



# 2014 Minerals Yearbook

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## AUSTRALIA

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# THE MINERAL INDUSTRY OF AUSTRALIA

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In 2014, Australia remained one of the world's leading mineral-producing nations, accounting for more than 40% of world production of lithium; 32%, of bauxite; more than 20%, of iron ore; 19%, of alumina; 17%, of industrial diamond and manganese; more than 15%, of industrial garnet; 15%, of lead; 10%, of nickel; 9%, of gold; about 5%, of copper; and nearly 5%, of cobalt (Bray, 2016a, b; Brininstool, 2016; Corathers, 2016; George, 2016; Guberman, 2016; 2016; Jaskula, 2016; Kuck, 2016; Olson, 2016; Shedd, 2016).

## Minerals in the National Economy

In fiscal year 2014, which began on July 1, 2013, and ended on June 30, 2014, mining accounted for 8.7% of Australia's gross domestic product (GDP). In terms of value added, mining output as reported by the Department of Industry, Innovation, and Science decreased by 7.4% to AUD118.3 billion (US\$96.6 billion<sup>1</sup>). The largest decreases in value added output was in iron ore mining, which decreased by 20.7% to AUD45.5 billion (US\$37.1 billion), and in coal mining, which decreased by 15.4% to AUD15.9 billion (US\$13 billion). Employment in mining continued to be affected by the downturn in mining investment. As of June 2014, the mineral sector employed about 173,000 people, which represented a 7% decrease compared with mining employment in June 2013 (Department of Industry, Innovation, and Science, 2015a, p. 11; Australian Bureau of Statistics, 2016a, b).

For the past decade, Australia's economy benefited from a significant boom in mining investment. Most of this investment was driven by an increase in the international price of, and demand for, the country's key mineral commodity exports—particularly coal and iron ore—and by increased demand from China, which was Australia's leading mineral export market. Increased demand for Australia's minerals also led to a substantial increase in the demand for mining-related labor, which was estimated to have increased threefold to 192,000 people between August 2003 and November 2013. Most of these jobs were in the construction of building and transportation infrastructure to support mining activities; only 2% of the jobs were directly related to mining operations (Department of Industry, Innovation, and Science, 2014, p. 47, 83–85).

In 2014, the persistently low international prices of many of Australia's key minerals forced some companies to shut down mining operations and to place others on care-and-maintenance status. Shutdowns included United States-based Alcoa Inc.'s Point Henry aluminum smelter and Henry and Yennora rolling mills, and Consolidated Minerals Ltd. of the United Kingdom's Coobina chromium mine. Mining operations placed on care-

and-maintenance status in 2014 included Norseman Gold plc of Australia's gold operations in Western Australia and Vedanta Resources plc of the United Kingdom's Mount Lyell underground copper mine. More than 200 employees were laid off at the Mount Lyell Mine. Operations at Rio Tinto Ltd.'s Gove alumina refinery in the Northern Territory were also curtailed during the year. Bracken Resources Pty Ltd.'s Hillgrove antimony mine remained on care-and-maintenance status. Several mines also opened during the year, including the Bald Hill bauxite mine, the Cadia East copper and gold mine, and the Tropicana gold mine. Exploration projects at an advanced stage included Rio Tinto's Bowen Basin coking coal project, the Pilbara iron ore project, and United States-based Chevron Corp.'s Gorgon LNG project (Validakis, 2014; Vedanta Resources, 2014; Alcoa Inc., 2015, p. 12; Chevron Corp., 2015a, p. 3; Consolidated Minerals Ltd. 2015, p. 2, 36; Rio Tinto Ltd., 2015, p. 9, 38).

In calendar year 2014, foreign direct investment (FDI) in mining accounted for AUD32.8 billion (US\$26.8 billion), or 57% of Australia's FDI net inflows, which were valued at AUD57.5 billion (US\$47 billion). This represented a 2.4% increase in FDI net inflows in 2014 compared with those of 2013. The United States accounted for the largest share (31%) of the net inflows, which decreased by 24.5% in 2014 to AUD18.2 billion (US\$14.9 billion) from AUD24.1 billion (US\$19.7 billion) in 2013. Net inflows of FDI from European Union countries—Australia's second largest source of FDI in 2014—decreased by 23.6% to AUD8.72 billion (US\$7.12 billion) from AUD11.4 billion (US\$9.32 billion) in 2013. Other significant sources of FDI in 2014 were, in order of the value of investment, the Netherlands, Canada, Hong Kong, Japan, and Singapore. Information on net inflows of FDI from China was not available for 2014 (Department of Foreign Affairs and Trade, 2015b, p. 33–34, 62).

In fiscal year 2014, capital expenditures in the mineral sector as a whole decreased by 16% to AUD76.1 billion (US\$62.2 billion) compared with those of 2013. Mineral exploration spending decreased in all States and at both the brownfield (existing) and greenfield (new) project levels. Mineral exploration spending (excluding petroleum) decreased by 25% to AUD1.6 billion (US\$1.3 billion) and petroleum exploration spending decreased by 21% to AUD3.8 billion (US\$3.1 billion). Exploration spending for brownfield projects decreased by 24%, and that for greenfield projects, by 29% (Department of Industry, Innovation, and Science, 2015b, p. 14–15).

## Government Policies and Programs

Land ownership in Australia is divided into two overarching categories: freehold land or land that is held by traditional owner groups (such as Aboriginal and Torres Strait Islander land groups), and nonfreehold land or public land, commonly known

<sup>1</sup>Where necessary, values have been converted from Australian dollars (AUD) to U.S. dollars (US\$) at an average rate of AUD1.22 = US\$1.00 for 2014.

as Crown land. Mineral resources, irrespective of whether they are located on freehold or Crown land, are owned by the Government of Australia. The right to mine these minerals is contained in the respective States' laws governing mineral rights (Australian Trade and Investment Commission, 2016).

In Australia's three-tiered Government system—local, State, and Federal—each State establishes its own mineral sector legal framework and has the authority to grant mining rights. All States and Territories, with the exception of the Australian Capital Territory, have identified mineral resources and established mineral industries. States, however, do not engage in commercial exploration or development of minerals, which is carried out by the private sector. Federal and State or Territory Governments invest in the collection and release of geoscientific data. The Federal Government sets national policy regarding the mineral sector as a whole, including the regulation of offshore mining operations, FDI guidelines, and taxation policy. The administration of offshore mineral resources is overseen by the National Offshore Petroleum Titles Administrator. Environmental and safety issues are overseen by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). States and Territories manage and allocate mineral and petroleum property rights onshore and in coastal waters. They also regulate mining operations and oversee the adherence to environmental, occupational health, and safety laws; collect royalties; and oversee other mineral-related laws and regulations that are not covered by Australia's Constitution (Geoscience Australia, 2015, p. 18).

The NOPSEMA is the sole environmental assessor for offshore natural gas and petroleum projects. Offshore mineral resources are owned and administered by the respective States and Territories only for areas within 3 nautical miles from the shoreline and extending seaward to the outer limits of the continental shelf (Geoscience Australia, 2015, p. 18–19).

In July 2014, the Federal Government abolished the country's carbon tax law, making Australia the first developed country to repeal its greenhouse-gas emissions law. Australia, which was one of the world's top coal producers, was heavily reliant on electrical power from coal-burning power stations to meet its domestic demand for electricity. The Organisation for Economic Cooperation and Development (OECD) estimated that in 2012, on a per capita basis, Australia generated more greenhouse gas emissions than most OECD countries. In September, the Federal Government also repealed the Mineral Resources Rent Tax (MRRT). The MRRT, which was established in 2012, was a tax levied on the profits of coal and iron ore mining companies. The law required that coal and iron ore mining companies pay a 22.5% tax on profits generated in excess of \$75 million (Organisation for Economic Cooperation and Development, 2014, p. 8, 15; Taylor, 2014; Taylor and Hoyle, 2014).

Australia was 1 of the 12 countries expected to become signatories to the Trans-Pacific Partnership (TPP) free-trade agreement. The TPP agreement sought to promote trade and investment across a range of sectors, including agriculture, minerals, and manufacturing, among countries of the Asia and the Pacific region. TPP countries, which in addition to Australia include Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam,

were estimated to represent nearly 40% of the GDP and to have imported about AUD107 billion (US\$87 billion) in Australian goods and services in fiscal year 2014. Once in effect, the TPP agreement would eliminate existing tariffs on key Australian mineral exports, such as coal, copper, iron ore, liquefied natural gas (LNG), nickel, and petroleum, entering TPP countries. The TPP agreement would also allow for Australian investors to apply for an exemption from the 49% foreign-equity limit on foreign ownership of uranium mines in Canada, for Australian companies to participate in investments in the energy sector of Mexico, and for Australian companies to make investments in the mineral sectors of Brunei and Malaysia (Department of Foreign Affairs and Trade, 2016).

## Production

Australia continued to be among the world's leading producers of such mineral commodities as bauxite, coal, cobalt, copper, gem and near-gem diamond, gold, gypsum, ilmenite, iron ore, lead, lithium, manganese, nickel, phosphate rock, rare-earth elements, rutile, salt, silver, tin, uranium, zinc, and zircon. Mineral commodities for which a slight increase (5% or less) in output was reported in 2014 compared with that of 2013 included coal (bituminous and subbituminous), copper (primary, secondary, and smelted), crude petroleum, gold (mine output), lead (mine output), manganese, nickel (mine output), salt, silver (mine output), and zinc (mine output). Those mineral commodities for which an increase in output in 2014 was greater than 5% but equal to or less than 10% included cobalt (refined) and copper (primary, refined). Mineral commodities for which an increase in output was 10% or greater included barite, gypsum, nickel (matte), tin (mine output), tungsten, and zircon concentrates (table 1).

Mineral commodities for which a modest decrease in output was reported in 2014 compared with that of 2013 included alumina, aluminum, bauxite, copper (mined), crude steel, gold, lead (primary, refined), petroleum refinery products, and zinc (smelted, primary); those for which a decrease in output in 2014 was greater than 5% but equal to or less than 10% included cobalt (mine output) and rutile. Mineral commodities for which a decrease in output in 2014 was 10% or greater included diamond, garnet, ilmenite, lead (bullion), nickel (refined), silver (refined), and uranium ( $U_3O_8$ ). Production was estimated for antimony, cadmium (refined), cement, feldspar, ferroalloys, gold (secondary refined metal), iron ore, lead (secondary), leucosene, lignite, lime, limestone, lithium (spodumene), magnesium (magnesite), palladium, phosphate rock, pig iron, platinum, rare-earth minerals, construction sand, sand and gravel, silica, soda ash, semimanufactured steel products, and sulfur (table 1).

## Structure of the Mineral Industry

The majority of mining operations in Australia were privately owned. In 2014, the share of foreign ownership in Australian businesses, including mining companies, was 29.3%. As of June 30, 2014, the mineral sector had the highest proportion (33.5%), across all industries, of foreign ownership in Australian businesses. About 22.5% of mining companies operating in the

country had foreign ownership that exceeded 10% equity. The mineral sector also accounted for the largest share (38.4%) of the stock of FDI in the country in 2014 (calendar year), which was valued at AUD264.7 billion (US\$216.2 billion). In 2014, mining also accounted for a significant share (25%) of Australian companies' direct investments abroad, which were valued at AUD135.2 billion (US\$110.5 billion) (table 2: Department of Foreign Affairs and Trade, 2015b, p. 12, 39–40, 62–64).

## Mineral Trade

The value of Australia's exports of goods and services increased by 2.5% in 2014 to AUD327 billion (US\$267 billion); about 80% of these exports were shipped to member countries of the Asia and the Pacific Economic Cooperation forum (APEC).<sup>2</sup> Australia's top five export markets within the APEC were China, which accounted for 30% of total exports, followed by Japan, 15.4%; the Republic of Korea, 6.7%; the United States, 5.7%; and New Zealand, 3.7%. Singapore and India were also important APEC export markets, accounting for 3.7% and 3.5%, respectively, of total exports of goods and services. The value of Australia's total merchandise exports (goods only, including reexports and beneficiated and manufactured goods) was about AUD266 billion (US\$217 billion). Exports of Australia-produced goods (not including reexports) were valued at AUD256 billion (US\$209 billion); nonfuel minerals accounted for nearly 35% of these exports, and fuel minerals, nearly 28% (Department of Foreign Affairs and Trade, 2015a, p. 36, 43, 62).

In 2014, Australia exported about 18 million metric tons (Mt) of alumina, nearly 1.5 Mt of aluminum, 16.9 Mt of bauxite, about 1.1 Mt of copper, 9.8 million carats of rough diamond, 287 metric tons (t) of gold, nearly 717 Mt of iron ore, an estimated 844,000 t of iron and steel, 757,000 t of lead, 7.2 Mt of manganese ores and concentrates, 252,000 t of nickel, about 1 Mt of ilmenite, 35,000 t of leucosene, 349,000 t of rutile, 1.5 Mt of zinc, and 753,000 t of zircon concentrates. Fuel mineral exports included about 135 million barrels (Mbbl) of crude petroleum and refinery feedstock, an estimated 24 Mt of LNG, 20 Mbbl of liquefied petroleum gas, 186 Mt of metallurgical coal, 201 Mt of thermal coal, and 5.7 Mbbl of petroleum refinery products (Department of Industry, Innovation, and Science, 2015c).

In terms of value, Australia's top five mineral commodity exports were iron ore, metallurgical coal, LNG, thermal coal, and gold. Together, these five commodities accounted for more than 72% of mineral export revenues in 2014 and generated about AUD135 billion (US\$110 billion). Iron ore exports were valued at about AUD66 billion (US\$54 billion); metallurgical coal, at AUD22 billion (US\$18 billion); LNG, at AUD18 billion (US\$14 billion); thermal coal, at

AUD16 billion (US\$13 billion); and gold, at AUD13 billion (US\$11 billion) (Department of Industry, Innovation, and Science, 2015c).

China was Australia's leading goods export market, accounting for nearly 34% of total goods exports or AUD90 billion (US\$74 billion). Japan, which was the second-ranked export market by value, accounted for 18.2% of total goods exports or AUD48 billion (US\$39 billion); followed by the Republic of Korea, which accounted for 7.7% or AUD20 billion (US\$17 billion); the United States, which accounted for 4.5% or AUD12 billion (US\$9.7 billion); and India, which accounted for 3.3% or AUD8.9 billion (US\$7.3 billion). Minerals represented about 82% of the total value of goods exported to China, 81% of the total value of goods exported to India, about 64% of the total value of goods exported to the Republic of Korea, more than 50% of the total value of goods exported to Japan, and nearly 4% of the total value of goods exported to the United States (Department of Foreign Affairs and Trade, 2015a, p. 80, 102, 106, 109, 115, 123).

