) and such costs will constitute Joint Venture Costs under this agreement.

10.2 Participant's access to records

The Manager will, if requested:

- (a) permit a Participant to inspect and copy;
- (b) provide to a Participant copies of; and
- (c) provide to a Participant statements compiled from,

the Joint Venture Records and Accounts and the results of all work undertaken by, or on behalf of, the Manager for the purposes of the Joint Venture (including plans, maps, geological and engineering reports, cores, samples, logs and surveys and other documents under the control of the Manager or any sub-contractor of the Manager). The requesting Participant will be required to pay any external costs and copying costs incurred by the Manager in providing information requested under this clause provided that the costs are material and to the extent that any such information may require further interpretation/clarification, the Manager will make relevant Personnel available to the requesting Participant. To the extent any costs are not required to be met by the requesting Participant under this clause, they will constitute Joint Venture Costs under this agreement.

10.3 Access to Joint Venture Area and Joint Venture Assets

- (a) Each Participant and its properly authorised representatives will be entitled at all reasonable times, and at the risk and expense of such Participant, to have:
 - (i) access to, and the right to inspect, the Joint Venture Assets and the Joint Venture Area, provided the Participants and their officers, employees, agents and contractors must comply with the directions of the Manager when doing so;
 - (ii) the right to consult with the employees of the Manager and with any independent contractors (and their employees) which have been engaged by the Manager concerning

Joint Venture Operations and the performance by the Manager of its duties under this agreement;

- (iii) the right to take such samples of material employed by or produced from the Joint Venture Operations as are reasonably requested; and
- (iv) the right to appoint an independent Auditor to audit the affairs of the Joint Venture and the Manager, including the basis for the provision of funds by the Participants under clause 8.
 - (b) Information and access will be provided promptly on request, provided that it does not unreasonably disrupt the conduct of the Joint Venture Operations.
 - (c) The Manager must co-operate with Participants and any Auditor appointed to enable them to obtain information and samples contemplated by clause 10.3(a).

11 Confidential Information

11.1 Information to be kept confidential

This agreement, and all information which is made available to or obtained by a Participant or the Manager from or in connection with Joint Venture Operations, or under any Joint Venture Document, and which is not a matter of public knowledge or lawfully available from any other source and the Mining Information (collectively **Confidential Information**) will be and will remain confidential between the Participants and the Manager, and will not, without the prior written consent of the other Participants (which consent must not be unreasonably withheld), be disclosed to any third person other than:

- (a) a Participant or its directors, officers, employees and agents;
- (b) an Affiliate of a Participant or that Affiliate's directors, officers, employees and agents;
- (c) the Manager;
- (d) any government, government minister, or Government Agency, which requires it or has power to require it under any applicable law, rule or regulation;
- (e) any court of competent jurisdiction which has directed it;
- (f) any bank or other recognised financial institution making a loan or giving accommodation to a Participant or to an Affiliate of a Participant;
- (g) any person to whom disclosure is permitted under the terms of any Joint Venture Document;
- (h) any person which in good faith is seeking to purchase or otherwise acquire the whole or part of the Joint Venture Interest of a Participant, or shares in a Participant or an Affiliate of a Participant, provided that an undertaking as to confidentiality by the person in a form set out in Attachment B is first obtained;
- (i) any professional legal adviser subject to professional obligations of confidentiality;
- (j) any other professional or other independent consultant or adviser engaged by a Participant or the Manager provided that an undertaking as to confidentiality by the person, in a form set out in Attachment B, is first obtained;

- (k) as may be required by law or by the rules of any recognised stock exchange on which shares or other securities of a Participant or its Affiliates are listed, except that the parties agree to the extent permitted that they will not disclose information of the kind described by section 275(1) of the PPS Act, except as permitted by any other provision of this clause or required by any other law or regulation. For the avoidance of doubt, this does not permit the disclosure of information under section 275(4) of the PPS Act unless section 275(7) applies;
- (l) to satisfy legal disclosure obligations in a disclosure document issued by a Participant or its Affiliates to raise funds or implement or propose a corporate transaction involving the Participant or its Affiliates; or
- (m) for the purposes of any arbitration or court proceeding in respect of any dispute arising out of any Joint Venture Document.

11.2 Protection of Confidential Information

Each Participant and the Manager must take or cause to be taken such reasonable precautions as may be necessary to prevent the disclosure of any Confidential Information.

11.3 Announcements

If any Participant (or its Affiliate) wishes to publish any public statement (including a press release) relating to or in any way connected with Joint Venture Operations or the terms of any Joint Venture Document, then, to the extent permitted by law or the rules of any recognised stock exchange applying to the Participant or its Affiliates, that Participant must notify and, where practicable, provide a copy of the public statement to, the Manager and the other Participants before issuing the public statement.

11.4 Continuing confidentiality obligation

- (a) This clause 11 will apply to:
 - (i) any Participant which ceases to be a Participant for a period of three (3) years after the date upon which such Participant ceases to be a Participant; and
 - (ii) a Manager which ceases to be a Manager for a period of three (3) years after the date upon which such Manager was removed.
- (b) Upon the termination of this agreement, this clause 11 will, notwithstanding such termination, apply to the Participants and the Manager at the date of termination, for a period of three (3) years after such termination.

11.5 MRL Standstill

- (a) The Participants acknowledge and agree that some or all of the Confidential Information may be relevant to the price or value of the securities of MRL. Each Participant (other than WLPL) undertakes (which undertaking is given for the benefit of MRL) that it will not (and must ensure that its Affiliates will not) do anything that breaches the insider trading provisions of the Corporations Act from time to time.
- (b) During the period commencing on the date of this agreement and ending on the earliest of the following dates:

- (i) two (2) months after a Participant ceases to be a Participant;
- (ii) the date a person or persons jointly or in concert (other than a Participant or its Affiliates), publicly announce their intention to commence a Control Transaction which, at the time of announcement, is unanimously recommended by the board of directors of MRL; and
- (iii) the date MRL publicly announces that its board of directors has approved an agreement which contemplates a Control Transaction,
 - the Participants must not, and must ensure that no Affiliates:
- (iv) announce any intention to commence a Control Transaction in relation to MRL;
- (v) enter into any swap, derivative or other similar instrument the effect of which is to give the Participant an economic interest in securities (including shares) in the capital of MRL;
- (vi) acquire, agree to acquire or make any invitation or proposal to acquire, a relevant interest (as defined in the Corporations Act) directly or indirectly in any securities (including shares) in the capital of MRL; or
- (vii) advise, assist or encourage any other person in connection with any of the foregoing,
 - unless this restriction is first waived in writing by MRL.
- (c) The Participants acknowledge that MRL may enforce the undertaking given by the Participants in this clause 11.5 despite the fact that it is not a party to this agreement.
- (d) For the avoidance of doubt, the provisions of this clause 11.5 will cease to apply if neither WLPL nor any of its Affiliates is a Participant.
- (e) The provisions of this clause 11.5 will cease to apply if MRL ceases to be the Ultimate Holding Company of any Participant.

11.6 Albemarle Standstill

- (a) The Participants acknowledge and agree that some or all of the Confidential Information may be relevant to the price or value of the securities of Albemarle. Each Participant (other than AWPL) undertakes (which undertaking is given for the benefit of Albemarle that it will not (and must ensure that its Affiliates will not) do anything that breaches the insider trading provisions of the Corporations Act or any other law or regulation from time to time.
- (b) During the period commencing on the date of this agreement and ending on the earliest of the following dates:
 - (i) two (2) months after a Participant ceases to be a Participant;
 - (ii) the date a person or persons jointly or in concert (other than a Participant or its Affiliates), publicly announce their intention to commence a Control Transaction which, at the time of announcement, is unanimously recommended by the board of directors of Albemarle; and

- (iii) the date Albemarle publicly announces that its board of directors has approved an agreement which contemplates a Control Transaction,
 - the Participants must not, and must ensure that no Affiliates:
 - (iv) announce any intention to commence a Control Transaction in relation to Albemarle;
 - (v) enter into any swap, derivative or other similar instrument the effect of which is to give the Participant an economic interest in securities (including shares) in the capital of Albemarle;
 - (vi) acquire, agree to acquire or make any invitation or proposal to acquire, a beneficial interest directly or indirectly in any securities (including shares) in the capital of Albemarle; or
 - (vii) advise, assist or encourage any other person in connection with any of the foregoing,
 - unless this restriction is first waived in writing by Albemarle.
- (c) The Participants acknowledge that Albemarle may enforce the undertaking given by the Participants in this clause 11.6 despite the fact that it is not a party to this agreement.
 - (d) For the avoidance of doubt, the provisions of this clause 11.6 will cease to apply if neither AWPL nor any of its Affiliates is a Participant.
 - (e) The provisions of this clause 11.6 will cease to apply if Albemarle ceases to be the Ultimate Holding Company of any Participant.

12 Assignments and charges

12.1 Restrictions on assignments and charges

- (a) Subject to clause 12.1(b), except as permitted in this clause 12, or as required under clause 13, no Participant will:
 - (i) sell, convey, assign, transfer, novate, lease, sublease or otherwise dispose of; or
 - (ii) create or permit to exist any Security Interest (other than a Permitted Security Interest) in respect of,
 - the whole or any part of its Joint Venture Interest.
- (b) Nothing in this clause 12 will operate to prevent a Participant from selling or otherwise disposing of its share of Product in the ordinary course of the Participant's business.
- (c) Notwithstanding any other provision of this agreement (and, in particular, clauses 12.2 and 12.3), a Participant must not make any sale, transfer or other disposition if, upon completion of that sale, transfer or other disposition, that Participant or the assignee would have a Joint Venture Interest less than 10% but greater than zero (in other words, each Participant must have a Joint Venture Interest of at least 10%).

- (d) For the purposes of clause 12 and 13 of this agreement, a Participant's Joint Venture Interest will be deemed to include the whole or the same proportionate part of that Participant's ownership interest in an Alternative Refinery Plant not forming part of the Joint Venture Assets.

12.2 Permitted transfer to Subsidiaries

A Participant which is not in default in the payment of any Called Sum, and with respect to which an Event of Default is not then in existence (**Transferor**), may at any time, subject to the provisions of clause 12.11, transfer the whole or any part of its Joint Venture Interest to a Subsidiary of the Ultimate Holding Company of the Transferor (**Transferee**).

12.3 Sale of Participant's lithium business

- (a) A Participant that is WLPL (or any Transferee Subsidiary of WLPL under clause 12.2) which is not in default in the payment of any Called Sum, and with respect to which an Event of Default is not then in existence, and provided that MRL is the Ultimate Holding Company of that Participant, may at any time subject to provisions of clause 12.11, transfer the whole of its Joint Venture Interest to a Third Party, provided that the transfer is affected as part of a sale of all or substantially all of MRL's lithium business which, as at the Effective Date, includes MRL's and its Affiliates' direct and indirect legal and beneficial ownership interest of:
 - (i) the Participant's Joint Venture Interest; and
 - (ii) its share of the Mount Marion Lithium Project.
- (b) A Participant that is AWPL (or any Transferee Subsidiary of AWPL under clause 12.2), which is not in default in the payment of any Called Sum, and with respect to which an Event of Default is not then in existence, and provided that Albemarle is the Ultimate Holding Company of that Participant, may at any time, subject to provisions of clause 12.11, transfer the whole or any part of its Joint Venture Interest to a Third Party, provided that the transfer is affected as part of a sale of all or substantially all of its global lithium business as described in its annual corporate filings from time to time.

12.4 Transfer of Participant's Joint Venture Interest

A Participant which is not in default in the payment of any Called Sum, and with respect to which an Event of Default is not then in existence (**Selling Participant**), may at any time, subject to the provisions of clause 12.11, agree to sell for a cash consideration or a non-cash consideration which is readily convertible to a cash equivalent, the whole or any part of its Joint Venture Interest, provided that the sale must not proceed to completion unless:

- (a) the provisions of clause 12.5 have first been complied with; and
- (b) in the case of an assignment to a person who is not a Participant or its Affiliate, that assignee must be approved by the other Participants, which approval cannot be withheld if the assignee has:
 - (i) the financial capacity to meet both the purchase price for acquiring the Selling Participant's Joint Venture Interest, and the financial commitments of a Participant under this agreement to the extent of the assigned Joint Venture Interest, whether through its own financial standing or through the provision of satisfactory security, which may include

a parent company guarantee from an entity with the requisite financial capacity or other satisfactory security; and

- (ii) the technical and operational capacity to meet the obligations of a Participant under this agreement.

