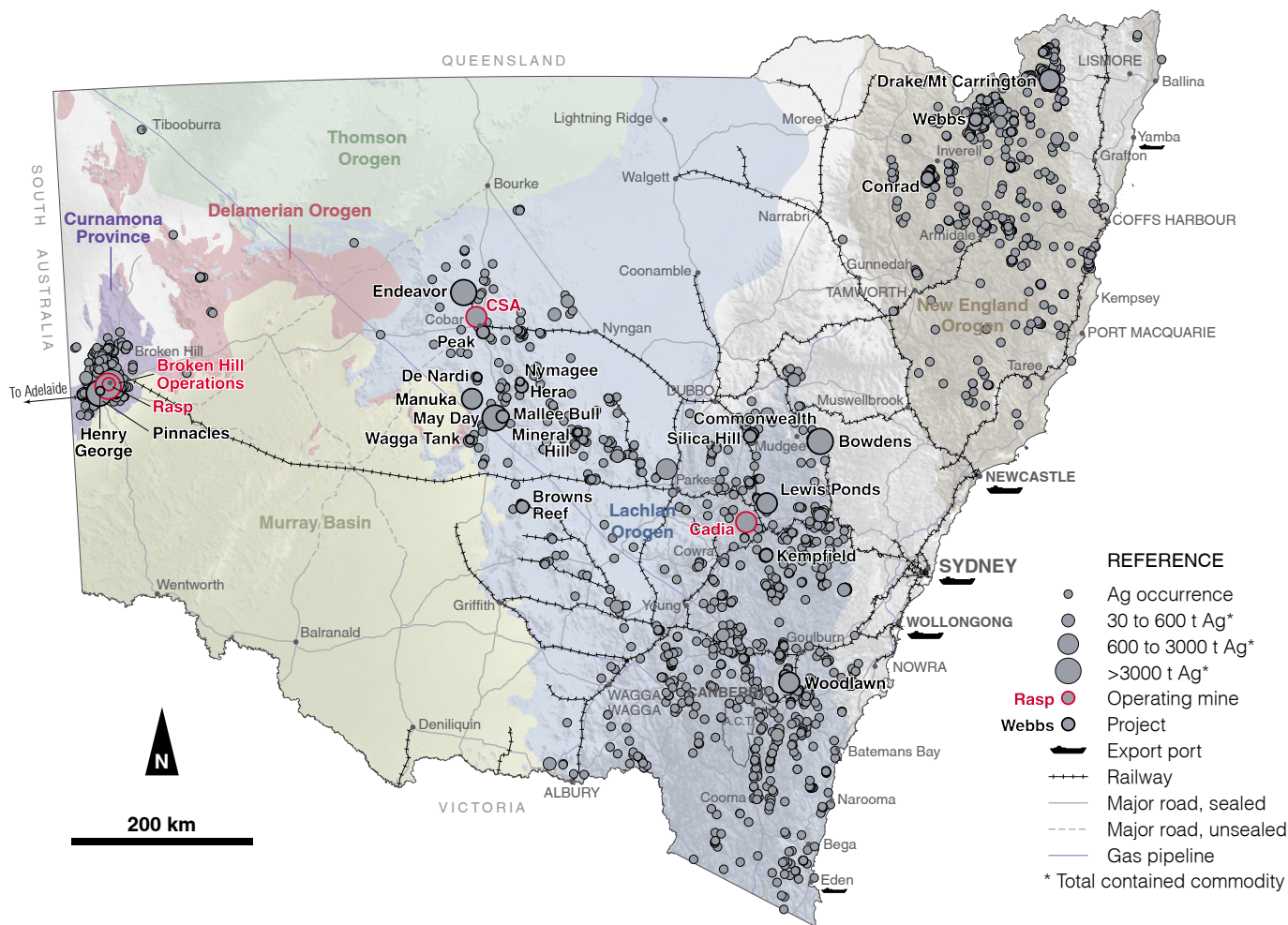


DECEMBER 2021



### Overview

- New South Wales (NSW) is a major producer of silver and home of the iconic silver-rich Broken Hill Line of Lode. Other major deposits with significant silver include the world-class Woodlawn and Endeavor deposits.
- The total metal endowment (total production + total resources) for NSW exceeds 39,039 t (1,251 Moz) of silver.
- Excellent opportunities exist for the discovery of new deposits and for the development of existing resources.

