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# 2022 Minerals Yearbook

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World rankings for mineral production, shares of world production, and reserves presented in this chapter are derived from the referenced sources. Production data in this chapter may differ from data in other sources because of differences in the date of reporting.

# The Mineral Industry of Australia

By Loyd M. Trimmer III

In 2022, the Commonwealth of Australia continued to be among the world's leading producers of such mineral commodities as alumina, bauxite, coal, cobalt, copper, industrial garnet, gold, ilmenite, iron ore, lead, lithium, manganese, nickel, rare earths, rutile, salt, silver, tin, uranium, zinc, and zircon. In 2022, Australia's lithium production accounted for 51% of world production (excluding United States production); industrial garnet, 40%; iron ore, 38%; zircon, 35% (estimated); rutile, 31% (excluding United States production); bauxite, 26% (excluding United States production); manganese, 15%; alumina, 14%; gold, lead, and zinc, 10% each; rare earths, 6% (estimated); ilmenite, nickel, salt, and silver, 5% each; mined copper and magnesium compounds (estimated), 4% each; and cobalt and tin, 3% each. Australia was ranked fourth in global uranium production, accounting for approximately 9% of world production, and it ranked fifth in global coal production, accounting for 6% of world production (table 1; Energy Institute, 2023, p. 39; World Nuclear Association, 2023; Bolen, 2024; Cordier, 2024; Ewing, 2024; Flanagan, 2024; Friedline, 2024; Gambogi, 2024a, b; Hartingh, 2024; Jaskula, 2024; Kim, 2024; Klochko, 2024; Londono, 2024; McRae, 2024; Merrill, 2024; Olson, 2024; Sheaffer, 2024; Tolcin, 2024; Tuck, 2024).

## Minerals in the National Economy

According to the International Monetary Fund, Australia's nominal gross domestic product (GDP) was 2.45 trillion Australia dollars (AUD) ($1.70 trillion)[1] in 2022 and real GDP increased by 3.7% compared with the GDP in 2021. According to the Australian Bureau of Statistics, the gross value added (GVA) of the mining and quarrying sector decreased by 0.2% to AUD319 billion ($221 billion), accounting for 13.4% of Australia's GDP compared with 13.9% in 2021. Iron ore mining accounted for 36% of the sectoral GVA, followed by coal, 27%; natural gas and petroleum extraction, 25%; other mining (which included nonferrous metals, industrial minerals, and uranium), 8%; and exploration and mining services, 4%. The GVA of exploration and mining support services increased by 2.7% compared with that in 2021; other mining, by 1.3%; and iron ore, by 0.3%. The GVA of coal mining decreased by 7.4%, and that of natural gas and petroleum production, by 0.1% (Australian Bureau of Statistics, 2023b; International Monetary Fund, 2023).

Capital expenditure towards the mineral industry totaled AUD44 billion ($30.5 billion) in 2022, which was an increase of 16% compared with that in 2021. Investment in oil and gas production increased by 40% to AUD12.7 billion ($8.8 billion); exploration and other mining service enterprises, by 34% to AUD1.79 billion ($1.24 billion); coal mining, by 11.2% to AUD7.0 billion ($4.8 billion); and metallic ore mining, by 6.2% to AUD21.3 billion ($14.8 billion). Investments in nonmetallic mineral mining decreased by 6.4% to AUD1.3 billion ($877 million) (Department of Industry, Science and Resources, 2023b, table 13).

The mineral industry employed approximately 200,000 people at the end of June 2022 compared with approximately 189,000 in 2021—increase of 6%—and accounted for about 1.4% of Australia's total employment. Metallic ore mining accounted for 44% of sectoral employment, followed by exploration and other mining services, 23%; coal mining, 18%; petroleum and natural gas extraction, 9%; and nonmetallic mineral mining and quarrying, 7%. Employment increased in exploration and other mining services, metallic ore mining, nonmetallic mineral mining and quarrying, and petroleum and natural gas production compared with that in 2021, whereas employment in coal mining decreased (Australian Bureau of Statistics, 2023a, d).

## Government Policies and Programs

There are two categories of land ownership in Australia: freehold land, which grants the most complete ownership of the land and includes 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 as Crown land. Mineral resources, irrespective of whether they are located on freehold land or Crown land, are owned by the Government of Australia. The right to extract minerals is under the jurisdiction of the respective State governments (Australian Trade and Investment Commission, 2022).

In the Commonwealth of Australia's federated three-tiered Government system—local, States and Territories, and Federal—each State or Territory establishes its own legal framework for the mineral sector and has the authority to grant mining rights. Mineral resources are considered owned by either the Federal or State governments. The Federal Government invests in the collection and publication of geoscientific data through the Department of Industry, Science and Resources, Geoscience Australia, and the Commonwealth Scientific and Industrial Research Organization. The Federal Government sets national policy regarding the mineral sector, including the regulation of offshore mining operations, Foreign Direct Investment (FDI) guidelines, and taxation policy. The administration of offshore hydrocarbon resources is overseen by the National Offshore Petroleum Titles Administrator. The Commonwealth's six States and two Territories manage and allocate mineral and petroleum property rights onshore and in coastal waters (within 3 nautical miles of the shore). States and Territories also regulate mining operations and oversee 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, 2020, p. 18–20, 24).

[1]Where necessary, values have been converted from Australian dollars (AUD) to U.S. dollars (US$) at the annual average exchange rates of AUD1.442=US$1.00 for 2022, AUD1.332=US$1.00 for 2021, and AUD1.452=US$1.00 for 2020.

In March 2022, the Government published the 2022 Critical Mineral Strategy, which was an updated version from 2019 Critical Mineral Strategy and aimed to develop a critical mineral sector to meet growing global demand. The Government sought to do the following: lessen the risk of projects by providing technical support and funding; enable research and development, create standards and accreditation, and develop shared infrastructure to attract investment in the sector; and strengthen international partnerships to secure commercial offtake agreements. Under the 2022 Critical Mineral Strategy, the Government undertook multiple concurrent efforts to expand critical mineral project development, mineral production, and downstream mineral processing. Such initiatives included the Critical Mineral Facility program, the Critical Minerals Accelerator Initiative, and the Modern Manufacturing Initiative (Department of Industry, Science and Resources, 2022a, p. 1, 3, 14–16).

The Export Finance Australia (EFA), which was the Government's export credit agency, administered the AUD2 billion ($1.39 billion) Critical Mineral Facility program to support mineral projects aligned with the country's Critical Mineral Strategy by providing financing. In 2022, notable projects that received loans from the program included Iluka Resources Ltd.'s integrated rare-earths facility, which received AUD1.25 billion ($867 million); Renascor Resources Ltd.'s integrated graphite mine and processing facility, AUD185 million ($128 million); and EcoGraf Ltd.'s battery anode material (BAM) facility expansion, AUD58 million ($40 million) (Department of Industry, Science and Resources, 2022a, p. 3, 15; Export Finance Australia, 2022, p. 6, 19, 54).

In 2022, the Government established the Critical Minerals Accelerator Initiative to support and accelerate early- and mid-stage critical minerals projects by providing funding to companies through grants. Under this program, the Government had allocated about AUD200 million ($140 million) for grants to critical minerals projects around the country. In September, grants were announced for six projects, including a high-purity aluminum expansion project by Alpha HPA Ltd.; the Broken Hill cobalt project by Cobalt Blue Holdings; the Mount Carbine tungsten project by EQ Resources Ltd.; and the integrated graphite ore-to-battery anode business by Mineral Commodities Ltd. (Department of Industry, Science and Resources, 2022a, p. 5, 15; 2022b, c).

The Modern Manufacturing Initiative aimed to move the country's manufacturing base towards specialized, higher value-added production. Under the strategy, the Modern Manufacturing Initiative allocated grant funds to mid-stage critical mineral projects. By 2022, the initiative had allocated AUD274 million ($190 million) to eight projects, including a cobalt and nickel battery material refinery by Pure Battery Technologies Pty. Ltd., a high-purity alumina facility by Alpha HPA, a rare-earth separation plant by Arafura Resources Ltd., and a lithium hydroxide pilot plant by Core Lithium Ltd. The initiative had a total of AUD1.3 billion ($900 million) in funds and was administered by the Department of Industry, Science and Resources and sought to scale-up commercial projects (Department of Industry, Science and Resources, 2020, p. 3, 8; 2022a, p. 16).

## Production

Mineral commodities for which output increased by 10% or more in 2022 compared with that in 2021 included barite, by 248%; tungsten, by 54% (estimated); lithium (spodumene, concentrate), by 40%; ferromanganese, by 36%; abrasives (natural garnet), by 21%; uranium (mine, U content), by 20%; cobalt (refinery, primary), by 18%; copper (solvent extraction), copper (refinery, electrowon), ilmenite and leucoxene, and nickel matte, by 17% each; bituminous coal, by 16% (estimated); metallurgical coal, by 15% (estimated); subbituminous coal, by 13% (estimated); anthracite, by 12% (estimated); cobalt (mine, Co content), by 11%; and platinum (mine, Pt content), by 10%. Mineral commodities for which output decreased by 10% or more in 2022 compared with that in 2021 include rare earths (concentrate), by 33% (estimated); antimony (mine, Sb content), by 32%; lead (secondary), by 21% (estimated); petroleum (refinery products), by 20%; cadmium (refinery, primary), by 15%; lignite, by 14% (estimated); zinc (smelter, primary), by 13%; ammonia (N content), by 12% (estimated); silver, mine and silver, refinery, by 12% each; and lead (mine, Pb content), by 10%. Data on mineral production are in table 1.

## Structure of the Mineral Industry

The Australian Government and State and Territory governments did not engage in the exploration for, nor the development of, mineral resources. All exploration and mining operations were undertaken by private entities. The mineral industry had the largest share of foreign ownership among all of Australia's industries. At the end of June 2022, 69.6% of the total number of mining businesses were solely Australian owned, 8.9% of mining businesses were less than 10% foreign owned, 6.8% of mining businesses were between 10% and 50% foreign owned, and 14.7% of mining businesses were greater than 50% foreign owned. Table 2 is a list of major mineral industry facilities (Geoscience Australia, 2020, p. 18; Australian Bureau of Statistics, 2023c, table 6).

## Mineral Trade

In 2022, Australia's total exports of goods were valued at AUD596 billion ($413 billion), which was an increase of 30% compared with that in 2021. Australia's nonfuel mineral exports totaled AUD219 billion ($152 billion) in 2022, which was a decrease of 6% compared with that in 2021. The value of Australia's mineral fuel exports increased by 97% to AUD253 billion ($175 billion) in 2022. The leading mineral commodity in terms of export value was iron ore, which was valued at AUD124 billion ($86 billion), followed by liquefied natural gas (LNG), AUD90 billion ($62 billion); metallurgical coal, AUD74 billion ($52 billion); thermal coal, AUD68 billion ($47 billion); and gold, AUD24 billion ($16 billion). The largest percent increase in exports, by value, was for that of spodumene concentrate (lithium), which increased by 642%, followed by thermal coal, by 154%; opal gemstones, by 146%; metallurgical coal, by 102%; LNG, by 81%; steel, by 67%; intermediate and refined nickel, by 50%; crude petroleum and other refinery feedstock, by 41%; aluminum metal, by 21%; zinc ores and concentrates, by 17%; alumina, by 15%;

tin, by 14%; and refined zinc and refined copper, by 12% each. The largest percent decrease, by value, was for that of refined silver, which decreased by 51% in 2022, followed by nickel ores and concentrates, by 41%; diamond, by 32%; iron ore, by 20%; and bauxite, by 11%. In 2022, Australia's major export trading partners were China (which received 30% of Australia's total exports, by value), Japan (20%), the Republic of Korea (9%), Taiwan and India (5% each), and the United States (4%) (Department of Foreign Affairs and Trade, 2023, p. 3; Department of Industry, Science and Resources, 2023a, table 17).

In 2022, the value of goods exported to China decreased by 2.4% to AUD176 billion ($122 billion). At yearend, Australia's major mineral commodity exports to China, by volume, included iron ore (including pellets), 746 million metric tons (Mt); zinc ores and concentrates, 1.16 Mt; refined copper, 159,000 metric tons (t); and lead concentrate, 117,000 t. China did not import metallurgical and thermal coal from Australia in 2022 (Department of Foreign Affairs and Trade, 2023, p. 3; Department of Industry, Science and Resources, 2023a, tables 29, 41).

In 2022, exports to Japan increased by 85% to AUD119 billion ($83 billion). During the year, Australia's major mineral commodity exports to Japan included thermal coal, 86 Mt; iron ore (including pellets), 57 Mt; metallurgical coal (45% high quality and 55% other), 40 Mt; aluminum, 354,000 t; zinc concentrates, 204,000 t; and lead concentrates, 38,000 t. Japan did not import copper ores and concentrates from Australia in 2022 (Department of Foreign Affairs and Trade, 2023, p. 3; Department of Industry, Science and Resources, 2023a, tables 29, 41).