The three leading mineral commodities exported to China in 2014, in terms of value, were iron ore and concentrates, which decreased in value by 3.9% to nearly AUD51 billion (US\$41 billion); coal (not specified), which decreased in value by 8.3% to AUD8 billion (US\$6.8 billion); and gold, which decreased in value by 13% to AUD7 billion (US\$5.7 billion). Other mineral commodities exported to China included bauxite, copper, manganese, precious metal ore and concentrates, zinc ore and concentrates, and other nonspecified ores and concentrates. The top two mineral commodities exported to Japan were coal, which decreased in value by 13.3% to nearly AUD12 billion (US\$9.7 billion) and iron ores and concentrates, which decreased in value by 12.1% to AUD8.4 billion (US\$6.9 billion); those to the Republic of Korea were iron ore and concentrates, which decreased in value by 5.2% to AUD5.2 billion (US\$4.2 billion) and coal, which increased in value by 2.3% to about AUD5.1 billion (US\$4.2 billion); those to the United States were zinc, which increased by 101% to AUD200 million (US\$163 million) and gold, which decreased by 35% to about AUD113 million (US\$92 million); and those to India were coal, which increased by 8.3% to AUD5.2 billion (US\$4.2 billion) and copper ore and concentrates, which decreased by about 23% (Department of Foreign Affairs and Trade, 2015a, p. 80, 102, 106, 109, 115, 123).

In 2014, the value of Australia's imports of goods and services increased slightly by 2.3% to nearly AUD337 billion (US\$275 billion); about 66% of these imports came from member countries of the APEC forum. In terms of value, the five leading countries supplying imports to the APEC countries were China, which accounted for 16.1% of total imports; the United States, 12.4%; Japan, 5.9%; Singapore, 5.4%; and Germany 4.1%. Other important sources of imported goods and services were Malaysia (which supplied 3.8%), Thailand (3.8%), the Republic of Korea (3.7%), the United Kingdom (3.7%), and New Zealand (3.4%) (Department of Foreign Affairs and Trade, 2015a, p. 36, 44).

The value of Australia's total merchandise imports (goods only, including beneficiated and manufactured goods) was about AUD252 billion (US\$206 billion). Nonbeneficiated

<sup>2</sup>The Asia and the Pacific Economic Cooperation (APEC) forum was established in 1989 to promote economic cooperation among its member countries. As of June 30, 2014, member countries included: Australia, Brunei Darussalam, Canada, Chile, China, Indonesia, Japan, the Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Thailand, the United States, and Vietnam.

or manufactured goods (unprocessed primary commodities, including minerals) were valued at nearly AUD59 billion (US\$48 billion). Australia imported 640,000 carats of gem- and industrial-quality diamond (which also included diamond dust and diamond powder), 43,000 t of ferroalloys, about 3 Mt of iron ore, 1.6 Mt of steel (ingot), 230 Mbbl of petroleum feedstock, 209 Mbbl of petroleum refinery products, and 399,000 t of phosphate rock. Mineral imports, including other nonspecified minerals, were valued at about AUD49 billion (US\$40 billion) (Department of Foreign Affairs and Trade, 2015a, p. 80; Department of Industry, Innovation, and Science, 2015c).

Australia's leading sources of imported goods were, by value of the goods, China (which supplied 20.6% of the imports), the United States (11.4%), Japan (6.8%), Singapore (5.0%), and Germany (4.8%). The leading mineral commodity imported from the United States was gold, which increased in value by 58.3% to AUD379 million (US\$310 million). The leading mineral commodities imported from Japan were refined petroleum, which decreased in value by 22.6% to AUD2.6 billion (US\$2.2 billion), and gold, which decreased in value by 46% to AUD255 million (US\$208 million). The leading mineral commodity imported from Singapore was refined petroleum, which increased in value by 29.9% to AUD4.5 billion (US\$3.7 billion). Raw minerals were not among Australia's leading imported goods from China or Germany (Department of Foreign Affairs and Trade, 2015a, p. 80, 102, 106, 109, 116, 123).

## Commodity Review

### Metals

**Bauxite and Alumina and Aluminum.**—In 2014, Australia remained the world's leading producer of bauxite; the country was also the second-ranked producer of alumina after China and was among the world's top 10 producers of aluminum. Australia accounted for 32% of the world's mined bauxite, nearly 19% of the world's alumina output, and about 3% of the world's aluminum output. Bauxite was mined at the Bald Hill Mine in Tasmania; the Gove Mine in the Northern Territory; the Boddington-Worsley, the Huntly, and the Willowdale Mines in Western Australia; and the Weipa Mine in Queensland. In 2014, Australia was estimated to have accounted for more than 20% of the world's reserves of bauxite (table 3; Bray, 2016a, b).

Western Australia remained Australia's leading bauxite-producing State, accounting for 58.3% of the country's total bauxite output, followed by Queensland, 33.4%, and the Northern Territory, 8.3%. In 2014, about 88% of Australia's alumina output was exported, but information regarding the specific country destinations for these exports was not available. Australia exported about 86% of its aluminum output; about 35% of these exports were shipped to Japan; 20%, to the Republic of Korea; 13%, to Taiwan; 8%, to Thailand; and 4% each, to Indonesia and Malaysia (Department of Industry, Innovation, and Science, 2015c).

The Bald Hill bauxite mine was commissioned on December 9, 2014. The mine, which was located near the town of Campbell in northern Tasmania, was the first bauxite mine to

open in the country in more than 35 years. The Bald Hill Mine had an annual production capacity of 900,000 t. The first bauxite shipments were expected to begin during the second quarter of 2015. Australian Bauxite Ltd., which was the company that operated the mine, was also exploring for bauxite at the Binjour project. The Binjour project was located in central Queensland and was reported to be prospective for silica-free gibbsite trihydrate bauxite (Australian Bauxite Ltd., 2015).

Alcoa Inc., through its subsidiary Alcoa World Alumina and Chemicals (AWAC), operated the Huntly and Willowdale Mines, which were located in the Darling Range of Western Australia. The Huntly Mine supplied bauxite to AWAC's Kwinana and Pinjarra alumina refineries and the Willowdale Mine to the Wagerup refinery, all of which were located in Western Australia. In August 2014, Alcoa completed the permanent closure of the Point Henry aluminum smelter because it had no prospects for profitability. A demolition and remediation program for the smelter began in late 2014 and was expected to be completed by the end of 2018. Alcoa also announced the closure of its Point Henry and Yennora rolling mills, which supplied can sheet metal to domestic and Asian markets. The rolling mills were closed owing to excess can sheet capacity in the region. Demolition and remediation activities were to begin in 2015 and were expected to be completed by the end of 2018 (Alcoa Inc., 2015, p. 12, 57).

A feasibility study was underway for Rio Tinto's South of Embley bauxite project. The project, which was located at Cape York in Queensland, consisted of the development of a mine, port, and other mine-related infrastructure. During the initial phase of the project, the mine was expected to produce nearly 23 million metric tons per year (Mt/yr) of bauxite with a future target of 50 Mt/yr. The development of the South of Embley Mine also would enable the continuity of supply to the company's two Gladstone alumina refineries. Rio Tinto reported that lower bauxite inventories in China could support the company's exports to China in 2015, especially if Indonesia's ban on bauxite exports remained in place throughout the year (Rio Tinto Ltd., 2015, p. 7, 29).

In May, production at Rio Tinto's Gove alumina refinery was curtailed following the company's decision in 2013 to place the refinery on care-and-maintenance status by 2014. Rio Tinto planned to convert the Gove refinery into a bauxite export facility and to progressively ramp up bauxite exports to 8 Mt/yr. About 900 employees were to be laid off during the transition. As of December 31, 2014, the Yarwun alumina refinery's capacity was 3.4 Mt/yr (Rio Tinto Ltd., 2014, p. 41; 2015, p. 28, 216).

**Chromium.**—The Coobina chromite mine, which was located 80 kilometers (km) southeast of Newman in Western Australia, closed during the first quarter of 2014. Consolidated Minerals Ltd. had made the decision to close the mine in July 2013 owing to a decrease in ore grade and mine yield and an increase in operational costs. Remaining stocks of crushed ore were processed in January and exported to customers during the first quarter of 2014. Consolidated Minerals was Australia's sole producer of chromite ore (in the form of lump and sands) for use in the production of ferrochromium. On December 1, AusTin Mining Ltd. signed a memorandum of understanding with Compound Resources Pty Ltd. to develop an alluvial

chromite deposit that had been discovered within AusTin's Marlborough exploration project (EPM 17768) in Queensland. The Marlborough project was prospective for cobalt, nickel, and platinum mineralization (AusTin Mining Ltd., 2014a; Consolidated Minerals Ltd. 2015, p. 2, 36).

**Copper.**—Australia produced about 5% of the world's mined copper output in 2014 and ranked sixth among the world's leading producers of mined copper. Most of the copper produced in the country came from mining operations located in Queensland, South Australia, and Western Australia, although some copper was also produced in New South Wales and Tasmania. Mined copper output decreased by about 3% in 2014 to 969,000 t from a revised 1,001,000 t in 2013. Production of blister copper increased by nearly 5% to 468,000 t, and that of refined copper, by nearly 6% to more than 500,000 t. In 2014, Australia was estimated to have accounted for about 12% of the world's copper reserves. South Australia accounted for about 31% of the country's mined copper output, followed by Queensland, 29%; New South Wales and Western Australia, 20% each; and Tasmania, less than 1% (tables 1 and 3; Department of Industry, Innovation, and Science, 2015c; Brininstool, 2016).

About 50% of Australia's copper ore and concentrate production was exported to China; 22%, to Japan; 12%, to India; 6%, to the Republic of Korea; and 5%, to the Philippines. The majority (47%) of refined copper exports were shipped to China, followed by Malaysia (about 21%), Japan (nearly 15%), Thailand (about 6%), Indonesia and Vietnam (nearly 3% each), and Taiwan (about 2%) (Department of Industry, Innovation, and Science, 2015c).

BHP Billiton Ltd., Glencore plc of Switzerland, Newcrest Mining Ltd., OZ Minerals Ltd., and Sandfire Resources NL were Australia's leading producers of copper. In 2014, BHP Billiton was in the process of completing a prefeasibility study for the expansion of the Olympic Dam underground polymetallic mine. The Olympic Dam operation was a fully integrated metallurgical complex. Its facilities included a grinding and concentrating circuit, a hydrometallurgical plant with solvent-extraction circuits for copper and uranium, and a recovery circuit for precious metals. Copper was also smelted and refined at the complex. In July, BHP Billiton submitted an application to the Government for the construction and operation of a heap-leach test plant. Construction of the test plant was expected to begin during the second half of 2015 and to be commissioned in late 2016 (BHP Billiton Ltd., 2015, p. 79, 82).

In 2014, Sandfire Resources increased production at its DeGrussa underground copper sulfide mine to 1.5 Mt/yr. Independence Group NL was in the process of completing an enhanced feasibility study (EFS) for the development of the Wilga and the Currawong copper-gold-lead-silver-zinc deposits, which are located in the town of Benambra in northeastern Victoria. The EFS was expected to be completed by yearend 2014 (Independence Group NL, 2014, p. 38; Sandfire Resources NL, 2014, p. 12).

**Gold.**—In 2014, Australia was the world's second-ranked producer of gold after China, accounting for about 9% of total world gold output. Most gold mines were located in Western Australia. Australia's total gold mine output increased by about 2% during the year to 274 t from a revised 268 t in 2013;

primary refined gold output decreased by less than 1% to 304 t, and that of secondary refined gold was estimated to be 20 t. In 2014, Australia was estimated to have accounted for about 16% of the world's gold reserves (tables 1–3; George, 2016).

Western Australia accounted for nearly 70% of all gold produced in Australia, followed by Queensland, 6.0%; the Northern Territory, 4.8%; South Australia, 4.6%; Victoria, 2.4%; and Tasmania, less than 1%. Nearly 77% of the country's total primary refined gold came from domestic mines; about 95% of secondary refined gold came from imported sources. In 2014, Australia exported nearly 287 t of refined and unrefined gold bullion; 54% of these exports was shipped to China; nearly 25%, to Singapore; about 7%, to the United Kingdom; 5%, to India; and 5%, to Thailand (Department of Industry, Innovation, and Science, 2015c).

The Tropicana gold mine, which was owned and operated by AngloGold Ashanti (Australia) Ltd. (70%) and Independence Group NL (30%), was officially opened in June. At full capacity, the mine was expected to produce between 15,100 and 16,400 kilograms per year of gold (Tropicana Joint Venture, 2014).

Gold Corp. owned 100% interest in the country's only gold and silver refinery accredited by the London Bullion Market. In 2014, about 99% of Australia-produced dore was refined at the Perth Mint refinery, which was located in Western Australia. The refinery also processed gold mined in Fiji, Laos, Malaysia, New Zealand, Papua New Guinea, the Philippines, the Solomon Islands, and Thailand, and recycled gold from various countries in Asia (unspecified). The refinery's main markets for value-added gold cast bars were China and India. Gold was also exported to London in the form of 12.4-kilogram (kg) gold bars (reported as 400-troy-ounce good delivery bars). Refined silver was exported to international markets in the form of 31.1-kg silver bars (reported as 1,000-troy-ounce good delivery bars). Value-added cast silver bars were sold domestically and exported to international markets (destinations unspecified). Gold Corp. also minted gold and silver bullion coins for export at the Perth Mint. As of June 30, 2014, the Perth Mint employed 363 people (Gold Corp., 2015, p. 2, 10, 20).

**Iron Ore.**—In 2014, Australia was the world's second-ranked producer of iron ore after China. The country accounted for about 23% of the world's mine production of iron ore and for about 28% of the world's reserves of crude iron ore. In 2014, iron ore output was estimated to have increased by 21.9% to 746 Mt compared with a revised 612 Mt in 2013. About 98% of the iron ore produced in the country came from mining operations located in Western Australia; about 1.5%, in South Australia; and less than 1% each, in Tasmania and the Northern Territory. In 2014, Australia exported about 97% of its iron ore output. Nearly 80% of iron ore in the form of fines, lump, and pellets was exported to China; about 11%, to Japan; and 7%, to the Republic of Korea (table 1; Department of Industry, Innovation, and Science, 2015c; Tuck, 2016).

BHP Billiton, CITIC Pacific Mining Management Pty Ltd. (CITIC), and Rio Tinto were Western Australia's leading iron ore producers in 2014. These three companies continued to invest in iron ore capacity expansion projects. BHP Billiton operated an integrated system of mines in the Pilbara region,

which was known as the Western Australia Iron Ore Operations (WAIO), and planned to increase production capacity to 290 Mt/yr. In response to demand from China, BHP Billiton launched an expansion program for the WAIO in the early 2000s and since then has completed eight expansion programs with the target of increasing iron ore production capacity to 290 Mt/yr (BHP Billiton Ltd., 2015, p. 17, 40).

