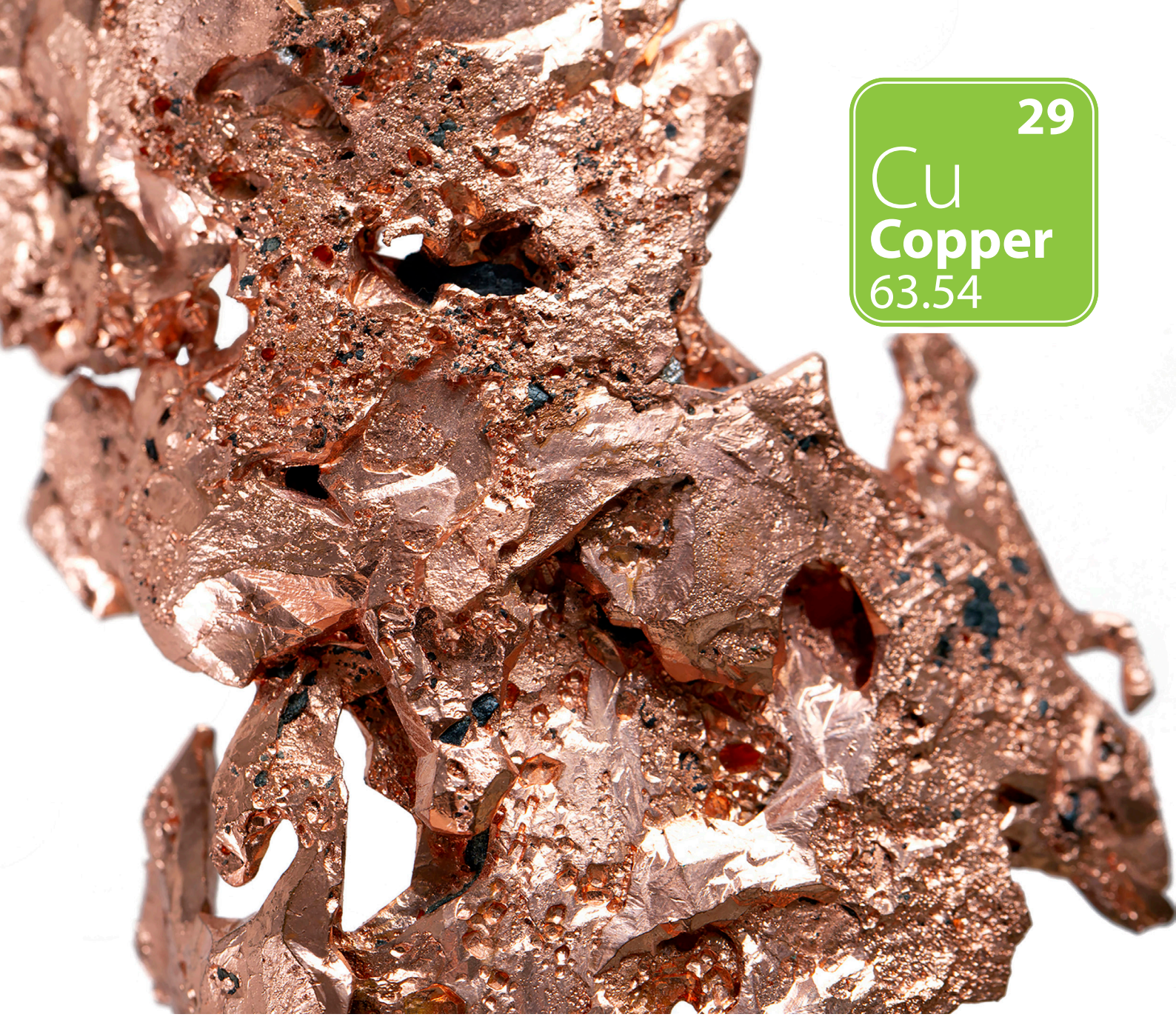

29
Cu
Copper
63.54

COPPER
in South Australia

Geological Survey of South Australia

SOUTH AUSTRALIA

Government of South Australia
Department for Energy and Mining

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South Australian Resources Information Gateway (SARIG)
SARIG provides up-to-date views of mineral, petroleum and geothermal tenements and other geoscientific data. You can search, view and download information relating to minerals and mining in South Australia including tenement details, mines and mineral deposits, geological and geophysical data, publications and reports (including company reports).
map.sarig.sa.gov.au