In 2022, the Republic of Korea imported a substantial number of commodities from Australia, including zinc ores and concentrates (416,000 t), copper ores and concentrates (335,000 t), aluminum (317,000 t), and lead concentrate (126,000 t), accounting for 20%, 23%, and 43% of Australia's total exports of those commodities, respectively, by volume. The Republic of Korea also imported 48 Mt of iron ore from Australia in 2022 (Department of Industry, Science and Resources, 2023a, tables 29, 41).

India received 28% of Australia's metallurgical coal exports, followed by Japan (25%) and the Republic of Korea (14%). China, Malaysia, and Taiwan were substantial importers of refined copper from Australia, accounting for 41%, 25%, and 12% of Australia's exports of refined copper, respectively. China received the largest share of Australia's gold bullion (refined and unrefined) exports, accounting for 37%, followed by Hong Kong, 24%, and Singapore, 12% (Department of Industry, Science and Resources, 2023a, tables 29, 41).

In 2022, Australia's total imports of goods increased by 26% to AUD434 billion ($301 billion). The value of Australia's mineral imports increased by 69% to AUD83 billion ($58 billion). The leading mineral import category was petroleum refinery products valued at AUD55 billion ($38 billion), followed by crude petroleum (including other refinery feedstock), AUD11 billion ($7.4 billion), and gold bullion (refined and unrefined), AUD7 billion ($4.8 billion) (Department of Foreign Affairs and Trade, 2023, p. 6; Department of Industry, Science and Resources, 2023a, table 19).

## Commodity Review

### *Metals*

**Bauxite and Alumina.**—Western Australia remained Australia's leading bauxite-producing State, accounting for nearly 51% of the country's bauxite production in 2022, followed by Queensland, 38%, and the Northern Territory, 11%. In 2022, Rio Tinto Ltd. produced 34.5 Mt of bauxite from the Weipa/Ely project, which included the Amrun, the Andoom, and the East Weipa Mines, and 11.5 Mt from the Gove Mine. At yearend 2022, probable and proven ore reserves of the Amrun Mine were 801 Mt grading 54.6% aluminum oxide; the Andoom and the East Weipa Mines, 59 Mt grading 51.7% aluminum oxide; and the Gove Mine, 56 Mt grading 50.5% aluminum oxide. Alcoa of Australia Ltd. (Alcoa Corp. of the United States, 60%, and Alumina Ltd., 40%), which operated the Darling Range Mines, produced 31.4 Mt of bauxite in 2022. Probable and proven ore reserves at Darling Range were 401.6 Mt grading 32.1% aluminum oxide (table 2; Alcoa Corp., 2023, p. 29, 30, 32; Department of Industry, Science and Resources, 2023a, table 23; Rio Tinto plc, 2023, p. 281, 284).

**Iron Ore.**—Western Australia remained Australia's leading iron-ore-producing State, accounting for more than 99% of the country's total iron ore production in 2022. South Australia, Tasmania, and the Northern Territory accounted for 0.6%, 0.3%, and 0.2%, respectively. The Pilbara Region in northwestern Western Australia was the country's major iron-ore-producing region and was where Rio Tinto, which was the leading iron ore producer in Australia, owned 17 mines and 4 port terminals. In 2022, Pilbara operations produced 324 Mt of iron ore compared with 320 Mt in 2021. In June 2022, Rio Tinto commenced production at the $3.1 billion Gudai-Darri (formerly known as Koodaideri) replacement iron ore mine. The mine had a production capacity of 43 million metric tons per year (Mt/yr) and was expected to have a mine life of more than 40 years (Department of Industry, Science and Resources, 2023a, table 28; Rio Tinto plc, 2023, p. 32, 36–39).

**Lead, Silver, and Zinc.**—Queensland remained Australia's leading lead-, silver-, and zinc-producing State. In 2022, Queensland accounted for 61% of the country's lead ore and concentrate (Pb content) production, followed by New South Wales, 18%; the Northern Territory, 13%; Tasmania, 7%; and Western Australia, 0.6%. Queensland accounted for 59% of the country's silver production, followed by New South Wales, 13%; Western Australia, 11%; Tasmania, 7%; and the Northern Territory and South Australia, 5% each. Queensland accounted for 57% of the country's zinc ore and concentrate (Zn content) production, followed by the Northern Territory, 22%; New South Wales, 8%; Western Australia, 7%; and Tasmania, 5% (Department of Industry, Science and Resources, 2023a, tables 29, 34, 37).

Australia's production of primary refined zinc decreased by 13% in 2022 compared with that of 2021. The decrease was due mainly to operational challenges at the Hobart smelter that resulted from an unplanned reduction in processed feedstock. The smelter was operated by Nyrstar NV, which was a subsidiary of Trafigura Group Pte. Ltd. of Singapore. In April, Nyrstar announced plans to construct a zinc electrolysis plant at its Hobart zinc smelter site in Tasmania. Construction of the AUD400-million ($277 million) project was expected to last 28 months. In October, the Government announced an AUD50 million ($35 million) grant towards the construction of the zinc electrolysis plant. In 2022, Nyrstar's operations accounted for 75% of the Australia's refined lead exports and 60% of its zinc exports. The company employed about 800 people at the Port Pirie refinery and about 500 people at the Hobart smelter (table 1; Nyrstar, 2022a, b; 2023, p. 2, 3; Trafigura Group Pte. Ltd., 2022, p. 76).

**Nickel and Cobalt.**—In 2022, the country produced 155,000 t of mined nickel, which was an increase of 3% compared with the 151,000 t produced in 2021. The total capacity of mined nickel contained in ore in Australia was 285,000 metric tons per year (t/yr). The country produced 5,786 t of mined cobalt, which was an increase of 11% compared with the 5,232 t produced in 2021. Western Australia accounted for the majority (99%) of the country's mined nickel production in 2022; Tasmania accounted for the remainder. In 2022, the quantity of exports of intermediate and refined nickel was estimated to have increased by 10% to 133,000 t; the export value was estimated to have increased by 50% to AUD4.4 billion ($3.1 billion). The increase in the export value was due to an increase in the spot price of nickel. The export volume of nickel ores and concentrates decreased by 45% to 113,000 t; the export value decreased by 41% to AUD339.2 million ($235 million) (tables 1, 3; Department of Industry, Science and Resources, 2023a, table 31).

In the first quarter of 2022, Mincor Resources NL completed construction and commissioning activities at its 100%-owned Kambalda nickel operation, which included the Cassini, Durkin North, Long, and Otter Juan nickel mines. The company started production at the Kambalda nickel operation during the year and delivered ore to BHP's wholly owned Kambalda nickel concentrator for toll processing. In April, Mincor and BHP amended and finalized an ore tolling and concentrate purchase agreement previously established in 2019; BHP began processing the ore at the Kambalda nickel concentrator in June. The Kambalda nickel operation was expected to produce about 71,000 t of mined nickel during a 5-year period of operation; the Kambalda nickel operation had a capacity of 16,000 t of nickel (table 2; Mincor Resources NL, 2020, p. 1, 5; 2022, p. 9, 10, 25, 50).

In 2022, IGO Ltd. produced nickel from the Nova and Forrestania Mines. In June, the company acquired 100% equity interest in Western Areas Ltd., which owned the Cosmos Mine project and the Forrestania Operations. The Cosmos Mine project, which included the Odysseus underground mine, remained on care-and-maintenance status during the year. During the year, IGO began development of the Odysseus Mine and planned to begin production in mid-2023; the mine had a capacity of 20,000 t/yr of mined nickel (Ni content in concentrate). In partnership with Wyloo Metals Pty. Ltd., IGO was in the process of conducting a feasibility study for downstream processing of nickel concentrates to produce battery-grade nickel sulfates in Australia (table 2; IGO Ltd., 2022, p. 1, 25, 27, 34, 93).

In July 2022, Mallee Resources Ltd. acquired 100% interest in Allegiance Mining Pty. Ltd., which owned the Avebury sulfide nickel mine and processing plant located near Zeehan, Tasmania. At the time of acquisition, the mine was on care-and-maintenance status. Mallee restarted underground mining operations in July to produce nickel ore and subsequently restarted processing plant operations in September to produce nickel concentrate. The mine had a 900,000-t/yr throughput capacity, and the indicated and inferred mineral resources were 29.3 Mt of nickel ore grading 0.9% nickel using a 0.4% cutoff grade. The Avebury Mine was the only nickel-producing mine outside of Western Australia (table 2; Mallee Resources Ltd., 2022, p. 3, 4, 11, 70).

**Rare Earths.**—In 2022, the country was estimated to have produced 16,000 t of rare-earth-oxide equivalent, which was an estimated 33% decrease compared with that in 2021. Lynas Rare Earths Ltd. produced rare-earth concentrate from the Mount Weld Mine in Western Australia for export to the company's processing plant in Malaysia. In August, the company announced an AUD500 million ($347 million) capacity expansion project at the mine and concentration plant. The expansion was expected to increase throughput capacity at the Mount Weld Mine to 1.3 Mt/yr from 300,000 t/yr, which would enable the Malaysian plant to increase its planned production to 12,000 t/yr of neodymium praseodymium equivalent oxide by 2024 from the current (in 2022) 7,000 t/yr. Proved and probable reserves at the Mount Weld Mine were reported to be 18.1 Mt containing 8.1% total rare-earth-oxide equivalent using a 2.5% cutoff grade (tables 1, 2; Lynas Rare Earths Ltd., 2022a, p. 2, 4, 69, 107, 108; 2022b, p. 10; 2022c).

In 2022, Lynas Rare Earths continued the development of the Kalgoorlie rare-earth processing facility in Kalgoorlie-Boulder, Western Australia. In February, the company received Government approval for construction of the processing facility, which continued at yearend. The Kalgoorlie facility planned to use a cracking and leaching process to produce mixed rare-earth carbonate from the rare-earth mineral concentrate produced at the Mount Weld Mine. The processing facility also was expected to process third-party concentrates. The company planned to export the mixed rare-earth carbonate to the Lynas Malaysia plant and to a proposed rare-earth processing facility in the United States. Lynas Rare Earths planned to start operations at the Kalgoorlie facility in July 2023. In 2021, Lynas Rare Earths was awarded an AUD14.8 million ($10.3 million) grant under the Government's Modern Manufacturing Initiative for construction of the Kalgoorlie facility (Lynas Rare Earths Ltd., 2021; 2022a, p. 2, 6, 25).

In 2022, Iluka began construction of the integrated Eneabba rare-earth-oxide facility. The facility, which would be the first rare-earth-oxide facility in the country, was expected to have a nameplate capacity of between 17,500 and 23,000 t/yr of rare-earth oxides. For the past three decades, the company had stockpiled monazite and xenotime byproduct from mineral-sand processing in an open pit in Eneabba, Western Australia. Iluka produced monazite-zircon concentrate from this stockpile. In June, the company began further processing of monazite-zircon concentrate to produce a 90% monazite concentrate (which the company planned to use as a direct feed into the planned facility) and a separate zircon-ilmenite concentrate. The separation operation at Eneabba would have the potential to process third party concentrate as well. Production was expected to include dysprosium, neodymium, praseodymium, and terbium. Iluka expected the separation operations to begin production in 2025 (Iluka Resources Ltd., 2023, p. 39).

### *Industrial Minerals*

**Graphite.**—In September, International Graphite Ltd. commissioned the graphite micronizing pilot plant at Collie to produce a micronized and spheroidized graphite product, which after purification, would be used as a finished battery anode product for lithium-ion battery anodes. By March 2023, the company planned to complete a feasibility study for a 3,000-t/yr graphite-processing plant and complete engineering cost studies for their BAM plant. International Graphite continued exploration of the Springdale graphite project, located near Hopetoun in the Albany Frazer Belt. As of 2022, inferred mineral resources of the Springdale project were 15.6 Mt of ore grading 6% total graphite content (International Graphite Ltd. 2022, p. 3, 7–9; 2023, p. 5–8).

In 2022, Renascor Resources Ltd. continued exploration and development of its 100%-owned Siviour graphite project and the development of a BAM facility. In February, the Government conditionally approved an AUD185 million ($128 million) loan for the development of the Siviour project and a BAM plant. The Siviour deposit, which is located in South Australia west of Arno Bay, and had proven reserves of 15.8 Mt of ore grading 8.4% total graphitic content, was the second largest graphite deposit in the world. During the fourth quarter of 2022, the company received approval from the South Australian Department of Energy and Mining for the proposed mine and concentrator facilities at the project, which allowed Renascor to commence development of the mine. The approved mining plan permitted the company to process up to 1.65 Mt/yr of ore and produce 150,000 t/yr of graphite concentrate. Renascor planned a two-staged startup of operations at Siviour; stage 1 was planned to begin with a processing capacity of 825,000 t/yr of ore and 78,000 t/yr of graphite concentrate. At yearend, the company continued a drilling campaign at the northwestern extension of the Siviour deposit (Renascor Resources Ltd., 2022, p. 14, 16, 28; 2023, p. 1, 9, 10).

