Occurrences of Gemstone Minerals in Tasmania

Tasmanian Government

Department of State Growth
Mineral Resources Tasmania

OCCURRENCES OF GEMSTONE MINERALS IN TASMANIA

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(9th Edition)
October 2023

ISBN 0 7246 4011 8

Cover: Fluorite and siderite, Mt Bischoff.

Rear cover: A beautiful example of crocoite crystals from the Red Lead mine, Dundas (photo by Steve Sorrell).

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Picture left: Sieving gravel in the Weld River (photo by Hannah Moore).

Introduction

This book has been prepared as a guide for people who are interested in collecting and polishing Tasmanian gemstones. The descriptions and localities of the various minerals have been compiled from a number of sources including: *A Catalogue of the Minerals of Tasmania* by R. S. Bottrill and W. E. Baker, 2008; Lancaster (1980, 2000); *Gemstones in Tasmania* by P. B. Nye (1927); *Tasmanian Museum and Art Gallery mineral catalogue*; and Dr F. L. Sutherland, formerly of the Tasmanian Museum and Art Gallery. Staff of Mineral Resources Tasmania, and various lapidary clubs in Tasmania, have supplied some localities. In many cases where localities are taken from publications, the precise locality has not been given therein. Similarly the location map in this book only represents general geographic localities and should not be taken to be indicative of precise locations. The list of localities is by no means complete, and with more intense searching it can be expected that gemstones will also be found in other areas.

Many of the areas mentioned in this book are on private property or mining leases, and the permission of the owner or lessee should be obtained before a search is made. Some areas are in National Parks or Forest Reserves, where collecting may not proceed without the authority of the relevant land manager. Collectors must ascertain the land status of a particular locality and obtain permission from the relevant land management agency or owner before removing specimens. Land status maps are available via the Map Veiwer on the Mineral Resources Tasmania webiste (www.mrt.tas.gov.au). There are a number of designated fossicking areas in Tasmania, and fossicking outside of these areas without a prospecting licence is not permitted (see page 40).

Note: all photos by R. S. Bottrill except where noted.

Panning at Lymington.

List of Minerals

Although many kinds of gemstones have been reported in Tasmania, few specimens of the more precious varieties have been found. Varieties of crystalline and amorphous silica are by far the most abundant. In the following listing the physical properties of each mineral are presented as follows:

H = hardness (Moh's scale)
SG = specific gravity (g/cm^3)
CS = crystal system

AGATE see Quartz

AGATE, MOSS see Quartz

ALEXANDRITE see Chrysoberyl

ALMANDINE see Garnet

AMBER fossil resin;
H = 2–2.5; SG = 1.1 (not a mineral)

Historically, amber was probably one of the first gemstones in the world to be cut and it is still highly valued. Amber is generally a transparent to translucent yellow substance with a conchoidal fracture. It has been reportedly found near Wynyard and Rebecca Creek on the West Coast.

AMETHYST see Quartz

ANDRADITE see Garnet

ANDALUSITE aluminium silicate;
H = 7.5; SG = 3.2; CS = orthorhombic

Andalusite occurs as pink, brown or white prismatic crystals in some metamorphic and igneous rocks. Large crystals occur at Blue Tier and on King Island, and it occurs as small crystals and masses at many sites in Tasmania. The variety chiastolite shows a black cross in cross section. Chiastolite occurs near Zeehan. No gem quality andalusite is known from Tasmania. Rough, altered chiastolite crystals up to about 40cm can be found between Temma and Interview River, though not gemmy.

APATITE see Fluorapatite

AQUAMARINE see Beryl

AXINITE see Ferroaxinite

Andradite garnet from Kara Mine.

AZURITE basic copper carbonate;
H = 3.5–4; SG = 3.8; CS = monoclinic

Azurite is sky blue in colour and in Tasmania the known occurrences are of thin scaly masses and small crystals, mostly unsuitable as gems. Areas where azurite is found include Cascade River, Heazlewood, Mackintosh River, Mt Lyell, Penguin, Saxons Creek, Smithton and Zeehan. No gem azurite is known in Tasmania.

BERYL beryllium aluminium silicate;
H = 7.5–8; SG = 2.6–2.8; CS = hexagonal

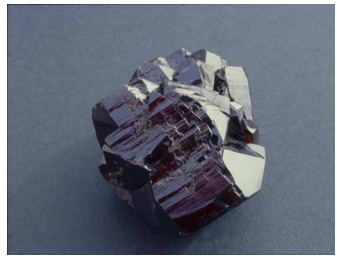
The varieties of beryl mainly used as gemstones are emerald (bright emerald green), aquamarine (pale blue to pale green) and heliodor (golden beryl). Colourless to bluish green crystals of beryl have been recorded from Killiecrankie and South Mt Cameron. Other areas are Moina (pale blue aquamarine and pale green), Mt Bischoff (deep blue), Great Republic mine (Ben Lomond) (mottled yellow-brown), Lake Cethana (blue) and along the St Pauls River near Royal George (bright green crystals). Small specimens of emerald have been reported from Thureaus Deep Lead near St Helens. Tasmanian beryl has rarely been used for gems.

Beryl (aquamarine) from Mt Bischoff.

CAIRNGORM see Quartz

CASSITERITE tin oxide;
H = 6–7; SG = 6.8–7.1; CS = tetragonal

Most of the cassiterite occurring in Tasmania is black or brown but red, yellow and colourless crystals have been found. The coloured crystals have sometimes been large enough to cut as gems. Ruby tin (red cassiterite) occurs at Goshen, Mt Cameron, Pats River on Flinders Island, Rossarden, Ruby Flats near Branxholm and Mt Bischoff.



Cassiterite from Rossarden.

CATS EYE see Chrysoberyl

CERUSSITE lead carbonate;
H = 3–3.5; SG = 6.5–6.6; CS = orthorhombic

Cerussite, Dundas Extended mine (photo by Steve Sorrell).

This mineral is common in the oxidised zones of some lead deposits, and may occur in small gemmy crystals, usually colourless to white, brown or yellow in colour. It has a high lustre and dispersion, making an attractive faceted stone, but is relatively soft and brittle, so is mostly only of interest to collectors. Good specimens were found in the mines at Dundas, particularly the Comet, Kapi, West Comet, Dundas Extended and Adelaide mines. Specimens of the mineral have also been recorded from the Silver Queen, Sylvester, Austral and other mines in the Zeehan field; from the Whyte River and Heazlewood silver-lead mines; and from the Magnet mine. Most of these mines produced spectacular specimens of a bright yellow variety commonly known as 'chrome cerussite', as well as the more common white variety.

CHALCEDONY see Quartz

CHERT see Quartz

CHIASTOLITE see Andalusite

CHRYSOBERYL beryllium aluminium oxide;
H = 8.5; SG = 3.5–3.8; CS = orthorhombic

A variety of chrysoberyl known as alexandrite is the best known gemstone of this mineral and is characterised by being emerald green in ordinary light and columbine-red in artificial light. It has been found in limited quantities at Weld River (northeast Tasmania). One stone of very good quality and several of poorer value have been reported. Pale green stones are sometimes called chrysolites but this term is usually applied to olivine. Good cuttable stones with chatoyancy (cymophane or Cats Eye) have been found in the Ringarooma River near Derby and near Moorina.

CHRYSOCOLLA hydrated copper silicate;
H = 2–4; SG = 2.0–2.4; CS = amorphous

A pale blue to green massive glassy material which has been recorded in small amounts at Colebrook Hill and the Kara mine.

CITRINE see Quartz

CLINOZOISITE see Epidote

COMMON OPAL see Opal

CORDIERITE Magnesium iron aluminium silicate;
H = 7–7.5; SG = 2.6–2.7; CS = orthorhombic

Also known as iolite in the gem trade. This mineral is moderately common in contact metamorphosed rocks in various parts of Tasmania, particularly the North East. It is usually dark blue, brown or black and glassy, but no gem quality material is known in Tasmania.

CORNELIAN see Quartz

CORUNDUM aluminium oxide;
H = 9; SG = 4.0–4.1; CS = hexagonal

Corundum is the mineral of which both sapphire and ruby are varieties. Most gem corundum is described as sapphire unless coloured red or black. Sapphire: fairly widespread in alluvial tin areas of the North East but only occasional specimens are suitable to cut. They vary in colour from green (oriental emerald), blue, yellow (oriental topaz) and purple (oriental amethyst). Sometimes the stones are parti-coloured and some star sapphires have been found. Notable localities are Branxholm, Derby, Gladstone, Lottah (some star sapphires), Main Creek, Moorina, Mt Cameron, Mt Stronach, and in the Weldborough–Weld River area. The largest sapphire recorded from Tasmania is a 52.8 g parti-coloured stone found in the Weld River area. Other areas where sapphires have been found are Blythe River, Boat Harbour–Sisters Creek (in sub-basalt gravel), Launceston, Lisle and Stanley River tinfield.