Disclaimer
The contents of this report are for general information only and are not intended as professional advice, and the Department for Energy and Mining (and the Government of South Australia) make no representation, express or implied, as to the accuracy, reliability or completeness of the information contained in this report or as to the suitability of the information for any particular purpose. Use of or reliance upon the information contained in this report is at the sole risk of the user in all things and the Department for Energy and Mining (and the Government of South Australia) disclaim any responsibility for that use or reliance and any liability to the user.

Acknowledgement of Country
As guests on Aboriginal land, the Department for Energy and Mining (DEM) acknowledges everything this department does impacts on Aboriginal country, the sea, the sky, its people, and the spiritual and cultural connections which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

Copper

in South Australia

Geological Survey of South Australia,
Department for Energy and Mining

August 2025

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FIGURES

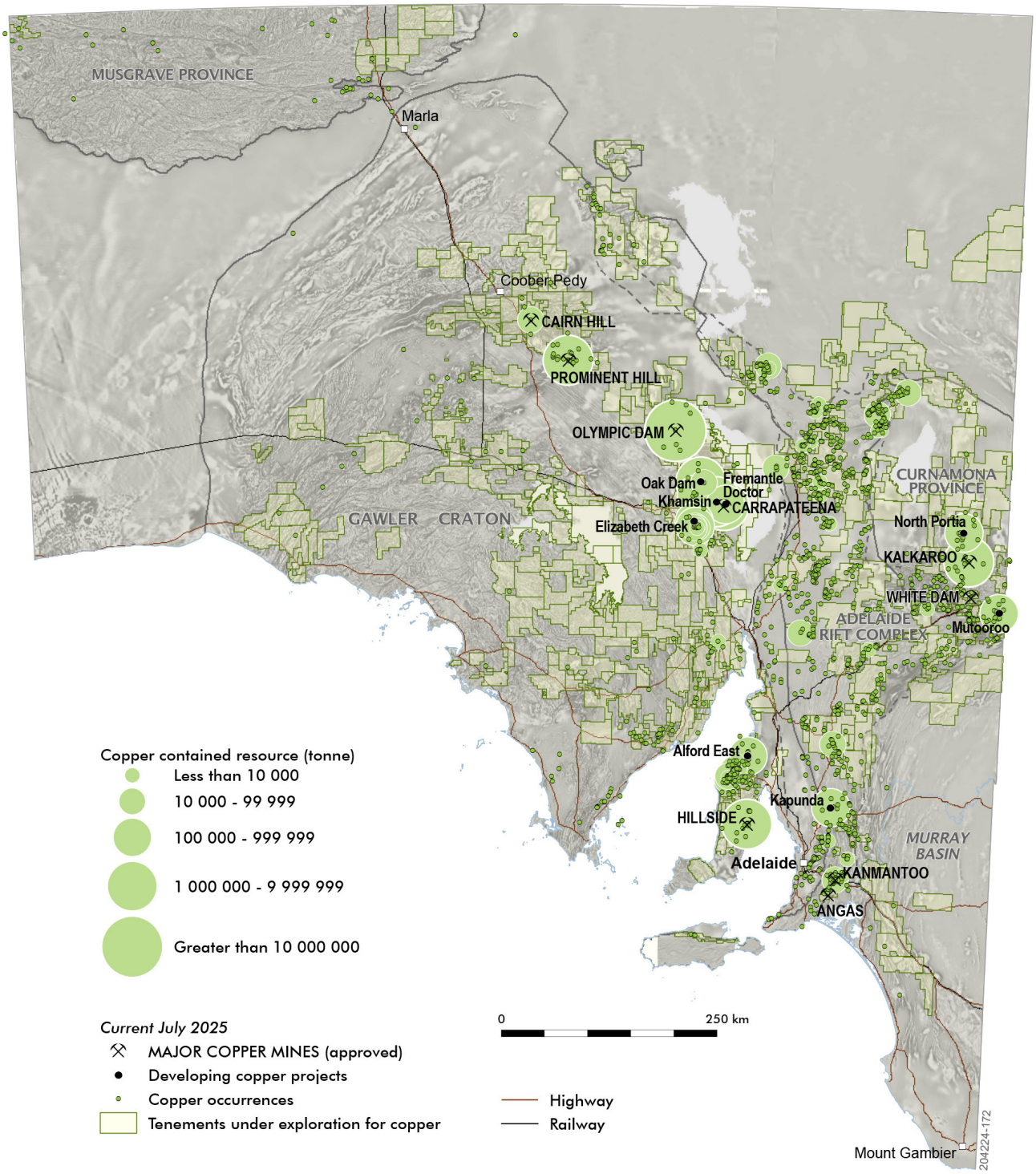

Figure 1. South Australian copper occurrences.
https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/plans/sarig1/image/DDD/204224-172

Copper

Geological Survey of South Australia

WHY SOUTH AUSTRALIA FOR COPPER?

South Australia has the largest economic demonstrated resources of copper within Australia. Premier copper provinces include Olympic Dam Cu-Au and Curnamona, and the Adelaide Superbasin.