Renascor also continued the development of a BAM plant, which was expected to be located about 20 km east of Port Adelaide. The plant would process graphite concentrate from the Siviour project to produce purified spherical graphite (PSG); Renascor sought to be a vertically integrated producer of PSG. During the first stage, about 60,000 t/yr of graphite concentrate from the Siviour project was expected to serve as feedstock for the BAM plant to produce 28,000 t/yr of PSG. Renascor initially had planned to increase the capacity to produce PSG at the BAM plant during stage 2 of development. However, at yearend, the company continued work on an optimized feasibility study to assess a plan to increase the production capacity of PSG from a previously planned initial startup capacity of 28,000 t/yr of PSG and an accelerated development and construction schedule. The company entered into four nonbinding offtake agreements totaling 60,000 t/yr of PSG with POSCO Ltd. of the Republic of Korea (30,000 t/yr), Hanwa Co. Ltd. of Japan (10,000 t/yr), Jiangxi Zhengtuo New Energy Technology Co. Ltd. of China (10,000 t/yr), and Shanxi Minguang New Material Technology Co. Ltd. of China (10,000 t/yr) (Renascor Resources Ltd., 2022, p. 3, 14, 21; 2023, p. 3, 10).

In 2022, Quantum Graphite Ltd. completed the definitive feasibility study for the first stage of the Uley 2 flake graphite project, which was located about 20 km west–southwest of Port Lincoln on South Australia's Eyre Peninsula. The Uley 2 project consisted of recommissioning the Uley 1 graphite mine and processing plant to produce high-purity large flake graphite powders, and the development of the Uley 2 deposit. In 2022, the company conducted site construction for the installation of a graphite processing facility. The project was expected to produce 55,000 t/yr of high-purity large flake graphite and would have a mine life of 12 years. The Uley 2 deposit had proved and probable mineral reserves of 4 Mt grading 11.9% total graphite content as of December 2019. In May 2022, the company signed a 5-year offtake agreement with MRI Trading AG of Switzerland for the entire production of flake graphite from Uley 2 (Quantum Graphite Ltd., 2021; 2022, p. 1, 3, 4; 2023, p. 1, 4).

**Lithium.**—In 2022, the country produced 2.75 Mt of spodumene concentrate and ore, which was an increase of 40% compared with production of 1.97 Mt in 2021. The first production of lithium hydroxide was in 2022 and totaled 2,449 t. During the year, export volumes of spodumene ores and concentrates increased by 35% to 2.7 Mt; the value of spodumene concentrate and ore exports increased by 642% to AUD12.1 billion ($8.4 billion). The increase in the value of exported spodumene ores and concentrates was due to the substantial increase in the spot price of spodumene concentrate and the increase in the quantity of exports (table 1; Department of Industry, Science and Resources, 2023a, table 30).

In 2022, Pilbara Minerals Ltd. produced 517,923 t of spodumene concentrate, which was an increase of 60% compared with production of 324,217 t in 2021. In the third quarter of 2022, Pilbara completed the recommissioning and rampup of the Ngungaju processing plant to nameplate capacity of 200,000 t/yr of spodumene concentrate. The company acquired the plant in 2021 and commenced a staged commissioning; the plant had been put into care-and-maintenance status in late 2020 owing to the previous owner's insolvency. The company also completed the commissioning of the Pilgan plant improvement project, which increased the plant's production capacity to 380,000 t/yr from 330,000 t/yr of spodumene concentrate. Pilbara started construction of the P680 Expansion project at the Pilgangoora Mine, which was expected to add 100,000-t/yr of capacity to the Pilgan plant and increase the total capacity of the Pilgangoora Mine to 680,000 t/yr of spodumene concentrate. The project was expected to be completed and operational by December 2023. The company continued feasibility study work on the P1000 Expansion project, which would increase the total capacity of the Pilgangoora operations to 1 Mt/yr of spodumene concentrate. Pilbara produced 19 t of tantalite concentrate compared with 58 t in 2021. The decrease in tantalite production was attributed to the low tantalite content of mined ore and to downtime during maintenance (Burton, 2020; Pilbara Minerals Ltd., 2021, p. 18; 2022, p. 5, 16; 2023a, p. 11, 29, 30, 38; 2023b, p. 5).

In May 2022, MARBL Lithium JV, a joint venture between Albemarle Corp. (60%) of the United States and Mineral Resources Ltd. (40%), resumed production of spodumene concentrate at the Wodgina hard rock lithium mine. The mine had been idled since 2019 owing to the lack of demand for lithium. During the year, the company's processing trains 1 and 2 produced concentrate; train 3 was completed and was expected to be commissioned in the first half of 2024. The company continued to assess the construction of a fourth train. The mine produced about 5,000 t of lithium contained in spodumene concentrate in 2022. The mine had indicated mineral resources of 21 Mt of lithium ore grading 1.36% lithium oxide (Mineral Resources Ltd., 2022, p. 9, 37, 42; Albemarle Corp., 2023, p. 4, 17, 29–30).

Talison Lithium Australia Pty. Ltd., a joint venture owned by Tianqi Lithium Energy Australia Pty. Ltd. (TLEA) (51%) and Albemarle Corp. (49%), operated the Greenbushes lithium mine. Tianqi Lithium Energy was a joint venture owned by Tianqi Lithium Corp. (51%) of China and IGO Ltd. of Australia (49%). In 2022, production at the Greenbushes Mine increased by 46% to about 38,800 t of lithium contained in spodumene concentrate. The increase was attributed to the commissioning of both an additional chemical-grade plant and a tailings retreatment plant. In March 2022, Talison announced plans for the construction of another chemical-grade plant. which was expected to have a production capacity of 520,000 t/yr of spodumene concentrate and to be completed in early 2025. The mine contained probable mineral reserves of 157 Mt of lithium ore grading 1.91% lithium oxide (table 2; IGO Ltd., 2022, p. 29, 30; Albemarle Corp., 2023, p. 29, 31).

In May, TLEA began production of battery-grade lithium hydroxide at its 100%-owned Kwinana lithium hydroxide refinery, which had two 24,000-t/yr lithium hydroxide trains for a total planned nameplate capacity of 48,000 t/yr. Production at the refinery represented the first refined lithium produced in the country. Train 1 commenced production in May and entered commercial production by yearend and train 2 was under construction. The refinery, which was located about 35 km south of Perth in Western Australia, processed spodumene concentrate from the Greenbushes Mine (IGO Ltd., 2022, p. 2, 30; 2023, p. 8; Tianqi Lithium Energy Australia Pty. Ltd., 2022).

In July, the Kemerton lithium hydroxide plant entered production. The plant, which was located near Bunbury in Western Australia and was owned by MARBL Lithium JV, had two 25,000-t/yr lithium hydroxide trains for a total planned nameplate capacity of 50,000 t/yr of lithium hydroxide. Train 1 entered production in July 2022. Train 2 was completed and was undergoing commissioning at yearend. The plant processed spodumene concentrate from the Greenbushes Mine (Mineral Resources Ltd., 2022, p. 38, 77; 2023, p. 7).

### *Mineral Fuels*

**Coal.**—In 2022, Queensland remained Australia's leading State in the production of coal (all types), accounting for 58% of the coal produced in the country, followed by New South Wales, 41%; and Western Australia, 1%. In 2022, 20.8 Mt of coal was produced at the Loy Yang Mine, followed by the Moorlarben Mine, 17.6 Mt; the Goonyella Riverside Mine, 16.7 Mt; the Mount Arthur Mine, 14.2 Mt; and the Yallourn Mine, 14.1 Mt (table 2; Department of Industry, Science and Resources, 2023a, table 24; Mining Technology, 2023b).

In 2022, Australia's exports of seaborne coal accounted for 28% of the total global seaborne coal exports and ranked second behind Indonesia. Total exports of coal decreased by 5% from 2021 to 340 Mt. Australia continued to contend with China's embargo on imports of coal from Australia in 2022, which had been in place since 2020. In 2022, Australia's export destinations for coal included Japan, which imported 35% of Australia's coal exports; India, 16%; the Republic of Korea, 14%; Taiwan, 9%; and the European Union, 8% (table 3; Dry Bulk Market, 2023; Mining Technology 2023a).

## Reserves and Resources

Under Australia's National Classification System for Identified Mineral Resources, Economic Demonstrated Resources (EDR) was used as a collective term for mineral resources the Government has determined to be economic. Notable EDR increases in 2022 compared with those in 2021 were manganese ore, by 79%; platinum group elements, by 45%; rare earths, by 34%; rutile, by 15%; zircon, by 12%; ilmenite and nickel, by 11% each; cobalt, by 10%; potash, by 7%; graphite, by 6%; and lithium, molybdenum, tantalum, and vanadium, by 5% each. Accessible EDR (AEDR)[2] for select minerals at the end of 2022 are shown in table 5 (Geoscience Australia, 2023, table 4).

In 2022, expenditures on exploration in Australia increased by 7% to AUD5.04 billion ($3.5 billion). Nonpetroleum mineral exploration accounted for 80% of total exploration expenditures compared with the total in 2021, whereas onshore petroleum exploration accounted for 12%, and offshore petroleum exploration, 8%. Exploration expenditures for nonpetroleum minerals increased by 13%. Exploration expenditures for onshore petroleum decreased by 17% and offshore petroleum, by 3%. In 2022, for exploration of minerals other than petroleum, existing deposits accounted for 69% of the exploration expenditures and new deposits accounted for the remaining 31%. A total of 11,685 km was drilled for exploration of minerals other than petroleum; this was a 12% decrease compared with the total depth drilled in 2021 (Australian Bureau of Statistics, 2023e).

Gold deposits represented the largest share of exploration expenditures among minerals other than petroleum in 2022, accounting for 38% of the total, followed by iron ore deposits, 18%; copper deposits, 14%; other minerals, which included construction sand and gravel, crushed stone, garnet, staurolite, tin, and tungsten (scheelite and wolframite), 12%; nickel-cobalt deposits, 7.8%; coal (undifferentiated), 5.9%; silver-lead-zinc deposits, 2.5%; mineral sands, 1.7%; uranium, 0.5%; and diamond, 0.1%. Exploration expenditures on uranium increased by 80% in 2022, followed by other minerals, which increased by 67%; mineral sands, by 48%; silver-lead-zinc, by 41%; nickel-cobalt, by 33%; iron ore, by 28%; coal (undifferentiated), by 7%; and copper, by 4%. Exploration expenditures for diamond decreased by 52% in 2022, and for gold, by 5% (Australian Bureau of Statistics, 2023e–i).

[2]Accessible EDR was defined by Geoscience Australia as EDR that excludes resources subject to legal or land-use restriction.

## Outlook

According to the International Monetary Fund, the growth rates of Australia's real GDP are expected to be 1.8% in 2023 and 1.2% in 2024. The country is expected to continue to be a major mineral exporting country in the future. Overall investment in mining and mineral processing is expected to continue to increase as the country makes efforts to expand downstream mineral processing, particularly for critical minerals. Global demand for battery materials, such as cobalt, graphite, lithium, and nickel, is likely to increase in the coming years. As a significant global producer of cobalt, lithium, and nickel, the country is well positioned to expand production of these minerals and metals, as several advanced projects are expected to start production in the near term. Lithium production is expected to continue to increase as a result of the expansions at the Pilgangoora Mine and the Wodgina Mine. Production and export of lithium hydroxide are expected to increase in the short term as the Kwinana and Kemerton lithium hydroxide plants continue to ramp up. Nickel and cobalt production are expected to increase as some mines restart production in response to increasing demand. The country is expected to begin producing raw graphite and downstream products in the next a few years as several graphite mining and mineral-processing projects continue to be on track. If the Iluka's rare-earth refinery and the Kalgoorlie rare-earth processing facility can be developed as planned, the country is expected to be able to abate the processing bottlenecks of the rare-earth supply chain and incentivize further development of the country's rare-earth resources (International Monetary Fund, 2023).