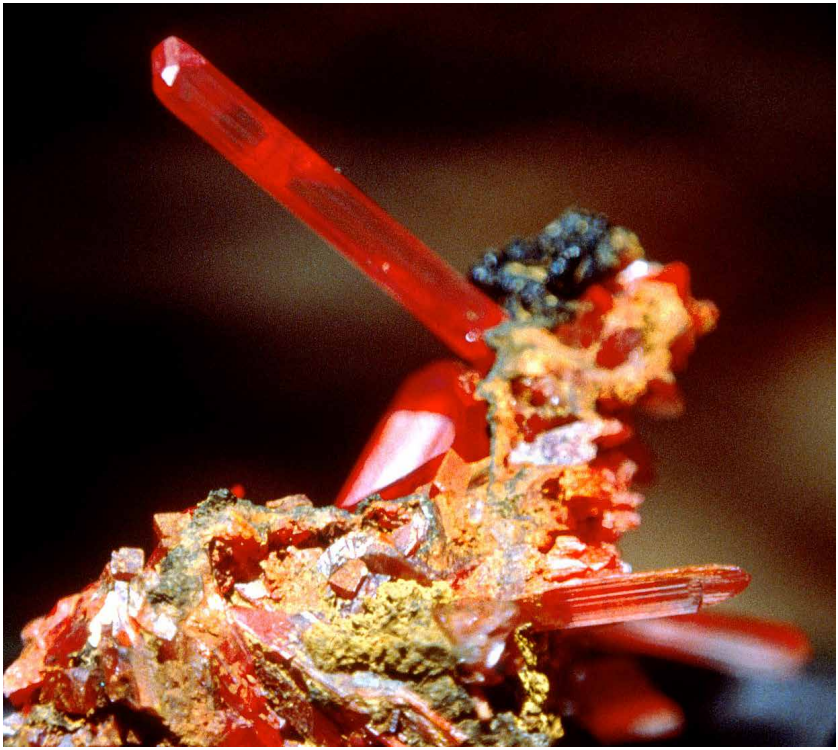
Clinozoisite-diopside-grossular rodingite from Andersons Creek (photo by M. Latham).

Ruby from the Weld River, Moorina.

Ruby: the red chromian variety of corundum. This has been reported from tin workings of northeast Tasmania and confirmed from Moorina, although some may really be zircon or garnet.

CROCOITE lead chromate;
H = 2–3; SG = 5.9–6.; CS = monoclinic

This mineral occurs as attractive red crystals, usually kept as specimens but sometimes cut as non-durable gemstones. Crocoite was quite abundant at many old silver-lead mines on the West Coast, and is still being mined in places. Originally much was mined for use as a flux in the Zeehan smelters. The principal locations are the Heazlewood, Magnet and Whyte River mines near Waratah; the Red Lead, Adelaide, Dundas Extended, Kapi and West Comet mines at Dundas; and the Silver Queen mine at Zeehan. It is usually opaque but may be semi-transparent and gemmy.



Crocoite from Red Lead mine, Dundas (photo by Mike Adams).

DARWIN GLASS Silica-rich glass (not a mineral);
H = 5, SG = 2.4, CS = amorphous

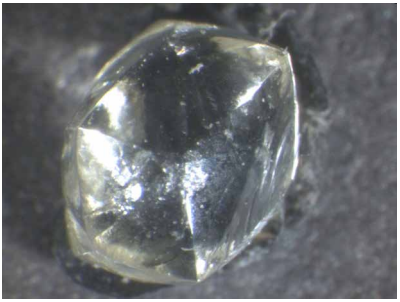
This is an impact glass, resulting from a large meteorite or asteroid impact which formed a crater near Darwin, southeast of Queenstown. The crater is in the World Heritage Area (WHA) and collecting is forbidden, but specimens can be found in areas outside the WHA like at Ten Mile Hill. Darwin glass occurs as irregular, molten-looking fragments up to a few centimetres, in a wide area mostly south of Queenstown. It is translucent to opaque, or rarely transparent in small pieces, and of a black to pale green or brown colour. It has sometimes been used as a gem material.

DATOLITE calcium borosilicate
H = 5–5.5; SG = 2.9; CS = monoclinic

Datolite is usually colourless to pale yellow, green or blue, and is similar to topaz in lustre and appearance. It occurs at Avebury Mine and Colebrook Hill, near Rosebery, in pale green crystals to a few centimetres, with ferroaxinite, quartz and danburite.

Darwin Glass from meteorite impact southeast of Queenstown.

DIAMOND carbon;
H = 10; SG = 3.5; CS = cubic


Diamond from Corinna - Savage River district.

About 18 diamonds of small size (average mass 25 mg, some specimens up to 67 mg or 0.3 carat) have been found in gold-bearing alluvial deposits in Harveys Creek, a tributary of the Little Savage River. They occurred in good crystals with points tinged yellow. Reports that a small diamond was found in alluvial material in the Hellyer River and in peridotite at Heazlewood are unconfirmed. 'Killiecrankie Diamonds' from Killiecrankie are actually topaz. Some small diamonds have been found in the Corinna area in recent years.

DIOPSIDE Calcium magnesium silicate;
H= 5–6; SG = 3.2–3.3; CS = Monoclinic

This pyroxene is a common component of many igneous and metamorphic rocks, but is seldom of gem interest. In the Weld River, near Glovers Bluff, a massive white skarn occurs in altered dolomite. This is locally composed of fine grained, almost pure diopside, usually with variable amounts of quartz, calcite and other minerals. A pink to white clinozoisite-grossular-diopside rich rodingite (q.v.) occurs at Andersons Creek near Beaconsfield has been described as clinozoisite variety thulite. Attractive fine-grained pale to dark green massive diopside and diopside hornfels occurs near Trial Harbour and is commonly cut and polished and marketed as "Jade".

EMERALD see Beryl

ENSTATITE magnesium pyroxene silicate;
H = 5–6; SG = 3.2–3.9; CS = Orthorhombic

Enstatite occurs as large black to green grains in the Blythe River, in the Derby region and in numerous Tasmanian basalts.

EPIDOTE - CLINOZOISITE hydrous silicate of calcium, iron and aluminium;
H = 6.7; SG = 3.25–3.5; CS = monoclinic

Epidote is usually yellowish green to greenish black but clinozoisite may be white, pink, brown and other colours. Most examples of the mineral in Tasmania are fine grained. Areas where epidote is known to occur include Calstock south of Deloraine, Grassy (King Island Scheelite mine), Lake Jukes, Magnet Range, Mt Bischoff area, Mt Claude (at the Round Hill silver-lead mine), the Smithton area, South Comstock, Tyndall Creek, Whyte River, Kara mine and Andersons Creek. See also rodingite.

Diopside skarn "Jade" from Trial Harbour.

FELDSPAR potassium, sodium and calcium aluminium silicates;
(Group) H = 6; SG = 2.6; CS = triclinic and monoclinic

This group includes orthoclase, albite, anorthoclase, sanidine and several other species, mostly white or pale coloured. Feldspars are a major component of most igneous rocks, and where coarse grained or in large masses can be of gem quality or lapidary interest. Amazonite is a green potassic feldspar which occurs in small amounts in granite near Scottsdale. Gemmy, colourless anorthoclase (moonstone) occurs as crystals to a few centimetres in basalt near Boat Harbour, and has been cut as gems. Sanidine and feldspar porphyries occur near Cygnet.

FERROAXINITE calcium iron aluminium borosilicate;
H = 6.5–7; SG = 3.3; CS = triclinic

Ferroaxinite is generally clove brown to purplish in colour and occurs as tabular crystals which are sometimes cut as gemstones. The Colebrook mine near Dundas is the best known locality but ferroaxinite has also been found at Mt Ramsay, Mt Lindsay, Avebury and has been reported from Kara.