### Geological setting

New South Wales hosts a wide range of silver-rich deposits in a range of tectonic settings. In some deposits silver is produced as one of the primary commodities (e.g. Broken Hill, Endeavor). In many others it is a significant credit along with gold, copper, lead and zinc (e.g. Cadia).

### Deposit types

**Broken Hill Type (BHT)** — these include the iconic Broken Hill lead-zinc-silver Line of Lode.

**Volcanic-Associated Massive Sulfide (VAMS)** — these include Woodlawn, Lewis Ponds and many others.

**Epithermal** — low and intermediate sulfidation epithermal systems commonly have significant silver in addition to lead-zinc and/or gold. Examples in NSW include Mineral Hill mine (Au-Cu-Pb-Zn-Ag), Bowdens (Ag-Pb) and the Drake district (e.g. Mt Carrington Au-Ag deposits).

**Sediment-hosted massive sulphide (SHMS)** — these systems include the world-class Endeavor base metal (Pb-Zn-Ag) deposit, which is located in the northwestern Cobar Basin.

**Orogenic base-metal** — these deposits can be large, often high grade and can be vertically extensive. They include examples where silver is a primary commodity (e.g. Thackaringa-type deposits near Broken Hill) and those with significant silver credits along with gold, copper and base metals (e.g. Browns Reef).

**Intrusion-related** — these deposits are commonly polymetallic and can include a range of precious, base metal and speciality metals (e.g. Pb, Zn, Sn, In, Au) in addition to significant silver. Examples include the Conrad and Webbs silver deposits. Several important Cobar-style deposits have recently been re-interpreted as intrusion-related (e.g. Peak and CSA).

**Carbonate and sandstone hosted systems (MVT)** — examples in NSW include the Manuka silver-lead and De Nardi lead-zinc-silver deposits.

## Prospective terranes

### Curnamona Craton

The Palaeoproterozoic Curnamona Craton hosts the world-famous Broken Hill Line of Lode (Broken Hill Operations, Rasp). Recent exploration success includes the discovery of the Henry George and 11:30 deposits to the southeast of Broken Hill. Many of the major deposits in this area are BHT deposits although there is also potential for SEDEX-type deposits under cover.

### Lachlan Orogen

The Ordovician to Carboniferous Lachlan Orogen is highly prospective for silver. Recent exploration has largely focussed on the large copper and gold systems within the terrane however the area is host to a range of silver-rich deposit types.

Exploration opportunities exist for:

- VAMS-type deposits including Woodlawn and Lewis Ponds are associated with the Silurian to Devonian deep marine basins (Hill End Trough, Goulburn Basin).
- Epithermal systems range in age from Silurian to Permian and are associated with areas of shallow submarine to subaerial volcanism (e.g. the Canbelego-Mineral Hill Volcanic Belt) and the flanks of the Sydney Basin (Bowdens).
- SHMS (Endeavor) and 'Cobar-type' (distal intrusion-related Cu-Au) deposits (Peak, CSA), including some with associated skarn mineralisation (Hera) in the Cobar Basin-Rast Trough.
- Carbonate- and sandstone-hosted base metal-silver deposits associated with the Devonian Winduck Shelf. Examples include the Manuka silver mine and De Nardi deposit.