12.5 Right of last refusal

The following provisions apply in respect of any sale referred to in clause 12.4:

- (a) the Selling Participant must give notice of the proposed sale to each of the other Participants, and must include in the notice (**Proposed Sale Notice**):
 - (i) the name and address of the person to whom the Selling Participant's Joint Venture Interest is proposed to be sold (**Proposed Buyer**);
 - (ii) the portion of the Selling Participant's Joint Venture Interest which is the subject of the proposed sale (**Sale Interest**);
 - (iii) the cash consideration or cash equivalent of the non-cash consideration for which the Selling Participant's Joint Venture Interest is proposed to be sold; and
 - (iv) all the other terms and conditions of the proposed sale;
- (b) the Selling Participant must include with the Proposed Sale Notice an offer to sell the Sale Interest to such of the other Participants who are not then in default in the payment of any Called Sums, and with respect to which an Event of Default is not then in existence (**Continuing Participants**), in proportion to their respective Joint Venture Interests, at the same price (being in the case of non-cash consideration, unless the Continuing Participants agree otherwise in relation to a royalty, the cash equivalent determined under this clause 12.5) and, subject to clause 12.6, on the same terms and conditions on which it is willing to sell the Sale Interest to the Proposed Buyer. The offer must be in a form which is capable of immediate acceptance by the Continuing Participants;
- (c) if the consideration notified by the Selling Participant to the Continuing Participants under the Proposed Sale Notice is non-cash consideration, the Selling Participant must bona fide convert the non-cash consideration to a cash equivalent on a basis that is transparent and disclosed in the Proposed Sale Notice;
- (d) if any Continuing Participant does not agree with the basis on which the non-cash consideration has been converted to a cash equivalent, that party must so notify the Selling Participant and the other Continuing Participants within seven (7) days of it receiving the Proposed Sale Notice;
- (e) on a Continuing Participant so notifying the Selling Participant, all of the Participants will promptly meet and endeavour to reach agreement on the amount of the cash equivalent of the non-cash consideration. If agreement is reached, the Selling Participant must issue a new Proposed Sale Notice including the agreed cash equivalent. The period of 60 days referred to in clause 12.5(h) will be deemed to commence on the date that the Selling Participant issues a fresh Proposed Sale Notice and the original notification to the Continuing Participants will be deemed never to have been made. If within 14 days after their first meeting, the Selling Participant and the Continuing Participants have not reached agreement on the amount of the cash equivalent of the non-cash consideration, the matter will be referred to an Expert in accordance with clause 17 to determine whether or not the Selling Participant's calculation of the cash equivalent was fair

and reasonable and, if not, to determine the Expert's calculation of the amount of the cash equivalent;

- (f) if the Expert determines that the Selling Participant's calculation of the cash equivalent was fair and reasonable:
 - (i) the period of 60 days referred to in clause 12.5(h) will be deemed to have commenced on the date the Proposed Sale Notice was given provided that if the period of 60 days has expired or would expire prior to 14 days after the date upon which the Expert notifies the Participants of his determination, the 60 day period will be extended to the date which is 14 days after the date upon which the Expert notifies the Participants of the Expert's determination; and
 - (ii) the Expert's costs will be borne by the Continuing Participant who objected to the Selling Participant's calculation of the cash equivalent;
- (g) if the Expert determines that the Selling Participant's calculation of the cash equivalent was not fair and reasonable:
 - (i) the Selling Participant must issue a fresh Proposed Sale Notice to the Continuing Participants in accordance with the requirements of clause 12.5(a) including the cash equivalent as determined by the Expert and the original Proposed Sale Notice will be deemed never to have been made; and
 - (ii) the Expert's costs will be borne by the Selling Participant;
- (h) the Continuing Participants will have the right to accept the offer set out in the Proposed Sale Notice at any time within a period of 60 days from the date the Proposed Sale Notice is given (subject to any extension under clause 12.5(f)), and such offer must remain open for that period;
 - (i) if one or more (but not all) of the Continuing Participants accept the offer within such 60 day period, the Selling Participant must notify the accepting Continuing Participant or Continuing Participants of details of the unaccepted portion of the Sale Interest and such Continuing Participant or Continuing Participants will have the right within a period of 60 days after the Selling Participant's notice is given to accept the unaccepted part of the Sale Interest in proportion to their respective Joint Venture Interests (or as they may otherwise agree) at the same price and on the same terms and conditions;
- (j) if:
 - (i) the whole of the Sale Interest is not accepted by one or more of the Continuing Participants; or
 - (ii) the whole of the Sale Interest is accepted by one or more of the Continuing Participants but the contract or contracts for transfer of the Sale Interest to the accepting Continuing Participant or Continuing Participants is terminated before completion for reasons other than for a default on the part of the Selling Participant,

then the Selling Participant may complete the sale of the Sale Interest to the Proposed Buyer in accordance with the terms and conditions of the proposed sale as set out in the Proposed Sale Notice (or on other terms no more favourable to the Proposed Buyer than those terms and conditions), within a period of 60 days (which period shall be extended until the 5th day following receipt of all Transfer Approvals (which must be sought with all reasonable dispatch), to the extent not

obtained during the initial 60 day period, provided that the initial period can only be extended up to a maximum of 12 months) after:

- (iii) in the circumstances outlined in clause 12.5(j)(i), the end of either the 60 day period referred to in clause 12.5(h) or the 60 day period referred to in clause 12.5(i) as the case may be; and
- (iv) in the circumstances outlined in clause 12.5(j)(ii), the date of termination of the contract or contracts for transfer of the Sale Interest to the accepting Continuing Participant or Continuing Participants;
 - (k) if the whole of the Sale Interest is accepted by one or more of the Continuing Participants, then the Selling Participant will transfer the Sale Interest to those Continuing Participants in accordance with the terms and conditions of the resulting contracts with those Continuing Participants. For the avoidance of doubt, the transfer of the Sale Interest to those Continuing Participants is not subject to any further rights of last refusal under this clause 12.5; and
 - (l) for the avoidance of doubt, an offer made under clause 12.5(b) must relate only to the Sale Interest and must not include or relate to any other assets.

12.6 Requirements of offer to Continuing Participants

- (a) An offer to sell the Sale Interest to the Continuing Participants under clause 12.5(b) must:
 - (i) contain a condition or conditions to the effect that the sale is conditional upon the Continuing Participants who accept the offer obtaining all Transfer Approvals either unconditionally or on conditions acceptable to such Continuing Participants (acting reasonably); and
 - (ii) provide for a date for the satisfaction of any conditions precedent, and a date for completion of the sale, which would result in any Continuing Participants who accept the offer having a period of time for satisfaction of conditions precedent (as may have been extended in clause 12.5(j)) and for completion not less than the corresponding periods of time that the Proposed Buyer would have had under the contract signed by it,

and may contain a condition to the effect that if two or more Continuing Participants accept the offer made to them under clause 12.5(b), the sale of the relevant portions of the Sale Interest to each such Continuing Participant will be conditional upon the contemporaneous completion of each such sale occurring.
- (b) For the purposes of the offer to sell the Sale Interest to the Continuing Participants under clause 12.5(b):
 - (i) the requirement for a cash consideration does not preclude the consideration for the sale of the Sale Interest consisting partly of cash and partly of other valuable promises (e.g. a royalty to the extent agreed under clause 12.5) that have been offered by the Proposed Buyer, provided that the Continuing Participants are objectively capable of giving and fulfilling those same promises and are not inherently disadvantaged (when compared to the Proposed Buyer) by the inclusion of those promises as part of the consideration;

- (ii) the consideration for the sale of the Sale Interest will be a cash consideration even though:
 - (A) payment of the purchase price may occur in two or more tranches;
 - (B) some or all of the purchase price may be paid after the date of transfer of the Sale Interest to the buyer;
 - (C) the payment of some or all of the purchase price may be subject to a contingency (provided that the contingency is not such that it is inherently more likely to be satisfied where the Continuing Participants are the buyer of the Sale Interest than where the Proposed Buyer is the buyer of the Sale Interest); and
 - (D) the amount of the purchase price, or some component of it, is not fixed and ascertainable at the date of the offer to sell the Sale Interest to the Continuing Participants (provided that the offer clearly sets out the basis upon which the purchase price, or the relevant component of it, is to be calculated, and the basis of calculation is not inherently likely to result in the Continuing Participants paying a higher price for the Sale Interest than the Proposed Buyer would pay if it were the buyer).

12.7 Charge of Participant's Joint Venture Interest

- (a) A Participant (**Chargor**) may create a Security Interest upon all or part of its Joint Venture Interest in favour of any person (**Chargee**) if the Chargee has entered into a deed (**Chargee's Priority Deed**) with the other Participants and the Manager, in a form acceptable to the other Participants and the Manager acting reasonably, under which the Chargee agrees that this agreement, the Deed of Cross Security, all other Joint Venture Documents and the constituent documents of the Manager will have priority over the Chargee's Security Interest and any enforcement of that Security Interest will be subject to compliance with the provisions of this agreement, the Deed of Cross Security, all other Joint Venture Documents and the constituent documents of the Manager.
- (b) The Participants acknowledge that the Chargee's Priority Deed will also contain provisions under which the Chargee is entitled to receive prior notice of any default by the Chargor or other circumstances that may result in enforcement of remedies under this agreement or the Deed of Cross Security against the Chargor and to take action to step-in or take other measures to avoid the exercise of such remedies. The Participants will negotiate such provisions reasonably and in good faith and will not unreasonably withhold their agreement to provisions proposed by the Chargee which are consistent with normal finance practice.

12.8 Notice of intention to create Security Interest

Any Participant proposing the creation of any Security Interest (other than a Permitted Security Interest) must give prior written notice of its intention to create such Security Interest to the other Participants, together with a copy of the proposed instrument creating such Security Interest and the name and address of the proposed Chargee.

12.9 Sale of Joint Venture Interest by Chargee

- (a) A Chargee of a Participant's Joint Venture Interest may, without the consent of any Participant, in the exercise of any power of sale or the enforcement of any other rights conferred by law or by the instrument creating such Security Interest, upon the happening of any event of default specified in the Security Interest, sell (but not otherwise dispose of) the whole or part of the Joint Venture Interest of such Participant (**Defaulting Participant**).

- (b) Any proposed sale (whether by private treaty or public auction) by a Chargee of the whole or part of a Defaulting Participant's Joint Venture Interest will be subject to the rights of last refusal of the other Participants under clauses 12.3, 12.5 and 12.6 and the Chargee's Priority Deed must acknowledge this.

12.10 Set-off

- (a) A Non-Defaulting Participant may, in connection with its purchase of the Joint Venture Interest or part of the Joint Venture Interest of a Defaulting Participant under this clause 12, credit against the purchase price payable by such Participant the amount of any debt due and payable to such Participant by the Defaulting Participant under clause 13.5.
- (b) Except to the extent of such credit, the Chargee must pay to the Manager (for the account of the other Participants) from the proceeds of such sale, all amounts due and payable under any of the Joint Venture Documents by the Defaulting Participant, or in the event such amounts have been paid on behalf of the Defaulting Participant by any other Participant, will reimburse such other Participant the amounts so paid together with interest as provided in clause 13.5.

12.11 Assumption of Joint Venture obligations by Transferee

Any sale, transfer or other disposition of the whole or any part of the Joint Venture Interest by a Participant under this clause 12 will be effective only upon:

- (a) the execution and delivery by the transferee and the other Participants of a deed of assignment and assumption in the form provided in Schedule 5:
 - (i) evidencing the agreement of such transferee (to the extent of the Joint Venture Interest being transferred):
 - (A) to become a Participant, or if already a Participant, to increase its Joint Venture Interest;
 - (B) to be bound by the provisions of the Joint Venture Documents; and
 - (C) to assume all of the liabilities and to perform all of the obligations and duties under the Joint Venture Documents of the Participant whose Joint Venture Interest, or part of whose Joint Venture Interest, is to be sold, transferred or disposed of to the extent of the Joint Venture Interest being sold, transferred or disposed of; and
 - (ii) evidencing the agreement of the other Participants that such transferee (to the extent of the Joint Venture Interest being transferred) will be entitled to all of the rights and benefits of a Participant under the Joint Venture Documents; and
- (b) the execution and delivery by the transferee of a deed of charge in, or substantially in, the form of the Deed of Cross Security.

12.12 Change in Control

- (a) If there is a Change in Control of a Participant or of a Holding Company of a Participant (except when the Participant or Holding Company the subject of the Change in Control is listed on a stock exchange, or in the circumstances described in clause 12.12(b)), then unless the other Participants have consented in writing to such Change in Control, the relevant Participant (**Changed Participant**) must immediately notify the other Participants of the Change in Control.
- (b) For the purposes of this clause 12.2, no Change in Control of a Participant or of a Holding Company of a Participant will be deemed to have occurred in circumstances where:
 - (i) if the Participant is WLPL (or any Transferee Subsidiary under clause 12.2), MRL has affected a sale of all or substantially all of MRL's lithium business which, as at the Effective Date, includes MRL's and its Affiliates' direct and indirect legal and beneficial ownership interest of:
 - (A) the Participant's Joint Venture Interest; and
 - (B) its share of the Mount Marion Lithium Project; and
 - (ii) if the Participant is AWPL (or any Transferee Subsidiary under clause 12.2), Albemarle has affected a sale of all or substantially all of its global lithium business as described in its annual corporate filings from time to time.

For the avoidance of doubt, this clause 12.12(b) will only apply for so long as Albemarle and MRL are Ultimate Holding Companies of AWPL and WLPL respectively, (or of any of their Transferee Subsidiaries of under clause 12.2).

- (c) Any other Participant may, within ten (10) Business Days after receiving the notice under clause 12.12(a), give a notice to the Changed Participant requiring that the Changed Participant must determine the value of its Joint Venture Interest (the **Offered Interest**). That value will be the value agreed between the parties using reasonable endeavours and acting in good faith to agree the value within 20 days from the date of the notice under clause 12.12(a). If the parties are unable to agree upon the value of the Offered Interest within 30 days from the date of the notice under clause 12.12(a), then the parties must endeavour to agree upon the appointment of two Valuers. If the parties are unable to agree upon the appointment of the Valuers within 40 days from the date of the notice under clause 12.12(a), then the Valuers will be two (2) suitably qualified and experienced persons nominated by the President (or acting President) for the time being of the Minerals Council of Australia or their nominee at the request of any other Participant. The following provisions apply where the value of the Offered Interest is required to be determined by the Valuers:
 - (i) the Valuers must be engaged on terms which require the Valuers to use their best endeavours to make independently a determination within 30 days after their appointment, or such other timeframes as the parties may agree;
 - (ii) each Valuer will determine the value of the Offered Interest, on the following basis:
 - (A) the price that would have been paid by a knowledgeable and willing (but not anxious) buyer to a knowledgeable and willing (but not anxious) seller dealing at arm's length;

- (B) any Rehabilitation Obligations and Mine Closure Obligations relating to the Offered Interest are to be taken into consideration;
- (C) the Offered Interest is to be valued on a stand-alone basis, and without taking into account any element of control that the other Participants may obtain as a result of acquiring all or part of the Changed Participant's Joint Venture Interest in addition to the other Participant's existing Joint Venture Interest;
- (D) the valuation is to be determined independently and generally in accordance with the VALMIN Code of the Australasian Institute of Mining and Metallurgy; and
- (E) otherwise the valuation methodologies to be applied are to be determined by the Valuer in its own discretion, taking into account usual and prudent industry practices;
- (iii) the value of the Offered Interest will be deemed to be the average of the two Valuer's determinations;
- (iv) in making the determination, each Valuer will be deemed to be acting as an expert and not as an arbitrator, and the laws relating to commercial arbitration will not apply to either Valuer, the Valuer's determination or the means by which each Valuer makes the determination;
- (v) each Participant will be entitled to submit such evidence to each Valuer as the Valuer may reasonably allow or require, and will provide all information, written or oral, which the Valuer may reasonably request, provided that:
 - (A) all oral evidence must be presented in the presence of the other parties; and
 - (B) copies of all written evidence must be given to all other parties;
- (vi) each Valuer may consult such legal, technical and financial experts as the Valuer, in his or her absolute discretion, thinks fit;
- (vii) the costs of the Valuers, and of any legal, technical and financial experts consulted by the Valuers, will be borne by the Changed Participant; and
- (viii) the determination of the Valuer will be final and binding on the parties without appeal so far as the law allows and except in the case of manifest error.
- (d) Once the value of the Offered Interest has been agreed or determined as contemplated by clause 12.12(b), the Changed Participant will within 5 Business Days notify the other Participants and will be deemed to have offered to assign the Offered Interest to such of the other Participants who are not then in default of payment of any Called Sums, and with respect to which an Event of Default is not then in existence (**Other Participants**), in proportion to their respective Joint Venture Interests, at a price equal to the value of the Offered Interest. The Other Participants will be entitled to accept that offer 60 days of the making of the offer.
- (e) If one or more (but not all) of the Continuing Participants accept the offer within such 60 day period, the Changed Participant must notify the accepting Continuing Participant or Continuing Participants of details of the unaccepted portion of the Offered Interest and such Continuing Participant or Continuing Participants will have the right within a period of 60 days after the Changed Participant's notice is given to accept the unaccepted part of the Offered Interest in proportion to their respective Joint Venture Interests (or as they may otherwise agree) at the same price.