FLINT see Quartz

FLUORAPATITE calcium fluorophosphate;
H = 7–7.5; SG = 2.6–2.7; CS = orthorhombic

Fluorapatite is usually green, blue-green or violet-blue but crystals of white, yellow, grey, red, pink, brown and other colours do occur. Fluorapatite has been reported as occurring at Crystal Hill in the Blue Tier area and at Mt Bischoff in porphyry. Visible crystals have been found sparsely in the Rossarden tin mines, Balfour copper mines and in gem gravels at Moorina (gemmy).

FLUORITE calcium fluoride;
H = 4; SG = 3.2; CS = cubic

Because of its low hardness, fluorite is only occasionally used as a gemstone. It shows great variety in colour, but colourless, blue, green and purple crystals are the most common. It has been found at the Great Republic mine, Kara, Lottah, Luina, Moina, Mt Bischoff, Mt Ramsay, Rosebery, Zeehan and many other localities.

Purple fluorite and yellow siderite, Mt Bischoff.

GAHNITE see Spinel

GARNET silicates of iron, calcium, magnesium, manganese,

(Group) aluminium, titanium and chromium;

H = 6.5–7.5; SG = 3.3–4.3; CS = cubic

The major species of this group identified in Tasmania include almandine, andradite, grossular, spessartine and uvarovite.

The colour of garnet varies, depending on composition, from dark brown and black to green, pink, yellow and colourless. When the colour is well developed and the crystals are free from flaws, they are considered to be low-value gems.

Garnet is common in metamorphic rocks and some alluvial deposits. Occurrences include Comstock, Grassy on King Island (greenish yellow and brown), Hudson River, Maynes tin mine (south of Mt Heemskirk), Moina, Round Hill, Mt Ramsay, Mt Stormont, Sea Elephant, Stonyford (about 2 km west of St Helens — small and pink), Trial Harbour, Whyte River and from many of the Precambrian schists which occur in the western half of Tasmania. Jacinth is a name sometimes given to cinnamon-brown gem garnet but this name usually refers to brown zircon. Green-brown andradite garnet is abundant at the Kara mine (in crystals to 30 mm) but is rarely gemmy.

Red spessartine garnet occurs with rhodonite in the Rosebery mine, and spessartine-almandine at Nelson Bay River near Temma. Bright green uvarovite-andradite garnet occurs at Trial Harbour and Avebury (andradite-uvarovite). Black to pink andradite and spessartine garnet occurs near Cygnet.

GROSSULAR see Garnet

HELIODOR see Beryl

HERCYNITE see Spinel

HORNFELS generally silica-rich rocks;

H = 6–7.5; SG » 2.5–2.7

A fine-grained, hard, baked rock usually formed by contact with a molten igneous rock. Some variably coloured siliceous hornfels from near St Valentines Peak, Clifton Beach and south of Hobart have been found to polish well and be of lapidary interest. Green, diopside rich hornfels of gem quality is found at Trial Harbour; and may include some nephrite jade and green garnet. See also Wollastonite.

HORNSTONE see Chalcedony

HYACINTH see Zircon

JACINTH see Garnet, Zircon

JADE See Nephrite and Diopside

JARGOON see Zircon

JASPER see Quartz

KILLIECRANKIE DIAMOND see Topaz

MALACHITE basic copper carbonate;
H = 3.5–4; SG = 3.9–4.0; CS = monoclinic

Although malachite crystallises as needle-like crystals, it usually takes a banded, granular or earthy habit and is green in colour. In Tasmania malachite is commonly only found as a thin encrustation but occasional samples, large enough to polish, have been found. Malachite has been found at Frankford, Heazlewood, Mackintosh River, Mt Jukes, Mt Lyell, Orieco, Scamander and Zeehan.

MARCASITE see Pyrite

MORION see Quartz

NEPHRITE calcium, magnesium amphibole
H = 6.5–7; SG = 3; CS = monoclinic

A fine grained massive, tough variety of actinolite; a type of Jade. Some dark green to black nephrite jade occurs with diopside hornfels near Trial Harbour.

OLIVINE magnesium and iron silicates;
(Group) H = 6–7; SG = 3.2–4.4; CS = orthorhombic

Olivine is usually grass green to olive green in colour, glassy and transparent to translucent, and is known as peridot or chrysolite in the gem trade. Most Tasmanian olivine is forsterite, the magnesium-rich member, but some is fayalite, the iron-rich member. Olivine is a major component of most basalts, mostly in very fine grains, but sometimes in coarse phenocrysts. It may also occur in coarse-grained aggregates known as xenoliths, derived from deep in the Earth. The crystals in these rocks may be up to a few centimetres, and these may be of gem quality. Olivine-rich xenoliths are locally abundant at Deloraine, Doctors Rocks, Don Heads, East Arm, Emu River, Scottsdale, Derby, The Sideling, Great Lake, Huonville, Wilmot, Branxholm, Weldborough and many other areas. Alluvial crystal fragments up to a centimetre or more have been found in the Ringarooma River downstream from Derby. This olivine is frequently gemmy, and larger stones make good gems.

ONYX see Quartz

OPAL hydrated amorphous silica;
H = 5.5–6.5; SG = 1.9–2.3

No confirmed occurrences of precious opal have been recorded but common opal of various colours has been found at Bothwell, Brighton, Cornelian Bay, Cygnet, Goulds Country, Harman River, Lindisfarne, Montagu, Mt Cameron, Proctors Road, Rushy Lagoon area, Sandy Bay, Shag Bay, and Supply River. Much of this is of lapidary interest.

Wood opal is sometimes referred to as fossilised wood, opalised wood or silicified wood. Much of the wood opal in Tasmania was formed when Tertiary basalt flowed over forest areas and associated silicification preserved the wood structure. Fragments are found in post-basalt gravels or in situ at the base of basalt flows during quarrying operations. Silicified wood is sometimes found in Permian rocks. Notable occurrences of wood opal are at Brighton, Carrick, Conara, Cornelian Bay, Derby, Dial Range, Epping Forest, Evandale, Franklin Rivulet, Gladstone, Gretna, Hadspen, Hollow Tree, near Howard Plains, Howrah, Latrobe, Launceston, Little Forester River, Longford, Lune River, Macquarie Plains, Mangalore, Meadowbank, Penstock, Port Sorell, Queen River, Richmond, Rose Bay, Ross, and Swansea.

Wood opal from Bushy Park.

PEARL Calcium carbonate;
H = 3; SG = 2.9; CS = orthorhombic

This is a natural, biogenic form of aragonite. Small, well-formed pearls, to a few millimetres in diameter, have been found in oysters near Dodges Ferry (C. Bain, pers. comm.).

PERIDOT see Olivine

PETRIFIED WOOD AND FERN

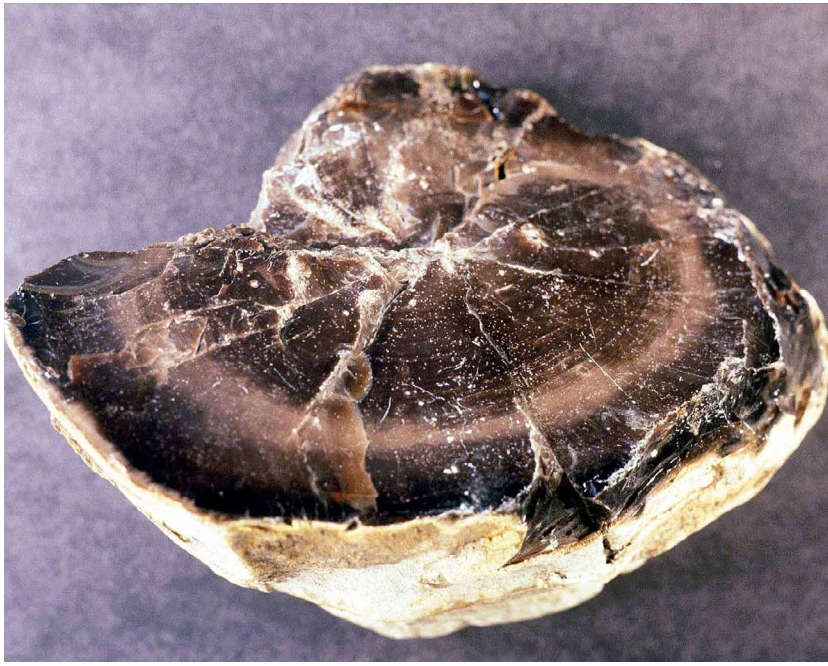
Most petrified wood and fern is chalcedonic but some is opaline (see Opal). It is widely used as a semi-precious gemstone, usually in varied shades of brown and with distinct woody textures and banding. The petrified ferns can have intricate patterns and colouration and good specimens may be very valuable. These gem quartz/chalcedony varieties have been recorded from numerous localities including Flinders Island, Mt Cameron, Goulds Country, Tunnel Marsh, Bushy Park, Little Swanport and, in particular, the designated fossicking areas at Lune River–Coal Hill, Penguin and Weymouth. Generally only smaller, rhizomatous stems of petrified fern occur at Hadspen, Penstock Lagoon, Milton, Little Swanport, Swanwick and Woodbury. These show evidence of being more water washed and transported, and are most likely Triassic in age. By contrast, Lune River materials are angular in form and appear to be little-weathered and have been transported downslope only a short distance from their original position. They range from a diminutive bracken-type rhizome to sturdy arborescent forms, not unlike some of today's tree ferns.