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TABLE 1

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1, 2]

(Metric tons, gross weight, unless otherwise specified)

| Commodity | | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| METALS | | | | | | |
| Aluminum: | | | | | | |
| Bauxite | thousand metric tons | 95,948 | 107,423 r | 103,627 | 103,266 r | 100,478 |
| Alumina | do. | 20,062 | 20,239 | 20,837 r | 20,624 r | 19,576 |
| Metal, primary | do. | 1,574 | 1,570 | 1,583 r | 1,559 r | 1,510 |
| Antimony, mine, Sb content[3] | | 2,173 | 2,032 | 3,903 | 3,380 | 2,292 |
| Cadmium, refinery, primary | | 401 r | 218 r | 377 r | 387 r | 328 |
| Cobalt, Co content: | | | | | | |
| Mine, laterite ore, Ni concentrates, and Zn concentrates[4] | | 4,878 | 5,741 | 5,626 | 5,232 r | 5,786 |
| Refinery, metal powder and oxide-hydroxide | | 3,200 | 3,700 | 3,300 | 2,800 | 3,300 |
| Copper: | | | | | | |
| Mine: | | | | | | |
| Concentrates, Cu content | thousand metric tons | 891 r | 900 | 843 r | 778 r | 799 |
| Solvent extraction[5] | do. | 23 | 25 | 25 | 23 | 27 |
| Smelter, primary | do. | 361 | 401 | 399 | 382 r | 390 |
| Refinery, primary: | | | | | | |
| Electrowon | do. | 23 | 25 | 25 | 23 | 27 |
| Other | do. | 356 r | 402 | 405 r | 383 r | 402 |
| Ferroalloys:[6] | | | | | | |
| Ferromanganese | | 148,300 | 114,000 | 84,000 r | 91,000 r | 124,000 |
| Silicomanganese | | 112,900 | 95,000 | 101,000 | 99,000 | 94,000 |
| Gold: | | | | | | |
| Mine, Au content | kilograms | 313,028 | 326,304 | 327,952 r | 307,577 r | 302,642 |
| Refinery, primary and secondary | do. | 342,706 | 323,708 | 303,914 | 267,431 | 258,012 |
| Iron ore, mine: | | | | | | |
| Gross weight | thousand metric tons | 903,850 | 917,046 | 918,063 | 922,159 | 944,966 |
| Fe content | do. | 559,701 r | 567,345 r | 567,789 r | 570,161 r | 584,413 |
| Iron and steel: | | | | | | |
| Pig iron | do. | 3,882 | 3,664 | 3,723 | 3,751 | 3,652 |
| Raw steel | do. | 5,775 | 5,493 | 5,489 | 5,822 r | 5,667 |
| Lead: | | | | | | |
| Mine, Pb content | | 446,571 | 500,985 | 494,271 | 485,487 | 437,800 |
| Refinery: | | | | | | |
| Primary | | 155,482 | 89,888 | 133,879 | 137,900 r | 144,000 |
| Secondary, excluding remelt[e] | | 33,000 | 35,000 | 35,000 | 29,000 | 23,000 |
| Manganese, mine, ore: | | | | | | |
| Gross weight | thousand metric tons | 8,193 | 7,545 | 7,976 | 7,900 r | 7,169 |
| Mn content | do. | 3,475 | 3,177 | 3,331 | 3,252 r | 3,044 |
| Nickel: | | | | | | |
| Mine, Ni content | do. | 160 | 159 | 169 | 151 | 155 |
| Smelter, matte[7] | do. | 11 | 17 | 21 | 29 | 34 |
| Refinery[8] | | 114,517 | 106,470 | 115,800 | 98,970 | 96,500 |
| Platinum-group metals, mine, elemental content:[e, 9] | | | | | | |
| Palladium | kilograms | 420 | 380 | 410 | 370 r | 380 |
| Platinum | do. | 120 | 110 | 110 | 100 | 110 |
| Total | do. | 540 | 490 | 520 | 470 r | 490 |
| Rare earths, mineral concentrates, rare-earth-oxide equivalent[e] | | 21,000 | 20,000 | 20,000 | 24,000 | 16,000 |
| Silicon, metal[e] | | 40,000 | 49,000 | 43,000 | 51,000 | 49,000 |
| Silver: | | | | | | |
| Mine, Ag content | | 1,254 | 1,325 | 1,337 | 1,330 | 1,169 |
| Refinery | | 865 | 928 | 936 | 931 | 818 |
| Tantalum, mine, tantalite concentrates, Ta content | kilograms | 32,000 | 67,000 | 42,000 | 44,000 | 46,000 |
| Tin, mine, Sn content | | 6,871 | 7,738 | 8,118 | 8,772 | 9,001 |
| Titanium, mineral concentrates:[e] | | | | | | |
| Ilmenite and leucoxene | thousand metric tons | 1,400 | 1,000 | 1,100 | 600 r | 700 |
| Rutile | do. | 200 | 200 | 200 | 200 | 200 |

See footnotes at end of table.

TABLE 1—Continued

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1, 2]

(Metric tons, gross weight, unless otherwise specified)

| Commodity | | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| METALS—Continued | | | | | | |
| Tungsten, mine, concentrates, W content[e] | | 20 | 20 | 100 | 130 | 200 |
| Zinc: | | | | | | |
| Mine, Zn content | thousand metric tons | 1,147 | 1,337 | 1,315 | 1,315 | 1,244 |
| Smelter, primary | do. | 490 | 436 | 447 | 433 [r] | 378 |
| Zirconium, mineral concentrates[e] | do. | 530 | 470 | 400 | 500 [r] | 500 |
| INDUSTRIAL MINERALS | | | | | | |
| Abrasives, garnet, natural | | 360,133 | 352,978 | 296,051 | 321,340 | 387,894 |
| Barite | | 6,534 | 1,982 | -- | 1,127 | 3,922 |
| Cement, hydraulic[e] | thousand metric tons | 10,200 | 9,700 [r] | 9,600 | 9,800 | 10,000 |
| Clay:[e] | | | | | | |
| Bentonite | | 71,800 | 49,500 | 43,000 | 47,000 [r] | 47,000 |
| Fuller's earth, attapulgite | | 10,000 | 8,000 | 10,000 [r] | 12,000 [r] | 12,000 |
| Kaolin | | 168,000 | 149,000 | 170,000 | 170,000 | 170,000 |
| Diamond, natural: | | | | | | |
| Gem | thousand carats | 281 [e] | 260 [e] | 219 [e] | -- | -- |
| Industrial | do. | 13,800 [e] | 12,700 [e] | 10,700 [e] | -- | -- |
| Total | do. | 14,100 [e] | 13,000 [e] | 10,900 [e] | -- | -- |
| Diatomite[e] | | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| Feldspar, includes nepheline syenite[e] | | 9,500 | 9,000 | 9,000 | 1,200 | 1,200 |
| Gypsum, mine[e] | thousand metric tons | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 |
| Lime[e] | do. | 2,000 | 1,980 | 1,980 | 2,000 | 1,990 |
| Lithium: | | | | | | |
| Spodumene, concentrates | | 1,965,912 [r] | 1,588,263 [r] | 1,477,240 [r] | 1,966,744 [r] | 2,754,728 |
| Refinery, lithium hydroxide | | -- | -- | -- | -- | 2,449 |
| Magnesite[e, 10] | | 265,000 | 320,000 | 850,000 [r] | 890,000 [r] | 860,000 |
| Nitrogen, ammonia, N content[e] | | 1,300,000 | 1,500,000 | 1,600,000 | 1,700,000 | 1,500,000 |
| Perlite[e] | | 1,800 | 1,700 | 3,000 | 3,500 | 3,500 |
| Phosphate rock:[e] | | | | | | |
| Gross weight | | 2,500,000 | 2,200,000 | 2,500,000 | 2,500,000 | 2,500,000 |
| $P_2O_5$ content | | 680,000 | 480,000 | 680,000 | 680,000 | 680,000 |
| Salt | thousand metric tons | 12,894 | 11,474 | 11,542 | 12,214 [r] | 11,681 |
| Stone, sand and gravel, construction:[e] | | | | | | |
| Sand and gravel | do. | 29,000 | 29,000 | 29,000 | 29,000 | 28,000 |
| Stone, crushed | do. | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| Talc and related materials, chlorite, pyrophyllite, steatite, talc[e] | | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| MINERAL FUELS AND RELATED MATERIALS | | | | | | |
| Coal:[e] | | | | | | |
| Anthracite | thousand metric tons | 7,580 [r] | 9,190 [r] | 7,640 [r] | 8,020 [r] | 8,950 |
| Bituminous | do. | 275,000 | 282,000 | 264,000 [r] | 258,000 [r] | 298,000 |
| Lignite | do. | 54,600 | 50,000 [r] | 24,500 [r] | 48,100 [r] | 41,500 |
| Metallurgical | do. | 213,000 | 218,000 | 200,000 [r] | 197,000 [r] | 227,000 |
| Subbituminous | do. | 33,500 | 30,500 | 27,800 [r] | 28,500 [r] | 32,200 |
| Coke, metallurgical | do. | 2,522 | 2,664 | 2,459 | 2,439 | 2,400 [e] |
| Liquefied natural gas | do. | 64,025 | 107,782 | 115,914 | 122,341 | 113,532 |
| Natural gas, marketable | million cubic meters | 130,987 | 154,485 | 154,107 [r] | 156,463 [r] | 163,112 |
| Petroleum: | | | | | | |
| Crude, including condensate | thousand 42-gallon barrels | 103,499 | 131,664 | 128,570 | 122,211 | 113,530 |
| Refinery products | do. | 174,608 | 178,801 | 175,991 | 146,862 | 116,996 |
| Uranium, mine, U content | | 6,560 | 6,550 | 6,170 | 3,790 | 4,560 |

See footnotes at end of table.

TABLE 1—Continued

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1, 2]

[e]Estimated. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through January 23, 2024. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]In addition to the commodities listed, Australia produced dimension stone, dolomite, jade, kyanite, opal, sapphire, silica, sulfuric acid, secondary tin metal, and vanadium, but available information was inadequate to make reliable estimates of output.

[3]Antimony content of antimony ore and concentrates, lead concentrates, and lead-zinc concentrates.

[4]Cobalt content of lateritic nickel ore and nickel concentrate reported by the Government of Western Australia.

[5]The copper content of solvent extraction output at the mine level is the same as electrowon refinery output because copper produced in the solvent extraction and electrowinning process was typically reported only at the refinery level.

[6]Reported by the International Manganese Institute.

[7]Figures exclude toll-refined material.

[8]Products with a nickel content of 99% or more. Includes electrolytic nickel, pellets, briquets, and powder.

[9]Platinum-group metals (PGMs) recovered from nickel ore that was processed domestically. PGMs in exported nickel ore were extracted in the importing countries, such as Japan, and are thought to be included in the production figures for those countries.

[10]Estimates are based on reported data for the calendar year by the Department of State Development, South Australia, and for the fiscal year by the Queensland Department of Natural Resources and Mines.