- (f) If the whole of the Offered Interest is accepted by one or more of the Continuing Participants (**Accepting Participants**), then the Changed Participant and the Accepting Participants will be deemed to have entered into a contract for the sale to the Accepting Participants (in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests) of the Changed Participant's Joint Venture Interest upon the following terms and conditions:
- (i) The liability of the Accepting Participants (including obligations to pay money) will be several in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests.
 - (ii) The sale will be conditional upon the parties obtaining all Transfer Approvals, which may include, without limitation:
 - (A) Ministerial consents required under the Mining Act for the assignment of the Changed Participant's Joint Venture Interest in the Tenements; and
 - (B) approval for the sale from the Foreign Investment Review Board (if applicable).
 - (iii) The parties must execute all documents and do all other things reasonably necessary to apply for and obtain the Transfer Approvals as expeditiously as possible.
 - (iv) If the Transfer Approvals:
 - (A) have not all been obtained within 90 days after the date of expiry of the 60 day period referred to in clause 12.12(d), the Accepting Participants may elect to terminate the contract for the sale of the Changed Participant's Joint Venture Interest;
 - (B) have all been obtained or the Accepting Participants have not elected to terminate the contract for the sale of the Changed Participant's Joint Venture Interest under clause 12.12(f)(iv)(A), then completion of the sale of the Changed Participant's Joint Venture Interest will take place at the place in Western Australia nominated by the Accepting Participants by notice in writing to the Changed Participant and on the date which is 30 days after the date upon which the last of the necessary Approvals was obtained, or such earlier date agreed by the Accepting Participants, provided that if all Transfer Approvals have not been obtained within 12 months of the offer described in clause 12.12(d), this clause 12.12 shall cease to apply in respect of that Change in Control event;
 - (C) have all been obtained by some but not all Accepting Participants within 90 days after the date of expiry of the 60 day period referred to in clause 12.12(d), then:
 - (1) those Accepting Participants who have not obtained all necessary Approvals may elect to withdraw from the contract for the sale of the Changed Participant's Joint Venture Interest; and

(2) if, within a further 14 days after the end of the 90 day period (or such longer period agreed by the Accepting Participants), any remaining Accepting Participants who have obtained all Transfer Approvals (within the 12 month limitation period described in clause 12.12(f)(iv)(B)) agree to purchase the Changed Participant's Joint Venture Interest, either in the proportions that those Accepting Participants' respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests, or in such other proportions that those remaining Accepting Participants otherwise agree, then:

(AA) the contract for the sale of the Changed Participant's Joint Venture Interest will be deemed to be between the Changed Participant and those remaining Accepting Participants, and in such proportions as those Accepting Participants agree; and

(BB) completion of the sale of the Changed Participant's Joint Venture Interest will take place at the place in Western Australia nominated by the relevant Accepting Participants by notice in writing to the Changed Participant on the date which is 14 days after the end of the 14 day period specified in clause 12.12(f)(iv)(C)(2).

(v) At completion:

(A) the Changed Participant must transfer its Joint Venture Interest to the relevant Accepting Participants free from all Security Interests (subject to the Permitted Security Interests which apply to the Joint Venture Interest). The relevant Accepting Participants will be entitled to a transfer of the Joint Venture Interest of the Changed Participant in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests or in such other proportions as the relevant Accepting Participants agree;

(B) the Changed Participant must execute and deliver all instruments of sale, assignment, conveyance and transfer and all other documents, and take such other action, as the relevant Accepting Participants may reasonably request to effect such transfer; and

(C) in return for the transfer of the Changed Participant's Joint Venture Interest, the relevant Accepting Participants must pay to the Changed Participant, or as the Changed Participant's solicitor may direct, the amount that is equal to the value of the Changed Participant's Joint Venture Interest (as agreed or determined in accordance with clause 12.12(b)).

(g) For the avoidance of doubt, a Change in Control of a Participant or its Holding Company does not constitute a transfer or proposed transfer for the purposes of clause 12.3.

13 Defaults and remedies

13.1 Event of Default

Any one or more of the following events with respect to any Participant is an Event of Default:

- (a) any failure by the Participant to pay a Called Sum (under clauses 8.3 or 8.5) in accordance with clause 8.4 within five (5) Business Days after notice has been given by the Manager or a Participant under clause 13.2;
- (b) subject to clause 19.15, an Insolvency Event occurs in relation to the Participant;
- (c) any default by the Participant in the performance of any material obligation under a Joint Venture Document (other than one referred to in clauses 13.1(a) or 13.1(b) above):
 - (i) which is capable of remedy, and which default is not remedied within 30 Business Days after receipt of written notice from any other Participant or the Manager given under clause 13.2;
 - (ii) but if the default is not reasonably capable of being remedied within 30 Business Days after receipt of written notice from any other Participant or the Manager given under clause 13.2, the Participant fails to commence or has not otherwise taken bona fide steps to remedy the relevant default within 30 Business Days of receiving such notice and does not remedy that default within 50 Business Days after receipt of written notice from any other Participant or the Manager given under clause 13.2 (or such longer period agreed by the Management Committee, where any Defaulting Participant or its Affiliates does not vote); or
- (d) any default by the Participant in the performance of any material obligation under a Joint Venture Document which is not capable of remedy (other than one referred to in clauses 13.1(a) or 13.1(b) above), where the Defaulting Participant has not paid monetary compensation to the Non-Defaulting Participants within 30 Business Days of receipt of notification of the amount of compensation payable as determined under clause 13.2(d).

13.2 Notices of default

- (a) If any Participant:
 - (i) fails to pay when due any amount due by it referred to in clause 13.1(a); or
 - (ii) defaults in the performance of any of its material obligations under any of the Joint Venture Documents,

the Manager must, as soon as practicable after it becomes aware of that default, notify the Defaulting Participant and each of the other Participants (**Non-Defaulting Participants**) of that default.

- (b) Failure by the Manager to give such notice will not release the Defaulting Participant from any of its obligations under the Joint Venture Documents.
- (c) If a Participant becomes aware that another Participant has defaulted in the performance of any of its obligations under the Joint Venture Documents but the Manager has not given a notice of default to the Defaulting Participant under

clause 13.2(a), the Participant may notify the Defaulting Participant, the Manager and each of the other Non-Defaulting Participants of that default.

- (d) If a default of a material obligation is not capable of being remedied, the Participants must agree in writing the amount of adequate monetary compensation to be paid by the Defaulting Participant to compensate for that default. If the Participants have not reached agreement within 14 days after the date on which notice of default is given, that amount must be referred to an Expert for determination in accordance with clause 17, who must make such determination within 30 days of his or her appointment. On agreement or determination of the amount of adequate monetary compensation under this clause, that amount, and any interest and costs payable or reimbursable under this agreement, becomes money due and payable under this agreement within the 30 Business Day period referred to in clause 13.1(d).

13.3 Payment of interest upon default

If a Participant defaults in paying the whole or part of any Called Sum, that Defaulting Participant must pay to the Manager, for the account of the Non-Defaulting Participants, interest on such unpaid amount at the Interest Rate calculated on daily balances, and capitalised monthly, from the due date for payment to the date of actual payment.

13.4 Rights following an Event of Default

Subject to clause 19.15, if an Event of Default occurs, then until such Event of Default has been rectified (and the Defaulting Participant has paid all amounts due but unpaid by it in relation to the default under any Joint Venture Document):

- (a) the Representatives of the Defaulting Participant:
 - (i) will not have the right to vote at meetings of the Management Committee;
 - (ii) will not be counted for the purposes of determining the relevant quorum; and
 - (iii) if Chairperson of the Management Committee, will cease to be Chairperson and the next entitled Non-Defaulting Participant may appoint the Chairperson;
- (b) if the Event of Default is a circumstance described in clause 13.1(a), the Defaulting Participant will not have a right to participate in the management of the Joint Venture or to participate in any determinations under this agreement and the Representatives appointed by the Defaulting Participant will not have the right to vote at Management Committee meetings, but will be entitled to attend and otherwise participate in those meetings;
- (c) the Defaulting Participant will have no further right to take and dispose of its share of Product and the Manager may take and dispose of what would otherwise be the Defaulting Participant's share of Product on such terms as the Manager considers reasonable and must credit the net proceeds of sale after deducting all costs incurred in effecting the sale, towards the moneys owed by the Defaulting Participant;
- (d) the Defaulting Participant will continue to have the right to receive the reports and information from the Manager under clause 9;

- (e) the Non-Defaulting Participants and the Manager may exercise each and every power and remedy provided in the Deed of Cross Security executed by the Defaulting Participant and use and apply any moneys realised from such exercise in accordance with the Deed of Cross Security; and
- (f) the Non-Defaulting Participants may acquire the Joint Venture Interest of the Defaulting Participant subject to and in accordance with clause 13.7.

13.5 Payment of Unpaid Called Sum

- (a) Subject to clause 13.5(b), if requested by written notice from the Manager, the Non-Defaulting Participants will, in the proportion that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests, pay on behalf of the Defaulting Participant all or any part nominated by the Manager of the amounts owing by such Defaulting Participant (including under clause 13.3), such payment to be made by the Non-Defaulting Participants within such time as the Manager may reasonably determine.
- (b) The Manager will exercise its rights under the Deed of Cross Security (as contemplated in clause 13.4(e)), and take and sell what would otherwise be the Defaulting Participant's Joint Venture Interest share of Product under clause 13.4(c), in priority to calling upon the Non-Defaulting Participants to pay any amounts owing by the Defaulting Participant (as contemplated in clause 13.5(a)), if the Manager is of the opinion that exercising its rights under the Deed of Cross Security or against the share of Product will result in it obtaining payment of the relevant outstanding amounts, within a timeframe that will enable Joint Venture Operations to continue without disruption.
- (c) If any Non-Defaulting Participant pays any amount on behalf of a Defaulting Participant under clause 13.5(a), the amount so paid will constitute a debt due and payable by the Defaulting Participant to such Non-Defaulting Participant, and will bear interest at the Interest Rate calculated on daily balances, and capitalised monthly, from the date such debt became due to the Non-Defaulting Participant until the date such debt is paid by the Defaulting Participant.

13.6 Delivery of Cross Security

- (a) It is acknowledged that, for the purposes of securing the performance of their obligations under the Joint Venture Documents, each Participant has executed and delivered the Deed of Cross Security, creating a charge upon the Participant's Joint Venture Interest and its shares in the Manager in favour of the other Participants and the Manager and creating a charge upon the Participant's Joint Venture Interest in favour of the Manager.
- (b) Each Participant (and each Transferee of a Joint Venture Interest which has executed a similar deed of charge in accordance with clause 12.11(b)) will as soon as practicable after the creation of the Deed of Cross Security promptly register the Deed of Cross Security, or will file or record such other notices or documents relating to the Deed of Cross Security, in each jurisdiction where such registration, filing or recording may be required to perfect the security created by the Deed of Cross Security and to protect further the rights of the Manager and other Participants under the Deed of Cross Security.

13.7 Option to acquire Joint Venture Interest of Defaulting Participant

- (a) Upon the occurrence of an Event of Default, the Manager (or failing the Manager doing so, any Participant) will notify the Participants of the Event of Default (**EOD Notice**).
- (b) Upon the occurrence of an Event of Default, and until such Event of Default has been rectified, each Non-Defaulting Participant will have the option to acquire the whole of the Joint Venture Interest of the Defaulting Participant.
- (c) Such option may be exercised by notice in writing (**Exercise Notice**) given to the Defaulting Participant at any time during the 60 day period immediately following the later of the occurrence of the Event of Default and the date that the Manager (or a Participant) gives the Participants an EOD Notice (**Option Exercise Period**), provided the Event of Default giving rise to such option remains unremedied as at the date of the Exercise Notice.
- (d) The Non-Defaulting Participant must give a copy of the Exercise Notice to:
 - (i) the Manager; and
 - (ii) the other Non-Defaulting Participants,
 - at the same time as giving the Exercise Notice to the Defaulting Participant.
- (e) If:
 - (i) one or more Non-Defaulting Participants give an Exercise Notice within the Option Exercise Period; and
 - (ii) at least the first of such Exercise Notices was given at a point in time when the Event of Default which gave rise to the option remained unremedied,
 - then, upon expiry of the Option Exercise Period, the value of the Joint Venture Interest of the Defaulting Participant must be determined in accordance with clause 13.8.
- (f) Within 14 days after the value of the Joint Venture Interest of the Defaulting Participant has been determined in accordance with clause 13.8, any Non-Defaulting Participant who had given an Exercise Notice may, by notice in writing (**Notice to Proceed**) given to the Defaulting Participant (with copies to the Manager and the other Non-Defaulting Participants) advise that the Non-Defaulting Participant wishes to proceed with the acquisition of the Joint Venture Interest of the Defaulting Participant.
- (g) If one or more Non-Defaulting Participants (**Acquiring Participants**) give a Notice to Proceed, the Defaulting Participant and the Acquiring Participants will be deemed to have entered into a contract for the sale to the Acquiring Participants (in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests) of the Defaulting Participant's Joint Venture Interest upon the following terms and conditions:
 - (i) The liability of the Acquiring Participants (including obligations to pay money) will be several in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests.