Collecting of the gems (agate and petrified wood) at Lune River led to systematic palaeontological studies of the fern materials, with work on the wood (araucarioides?) and cycad type (cycadeoidales?) materials still awaiting expertise and funding for their study. Since work began on the Lune River Cretaceous permineralised ferns in the mid-1970s, over a dozen species have been described. Of the 15 species of Osmundacaulis from mid-Mesozoic strata world-wide, 13 are known from the southern hemisphere and eight of these are from Lune River. Arborescent in habit, they ranged in height with stems upwards of 450 mm in diameter. Species identified to date include *Osmundacaulis nerii, O. jonesii, O. janii, O. richmondii, O. pruchnickii, O. griggsii, O. tasmanensis and O. andrewii*. The closely related genus Ashicaulis is represented with one species, *A. wrightii*. Three new genera have also been located in the Lune River flora and placed in the fossil fern record; the tree ferns *Oguracaulis banksii* and *Cibotium tasmanense* and the rhizomatous bracken-type fern *Tasmanopteris richmondii.*

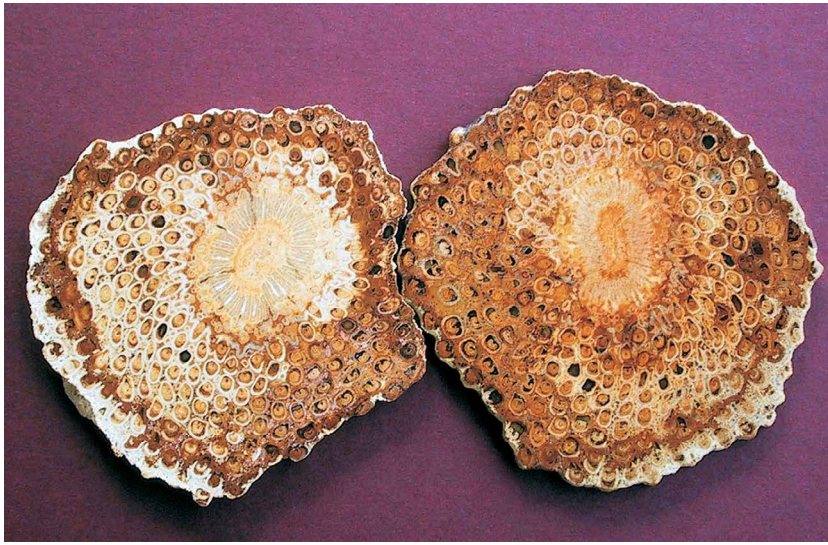
PLEONASTE see Spinel

PORPHYRY Generally potassium aluminium silicate-rich rocks; H = 6; SG = 2.6

This includes various igneous rocks, usually very feldspar rich, with coarse crystals in a finer groundmass. Numerous bodies of syenitic porphyry occur near Cygnet. These vary from off-white to pink, dark grey and bright green, with large white to cream-coloured tabular crystals of sanidine feldspar in a darker, feldspathic matrix. They have been descriptively termed biscuit-rock or magpie-rock and other names. These rocks can take a good polish where fresh, and are of some lapidary interest, although some of the occurrences are listed as geological heritage sites.



Opalised wood from Plenty.



Petrified fern from Lune River (photo by Ross Jones).

Petrified wood from Lune River.

Sanidine feldspar porphyry from Cygnet.

PRASE see Quartz

PREHNITE hydrous calcium aluminium silicate;
H = 6–6.5; SG = 2.8–3.0; CS = orthorhombic

This green mineral is moderately common in many altered igneous and other rocks in Tasmania, but is not known in cuttable quality.

PYRITE iron disulphide;
H = 6–6.5; SG = 5.0–5.1; CS = cubic

Pyrite is pale bronze-yellow with a metallic lustre and is used occasionally as a semi-precious stone. It is very common in areas of sulphide mineralisation on the West Coast. Marcasite, a polymorph of pyrite, has been found at Magnet, Mt Lyell and Mt Bischoff. Much of the 'marcasite' in jewellery is actually pyrite.

QUARTZ silicon dioxide;
H = 7; SG = 2.65; CS = hexagonal

A number of gemstones are of this composition and the different varieties have their own individual names.

Cryptocrystalline varieties (Chalcedony)

Chalcedony is fine-grained quartz of various colours with a waxy lustre, and occurs in seams associated with Tertiary volcanic rocks, in post-basalt gravel, and sometimes near the contacts of Jurassic dolerite bodies. It has been found at Beaconsfield, Cornelian Bay, Goulds Country, Heazlewood, Lisle, Little Swanport, Meredith Range, Mt Cameron, Sandy Bay and Zeehan. Gem chalcedony occurs in a number of forms, and individual names have been given to the different varieties, for example:

- Agate: banded chalcedony, often with an almost circular pattern.
- Cornelian or Carnelian: red chalcedony.
- Cornelian Agate: red and white agate.
- Iris Agate: a type of clear agate displaying rainbow colours.
- Moss Agate: chalcedony with moss-like or dendritic structures.
- Onyx: black and white banded chalcedony in even planes.
- Sard: deep brownish red chalcedony.
- Sardonyx: brown and white banded chalcedony in even planes.

Quartz from Mt Lyell.

Cut agate from Lune River.

There are many areas where these members of the chalcedony group occur. They are often found together and in association with wood opal. Many appear to have been formed during Tertiary volcanism and are found in post-basalt gravel, and some are probably formed at Jurassic dolerite contacts. Agate and other forms of chalcedony can be seen in seams and nodules in the basalt at Lune River. Grey agate can be found as pebbles in basal Permian tillite at Doctors Rocks, and this rock type may be the source of large numbers of grey agates in terrace gravels along the lower Huon River. Their location prior to deposition as pebbles in the tillite is unknown. Grey-white agates occur in dolomite at Corinna.

Occasional agates and onyx can be found in many areas in Tasmania where gravel occurs, but some of the more notable areas are Bothwell, Bronte, Camden Plains, Campania, Carrick, Cornelian Bay, Cranbrook, Dee Lagoon, Droughty Point, Fingal, Gladstone, Hagley, Heazlewood, Howrah, Huon River, Ilfraville (Beauty Point), Lindisfarne Bay, Little Pine Lagoon, Little Swanport, Lobster Creek, Longford, Lune River, Lymington, Mangalore, Mt Barrow, Mt Cameron, Oatlands, Penna, Penstock, Petcheys Bay, Preolenna, Richmond, Rose Bay, Supply River, Swansea, Tunbridge, Westbury, Weymouth, Windermere and Wynyard.

Iris agate is not common but has been collected from the Gladstone area.

A number of opaque to translucent varieties of chalcedony and cryptocrystalline quartz of varying purity and colour are sometimes used as gem material. These are similar in composition and form and are sometimes not differentiated — some or all are at times included under the term chert.

CHERT, FLINT: variously coloured, impure chalcedony and cryptocrystalline quartz with a splintery fracture. Occurs as bedded deposits of red banded material in the Penguin and other areas, and as grey banded beds in the Smithton district, and has been reported from Weymouth. It also occurs as nodules in some rocks — particularly in dolomite around Smithton. Banded chert has been found at Beaconsfield.