TABLE 2
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|
| Aluminum: | | | |
| Bauxite | Amrun Mine (Rio Tinto Ltd., 100%) | South of Weipa, QLD | 22,800 |
| Do. | Andoom and East Weipa Mines (Rio Tinto Ltd., 100%) | Weipa, QLD | 12,700 |
| Do. | Bald Hill Mine[3] (Australian Bauxite Ltd., 100%) | Campbell Town, TAS | 40 |
| Do. | Bauxite Hills Mine (Metro Mining Ltd., 100%) | 95 km north of Weipa, QLD | 3,500 |
| Do. | Boddington-Worsley open pit bauxite mine {Worsley Alumina Pty. Ltd., manager [South32 Ltd., 86%; Japan Alumina Associates (Australia) Pty. Ltd.,10%; Sojitz Alumina Pty. Ltd., 4%]} | 14 km south of Boddington, WA | 19,000 |
| Do. | Gove open pit bauxite mine [Pacific Aluminum (Rio Tinto Ltd., 100%)] | 15 km southeast of Nhulunbuy, NT | 13,000 |
| Do. | Gulkula Mine (Gulkula Mining Co., 100%) | 20 km south of Nhulunbuy, NT | 500 |
| Do. | Hey Point Mine (Green Coast Resources Pty. Ltd., 100%) | Near Weipa, QLD | 1,500 |
| Do. | Huntly open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)] | 80 km south of Perth, WA | 26,000 |
| Do. | Willowdale open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)] | 130 km south of Perth, WA | 10,000 |
| Alumina, refinery | Kwinana alumina refinery [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)] | Kwinana, WA | 2,200 |
| Do. | Pinjarra alumina refinery [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)] | Pinjarra, WA | 4,200 |
| Do. | Queensland alumina refinery [Queensland Alumina Ltd., operator (Rio Tinto Ltd., 80%, and United Company RUSAL, 20%)] | Gladstone Region, QLD | 3,950 |
| Do. | Wagerup alumina refinery [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)] | Wagerup, WA | 2,850 |
| Do. | Worsley alumina refinery {Worsley Alumina Pty. Ltd., manager [South32 Ltd., 86%; Japan Alumina Associates (Australia) Pty. Ltd., 10%; Sojitz Alumina Pty. Ltd., 4%]} | Woresly, 20 km northwest of Collie, WA | 4,600 |
| Do. | Yarwun alumina refinery (Rio Tinto Ltd., 100%) | Gladstone Region, QLD | 3,200 |
| Metal, smelter | Bell Bay aluminum smelter [Pacific Aluminum (Rio Tinto Ltd., 100%)] | Bell Bay, TAS | 195 |
| Do. | Boyne Island aluminum smelter [Boyne Smelters Ltd., operator (Rio Tinto Alcan, 59.39%; YKK Aluminum, 9.5%; UACJ Australia, 9.43%; Southern Cross Aluminum, 7.57%; Ryowa Development, 5.27%; Ryowa Development II, 6.34%; Sumitomo Chemical Co. Ltd., 2.5%)] | Boyne Island, QLD | 584 |
| Do. | Portland aluminum smelter [Alcoa of Australia Ltd., 55%, manager; China International Trust Investment Co. (China state-owned company), 22.5%; Marubeni Australia Pty. Ltd., 22.5%] | Portland, VIC | 358 |
| Do. | Tomago aluminum smelter {Tomago Aluminium Co. Pty. Ltd., operator [Pacific Aluminum (Rio Tinto Ltd., 100%), 51.55%; Gove Aluminium Finance Ltd., 36.05%; Hydro Aluminium, 12.40%]} | Tomago, NSW | 590 |
| Antimony | Costerfield underground antimony-gold mine [AGD Mining, operator (Mandalay Resources Ltd., 100%)] | 50 km southeast of Bendigo, VIC | 4 |
| Do. | Hillgrove Mine[4] (Red River Resources Ltd. 100%) | 25 km east of Armidale, NSW | 10 |
| Cement | Adelaide Brighton Cement Pty. Ltd. | 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 |
| Do. | do. | Gladstone, QLD | 1,700 |
| Do. | do. | Railton, TAS | 1,000 |
| Do. | Cockburn Cement Ltd. | Munster, 30 km south of Perth, WA | 700 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|
| Clay: | | | |
| Bentonite | Arumpo open pit bentonite mine (Arumpo Bentonite Pty. Ltd., 100%) | 95 km northeast of Mildura, NSW | 30 |
| Do. | Mantuan Downs Mine (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 |
| 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 |
| Coal | Airly coal mine [Centennial Coal Co. Ltd. (Banpu Public Co. Ltd., 100%)] | 42 km northwest of Lithgow, NSW | 1,900 |
| Do. | Angus Place longwall coal mine[4] (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 (South32 Ltd., 100%)] | 40 km northwest of Wollongong, NSW | 8,800 |
| Do. | Ashton open pit-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. (Centennial Coal Co. Ltd., 100%)] | 65 km west of Newcastle, NSW | 2,000 |
| Do. | Baal Bone coal mine [Oakbridge Pty. Ltd. (Glencore Plc., 78%), 74.1%; Sumitomo Corp., 5%; Toyota Tsusho Mining (Australia) Pty. Ltd., 4.75%; private, 14.44%] | 24 km northwest of Lithgow, NSW | 2,500 |
| Do. | Baralaba North coal mine (Baralaba Coal Co., 100%) | 8 km south of Baralaba, QLD | 4,100 |
| Do. | Bengalla open pit coal mine (New Hope Corp. Ltd., 40%; Wesfarmers Ltd., 40%; Mitsui & Co. Ltd., 10%; Taiwan Power Co., 10%) | 5 km west of Muswellbrook, NSW | 8,600 |
| Do. | Blackwater open pit coal mine (includes South Blackwater) [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)] | 195 km west of Rockhampton, QLD | 14,000 |
| Do. | Broadmeadow open pit-underground coal mine [BHP Mitsubishi Alliance, manager (BHP Group 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. | Byerwen Mine (Qcoal Pty. Ltd., 80%, and JFE Steel Corp., 20%) | 20 km west of Glendale, QLD | 3,000 |
| Do. | Callide coal mine (Anglo Coal Pty. Ltd., 100%) | 120 km southwest of the Port of Gladstone, QLD | 10,700 |
| Do. | Carborough Downs underground coal mine (Vale S.A., 80%; Nippon Steel & Sumitomo Metal Corp. 5%; POSCO, 5%; Tata Steel Ltd., 5%; JFE Shoji, 2.5%; JFE Steel, 2.5%) | Bowen basin, QLD | 2,500 |
| Do. | Caval Ridge open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)] | 160 km west of Mackay, QLD | 5,500 |
| Do. | Clarence underground coal mine [Banpu Public Co. Ltd. (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, 37.13%; Sumitomo Corp., 37.13%; J-Power Australia Pty. Ltd., 22.24%; JCD Australia Pty Ltd, 3.5%)] | 12 km north of Clermont, 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 |

See footnotes at end of table.

(Thousand metric tons unless otherwise specified)