The WAIO consisted of four main mining areas—the Mount Goldsworthy, the Mount Newman, the Jumblebar, and the Yandi joint-venture operations. BHP Billiton sold lump and fines from its WAIO operations to domestic and international steel mills, including steel mills in China, Hong Kong, Japan, the Republic of Korea, Singapore, Switzerland, and Taiwan. In 2014, BHP Billiton completed the first phase of its capacity expansion program at the Jumblebar Mine; the expansion was expected to increase capacity to 35 Mt/yr by mid-2015, and to further expand capacity to 55 Mt/yr (expected date of commissioning not indicated). At the Mount Goldsworthy operation, production from the Yarric Mine was suspended during the year as the company focused on improving productivity at its other mining operations (BHP Billiton Ltd., 2015, p. 17, 40–41).

CITIC reported that, despite delays in 2014, the commissioning of production lines No. 3 and 4 at the Sino iron project, which was Australia's largest magnetite iron ore mine, was scheduled for 2015. The commissioning of lines No. 5 and 6 was scheduled for 2016. The Sino iron project is located at Cape Preston, which is about 100 km southwest of the city of Karratha in Western Australia's Pilbara region. Iron ore concentrate from the Sino iron project was shipped to CITIC's steel plants and other customers in China. Upon completion, the project was expected to have six production lines with the capacity to produce a total of 24 Mt/yr of magnetite concentrate. CITIC Pacific Mining Management Pty Ltd. was a subsidiary of Hong Kong-based CITIC Pacific Ltd., which was a member of China's state-owned CITIC Group (CITIC Ltd., 2015, p. 26).

The first phase of Rio Tinto's 290-Mt/yr iron ore expansion project at its Pilbara region mines was achieved in May; a further expansion to 330 Mt/yr of iron ore was expected to be commissioned in 2015. Rio Tinto reported that an investment decision regarding the development of the Silvergrass Mine was deferred until 2016 and that phase 2 of the expansion of the Western Turner Syncline, which was expected to increase production capacity at the Hamersley operations by 7 Mt/yr, had been approved. Rio Tinto operated 15 mines in the Pilbara region. In January, severe weather conditions from a tropical storm caused the temporary suspension of all Rio Tinto's coastal mining operations in the Pilbara region and at other mining operations in the region (Rio Tinto Ltd., 2015, p. 36–37).

**Lead, Silver, and Zinc.**—In 2014, Australia ranked second after China among the world's leading producers of lead and zinc. The country also ranked second among the world's producers of silver. Australia accounted for nearly 15% of world mine production of lead and nearly 12% of world mine production of zinc. Lead mine production increased slightly to 728,000 t in 2014 from 711,000 t in 2013. Silver output remained at about the same level as that of 2013, and zinc mine output increased slightly to 1.56 Mt in 2014 from 1.52 Mt in 2013. Lead and silver were produced in New South Wales,

Queensland, South Australia, and Tasmania, and zinc was produced in New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, and Western Australia (tables 1 and 2; George, 2016; Guberman, 2016; Tolcin, 2016).

Queensland accounted for nearly 64% of Australia's mine production of lead, followed by New South Wales, 14%; Western Australia, 12%; the Northern Territory, 7%; and Tasmania, 4%. Nearly 64% of lead concentrate exports went to China, 15% to the Republic of Korea, 11% to Japan, and 10% to European Union countries. Lead bullion containing some precious metals, mainly silver, was exported to the United Kingdom. About 30% of refined lead exports went to Malaysia; nearly 24%, to India; about 19%, to the Republic of Korea; 17%, to Vietnam; nearly 7%, to Thailand; and nearly 4%, to South Africa. Queensland accounted for about 76% of Australia's mine production of silver, followed by Western Australia, nearly 7%; New South Wales, 6%; Tasmania, nearly 5%; and the Northern Territory and South Australia, 3% each (Department of Industry, Innovation, and Science, 2015c).

Queensland accounted for nearly 65% of Australia's mined zinc output, followed by the Northern Territory, about 14%; New South Wales, about 9%; and Tasmania and Western Australia, nearly 6% each. Nearly 35% of zinc concentrates exports went to China; about 19%, to the Republic of Korea; 11%, to Spain; 10%, to Belgium and Luxembourg; 10%, to Japan; nearly 5%, to the Netherlands; 3.7%, to Germany; about 1%, to Thailand; and less than 1%, to India. Nearly 25% of Australia's refined zinc was exported to the United States; 24%, to China; 18%, to Taiwan; 17%, to Hong Kong; 8%, to Indonesia; 6%, to Malaysia; and 2%, to India (Department of Industry, Innovation, and Science, 2015c).

**Nickel.**—Most nickel mined in Australia came from Western Australia. In 2014, Australia produced about 10% of the world's mined nickel output. Mined output of nickel increased by about 4% to 244,000 t in 2014 from 234,000 t in 2013. Nickel matte production increased by 20% to 84,000 t in 2014 from 70,000 t in 2013, and production of refined nickel decreased by 19.7% to 114,000 t in 2014 from 142,000 in 2013. BHP Billiton held the largest nickel operation (Nickel West) in the country. The Nickel West operations included the Leinster and the Mount Keith open pit mines. Production at the Leinster Perseverance underground mine was suspended in 2013 following a seismic event that rendered the underground operations unsafe. The mine remained closed in 2014. In May, BHP Billiton announced that it was considering the sale of all its Nickel West assets in Australia, which, in addition to the mines, included concentrators, the Kalgoorlie smelter, and the Kwinana refinery (table 1; BHP Billiton Ltd., 2015, p. 44–45; Kuck, 2016).

In September, Poseidon Nickel Ltd. acquired the rights to the Lake Johnston Nickel Operation (LJNO) from MMC Norilsk Nickel of Russia. In December, the company announced that it had completed a bankable feasibility study for the redevelopment of the LJNO. The LJNO comprised the Emily Ann and the Maggie Hays underground nickel mines, which had operated during the 1990s but were closed in 2007 and 2009, respectively, owing in part to the onset of the 2008–9 global financial crisis. A Joint Ore Reserves Committee (JORC) mineral resource study report completed in October estimated

indicated and inferred resources at the Maggie Hays Mine to be 3.8 Mt at an average grade of 1.41% nickel. The LJNO is located 540 km east of Perth in Western Australia. Poseidon also planned to redevelop the Mount Windarra underground nickel mine for which the company began a drilling campaign in 2014. As of July, a JORC mineral resource study report estimated indicated and inferred mineral resources for the Mount Windarra Mine to be about 4.4 Mt at an average grade of 1.64% nickel (Poseidon Nickel Ltd., 2014a, b).

Metals X Ltd. continued to explore for nickel and cobalt at its Central Musgrave project (CMP). The CMP straddles the boundaries of the Northern Territory, South Australia, and Western Australia and consists of the Claude Hills nickel deposit, the Wingellina nickel-cobalt deposit, and the Mt. Davies exploration prospects. The Wingellina deposit was reported to be one of the world's largest undeveloped nickel-cobalt limonite deposits. In 2014, Metals X was in the process of completing long-lead-time studies required for the completion of a definitive feasibility study, including studies for the development of key mining-related infrastructure, such as rail, roads, and ports. The company also focused on the completion of a Public Environmental Review, which was required for final approval by the Environmental Protection Authority of Western Australia, and completed the buyout of the interests of Rio Tinto in the Mt. Davies joint venture. As of June 30, 2014, measured, indicated, and inferred mineral resources at Wingellina were estimated to be 183.2 Mt at an average grade of 0.98% nickel, 0.08% cobalt, and 47% iron oxide. The total ore reserve was estimated to be 167.5 Mt at an average grade of 0.98% Ni, 0.08% cobalt, and 47.3% iron oxide (Metals X Ltd., 2015, p. 16, 122).

**Tin.**—AusTin Mining Ltd. completed a feasibility study, which confirmed the technical and economic viability of the Taronga Tin Project (TTP). The TTP, which is located about 7 km northwest of Emmaville in northern New South Wales, had been explored previously by BHP Billiton and Newmont and was considered to host one of the world's largest undeveloped hard-rock tin deposits. A mineral resource estimate conducted in August 2013 concluded that the project hosted 36.3 Mt at average grades of 0.16% tin, 0.07% copper, and 3.8 grams per metric ton silver. Further metallurgical test work was to be carried out during the completion of a definitive feasibility study for the project. The Taronga project was expected to produce about 2,800 metric tons per year (t/yr) of tin and to begin producing in 2017 (AusTin Mining Ltd., 2014b, p. 5–7).

Metals X planned to reprocess the tailings from its Renison tin project to recover tin and copper. The Renison tin project is located about 15 km northeast of Zeehan on Tasmania's west coast. The total mineral resource estimate for the tailings reprocessing project was estimated to be 21.2 Mt at an average grade of 0.45% tin and 0.21% copper. A definitive feasibility study completed for the project in 2009 concluded the possibility of developing a 5,300-t/yr tin operation and a 2,000-t/yr copper operation for a period of 10 years. During the year, Metals X disposed of its Collingwood tin project in Queensland. The project had been on care-and-maintenance status since 2012 (Metals X Ltd., 2015, 14–15).

**Titanium and Zirconium.**—Iluka Resources Ltd. was the leading heavy-mineral producer in Australia, and its operations

were located in the Eucla basin in South Australia, the Murray basin on the border of New South Wales and Victoria, and the Perth basin in Western Australia. The company produced 177,000 t of rutile and 271,000 t of ilmenite in 2014 from its operations in Australia, which was an increase of 40% and a decrease of 31%, respectively, compared with production in 2013. All Iluka's synthetic rutile kilns were idled in 2014 in response to reduced market demand (Iluka Resources Ltd., 2015, p. 14, 18).

In 2014, Iluka was in the process of completing a definitive feasibility study for the Cataby deposit, which is located north of Perth in Western Australia, and for the West Balranald and Nepean rutile-rich mineral sands deposits in the Murray basin. Cataby is an ilmenite deposit prospective for rutile and zircon. Once in production, the heavy-mineral concentrate produced at Cataby would be processed at Iluka's Narnngulu mineral separation plant. Part of the expected production of ilmenite was to be used as feed for the production of synthetic rutile. The West Balranald and Nepean deposits also were prospective for ilmenite and zircon mineralization. The company also commenced a prefeasibility study for the Atacama, the Sonoran, and the Typhoon mineral sand deposits, which are located in the Eucla basin in South Australia. These deposits were also reported to be prospective for the production of ilmenite in addition to zircon (Iluka Resources Ltd., 2015, p. 24–25).

### *Industrial Minerals*

**Diamond.**—Rio Tinto was Australia's leading diamond producer. The company held 100% interest in the Argyle underground mine, which is located 120 km southwest of Kununurra in Western Australia. Rio Tinto also operated a rough diamond-cutting and -polishing factory in Australia where it processed its high-value pink diamond from the Argyle Mine for export to international markets. In 2014, Rio Tinto reported that production from the Argyle Mine had been negatively affected by the transition to underground mining owing mostly to the processing of lower grade tailings as underground production ramped up and to a maintenance shutdown, which affected the operation of the mine's underground crushers. The Argyle Mine was expected to ramp up to full nameplate capacity by 2015. The mine produced nearly 9.3 million carats of diamond in 2014 (Rio Tinto Ltd., 2015, p. 32, 197).

**Lithium.**—Australia was the world's leading producer of lithium. In 2014, the country was estimated to have produced about 425,000 t of spodumene, which was equivalent to about 13,300 t of contained lithium, and to have about 11% of the world's lithium reserves. Lithium output came from the Greenbushes and the Mount Cattlin Mines in Western Australia. At least three companies—Altura Mining Ltd., Reed Resources Ltd., and Mineral Resources Ltd.—explored for lithium in 2014. Altura explored for lithium at the Pilgangoora project in the Pilbara region of Western Australia, and Reed Resources (70%), in a joint venture with Mineral Resources (30%), explored for lithium at the Mount Marion project southwest of Kalgoorlie, Western Australia (Jaskula, 2016).

**Salt and Gypsum.**—Rio Tinto produced industrial salt by solar evaporation of seawater at Dampier and Port Hedland and



from underground brines at Lake MacLeod, all of which were located in Western Australia. Salt was also produced by other smaller producers in Queensland, South Australia, Victoria, and Western Australia. Rio Tinto's production, which in 2014 was about 9.9 Mt, was exported mainly to chemical industry markets in Asia. Rio Tinto produced 6.8 Mt of salt (production represented Rio Tinto's share only) from Dampier, Port Hedland, and Lake MacLeod in 2014. Rio Tinto also produced gypsum at the Lake MacLeod operation (Rio Tinto Ltd., 2015, p. 33, 197, 213).

### ***Mineral Fuels and Related Materials***

**Coal.**—Australia was among the world's leading producers of mined coal. Most of the coal produced in the country came from mining operations located in Queensland and New South Wales, although coal also was produced in South Australia, Tasmania, Victoria, and Western Australia. In 2014, mined coal output (bituminous and subbituminous) increased by about 5% to 571 Mt compared with a revised 544 Mt in 2013. Queensland accounted for about 52% of the country's mined coal output, followed by New South Wales, nearly 46%, and Western Australia, 1.3%. About 26% of Australia's high-quality metallurgical coal exports went to China; 25%, to India; nearly 18%, to Japan; nearly 13%, to European Union countries; 7%, to the Republic of Korea; about 4%, to Taiwan; and 2%, to Brazil. About 39% of thermal coal exports went to Japan; 23%, to China; 17%, to the Republic of Korea; and 10%, to Taiwan (table 1; Department of Industry, Innovation, and Science, 2015c).

BHP Billiton held interest in the Queensland Coal asset in partnership with Mitsubishi Corp. of Japan, a 50–50 joint venture. Queensland Coal comprised the BHP Billiton Mitsubishi Alliance (BMA) and the BHP Billiton Mitsui Coal (BMC) properties, which are located in the Bowen basin in Central Queensland. BMA operated the Blackwater, the Broadmeadow, the Caval Ridge, the Daunia, the Goonyella Riverside, the Gregory Crinum, the Peak Downs, and the Saraji Mines. The Daunia Mine was commissioned in September 2013, and the Caval Ridge Mine was commissioned in June 2014. Total coal production from the BMA mines during fiscal year 2014 was 29.3 Mt. BMC, which operated the Poitrel and the South Walker Creek open pit metallurgical coal mines, produced a total of 8.3 Mt of coal in fiscal year 2014 (BHP Billiton Ltd., 2015, p. 42–43).

BHP Billiton also held a 100% interest in the Illawarra Coal asset, which comprised the Appin, the Dendrobium, and the West Cliff Mines in New South Wales. These mines supplied metallurgical coal to BlueScope Steel Ltd.'s Port Kembla steelworks and to other domestic markets. Coal also was exported internationally through the Port of Kembla. In fiscal year 2014, production from these mines was 7.5 Mt. An expansion program underway at the Appin Mine was expected to increase total production capacity from the Illawarra Coal asset to 9 Mt/yr by 2016. This new output would help counterbalance the loss in production from the closure of the West Cliff Mine; reserves were expected to be depleted by 2017 (BHP Billiton Ltd., 2015, p. 42).