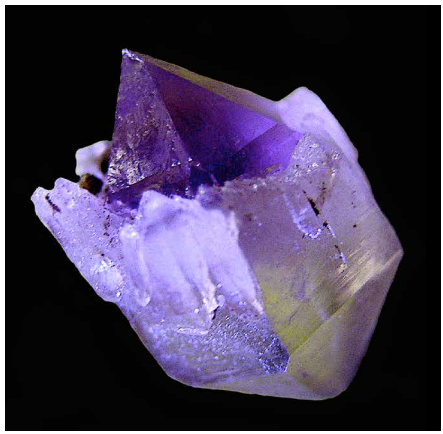
HORNSTONE: hornstone is said to be like chert but is more opaque. It has been recorded from Cornelian Bay, Mt Bischoff and Mt Nelson.

JASPER: cryptocrystalline quartz with iron oxides producing the various colours. It is usually red but yellow, brown, black and green varieties are known. Jasper has been found at Avoca, in the Arthur River about 10 km from Mt Bischoff (red and green), Campbell Town, Carrick, Corinna, Dial Range, Magnet, Merseylea, Mt Heemskirk, in the Old Jasper mine, Penstock, Pioneer, Targa and Lobster Creek near Ulverstone.

PRASE: a translucent yellowish-brown to dull green variety of chalcedonic quartz with a waxy lustre. It has been found at Kara, Magnet Range and Tasman River.

Crystalline varieties

AMETHYST: a violet-coloured variety of quartz which has been found in alluvial tin areas in northeastern Tasmania, e.g. Zeehan, Derby, Gladstone, Mt Cameron, Mt Heemskirk, Moorina, and South Mt Cameron. It has also been found at Blue Tier, Kara where it occurs with garnet, at Mt Read grading into smoky quartz, at Rossarden and Lune River.



Amethyst from the Heemskirk district.

CITRINE: also known as occidental topaz, false topaz and at times just topaz. It is a yellow variety of quartz and occurs at Goulds Country, Mt Cameron, Mt Heemskirk, Moorina and Rex Hill mine.

ROCK CRYSTAL: a clear colourless form of quartz which has been found at Beaconsfield, Branxholm Creek, Dorset Flats, Dundas, Gipps Creek, Gladstone, Goulds Country, Lefroy, Moina, Moorina, Mt Cameron, Mt Heemskirk, Mt Maurice, east of Mt Stronach, Pioneer, Rocky Gully (Tonganah), Rossarden, South Mt Cameron, St Pauls River and Savage River.

ROSE QUARTZ: pink coloured; only poor specimens have been reported from Beaconsfield, Lottah, Lefroy, Moorina and the West Coast.

RUTILATED QUARTZ: fine acicular crystals of rutile in quartz crystals have been found in the Gladstone area and at Howard Plains.

SMOKY QUARTZ: almost black to smoky brown and smoky yellow; a number of different names based on colour varieties have been used; e.g. morion and cairngorm. It has been found at Avoca, Lottah, Derby, Gladstone, Kara, Moina, Moorina, Mt Cameron, Mt Heemskirk, Mt Read, Rex Hill mine, Savage River and Tulendeena.

RHODOCHROSITE manganese carbonate;
H = 3.5–4.5; SG = 3.4–3.6; CS = hexagonal

Rhodochrosite is usually pinkish to red in colour and is sometimes cut as a semi-precious gemstone, despite its low hardness. It has been found in mines at Dundas, Kara, Magnet, Rosebery and Zeehan. Occurs at Nelson Bay River.

Rhodochrosite from Comet Mine, Dundas.

RHODONITE manganese silicate;
H = 5.5–6.5; SG = 3.4–3.7; CS = triclinic

Rhodonite is usually pink to red in colour and has been reported from Andersons Creek, near Beaconsfield, sometimes also called "thulite" (a variety of clinozoisite), but found to be a rodingite, with a mixture of clinozoisite, diopside and grossular (all pink). There is an unconfirmed report of rhodonite occurring at Zeehan. Massive pink material occurs with garnet in the Rosebery mine.

ROCK CRYSTAL see Quartz

RODINGITE metasomatic rock consisting of Ca-Mg silicates;
H = 6-7; SG = 2.9;

A fine grained rock of this type, containing clinozoisite, grossular and diopside occurs at Andersons Creek, near Beaconsfield and can be white to deep pink (mostly from the garnet). It has been cut and polished as gems and sometimes incorrectly called rhodonite.

ROSE QUARTZ see Quartz

RUBY see Corundum

RUBY TIN see Cassiterite

RUTILE titanium dioxide;
H = 6–6.5; SG = 4.2–5.2; CS = tetragonal

Rutile is usually red-brown to black in colour but red, yellow, blue and green crystals are known. It is very common but is mostly found as very fine grains, and no gem quality material is known in Tasmania. Notable areas include Claytons Rivulet (up to 15 mm crystals), Dundas River, Lymington, Moorina and various beaches in southwest Tasmania.

SAPPHIRE see Corundum

SARD see Quartz

SARDONYX see Quartz

SCHORL see Tourmaline

SERPENTINE hydrated magnesium silicate;
(Group) H = 2.5–4; SG = 2.5–2.7; CS = monoclinic

This group includes antigonite, crysotile and lizardite species. Serpentine has been used as a gemstone and also in rock carvings but its use as a gemstone is limited because of the low hardness. It occurs in large masses in the Andersons Creek, Claytons Rivulet, Heazlewood–Waratah, Birches Inlet and Trial Harbour areas.

SMOKY QUARTZ see Quartz

Stichtite (pink) in serpentine (green), from the Dundas area.

SPHENE calcium titanium silicate;
H = 5–5.5; SG = 3.4–3.6; CS = monoclinic

Sphene is yellow to brown in colour but rarely occurs in crystals large enough to cut. Occurrences include Cygnet, Heazlewood and Mt Ramsay.

SPINEL
(Group)

mixed oxides of aluminium, iron, chromium, magnesium, iron, zinc and manganese;
H = 5.5–8; SG = 3.5–5.2 (these two properties vary with composition); CS = cubic

Spinel from the Weld River, Moorina.

The members of this group found in Tasmania include spinel, magnetite, hercynite, chromite, magnesiochromite, maghemite and gahnite; most of the spinel group are black. Pleonaste (ferroan spinel, usually black) is common in alluvial tin areas, e.g. Derby, Gladstone, Rossarden and Weldborough. Hercynite (iron spinel — black) is found at Moorina and gahnite (zinc spinel — usually green) is reported from Mt Bischoff. Some black spinel is found in xenoliths with olivine in basalt at Derby. The black spinel takes a very good polish.

STAUROLITE hydrated iron aluminium silicate;
H = 7–7.5; SG = 3.6–3.8; CS = orthorhombic

Crystals of staurolite have been found in the Reekara area on King Island but are not of gem quality.

STICHTITE hydrous chromium magnesium carbonate;
H = 1.5–2; SG = 2.2; CS = hexagonal

A rare, soft, lilac to mauve or purple, serpentine-like mineral, usually found as blebs in serpentine bodies, often with chromite grains. Barbertonite, chlorite and other minerals may be included in small amounts. Like serpentine, it is too soft for normal gem use, but is colourful, contrasts dramatically with the associated apple green serpentine and takes a good polish, so is a rather desirable lapidary material. It is mined commercially, intermixed with serpentine, at Stichtite Hill, near Dundas, for ornamental carving and polishing purposes. It is also found in other areas near Dundas, and Birches Inlet.

THULITE see Epidote

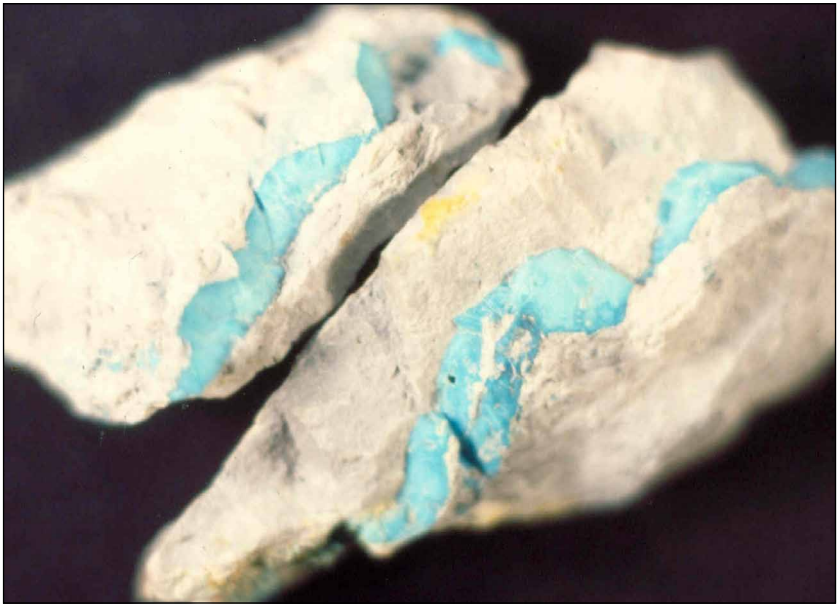
TOPAZ hydrated fluoro-aluminium silicate;
H = 8; SG = 3.4–3.6; CS = orthorhombic