| Commodity | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|
| Coal—Continued | Cook underground mine[4] (Qcoal Pty. Ltd., 100%) | 27 km south of Blackwater, QLD | 2,000 |
| 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[4] (Australian Pacific Coal Ltd., 100%) | 70 km north of Singleton, NSW | 3,750 |
| Do. | Daunia open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)] | 30 km east of Moranbah, 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 (South32 Ltd., 100%)] | 15 km southwest of Wollongong, NSW | 5,200 |
| Do. | Donaldson open pit coal mine (Donaldson Coal Pty. Ltd., 100%) | 5 km southeast of Maitland, NSW | 2,500 |
| Do. | Drake Mine (Qcoal Pty. Ltd., 100%) | 17 km south of Collinsville, QLD | 6,000 |
| 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 northeast 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. (Realm Resources Ltd., 70%; POSCO, 20%; Nippon Steel & Sumitomo Metal Australia Pty. Ltd., 10%), 100%] | Bowen basin, QLD | 3,600 |
| Do. | German Creek and German Creek East open pit-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 Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)] | 140 km southwest of Mackay, QLD | 19,000 |
| Do. | Gregory Crinum open pit-underground coal mine (Sojitz Corp., 100%) | 60 km north of Emerald, QLD | 5,500 |
| Do. | Hail Creek open pit coal mine (Rio Tinto Ltd., 82%; Nippon Steel Australia Pty. Ltd., 8%; Marubeni Coal Pty. Ltd., 6.67%; Sumisho Coal Development Pty. Ltd., 3.33%) | 100 km west of Mackay, QLD | 8,000 |
| Do. | Hunter Valley Operations (includes Carrington Chestnut, Howick, Hunter Valley No. 1, Lemington, and Riverview open pit coal mines) (Rio Tinto Ltd., 80%, and others, 20%) | 10 km west and 25 km north of Singleton, NSW | 15,000 |
| Do. | Integra underground mine [HV Coking Coal Pty. Ltd. (Glencore Plc., 100%)] | 10 km northwest of Singleton, NSW | 1,300 |
| Do. | Isaac Plains open pit coal mine[4] (Sumitomo Corp., 50%, and Vale S.A., 50%) | 7 km southeast of Moranbah, QLD | 1,600 |
| Do. | Isaac Plains East open pit coal mine (Sumitomo Corp., 50%, and Vale S.A., 50%) | do. | 2,000 |
| Do. | Jax Mine (Qcoal Pty. Ltd., 100%) | 15 km south of Collinsville, QLD | 1,800 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|
| Coal—Continued | 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 [Liddell Coal Operations Pty. Ltd. (Glencore Plc., 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 (AGL Energy Ltd., 100%) | 165 km east of Melbourne, VIC | 21,000 |
| Do. | Mondalong underground coal mine (Centennial Coal Co. Ltd., 100%) | 35 km southwest of Newcastle, NSW | 6,000 |
| Do. | Moolarben Mine [Yancoal Australia Ltd. (Yankuang Energy Group Co. Ltd., 62.26%, and others, 37.74%)] | Ulan, New South Wales | 18,400 |
| Do. | Moorvale open pit coal mine (Macarthur Coal Ltd., 73.3%; CITIC Resources Australia Pty. Ltd., 14%; Winchester Coal Pty Limited, 7%; JFE Shoji Trade Corporation, 3.7%; Nippon Steel Australia Pty. Ltd., 2%) | 10 km south of Coppabella, QLD | 3,400 |
| Do. | Moranbah North longwall coal mine (Anglo American Plc., 88%; Nippon Steel Australia Pty. Ltd., 5%; others, 7%) | 150 km southwest of Mackay, QLD | 5,800 |
| Do. | Mount Arthur open pit coal mine (BHP Group 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 Pleasant Mine (Mach Energy Australia Pty. Ltd., 100%) | 3 km south of Muswellbrook, NSW | 10,500 |
| Do. | Mount Thorley open pit coal mine [Yancoal Australia Ltd. (Yanzhou Coal Mining Co., 62.26%; Cinda International Holdings Ltd., 15.89%; others, 21.85%), 80%, and POSCO, 20%] | 14 km southwest of Singleton, NSW | 12,000 |
| Do. | Muja open pit coal mine (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 |
| Do. | 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[4] (Banpu Public Co. Ltd., 100%) | 30 km southwest of Newcastle, NSW | 4,000 |
| Do. | North Goonyella underground coal mine (Peabody Energy Corp., 100%) | 40 km north of Moranbah, QLD | 3,000 |
| Do. | Norwich Park open pit coal mine[4] [BHP Mitsubishi Alliance, manager (BHP Group 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%; Itocho Corp., 20%) | 300 km west-northwest of Rockhampton, QLD | 9,500 |
| Do. | Peak Downs open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)] | 145 km north of Emerald, QLD | 9,000 |
| Do. | Poitrel open pit coal mine (Stanmore Resources Ltd., 100%) | 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) (Glencore Plc., 90%, and Itochu Corp., 10%) | 20 km northwest of Singleton, NSW | 9,000 |
| 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 | 13,500 |
| Do. | Saraji open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)] | 125 km north of Emerald, QLD | 6,500 |
| Do. | Sonoma Mine (Qcoal Pty. Ltd., 85.5%; JFE Steel Corp., 9.5%; China Steel Corp., 5%) | 6 km south of Collinsville, QLD | 4,000 |
| Do. | South Walker Creek open pit-underground coal mine [BHP Group 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. (Centennial Coal Co. Ltd., 50%, and SK Kores Australia Pty. Ltd., 50%)] | 16 km northwest of Lithgow, NSW | 4,500 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Coal—Continued | | Tahmoor longwall coal mine (includes Bargo and Tahmoor North) [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 | 10,000 |
| Do. | | United Collieries underground coal mine (Glencore Plc., 95%, and private, 5%) | 15 km west of Singleton, NSW | 3,000 |
| Do. | | Wambo open pit-underground coal mine (Peabody Energy Corp., 100%) | 30 km west from Singleton, NSW | 6,000 |
| Do. | | Warkworth coal mine [Yancoal Australia Ltd. (Yanzhou Coal Mining Co., 62.26%; Cinda International Holdings Ltd., 15.89%; others, 21.85%), 80%, and POSCO, 20%] | 15 km southwest of Singleton, NSW | 1,300 |
| Do. | | West Cliff longwall coal mine (South32 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 (EnergyAustralia Pty. Ltd., 100%) | 140 km southeast of Melbourne, VIC | 14,100 |
| Cobalt, mine production, Co content | metric tons | Murrin Murrin open pit nickel-cobalt mine (Murrin Murrin Operations Pty. Ltd. (Glencore, 100%) | 60 km east of Leonora, WA | 2,000 |
| Do. | do. | Nova-Bollinger mine (IGO Ltd, 100%) | 160 km east-northeast of Norseman, WA | 1,100 |
| Do. | do. | Radio Hill underground nickel-cobalt mine and processing plant[4] (Artemis Resources Ltd., 100%) | 35 km south of Karratha, WA | 200 |
| Do. | do. | Ravensthorpe open pit mine (First Quantum Minerals Ltd., 100%) | 155 km west of Esperance, WA | 1,400 |
| Do. | do. | Savannah underground mine (Panoramic Resources Ltd., 100%) | 120 km north of Halls Creek, WA | 250 |
| Copper: | | | | |
| Mine production, Cu content | | Boddington open pit-underground gold mine (Newmont Mining Corp., 100%) | 130 km southeast of Perth, WA | 35 |
| Do. | | Cadia Valley mining complex (includes Cadia East, Cadia Hill, and Ridgeway) (Newcrest Mining Ltd., 100%) | 25 km south-southwest of Orange, NSW | 90 |
| Do. | | Capricorn copper mine (Capricorn Copper Pty. Ltd., 100%) | 125 km northwest of Mount Isa, QLD | 30 |
| Do. | | Carrapateena Mine (Oz Mineral Ltd., 100%) | 160 km north of Port Augusta, SA | 65 |
| 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-underground copper-gold mine (Glencore Plc., 100%) | 35 km northeast of Cloncurry, QLD | 115 |
| Do. | | Golden Grove underground zinc-copper mine [EMR Golden Grove Pty. Ltd. (EMR Capital Pty. Ltd., 100%)] | 225 km east of Geraldton, WA | 20 |
| 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[4] | 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 includes Enterprise, George Fisher, and Lady Loretta Mines) (Glencore Plc., 100%) | Mount Isa, QLD | 190 |
| Do. | | Mount Lyell underground copper-gold mine [Copper Mines of Tasmania Pty. Ltd. (Vedanta 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-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 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Copper:—Continued | | | | |
| Mine production, Cu content—Continued | | Nova-Bollinger mine (IGO Ltd, 100%) | 160 km east-northeast of Norseman, WA | 13 |
| Do. | | Olympic Dam underground copper-silver-gold-uranium mine [BHP Olympic Dam Corp. Pty. Ltd., operator (BHP Group 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 mine (includes New Cobar, New Occidental, and Perseverance) (New Gold Inc., 100%) | 8 km south of Cobar, NSW | 3 |
| Do. | | Prominent Hill open pit-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. | | Savannah underground mine (Panoramic Resources Ltd., 100%) | 120 km north of Halls Creek, WA | 3 |
| Do. | | Telfer copper-gold mine (Newcrest Mining Ltd., 100%) | 400 km east-southeast of Port Hedland, WA | NA |
| 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 Corp. Pty. Ltd., operator (BHP Group Ltd., 100%)] | Roxby Downs, 80 km north of Woomera, SA | 70 |
| Refinery | | Olympic Dam copper refinery [Olympic Dam Corp. Pty. Ltd., operator (BHP Group Ltd., 100%)] | do. | 235 |
| Do. | | Townsville copper refinery (Glencore Plc., 100%) | Townsville, QLD | 300 |
| Diamond | thousand carats | Argyle diamond mine[4] [Argyle Diamonds Ltd., operator (Rio Tinto Ltd., 100%)] | 120 km southwest of Kununurra, WA | 20,000 |
| Do. | do. | Ellendale Mine[4] (Gibb River Diamonds Ltd., 100%) | 130 km east-southeast of Derby, WA | 700 |
| Do. | do. | Merlin diamond mine[4] (Merlin Diamonds Ltd., 100%) | 100 km south of Borroloola, NT | 100 |
| Diatomite | | Barraba open pit diatomite mine (Australia Diatomite Mining Pty. Ltd., 100%) | 85 km north-northwest of Tamworth, NSW | 25 |
| Do. | | Conjuboy Mine (Greenvale Silicon Pty. Ltd., 100%) | 45 km northwest of Greenvale, QLD | NA |
| Do. | | Mount Sylvia Mine (Mount Sylvia Diatomite Pty. Ltd., 100%) | 35 km southeast of Toowoomba, QLD | NA |
| Feldspar | | Broken Hill open pit feldspar mine (includes Bakers, Lady Beryl, and Spar Ridge) (Unimin Australia Ltd., 100%) | 42 km southwest of Broken Hill, NSW | 15 |
| Garnet | | Port Gregory open pit industrial garnet mine (GMA Garnet Pty. Ltd., 100%) | 100 km north of Geraldton, WA | 400 |
| Gemstone, opal | | Many small producers | Andamooka and Coober Pedy areas, SA; Lightning Ridge area, NSW | NA |
| Gold: | | | | |
| Mine production, Au content | kilograms | Agnew-Lawlers open pit-underground gold mine (Gold Fields Ltd., 100%) | 23 km west of Leinster, WA | 8,600 |
| Do. | do. | Boddington open pit-underground gold mine (Newmont Mining Corp., 100%) | 130 km southeast of Perth, WA | 25,000 |
| Do. | do. | Bronzewing underground gold mine (includes Cockburn, Corboys, Mount McClure, Mount Joel, Success, Venus) (Audax Resources Ltd., 100%) | 65 km northeast of Leinster, WA | 9,000 |
| Do. | do. | Burnside open pit mines (includes Brocks Creek, Fountain Head, North Point, Princess Louise, Rising Tide, Union Reefs, Zapopan) (Crocodile Gold Corp., 100%) | Pine Creek, NT | 6,500 |
| Do. | do. | Cadia Valley mining complex (includes Cadia East, Cadia Hill, and Ridgeway Mines) (Newcrest Mining Ltd., 100%) | 25 km south-southwest of Orange, NSW | 18,600 |
| Do. | do. | Doolgunna open pit-underground gold-copper mine (includes DeGrussa) (Sandfire Resources NL, 100%) | 140 km north of Meekatharra, WA | 270 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Gold:—Continued | | | | |
| Mine production Au content—Continued | kilograms | Ernest Henry open pit copper-gold mine (Glencore Plc., 100%) | 35 km northeast of Cloncurry, QLD | 3,000 |
| Do. | do. | Fosterville open pit mine (Agnico Eagle Mines Ltd., 100%) | 130 km north of Melbourne, VIC | 15,900 |
| Do. | do. | Garden Well gold mine (Regis Resources Ltd., 100%) | 350 km northeast of Kalgoorlie, WA | 5,200 |
| Do. | do. | Granny Smith open pit gold mine (includes Wallaby) (Gold Fields Ltd., 100%) | 20 km south of Laverton, WA | 8,700 |
| Do. | do. | Gruyere Mine (Gold Fields Ltd., 50%, and Gold Roads Resources Ltd., 50%) | 160 km east-northeast of Laverton, WA | 9,000 |
| 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 (Red River Resources Ltd., 100%) | Hillgrove, NSW | 120 |
| Do. | do. | Jundee-Nimary open pit-underground gold mine (Newmont Mining Corp., 100%) | 45 km northeast of Wiluna, WA | 12,000 |
| Do. | do. | Kalgoorlie open pit-underground gold mine [Kalgoorlie Consolidated Gold Mine Pty. Ltd., operator (Ardea Resources Ltd., 100%)] | Southeast corner of the Kalgoorlie Boulder Township, WA | 20,000 |
| Do. | do. | Kalgoorlie Super Pit Mine (Northern Star Resources Ltd., 100%) | Fimiston, WA | 15,200 |
| Do. | do. | Kanowna Belle underground gold mine (Barrick Gold Corp., 100%) | 18 km northeast of Kalgoorlie, WA | 7,000 |
| Do. | do. | Karlawinda gold mine (Capricorn Metals Ltd., 100%) | 65 km southwest of Newman, WA | 960 |
| 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 [Copper Mines of Tasmania Pty. Ltd. (Vedanta Ltd. 100%)] | 2 km northeast of Queenstown, TAS | 1,000 |
| Do. | do. | Mount Magnet open pit-underground gold mine (includes Hill 50 and Star) (Ramelins Resources Ltd., 100%) | Mount Magnet, WA | 8,500 |
| Do. | do. | Mount Morgan Mine (Dacian Gold Ltd., 100%) | 25 km west of Laverton, WA | 4,500 |
| Do. | do. | Norseman underground gold mine (Norseman Gold Plc., 100%) | Norseman, WA | 3,700 |
| Do. | do. | Northparkes open pit-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. | Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Group Ltd., 100%)] | Roxby Downs, 80 km north of Woomera, SA | 1,500 |
| Do. | do. | Osborne underground copper-gold mine (Ivanhoe Australia Ltd., 100%) | 120 km northeast of Boulia, QLD | 1,000 |
| Do. | do. | Paddington open pit-underground gold operation [Norton Gold Fields Ltd. (Zijin Mining Group Co. Ltd., 100%)] | 35 km north of Kalgoorlie, WA | 5,000 |
| Do. | do. | Pajingo underground gold mine (includes Vera-Nancy) (Evolution Mining Ltd., 100%) | 60 km south-southeast of Charters Towers, QLD | 6,400 |
| Do. | do. | Plutonic open pit-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 Mount Wright, Nolans, and Sarsfield) (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-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) (AngloGold Ashanti Ltd., 100%) | 55 km south of Laverton, WA | 15,000 |
| Do. | do. | Tanami open pit gold mine (Newmont Gold Corp., 100%) | 650 km northwest of Alice Springs, NT | 15,100 |
| Do. | do. | Telfer copper-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 | 11,800 |
| Do. | do. | Wiluna open pit-underground gold mine (Apex Minerals NL, 100%) | 7 km south of Wiluna, WA | 3,300 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Gold:—Continued | | | | |
| Smelter | kilograms | 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 | | Dredging of gypsum from surface of Lake MacLeod (Rio Tinto Ltd., 68.4%) | Lake MacLeod, WA | 900 |
| Do. | | Lake MacDonnell open pit gypsum mine (Gypsum Resources Australia Pty. Ltd., 100%) | Point Thevenard, SA | 1,400 |
| Iron ore | | Area C Mine [BHP Group Ltd., 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. | | Channar Mine {Channar Joint Mining Venture [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 | 10,600 |
| Do. | | Cloudbreak iron ore mine (includes Chichester Range, Christmas Creek, Flinders, Mount Lewin, Mount Nicholas, and WhiteKnight) (Fortescue Metals Group Ltd., 100%) | Chichester Ranges, East Pilbara, WA | 55,000 |
| Do. | | Eastern Range open pit iron ore mine {Bao-HI Ranges Joint Venture, 100% [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-Iron Hill open pit iron ore mine (Mount Gibson Iron Ltd., 100%) | 85 km of Perenjori, WA | 3,200 |
| Do. | | Hamersley operations (includes Brockman 2, Brockman 4, Gudai-Darri, Marandoo, Mount Tom Price, Nammuldi, Paraburdoo, Silvergrass, Western Turner Syncline, and Yandicoogina open pit iron ore mines) [Hamersley Iron Pty. Ltd. (Rio Tinto Ltd., 100%)] | 30 km to 85 km northeast, northwest, and south of Tom Price, WA | 200,000 |
| 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 | 49,000 |
| 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. (BHP Group Ltd., 85%; ITOCHU Minerals and Energy of Australia, 8%; Mitsui Iron Ore Exploration and Mining Pty. Ltd., 7%] | 40 km east of Newman, WA | 20,000 |