There is strong ongoing copper exploration with AUS$204m spent in 2023–24 and copper production value of $4.36 billion in 2024.

South Australia has world-class precompetitive geoscience data and regulatory framework.

COPPER PROPERTIES AND USES

Copper is one of the most important and widely used metals of modern society due to its properties of:

- high electrical conductivity
- high thermal conductivity
- resistance to corrosion
- ability to form alloys with other metals such as brass (zinc), bronze (tin) and cupronickel (nickel).

The demand for copper is forecast to increase substantially to supply the materials required for the global energy transition. Copper is predominantly used for copper wire in building construction, electronics and transportation equipment. Copper is also an integral part of the rapidly expanding electric vehicle and renewable energy industries.

Copper can occur naturally in its pure state (native copper) but is principally mined as sulphide minerals chalcopyrite ($CuFeS_2$), chalcocite (Cu_2S) and bornite (Cu_5FeS_4). The main oxidised ores are the copper oxide, cuprite (Cu_2O), and carbonate minerals azurite ($Cu_3(CO_3)2(OH)_2$) and malachite ($Cu_2CO_3(OH)_2$).

COPPER IN SOUTH AUSTRALIA

South Australia contains 68% of Australia's economic demonstrated resources of copper (Geoscience Australia 2024). South Australia hosts many internationally and nationally significant copper mines and projects currently in operation including Olympic Dam, Carrapateena, Prominent Hill, Kanmantoo, Kalkaroo and Hillside, along with significant projects at Oak Dam and Kapunda, as well as many exploration and appraisal projects.

Stacked copper cathode at Olympic Dam. (Courtesy BHP)