In July, Centennial Coal Co. Ltd. placed its Newstan Colliery Mine on care-and-maintenance status, citing unfavorable coal

market conditions and increased operating costs. Forty-five of the 148 employees were transferred to the company's Myuna and Mandalong Mines; 103 employees were retrenched. The Newstan Colliery Mine had been closed from 2009 to 2011 also owing to unfavorable coal market conditions. Despite its temporary closure, Centennial planned to continue with the mine's expansion project until market conditions improved. In October, the company announced that it also planned to place the Angus Place Mine on care-and-maintenance status in April 2015 owing to a reduction in domestic coal consumption resulting from the suspension of operations at the Wallerawang power station. An undisclosed portion of the mine's 268 employees were transferred to the company's Springvale Mine and 30 employees were transferred to the Clarence Mine. Centennial expected both mines to reopen when coal market conditions improved. Centennial supplied about 45% of New South Wales' thermal coal needs for use in coal-fired electricity generation. As of yearend, the company employed about 1,500 people. Centennial was wholly owned subsidiary of Banpu Public Co. Ltd. of Thailand and operated six coal mines in New South Wales (Centennial Coal Co. Ltd., 2015, p. 1, 9).

In addition to the Angus, the Mandalong, the Myuna, and the Newstan coal mines, Centennial held interest in four other coal mines in Australia, including the Airly, the Charbon, the Clarence, and the Springvale Mines. In 2014, the Airly Mine produced 481,587 t of coal and employed 59 people; the Clarence Mine had record production of 2.55 Mt of coal and employed 236 people; the Mandalong had record production of about 5.94 Mt of coal and employed 377 people; the Myuna Mine had record production of about 1.87 Mt of coal and employed 257 people. Although operations were suspended at the Newstan Mine during the second half of the year, the mine produced 530,845 t; the Springvale Mine had record production of about 3.49 Mt of coal and employed 343 people. Coal reserves at the Charbon Mine were near depletion; underground mining operations ceased in April 2014, and open pit operations were expected to cease in 2015. The Charbon Mine produced 779,565 t in 2014 and as of yearend employed 17 people (Centennial Coal Co. Ltd., 2015, p. 20–23).

**Natural Gas.**—Australia was expected to become the world's leading exporter of liquefied natural gas (LNG) by 2020 following the commissioning of seven LNG projects, which were expected to come online within the next 5 years. Two of these projects included the 15.6-Mt/yr Gorgon LNG project, which is located on Barrow Island off the northwest coast of Western Australia, and the 8.9-Mt/yr Wheatstone onshore LNG project, which is located near Onslow in the West Pilbara region of Western Australia. In 2014, Chevron invested \$7.1 billion in the development and construction of these two projects. The Gorgon project was expected to be commissioned in 2015, and the Wheatstone project, in 2016. Natural gas to supply the Gorgon LNG project was to be sourced from the Gorgon and the Jansz-lo fields, which were also under development and expected to come online in mid-2015. Majority interest in the Gorgon project was held by Chevron (47.3%), Exxon Mobil Corp. of the United States (25%), and Royal Dutch Shell plc of the Netherlands (25%). About 80% of the natural gas needed to supply the Wheatstone onshore LNG project would be sourced

from the Wheatstone and the Lago fields, which were operated by Chevron in joint venture with the Kuwait Foreign Petroleum Exploration Co., the Kyushu Electric Power Co. of Japan, and PE Wheatstone Pty. Ltd. Other LNG projects included the 8.9-Mt/yr Ichthys project, which was expected to be commissioned in 2017; and the 3.6-Mt/yr Prelude project, which was expected to be online by 2017. Australia was expected to produce 82.4 billion cubic meters of natural gas in fiscal year 2015 and to increase production to 146.8 billion cubic meters by fiscal year 2019 (Chevron Corp. 2015a, p. 3, 75; 2015b; Department of Industry, Innovation, and Science, 2015a, p. 42; 2015b, p. 63–64).

## Outlook

Australia's Department of Industry, Innovation, and Science reported that although the mining investment boom had passed, mineral output in Australia was likely to continue to increase as the mineral sector moved from a mining investment phase to a mineral production phase. This projected increase in production was, for the most part, underpinned by the estimated AUD400 billion (US\$327 billion) of investments in the development of mineral projects in the past 11 years. Over the medium and long terms, demand for Australia's mineral commodities is likely to increase based on the expected increase in consumption by developing economies, mostly countries in Asia. The recent slowdown in China's economy, Australia's largest mineral export market, could result in a significant decrease in demand for Australian mineral exports. This could continue to exert financial pressure on small-scale, high-cost mineral producers, forcing them to close mines or to place them on care-and-maintenance status. The Australian Government projects mining investment in the country to decrease by more than 25% between 2015 and 2016 and by more than 30% between 2016 and 2017 (Department of Industry, Innovation, and Science, 2015a, p. 25; 2015b, 2, 12).

Growth in Australia's output and exports of iron ore is expected to slow to about 4% per year over the medium term from a 15% annual rate of growth from 2010 to 2014. Exploration expenditures, however, are projected to increase as Australian producers look for new iron ore deposits to replace operations that are reaching life-of-mine capacity. Iron ore exports are projected to increase by 24% to 928 Mt by 2019. The Roy Hill Mine was expected to be operational by yearend 2015. Australia's thermal coal production is projected to increase to 265 Mt in 2019 owing to the rampup of mining projects to be commissioned in 2015 and 2016. Australia's thermal coal exports are projected to increase to 206 Mt in 2015, and to increase further to 222 Mt by 2019 (Department of Industry, Innovation, and Science, 2015b, p. 35, 37, 54–55).

In 2015, production of natural gas is expected to increase to 82.4 billion cubic meters, mostly as a result of the ramping-up of production at existing fields, and to further increase to 146.8 billion cubic meters by 2019. Australia is expected to become the world's leading LNG exporter by 2020; 25% of exports are expected to be shipped to China, and 13%, to the Republic of Korea. Australia's production of aluminum is projected to decrease to 1.5 Mt in 2019 as domestic supply is

displaced by low-cost imports, and exports are projected to decrease to 1.3 Mt. Exports of alumina are expected to increase to 21.3 Mt in 2015. Production of bauxite will be supported by the development of the Bauxite Hills and South of Embley projects; bauxite exports are expected to increase to about 34.6 Mt by 2019 (Department of Industry, Innovation, and Science, 2015b, p. 63–66, 91, 93).

Copper mine production is expected to increase to 1 Mt in 2015, mostly as a result of the normalization of operations at the Olympic Dam Mine. Production is expected to increase to 1.3 Mt by 2020 owing to the development of new projects and higher production at existing mines. Increased production from existing mines, in particular the Cadia and the Prominent Hill Mines, is expected to help counterbalance the loss of production from the closure of the Golden Grove and the Leichhardt Mines. In 2016, refined copper production is expected to increase to 479,000 t owing mostly to the resumption of normal operations at the Olympic Dam Mine and increases at other operations. Australia's copper exports (total Cu content) are projected to increase to 1.3 Mt by 2019. Refined copper production, however, is expected to decrease to 239,000 t by 2019 as a result of the expected closure the Townsville refinery in 2016 (Department of Industry, Innovation, and Science, 2015b, p. 101–102).

In 2015, Australia's nickel exports (Ni content) are projected to increase to 262,000 t. Mined nickel production is expected to increase to 275,000 t in 2019, and exports of nickel are expected to reach 299,000 t. Refined nickel production is expected to decrease to 104,000 t mostly as a result of decreased production at Nickel West. Zinc mine production is expected to decrease to 1.6 Mt in 2019 (Department of Industry, Innovation, and Science, 2015b, p. 108–109, 113–114).

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TABLE 1  
AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity		2010	2011	2012	2013	2014
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	68,414	69,976	76,282	81,119 <sup>r</sup>	78,633
Alumina	do.	19,956	19,399	21,357	21,528	20,475
Metal:						
Primary	do.	1,928	1,945	1,864	1,778	1,704
Antimony, Sb content of ores and concentrates		1,106	1,577	2,481	3,275	3,800 <sup>c</sup>
Cadmium, metal, smelter, refined <sup>c</sup>		350	390	380	380	380
Chromium:						
Chromite, gross weight		180,000	323,800	452,300	355,000 <sup>r</sup>	--
Chromite content <sup>c</sup>		65,000	120,000	160,000	130,000 <sup>r</sup>	--
Cobalt:						
Co content in laterite ore and Ni concentrate <sup>3</sup>		3,852	3,848	5,870 <sup>r</sup>	6,410 <sup>r</sup>	5,978
Metal, refined <sup>4</sup>		4,117 <sup>r</sup>	4,722 <sup>r</sup>	4,859 <sup>r,5</sup>	4,981 <sup>r</sup>	5,419
Copper:						
Mine output, Cu content	thousand metric tons	870	958	914	1,001 <sup>r</sup>	969
Metal:						
Smelter, primary and secondary	do.	410	441	422	446 <sup>r</sup>	468
Refined, primary	do.	417	477	460	480 <sup>r</sup>	507
Gold:						
Mine output, Au content		261	260	252	268 <sup>r</sup>	274
Metal, refined:						
Primary		280	271	263	306 <sup>r</sup>	304
Secondary		71	48	45 <sup>r</sup>	23 <sup>r</sup>	20 <sup>c</sup>
Iron and steel:						
Iron ore: <sup>e</sup>						
Gross weight	thousand metric tons	433,000	488,000	520,000 <sup>r</sup>	612,000 <sup>r</sup>	746,000
Fe content	do.	271,000	277,000	312,000 <sup>r</sup>	367,000 <sup>r</sup>	448,000
Metal:						
Pig iron	do.	6,259	5,296 <sup>r</sup>	3,480	3,342 <sup>r</sup>	3,300 <sup>c</sup>
Ferroalloys: <sup>c</sup>						
Ferromanganese		138,000	146,000	106,000	144,000	162,000
Silicomanganese		131,000	130,000	51,000	110,000	119,000
Total		269,000	276,000	157,000	254,000	281,000
Steel, crude	thousand metric tons	7,408	6,538	4,903 <sup>r</sup>	4,646 <sup>r</sup>	4,412
Semimanufactured products <sup>c</sup>	do.	9,100	9,750	8,300	7,600	7,600
Lead:						
Mine output, Pb content	thousand metric tons	625	621	622	711	728
Metal:						
Bullion	do.	142	139	147	144 <sup>r</sup>	109
Refined:						
Primary	do.	178	187	160	177	176
Secondary, excluding remelt	do.	26	26	24	24	50 <sup>c</sup>
Manganese ore, metallurgical:						
Gross weight	do.	6,474	6,963	7,179 <sup>r</sup>	7,447 <sup>r</sup>	7,587
Mn content	do.	2,650	2,860	2,950	2,970	3,000 <sup>c</sup>
Nickel:						
Mine output, Ni content	do.	170	215	244	234	244
Matte	do.	54	57	66	70	84
Metal, smelter, refined Ni and Ni content of oxide	do.	108	110	129	142	114
Platinum-group metals: <sup>e</sup>						
Palladium, Pd content	kilograms	650	350	550	610	600
Platinum, Pt content	do.	130	100 <sup>r</sup>	160 <sup>r</sup>	176	180
Total	do.	780	450 <sup>r</sup>	710 <sup>r</sup>	790	780

See footnotes at end of table.

TABLE 1—Continued  
 AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	2010	2011	2012	2013	2014
METALS—Continued					
Silver:					
Mine output, Ag content	1,879	1,725	1,728 <sup>r</sup>	1,840	1,848
Metal, refined	634	990	781 <sup>r</sup>	1,222	944
Tin:					
Mine output, Sn content <sup>6</sup>	18,263	14,014	6,158	6,472	7,207
Metal, refined, secondary <sup>c</sup>	400	400	400	400	400
Titanium mineral concentrates, gross weight:					
Ilmenite	1,492	1,277	1,344	1,342 <sup>r</sup>	1,000
Leucoxene <sup>c</sup>	159,000	224,000	228,000	220,000	250,000
Rutile	438,000 <sup>r</sup>	474,000	439,000 <sup>r</sup>	232,000 <sup>r</sup>	212,000
Tungsten, mine output, W content	18	15	290	320	477
Zinc:					
Mine output, Zn content	1,479	1,515	1,542 <sup>r</sup>	1,523	1,560
Metal, smelter:					
Primary	499	507	498	498	482
Zircon concentrates, gross weight	549	762	605	388	798
INDUSTRIAL MINERALS					
Abrasives, natural, garnet	196,839	308,139 <sup>r</sup>	266,224 <sup>r</sup>	395,841 <sup>r</sup>	277,662
Barite	16,529 <sup>r</sup>	10,569 <sup>r</sup>	12,373 <sup>r</sup>	13,176 <sup>r</sup>	14,676
Cement, hydraulic <sup>c</sup>	8,300	8,600	8,500	8,400	9,000
Diamond:					
Gem	100	86	65	106	464
Industrial	9,900	7,500	11,895	11,376	8,824
Total	10,000	7,586	11,960	11,482	9,288
Feldspar, including nepheline syenite <sup>c</sup>	50,000	50,000	50,000	45,000	45,000
Gypsum	2,880 <sup>r</sup>	2,220 <sup>r</sup>	2,120 <sup>r</sup>	2,270 <sup>r</sup>	2,580
Lime <sup>c</sup>	2,200,000	2,200,000	2,200,000	2,100,000	1,950,000
Lithium, spodumene	295,000	421,391	456,921	421,000	425,000 <sup>e</sup>
Magnesite	275,000	640,000	587,000	450,000 <sup>e</sup>	450,000 <sup>e</sup>
Phosphate rock: <sup>c</sup>					
Gross weight <sup>7</sup>	2,600,000	2,650,000	2,800,000 <sup>r</sup>	2,500,000 <sup>r</sup>	2,800,000
P <sub>2</sub> O <sub>5</sub> content	600,000	610,000	644,000 <sup>r</sup>	575,000 <sup>r</sup>	644,000
Rare earths, rare-earth oxide equivalent	--	2,188	3,222	3,000 <sup>r</sup>	8,000 <sup>e</sup>
Salt <sup>7</sup>	11,540 <sup>r</sup>	12,250 <sup>r</sup>	12,500 <sup>r</sup>	12,900 <sup>r</sup>	13,000
Soda ash <sup>c</sup>	310	310	300	300	300
Stone and sand and gravel: <sup>c</sup>					
Construction sand	21,000	24,000	25,000	25,000	25,000
Crushed and broken stone	100,000	100,000	100,000	100,000	100,000
Dimension stone	120	140	140	140	140
Gravel	6,000	8,000	8,000	8,000	8,000
Limestone	19,000	22,000	21,000	20,000	20,000
Silica in the form of quartz, quartzite, glass sand	3,100	3,500	3,500	3,000	3,000
Sulfur, byproduct: <sup>c</sup>					
Metallurgy	800	800	800	810 <sup>r</sup>	810
Petroleum	60	60	60	90 <sup>r</sup>	90
Total	860	860	860	900 <sup>r</sup>	900
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Mine output, bituminous and subbituminous	449,000	468,000	501,000 <sup>r</sup>	544,000 <sup>r</sup>	571,000
Salable:					
Bituminous and subbituminous	356,000	348,000	380,000 <sup>r</sup>	412,000 <sup>r</sup>	442,000
Lignite <sup>c</sup>	71,000	65,000	65,000	66,000	61,000
Total <sup>c</sup>	427,000	413,000	445,000 <sup>r</sup>	478,000 <sup>r</sup>	503,000
Gas, natural, marketed	51,868	51,253	60,610 <sup>r</sup>	61,199 <sup>r</sup>	64,897

See footnotes at end of table.