| 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 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 (BHP Group Ltd., 85%; Mitsui-ITOCHU Iron Iron Pty. Ltd., 10%; ITOCHU Minerals and Energy of Australia, 5%) | 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. Ltd., 33%; Nippon Steel & Sumitomo Metal Corp., 14%)] | 130 km south-southwest of Dampier, Pilbara region, WA | 25,500 |
| Do. | | Roy Hill Mine (Hancock Prospecting Pty. Ltd., 70%; Marubeni Corp., 15%; POSCO, 12.5%; China Steel Corp., 2.5%) | 340 km southeast of Port Hedland | 55,000 |
| 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 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Iron ore—Continued | | Savage River open pit iron ore mine (Grange Resources Ltd., 100%) | 100 km southwest of Burnie, TAS | 2,400 |
| Do. | | Tallering Peak open pit iron ore mine (Mount Gibson Iron Ltd., 100%) | 120 km 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. Ltd., 33%; Nippon Steel & Sumitomo Metal Corp., 14%)] | 110 km west of Newman, Pilbara region, WA | 34,600 |
| 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 (BHP Group Ltd., 85%, manager; 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 |
| Iron and steel: | | | | |
| 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 |
| Lead: | | | | |
| Mine production, Pb content | | Angas zinc mine (Terramin Australia Ltd., 100%) | 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 |
| Do. | | Cannington underground silver-lead-zinc mine (South32 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. | | Dugald River Mine (MMG Ltd., 100%) | 65 km northwest of Cloncurry, QLD | 25 |
| 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 (NQ Minerals Plc., 100%) | 80 km south-southwest of Burnie, TAS | 25 |
| Do. | | McArthur River open pit mine [McArthur River Mining Pty. Ltd., operator (Glencore Plc., 100%)] | 60 km southwest of Borroloola, NT | 170 |
| Do. | | Mount Isa underground copper-lead-zinc-silver mine (also includes Enterprise, George Fisher, Hilton, and Lady Loretta) (Glencore Plc., 100%) | Mount Isa, QLD | 150 |
| Do. | | Rosebery underground zinc-lead-silver-copper-gold mine [MMG Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)] | 35 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: | | | | |
| Mine, direct shipping ore | | Wodgina Mine [MARBL Lithium Joint Venture (Albemarle Corp., 60%, and Mineral Resources Ltd., 40%)] | 100 km south of Port Hedland, WA | 3,500 |
| Mine, spodumene, concentrate | | Altura lithium mine (Pilbara Minerals Ltd., 100%) | 90 km south of Port Hedland, WA | 220 |
| Do. | | Bald Hill lithium and tantalum mine[4] (Alita Resources Ltd., 100%) | 50 km southeast of Kambalda, WA | 150 |
| Do. | | Greenbushes open pit-underground tantalite-spodumene mine [Talison Lithium Australia Pty. Ltd., operator (Albemarle Corp., 49%; Tianqi Lithium Corp., 26.01%; IGO Ltd., 24.99%)] | 70 km southeast of Bunbury, WA | 740 |
| Do. | | Mount Cattlin spodumene mine (Galaxy Resources Ltd., 100%) | 2 km north of Ravensthorpe, WA | 180 |
| Do. | | Mount Marion spodumene mine [Reed Industrial Minerals Pty. Ltd. (Mineral Resources Ltd., 50%, and Jiangxi Ganfeng Lithium Co. Ltd., 50%)] | 40 km southwest of Kaloorlie, WA | 600 |
| Do. | | Pilgangoora lihtium-tantalum mine (Pilbara Minerals Ltd., 100%) | 120 km south of Port Hedland, WA | 580 |
| Refinery, hydroxide | metric tons | Kemerton refinery [MARBL Lithium Joint Venture (Albemarle Corp., 60%, and Mineral Resources Ltd., 40%)] | Bunbury, WA | 25,000 |
| Do. | do. | Kwinana refinery [Tianqi Lithium Energy Australia Pty. Ltd. (operator) (Tianqi Lithium Corp., 51%, and IGO Ltd., 49%)] | 35 km south of Perth, WA | 24,000 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Magnesite | | Kunwarara open pit magnesite mine (includes Marlborough) [Queensland Magnesia Pty. Ltd. (Sibelco Group, 100%)] | 70 km northwest of Rockhampton, QLD | NA |
| 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 |
| Manganese: | | | | |
| 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 Group 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 Group Ltd., 100%)] | Bell Bay, TAS | 250 |
| Natural gas: | | | | |
| Gas | million cubic meters | Gorgon project (Chevron Corp., 47.3%; Exxon Mobil Corp., 25%; Royal Dutch Shell Plc., 25%; Osaka Gas Ltd., 1.25%; Tokyo Gas Co. Ltd., 1%; JERA Co. Inc., 0.417%) | Barrow Island, WA | 23,400 |
| Do. | do. | Ichthys Project (INPEX, 66.245%; Total S.A., 26%; CPC Corp., 2.625%; Tokyo Gas Co. Ltd., 1.515%; Kansai Electric Power Co. Inc., 1.2%; Osaka Gas Co. Ltd., 1.2%; JERA Co. Inc., 0.735%; Toho Gas Co. Ltd., 0.42%) | South of Darwin, NT | 12,000 |
| Do. | do. | 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 | 7,300 |
| Do. | do. | Pluto and Xena fields {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], 90%; Kansai Electric Power Co. Inc., 5%; Tokyo Gas, 5%} | Burrup Peninsula, WA | 6,900 |
| Liquefied natural gas | million metric tons | Australia Pacific LNG (ConocoPhillips Co., 37.5%; Origin Energy, 37.5%; Sinopec, 25%) | Curtis Island, QLD | 9 |
| Do. | do. | Darwin LNG facility [ConocoPhillips Co., 56.9%; Santos Ltd., 11.5%; INPEX, 11.4%; Eni S.p.A., 11%; JERA Co. Inc. and Tokyo Gas Co. Ltd., 9.2% (combined)] | Darwin, NT | 4 |
| Do. | do. | Gladstone LNG (Santos Ltd., 30%; PETRONAS, 27.5%; Total S.A., 27.5%; Korea Gas Corp., 15%) | Bowen Basin, QLD | 8 |
| Do. | do. | Gorgon project (Chevron Corp., 47.3%; Exxon Mobil Corp., 25%; Royal Dutch Shell Plc., 25%; Osaka Gas Ltd., 1.25%; Others, 1.42%) | Barrow Island, WA | 16 |
| Do. | do. | Ichthys Project (INPEX, 66.245%; Total S.A., 26%; CPC Corp., 2.625%; Tokyo Gas Co. Ltd., 1.515%; Kansai Electric Power Co. Inc., 1.2%; Osaka Gas Co. Ltd., 1.2%; JERA Co. Inc., 0.735%; Toho Gas Co. Ltd., 0.42%) | South of Darwin, NT | 9 |
| Do. | do. | North West Shelf project {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]} | Burrup Peninsula, WA | 17 |
| Do. | do. | Pluto LNG {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], 90%; Kansai Electric Power Co. Inc., 5%; Tokyo Gas Co. Ltd., 5%} | Burrup Peninsula, WA | 5 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Natural gas: | | | | |
| Liquefied natural gas—Continued | million metric tons | Prelude Floating LNG platform (Royal Dutch Shell Plc., 67.5%; INPEX, 17.5%; Korea Gas Corp., 10%; CPC Corp., 5%) | Browse Basin, NT | 4 |
| Do. | do. | Queensland Curtis LNG (Royal Dutch Shell Plc., 100%) | Curtis Island, QLD | 9 |
| Do. | do. | Wheatstone project [Chevron Corp., 64.14%; Kuwait Foreign Petroleum Exploration Co. (KUFPEC), 13.4%; Woodside Petroleum Ltd., 13%; PE Wheatstone Pty. Ltd., 8%; Kyushu Electric Power Co., 1.46%] | 12 km west of Onslow, WA | 9 |
| Nickel: | | | | |
| Mine production, Ni content | | Avebury nickel mine and processing plant (includes Bison, North Avebury, Saxon, and West Viking) (Mallee Resources Ltd., 100%) | Near Zeehan, TAS | 7 |
| Do. | | Beta Hunt nickel-gold mine (includes Beta Hunt and East Alpha deposits) [Salt Lake Mining Pty. Ltd. (Karora Resources Ltd., 100%)] | 60 km south of Kalgoorlie, WA | 3 |
| Do. | | Black Swan underground nickel mine[4] (includes Silver Swan) (Poseidon Nickel Ltd., 100%) | 53 km northeast of Kalgoorlie, WA | 10 |
| Do. | | Cosmos project[4] (includes Odysseus underground nickel mine) (IGO Ltd., 100%) | 50 km north of Leinster, WA | 13 |
| Do. | | Forrestania operation (includes Fly Fox and Spotter Quoll underground nickel mines and Cosmic Boy concentrator) (IGO Ltd., 100%) | 100 km north of Ravensthorpe, WA | 25 |
| Do. | | Kambalda nickel mine (includes Cassini, Durkin North, Long, and Otter Juan, and deposits) (Mincor Resources NL, 100%) | 120 km west of Norseman, WA | 16 |
| Do. | | Kambalda nickel concentrator (BHP Group Ltd., 100%) | 56 km south of Kalgoorlie, WA | 40 |
| Do. | | Lake Johnston underground nickel mine[4] (includes Emily Ann, and Maggie Hays Lake) (Poseidon Nickel Ltd., 100%) | 120 km west of Norseman, WA | 12 |
| Do. | | Lanfranchi underground mine (includes Deacon, Schmitz, Tramway,and Winner) (Black Mountain Metals LLC, 50%, and Tembo Capital Management Ltd., 50%) | 42 km south of Kambalda, WA | 10 |
| Do. | | Leinster nickel operation (includes Cliffs, Leinster, and Venus mines, and Leinster concentrator) (BHP Group Ltd., 100%) | 10 km north of Leinster, WA | 44 |
| Do. | | Mount Keith nickel operation (includes Mount Keith and Yakabine mines, and Mount Keith concentrator) (BHP Group Ltd., 100%) | 70 km south-southeast of Wiluna, WA | 40 |
| Do. | | Murrin Murrin open pit nickel-cobalt mine [Murrin Murrin Pty. Ltd. (Glencore Plc., 100%)] | 60 km east of Leonora, WA | 40 |
| Do. | | Nova operation (includes Nova underground nickel-cobalt mine and processing plant) (IGO Ltd, 100%) | 160 km east-northeast of Norseman, WA | 28 |
| Do. | | Radio Hill underground nickel-cobalt mine and processing plant[4] (Artemis Resources Ltd., 100%) | 35 km south of Karratha, WA | 4 |
| Do. | | Ravensthorpe open pit mine (First Quantum Minerals Ltd., 100%) | Ravensthorpe, WA | 25 |
| Do. | | Savannah underground mine (Panoramic Resources Ltd., 100%) | 120 km north of Halls Creek, WA | 8 |
| Smelter | | Kalgoorlie nickel smelter (BHP Group Ltd., 100%) | Kalgoorlie, WA | 110 |
| Refinery | | Kwinana nickel refinery (BHP Group Ltd., 100%) | Kwinana, WA | 83 |
| Do. | | Murrin Murrin nickel refinery [[Murrin Murrin Pty. Ltd. (Glencore Plc., 100%)] | Murrin Murrin, WA | 45 |
| Petroleum: | | | | |
| Condensate | thousand 42-gallon barrels | Gorgon project (Chevron Corp., 47.3%; Exxon Mobil Corp., 25%; Royal Dutch Shell Plc., 25%; Osaka Gas Ltd., 1.25%; and others, 1.42%) | Barrow Island, WA | 2,200 |
| Do. | do. | Ichthys Project (INPEX, 67.82%; Total S.A., 26%; CPC Corp., 2.625%; Osaka Gas Co. Ltd., 1.2%; Kansai Electric Power Co. Inc., 1.2%; JERA Co. Inc., 0.735%; Toho Gas Co. Ltd., 0.42%) | South of Darwin, NT | 36,500 |
| Do. | do. | 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 | 22,000 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Petroleum:—Continued | | | | |
| Condensate—Continued | thousand 42-gallon barrels | Prelude Floating LNG platform (Royal Dutch Shell Plc., 67.5%; INPEX, 17.5%; Korea Gas Corp., 10%; CPC Corp., 5%) | Browse Basin, NT | 9,600 |
| Refinery | do. | Altona Refinery (Exxon Mobil Corp., 100%) | 13 km southeast of Melbourne, VIC | 44,000 |
| Do. | do. | Bulwer Island Refinery [BP Amoco Refinery (Bulwer Island) Pty. Ltd., 100%] | Bulwer Island, QLD | 26,000 |
| Do. | do. | Geelong Refinery [Shell Refining (Australia) Pty. Ltd., 100%] | Geelong, VIC | 40,000 |
| Do. | do. | Kurnell Refinery (Caltex Australia Ltd., 100%) | Kurnell, NSW | 42,000 |
| Do. | do. | Kwinana Refinery [BP Amoco Refinery (Kwinana) Pty. Ltd., 100%] | Kwinana, WA | 50,000 |
| Do. | do. | Lytton Refinery (Caltex Australia Ltd., 100%) | Lytton, QLD | 39,000 |
| 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., 100%) | Mount Weld, WA | 21,000 |
| Salt | | Dampier Salt, solar evaporation salt pans (Rio Tinto Ltd., 68%; Marubeni Corp., 22%; Sojitz Corp., 10%) | Near Dampier, WA | 4,000 |
| Do. | | Lake MacLeod solar salt and gypsum evaporation pans (Rio Tinto Ltd., 68%; Marubeni Corp., 22%; Sojitz Corp., 10%) | 65 km north of Carnarvon, WA | 900 |
| Do. | | Port Hedland solar salt fields (Rio Tinto Ltd., 68.4%, and others, 31.6%) | Port Hedland, WA | 3,000 |
| Silica | | Kemerton silica sands dredge [Kermerton Silica Sand Pty. Ltd. (Touchu Corp., 67%, and Toyota Tsusho Corp., 33%)] | 35 km northeast of Bunbury, WA | 450 |
| Silver: | | | | |
| Mine production, Ag content | kilograms | Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%) | Broken Hill, NSW | 81,200 |
| Do. | do. | Cannington underground silver-lead-zinc mine (BHP Group 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 |
| Do. | do. | Dugald River Mine (MMG Ltd., 100%) | 65 km northwest of Cloncurry, QLD | 38,000 |
| 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-silver mine (NQ Minerals Plc., 100%) | 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 mines (also includes Enterprise, George Fisher, Hilton, and Lady Loretta) (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 Group 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) (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%)] | 35 km north of Queenstown, TAS | 35,000 |
| Smelter | do. | Port Pirie smelter (Nyrstar Corp., 100%) | Port Pirie, SA | 450,000 |
| Refinery | do. | Perth Refinery [AGR Management Services Ltd. (Australian Gold Alliance Pty. Ltd., 40%; Western Australian Mint, 40%; Johnson Matthey (Australian) Ltd., 20%] | Newburn, WA | NA |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|---|
| Stone, dolomite | | Ardrossan metallurgical dolomite quarry (OneSteel Ltd., 100%) | Northern York Peninsula, SA | 650 |
| Do. | | Cookes Hill Mine (includes Nickol River and Warrawoona) (Haoma Mining NL, 100%) | Near Port Hedland, WA | 400 |
| Talc | | Three Springs open pit talc mine (Imerys S.A., 100%) | 330 km north of Perth, WA | 150 |
| Tantalum, tantalite, mine production | | Bald Hill lithium-tantalum mine (Alliance Mineral Assets Ltd., 100%) | 50 km southeast of Kambalda, WA | NA |
| Do. | | Greenbushes open pit-underground tantalite-spodumene mine (Global Advanced Metals Ltd., 100%) | 70 km southeast of Bunbury, WA | NA |
| Do. | | Pilgangoora lihtium-tantalum project (Pilbara Minerals Ltd., 100%) | 120 km south of Port Hedland, WA | NA |
| Do. | | Wodgina open pit tantalite mine (Global Advanced Metals Ltd., 100%) | 70 km southeast of Bunbury, WA | NA |
| Tin: | | | | |
| Mine production, Sn content | metric tons | Greenbushes open pit-underground tantalite-spodumene mine (Global Advanced Metals Ltd., 100%) | 70 km southeast of Bunbury, WA | 1,000 |
| Do. | do. | Mount Bischoff open pit mine[4] (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 (Global Advanced Metals Ltd., 100%) | 70 km southeast of Bunbury, WA | 1,000 |
| Titanium, mineral sands (ilmenite, rutile, and zircon) | | Broken Hill region mines (Cristal Australia Pty. Ltd., 100%) | 120 km north of Mildura, NSW | NA |
| Do. | | Capel heavy-mineral processing facility (Iluka Resources Ltd., 100%) | 7 km north of Capel, WA | 335 |
| Do. | | Cataby heavy-mineral mine (Iluka Resources Ltd., 100%) | 150 km north of Perth, WA | 450 |
| Do. | | Jacinth-Ambrosia mine (Iluka Resources Ltd., 100%) | 110 km north of Coorabie, SA | 600 |
| Do. | | Murray Basin heavy-mineral sands mine (Iluka Resources Ltd., 100%) | 80 km southeast of Mildura, VIC | NA |
| Do. | | Narngulu mineral seperation plant (Iluka Resources Ltd., 100%) | 8 km southeast of Geraldton, 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, mine production, W content | metric tons | Kara magnetite and scheelite mine (Tasmania Mines Ltd., 100%) | 30 km south of Burnie, TAS | 50 |
| Do. | do. | Mount Carbine tungsten mine[4] (EQ Resources Ltd., 100%) | 75 km west of Caims, QLD | 4,000 |
| Do. | do. | Wolfram Camp molybdenum-tungsten mine (Almonty Industries Inc., 100%) | 85 km west of Caims, QLD | 500 |
| Uranium, mine production, $U_3O_8$ content | do. | Beverley in situ leach uranium operation[4] (Heathgate Resources Pty. Ltd., 100%) | 300 km northeast of Port Augusta, SA | 1,000 |
| Do. | do. | Four Mile uranium mine [Quasar Resources Pty. Ltd., 100% (a subsidiary of Heathgate Resources Pty. Ltd.)] | 300 km northeast of Port Augusta, SA | 1,200 |
| Do. | do. | Honeymoon uranium mine[4] (Boss Resources Ltd., 100%) | 75 km northwest of Broken Hill, SA | 400 |
| Do. | do. | Olympic Dam underground copper-silver-gold-uranium mine [BHP Billiton Olympic Dam Corp. Pty. Ltd., operator (BHP Group Ltd., 100%)] | Roxby Downs, 80 km north of Woomera, SA | 4,400 |
| Do. | do. | Ranger open pit uranium mine [Energy Resources of Australia Ltd. (Rio Tinto Plc., 68.4%, and public 31.6%), 100%] | 230 km east of Darwin, NT | 5,000 |
| Vanadium, mine production, $V_2O_5$ content | do. | Windimurra vanadium mine[4] (Atlantic Vanadium Pty. Ltd., 100%) | 100 km east-southeast of Mount Magnet, WA | 8 |