COPPER STATISTICS 2025

SOUTH AUSTRALIA	VOLUME/VALUE
Annual copper mine production volume[6]	3,232,479 t (in 2024)
Annual copper production value[6]	$4.36 billion (in 2024)
Selected mine production[2]	• Olympic Dam 216 kt Cu cathode • Prominent Hill 68 kt Cu in concentrate • Carrapateena 50 kt Cu in concentrate
Exploration expenditure[3]	$204 million
Resources[3]	103 Mt contained Cu
Reserves[3]	15 Mt contained Cu
National ranking[7]	South Australia ranked #1, containing 68% of the Australian economic demonstrated copper resources.
AUSTRALIA	**VOLUME/VALUE**
Annual mine production[7]	0.78 Mt
Copper exploration expenditure[2]	$575 million
Total economic demonstrated Resources[5]	104.74 Mt
Reserves[7]	27.36 Mt
Selected mines contained Reserves[2]	• Olympic Dam (SA) 10.68 Mt Cu (average grade 1.78% Cu) • Cadia (NSW) 3.2 Mt Cu (average grade 0.29% Cu) • Carrapateena (SA) 1.91 Mt Cu (average grade 1.03% Cu) • Ernest Henry (Qld) 0.56 Mt Cu (average grade 0.76% Cu)
Australia's global ranking[7]	Australia is ranked #3 globally (containing 10% of the global copper resources) and #8 in copper production (producing 4% of the global copper).
WORLD	**VOLUME/VALUE**
Mine production (rounded)[5]	Global total 23 Mt Chile 5.3 Mt China 1.8 Mt Peru 2.6 Mt United States 1.1 Mt
Reserves (rounded)[5]	Global total 980 Mt Chile 190 Mt China 41 Mt Peru 100 Mt United States 47 Mt

1 Total Resources, Joint Ore Reserves Committee (JORC) compliant, compiled from published company reports.
2 Australian Bureau of Statistics (ABS), 2025.
3 Department for Energy and Mining (DEM), 2024.
4 Geoscience Australia (GA), 2025.
5 United States Geological Survey (USGS) copper commodity page year end 2024.
6 Resource production statistics, Government of South Australia for the six month end 2024.
https://www.energymining.sa.gov.au/industry/minerals-and-mining/invest/resource-production-statistics
7 Resource and Reserves volumes as of December 2023, Geoscience Australia identified Mineral Resources Report, 2024.

COPPER PRODUCTION AND EXPLORATION EXPENDITURE

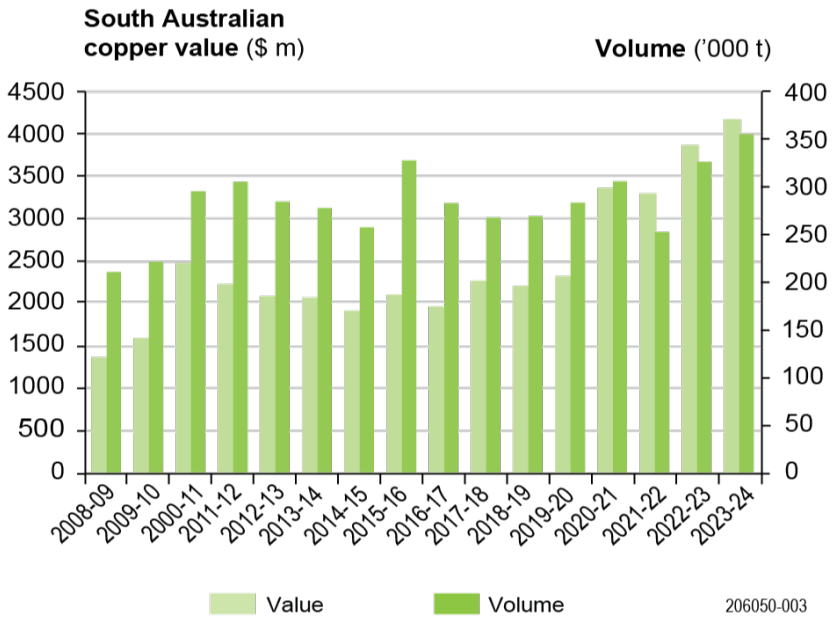

Figure 2. South Australian copper production, 2008 to 2024.