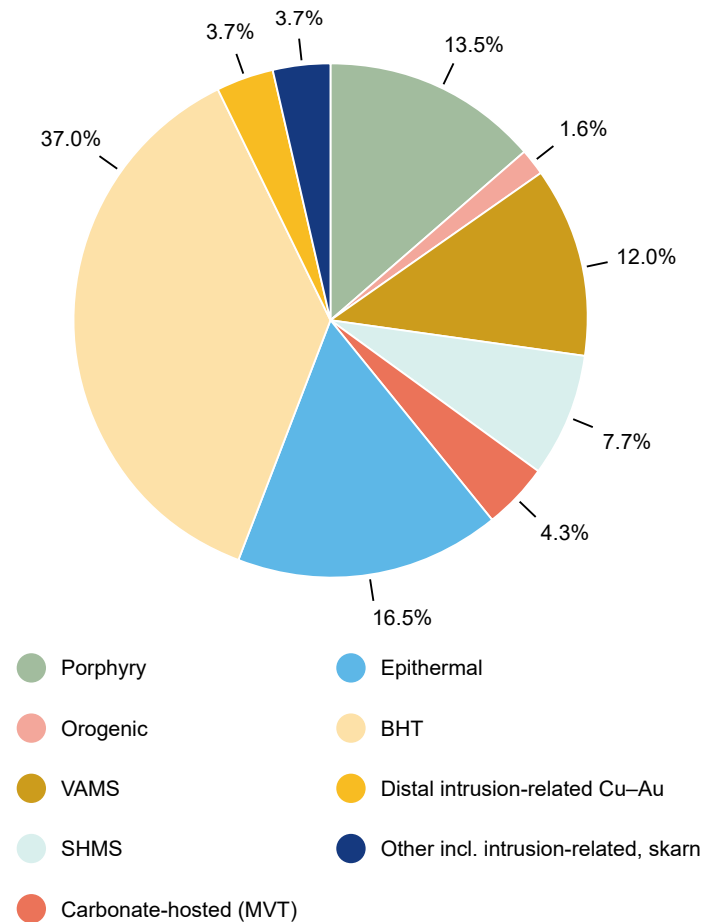
### New England Orogen

The Devonian to Triassic New England Orogen is under-explored by Australian standards. The orogen is host to many intrusion-related systems with significant silver (e.g. Conrad) as well as intermediate sulfidation epithermal systems (e.g. Drake). There is also untested potential for a range of other deposit types.

## Silver endowment (past production + current resources) for NSW, classified by deposit type

Total endowment >39,039 t (1,251 Moz)

Current resources >24,163 t (777 Moz)



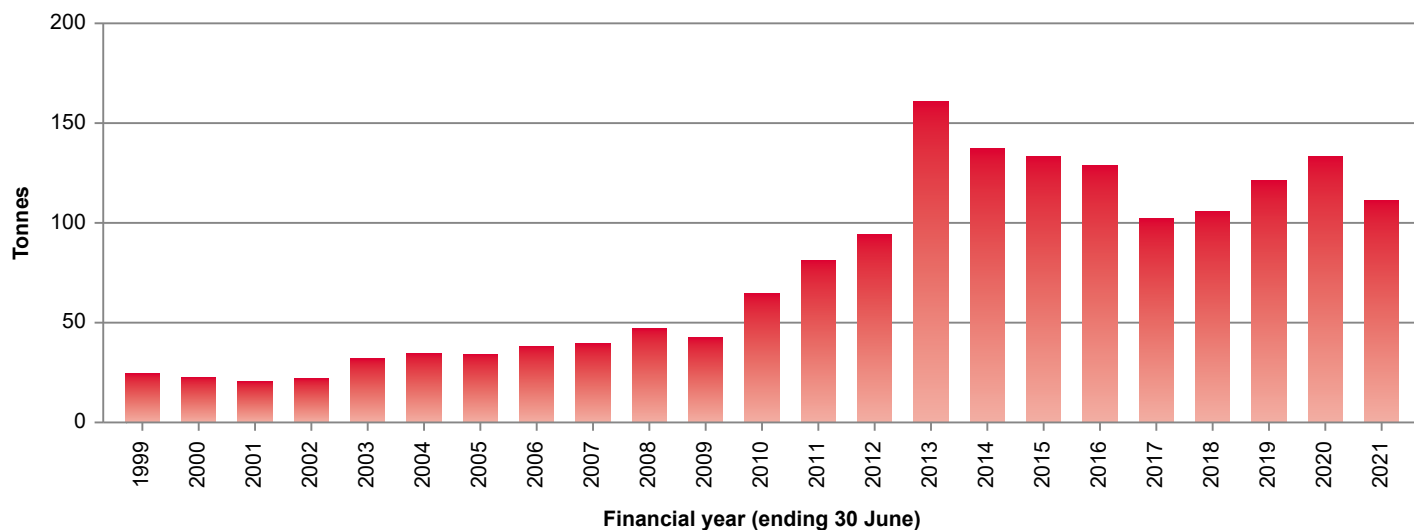
New Cobar pit, Cobar.