- (ii) The sale will be conditional upon the parties obtaining all Governmental Agency consents, approvals or clearances required in respect of the sale (**Approvals**), which may include, without limitation:
 - (A) Ministerial consents required under the Mining Act for the assignment of a Defaulting Participant's Joint Venture Interest in the Tenements; and
 - (B) approval for the sale from the Foreign Investment Review Board (if applicable).
- (iii) The parties must execute all documents and do all other things reasonably necessary to apply for and obtain the necessary Approvals as expeditiously as possible.
- (iv) If the necessary Approvals:
 - (A) have not all been obtained within 90 days after the date of expiry of the 14 day period referred to in clause 13.7(f), the Acquiring Participants may elect to terminate the contract for the sale of the Defaulting Participant's Joint Venture Interest;
 - (B) have all been obtained or the Acquiring Participants have not elected to terminate the contract for the sale of the Defaulting Participant's Joint Venture Interest under clause 13.7(g)(iv)(A), then completion of the sale of the Defaulting Participant's Joint Venture Interest will take place at the place in Western Australia nominated by the Acquiring Participants by notice in writing to the Defaulting Participant and on the date which is 30 days after the date upon which the last of the necessary Approvals was obtained, or such earlier date agreed by the Acquiring Participants;
 - (C) have all been obtained by some but not all Acquiring Participants within 90 days after the date of expiry of the 14 day period referred to in clause 13.7(f), then:
 - (1) those Acquiring Participants who have not obtained all necessary Approvals may elect to withdraw from the contract for the sale of the Defaulting Participant's Joint Venture Interest; and
 - (2) if, within a further 14 days after the end of the 90 day period (or such longer period agreed by the Acquiring Participants), any remaining Acquiring Participants who have obtained all necessary Approvals agree to purchase the Defaulting Participant's Joint Venture Interest, either in the proportions that those Acquiring Participants' respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests, or in such other proportions that those remaining Acquiring Participants otherwise agree, then:
 - (AA) the contract for the sale of the Defaulting Participant's Joint Venture Interest will be deemed to be between the Defaulting Participant and those remaining Acquiring Participants, and in such proportions as those Acquiring Participants agree; and

(BB) completion of the sale of the Defaulting Participant's Joint Venture Interest will take place at the place in Western Australia nominated by the relevant Acquiring Participants by notice in writing to the Defaulting Participant on the date which is 14 days after the end of the 14 day period specified in clause 13.7(g)(iv)(C)(2).

(v) At completion:

- (A) the Defaulting Participant must transfer its Joint Venture Interest to the relevant Acquiring Participants free from all Security Interests (subject to the Permitted Security Interests which apply to the Joint Venture Interest). The relevant Acquiring Participants will be entitled to a transfer of the Joint Venture Interest of the Defaulting Participant in the proportions that their respective Joint Venture Interests bear to the aggregate of their Joint Venture Interests or in such other proportions as the relevant Acquiring Participants agree;
- (B) the Defaulting Participant must execute and deliver all instruments of sale, assignment, conveyance and transfer and all other documents, and take such other action, as the relevant Acquiring Participants may reasonably request to effect such transfer;
- (C) in return for the transfer of the Defaulting Participant's Joint Venture Interest, the relevant Acquiring Participants must pay to the Defaulting Participant, or as the Defaulting Participant's solicitor may direct, the amount that is equal to 95% of the value of the Defaulting Participant's Joint Venture Interest (as determined in accordance with clause 13.8) less the following amounts:
 - (1) all amounts due but unpaid under any of the Joint Venture Documents by the Defaulting Participant, which amounts must, immediately following completion, be paid by the relevant Acquiring Participants on behalf of the Defaulting Participant;
 - (2) the amount of the debt owed by the Defaulting Participant to the acquiring Participants under clause 13.5(c); and
 - (3) the amount (as reasonably determined by the Non-Defaulting Participants) of all other outstanding liabilities and obligations of the Defaulting Participant under any of the Joint Venture Documents which are to be assumed by the relevant Acquiring Participants; and
 - (4) all amounts of any stamp and other duties, levies, imposts or other taxes, together with any interest or penalty thereon, imposed by the State or the Commonwealth or any taxing authority, paid or which may thereafter be payable by the relevant Acquiring Participants in connection with the exercise of the option and the transfers effected consequent upon its exercise; and
- (D) the amount payable to the Defaulting Participant under clause 13.7(g)(v)(C) must be paid by electronic transfer of clear and available funds into a bank account in Australia nominated by the Defaulting Participant for this purpose.

- (vi) To secure the rights of the Acquiring Participants under this clause, the Defaulting Participant hereby irrevocably appoints each relevant Acquiring Participant, the Manager and their respective directors as the several attorneys of the Defaulting Participant with power to sign all documents and do all other things in the name of the Defaulting Participant which are reasonably necessary to:
 - (A) apply for and obtain the necessary Government Agency consents, approvals and clearances referred to in clause 13.7(g); and
 - (B) effect the transfer of the Defaulting Participant's Joint Venture Interest as contemplated in clauses 13.7(g)(v)(A) and 13.7(g)(v)(B).
- (vii) The Defaulting Participant and the relevant Acquiring Participants must sign any deed of covenant and deed of charge that is required under clause 12.11(b).

13.8 Value of Joint Venture Interest of Defaulting Participant

The following provisions apply where, under clause 13.7, the value of the Joint Venture Interest of a Defaulting Participant is required to be determined:

- (a) The Defaulting Participant and the Non-Defaulting Participants who have given an Exercise Notice must endeavour to agree the value of the Joint Venture Interest of the Defaulting Participant.
- (b) If the parties are unable to agree upon the value of the Joint Venture Interest of the Defaulting Participant within 14 days after the expiry of the Option Exercise Period, the parties must endeavour to agree upon the appointment of two Valuers.
- (c) If the parties are unable to agree upon the appointment of the Valuers within 14 days after the expiry of the Option Exercise Period, then the Valuers will be two (2) suitably qualified and experienced persons nominated by the President (or acting President) for the time being of the Minerals Council of Australia or their nominee at the request of Non-Defaulting Participants who have given an Exercise Notice.
- (d) The Valuers must be engaged on terms which require the Valuers to use their best endeavours to make independently a determination within 30 days after their appointment, or such other timeframes as the Defaulting Participant and Non-Defaulting Participants who have given an Exercise Notice may agree.
- (e) Each Valuer will determine the value of the Joint Venture Interest of the Defaulting Participant, as at the date of the first Exercise Notice given, on the following basis:
 - (i) the price that would have been paid by a knowledgeable and willing (but not anxious) buyer to a knowledgeable and willing (but not anxious) seller dealing at arm's length;
 - (ii) any Rehabilitation Obligations and Mine Closure Obligations relating to the Joint Venture Interest are to be taken into consideration;
 - (iii) the Joint Venture Interest is to be valued on a stand-alone basis, and without taking into account any element of control that a Non-Defaulting Participant may obtain as a result of acquiring all or part of the Defaulting Participant's Joint Venture Interest in addition to the Non-Defaulting Participant's existing Joint Venture Interest;

- (iv) the valuation is to be determined independently and generally in accordance with the VALMIN Code of the Australasian Institute of Mining and Metallurgy; and
- (v) otherwise the valuation methodologies to be applied are to be determined by the Valuer in its own discretion, taking into account usual and prudent industry practices.
 - (f) The value of the Joint Venture Interest of the Defaulting Participant will be deemed to be the average of the two Valuer's determinations.
 - (g) In making the determination, each Valuer will be deemed to be acting as an expert and not as an arbitrator, and the laws relating to commercial arbitration will not apply to either Valuer, the Valuer's determination or the means by which each Valuer makes the determination.
 - (h) Each Participant will be entitled to submit such evidence to each Valuer as the Valuer may reasonably allow or require, and will provide all information, written or oral, which the Valuer may reasonably request, provided that:
 - (i) all oral evidence must be presented in the presence of the other parties; and
 - (ii) copies of all written evidence must be given to all other parties.
 - (i) Each Valuer may consult such legal, technical and financial experts as the Valuer, in his or her absolute discretion, thinks fit.
 - (j) The costs of the Valuers, and of any legal, technical and financial experts consulted by the Valuers, will be borne by the Defaulting Participant.
 - (k) The determination of the Valuer will be final and binding on the parties without appeal so far as the law allows and except in the case of manifest error.

13.9 Remedies not exclusive

- (a) Each and every power and remedy given to the Non-Defaulting Participants in this clause 13 are in addition to every other power and remedy existing at law or in equity, and each and every power and remedy may be exercised from time to time and simultaneously and as often and in such order as may be deemed expedient.
- (b) All such powers and remedies will be cumulative, and the exercise of one will not be deemed a waiver of the right to exercise any other or others.
- (c) No delay or omission in the exercise of any such power or remedy will impair any such power or remedy or will be construed to be a waiver of any default.

14 Force Majeure

- (a) If a party (**Affected Party**) is prevented or hindered by Force Majeure from fully or partly complying with any obligation (except for the payment of money) under this agreement, that obligation is suspended for the duration of, and to the extent affected by, such Force Majeure.
- (b) If the Affected Party wishes to claim the benefit of this clause it must give prompt notice of the Force Majeure occurrence to the other parties including reasonable details of:

- (i) the Force Majeure occurrence and why it constitutes Force Majeure;
 - (ii) the effect of the Force Majeure occurrence on the performance of the Affected Party's obligations; and
 - (iii) the likely duration of the delay in performance of those obligations.
- (c) The Affected Party must use its best endeavours to remove or overcome the cause and/or effect of the Force Majeure provided that nothing in this clause requires the Affected Party to:
- (i) settle any strike, or other labour dispute; or
 - (ii) contest the validity or enforceability of any law or legally enforceable order by way of legal proceedings,
 - on terms not acceptable to it solely for the purpose of removing the event of Force Majeure.
- (d) If the Force Majeure event cannot be removed or overcome to an extent that allows resumption of performance within six (6) Months (or such other period as the Participants agree) from the date the notice is given under clause 14(b)(i), the parties must consider and determine whether this agreement should be modified or terminated.
- (e) Notwithstanding the Force Majeure, the Participants must continue to pay any Called Sum called by the Manager in accordance with clauses 8.3 and 8.5 to the extent such monies are necessary to maintain the Joint Venture Assets in good condition and keep the Tenements and the Petroleum Pipelines in good standing.

15 Notices

15.1 General

A notice, demand, certification, process or other communication relating to this agreement must be in writing in English and may be given by an agent of the sender.

15.2 How to give a communication

In addition to any other lawful means, a communication may be given by being:

- (a) personally delivered;
- (b) left at the party's current delivery address for notices;
- (c) sent to the party's current postal address for notices by pre-paid ordinary mail or, if the address is outside Australia, by pre-paid airmail;
- (d) sent by email to the party's current email address for notices; or
- (e) sent by such other form of communication as the Participants and the Manager may from time to time agree.

15.3 Particulars for delivery

(a) The particulars for delivery of notices are initially:

(i) in the case of WLPL:

Delivery address: 1 Sleat Road
APPLECROSS WA 6153

Postal address: Locked Bag 3, Canning Bridge
APPLECROSS WA 6153

Email: [insert]

Attention: [insert]

(ii) in the case of AWPL:

Delivery address: [insert]

Postal address: [insert]

Email: [insert]

Attention: [insert]

(iii) in the case of the Manager:

Delivery address: [insert]

Postal address: [insert]

Email: [insert]

Attention: [insert]

(b) Each party may change its particulars for delivery of notices by notice to each other party.

15.4 Communications by post

Subject to clause 15.7, a communication is given if posted:

- (a) within Australia to an Australian postal address, three (3) Business Days after posting; or
- (b) outside of Australia to an Australian postal address or within Australia to an address outside of Australia, ten (10) Business Days after posting.

15.5 Communications by email

(a) Subject to clause 15.7, a communication is given if sent by email, upon the earlier of:

- (i) the time the sender receives an automated message from the intended recipient's information system confirming delivery of the email;

- (ii) the time that the email is first opened or read by the intended recipient, or an employee or officer of the intended recipient; and
 - (iii) four (4) hours after the time the email is sent (as recorded on the device from which the sender sent the email) unless the sender receives, within that four (4) hour period, an automated message that the email has not been delivered.
- (b) Despite anything to the contrary in this agreement, the following communications must not be given by email:
- (i) a notice given by the Manager under clause 13.2(a) or any Participant under clause 13.2(c); and
 - (ii) an EOD Notice given under clause 13.7.

15.6 Process service

Any process or other document relating to litigation, administrative or arbitral proceedings in relation to this agreement may be served by any method contemplated by this clause 15 or in accordance with any applicable law.

15.7 After hours communications

If a communication is given:

- (a) after 5.00 pm in the place of receipt; or
- (b) on a day which is a Saturday, Sunday or bank or public holiday in the place of receipt,

it is taken to have been given at 9.00am on the next day which is not a Saturday, Sunday or bank or public holiday in that place.

16 GST

16.1 Construction

In this clause 16:

- (a) unless there is a contrary indication, words and expressions which are not defined in this agreement but which have a defined meaning in the GST Law have the same meaning as in the GST Law;
- (b) references to GST payable and input tax credit entitlements include:
 - (i) notional GST payable by, and notional input tax credit entitlements of the Commonwealth, a State or a Territory (including a government, government body, authority, agency or instrumentality of the Commonwealth, a State or a Territory); and
 - (ii) GST payable by, and the input tax credit entitlements of, the representative member of a GST group of which the entity is a member.

16.2 Consideration GST exclusive

Unless otherwise expressly stated, all consideration, whether monetary or non-monetary, payable or to be provided under or in connection with this agreement is exclusive of GST (**GST-Exclusive Consideration**).

16.3 Payment of GST

If GST is or becomes payable on any supply made by:

- (a) a party; or
- (b) an entity that is taken under the GST Law to make the supply by reason of the capacity in which a party acts,

(**Supplier**) under or in connection with this agreement, the recipient of the supply, or the party providing the consideration for the supply, must pay to the Supplier an amount equal to the GST payable on the supply as calculated in accordance with the GST Law, subject to clause 16.5.

16.4 Timing of GST payment

The amount referred to in clause 16.3 must be paid in addition to and at the same time and in the same manner (without any set-off or deduction) that the GST-Exclusive Consideration for the supply is payable or to be provided.

16.5 Tax invoice

The Supplier must deliver a tax invoice or an adjustment note to the recipient of a taxable supply before the Supplier is entitled to payment of an amount under clause 16.3.

16.6 Adjustment event

If an adjustment event arises in respect of a supply made by a Supplier under or in connection with this agreement, any amount that is payable under clause 16.3 will be calculated or recalculated to reflect the adjustment event and a payment will be made by the recipient to the Supplier or by the Supplier to the recipient as the case requires.

16.7 Reimbursements

Notwithstanding any other provision in this agreement, where a party is required under or in connection with this agreement to pay for, reimburse or contribute to any expense, loss, liability or outgoing suffered or incurred by another party or indemnify another party in relation to such an expense, loss, liability or outgoing (**Reimbursable Expense**), the amount required to be paid, reimbursed or contributed by the first party will be reduced by the amount of any input tax credits to which the other party (or the representative member of the GST group of which the other party is a member) is entitled in respect of the Reimbursable Expense.