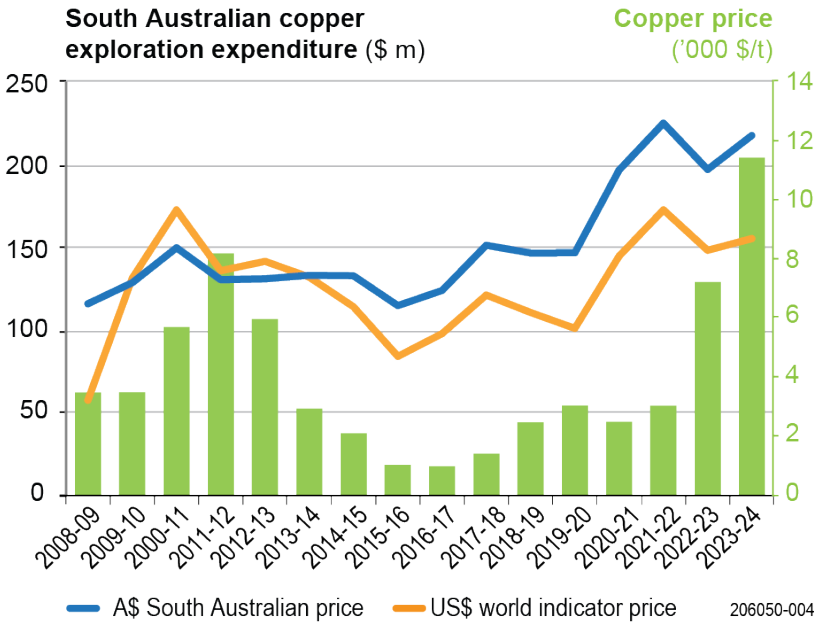

Figure 3. South Australian copper exploration expenditure, 2008 to 2024.

MAJOR MINES

Major copper mines in South Australia include:

- Olympic Dam (BHP)
  Total mineral resource of 11,370 Mt at 0.72 % Cu, 0.24% U_3O_8, 0.30 g/t Au and 1.29 g/t Ag.
- Carrapateena (BHP)
  Total mineral resource of 900 Mt at 0.55 % Cu, 0.80 g/t Au and 2.94 g/t Ag.
- Hillside (Rex Minerals)
  Total mineral resource of 337 Mt at 0.56% Cu and 0.14 g/t Au.
- Kalkaroo (Havilah Resources / BHP)
  Total mineral resource of 245.5 Mt at 0.49% Cu and 0.36 g/t Au and 193 Mt at 120 ppm Co.
- Prominent Hill (BHP)
  Total resource of 162 Mt at 0.91% Cu, 0.8 g/t Au and 2.94 g/t Ag.
- Kanmantoo (Hillgrove Resources)
  Total mineral resource of 19.3 Mt at 0.77% Cu, 0.14 g/t Au, 2.2 g/t Ag and 110 ppm Bi.

More information regarding mining operations, compliance reporting and approvals can be found at https://www.energymining.sa.gov.au/industry/minerals-and-mining/mining/major-projects-and-mining-activities

DEVELOPING PROJECTS

Major developing copper projects in South Australia include:

- Oak Dam (BHP)
  Total mineral resource of 1340 Mt at 0.66% Cu and 0.33g/t Au.
  Status: Exploration.
- Elizabeth Creek (Coda Minerals)
  Total mineral resource of 65.5 Mt at 1.24% Cu, 15.8 g/t Ag, 1700 ppm Zn (Emmie Bluff) and 563 ppm Co.
  Status: Exploration.
- Kapunda (EnviroCopper)
  Total mineral resource of 47.4 Mt at 0.25% Cu for in-situ recovery.
- Fremantle Doctor (BHP)
  Inferred resource of 100 Mt at 0.51% Cu, 0.33 g/t Au and 1.00 g/t Ag.
- Mutooroo (Havilah Resources)
  Total mineral resource of 13.1 Mt at 1.49% Cu, 0.19 g/t Au, and 0.15% Co.
- North Portia (Consolidated Mining and Civil)
  Total mineral resource of 12.96 Mt at 0.78% Cu, 0.60 g/t Au, 154 ppm Co and 435 g/t Mo.
  Status: Care and Maintenance.