## Summary of significant silver resources within NSW

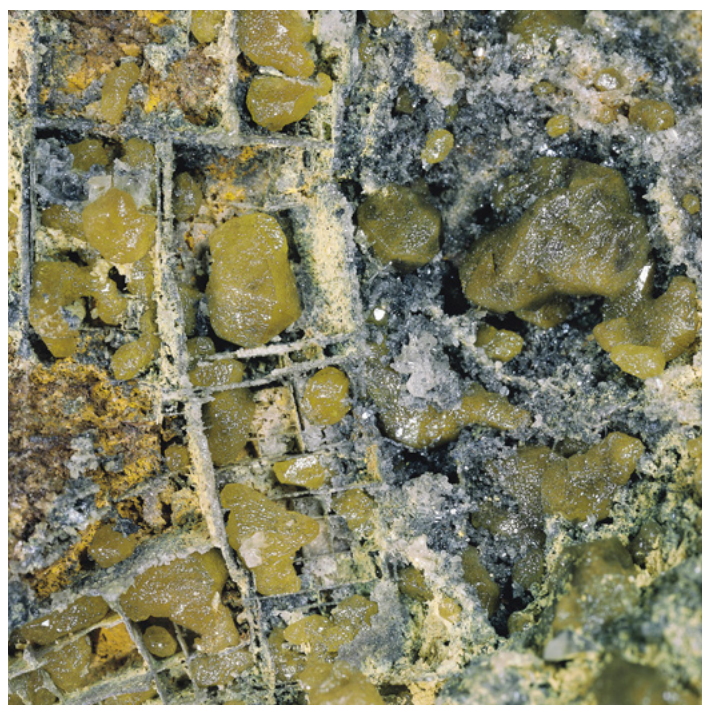
	Mine name Deposit type	Current resources and reserves (JORC)	Contained silver (kg)	Contained silver (Koz)
MINES	<b>Broken Hill Operations</b> BHT	Southern Operations: (total resources) 11.7 Mt @ 9.3% Zn, 6.8% Pb, 72 g/t Ag Southern Operations: (proved & probable) 11.7 Mt @ 6.2% Zn, 4.8% Pb, 50 g/t Ag Central Blocks: (inferred) 0.7 Mt @ 5% Zn, 4% Pb, 43 g/t Ag North Mine Upper: (total resources) 1.0 Mt @ 7% Zn, 9% Pb, 140 g/t Ag North Mine Deeps: (measured & indicated) 3.3 Mt @ 11.5 Zn, 13.8 % Pb, 224.4 g/t Ag Potosi: (inferred) 1.6 Mt @ 14% Zn, 3% Pb, 46 g/t Ag Silver Peak: (inferred) 0.4 Mt @ 5% Zn, 9% Pb, 77 g/t Ag Flying Doctor: (indicated & inferred) 1.5 Mt @ 3% Zn, 4% Pb, 44 g/t Ag	1,923,420	61,839
	<b>Cadia Valley Operations</b> Porphyry Au-Cu	Cadia East: (indicated) 2,900 Mt @ 0.35 g/t Au, 0.26% Cu, 64 ppm Mo, 0.67 g/t Ag Cadia East: (probable) 1,300 Mt @ 0.44 g/t Au, 0.29 % Cu	1,015,000	32,633
	<b>CSA</b> Distal intrusion-related Cu-Au	(measured & indicated) 7.9 Mt @ 5.5% Cu, 23 g/t Ag (inferred) 3.8 Mt @ 5.66% Cu, 22 g/t Ag (total reserves) 7.7 Mt @ 3.84% Cu, 15.8 g/t Ag	265,300	8,530
	<b>Project name</b> Deposit type			
PROJECTS	<b>Bowdens</b> Epithermal	(total resources) 128 Mt @ 40 g/t Ag, 0.26% Pb, 0.38% Zn (proved & probable) 29.9 Mt @ 69.01 g/t Ag, 0.44% Zn, 0.32% Pb	5,069,867	163,000
	<b>Commonwealth VAMS</b>	(inferred) 0.912 Mt @ 2.4 g/t Au, 44 g/t Ag, 1.2% Zn, 0.5% Pb, 0.08% Cu Silica Hill North & Silica Hill South (inferred) 0.71 Mt @ 88 g/t Ag, 0.8 g/t Au	12,608	3,299
	<b>Drake/Mt Carrington</b> Epithermal	Lady Hampden, White Rock (indicated) 3.54 Mt @ 0.3 g/t Au, 73 g/t Ag Lady Hampden, White Rock, White Rock North, Silver King (inferred) 8.95 Mt @ 0.1 g/t Au, 51 g/t Ag	709,253	22,803
	<b>Endeavor</b> (care and maintenance) SHMS	(total resources) 26.2 Mt @ 6.7% Zn, 4.1% Pb, 62 g/t Ag, 0.18% Cu (proved & probable) 3.7 Mt @ 7.6% Zn, 4.8% Pb, 74 g/t Ag	1,624,400	52,226
	<b>Kempfield VAMS</b>	(total resources) 26 Mt @ 40 g/t Ag, 0.12 g/t Au, 0.46% Pb, 1.0% Zn Oxide/Transitional: (total resources) 6.0 Mt @ 55 g/t Ag, 0.11 g/t Au Primary: (total resources) 20 Mt @ 35 g/t Ag, 0.13 g/t Au, 0.60% Pb, 1.3% Zn	1,026,415	33,000