TABLE 1—Continued  
 AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	2010	2011	2012	2013	2014	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude, includes condensate	thousand 42-gallon barrels	169,985	143,456	119,200	128,600	128,960
Refinery products	do.	235,971	239,618	234,734	219,370	209,070
Uranium, mine output, U <sub>3</sub> O <sub>8</sub> content		7,440	6,942	6,968	7,584	5,883

<sup>6</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>†</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through December 31, 2015.

<sup>2</sup>In addition to the commodities listed, bentonite, diatomite, jade, kyanite, opal, perlite, sapphire, and talc were produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Cobalt content of lateritic nickel ore and nickel concentrate reported by the government of Western Australia.

<sup>4</sup>Cobalt content of metal powder and oxide hydroxide reported by the Cobalt Development Institute, except as noted.

<sup>5</sup>Production reported by the Cobalt Development Institute and Glencore International AG.

<sup>6</sup>Does not include tin production from heavy mineral sand in Western Australia.

<sup>7</sup>Data include production from Christmas Island.

TABLE 2  
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>6</sup>
<b>Aluminum:</b>			
Bauxite	Gove open pit bauxite mine [Pacific Aluminium (Rio Tinto Ltd., 100%)]	15 km southeast of Nhulunbuy, NT	8,000
Do.	Huntly open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa World Alumina and Chemicals, 100%)]	80 km south of Perth, WA	23,000
Do.	Weipa-Ely open pit bauxite mine [Comalco Ltd., operator (Rio Tinto Alcan, 100%)]	Weipa, QLD	26,000
Do.	Willowdale open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa World Alumina and Chemicals, 100%)]	130 km south of Perth, WA	10,000
Do.	Boddington-Worsley open pit bauxite mine {Worsley Alumina Pty. Ltd., manager [South32, 86% (BHP Billiton Ltd., 100%); Japan Alumina Associates (Australia) Pty. Ltd., 10%; Sojitz Alumina Pty. Ltd., 4%]}	14 km south of Boddington, WA	19,000
Do.	Bald Hill Mine <sup>3</sup> (Australian Bauxite Ltd., 100%)	Campbell Town, TAS	900
Alumina, refinery	Queensland Alumina alumina refinery [Queensland Alumina Ltd., operator (Rio Tinto Ltd., 80%, and United Company RUSAL, 20%)]	Gladstone, QLD	3,950
Do.	Gove alumina refinery <sup>4</sup> (Rio Tinto Ltd., 100%)	Nhulunbuy, Gove, NT	2,650
Do.	Kwinana alumina refinery [Alcoa of Australia Ltd. (Alcoa World Alumina and Chemicals, 100%)]	Kwinana, WA	2,200
Do.	Pinjarra alumina refinery [Alcoa of Australia Ltd. (Alcoa World Alumina and Chemicals, 100%)]	Pinjarra, WA	4,200
Do.	Wagerup alumina refinery [Alcoa of Australia Ltd. (Alcoa World Alumina and Chemicals, 100%)]	East of Waroona, WA	2,600
Do.	Worsley alumina refinery {Worsley Alumina Pty. Ltd., manager [South32, 86% (BHP Billiton Ltd., 100%); Japan Alumina Associates (Australia) Pty. Ltd., 10%; Sojitz Alumina Pty. Ltd., 4%]}	20 km northwest of Collie, WA	4,600
Do.	Yarwun alumina refinery (Rio Tinto Ltd., 100%)	Gladstone, QLD	3,400
Metal, smelter	Bell Bay aluminum smelter [Pacific Aluminium (Rio Tinto Ltd., 100%)]	Bell Bay, TAS	192
Do.	Boyne Island aluminum smelter [Boyne Smelters Ltd., operator (Rio Tinto Alcan, 59.39%; YKK Aluminum, 9.5%; UACJ Australia, 9.43%; Southern Cross Aluminium, 7.57%; Ryowa Development, 5.27%; Ryowa Development II, 6.34%; Sumitomo Chemical Co. Ltd. 2.5%)]	Boyne Island, QLD	571
Do.	Point Henry aluminum smelter <sup>5</sup> (Alcoa of Australia, 100%)	Point Henry, VIC	185
Do.	Portland aluminum smelter [Alcoa of Australia, manager, 55%; China International Trust Investment Co. (China state-owned company), 22.5%; Marubeni Australia Pty. Ltd., 22.5%]	Portland, VIC	345
Do.	Tomago aluminum smelter {Tomago Aluminium Co. Pty. Ltd., operator [Gove Aluminium Finance Ltd., 36.05%; Pacific Aluminium 51.55% (Rio Tinto Ltd., 100%); Hydro Aluminium, 12.40%]}	Tomago, NSW	561
Antimony	Costerfield underground antimony-gold mine [AGD Mining, operator (Mandalay Resources Ltd., 100%)]	50 km east and southeast of Bendigo, VIC	5
Do.	Hillgrove Mine <sup>4</sup> (Bracken Resources Pty Ltd., 100%)	25 km east of Armidale, NSW	10
Bentonite	Arumpo open pit bentonite mine (Arumpo Bentonite Pty. Ltd., 100%)	95 km northeast of Mildura, NSW	30
Do.	Cedars open pit bentonite mine (PCP Douglass Pty. Ltd., 100%)	10 km southwest of Yarraman, QLD	20
Do.	Cressfield open pit bentonite mine (Sibelco Group through Sibelco Australia Ltd., 100%)	15 km north of Scone, NSW	12
Do.	Mantuan Downs (Pacific Enviromin Ltd., 100%)	West of Springsure, QLD	100
Do.	Miles open pit bentonite mine (Unimin Australia Ltd., 100%)	350 km west of Brisbane, QLD	100
Cement, plant	Adelaide Brighton Cement Pty Ltd., 100%	Angaston, SA	250
Do.	do.	Birkenhead, SA	1,200
Do.	do.	Geelong, VIC	800
Do.	do.	Munster, SA	590
Do.	Blue Circle Southern Cement Ltd. (Boral Ltd., 100%)	Berrima, NSW	1,200
Do.	do.	Maldon, NSW	700
Do.	do.	Waurn Ponds, VIC	250
Do.	Cement Australia Pty Ltd. (Hanson Ltd. and Holcim Australia Pty Ltd.)	Brisbane, QLD	1,200

See footnotes at end of table.

TABLE 2—Continued  
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>6</sup>
Cement, plant—Continued	Cement Australia Pty Ltd. (Hanson Ltd. and Holcim Australia Pty Ltd.)	Gladstone, QLD	1,700
Do.	do.	Railton, TAS	1,000
Do.	Cockburn Cement Ltd., 100%	Munster, 30 km south of Perth, WA	700
Chromite	Coobina open pit chromite mine <sup>5</sup> (Consolidated Minerals Ltd., 100%)	80 km southeast of Newman, WA	250
Coal	Airly coal mine (Banpu Public Co. Ltd. through Centennial Coal Co. Ltd., 100%)	42 km northwest of Lithgow, NSW	1,900
Do.	Angus Place longwall coal mine <sup>6</sup> (Centennial Coal Co. Ltd., 50%, and SK Kores Australia Pty Ltd., 50%)	16 km northwest of Lithgow, NSW	4,000
Do.	Appin longwall coal mine [Illawarra Coal Holdings Pty Ltd., operator (BHP Billiton Ltd., 100%)]	40 northwest of Wollongong, NSW	8,800
Do.	Ashton open pit and underground coal mine (Yancoal Australia Ltd., 90%, and Itochu Corp., 10%)	14 km northwest of Singleton, NSW	4,000
Do.	Austar underground coal mine [Yancoal Australia Ltd., 100% (Centennial Coal Co. Ltd., 100%)]	65 km west of Newcastle, NSW	2,000
Do.	Baal Bone coal mine [Oakbridge Pty Ltd., 74.1% (Glencore plc, 100%); Sumitomo Corp., 5%; Toyota Tsusho Mining (Australia) Pty Ltd., 4.75%; private, 14.44%]	24 km northwest of Lithgow, NSW	2,500
Do.	Bengalla open pit coal mine (Rio Tinto Ltd., 32%)	5 km west of Muswellbrook, NSW	8,600
Do.	Blackwater open pit coal mine (includes South Blackwater) [BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)]	195 km west of Rockhampton, QLD	14,000
Do.	Broadmeadow open pit and underground coal mine [BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)]	30 km north of Moranbah, QLD	3,000
Do.	Bulga open pit coal mine [Oakbridge Pty Ltd., manager (Glencore plc, 68.25%; Nippon Steel Australia Pty. Ltd., 12.5%; Toyota Tsusho Mining (Australia) Pty Ltd., 4.38%; private, 13.3%)]	16 km southwest of Singleton, NSW	10,000
Do.	Burton open pit coal mine (Peabody Energy Corp., 95%, and Thiess Pty. Ltd., 5%)	150 km southwest of Mackay, QLD	5,800
Do.	Callide coal mine (Anglo Coal Pty Ltd., 100%)	120 km southwest of the Port of Gladstone, QLD	10,700
Do.	Caval Ridge open pit coal mine [BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)]	Central QLD	5,500
Do.	Carborough Downs underground coal mine (Vale SA, 90%)	Bowen basin, QLD	2,500
Do.	Charbon open pit and underground coal mine <sup>7</sup> (Banpu Public Co. Ltd. through Centennial Coal Co. Ltd., 95%, and SK Energy Australia Pty Ltd., 5%)	Western coalfields near Kandos, NSW	1,300
Do.	Clarence underground coal mine [Banpu Public Co. Ltd. through Centennial Coal Co., 85%, and SK Energy Australia Pty Ltd., 15%]	10 km east of Lithgow, NSW	2,600
Do.	Clermont coal mine [GS Coal Pty Ltd. (Glencore plc and Sumitomo Corp.)]	Central QLD	12,000
Do.	Commodore open pit coal mine {Roche Mining Pty. Ltd., operator [Intergen (Australia) Pty Ltd., 100%]}	80 km southwest of Toowoomba, QLD	3,600
Do.	Coppabella open pit coal mine (Macarthur Coal Ltd., 73.3%, and others, 26.7%)	140 km southwest of Mackay, QLD	4,000
Do.	Cumnock No. 1 Colliery mine (Cumnock No. 1 Colliery Pty Ltd., 100%)	28 km northwest of Singleton, NSW	3,000
Do.	Curragh open pit coal mine (Wesfarmers Ltd., 100%)	70 km east of Emerald, QLD	9,000
Do.	Dartbrook coal mine <sup>4</sup> (Anglo Coal Holdings Australia Ltd., 77.3%)	70 km north of Singleton, NSW	3,750
Do.	Daunia open pit coal mine [BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)]	Central QLD	4,500
Do.	Dawson coal complex (includes Moura, Taroom, and Theodore) [Anglo American plc, 51%, and Mitsui & Co. (Australia) Ltd., 49%]	230 km west of Bundaberg, QLD	7,000
Do.	Dendrobium underground coal mine [Dendrobium Coal Pty Ltd., operator (BHP Billiton Ltd., 100%)]	15 km southwest of Wollongong, NSW	5,200

See footnotes at end of table.



TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
Coal—Continued	Donaldson open pit coal mine (Donaldson Coal Pty Ltd., 100%)	5 km southeast of Maitland, NSW	2,500
Do.	Drayton open pit coal mine [Anglo Coal Holdings Australia Ltd., 88.2%; manager; Mitsui Coal Development Australia Pty. Ltd., 3.8%; Mitsui Mining (Australia) Pty. Ltd., 3%; others, 5%]	35 km northwest of Singleton, NSW	5,000
Do.	Duralie open pit coal mine (Gloucester Coal Ltd., 100%)	110 km of Newcastle, NSW	2,000
Do.	Elouera underground coal mine (Gujarat NRE Resources NL, 100%)	15 km southwest of Wollongong, NSW	2,000
Do.	Ensham-Yongala open pit coal mine [Idemitsu Kosan Co. Ltd., 85%; J-Power (Australia) Pty. Ltd., 10%; LG International (Australia) Pty Ltd., 5%]	40 km northeast of Emerald, QLD	9,000
Do.	Ewington II open pit coal mine (Griffin Coal Mining Co. Pty. Ltd., 100%)	8 km east of Collie, WA	1,000
Do.	Foxleigh open pit coal mine (Foxleigh Mining Pty Ltd., 100%)	Bowen basin, QLD	3,600
Do.	German Creek and German Creek East open pit and underground coal mines [Anglo American plc, 70%, and Mitsui & Co. (Australia) Ltd., 30%]	275 km west-northwest of Rockhampton, QLD	6,000
Do.	Glennies Creek longwall coal mine (CVRD Inco Ltd., 85%; Nippon Steel Australia Pty Ltd., 5%; POSCO Australia Pty Ltd., 5%; private, 5%)	12 km north of Singleton, NSW	2,800
Do.	Goonyella-Riverside open pit coal mines (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)	140 km southwest of Mackay, QLD	16,000
Do.	Gregory Crinum open pit and underground coal mine [BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)]	60 km north of Emerald, QLD	5,500
Do.	Hunter Valley Operations (includes Carrington Chestnut, Howick, Hunter Valley No. 1, Lemington, Riverview open pit coal mines) (Rio Tinto Ltd., 80%)	10 km west and 25 km north of Singleton, NSW	15,000
Do.	Hail Creek open pit coal mine (Rio Tinto Ltd., 82%; Nippon Steel Australia Pty Ltd., 8%; Marubeni Coal Pty. Ltd., 6.66%)	100 km west of Mackay, QLD	8,000
Do.	Hazelwood open pit coal mine (International Power Hazelwood, 100%)	150 km southeast of Melbourne, VIC	20,000
Do.	Integral coal complex <sup>4</sup> (includes Camberwell and Glennies Creek [Vale SA, 61.2% (operator); Toyota Tsusho Corp., 28%; JFE Holdings Inc., 3.6%; Nippon Steel & Sumitomo Metal Corp., 3.6%; POSCO, 3.6%])	10 km northwest of Singleton, NSW	4,000
Do.	Isaac Plains open pit coal mine <sup>4</sup> (Vale SA, 50%, and Sumitomo Corp., 50%)	7 km southeast of Moranbah, QLD	1,600
Do.	Jellinbah East open pit coal mine (Queensland Coal Mine Management Pty. Ltd., 70%; Marubeni Coal Pty. Ltd., 15%; Sojitz Australia Ltd., 15%)	90 km east of Emerald, QLD	4,000
Do.	Kestrel underground coal mine (Rio Tinto Ltd., 80%, and Mitsubishi Corp., 20%)	40 km north-northeast of Emerald, QLD	5,500
Do.	Liddell open pit coal mine (Xstrata Coal Australia Pty. Ltd., 67.5%, and Mitsui Matushima Australia Pty. Ltd., 32.5%)	25 km northwest of Singleton, NSW	4,000
Do.	Loy Yang open pit coal mine (Loy Yang Power Ltd., 100%)	165 km east of Melbourne, VIC	30,000
Do.	Mandalong underground coal mine (Centennial Coal Co. Ltd., 100%)	35 km southwest of Newcastle, NSW	4,500
Do.	Moorvale open pit coal mine (Macarthur Coal Ltd., 73.3%; CITIC Resources Australia Pty Ltd., 14%; Sojitz Australia Ltd., 7%; Nippon Steel Australia Pty Ltd., 2%)	10 km south of Coppabella, QLD	3,400
Do.	Moranbah North longwall coal mine (Anglo American plc., 88%, and Nippon Steel Australia Pty. Ltd., 5%)	150 km southwest of Mackay, QLD	5,800
Do.	Mount Arthur open pit coal mine (BHP Billiton Ltd., 100%)	5 km southwest of Muswellbrook, NSW	15,000
Do.	Mount Owen open pit coal mine (Glencore plc, 100%)	20 km northwest of Singleton, NSW	7,700
Do.	Mount Thorley open pit coal mine (Rio Tinto Ltd., 64%)	14 km southwest of Singleton, NSW	12,000
Do.	Muja open pit coal mine (The Griffin Coal Mining Co. Pty. Ltd., 100%)	18 km southeast of Collie, WA	2,000
Do.	Muswellbrook No. 2 open pit coal mine (Muswellbrook Coal Co., 100%)	4 km northeast of Muswellbrook, NSW	1,700
Do.	Myuna underground coal mine (Centennial Coal Co. Ltd., 100%)	35 km south of Newcastle, NSW	2,000
Do.	New Acland open pit coal mine (New Hope Corp. Ltd., 100%)	35 km northwest of Toowoomba, QLD	3,750