16.8 Calculations based on other amounts

If an amount of consideration payable or to be provided under or in connection with this agreement is to be calculated by reference to any price, value, sales, proceeds, revenue or similar amount (**Revenue**), that reference will be to that Revenue determined by deducting from it an amount equal to the GST payable on the supply for which it is consideration.

16.9 No merger

This clause 16 does not merge on the completion, rescission or other termination of this agreement or on the transfer of any property supplied under this agreement.

16.10 GST joint venture

The Manager and the Participants will, in good faith, consider taking action to register the Joint Venture as a GST joint venture after the Effective Date. If the Joint Venture is registered as a GST joint venture then the parties contemplate that the Manager will be responsible for administration of any GST.

17 Expert determination

17.1 When appointed

Wherever under this agreement:

- (a) any matter is expressly to be referred to an Expert; or
- (b) the parties agree that a point of difference between them will be resolved by an Expert,

then unless specifically provided otherwise, the matter in issue will be referred to an Expert for determination and this clause will apply. Unless otherwise agreed by the parties to the dispute, any Expert appointed under this agreement must be someone who is independent of the parties to the dispute, does not have an interest or duty which conflicts or may conflict with the functions as the expert and is not an employee, representative of a person that provides consultancy services on a regular basis to any party to the dispute.

17.2 Appointment

The procedure for the appointment of an Expert will be as follows:

- (a) the party wishing the appointment to be made will give notice in writing to that effect to the other parties and give details of the matter which it proposes will be resolved by the Expert;
- (b) within ten (10) Business Days from the date of that notice, the parties will meet in an endeavour to agree upon a single Expert (who will be independent of the parties and will have qualifications and experience appropriate to the matter in dispute) to whom the matter in dispute will be referred for determination; and
- (c) if within that ten (10) Business Days the parties fail to agree upon the appointment of a single Expert then any party may request the nomination of an Expert by:
 - (i) the President of the Australasian Institute of Mining and Metallurgy to appoint the Expert, if the subject matter of the dispute relates to a technical issue;
 - (ii) the President of the Institute of Chartered Accountants in Australia, if the subject matter of the dispute relates to a financial issue;
 - (iii) the President of the Western Australian Law Society, if the subject matter of the dispute relates to a legal issue; and

- (iv) the National Chairman of the Australian Institute of Company Directors, if the subject matter of the dispute relates to any other issue,

(collectively an **Independent Body**), which nominee the parties must appoint.

- (d) If an Independent Body fails to nominate an Expert within ten (10) Business Days of being requested to do so, or otherwise refuses to make such an appointment, then any party may request the nomination of an Expert by the President of the Resolution Institute of Australia, which nominee the parties must appoint.

17.3 Instructions

The Expert will be instructed to:

- (a) determine the dispute within the shortest practicable time; and
- (b) deliver a report stating his opinion with respect to the matters in dispute and setting out the reasons for the decision.

17.4 Procedure

- (a) The Expert will determine the procedures for the conduct of the process in order to resolve the dispute and must provide each party with a fair opportunity to make submissions in relation to the matter in issue.
- (b) Any process or determination of the dispute by the Expert will be made as an expert and not as an arbitrator and the determination of the Expert will be final and binding on the parties without appeal so far as the law allows and except in the case of manifest error or where a party to the matter in issue has not been provided with a fair opportunity to make submissions in relation to the matter in issue.

17.5 Costs

Each party will bear its own costs of and incidental to any proceedings under this clause 17. The costs of the Expert will be Joint Venture Costs, except as otherwise may be provided in this agreement.

18 Dispute resolution

18.1 Dispute resolution process

Except to the extent otherwise expressly referred to Expert determination in accordance with clause 17 or otherwise expressly prescribed by this agreement in relation to particular types of dispute, the parties must deal with any dispute, controversy, claim or difference (**Dispute**) arising out of, connected with or relating to this agreement or any breach, termination or claimed invalidity of this agreement in accordance with the dispute resolution process set out in this clause 18.

18.2 Dispute Notice

- (a) A party claiming a Dispute (**Initiating Party**) must give notice (**Dispute Notice**) to the other party which:
 - (i) identifies the subject matter of the Dispute; and

- (ii) designates a senior representative for the Dispute who will have the authority to settle the Dispute on its behalf.
 - (b) The other party must then promptly designate, by notice to the Initiating Party, its senior representative for the Dispute who will have authority to settle the Dispute on its behalf.

18.3 Meeting of the parties' designated representatives

The parties' designated representatives must meet and use all reasonable endeavours acting in good faith to resolve the Dispute, within five (5) Business Days after the receipt of the Dispute Notice.

18.4 Meeting of Senior Executives and Chief Executive Officers

- (a) If the Dispute is not resolved under clause 18.3, then within ten (10) Business Days of the Dispute Notice, a senior executive of the Ultimate Holding Company of each party to the Dispute (**Disputing Parties**) must meet and use all reasonable endeavours acting in good faith to resolve the Dispute.
- (b) If the Dispute is not resolved under clause 18.4(a), then within 20 Business Days of the date the Dispute Notice has been given, each chief executive officer of the Ultimate Holding Company of each Disputing Party must meet and use all reasonable endeavours acting in good faith to resolve the Dispute.

18.5 Court proceedings

A party may commence court proceedings in respect of the Dispute if:

- (a) the steps under clauses 18.3, 18.4(a) and 18.4(b) have been taken and one or other of the chief executive officers of the Ultimate Holding Companies of the Disputing Parties has stated that they consider that the Dispute will not be resolved within 40 Business Days from the date of the Dispute Notice; or
- (b) one of the parties has attempted to follow the steps in clauses 18.3, 18.4(a) and 18.4(b) and the other party has not complied with its obligations under those clauses.

18.6 Urgent interlocutory relief

This clause 18 does not prevent a party from seeking urgent interlocutory relief from a court of competent jurisdiction where, in that party's reasonable opinion, that action is necessary to protect that party's rights.

19 General

19.1 Consents and approvals

Except as expressly provided in this agreement, a party may conditionally or unconditionally in its absolute discretion give or withhold any consent or approval under this agreement.

19.2 Duty

- (a) Except as expressly stated otherwise in this agreement (including as provided in clause 2.15), the Manager, as between the parties, is liable for and must pay all duty (including any fine, interest or penalty except where it arises from default by another party) on or relating to this agreement, any agreement executed under it or any dutiable transaction evidenced or effected by it.
- (b) If a party other than the Manager pays any duty (including any fine, interest or penalty) on or relating to this agreement, any document executed under it or any dutiable transaction evidenced or effected by it, the Manager must pay that amount to the paying party on demand.
- (c) All amounts payable by the Manager under clauses 19.2(a) and 19.2(b) will form part of Joint Venture Costs.

19.3 Legal costs

- (a) Except as expressly stated otherwise in this agreement, each party must pay its own legal and other costs and expenses of negotiating, preparing, executing and performing its obligations under this agreement.
- (b) The legal costs of the Manager in negotiating, preparing, and executing this agreement do not form part of Joint Venture Costs, however the legal costs of the Manager in performing its obligations under this agreement form part of Joint Venture Costs.

19.4 No liability for consequential losses

Except in the case of Wilful Misconduct or Gross Negligence, no party will be liable to the other parties in any circumstances for any loss of use, loss of revenue, loss of profit, loss of production, business interruption, loss of business opportunity, loss of savings, loss of use of capital or loss of good will, arising out of or in connection with this agreement, whether or not foreseeable at the Effective Date.

19.5 Entire agreement

- (a) This agreement is the entire agreement between the parties about its subject matter and replaces all previous agreements, understandings, representations and warranties about that subject matter.
- (b) Each party represents and warrants that it has not relied on any representations or warranties about the subject matter of this agreement except as expressly provided in this agreement.

19.6 Further assurances

Except as expressly provided in this agreement, each party must, at its own expense, do all things reasonably necessary to give full effect to this agreement and the matters contemplated by it.

19.7 Rights cumulative

Except as expressly stated otherwise in this agreement, the rights of a party under this agreement are cumulative and are in addition to any other rights of that party.

19.8 Severability

Any term of this agreement which is wholly or partially void or unenforceable is severed to the extent that it is void or unenforceable. The validity or enforceability of the remainder of this agreement is not affected.

19.9 Survival and merger

- (a) No term of this agreement merges on completion of any transaction contemplated by this agreement.
- (b) Clause 11 survives termination or expiry of this agreement together with any other term which by its nature is intended to do so.

19.10 PPS Act

- (a) Each party waives the right to receive any notice under the PPS Act (including a notice of verification statement) unless the notice is required under the PPS Act and the obligation to give it cannot be excluded.
- (b) Unless expressed to the contrary, a reference to a term which is defined in the PPS Act has the meaning it has in the PPS Act.

19.11 Variation

No variation of this agreement is effective unless made in writing and signed by each party.

19.12 Waiver

- (a) No waiver of a right or remedy under this agreement is effective unless it is in writing and signed by the party granting it. It is only effective in the specific instance and for the specific purpose for which it is granted.
- (b) A single or partial exercise of a right or remedy under this agreement does not prevent a further exercise of that or of any other right or remedy.
- (c) Failure to exercise or delay in exercising a right or remedy under this agreement does not operate as a waiver or prevent further exercise of that or any other right or remedy.

19.13 Governing law

- (a) This agreement is governed by the laws of Western Australia.
- (b) Each party irrevocably and unconditionally submits to the exclusive jurisdiction of the courts of Western Australia including, for the avoidance of doubt, the Federal Court of Australia sitting in Western Australia.

19.14 Counterparts

This agreement may be executed in any number of counterparts and signatures on behalf of a party may be on different counterparts.

19.15 Ipso Facto Stay

The provisions of this agreement are subject to any Ipso Facto Stay which may operate to prevent the enforcement of rights under this agreement. To the extent that there is any

conflict between the provisions of this agreement and the Ipso Facto Stay, this agreement is to be interpreted subject to the Ipso Facto Stay.

19.16 Relationship with Shareholders' Deed

Where this agreement and the Shareholders' Deed deal with the same or similar topic differently, this agreement is to prevail.

19.17 Remote conferencing

Where this agreement calls for or requires a meeting between the Participants, their Representatives, the Manager or any of the Manager's or Participants' officers, employees, contractors or agents, such meetings may be attended by telephone, video conferencing or any other means of electronic conferencing.

Schedule 1 Dictionary

1 Dictionary

In this agreement:

Accepting Participants has the meaning given to that term in clause 12.12(f).

Accounting Procedure means the accounting procedure set out in Schedule 4.

Acquiring Participants has the meaning given to that term in clause 13.7(g).

Additional Production Capacity has the meaning given to that term in clause 6.12(d).

Adviser has the meaning given to that term in clause 6.13.

Affected Party has the meaning given to that term in clause 14(a).

Affiliate means, with respect to any corporation, another corporation which Controls, is Controlled by, or is under common Control with, such corporation.

Albemarle means Albemarle Corporation.

Alternative Refinery Plant means a plant capable of converting spodumene concentrate produced from the Mine into lithium hydroxide monohydrate consisting of one module with a designed production capacity of approximately 25ktpa, and otherwise having substantially the same specifications as the Initial Refinery Plant.

Alternative Refinery Plant Notice has the meaning given to that term in clause 6.12(a).

Approvals means any licence, consent, approval, permit, registration, accreditation, certification or other authorisation given or issued by any Government Agency or any other person which relate to the Joint Venture Operations, including those specified the Asset Sale and Share Subscription Agreement.

Approved Budget means a Proposed Budget approved by the Management Committee in accordance with clause 7, as amended or updated from time to time in accordance with clause 7.

Approved Closure Plan means the Closure Plan as approved by the Department as at the Effective Date, as amended, updated or supplemented from time to time in accordance with this agreement and in compliance with applicable laws.

Asset Sale and Share Subscription Agreement means the document entitled 'Asset Sale and Share Subscription Agreement — Wodgina Lithium Project' between the Participants, MRL and Albemarle dated [insert date].

Assigned Tenements means the mining tenements specified in Part 2 of Schedule 2.

Associated Rights means:

- (a) all Intellectual Property Rights that the Participants or the Manager holds pertaining to the Mining Information including rights subsisting under copyright, design, trade mark, patent or similar legislation, together with rights recognised at common law; and

- (b) the benefit of any contracts (whether written or oral) between the Manager and the provider of the Mining Information for production of that information, including any actual or implied warranties as to the accuracy of that information.

ASX Listing Rules means the official listing rules from time to time of the Australian Securities Exchange, as amended, modified or waived from time to time.

Atlas means Atlas Iron Limited (ACN 110 396 168).

Auditor has the meaning given to that term in clause 10.1(a).

Business Day means a day on which banks are open for business excluding Saturdays, Sundays and public holidays in Perth, Western Australia.

Business Plan means the LOM Business Plan and the Refinery Plant Business Plan.

Called Sum has the meaning given to that term in clause 8.3(b)(iii).

Camp Services Agreement means [the Wodgina Camp Services Agreement] between the Manager and the Camp Services Provider dated on or around the date of this agreement.

Camp Services Provider means Process Minerals International Pty Ltd (ACN 063 988 894).

Capital Costs means all costs of a type which are treated as capital costs in accordance with International Financial Reporting Standards.

Capital Works means capital works and services associated with a future expansion project or other development in respect of the Joint Venture Operations or to further support, sustain, expand, suspend, rehabilitate or abandon Joint Venture Operations, where applicable as approved by the Management Committee.

Cash Call has the meaning given to that term in clause 8.3(b).

Chairperson has the meaning given to that term in clause 6.6(a).

Change in Control means, in relation to any entity (the first mentioned entity):

- (a) a change in the entity that Controls the first mentioned entity (other than if the Ultimate Holding Company of the first mentioned entity remains the same following the change);
- (b) an entity that Controls the first mentioned entity ceases to Control that entity (other than if the Ultimate Holding Company of the first mentioned entity remains the same following the change); or
- (c) if the first mentioned entity is not Controlled, another entity acquires Control of the first mentioned entity.

Changed Participant has the meaning given to that term in clause 12.12(a).

Chargee has the meaning given to that term in clause 12.7(a).

Chargee's Priority Deed has the meaning given to that term in clause 12.7(a).

Chargor has the meaning given to that term in clause 12.7(a).

Circular Resolution has the meaning given to that term in clause 6.15(a).

Closure Plan means the plan for Rehabilitation and Mine Closure.

Competent Person means a person who qualifies as a “Competent Person” for purposes of the JORC Code.

Confidential Information has the meaning given to that term in clause 11.1.

Conflicted Participant has the meaning given to that term in clause 6.8(d).