	<b>Lewis Ponds VAMS</b>	(inferred) 6.2 Mt @ 2 g/t Au, 80 g/t Ag, 2.7% Zn, 1.6% Pb, 0.2% Cu	496,000	15,947
	<b>Mallee Bull</b> Distal intrusion-related Cu-Au	(indicated & inferred) 6.76 Mt @ 1.8% Cu, 31 g/t Ag, 0.4 g/t Au, 0.6% Pb, 0.6% Zn	209,560	6,738
	<b>Manuka</b> Carbonate-hosted (MVT)	(total resources) 38.8 Mt @ 42 g/t Ag, 0.61% Pb Stockpile: (probable) 0.516 Mt @ 70 g/t Ag	1,628,796	52,367
	<b>May Day</b> Distal intrusion-related Cu-Au	Open Pit Oxide (indicated) 0.510 Mt @ 1.0. g/t Au, 20.4 g/t Ag Open Pit Sulphide (indicated) 0.390 Mt @ 1 g/t Au, 28.2 g/t Ag, 1.31% Zn, 0.84% Pb Underground Sulphide (indicated) 0.170 Mt @ 1.03 g/t Au, 39.4 g/t Ag, 1.67% Zn, 1.21% Pb	28,100	903
	<b>Nymagee</b> Distal intrusion-related Cu-Au	(indicated & inferred) 1.5 Mt @ 2.3% Cu, 0.8% Pb, 1.5% Zn, 18 g/t Ag	26,100	839
	<b>Rasp</b> (care and maintenance) BHT	(probable) 3.17 Mt @ 6.0% Zn, 4.6% Pb, 64 g/t Ag (indicated & inferred) 16.503 Mt @ 6.6% Zn, 5.1% Pb, 89 g/t Ag	1,468,767	47,222
	<b>Wagga Tank VAMS</b>	Southern Nights (indicated & inferred) 4.14 Mt @ 5.0% Zn, 2.0% Pb, 77 g/t Ag, 0.3 g/t Au, 0.2% Cu Wagga Tank (indicated & inferred) 0.81 Mt @ 5% Zn, 2.4% Pb, 81 g/t Ag, 0.5 g/t Au, 0.4% Cu	384	12
	<b>Webbs</b> Intrusion-related	(total resources) 1.49 Mt @ 245 g/t Ag, 0.27% Cu, 0.71% Pb, 1.56% Zn	365,050	11,737
	<b>Woodlawn</b> (care and maintenance) VAMS	Underground: (total resources) 7.4 Mt @ 6% Zn, 1.9% Cu, 2.2% Pb, 0.5 g/t Au, 48 g/t Ag Underground: (probable) 3.1 Mt @ 5.2% Zn, 1.6% Cu, 1.8% Pb, 0.4 g/t Au, 38 g/t Ag Reclaimed tailings: (total resources) 10.8 Mt @ 2.2% Zn, 0.5% Cu, 1.3% Pb, 0.3 g/t Au, 31 g/t Ag Reclaimed tailings: (proved & probable) 9.3 Mt @ 2.2% Zn, 0.5% Cu, 1.3% Pb, 0.3 g/t Au, 31 g/t Ag	690,000	22,184

Note: Project totals for contained silver are based on combined resources.

## Silver production in New South Wales (1999–2021)



*Native silver from the Endeavor mine. Specimen is 10 cm tall.  
Photo courtesy of John Chapman.*



*Chlorargyrite (AgCl) from Broken Hill.*