Topaz is usually regarded as a yellow stone when used as a gemstone but many of the Tasmanian stones are colourless to pale green. It is often mistaken for quartz but topaz is harder and has a distinct cleavage. Topaz is a common accessory mineral in granite and pegmatite and is often found concentrated in alluvial tin workings, e.g. Branxholm Creek, Derby, Dorset Flats, Gladstone, Killiecrankie Bay (Flinders Island), Moorina, Mt Cameron, St Pauls River, Weldborough, Weld River and Wyniford River. Other occurrences include Gipps Creek, Lefroy, Long and Brown Plains (between the Heazlewood and Pieman rivers), Moina (with tin-tungsten ore), Mt Bischoff (in porphyry), Rossarden, St Helens and the Stanley River tin field. Stones of gem quality have been found in a number of these localities, the most notable of which is the Flinders Island area. Topaz crystals at Killiecrankie Bay have been referred to as 'Killiecrankie diamonds'. Good blue stones occur at Moina.

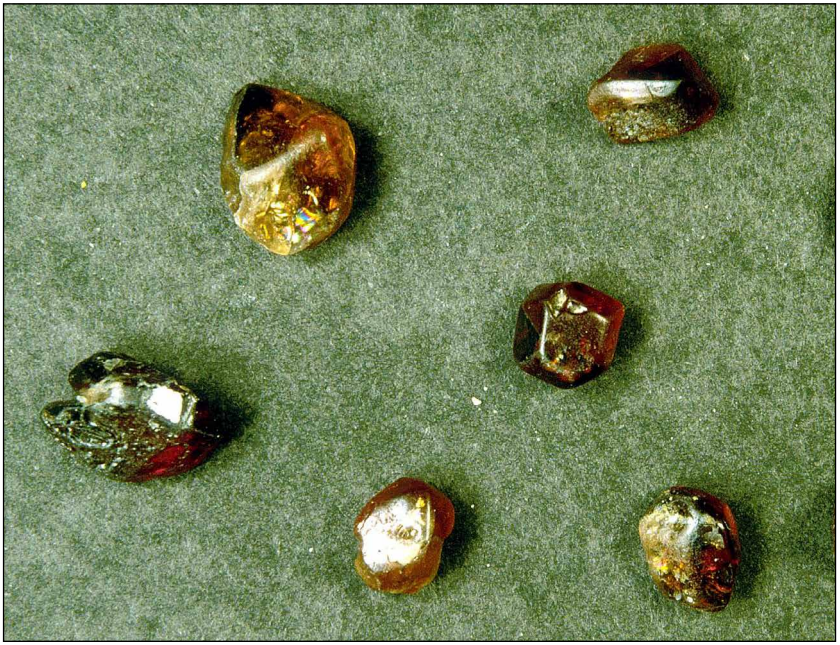
TOURMALINE complex silicate of aluminium and boron;
(Group) H = 7–7.5; SG = 3.0–3.2; CS = hexagonal.

Minerals of this group found in Tasmania include dravite and schorl. Tourmaline occurs as slender prismatic bunches of crystals in most localities named. It is a common accessory mineral in granite in the North East, Bass Strait islands and West Coast. Most occurrences are of the black species (schorl) which is of low value as a gem. Acicular green crystals of tourmaline have been recorded

Uncut topaz from Killiecrankie, Flinders Island (photo by Tony Forsyth).



Turquoise collected from the Arthur River area.



Zircons from Sisters Creek.

at Mt Bischoff, Mt Heemskirk, Mt Lyell and Stanley River. Brown tourmaline occurs at Mt Heemskirk and is said to occur at Mt Lyell and Mt Ramsay.

TURQUOISE hydrated aluminium and copper phosphate; H = 5.6; SG = 2.6–2.8; CS = triclinic but is generally amorphous to cryptocrystalline

Turquoise is generally sky blue but blue-green and apple green varieties are known. Thin seams have been found in the Lefroy–Back Creek area and Den Ranges. Green seams and occasionally blue pieces have been found south of the Arthur River to the southeast of Trowutta. Good gems have been cut from Back Creek material. Other locations include Savage River mine, Cressy and Billop Hill.

UVAROVITE see Garnet

VARISCITE hydrated aluminium phosphate; H = 3.5–4.5; SG = 2.6; CS = orthorhombic

This is not known to have been cut as a gemstone in Tasmania, but has been reported as massive green material at Back Creek, and Den Ranges.

WOLLASTONITE calcium silicate; H = 4.5–5; SG = 2.8–2.9; CS = monoclinic

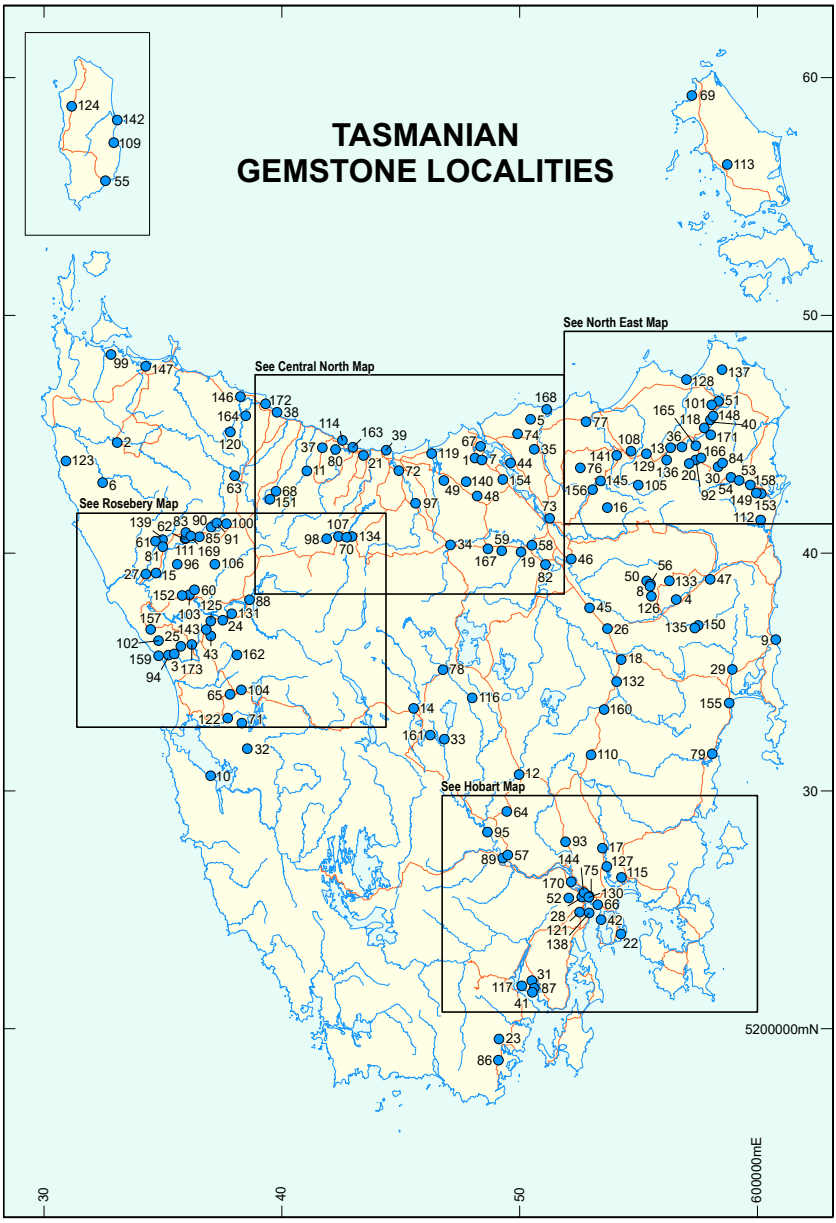
Wollastonite is normally white in colour but can also be grey, yellow, red or brown. It is related to rhodonite and is sometimes cut as a semi-precious gem. It occurs at Glenorchy, Kara, Moina and Proctors Road, but no Tasmanian stones are known to have been cut for gems. It is found richly in some white to green Permian calcareous, fossiliferous hornfels that polish well (e.g. at Leslie Vale).