See footnotes at end of table.

TABLE 2—Continued  
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>6</sup>
Coal—Continued	Newlands-Collinsville-Abbot Point open pit coal mine (Glencore plc, 55%; Itochu Corp., 35%; Sumitomo Corp., 10%)	130 km west of Mackay, QLD	15,000
Do.	Newstan Colliery longwall coal mine <sup>4</sup> (Centennial Coal Co. Ltd., 100%)	30 km southwest of Newcastle, NSW	4,000
Do.	North Goonyella underground coal mine (Peabody Energy Corp., 100%)	40 km north Moranbah, QLD	3,000
Do.	Norwich Park open pit coal mine (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)	85 km north-northeast of Emerald, QLD	5,000
Do.	Oaky Creek longwall and Alliance open pit coal mines (Glencore plc, 55%; Sumitomo Coal Australia Pty. Ltd., 25%; Itochu Corp., 20%)	300 km west-northwest of Rockhampton, QLD	9,500
Do.	Peak Downs open pit coal mine (BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)	145 km north of Emerald, QLD	9,000
Do.	Poitrel open pit coal mine (BHP Billiton Ltd., 80%, and Mitsui & Co. (Australia) Ltd., 20%)	Bowen basin, QLD	3,100
Do.	Premier open pit coal mine (Wesfarmers Premier Coal Ltd., 100%)	10 km southeast of Collie, WA	4,000
Do.	Ravensworth-Narama open pit coal mine (includes Ravensworth East Mine) (Xstrata Coal Australia Pty. Ltd., 100% of Ravensworth and 50% of Narama; and Iluka Resources Ltd., 50% of Narama)	20 km northwest of Singleton, NSW	3,500
Do.	Rixs Creek open pit coal mine (Bloomfield Colliers Pty. Ltd., 100%)	5 km northwest of Singleton, NSW	2,000
Do.	Rolleston open pit coal mine (Glencore plc, 75%; Itochu Corp., 12.5%; Sumitomo Corp., 12.5%)	90 km south-southeast of Emerald, QLD	8,000
Do.	Saraji open pit coal mine (BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%)	125 km north of Emerald, QLD	6,500
Do.	South Walker Creek open pit and underground coal mine [BHP Billiton Ltd., 80%, and Mitsui & Co. (Australia) Ltd., 20%]	90 km southwest of Mackay, QLD	5,300
Do.	Springvale underground coal mine (Banpu Public Co. Ltd. through Centennial Coal Co. Ltd., 50%, and SK Kores Australia Pty Ltd., 50%)	16 km northwest of Lithgow, NSW	4,500
Do.	Tahmoor longwall coal mine (includes Tahmoor North and Bargo Mines) [Austral Coal Ltd., operator (Glencore plc, 100%)]	70 km southwest of Sydney, NSW	2,500
Do.	Tarong-Meandu open pit coal mine (Rio Tinto Ltd., 100%)	85 km north of Toowoomba, QLD	7,000
Do.	Ulan underground coal mine (Glencore plc, 90%, and Mitsubishi Corp., 10%)	45 km northwest of Mudgee, NSW	5,000
Do.	United Collieries underground coal mine (Glencore plc, 95%, and private, 5%)	15 km west of Singleton, NSW	3,000
Do.	Wambo open pit and underground coal mine (Peabody Energy Corp., 100%)	30 km from Singleton, NSW	6,000
Do.	Warkworth coal mine (Rio Tinto Ltd., 44.46%)	15 km southwest of Singleton, NSW	1,300
Do.	West Cliff longwall coal mine (BHP Billiton Ltd., 100%)	43 km northwest of Wollongong, NSW	2,300
Do.	West Wallsend longwall coal mine (Glencore plc, 70%; Marubeni Coal Pty Ltd., 17%; private, 13%)	25 km southwest of Newcastle, NSW	2,500
Do.	Yallourn open pit lignite mine (CLP Power Asia Ltd., 100%)	140 km southeast of Melbourne, VIC	18,000
Cobalt:			
Mine	Cawse open pit nickel-cobalt mine (OJSC MMC Norilsk Nickel, 100%)	50 km northwest of Kalgoorlie, WA	0.2
Do.	Murrin Murrin open pit nickel-cobalt mine (Minara Resources Ltd., 60%, and Glencore plc, 40%)	60 km east of Leonora, WA	2.0
Do.	Radio Hill underground nickel-cobalt mine (Fox Resources Ltd., 100%)	35 km south of Karratha, WA	0.2
Do.	Ravensthorpe open pit mine (First Quantum Minerals Ltd., 100%)	155 km west of Esperance, WA	1.4
Refinery	Palmer nickel-cobalt refinery (Nickel Consolidated Pty Ltd., Nickel House Pty, and Nickel Process Pty)	Townsville, QLD	3
Copper:			
Mine, Cu content	Boddington open pit and underground gold mine (Newmont Mining Corp., 100%)	130 km southeast of Perth, WA	35
Do.	Cadia Valley open pit and underground gold-copper mine (includes Cadia East, Cadia Hill, <sup>4</sup> and Ridgeway Mines) (Newcrest Mining Ltd., 100%)	25 km south-southwest of Orange, NSW	90
Do.	Cobar underground copper mine (Glencore plc, 100%)	12 km northwest of Cobar, NSW	30
Do.	DeGrussa underground gold-copper mine (Sandfire Resources NL, 100%)	150 km north of Meekatharra, WA	300
Do.	Eloise underground copper mine (FMR Investments Pty Ltd., 100%)	60 km southeast of Cloncurry, QLD	70
Do.	Ernest Henry open pit and underground copper-gold mine (Glencore plc, 100%)	35 km northeast of Cloncurry, QLD	115

See footnotes at end of table.

TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
Copper—Continued:			
Mine, Cu content— Continued	Golden Grove underground zinc-copper mine [MMG Ltd., operator (China Minmetals Group, 100%)]	225 km east of Geraldton, WA	20
Do.	Hellyer underground zinc-lead-copper-silver mine (Bass Metals Ltd., 100%)	80 km south-southwest of Burnie, TAS	1
Do.	Lady Annie copper (solvent extraction-electrowinning) mine (CST Mining Group Ltd., 100%)	100 km north-northwest of Mount Isa, QLD	19
Do.	Leichhardt copper mine (Cape Lambert Resources Ltd., 100%)	110 km northwest of Cloncurry, QLD <sup>3</sup>	10
Do.	Mount Gordon open pit copper (solvent extraction-electrowinning) mine (Aditya Birla Minerals Ltd., 100%)	120 km north of Mount Isa, QLD	50
Do.	Mount Isa underground copper-lead-zinc-silver mine (also Enterprise, George Fisher, and Hilton Mines) (Glencore plc, 100%)	Mount Isa, QLD	190
Do.	Mount Lyell underground copper-gold mine {Copper Mines of Tasmania Pty Ltd. [Sterlite Industries (India) Ltd., 100%]}	2 km northeast of Queenstown, TAS	35
Do.	Nifty open pit copper (solvent extraction-electrowinning) mine (Aditya Birla Minerals Ltd., 100%)	200 km southeast of Marble Bar, WA	25
Do.	Northparkes open pit and underground copper-gold mine (China Molybdenum Co. Ltd., 80%; Sumitomo Metal Mining Oceania Pty. Ltd., 13.3%; SC Mineral Resources Pty. Ltd., 6.7%)	30 km northwest of Parkes, NSW	90
Do.	Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	235
Do.	Osborne underground copper-gold mine (Ivanhoe Australia Ltd., 100%)	120 km northeast of Boulia, QLD	22
Do.	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance Mines) (New Gold Inc., 100%)	8 km south of Cobar, NSW	3
Do.	Prominent Hill open pit and underground copper-gold mine (OZ Minerals Ltd., 100%)	650 km northwest of Adelaide, SA	140
Do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	2
Do.	Tritton underground mine (Straits Resources Ltd., 100%)	Nyngan, NSW	30
Smelter	Mount Isa copper smelter (Glencore plc, 100%)	Mount Isa, QLD	250
Do.	Olympic Dam copper smelter [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	70
Refinery	Olympic Dam copper refinery [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	235
Do.	Townsville copper refinery (Glencore plc, 100%)	Townsville, QLD	300
Diamond thousand carats	Argyle underground mine; previously open pit mine (Rio Tinto Ltd., 100%)	120 km southwest of Kununurra, WA	20,000
Do.	do. Ellendale Mine (includes pipes 4 and 9) (Kimberley Diamond Ltd., 100%)	130 east southeast of Derby, WA	700
Do.	do. Ellendale 9 North Mine <sup>5</sup> (Blina Diamond NL, 100%)	140 east of Derby, WA	500
Diatomite	Barraba open pit diatomite mine (Australia Diatomite Mining Pty. Ltd., 100%)	85 km north-northwest of Tamworth, NSW	25
Do.	Mount Sylvia Diatomite Pty Ltd.	Mount Sylvia Mine, 35 km southeast of Toowoomba, QLD	NA
Do.	Greenvale Silicon Pty Ltd.	Conjuboy Mine, 45 km northwest of Greenvale, QLD	NA
Dolomite	Ardrossan metallurgical dolomite quarry (OneSteel Ltd., 100%)	Northern York Peninsula, SA	650
Do.	Cookes Hill Mine (includes Nickol River and Warrawoona Mines) (Haoma Mining NL, 100%)	Near Port Hedland, WA	400
Feldspar	Broken Hill open pit feldspar mine (includes Bakers, Lady Beryl, and Spar Ridge Mines) (Unimin Australia Ltd., 100%)	42 km southwest of Broken Hill, NSW	15

See footnotes at end of table.

TABLE 2—Continued  
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
Garnet		Port Gregory open pit industrial garnet mine (GMA Garnet Pty. Ltd., 100%)	100 km north of Geraldton, WA	400
Gas:				
Condensate	thousand 42-gallon barrels per day	North West Shelf gas operations {Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]}	130 km offshore Dampier, WA	60
Natural	million cubic meters per day	do.	do.	20
Liquefied natural	million metric tons	do.	Four-train liquefaction plant, Burrup Peninsula, WA	12
Gold:				
Mine	kilograms	Agnew open pit and underground gold mine (Gold Fields Ltd., 100%)	23 km west of Leinster, WA	5,600
Do.	do.	Boddington open pit and underground gold mine (Newmont Mining Corp., 100%)	130 km southeast of Perth, WA	31,000
Do.	do.	Bronzewing underground gold mine (includes Mount McClure, Venus, Success, Cockburn, Corboys, and Mount Joel Mines) (Audax Resources Ltd., 100%)	65 km northeast of Leinster, WA	9,000
Do.	do.	Burnside open pit mines (includes Union Reefs, Brocks Creek, North Point, Princess Louise, Rising Tide, Zapopan, and Fountain Head Mines) (Crocodile Gold Corp., 100%)	Pine Creek, NT	6,500
Do.	do.	Cadia Valley open pit and underground gold-copper mine (includes Cadia East, Cadia Hill, and Ridgeway Mines) (Newcrest Mining Ltd., 100%)	25 km south-southwest of Orange, NSW	25,000
Do.	do.	Doolgunna open pit and underground gold-copper mine (includes DeGrussa Mine) (Sandfire Resources NL, 100%)	140 km north of Meekatharra, WA	270
Do.	do.	Ernest Henry open pit copper-gold mine (Glencore plc, 100%)	35 km northeast of Cloncurry, QLD	3,000
Do.	do.	Garden Well gold mine (Regis Resources Ltd., 100%)	350 kilometres northeast of Kalgoorlie, WA	5,200
Do.	do.	Granny Smith open pit gold mine (includes Wallaby Mine) (Barrick Gold Corp., 100%)	20 km south of Laverton, WA	16,000
Do.	do.	Gwalia underground gold mine (St Barbara Ltd., 100%)	3 km south of Leonora, WA	2,600
Do.	do.	Henty underground gold-silver mine (Unity Mining Ltd., 100%)	30 km north of Queenstown, TAS	3,700
Do.	do.	Hillgrove Mine (Straits Resources Ltd., 100%)	25 km east of Armidale, NSW	650
Do.	do.	Jundee-Nimary open pit and underground gold mine (Newmont Mining Corp., 100%)	45 km northeast of Wiluna, WA	12,000
Do.	do.	Kalgoorlie open pit and underground gold mine [Kalgoorlie Consolidated Gold Mine Pty Ltd., operator (Barrick Gold Australia, 50%, and Newmont Mining Corp., 50%)]	Southeast corner of the Kalgoorlie Boulder Township, WA	25,000
Do.	do.	Kanowna Belle underground gold mine (Barrick Gold Corp., 100%)	18 km northeast of Kalgoorlie, WA	7,000
Do.	do.	Lawlers underground gold mine (Barrick Gold Corp., 100%)	30 km southwest of Leinster, WA	3,000
Do.	do.	Moolart Well gold mine (Regis Resources Ltd., 100%)	100 km north of Laverton, WA	3,000
Do.	do.	Mount Lyell underground copper-gold mine [Sterlite Industries (India) Ltd., 100%]	2 km northeast of Queenstown, TAS	1,000
Do.	do.	Mount Magnet open pit and underground gold mine (includes Hill 50 and Star Mines) (Ramelins Resources Ltd., 100%)	2 km from Mount Magnet, WA	8,500
Do.	do.	Norseman underground gold mine <sup>4</sup> (Norseman Gold Plc, 100%)	Norseman, WA	3,700
Do.	do.	Northparkes open pit and underground copper-gold mine (China Molybdenum Co. Ltd., 80%, and Sumitomo Metal Mining Oceania Pty. Ltd., 20%)	30 km north of Parkes, NSW	1,550
Do.	do.	Osborne underground copper-gold mine (Ivanhoe Australia Ltd., 100%)	120 km northeast of Boulia, QLD	1,000
Do.	do.	Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	1,500
Do.	do.	Paddington open pit and underground gold operation (Noron Gold Fields Ltd., operator) (Zijin Mining Group Co. Ltd., 89%)	35 km north of Kalgoorlie, WA	5,000
Do.	do.	Pajingo underground gold mine (includes Vera-Nancy Mine) (Evolution Mining Ltd., 100%)	60 km south-southeast of Charters Towers, QLD	6,400

See footnotes at end of table.

TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>c</sup>	
<b>Gold—Continued</b>				
Mine— Continued	kilograms	Plutonic open pit and underground gold mine (Barrick Gold Corp., 100%)	180 km northeast of Meekatharra, WA	8,000
Do.	do.	Prominent Hill open pit copper-gold mine (OZ Minerals Ltd., 100%)	650 km northwest of Adelaide, SA	2,200
Do.	do.	Ravenswood open pit mine (includes Nolans, Sarsfield, and Mount Wright Mines) (Resolute Mining Ltd., 100%)	100 km south of Townsville, QLD	3,000
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	1,000
Do.	do.	Saint Ives open pit and underground gold mine (Gold Fields Ltd., 100%)	75 km south-southeast of Kalgoorlie, WA	15,000
Do.	do.	Selwyn underground copper-gold mine (Barrick Gold Corp., 100%)	160 km southeast of Mount Isa, QLD	700
Do.	do.	Stawell underground gold mine (Perseverance Corp. Ltd., 100%)	250 km west of Melbourne, VIC	3,000
Do.	do.	Sunrise Dam open pit mine gold (includes Cleo Mine) (AngloGold Ashanti Ltd., 100%)	55 km south of Laverton, WA	15,000
Do.	do.	Tanami open pit gold mine (includes Central Desert Joint Venture) (Newmont Gold Corp., 100%)	650 km northwest of Alice Springs, NT	15,000
Do.	do.	Telfer copper and gold mine (Newcrest Mining Ltd., 100%)	400 km east southeast of Port Hedland, WA	15,000
Do.	do.	Trident gold mine (Alacer Gold Corp., 100%)	Higginsville, WA	5,000
Do.	do.	Tropicana gold mine (AngloGold Ashanti Australia Pty Ltd., 70% and Independence Group NL 30%)	330 km northeast of Kalgoorlie, WA	16,400
Do.	do.	Wattle Dam gold mine <sup>3</sup> (Tychean Resources Ltd., 100%)	70 km south of Kalgoorlie, WA	3,000
Do.	do.	Wiluna open pit and underground gold mine (Apex Minerals NL, 100%)	7 km south of Wiluna, WA	3,300
Smelter	do.	Gidji Roaster gold smelter (Kalgoorlie Consolidated Gold Mines Pty. Ltd., 100%)	Kalgoorlie, WA	24,300
Refinery	do.	Perth Mint Refinery [Gold Corp. (Government of Western Australia, 100%)]	Newburn, WA	400,000
Gypsum		Gypsum Resources Australia Pty. Ltd., 100%	Lake MacDonnell open pit gypsum mine, near Point Thevenard, SA	1,400
Do.		Dredging of gypsum from surface of Lake MacLeod (Rio Tinto Ltd., 68.4%)	Lake MacLeod, WA	900
<b>Iron and steel:</b>				
Iron ore		Channar open pit iron ore mine [Hamersley Iron Pty. Ltd., 60% (Rio Tinto Ltd., 100%), and China Iron and Steel Industry & Trade Group Corp. (SINOSTEEL) (a China state-owned company), 40%]	70 km south of Tom Price, WA	11,000
Do.		Cloudbreak iron ore mine (includes Chichester Range, Christmas Creek, WhiteKnight, Mount Lewin, Mount Nicholas, and Flinders Mines) (Fortescue Metals Group Ltd., 100%)	Chichester Ranges, East Pilbara, WA	55,000
Do.		Cockatoo Island open pit iron ore mine (BHP Billiton Ltd., 100%)	130 km north northeast of Derby, WA	1,500
Do.		Eastern Range open pit iron ore mine [Hamersley Iron Pty. Ltd., 54% (Rio Tinto Ltd., 100%), and Shanghai Baosteel Group Corp., 46%]	10 km east of Paraburdoo, WA	10,000
Do.		Extension Hill open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	85 km of Perenjori, WA	3,000
Do.		Hamersley Operations (includes Brockman 2, Brockman 4, Marandoo, Mount Tom Price, Nammuldi, Paraburdoo, Western Turner Syncline, and Yandicoogina open pit iron ore mines), Rio Tinto Ltd., 100%	30 km to 85 km northeast, northwest, and south of Tom Price, WA	140,000
Do.		Hope Downs 1 Mine [Hope Downs Iron Ore Pty Ltd. (Hancock Prospecting Pty Ltd. 100%), 50%, and Rio Tinto Ltd., 50%]	75 km northwest of Newman, Pilbara region, WA	30,000
Do.		Hope Downs 4 Mine [Hope Downs Iron Ore Pty Ltd. (Hancock Prospecting Pty Ltd. 100%), 50%, and Rio Tinto Ltd., 50%]	Pilbara region, WA	15,000
Do.		Jimblebar open pit iron ore mine (includes ore from Wheelarra JV) {BHP Iron Ore (Jimblebar) Pty Ltd., 85% [BHP Billiton Ltd., 100%]; ITOCHU Minerals and Energy of Australia, 8%; Mitsui Iron Ore Corp., 7%}	40 km east of Newman, WA	20,000

See footnotes at end of table.

TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
<b>Iron and steel—Continued:</b>			
Iron ore—Continued	JW4 open pit (ore blended with that of Yandi Mine) (BHP Billiton Ltd., 68%; JFE Steel Australia 20%; ITOCHU Minerals and Energy of Australia, 6.4%; Mitsui Iron Ore Corp., 5.6%)	Pilbara region, WA	NA
Do.	Karara open pit iron ore mine (Anshan Iron and Steel Group Corp., 50%, and Gindalbie Metals Ltd., 50%)	110 km south of Yalgoo, WA	8,000
Do.	Koolan Island open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	140 north of Derby, WA	4,000
Do.	Koolyanobbing Central open pit iron ore mine (Portman Ltd., 100%)	50 km north-northeast of Southern Cross, WA	6,000
Do.	Mount Goldsworthy mining associates joint venture (includes the Area C, the Nimingarra, and the Yarric <sup>5</sup> Mines) [BHP Billiton Minerals Pty Ltd. (manager), 85%; ITOCHU Minerals & Energy of Australia Pty Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%]	180 km east of Port Hedland, Pilbara region, WA	42,000
Do.	Mount Gould open pit iron ore mine (Unimin Australia Ltd., 100%)	160 km west of Meekatharra, WA	6,000
Do.	Mount Newman open pit iron ore mine (includes Mount Whaleback orebodies 18, 24, 25, 29, 30 and 35) [BHP Billiton Minerals Pty Ltd., 85%, [BHP Billiton Ltd., 100%]; Mitsui ITOCHU Iron Pty Ltd., 10% [Mitsui & Co. (Australia) Ltd., 100%]; ITOCHU Minerals and Energy of Australia, 5% [ITOCHU Corp., 100%]]	Within 13 km of Newman, Pilbara region, WA	42,000
Do.	Pannawonica (includes Mesa A and J) open pit iron ore mine [Robe River Iron Associates, manager (Rio Tinto Ltd., 53%; Mitsui & Co. (Australia) Ltd., 33%; Nippon Steel Australia Pty. Ltd., 10.5%; Sumitomo Metal Australia Pty. Ltd., 3.5%]	130 km south-southwest of Dampier, Pilbara region, WA	35,000
Do.	Sino Iron iron ore mine (CITIC Pacific Mining Management Pty Ltd., 80% and China Metallurgical Group Corp., 20%)	Cape Preston, 100 km southwest of Karratha, Pilbara region, WA	2,000
Do.	Savage River open pit iron ore mine (Grange Resources Ltd., 100%)	100 km southwest of Burnie, TAS	2,400
Do.	Talling Peak open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	120 northeast of Geraldton, WA	3,000
Do.	West Angelas open pit iron ore mine [Robe River Iron Associates, manager (Rio Tinto Ltd., 53%; Mitsui & Co. (Australia) Ltd., 33%; Nippon Steel Australia Pty. Ltd., 10.5%; Sumitomo Metal Australia Pty. Ltd., 3.5%]	110 km west of Newman, Pilbara region, WA	29,400
Do.	Whyalla open pit iron ore mines (Arrium Steel Ltd., 100%)	270 km northwest of Adelaide, SA	2,600
Do.	Yandi open pit iron ore mine (includes ore from JW4 open pit) [BHP Billiton Minerals Pty Ltd. (BHP Billiton Ltd., 100%), manager, 85%; ITOCHU Minerals & Energy of Australia Pty Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%]	92 km north of Newman, Pilbara region, WA	47,000
Pig iron	Hismelt pig iron plant [Hismelt Corp. Pty Ltd. (Rio Tinto Ltd., 60%; Nucor Corp., 25%; Mitsubishi Corp., 10%; Shougang Corp., 5%)]	Kwinana, WA	800
Steel	Laverton Steel Mill (Arrium Steel Ltd., 100%)	Laverton, Melbourne, VIC	700
Do.	Port Kembla steelworks (Blue Scope Steel Ltd., 100%)	Port Kembla, NSW	2,600
Do.	Smorgon Steel Group Ltd.	Laverton, Melbourne, VIC	700
Do.	do.	Waratch, NSW	285
Do.	Sydney Steel Mill (Arrium Steel Ltd., 100%)	Sydney, NSW	600
Do.	Whyalla steelworks (Arrium Steel Ltd., 100%)	Whyalla, SA	1,200
Kaolin	Axedale Clays open pit kaolin mine (E Clay Pty Ltd., 100%)	18 km east of Bendigo, VIC	50
Do.	Pittong open pit kaolin mine (Imerys Minerals Australia Pty Ltd., 100%)	35 km southwest of Ballarat, VIC	110
Do.	Skardon River open pit kaolin mine (Queensland Kaolin Pty. Ltd., 96.6%, and private, 3.4%)	85 km north of Weipa, QLD	150
<b>Lead:</b>			
Mine, Pb content	Angas zinc mine (Terramin Australia Ltd., 100%)	2 km from Strathalbyn, SA	10
Do.	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	90

See footnotes at end of table.

TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>6</sup>
<b>Lead—Continued:</b>			
Mine, Pb content— Continued	Cannington underground silver-lead-zinc mine (BHP Billiton Ltd., 100%)	85 km southwest of McKinlay, QLD	265
Do.	Century open pit zinc-silver-lead mine (MMG Ltd., 100%)	250 km north of Mount Isa, QLD	90
Do.	Endeavor underground zinc-silver-lead mine (CBH Resources Ltd., 100%)	40 km northwest of Cobar, NSW	45
Do.	Hellyer underground zinc-lead-copper-silver mine <sup>4</sup> (Bass Metals Ltd., 100%)	80 km south-southwest of Burnie, TAS	44
Do.	Mount Isa underground copper-lead-zinc-silver mine (also includes Enterprise, George Fisher, and Hilton Mines) (Glencore plc, 100%)	Mount Isa, QLD	150
Do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	5 km north of Queenstown, TAS	25
Smelter	Mount Isa smelter (Glencore plc, 100%)	Mount Isa, QLD	240
Do.	Port Pirie smelter (Nyrstar Corp., 100%)	5 km north of Queenstown, TAS	235
Lithium, spodumene	Greenbushes open pit and underground tantalite-spodumene mine {Windfield Holding Pty Ltd., operator [Chengdu Tianqi Industry (Group) Co. Ltd., 100%]}	70 km southeast of Bunbury, WA	740
Do.	Mount Cattlin spodumene mine <sup>4</sup> (Galaxy Resources Ltd., 100%)	2 km north of Ravensthorpe, WA	140
Magnesite	Kunwarara open pit magnesite mine (includes Marlborough Mine) [Queensland Magnesite Pty Ltd., operator (Sibelco Group, 100%)]	70 km northwest of Rockhampton, QLD	3,000
Do.	Salt Creek open pit mine (Agricola Mining Pty Ltd., 100%)	70 km southeast of Meningie, SA	NA
Do.	Thuddungra Mine (Orind Australia Pty Ltd., 100%)	38 km northwest of Young, NSW	80
<b>Manganese:</b>			
Mine, concentrate	Bootu Creek open pit manganese mine (OM Holding Ltd., 100%)	110 km north of Tennant Creek, NT	600
Do.	Groote Eylandt open pit manganese mine [Groote Eylandt Mining Co., operator (BHP Billiton Ltd., 60%, and Anglo American Corp., 40%)]	Groote Eylandt, NT	3,100
Do.	Woodie Woodie open pit manganese mine (includes Bells and East Pilbara leases) [Pilbara Manganese Pty Ltd., operator (Consolidated Minerals Ltd., 100%)]	400 km southeast of Port Hedland, WA	1,000
Alloys	Bell Bay Smelter [Tasmanian Electro Metallurgical Co. Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Bell Bay, TAS	250
<b>Nickel:</b>			
Mine, Ni content	Avebury nickel mine (includes Bison, North Avebury, Saxon, and West Viking Mines) [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	Near Zeehan, TAS	7
Do.	Black Swan underground nickel mine <sup>4</sup> (includes Silver Swan Mine) (OJSC MMC Norilsk Nickel, 100%)	53 km northeast of Kalgoorlie, WA	10
Do.	Carnilya Hill open pit mine (Mincor Resources NL, 70%, and View Resources Ltd., 30%)	25 km northeast of Kambalda, WA	5
Do.	Cawse open pit nickel-cobalt mine <sup>4</sup> (OJSC MMC Norilsk Nickel, 100%)	50 km northeast of Kalgoorlie, WA	9
Do.	Cosmos open pit nickel mine <sup>4</sup> (Glencore plc, 100%)	50 km north of Leinster, WA	13
Do.	Flying Fox underground mine (Western Areas NL, 100%)	108 km south of Marvel Loch, WA	15
Do.	Kambalda underground nickel mines (Palmary Enterprises Ltd., 100%)	5 km south of Kambalda, WA	35
Do.	Lake Johnston underground nickel mine <sup>4</sup> (includes Maggie Hays, Maggie Hays Lake, and Emily Ann Mines) (OJSC MMC Norilsk Nickel, 100%)	130 km west of Norseman, WA	12
Do.	Lanfranchi underground mine (includes Deacon, Schmitz, Tramway, and Winner Mines) (Panoramic Resources Ltd., 100%)	42 km south of Kambalda, WA	10

See footnotes at end of table.