Continuing Participants has the meaning given to that term in clause 12.5(b).

Contract Liability has the meaning given to that term in clause 5.9(b).

Contracted Concentrate means spodumene concentrate derived from Ore located in the stockpiles on the Tenements or in transit that is the subject of offtake arrangements entered into prior to the Effective Date by WLPL or its agent in accordance with the Asset Sale and Share Subscription Agreement.

Control has the meaning given to that term in section 50AA of the Corporations Act, and **Controlled** has a corresponding meaning.

Control Transaction means:

- (a) in respect of MRL, any transaction or dealing which would result, on completion, in a Change in Control of MRL and includes, for the purposes of this definition, any person or group of persons acting jointly or in concert, acquiring a relevant interest (as defined in the Corporations Act) in 20% or more of MRL’s issued shares; and
- (b) in respect of Albemarle, any transaction or dealing which would result, on completion, in a Change in Control of Albemarle and includes, for the purposes of this definition, any person or group of persons acting jointly or in concert, acquiring a beneficial interest in 20% or more of Albemarle’s issued shares.

Corporations Act means *Corporations Act 2001* (Cth).

Crusher means the crusher to be funded, built, owned and, pursuant to the Crushing Services Agreement, operated by the Crushing Services Provider.

Crushing Services Agreement means [the Wodgina Crushing Services Agreement] between the Manager and the Crushing Services Provider dated on or around the date of this agreement.

Crushing Services Provider means Crushing Services International Pty Ltd (ACN 069 303 377).

Deadlock has the meaning given to that term in clause 6.11(a).

Deed of Cross Security means the Deed of Cross Security in, or substantially in, the form of the deed contained in Attachment C executed contemporaneously with this agreement by the Participants and the Manager, and includes each other similar deed of charge executed by a new Participant in accordance with clause 12.11(b).

Defaulting Participant means a Participant in respect of which an Event of Default has occurred.

Delivery Point means the place at which Product is delivered to and becomes the property of an individual Participant, being the delivery point determined by the Management Committee from time to time.

Department means the Department of Mines, Industry Regulation and Safety for Western Australia or such other body, department or instrumentality responsible for the administration of the Mining Act from time to time and includes any registrar or warden.

Designated Area has the meaning given to that term in clause 6.12(k)(i).

Development Area means the areas of the Tenements that are, from time to time, the subject of any of the following:

- (a) feasibility level study work; or
- (b) Mining Operations.

Dispute has the meaning given to that term in clause 18.1.

Dispute Notice has the meaning given to that term in clause 18.2.

Effective Date means the date of completion under the Asset Sale and Share Subscription Agreement.

EOD Notice has the meaning given to that term in clause 13.7(a).

Event of Default has the meaning given to that term in clause 13.1.

Excluded Assets means:

- (a) the Contracted Concentrate;
- (b) the Excluded Infrastructure;
- (c) the Retained Mineral Rights;
- (d) the GAMG Assets; and
- (e) the WLPL Assets.

Excluded Infrastructure means the plant, equipment, machinery, facilities and other infrastructure owned by a third party that is leased, hired or used in the Joint Venture, including the Crusher.

Expert means a person appointed in accordance with clause 17.2.

Exploration Information means Exploration Results and Exploration Targets (as those terms are defined in the JORC Code) relating to the Tenements.

Exploration Operations means all activities as are necessary or expedient for the purpose of exploring the Joint Venture Area.

Financial Year means the twelve (12) Month period ending 30 June each year, or such other period adopted by the Management Committee from time to time as the Financial Year for the Joint Venture.

Force Majeure means any event or circumstance which:

.....

- (a) is beyond the control of the Affected Party;
- (b) was not directly or indirectly caused or materially contributed to by the Affected Party; and
- (c) could not have been reasonably prevented by the Affected Party,

and includes, subject to the requirements of paragraphs (a) to (c), any of the following:

- (d) act of God;
- (e) law, rule, regulation or order of any government or Government Agency;
- (f) executive or administrative orders or acts of either general or particular application of any official acting under the authority of any government, or of any official acting under the authority of such government;
- (g) act of war (declared or undeclared);
- (h) public disorder;
- (i) riot, insurrection, rebellion, sabotage or act of terrorists;
- (j) fire, flood, drought, earthquake, storm, hail, lightning, severe weather conditions or other natural calamity;
- (k) explosion, breakdown or injury to or expropriation, confiscation or requisitioning of production, manufacturing, selling, transportation or delivery facilities;
- (l) shortage or unavailability (whether permanent or temporary) of water, electricity, gas, telecommunications or other essential goods or services;
- (m) inability to access all or any part of the Joint Venture Area because of Native Title Claims or Native Title Rights or otherwise;
- (n) quarantine or customs restrictions;
- (o) the decision of any court or other body of competent jurisdiction; and
- (p) strike, boycott, lockout or other labour disturbance.

GAAP means the Generally Accepted Accounting Principles adopted by the US Securities and Exchange Commission.

GAMG means Global Advanced Metals Greenbushes Pty Ltd (ACN 125 585 284).

GAMG Assets means the Tantalum Rights and the Tantalum Assets.

GAMG Mineral Rights Agreement means the document entitled 'Mineral Rights Agreement' originally between GAMW, GAMG and Global Advanced Metals Pty Ltd (ACN 139 987 465), dated 8 September 2016, as subsequently amended and assigned.

GAMW means Global Advanced Metals Wodgina Pty Ltd (ACN 125 585 239), formerly Talison Wodgina Pty Ltd.

Government Agency means a government or any governmental, semi-governmental, legislative, administrative, fiscal, quasi-judicial or judicial entity, authority, department,

commission, authority, tribunal, agency or entity or other body, whether foreign, federal, State, Territorial or local (including any self-regulatory organisation established under statute or any recognised stock exchange).

Gross Negligence means such reckless conduct in breach of a duty of care as demonstrates a conscious or reckless disregard for the harmful, foreseeable, proximate and avoidable consequences which result or may result from that conduct.

GST means a goods and services tax, or a similar value added tax, levied or imposed under the GST Law.

GST Law has the meaning given to it in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

Holding Company has the meaning given to that term in section 9 of the Corporations Act.

Immediately Available Funds means cash, bank cheque or telegraphic or other electronic means of transfer of cleared funds into a bank account.

Initial Mine Plan and Budget means the LOM Business Plan (including the Approved Budget) for the development of the Wodgina Resource as developed and agreed under the Asset Sale and Share Subscription Agreement and as set out in Attachment A, as amended pursuant to clause 7.5.

Initial Refinery Plant means a plant capable of converting spodumene concentrate produced from the Mine into lithium hydroxide monohydrate, consisting of two modules each designed to be capable of producing approximately 25ktpa of lithium hydroxide monohydrate, and designed to have a total production capacity of at least 50ktpa of lithium hydroxide monohydrate.

Insolvency Event means the happening of any of the following events in relation to a Participant or the Manager (the **Insolvent Party**):

- (a) it is, or states that it is, unable to pay all of its debts as and when they become due and payable, or it has failed to comply with a statutory demand as provided in section 459F(1) of the Corporations Act;
- (b) an application or order is made for the winding up or dissolution, or a resolution is passed or any steps are taken to pass a resolution for the winding up or dissolution, of the Insolvent Party (other than for the purposes of a solvent reconstruction, amalgamation or other like corporate reorganisation), and the application is not dismissed, the order is not set aside or the resolution is not withdrawn (as applicable) within 14 days;
- (c) an administrator, provisional liquidator, liquidator or person having a similar or analogous function under the laws of any relevant jurisdiction is appointed in respect of the Insolvent Party or any action is taken to appoint any such person and the action is not stayed, withdrawn or dismissed within 14 days;
- (d) a controller (as defined in the Corporations Act) is appointed in respect of any property of the Insolvent Party;
- (e) the Insolvent Party is deregistered under the Corporations Act;
- (f) a distress, attachment or execution is levied or becomes enforceable against any property of the Insolvent Party;

- (g) the Insolvent Party enters into, or takes any action to enter into, an arrangement (including a scheme of arrangement or deed of company arrangement), composition or compromise with, or assignment for the benefit of, all or any class of its creditors or members or a moratorium involving any of them; or
- (h) anything analogous to or of a similar effect to anything described above under the law of any relevant jurisdiction occurs in respect of the Insolvent Party.

Intellectual Property Licence Agreement means [the Hydroxide Intellectual Property Licence Agreement] between the Manager as agent for the Participants and the Licence Provider executed on or around the date of this agreement.

Intellectual Property Rights means all intellectual property rights of whatever nature throughout the world including all rights conferred under statute, common law or equity, whether existing now or at any time in future, including rights in all copyright, patents, trade marks, business names, trade names, domain names, designs, Confidential Information, trade secrets and know-how.

Interest Rate means, on any day, the interest rate that is the aggregate of:

- (a) 6% per annum; plus
- (b) the Reserve Bank of Australia's cash rate, or, if that rate cannot be so determined, the rate (expressed as a percentage yield per annum to maturity) quoted at or about such time by Westpac Banking Corporation as the rate at which it would be prepared to purchase bills of exchange accepted by an Australian trading bank and having a tenor of 90 days and of an amount of \$100,000.

International Financial Reporting Standards means, at any time, the International Financial Reporting Standards issued by the International Accounting Standards Board at that time, consistently applied.

Ipsso Facto Stay means any limitation on enforcement of rights or self-executing provisions in a contract, agreement or arrangement pursuant to sections 415D, 415F, 415FA, 434J, 434L, 434LA, 451E, 451G or 451GA of the Corporations Act.

Iron Ore means iron ore and any by-product that is directly associated with the form of iron ore mineralogy.

Iron-Ore Rights has the meaning given to that term in the Asset Sale and Share Subscription Agreement.

Joint Venture means the joint venture formed pursuant to clause 2.1.

Joint Venture Area means the area of the Tenements or such other area as is agreed by all Participants.

Joint Venture Assets means all rights, titles, interests, claims, benefits and all other assets and property of whatsoever kind, real or personal, from time to time acquired, created or held for use by or on behalf of the Participants in connection with the Joint Venture and for the conduct of Joint Venture Operations, including:

- (a) the Tenements;
- (b) the Pipeline Licences;
- (c) the Mining Information;

- (d) the Project Facilities;
- (e) the Approvals;
- (f) the Third Party Agreements (subject to any exclusions identified in this agreement and to the extent that they relate to the Tenements or Pipeline Licences only);
- (g) the stockpiles (but excluding Contracted Concentrate);
- (h) the Associated Rights;
- (i) Product, prior to it being taken in kind by a Participant in accordance with clause 2.8 (for the avoidance of doubt, Product to which a Participant is entitled to take in kind in accordance with clause 2.8, contracts with respect to the sale of Product and proceeds from the sale of Product are not Joint Venture Assets); and
- (j) the Refinery Plant,

but excludes the Excluded Assets.

Joint Venture Costs means all expenditure and liabilities incurred by or for the Participants in accordance with this agreement and includes:

- (a) all expenditure expressed to be part of Joint Venture Costs in this agreement; and
- (b) all expenditure and liabilities incurred by the Manager in accordance with this agreement including those set out in Schedule 4.

Joint Venture Documents means:

- (a) this agreement;
- (b) the Tenements;
- (c) the Shareholders' Deed;
- (d) the Deed of Cross Security; and
- (e) all other agreements entered into by the Participants from time to time in connection with the Joint Venture (whether or not there are also other parties to such agreements) which the Participants agree will be a Joint Venture Document,

together with all amendments made from time to time to such documents, but does not include:

- (f) any contract for the sale by a Participant of its share of Product;
- (g) any agreement whereby a Participant appoints an agent or representative to perform duties and functions in relation to the sale of its share of Product;
- (h) any agreement entered into by a Participant for separately financing its obligations in connection with the Joint Venture; or
- (i) any other agreement entered into by the Participants from time to time which:
- (j) is not in connection with the Joint Venture; or

(k) the Participants agree will not be a Joint Venture Document.

Joint Venture Interest means the following obligations, benefits and rights of a Participant expressed as a percentage determined in accordance with this agreement:

- (a) the obligation, subject to the terms of this agreement, to contribute that percentage of all Joint Venture Costs;
- (b) the ownership of and right and benefit as a tenant in common to receive in kind and to dispose of for its own account that percentage of Minerals produced by the Joint Venture;
- (c) the rights, duties, obligations and liabilities of the Participants arising from the Joint Venture Documents; and
- (d) the beneficial ownership as a tenant in common of an undivided share in that percentage of all Joint Venture Assets.

Joint Venture Operations means all activities as are necessary or desirable in order to implement and give full effect to the provisions and purposes of this agreement including Exploration Operations, Mining Operations and, subject to the Management Committee making a Refinery Plant Decision, the Refinery Operations.

Joint Venture Records and Accounts has the meaning given to that term in clause 9.1(a).

JORC Code means The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition) prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia, as amended or replaced from time to time.

Licence Provider means [insert].

Life of Mine means, in relation to the Joint Venture Operations, the expected term of Mining Operations and subsequent Rehabilitation and Mine Closure activities.

Lithium means all naturally occurring lithium mineral obtained or obtainable by Joint Venture Operations carried out on or under the surface of the land the subject of the Tenements.

LOM Business Plan means the business plan for the remaining Life of Mine approved by the Management Committee in the previous Financial Year in accordance with clause 7, as amended or updated from time to time in accordance with clause 7 (which incorporates the Approved Budget) or in respect of Joint Venture Operations relating to the period from the Effective Date until 30 June 2020, the Initial Mine Plan and Budget.

Loss means any cost, damages, debt, expense, liability or loss.

Management Committee means the committee established pursuant to clause 6.

Manager means WLOPL as appointed under clause 4.1 or any successor or permitted assignee as may be appointed from time to time as manager of the Joint Venture in accordance with this agreement.

Mine means the mine site known as the Wodgina Lithium mine site, located in the Pilbara region of Western Australia, situated on the Tenements and including all associated infrastructure.

Mine Closure means all or any action or conduct by the Manager for the purpose of suspending or abandoning all, or a severable part of, the Joint Venture Operations or Joint Venture Assets under this agreement whether by way of demolition, removal, destruction, conversion, placement on permanent care and maintenance or other basis, or any similar action or conduct, and all other action or conduct as the Manager considers necessary to comply with the Mine Closure Obligations.

Mine Closure Obligations means the obligations of the holder(s) of the Tenements in relation to Mine Closure during or pertaining to the term of this agreement and which relate to the land the subject of the Tenements under:

- (a) the Mining Act (including the terms and conditions of the Tenements);
- (b) authorisations, approvals or licences granted by any Government Agency; and
- (c) all other applicable statutory and contractual obligations relating to Mine Closure and the requirements of good mining industry practice on and following Mine Closure.