More information regarding mining operations, compliance reporting and approvals can be found at https://www.energymining.sa.gov.au/industry/minerals-and-mining/mining/major-projects-and-mining-activities

EXPLORATION MODELS

Copper mineralisation is widespread and found in most geological provinces throughout South Australia. The most significant regions of copper mineralisation are the Olympic Cu-Au Province (eastern Gawler Craton), Curnamona Province and Adelaide Superbasin / Delamerian Orogen. The most significant mineral system styles include iron oxide-copper-gold (IOCG), skarn, porphyry and sediment-hosted.

- South Australia major exploration models map
  https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/plans/sarig1/image/DDD/205152-002

OLYMPIC CU-AU PROVINCE, EASTERN GAWLER CRATON

The Olympic Cu-Au Province is a ~600 km long metallogenic corridor in the eastern Gawler Craton containing significant copper mineralisation. This world-class copper province is highly prospective for IOCG and skarn deposits formed during early Mesoproterozoic Hiltaba Suite magmatism and eruption of the Gawler Range Volcanics at c. 1590 Ma. Major copper deposits in the Olympic Cu-Au Province include Olympic Dam (MinDep 3000), Carrapateena (MinDep 8303), Prominent Hill (MinDep 8329), Oak Dam (MinDep 9839) and Hillside (MinDep 11272).

Related links

- South Australia's Mineral Deposit (MinDep) database
  https://minerals.sarig.sa.gov.au/MineralDepositSearch.aspx
- Reference drillholes from IOCG and associated deposits in South Australia
  https://pid.sarig.sa.gov.au/document/2024d050318
- Prospectivity modelling of the Olympic Cu–Au Province
  https://pid.sarig.sa.gov.au/document/mesac28834
- Probabilistic cover-basement interface map in Carrapateena, South Australia
  https://pid.sarig.sa.gov.au/dataset/mesac631
- The Olympic Cu-Au Province, Gawler Craton: a review of the lithospheric architecture, geodynamic setting, alteration systems, cover successions and prospectivity
  https://doi.org/10.3390/min9060371
- Characterisation and mapping of Cu–Au skarn systems in the Punt Hill region, Olympic Cu–Au Province https://pid.sarig.sa.gov.au/document/mesac27902

CURNAMONA PROVINCE

The Curnamona Province, which straddles the border of South Australia and New South Wales, experienced similar magmatism to the eastern Gawler Craton during the early Mesoproterozoic, making it prospective for similar styles of copper deposits as the Olympic Cu-Au Province. Significant copper deposits include Kalkaroo (MinDep 8455), Mutooroo (MinDep 842) and North Portia (MinDep 4503).

Related links

- South Australia's Mineral Deposit (MinDep) database
  https://minerals.sarig.sa.gov.au/MineralDepositSearch.aspx
- Southern Curnamona Province, South Australia, collaborative research 2002-2004
  https://pid.sarig.sa.gov.au/document/mesac21733
- Curnamona Province exploration review and mineral systems
  https://pid.sarig.sa.gov.au/document/d20010148
- Proterozoic copper-gold systems of the Curnamona Province - members of a global family?
  https://pid.sarig.sa.gov.au/document/mesac18899

ADELAIDE SUPERBASIN / DELAMERIAN OROGEN

The Adelaide Superbasin is a large sedimentary basin formed during the Neoproterozoic to middle-Cambrian that occurs largely between the Gawler Craton and Curnamona Province. The stratigraphy of the Adelaide Superbasin has been compared to the Katanga Basin in Zambia and the Democratic Republic of Congo, which hosts the Central African Copper Belt. These correlations support the prospectivity of the Adelaide Superbasin for sediment-hosted copper mineralisation. There are 662 known copper occurrences hosted within the Neoproterozoic strata within the Adelaide Superbasin (including Stuart Shelf, Torrens Hinge Zone and Adelaide Rift Complex). Examples include deposits in the Mount Gunson region (MinDep 3088) on the Stuart Shelf and the Kapunda deposit (MinDep 4856) north of Adelaide.