TABLE 2—Continued  
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>e</sup>
Nickel—Continued:				
Mine, Ni content— Continued		Leinster open pit and underground nickel mines <sup>5</sup> (BHP Billiton Ltd., 100%)	10 km north of Leinster, WA	44
Do.		Long underground mine (Independence Group NL, 100%)	Near Kambalda East, WA	10
Do.		Miitel underground nickel mine (includes Redross and Mariners Mines) (Mincor Resources NL, 100%)	70 km south of Kambalda, WA	10
Do.		Mount Keith open pit nickel mine includes (Cliffs, Jericho, Venus, and Yakabindie Mines) (BHP Billiton Ltd., 100%)	70 km south-southeast of Wiluna, WA	40
Do.		Murrin Murrin open pit nickel-cobalt mine (Minara Resources Ltd., 60%, and Glencore plc, 40%)	60 km east of Leonora, WA	34
Do.		Radio Hill underground nickel-cobalt mine (Fox Resources Ltd., 100%)	35 km south of Karratha, WA	4
Do.		Ravensthorpe open pit mine <sup>4</sup> (First Quantum Minerals Ltd., 100%)	155 km west of Esperance, WA	39
Do.		Savannah underground mine (Panoramic Resources Ltd., 100%)	120 km north of Halls Creek, WA	8
Do.		Spotted Quoll nickel mine (includes Tim King and Willy Willy Mines) (Western Areas NL, 100%)	114 km south of Marvel Loch, WA	10
Do.		Waterloo underground nickel mine (includes Amorac Mine) (OJSC MMC Norilsk Nickel, 100%)	90 km north of Leonora, WA	5
Smelter		Kalgoorlie nickel smelter (BHP Billiton Ltd., 100%)	Kalgoorlie, WA	100
Refinery		Kwinana nickel refinery (BHP Billiton Ltd., 100%)	Kwinana, WA	67
Do.		Murrin Murrin nickel refinery (Minara Resources Ltd., 60%, and Glencore plc, 40%)	Murrin Murrin, WA	45
Do.		Yabulu nickel-cobalt refinery (Nickel Consolidated Pty Ltd., Nickel House Pty Ltd., and Nickel Process Pty Ltd.)	Townsville, QLD	40
Opal		Many small producers	Andamooka and Coober Pedy areas, SA; Lightning Ridge area, NSW	NA
Petroleum	thousand 42-gallon barrels per day	Exxon Mobil Corp., 100%	Altona Refinery, VIC	120
Do.	do.	Bulwer Island Refinery [BP Amoco Refinery (Bulwer Island) Pty. Ltd., 100%]	Bulwer Island, QLD	69.3
Do.	do.	Geelong Refinery [Shell Refining (Australia) Pty. Ltd., 100%]	Geelong, VIC	110
Do.	do.	Kurnell Refinery (Caltex Australia Ltd., 100%)	Kurnell, NSW	114
Do.	do.	Kwinana Refinery [BP Amoco Refinery (Kwinana) Pty. Ltd., 100%]	Kwinana, WA	138
Do.	do.	Lytton Refinery (Caltex Australia Ltd., 100%)	Lytton, QLD	106
Phosphate rock		Phosphate Hill-Duchess open pit phosphate mine (Incitec Pivot Ltd., 100%)	140 km northwest of Mount Isa, QLD	2,200
Rare earths, rare-earth oxide equivalent	metric tons	Mount Weld Mine (Lynas Corp. Ltd.)	Mount Weld, WA	8,000
Salt		Dampier Salt, solar evaporation salt pans (Rio Tinto Ltd., 68.4%)	Near Dampier, WA	4,200
Do.		Lake MacLeod solar salt and gypsum evaporation pans (Rio Tinto Ltd., 68.4%)	65 km north of Carnarvon, WA	2,900
Do.		Port Hedland solar salt fields (Rio Tinto Ltd., 68.4%)	Port Hedland, WA	3,200
Silica		Itochu Corp., 50%, and Tochu Corp., 50%	Kemerton silica sands dredge, 25 km northeast of Bunbury, WA	450
Silver:				
Mine, Ag content	kilograms	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfermet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	81,200
Do.	do.	Cannington underground silver-lead-zinc mine (BHP Billiton Ltd., 100%)	85 km southwest of McKinlay, QLD	700,000
Do.	do.	Century open pit zinc-silver-lead mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	250 km north of Mount Isa, QLD	3,000

See footnotes at end of table.



TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
Silver—Continued:				
Mine, Ag content—Continued	kilograms	Pasminco Ltd., 100%	Cockle Creek silver smelter, NSW	85,000
Do.	do.	Endeavor underground zinc-silver-lead mine (CBH Resources Ltd., 100%)	40 km northwest of Cobar, NSW	35,000
Do.	do.	Hellyer underground zinc-lead-copper-silver mine (Intec Ltd., 50%, and Polymetals Mining Services Pty Ltd., 50%)	80 km south-southwest of Burnie, TAS	60,000
Do.	do.	Henty underground gold-silver mine (Barrick Gold Ltd., 100%)	30 km north of Queenstown, TAS	1,100
Do.	do.	Mount Isa underground copper-lead-zinc-silver mine (also Enterprise, George Fisher, and Hilton Mines) (Glencore plc, 100%)	Mount Isa, QLD	375,000
Do.	do.	Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	27,000
Do.	do.	Peak underground gold-zinc-lead-copper-silver mine (includes New Cobar, New Occidental, and Perseverance Mines), (GoldCorp Inc., 100%)	8 km south of Cobar, NSW	6,000
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	5 km north of Queenstown, TAS	35,000
Smelter	do.	Port Pirie smelter (Nyrstar Corp., 100%)	do.	450,000
Refinery	do.	Perth refinery [AGR Management Services Ltd. (Australian Gold Alliance Pty Ltd., 40%; Western Australian Mint, 40%; and Johnson Matthey (Australian) Ltd., 20%)]	Newburn, WA	NA
Talc		Three Springs open pit talc mine (Imerys SA, 100%)	330 km north of Perth, WA	150
Tantalum, tantalite, Ta <sub>2</sub> O <sub>5</sub> content	metric tons	Greenbushes open pit and underground tantalite-spodumene mine <sup>3</sup> (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	NA
Do.	do.	Bald Hill tantalite mine <sup>4</sup> (Haddington Resources Ltd., 100%)	60 km southeast of Kambalda, WA	NA
Do.	do.	Wodgina open pit tantalite mine <sup>4</sup> (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	NA
Tin:				
Mine, Sn content	do.	Collingwood underground tin mine <sup>4</sup> (Metals X Ltd., 100%)	35 km south of Cooktown, QLD	3,000
Do.	do.	Greenbushes open pit and underground tantalite-spodumene mine <sup>4</sup> (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	1,000
Do.	do.	Mount Bischoff open pit mine <sup>4</sup> (Metals X Ltd., 50%; L'sea Resources International Holdings Ltd. and YT Parksong Australia Holdings Pty Ltd., 50%)	55 km southwest of Burnie, TAS	6,000
Do.	do.	Renison Bell underground tin mine (Metals X Ltd., 50%; L'sea Resources International Holdings Ltd. and YT Parksong Australia Holdings Pty Ltd., 50%)	136 km south of Burnie, TAS	4,000
Smelter	do.	Greenbushes smelter <sup>4</sup> (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	1,000
Titanium, mineral sands				
Do.		Broken Hill region mines (Cristal Australia Pty Ltd., 100%)	120 km north of Mildura, NSW	NA
Do.		Murray Basin heavy-mineral sands mine (Iluka Resources Ltd., 100%)	80 km southeast of Mildura, VIC	NA
Do.		Perth Basin heavy-mineral sands mine (Iluka Resources Ltd., 100%)	260 km north of Perth, WA	NA
Do.		North Capel open pit heavy-mineral sands mine (Iluka Resources Ltd., 100%)	7 km north of Capel, WA	NA
Do.		North Stradbroke Island heavy-mineral sands dredge (Stradbroke Rutile Pty. Ltd., 100%)	35 km east of Brisbane, QLD	NA
Do.		Tiwest Joint Venture heavy-mineral sands dredge (Exxaro Resources Ltd., 50%, and Tronox Inc., 50%)	180 km north of Perth, WA	NA
Tungsten, W content				
Do.	metric tons	Kara magnetite and scheelite mine (Tasmania Mines Ltd., 100%)	30 km south of Burnie, TAS	50
Do.	do.	Mount Carbine tungsten mine (Carbine Tungsten Ltd., 100%)	75 km west of Cairns, QLD	4,000
Do.	do.	Wolfram Camp molybdenum-tungsten mine (Almonty Industries Inc., 100%)	85 km west of Cairns, QLD	500
Uranium, U <sub>3</sub> O <sub>8</sub> content				
Do.	do.	Beverley in situ leach uranium operation (Heathgate Resources Pty. Ltd., 100%)	300 km northeast of Port Augusta, SA	1,000
Do.	do.	Honeymoon uranium mine (UraniumOne Inc., 100%)	75 km northwest of Broken Hill, SA	400

See footnotes at end of table.

TABLE 2—Continued  
 AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities <sup>1,2</sup>	Annual capacity <sup>3</sup>
Uranium, U <sub>3</sub> O <sub>8</sub> content— Continued	metric tons Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Billiton Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	4,400
Do.	do. Ranger open pit uranium mine (Energy Resources of Australia Ltd., 100%)	230 km east of Darwin, NT	5,000
Vanadium, V <sub>2</sub> O <sub>5</sub> content	do. Windimurra open pit mine vanadium <sup>4</sup> (Precious Metals Australia Ltd., 90%, and Noble Group Ltd., 10%)	100 km east-southeast of Mount Magnet, WA	8
Zinc:			
Mine, Zn content	Angas zinc mine (Terramin Australia Ltd., 100%)	2 km from Strathalbyn, SA	24
Do.	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	360
Do.	Cannington underground silver-lead-zinc mine (BHP Billiton Ltd., 100%)	85 km southwest of McKinlay, QLD	100
Do.	Century open pit zinc-silver-lead mine [MMG Ltd., operator (China Minmetals Group, 100%)]	250 km north of Mount Isa, QLD	500
Do.	Endeavor underground zinc-silver-lead mine (CBH Resources Ltd., a subsidiary of Toho Zinc Co. Ltd. of Japan, 100%)	40 km northwest of Cobar, NSW	125
Do.	Golden Grove underground zinc-copper mine [MMG Ltd., operator (China Minmetals Group, 100%)]	225 km east of Geraldton, WA	150
Do.	Hellyer underground zinc-lead-copper-silver mine <sup>4</sup> (Intec Ltd., 50%, and Polymetals Mining Services Pty Ltd., 50%)	80 km south-southwest of Burnie, TAS	130
Do.	Jaguar underground mine (Jabiru Metals Ltd., 100%)	250 km north of Kalgoorlie, WA	420
Do.	McArthur River open pit mine [McArthur River Mining Pty Ltd., operator (Glencore plc, 100%)]	60 km southwest of Borroloola, NT	143
Do.	Mount Isa underground copper-lead-zinc-silver mine (also Enterprise, George Fisher, Hilton Mines, and Lady Loretta) (Glencore plc, 100%)	Mount Isa, QLD	175
Do.	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance Mines) (New Gold Inc., 100%)	8 km south of Cobar, NSW	8
Do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	100
Smelter	Port Pirie smelter (Nyrstar NV, 100%)	5 km north of Queenstown, TAS	45
Do.	Hobart smelter (Nyrstar NV, 100%)	Hobart, TAS	320
Refinery	Sun Metals zinc refinery [Sun Metals Corp. Pty. Ltd., operator (Korea Zinc Co., 100%)]	Townsville, QLD	170

<sup>3</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Abbreviations used for States and Territories in this table include the following: NSW—New South Wales; NT—Northern Territory; QLD—Queensland; SA—South Australia; TAS—Tasmania; VIC—Victoria; WA—Western Australia.

<sup>2</sup>Abbreviation(s) used for unit(s) of measure in this table include the following: km—kilometer.

<sup>3</sup>Commissioned December 9, 2014.

<sup>4</sup>On care-and-maintenance status.

<sup>5</sup>Closed.

<sup>6</sup>Company announcement in October 2014 indicated that the mine would be placed on care and maintenance in April 2015.

<sup>7</sup>Near depletion; underground mining operations ceased in April 2014, and open pit operations were expected to cease in 2015.

TABLE 3  
AUSTRALIA: RESERVES OF MAJOR MINERAL COMMODITIES IN 2014

Commodity	Reserves <sup>1,2</sup>
Antimony, Sb content	thousand metric tons 139
Bauxite	million metric tons 6,200
Coal:	
Black, recoverable	billion metric tons 56
Brown, recoverable	do. 34
Cobalt, Co content	thousand metric tons 1,070
Copper, Cu content	million metric tons 88
Diamond	million carats 220
Gold, Au content	metric tons 9,080
Iron ore	billion metric tons 54
Lead, Pb content	million metric tons 35
Lithium, Li content	thousand metric tons 1,530
Magnesite, MgCO <sub>3</sub> content	million metric tons 318
Manganese ore	do. 227
Mineral sands:	
Ilmenite	do. 139
Rutile	do. 22
Zircon	do. 38
Molybdenum, Mo content	thousand metric tons 190
Nickel, Ni content	million metric tons 19
Niobium (columbium) and tantalum:	
Niobium (columbium), Nb content	thousand metric tons 205
Tantalum, Ta content	do. 67
Platinum-group metals (Pd, Pt)	metric tons 1
Rare earths (REO plus Y <sub>2</sub> O <sub>3</sub> )	thousand metric tons 3,190
Silver, Ag content	do. 85
Tin, Sn content	do. 413
Tungsten, W content	do. 392
Uranium, U content	do. 1,080
Vanadium, V content	do. 1,900
Zinc, Zn content	million metric tons 63

do. Ditto.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Accessible Economic Demonstrated Resources (AEDR) as of December 2014, as reported by Geoscience Australia. AEDR refers to the portion of total Economic Demonstrated Resources (EDR), which include Joint Ore Reserves Committee-compliant reserves and measured and indicated resources, that is accessible for mining. It excludes resources that are inaccessible for mining because of environmental restrictions, Government policies, or military lands.