Mine Development means the location, opening and development of mines and all activities necessary, expedient, conducive or incidental thereto including without limitation pre-stripping and the removal and disposal of over-burden and waste.

Mineral Rights Agreement means the MRA (Exploration Licences) and the MRA (Mining Leases).

Minerals means all naturally occurring substances on or under the surface of the land the subject of the Tenements.

Mining Act means the *Mining Act 1978 (WA)* or any amendment or statutory replacement of that Act and includes regulations and orders made under that Act.

Mining Information means all technical information including (without limitation) geological, geochemical and geophysical maps and reports, surveys, mosaics, aerial photographs, electromagnetic tapes, electromagnetic or optical disks, sketches, drawings, memoranda, samples, drill core, drill logs, drill pulp, logs of drill cores, assay results, maps and plans relating to the Tenements or to Joint Venture Operations, whether in physical, written or electronic form.

Mining Operations means commercial mining operations and all activities necessary, expedient, conducive or incidental thereto including without limitation:

- (a) Mine Development; and
- (b) the weighing, sampling, assaying, mining, extraction, crushing, refining, treatment, transportation, handling, storage, loading and delivery of Minerals.

Mining Tenements means the mining tenements specified in Part 1 of Schedule 2.

Month means a calendar month or such other period as is agreed by the Participants to comprise a Month.

MRA (Exploration Licences) means the Sale of Mining Property and Grant of Minerals Rights Agreement (for Exploration Licences) between Atlas and Talison Wodgina Pty Ltd dated 7 May 2008 as amended.

MRA (Mining Leases) means the Sale of Mining Property and Grant of Mineral Rights Agreement (for Mining Leases) between Atlas and Talison Wodgina Pty Ltd dated 1 July 2008 as amended.

MRL means Mineral Resources Limited (ACN 118 549 910).

Native Title Act means the *Native Title Act 1993* (Cth).

Native Title Claims means any claim, application or proceeding in respect of either:

- (a) Native Title Rights which is accepted by the Native Title Tribunal or the Registrar thereof pursuant to the Native Title Act; or
- (b) Native Title Interests.

Native Title Interests includes those rights, interests and statutory protections of and relating to aboriginal persons as set out in the *Aboriginal Heritage Act 1972* (WA), *Aboriginal Affairs Planning Authority Act 1972* (WA) or the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth).

Native Title Rights includes:

- (a) “native title” or “native title rights and interests” as defined in section 223(1) of the Native Title Act; and
- (b) Native Title Interests.

Non-consenting Participant has the meaning given to that term in clause 6.12(a).

Non-Defaulting Participants has the meaning given to that term in clause 13.2(a).

Notice of Consent has the meaning given to that term in clause 2.4(e).

Notice of Objection has the meaning given to that term in clause 2.4(d).

Notice of Proposed Activity has the meaning given to that term in clause 2.4(b).

Observer has the meaning given to that term in clause 6.13.

Offered Interest has the meaning given to that term in clause 12.12(b).

Operating Costs means all costs, expenses, losses and charges incurred by the Manager for the account of the Participants severally, in accordance with this agreement, in carrying out the Joint Venture Operations (other than Capital Costs).

Option Exercise Period has the meaning given to that term in clause 13.7(c).

Ordinary Resolution means a decision or determination of the Management Committee which satisfies the voting thresholds in clause 6.9.

Ore means ore derived from the Wodgina Resource.

Participants means WLPL and AWPL and their respective successors and permitted assigns and (where applicable) legal personal representatives of any person which at any time hereafter becomes a Participant and each of those persons constitutes a **Participant** for the purposes of this agreement.

PCAOB means the Public Company Accounting Oversight Board of the US.

Permitted Security Interest means:

- (a) any lien arising by operation of law:
 - (i) for the unpaid balance of purchase moneys under an instalment contract entered into in the ordinary course of business; or
 - (ii) in the ordinary course of day to day trading and securing obligations not more than 30 days old;
- (b) any bankers' lien or right of set-off or combination arising by operation of law or practice over property or moneys deposited with a banker in the ordinary course of ordinary business of the depositor;
- (c) any Security Interest arising under an operating lease or finance lease entered into in the ordinary course of business and not arising as a result of any default or omission by any Participant;
- (d) any retention of title arrangement in connection with the acquisition of goods on arm's length terms in the ordinary course of ordinary business on the suppliers' usual terms of sale;
- (e) any Security Interest created by statute in favour of Government Agency securing the payment of taxes, except as created because of any failure to duly pay any taxes; and
- (f) a deemed Security Interest under section 12(3) of the PPS Act that does not secure payment or performance of an obligation.

Personnel means in relation to a party, that party's directors, officers, employees, agents, consultants, contractors and subcontractors.

Petroleum Pipelines Act means the *Petroleum Pipelines Act 1969 (WA)*;

Pipeline Licences means petroleum pipeline licences PL 55, PL 56 and PL 116 granted under the Petroleum Pipelines Act, and any renewals, conversions, extensions, amalgamations or amendments of, and substitutions for these petroleum pipeline licences.

PPS Act means the *Personal Property Securities Act 2009 (Cth)*.

Processing Plant means [insert description].

Product means Minerals recovered from the Tenements in the form in which it is to be made available to each Participant at the Delivery Point, initially in accordance with the Initial Mine Plan and Budget and the Refinery Plant Development Plan.

Project Facilities means the plant, equipment, machinery, facilities and other infrastructure used for the purposes of conducting the Joint Venture Operations, including those described in the Asset Sale and Share Subscription Agreement.

Proposed Activity has the meaning given to that term in clause 2.4(b).

Proposed Budget means a work programme and budget for a given Financial Year, or other relevant period, in relation to the conduct of Joint Venture Operations, proposed in accordance with the corresponding Business Plan.

Proposed Buyer has the meaning given to that term in clause 12.5(a)(i).

Proposed Sale Notice has the meaning given to that term in clause 12.5(a).

Quarter means a period of three Months commencing on the first day of January, April, July and October, as the case may be.

Refinery Operations means the construction and operation of the Refinery Plant.

Refinery Plant means the Initial Refinery Plant as may be expanded by a decision of the Management Committee, including by a Stage 2 Decision.

Refinery Plant Business Plan means the business plan adopted for the construction, operation and maintenance of the Refinery Plant approved by the Management Committee in the previous Financial Year in accordance with clause 7, as amended or updated from time to time in accordance with clause 7 (which incorporates the Approved Budget).

Refinery Plant Decision means a resolution of the Management Committee to proceed with the construction of a Refinery Plant.

Refinery Plant Development means the development, construction and commissioning of the Refinery Plant and all activities necessary, expedient, conducive or incidental thereto.

Rehabilitation means all undertakings, works and efforts for the rehabilitation, reclamation, revegetation, decontamination and cleaning up of the Tenements.

Rehabilitation Levy means the mining rehabilitation levy under the Mining Rehabilitation Fund Act 2012 (WA).

Rehabilitation Obligations means the obligations of the holder(s) of the Tenements in relation to Rehabilitation required to be undertaken during or pertaining to the term of this agreement (regardless of when the activity giving rise to that Rehabilitation obligation arose) and which relate to the land the subject of the Tenements under:

- (a) the Mining Act (including the terms and conditions of the Tenements); and
- (b) authorisations, approvals or licences granted by any Government Agency; and

all other applicable statutory and contractual obligations relating to the Rehabilitation of the Tenements.

Related Party Contracts has the meaning given to that term in clause 5.8(a)(i).

Representative means a person for the time being appointed by a Participant as its representative on the Management Committee and includes any alternate of that person appointed under clause 6.2(b).

Resources and Reserves means Mineral Resources, Ore Reserves and Mineral Reserves, as those terms are defined in the JORC Code, located on the Tenements.

Retained Mineral Rights means the Iron Ore Rights retained by WLPL.

Sale Interest has the meaning given to that term in clause 12.5(a)(ii).

Security Interest means any mortgage, pledge, lien, charge, assignment, hypothecation, security interest, title retention, preferential right or trust arrangement and any other security agreement or arrangement securing obligations or liabilities, whether absolute or contingent and includes a security interest under the PPS Act.

Selling Participant has the meaning given to that term in clause 12.4.

Shareholders' Deed means the Shareholders' Deed between WLPL and AWPL dated on or around the date of this agreement.

Sole Risk Participant has the meaning given to that term in clause 6.12(a).

Special Resolution means a decision or determination of the Management Committee which satisfies the voting thresholds set out in clause 6.10.

Stage 2 Decision means a decision of the Management Committee to proceed with an expansion of the Initial Refinery Plant up to a designed production capacity of approximately 100ktpa of lithium hydroxide monohydrate.

Stage 2 Refinery Plant means the expansion of the Initial Refinery Plant capable of converting additional spodumene concentrate produced from the Mine into lithium hydroxide monohydrate, consisting of a further two modules each designed to be capable of producing approximately 25ktpa of lithium hydroxide monohydrate, and taking the Initial Refinery Plant with the expansion up to a designed production capacity of approximately 100ktpa of lithium hydroxide monohydrate.

Subsidiary means a body corporate (first body) in which another body corporate holds the entire issued share capital or the first body is a subsidiary of a subsidiary of the other body corporate.

Tantalum means tantalum pentoxide (Ta_2O_5) and tantalum pentoxide bearing ore.

Tantalum Assets means the assets known as the 'tantalum circuit' forming part of the Processing Plant and owned by GAMG.

Tantalum Rights means the rights to Tantalum retained by GAMG in relation to the Tenements pursuant to the GAMG Mineral Rights Agreement

Tenement Applications means the mining tenements specified in Part 3 of Schedule 2;

Tenements means:

- (a) the Mining Tenements;
- (b) the Assigned Tenements;
- (c) the Tenement Applications;
- (d) all other permits, licences and leases under the Mining Act (if any) granted to, or applied for by or on behalf of, the Participants for the purposes of the Joint Venture from time to time; and

- (e) all renewals, conversions, extensions, amalgamations or amendments of, and substitutions for, the tenements and applications mentioned in paragraphs (a) to (d).

Third Party means a person not a party, or an Affiliate of a party, to this agreement.

Third Party Agreement means each of the contracts for the provisions of goods or services relating to the Joint Venture, including those described in the Asset Sale and Share Subscription Agreement.

Transfer Approvals means necessary Government Agency consents, approvals or clearances and any consents or approvals required under competition laws and the foreign investment laws of Australia or any relevant foreign jurisdiction that are required to affect a transfer of a Participant's Joint Venture Interest as described in clauses 12.5(j), 12.6(a) and 12.12(f)(ii).

Transferee has the meaning given to that term in clause 12.2.

Transferor has the meaning given to that term in clause 12.2.

Ultimate Holding Company has the meaning given to that term in section 9 of the Corporations Act.

US means the United States of America.

Valuer means a suitably qualified and experienced person, having at least 10 years' experience in valuing mining assets, to determine the value of:

- (a) the Offered Interest; or
- (b) the Joint Venture Interest of the Defaulting Participant,

as applicable.

Wilful Misconduct means an intentional and conscious disregard of any provision of this agreement, but does not include any error of judgement or mistake made by the person alleged to be culpable or by any director, employee, agent or contractor of that person in the exercise, in good faith, of any function, power, authority or discretion conferred on that person under this agreement or under any law.

WLPL Assets means the New Crusher and the Old Crusher (each as defined in the Asset Sale and Share Subscription Agreement).

WLPL Ownership Period means the period from 9 September 2016 to the Effective Date.

Wodgina Resource means the lithium resource identified within the area of the Tenements and the subject of MRL's ASX announcements dated 21 March 2017 and 28 April 2017.

2 Interpretation

In this agreement headings are for convenience only and do not affect the interpretation of this agreement and the following rules of interpretation apply unless the contrary intention appears:

- (a) the singular includes the plural and vice versa;
- (b) words that are gender neutral or gender specific include each gender;
- (c) where a word or phrase is given a particular meaning, other parts of speech and grammatical forms of that word or phrase have corresponding meanings;
- (d) the words 'such as', 'including', 'particularly' and similar expressions are not used as, nor are intended to be, interpreted as words of limitation;
- (e) a reference to:
 - (i) a person includes a natural person, partnership, joint venture, Government Agency, association, corporation or other body corporate;
 - (ii) a thing (including, but not limited to, a chose in action or other right) includes a part of that thing;
 - (iii) a party includes its successors and permitted assigns;
 - (iv) a document includes all amendments or supplements to that document;
 - (v) a clause, term, party, schedule or attachment is a reference to a clause or term of, or party, schedule or attachment to this agreement;
 - (vi) this agreement includes all schedules and attachments to it;
 - (vii) a law includes a constitutional provision, treaty, decree, convention, statute, regulation, ordinance, by-law, judgment, rule of common law or equity and is a reference to that law as amended, consolidated or replaced;
 - (viii) an agreement other than this agreement includes an undertaking, or legally enforceable arrangement or understanding, whether or not in writing; and
 - (ix) a monetary amount is in Australian dollars;
- (f) when the day on which something must be done is not a Business Day, that thing must be done on the following Business Day;
- (g) in determining the time of day, where relevant to this agreement, the relevant time of day is:
 - (i) for the purposes of giving or receiving notices, the time of day where a party receiving a notice is located; or
- (ii) for any other purpose under this agreement, the time of day in the place where the party required to perform an obligation is located;
- (h) A reference to AWPL and WLPL, includes in each case each of their respective successors and permitted assigns and (where applicable) legal personal representatives which at any time hereafter becomes a Participant; and
- (i) no rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of this agreement or any part of it.