WOOD OPAL see Opal

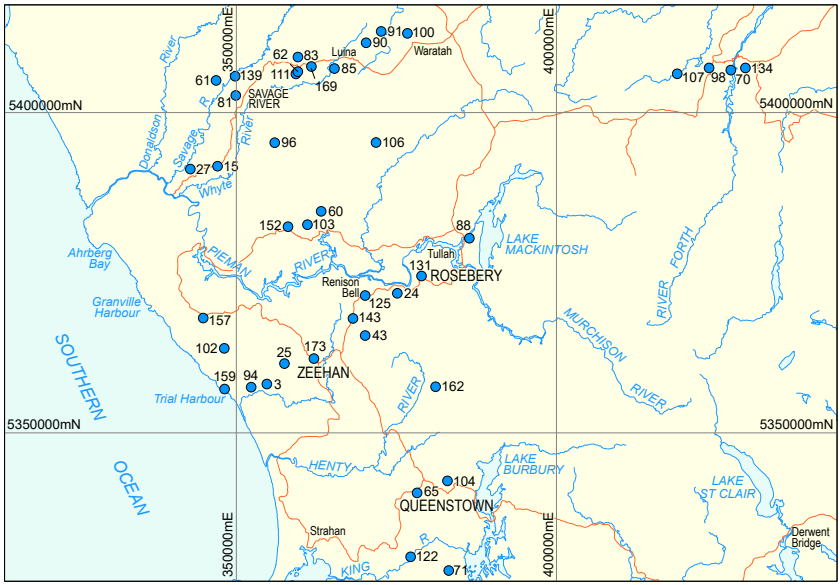
ZIRCON zirconium silicate; H = 7.5; SG = 4.7; CS = tetragonal

Zircon is an accessory mineral in granite and is commonly found concentrated in alluvial tin workings, e.g. Derby, Gladstone, Moorina, Ruby Flats, Weldborough and Weld River. Other areas where it has been found include Beaconsfield, Blythe River, Boat Harbour–Sisters Creek (in sub-basalt gravel), Meredith Range, Penguin, Rossarden, Trial Harbour and Upper Calder. The zircon is usually brown to red (hyacinths and jacinths) but colourless and yellow (jargoons) and green specimens have been recorded. The crystals are seldom large enough to cut as gems and many of the larger ones are fractured.

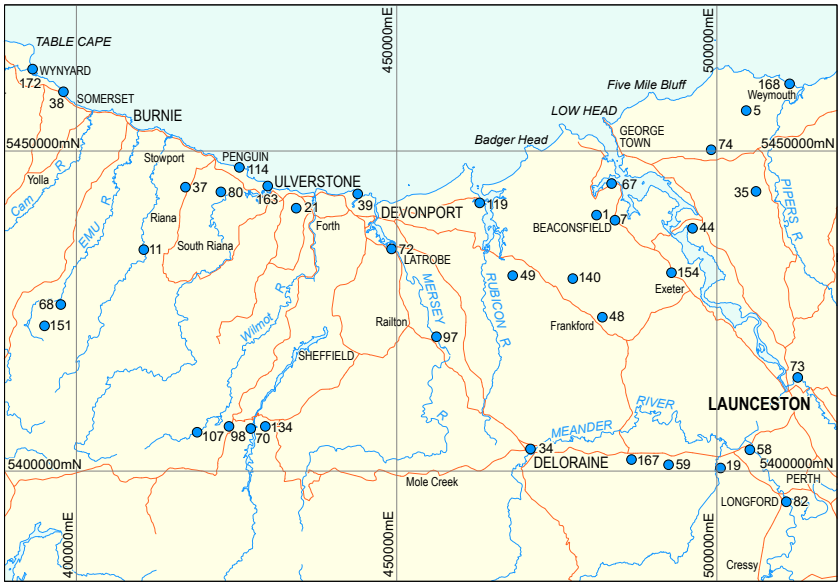
Gemstone Locality Map



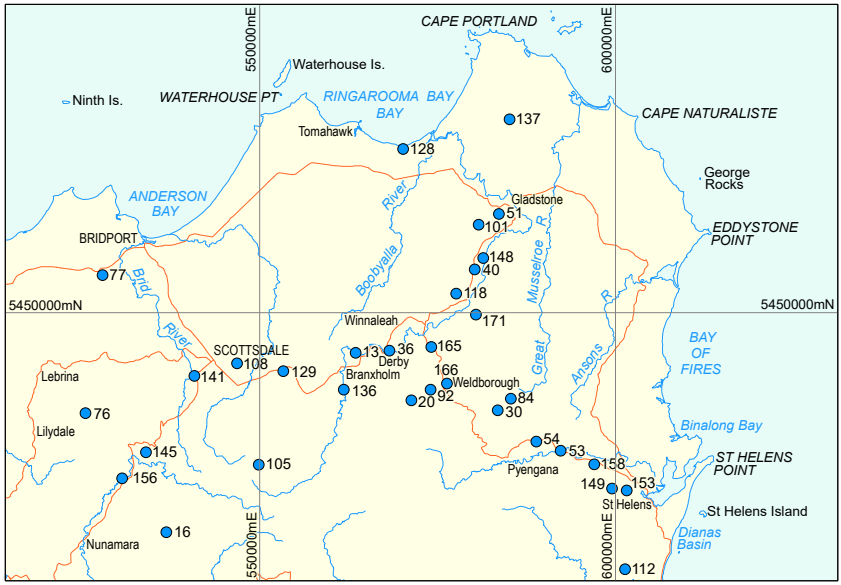
ROSEBERY



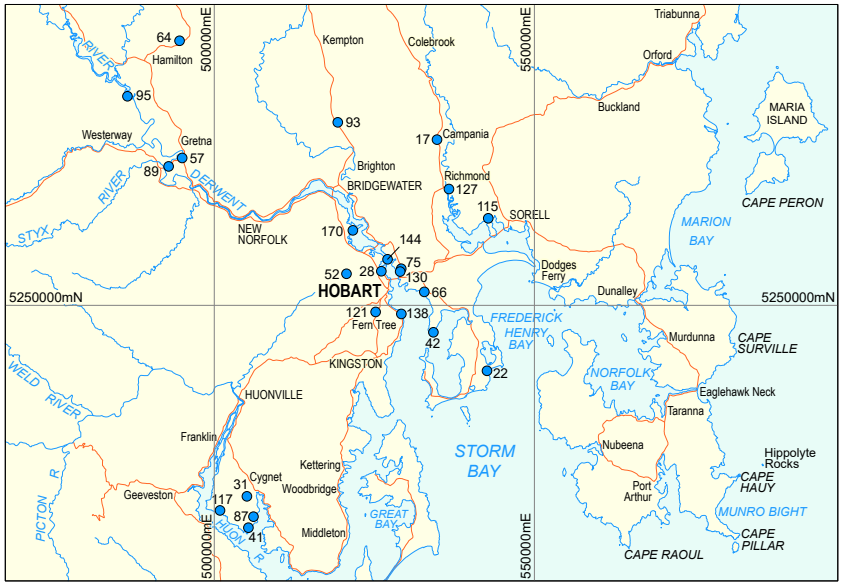
CENTRAL NORTH



NORTH EAST



HOBART



Index to Gemstone Locality Map

No.	Locality	Minerals
1	Andersons Creek	Serpentine, clinozoisite, rodingite, grossular, diopside
2	Arthur River	Jasper, turquoise
3	Avebury Mine	Garnet, axinite, hornfels, datolite, serpentine
4	Avoca	Jasper, smoky quartz, amethyst
5	Back Creek	Chrysocolla, turquoise, variscite
6	Balfour	Malachite, apatite
7	Beaconsfield	Rock crystal, chalcedony, banded chert, rose quartz
8	Ben Lomond	Beryl, garnet, topaz
9	Bicheno	Quartz
10	Birchs Inlet	Agate, onyx, stichtite, serpentine
11	Blythe River	Sapphire, zircon, hypersthene
12	Bothwell	Agate, onyx, common opal
13	Branxholm Creek	Rock crystal, topaz
14	Bronte	Agate
15	Brown Plains	Topaz
16	Camden Plains	Agate
17	Campania	Agate, rutile, smoky quartz
18	Campbell Town	Jasper, fluorapatite
19	Carrick	Agate, jasper, wood opal
20	Cascade River	Topaz, sapphire
21	Claytons Rivulet	Rutile, serpentine
22	Clifton Beach	Hornfels
23	Coal Hill	Agate, petrified wood
24	Colebrook Hill	Ferroaxinite
25	Comstock	Garnet
26	Conara	Wood opal
27	Corinna	Jasper
28	Cornelian Bay	Agate, hornstone, common opal, wood opal
29	Cranbrook	Agate
30	Crystal Hill	Fluorapatite
31	Cygnet	Garnet, common opal, sphene, porphyry, feldspar
32	Darwin	Darwin glass
33	Dee Lagoon	Agate