A large proportion of the Adelaide Superbasin was deformed by the Delamerian Orogeny during the Cambrian and Ordovician. The magmatism, metamorphism and deformation associated with this event formed the Kanmantoo deposit (MinDep 1538).

Related links

- South Australia's Mineral Deposit (MinDep) database
  https://minerals.sarig.sa.gov.au/MineralDepositSearch.aspx
- South Australian Neoproterozoic sediment-hosted copper occurrences
  https://pid.sarig.sa.gov.au/map/mesac29855
- Delamerian Orogen mineral potential mapping: the Cu-Mo-Au mineral system
  https://pid.sarig.sa.gov.au/document/2021d028040

SEDIMENTARY COPPER MINERAL SYSTEMS OF THE STUART SHELF

The Stuart Shelf is part of the Adelaide Superbasin overlying the metal-rich Olympic Domain of the Gawler Craton and the Cariewerloo Basin in South Australia. The basin is of interest for sediment-hosted copper mineralisation known to be hosted in numerous stratigraphic intervals across the region including Mount Gunson (MinDep 3088), Myall Creek (MinDep 3030), Emmie Bluff (MinDep 3035)) and Sweet Nell (MinDep 3125).

Related links

- South Australia's Mineral Deposit (MinDep) database
  https://minerals.sarig.sa.gov.au/MineralDepositSearch.aspx
- Sedimentary Cu mineral systems, Stuart Shelf, South Australia
  https://pid.sarig.sa.gov.au/document/2024d023808
- Stratigraphic and sequence stratigraphy of the Neoproterozoic (Cryogenian-Ediacaran) Sturt Shelf, South Australia
  https://www.tandfonline.com/doi/full/10.1080/08120099.2024.2342376#abstract

PRE-COMPETITIVE GEOSCIENCE DATA (FOR COPPER EXPLORATION)

The Geological Survey of South Australia provides vital pre-competitive data, resources and services to the resource sector on South Australia's geology to inform exploration as well as decision-making by government, industry and the community.

Project links

- Gawler Craton Airborne Survey (GCAS)
  https://www.energymining.sa.gov.au/industry/geological-survey/gssa-projects/gawler-craton-airborne-survey
- ExploreSA: The Gawler Challenge
  https://www.energymining.sa.gov.au/industry/geological-survey/gssa-projects/exploresa-the-gawler-challenge
- Gawler Phase 2 (GP2): Next Generation Mineral Systems Mapping Project
  https://www.energymining.sa.gov.au/industry/geological-survey/gssa-projects/gp2-next-generation-mineral-systems-mapping

ADDITIONAL READING

Cooper BJ and McGeough MA (Eds) 2006. *South Australia mineral explorers guide. Second edn*. Department of Primary Industries and Resources South Australia. Mineral Exploration Data Package 11. https://pid.sarig.sa.gov.au/dataset/mesac26570

Heithersay P 2002. Prominent Hill discovery - URN 1: The best Cu-Au intersection in 25 years. *MESA Journal* 24:4-5. Department of Primary Industries and Resources South Australia, Adelaide. https://pid.sarig.sa.gov.au/document/mesac19329

Reynolds LJ 2001. Geology of Olympic dam Cu-U-Au-Ag-REE deposit. *MESA Journal* 23:4-11. Department of Primary Industries and Resources South Australia, Adelaide. https://pid.sarig.sa.gov.au/document/mesac19392

South Australian copper occurrences with deposit listing
https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/plans/sarig1/image/DDD/204204-005