See footnotes at end of table.

TABLE 2—Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | Facilities, major operating companies, and major equity owners | Location of main facilities[1, 2] | Annual capacity[e] |
|---|---|---|---|
| Zinc: | | | |
| Mine production, Zn content | Angas zinc mine (Terramin Australia Ltd., 100%) | 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 Group Ltd., 100%) | 85 km southwest of McKinlay, QLD | 100 |
| Do. | Century open pit zinc-silver-lead mine (New Century Resources Ltd., 100%) | 250 km north of Mount Isa, QLD | 500 |
| Do. | Dugald River Mine (MMG Ltd., 100%) | 65 km northwest of Cloncurry, QLD | 180 |
| Do. | Endeavor underground zinc-silver-lead mine [CBH Resources Ltd. (Toho Zinc Co. Ltd., 100%)] | 40 km northwest of Cobar, NSW | 125 |
| Do. | Golden Grove underground zinc-copper mine (EMR Capital Pty. Ltd., 100%) | 225 km east of Geraldton, WA | 150 |
| Do. | Hellyer underground zinc-lead-silver mine (NQ Minerals Plc., 100%) | 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 | 280 |
| Do. | Mount Isa underground copper-lead-zinc-silver mines (also includes Enterprise, George Fisher, and Lady Loretta) (Glencore Plc., 100%) | Mount Isa, QLD | 175 |
| Do. | Peak underground gold-zinc-lead-copper-silver mines (includes New Cobar, New Occidental, and Perseverance) (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 | Hobart smelter (Nyrstar NV, 100%) | Hobart, TAS | 320 |
| Do. | Port Pirie smelter (Nyrstar NV, 100%) | 5 km north of Queenstown, TAS | 45 |
| Refinery | Sun Metals zinc refinery [Sun Metals Corp. Pty. Ltd., operator (Korea Zinc Co., 100%)] | Townsville, QLD | 170 |

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

[1]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.

[2]Abbreviation(s) used for unit(s) of measure in this table include the following: km—kilometer.

[3]Produced low-grade bauxite for use by the cement and fertilizer sectors.

[4]On care-and-maintenance status in 2022.

TABLE 3
AUSTRALIA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Quantity | Value (million dollars) |
|---|---|---|---|
| METALS | | | |
| Aluminum: | | | |
| Bauxite | | 35,933 | 786 |
| Alumina[1] | | 17,187 | 6,194 |
| Metal | | 1,374 | 3,922 |
| Copper: | | | |
| Ores and concentrates, gross weight | | 1,614 | 5,264 |
| Refined metal | | 383 | 3,336 |
| Total Cu content | | 844 | NA |
| Gold, bullion, refined and unrefin | metric tons | 237 | 16,302 |
| Iron and steel: | | | |
| Iron ore, gross weight[2] | | 883,624 | 86,140 |
| Raw steel | | 1,150 e | 939 |
| Scrap | | 1,733 | 792 |
| Lead: | | | |
| Ores and concentrates, gross weight | | 291 | 542 |
| Refined metal | | 138 | 307 |
| Bullion[3] | | 148 | 374 |
| Total Pb content | | 494 | NA |
| Nickel: | | | |
| Ores and concentrates, gross weight | | 113 | 235 |
| Refined and intermediate, gross weight | | 133 e | 3,070 e |
| Total Ni content | | 151 e | NA |
| Silver, bullion, refined | metric tons | 123 | 104 |
| Tin, ores and concentrates: | | | |
| Gross weight | do. | 17,381 | 261 |
| Sn content | do. | 8,910 e | NA |
| Titanium: | | | |
| Leucoxene concentrate | | 98 e | NA |
| Titanium dioxide pigment | | 170 e | NA |
| Zinc: | | | |
| Ores and concentrates, gross weight | | 2,039 | 2,080 |
| Refined metal | | 315 | 1,157 |
| Total Zn content | | 1,217 | NA |
| INDUSTRIAL MINERALS | | | |
| Lithium, ores and concentrates, gross weight | | 2,703 | 8,408 |
| Gemstones: | | | |
| Diamond: | | | |
| Gem | carats | 72,335 | 107 |
| Industrial | do. | 467 | 3 |
| Unsorted | do. | -- e | -- e |
| Total | do. | 72,800 e | 110 e |
| Opal: | | | |
| Rough | | NA | 10 |
| Cut and polished | | NA | 21 |
| Total | | NA | 31 |
| Sapphire, rough | | NA | 10 |
| Others[4] | | NA | 22 |

See footnotes at end of table.

TABLE 3—Continued
AUSTRALIA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2022

| Commodity | | Quantity | Value (million dollars) |
|---|---|---|---|
| MINERAL FUELS AND RELATED MATERIALS | | | |
| Coal: | | | |
| Metallurgical | million metric tons | 161 | 51,697 |
| Thermal | do. | 179 | 47,017 |
| Liquefied natural gas[5] | do. | 81 | 62,651 |
| Petroleum: | | | |
| Crude[6] | thousand 42-gallon barrels | 99,895 | 10,317 |
| Refinery products | do. | 2,208 | 275 |
| Uranium oxide ($U_3O_8$) | metric tons | 5,425 | 508 [e] |

[e]Estimated; estimated data are rounded to no more than thre significant digits. do. Ditto. NA Not available. -- Zero.

[1]Includes alumina hydroxide

[2]Includes iron ores, concentrates, lump, and pellets.

[3]Lead bullion includes a substantial precious metal content, mainly silver.

[4]Includes cut and polished sapphires.

[5]Includes reexports.

[6]Includes other refinery feedstock.

Source: Government of Australia, Department of Industry, Resources and Science, 2023, Resource and energy quarterly, December 2023.

TABLE 4
AUSTRALIA: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2022

(Thousand metric tons unless otherwise specified)

| Commodity | | Quantity | Value (million dollars) |
|---|---|---|---|
| METALS | | | |
| Aluminum: | | | |
| Bauxite | | 4 | 2 |
| Alumina | | 13 | 12 |
| Metal | | 72 | 215 |
| Ferroalloys | | 70 | 122 |
| Gold, bullion, refined and unrefined | | NA | 4,824 |
| Iron and steel: | | | |
| Iron ore, gross weight[1] | | 1,037 | 112 |
| Raw steel | | 2,290 e | 3,118 |
| Nickel, primary products[2] | | NA | 89 |
| Phosphate rock | | 414 | 73 |
| Silver, bullion, refined | | NA | 727 |
| Tin, refined | metric tons | 306 | 7 |
| INDUSTRIAL MINERALS | | | |
| Gemstones, diamond: | | | |
| Dust and powder | thousand carats | 3,495 | 1 |
| Gem | do. | 536 | 429 |
| Industrial | do. | 2 | 2 |
| Total | do. | 4,033 | 432 |
| MINERAL FUELS AND RELATED MATERIALS | | | |
| Petroleum: | | | |
| Crude[3] | thousand 42-gallon barrels | 65,850 | 7,355 |
| Refinery products | do. | 290,304 | 38,038 |

[e]Estimated; estimated data are rounded to no more than three significant digits.
[1]Includes limonite ore used in the production of refined nickel products.
[2]Includes matte, sinter, and intermediate products; ferronickel, unwrought nickel metal, and alloys and scrap. Also includes the value of limonite ore used in the production of refined nickel products.
[3]Includes other refinery feedstock.

Source: Australian Government, Department of Industry, Resources and Science, 2023, Resource and energy quarterly, December 2023.

TABLE 5

AUSTRALIA: RESERVES OF MAJOR MINERAL COMMODITIES IN 2022[1]

| Commodity | | Reserves |
|---|---|---|
| Antimomy, Sb content | thousand metric tons | 139 |
| Bauxite | million metric tons | 3,520 |
| Coal: | | |
| Anthracite and bituminous, recoverable[2] | billion metric tons | 72 |
| Lignite, recoverable[3] | do. | 72 |
| Cobalt, Co content | thousand metric tons | 1,740 |
| Copper, Cu content | million metric tons | 102 |
| Diamond | thousand carats | 1,280 |
| Gold, Au content | metric tons | 12,100 |
| Graphite | thousand metric tons | 8,500 |
| Iron ore: | | |
| Gross weight | billion metric tons | 58 |
| Fe content | do. | 27 |
| Lead, Pb content | million metric tons | 35 |
| Lithium, Li content | thousand metric tons | 7,050 |
| Magnesite, $MgCO_3$ content | million metric tons | 284 |
| Manganese ore | do. | 496 |
| Molybdenum, Mo content | thousand metric tons | 687 |
| Nickel, Ni content | do. | 24,100 |
| Niobium, Nb content | do. | 216 |
| Platinum-group metals (Ir, Os, Pd, Pt, Rh, Ru)[4] | metric tons | 357 |
| Phosphate rock: | | |
| Gross weight | million metric tons | 1,080 |
| $P_2O_5$ content | do. | 178 |
| Potash, $K_2O$ content | do. | 47 |
| Rare earths (rare-earth oxides plus $Y_2O_3$) | thousand metric tons | 5,700 |
| Scandium, Sc content | do. | 37 |
| Silver, Ag content | do. | 94 |
| Tantalum, Ta content | do. | 110 |
| Tin, Sn content | do. | 623 |
| Titanium: | | |
| Ilmenite | million metric tons | 293 |
| Rutile | do. | 36 |
| Tungsten, W content | thousand metric tons | 568 |
| Uranium, U content | do. | 1,230 |
| Vanadium, V content | do. | 8,510 |
| Zinc, Zn content | million metric tons | 64 |
| Zirconium, zircon | do. | 85 |

do. Ditto.

[1]Accessible Economic Demonstrated Resources (AEDR) as of December 2022, as reported by Geoscience Australia. AEDR refers to the portion of total Economic Demonstrated Resources (EDR), which include Joint Ore Reserves Committee (JORC) Reserves,

[2]Reported as black coal by Geoscience Australia.

[3]Reported as brown coal by Geoscience Australia.

[4]Platinum-group metals were produced as a byproduct of nickel-cobalt mining; platinum-group-metal reserves and resources of these producers are not reported.