No.	Locality	Minerals
34	Deloraine	Epidote, olivine, sapphire, spinel
35	Den Ranges	Turquoise
36	Derby	Sapphire, topaz, amethyst, chrysoberyl, olivine, smoky quartz, wood opal, zircon
37	Dial Range	Jasper, wood opal
38	Doctors Rocks	Olivine
39	Don Heads	Olivine
40	Dorset Flats	Rock crystal, topaz
41	Drip Beach	Agate
42	Droughty Point	Agate
43	Dundas	Stichtite, serpentine, crocoite
44	East Arm	Olivine
45	Epping Forest	Wood opal
46	Evandale	Wood opal
47	Fingal	Agate, zircon
48	Frankford	Malachite
49	Franklin Rivulet	Wood opal
50	Gipps Creek	Rock crystal, garnet, topaz, zircon
51	Gladstone	Smoky quartz, rock crystal, amethyst, sapphire, spinel, wood opal, agate, iris agate
52	Glenorchy	Wollastonite
53	Goshen	Cassiterite
54	Goulds Country	Chalcedony, citrine, common opal, rock crystal
55	Grassy	Epidote, garnet
56	Great Republic Mine	Beryl, fluorite, smoky quartz, rock crystal
57	Gretna	Wood opal
58	Hadspen	Wood opal, prase, smoky quartz
59	Hagley	Agate
60	Harman River	Common opal, serpentine
61	Harveys Creek	Diamond
62	Heazlewood	Agate, chalcedony, crocoite, malachite
63	Hellyer River	Diamond(?)
64	Hollow Tree	Wood opal
65	Howard Plains	Wood opal, rutilated quartz
66	Howrah	Agate, wood opal
67	Ilfraville	Agate
68	Kara Mine	Amethyst, epidote, garnet, olivine

No.	Locality	Minerals
69	Killecrankie Bay	Topaz
70	Lake Cethana	Beryl
71	Lake Jukes	Epidote
72	Latrobe	Wood opal
73	Launceston	Wood opal
74	Lefroy	Rose quartz, rock crystal
75	Lindisfarne	Agate, common opal
76	Lisle	Chalcedony, sapphire
77	Little Forester River	Wood opal
78	Little Pine Lagoon	Agate
79	Little Swanport	Agate
80	Lobster Creek	Agate, jasper
81	Long Plains	Topaz
82	Longford	Agate, wood opal
83	Lord Brassey	Serpentine
84	Lottah	Cassiterite, topaz, smoky quartz, star sapphire, amethyst, fluorapatite, fluorite
85	Luina	Rock crystal, fluorite
86	Lune River	Agate, amethyst, petrified wood, petrified fern, rock crystal
87	Lymington	Agate, rutile, sapphire
88	Mackintosh River	Azurite, malachite
89	Macquarie Plains	Wood opal
90	Magnet Mine	Crocoite, jasper, rhodochrosite
91	Magnet Range	Epidote, prase
92	Main Creek	Sapphire
93	Mangalore	Agate, wood opal
94	Maynes Tin Mine	Garnet
95	Meadowbank	Wood opal
96	Meredith Range	Epidote, rock crystal, prase
97	Merseylea	Jasper
98	Moina	Aquamarine, topaz, beryl, garnet, smoky quartz, rock crystal
99	Montagu	Common opal
100	Mount Bischoff	Tourmaline, fluorite, topaz, beryl, smoky quartz, cassiterite, serpentine, hornstone, marcasite/pyrite, fluorapatite
101	Mount Cameron	Smoky quartz, amethyst, beryl, cassiterite, citrine, topaz, sapphire, agate

No.	Locality	Minerals
102	Mount Heemskirk	Rock crystal, tourmaline, green tourmaline, jasper
103	Mount Lindsay	Common opal, ferroaxinite, sphene
104	Mount Lyell	Azurite, malachite, marcasite, brown tourmaline
105	Mount Maurice	Rock crystal
106	Mount Ramsay	Ferroaxinite, fluorite, garnet, sphene
107	Mount Stormont	Garnet
108	Mount Stronach	Rock crystal, sapphire
109	Naracoopa	Rutile
110	Oatlands	Agate
111	Old Jasper Mine	Jasper
112	Orieco	Azurite, malachite
113	Pats River	Cassiterite
114	Penguin	Jasper, sapphire, chert, zircon
115	Penna	Agate
116	Penstock	Agate, jasper, wood opal
117	Petcheys Bay	Agate
118	Pioneer	Rock crystal, jasper, cassiterite, zircon
119	Port Sorell	Wood opal
120	Preolenna	Agate
121	Proctors Road	Common opal, wollastonite, hornfels
122	Queen River	Wood opal
123	Rebecca Creek	Amber
124	Reekara	Staurolite
125	Renison	Fluorite, marcasite
126	Rex Hill Mine	Cassiterite, tourmaline, smoky quartz, fluorite, jasper, citrine
127	Richmond	Agate, wood opal
128	Ringarooma Bay	Agate, jasper
129	Rocky Gully	Rock crystal, smoky quartz, tourmaline
130	Rose Bay	Agate, wood opal
131	Rosebery	rhodonite, garnet, rhodochrosite, tourmaline
132	Ross	Wood opal
133	Rossarden	Cassiterite, amethyst, rock crystal
134	Round Hill	Epidote, garnet
135	Royal George	Beryl, tourmaline, cassiterite
136	Ruby Flats	Cassiterite, zircon
137	Rushy Lagoon	Common opal

No.	Locality	Minerals
138	Sandy Bay	Chalcedony, common opal, fluorapatite
139	Savage River	Smoky, quartz, rock crystal
140	Saxons Creek	Azurite
141	Scottsdale	Olivine
142	Sea Elephant	Garnet
143	Serpentine Hill	Stichtite, serpentine, rodingite
144	Shag Bay	Common opal
145	Sideling	Olivine
146	Sisters Creek	Sapphire, zircon
147	Smithton	Epidote, chert
148	South Mount Cameron	Smoky quartz, amethyst, beryl, rock crystal
149	St Helens	Jasper
150	St Pauls River	Beryl, rock crystal, topaz
151	St Valentines Peak	Epidote, hornfels
152	Stanley River	Sapphire, topaz, tourmaline
153	Stonyford	Garnet
154	Supply River	Agate, common opal
155	Swansea	Agate, wood opal
156	Targa	Jasper
157	Tasman River	Prase, tourmaline
158	Thureaus Deep Lead	Beryl
159	Trial Harbour	Garnet, zircon
160	Tunbridge	Agate
161	Tunnel Marsh	Agate
162	Tyndall Creek	Epidote
163	Ulverstone	Jasper
164	Upper Calder	Zircon, agate
165	Weld River (Moorina)	Sapphire, spinel, topaz, rock crystal, rose quartz, rutile, amethyst, citrine, zircon
166	Weldborough	Sapphire, spinel, topaz, zircon
167	Westbury	Agate
168	Weymouth	Agate, chert
169	Whyte River	Crocoite, epidote, garnet
170	Windermere	Agate
171	Wyniford River	Topaz
172	Wynyard	Agate
173	Zeehan	Marcasite/pyrite, amethyst, quartz, serpentine

Fossicking Areas

Fossicking areas in Tasmania locality map.

Areas at several locations throughout Tasmania have been set aside for the use of the general public as Fossicking Areas. Commercial collecting and the use of machinery in these areas is prohibited.

Location details of these fossicking areas, and guidelines under which fossicking can be undertaken, are outlined in a manual similar to this one, available for purchase from Mineral Resources Tasmania, or freely downloadable from the MRT website. For fossicking outside of these areas, a prospecting licence must be obtained from Mineral Resources Tasmania for a small fee.

Picture following page: Fossicking at Lune River (photo by Max Hohl).

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