Schedule 1 Special Resolutions

Any of the following matters and things may be done, decided or authorised by the Management Committee, but only by Special Resolution:

- (a) The disposition or surrender or relinquishment of a Tenement other than as required by the Mining Act or terms and conditions of the Tenement.
- (b) A sale, lease or exchange of all or substantially all of the Joint Venture Assets or merger or consolidation of any of the Project Facilities or the Joint Venture Operations with any other business or entity.
- (c) The disposal or sale of any Project Facilities referred to in clause 5.1(b)(xii) or other Joint Venture Assets, the written down book value of which exceeds \$500,000.
- (d) Placing the Joint Venture Operations on “care and maintenance”.
- (e) Suspending the Joint Venture Operations for more than 60 days, other than due to Force Majeure.
- (f) The appointment of the Manager or any successor Manager.
- (g) Changing the Manager’s remuneration.
- (h) The selection of a new Auditor.
- (i) The Manager taking forward cover for, or hedging, foreign currency obligations or pre-paying or taking any other appropriate action to avoid currency losses, in each case in relation to Joint Venture Operations.
- (j) Any of the following actions by the Manager:
 - (i) borrowing of money;
 - (ii) entering into any financing arrangement or any commitment with respect to financial derivatives; or
 - (iii) any leasing or finance leasing of assets.
- (k) Granting by the Manager of any Security Interest over any or all or substantially all of the Joint Venture Assets other than Permitted Security Interests or as otherwise permitted by this agreement.
- (l) The initiation, defence, compromise or settlement of any court or arbitration proceedings affecting or relating to the Joint Venture Operations or Joint Venture Assets where the total claim amount is reasonably estimated by the Manager to exceed \$250,000 (provided that the Manager may initiate or defend a court or arbitration proceeding affecting or relating to the Joint Venture Operations or Joint Venture Assets if it reasonably decides that it must take immediate action in order to protect the rights of the Participants).
- (m) The approval of any Closure Plan prior to submission to any Government Agency.
- (n) The ratification of expenditure outside of the authority of the Manager.

- (o) Any other matter which the Management Committee may from time to time, by Special Resolution, resolve shall only be done or authorised by such a vote and any other matter which is expressed under this agreement to require a Special Resolution.

Execution page

Executed as an agreement.

Signed by **Wodgina Lithium Pty Ltd** in accordance with section 127 of the *Corporations Act 2001* (Cth) by:

Signature of director

Signature of director/secretary

Name of director (print)

Name of director/secretary (print)

Signed by **Albemarle Wodgina Pty Ltd** in accordance with section 127 of the *Corporations Act 2001* (Cth) by:

Signature of director

Signature of director/secretary

Name of director (print)

Name of director/secretary (print)

Signed by **Wodgina Lithium Operations Pty Ltd** in accordance with section 127 of the *Corporations Act 2001* (Cth) by:

Signature of director

Signature of director/secretary

Name of director (print)

Name of director/secretary (print)

SUBSIDIARIES OF ALBEMARLE CORPORATION

<u>NAME</u>	<u>PLACE OF FORMATION</u>
ACI Cyprus, L.L.C.	Delaware
Albemarle Argentina SRL	Argentina
Albemarle Brazil Holdings LTDA.	Brazil
Albemarle Care Fund	Virginia
Albemarle Catalysts Company B.V.	Netherlands
Albemarle Chemical Canada Ltd.	Canada
Albemarle Chemicals (Shanghai) Company Limited	China
Albemarle Chemicals Ltd.	Cyprus
Albemarle Chemicals Private Limited	India
Albemarle Chemicals S.A.S.	France
Albemarle Chemicals South Africa (PTY) Ltd.	South Africa
Albemarle de Venezuela C.A.	Venezuela
Albemarle Delaware Holdings 1 LLC	Delaware
Albemarle Delaware Holdings 2 LLC	Delaware
Albemarle Dutch Holdings B.V.	Netherlands
Albemarle Dutch Holdings 2 B.V.	Netherlands
Albemarle Europe Sprl	Belgium
Albemarle Finance Company B.V.	Netherlands
Albemarle Foundation	Virginia
Albemarle Germany Gmbh	Germany
Albemarle Hilfe GmbH Unterstutzungskasse	Germany
Albemarle Holdings Company Limited	Turks & Caicos Islands
Albemarle Holdings Limited	Hong Kong
Albemarle Hungary Ltd.	Hungary
Albemarle Italy S.R.L.	Italy
Albemarle Japan Corporation	Japan
Albemarle Japan Holdings B.V.	Netherlands
Albemarle Knight Lux 1 Holdings Corporation	Delaware
Albemarle Korea Corporation	Korea
Albemarle Limitada	Chile
Albemarle Lithium Holding Corporation	Delaware
Albemarle Lithium Holding GmbH	Germany
Albemarle Lithium Pty Ltd	Australia
Albemarle Management (Shanghai) Co., Ltd.	China
Albemarle Middle East Corporation FZE	United Arab Emirates
Albemarle Netherlands B.V.	Netherlands
Albemarle New Holding GmbH	Germany
Albemarle Overseas Employment Corporation	Virginia
Albemarle Quimica LTDA	Brazil
Albemarle Saudi Trading Company	Saudi Arabia
Albemarle Singapore PTE LTD	Singapore
Albemarle Spain S.L.U.	Spain
Albemarle Taiwan Limited	Taiwan

<u>NAME</u>	<u>PLACE OF FORMATION</u>
Albemarle U.S., Inc.	Delaware
Albemarle Wodgina Pty Ltd	Australia
DNVJ Vermögensverwaltung GmbH	Germany
Dynamit Nobel GmbH	Germany
Dynamit Nobel Unterstützungsfonds GmbH	Germany
Excalibur Realty Company	Delaware
Excalibur II Realty Company	Delaware
Foote Chile Holding Company	Delaware
Foote Minera e Inversiones Ltda.	Chile
Jiangxi Albemarle Lithium Co., Ltd.	China
Jordan Bromine Company Limited	Jordan
Knight Lux 1 S.à r.l.	Luxembourg
Knight Lux 2 S.à r.l.	Luxembourg
Metalon Environmental Management & Solutions GmbH	Germany
Rockwood Holdings, Inc.	Delaware
Rockwood Lithium India Pvt. Ltd.	India
Rockwood Lithium Japan K.K.	Japan
Rockwood Lithium Korea LLC	South Korea
Rockwood Lithium Shanghai Co., Ltd.	China
Rockwood Lithium Taiwan Co., Ltd.	Taiwan
Rockwood Lithium (UK) Ltd.	United Kingdom
Rockwood Specialties GmbH	Germany
Rockwood Specialties Group, Inc.	Delaware
Rockwood Specialties LLC	Delaware
Rockwood Specialties Limited	United Kingdom
RT Lithium Limited	United Kingdom
RSG Immobilien GmbH	Germany
Sales de Magnesio Limitada	Chile
Shandong Sinobrom Albemarle Bromine Chemicals Company Limited	China
Sichuan Guorun New Material Co., Ltd.	China

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 33-75622, 333-150694, 333-166828, 333-188599 and 333-223167) of Albemarle Corporation of our report dated February 27, 2019 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Charlotte, North Carolina
February 27, 2019

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Luther C. Kissam IV, certify that:

1. I have reviewed this Annual Report on Form 10-K of Albemarle Corporation for the period ended December 31, 2018;
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 27, 2019

/s/ LUTHER C. KISSAM IV

Luther C. Kissam IV
Chairman, President and Chief Executive Officer

CERTIFICATION OF CHIEF FINANCIAL OFFICER

I, Scott A. Tozier, certify that:

1. I have reviewed this Annual Report on Form 10-K of Albemarle Corporation for the period ended December 31, 2018;
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 27, 2019

/s/ SCOTT A. TOZIER

Scott A. Tozier
Executive Vice President and Chief Financial Officer

**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 on Form 10-K of Albemarle Corporation (the “Company”) for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Luther C. Kissam IV, principal executive officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ LUTHER C. KISSAM IV

Luther C. Kissam IV

Chairman, President and Chief Executive Officer

February 27, 2019

**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 on Form 10-K of Albemarle Corporation (the “Company”) for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Scott A. Tozier, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ SCOTT A. TOZIER

Scott A. Tozier
Executive Vice President and Chief Financial Officer
February 27, 2019

FIVE-YEAR SUMMARY

(In Thousands, Except for Per Share Amounts and Footnote Data)

Year Ended December 31	2018	2017 ^(a)	2016 ^{(a)(b)}	2015 ^{(a)(b)(c)}	2014 ^(a)
Results of Operations					
Net sales	\$ 3,374,950	\$ 3,071,976	\$ 2,677,203	\$ 2,826,429	\$ 2,445,548
Costs and expenses ^(d)	2,463,410	2,500,316	2,076,223	2,516,596	2,049,557
Operating profit	911,540	571,660	600,980	309,833	395,991
Interest and financing expenses	(52,405)	(115,350)	(65,181)	(81,650)	(41,358)
Other (expenses) income, net	(64,434)	(9,512)	(20,535)	82,561	(141,454)
Income from continuing operations before income taxes and equity in net income of unconsolidated investments	794,701	446,798	515,264	310,744	213,179
Income tax expense	144,826	431,817	96,263	11,134	18,484
Income from continuing operations before equity in net income of unconsolidated investments	649,875	14,981	419,001	299,610	194,695
Equity in net income of unconsolidated investments (net of tax)	89,264	84,487	59,637	27,978	35,742
Net income from continuing operations	739,139	99,468	478,638	327,588	230,437
Income (loss) from discontinued operations (net of tax) ^(e)	—	—	202,131	32,476	(69,531)
Net income	739,139	99,468	680,769	360,064	160,906
Net income attributable to noncontrolling interests	(45,577)	(44,618)	(37,094)	(25,158)	(27,590)
Net income attributable to Albemarle Corporation	\$ 693,562	\$ 54,850	\$ 643,675	\$ 334,906	\$ 133,316
Financial Position and Other Data					
Total assets ^(f)	\$ 7,581,674	\$ 7,750,772	\$ 8,161,207	\$ 9,597,954	\$ 5,202,437
Operations:					
Working capital	\$ 815,248	\$ 1,276,638	\$ 2,166,515	\$ 214,317	\$ 2,208,964
Current ratio	1.69	2.06	2.90	1.13	2.94
Depreciation and amortization	\$ 200,698	\$ 196,928	\$ 226,169	\$ 260,076	\$ 103,572
Capital expenditures	\$ 699,991	\$ 317,703	\$ 196,654	\$ 227,649	\$ 110,576
Acquisitions, net of cash acquired	\$ 11,403	\$ 44,367	\$ 208,734	\$ 2,100,490	\$ —
Cash proceeds from divestitures, net	\$ 413,569	\$ 6,857	\$ 3,325,571	\$ 8,883	\$ 104,718
Research and development expenses	\$ 70,054	\$ 84,330	\$ 80,475	\$ 89,187	\$ 88,310
Gross profit as a % of net sales	36.1	36.0	36.2	30.4	31.5
Total long-term debt ^(f)	\$ 1,705,210	\$ 1,837,372	\$ 2,369,262	\$ 3,817,157	\$ 2,913,465
Total equity ^(g)	\$ 3,759,108	\$ 3,817,696	\$ 3,942,604	\$ 3,401,313	\$ 1,488,635
Total long-term debt as a % of total capitalization	31.2	32.5	37.5	52.9	66.2
Net debt as a % of total capitalization ^(h)	23.4	15.5	2.5	51.4	22.2
Common Stock					
Basic earnings (loss) per share					
Continuing operations	\$ 6.40	\$ 0.49	\$ 3.93	\$ 2.72	\$ 2.57
Discontinued operations	\$ —	\$ —	\$ 1.80	\$ 0.29	\$ (0.88)

Shares used to compute basic earnings per share	108,427	110,914	112,379	111,182	78,696
Diluted earnings (loss) per share					
Continuing operations	\$ 6.34	\$ 0.49	\$ 3.90	\$ 2.71	\$ 2.57
Discontinued operations	\$ —	\$ —	\$ 1.78	\$ 0.29	\$ (0.88)
Shares used to compute diluted earnings per share	109,458	112,380	113,239	111,556	79,102
Cash dividends declared per share	\$ 1.34	\$ 1.28	\$ 1.22	\$ 1.16	\$ 1.10
Total equity per share ^(g)	\$ 35.59	\$ 34.53	\$ 35.04	\$ 30.31	\$ 19.08
Return on average total equity	18.3%	1.4%	17.5%	13.7%	8.3%

Footnotes:

- (a) As a result of the adoption of new accounting guidance effective January 1, 2018, on a retrospective basis, all components of net benefit cost (credit), other than service cost, are to be shown outside of operations on the consolidated statements of income. We recast these components of net benefit cost (credit), which resulted in an increase (reduction) of \$3.7 million, \$0.3 million, \$3.7 million and (\$34.4) million in Cost of goods sold, respectively, and \$12.4 million, (\$26.7) million, \$31.6 million and (\$90.3) million in Selling, general and administrative expenses, respectively, with an offsetting impact of \$16.1 million, (\$26.4) million, \$35.3 million and (\$124.7) million in Other (expenses) income, net, respectively, for the years ended December 31, 2017, 2016, 2015 and 2014. There was no impact to Net income attributable to Albemarle Corporation.
- (b) On December 14, 2016 the Company sold the Chemetall Surface Treatment business, which qualifies for discontinued operations treatment because it represents a strategic shift that will have a major effect on the Company's operations and financial results. As a result, in the second quarter of 2016, the Company began accounting for this business as discontinued operations in the consolidated statements of income and excluded the business from segment results for the years ended December 31, 2016 and 2015, the periods this business was owned by Albemarle. Related assets and liabilities are classified as held for sale for 2015.
- (c) On January 12, 2015, we completed the acquisition of Rockwood Holdings, Inc. Results for 2015 include the operations of Rockwood commencing on January 13, 2015.
- (d) The year ended December 31, 2018 included a gain before income taxes of \$210.4 million related to the sale of the polyolefin catalysts and components portion of the Performance Catalysts Solutions business. The year ended December 31, 2016 included gains before income taxes of \$11.5 million and \$112.3 million related to the sales of the metal sulfides business and the minerals-based flame retardants and specialty chemicals business, respectively.
- (e) Included in Income (loss) from discontinued operations (net of tax) for the year ended December 31, 2016 is a pre-tax gain of \$388.0 million (\$135.0 million after income taxes) related to the sale of the Chemetall Surface Treatment business. The year ended December 31, 2014 includes a pre-tax loss of \$85.5 million (\$65.7 million after income taxes) related to the sale of the antioxidant, ibuprofen and propofol businesses.
- (f) As a result of the adoption of new accounting guidance effective January 1, 2016 on a retrospective basis, unamortized debt issuance costs are now deducted from the carrying amount of the associated debt liability on the balance sheet. The reclassification of these unamortized debt issuance costs resulted in reductions of Long-term debt and Other assets on the consolidated balance sheets of \$17.1 million in 2015 and \$20.6 million in 2014.
- (g) Equity reflects the repurchase of common shares amounting to: 2018—5,262,654; 2017—2,341,083; 2016—0; 2015—0; and 2014—2,190,254. 2015 also includes the impact of 34,113,064 shares of common stock issued in connection with the acquisition of Rockwood.
- (h) We define net debt as total debt plus the portion of outstanding joint venture indebtedness guaranteed by us (or less the portion of outstanding joint venture indebtedness consolidated but not guaranteed by us), less cash and cash equivalents.