MINERAL RESOURCES TASMANIA

Tasmania

DEPARTMENT of INFRASTRUCTURE ENERGY and RESOURCES

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# 1:250,000 GEOLOGY OF TASMANIA (STATE LEGEND)

## CAINOZOIC

### QUATERNARY (HOLOCENE / PLEISTOCENE)

- Qh — Sand, gravel, and mud of alluvial, lacustrine and littoral origin (Qh).
- Qpl, Qpg, Qps, Qpl — Glacial, periglacial and fluvioglacial sediments including till and interglacial deposits (Qp); talus, vegetated and active (Qpl); glacial and glacigene deposits (Qpg); coastal sand and gravel (Qps); limestone (Qpl).

Erosional surface

### TERTIARY

- Tf — Dominantly non-marine sequences of gravel, sand, silt, clay and regolith (Ts); marine limestone (Tm); ferricrete, laterite and derived lag deposits (Tf); basalt (tholeiitic to alkalic) and related volcaniclastic rocks (Tb); conglomerate, gravel and grit (Tc).
- Tb
- Tc

Erosional surface.

## MESOZOIC

### JURASSIC

- Jb — Basalt (tholeiitic), comagmatic with Jurassic dolerite (Lune River area) (Jb).

Erosional surface.

### TRIASSIC (UPPER PARMEENER SUPERGROUP)

- Rvc, Rb, Rvv — Undifferentiated fluviolacustrine sequences of sandstone, siltstone and mudstone (R); dominantly lithic volcaniclastic sandstone (Rv); lithic sandstone, siltstone, mudstone and felsic tuff with some coal and basal quartz sandstone (Rvc); alkali olivine basalt/hawaiite (St Marys area) (Rb); dominantly siltstone, lithic sandstone and mudstone (Rvv); dominantly quartz sandstone (Rq).
- Rq

### PERMIAN-LATE CARBONIFEROUS (LOWER PARMEENER SUPERGROUP)

- Pc, Pf, Pt — Undifferentiated glacial, glaciomarine and non-marine sedimentary rocks (P); freshwater sandstone with coal measures (Pc); upper glaciomarine sequences of pebbly mudstone, pebbly sandstone and limestone (Pu); freshwater and paralic sandstone and mudstone with some coal measures (Pf); lower glaciomarine sequences of mudstone, pebbly mudstone, pebbly sandstone, minor limestone and tasmanite oil shale (Pl); basal tillite (Pt).

Erosional surface

### LATE MIDDLE DEVONIAN

- Dc — Terrestrial cavern fillings (Eugenana Beds) (Dc).

Angular unconformity attributed to major polyphase orogeny.

## PALAEOZOIC

### EARLY DEVONIAN-SILURIAN (ELDON GROUP, TIGER RANGE GROUP)

- SDb, SDl — Undifferentiated shallow marine quartz sandstone, siltstone and shale (Eldon and Tiger Range Groups and correlates) (SD); siltstone, shale and fine-grained sandstone (Bell Shale, McLeod Creek Formation and correlates) (SDb); limestone (SDl).
- SDf — Shallow marine quartz sandstone (Florence Quartzite, Currawong Quartzite and correlates) (SDf).
- SDa — Siltstone, shale and minor quartz sandstone (Austral Creek Siltstone, Amber Slate, Keel Quartzite and Richea Siltstone) (SDa).
- SDc — Shallow marine quartz sandstone and pebble conglomerate (Crotty Quartzite, Gell Quartzite and correlates) (SDc).

### ORDOVICIAN (WURAWINA SUPERGROUP)

- Ola — Mainly siltstone and fine-grained sandstone (Arndell Sandstone, 'Rinadeena Shale' and correlates) (Ola).
- Ol — Dominantly shallow marine limestone with minor siltstone and sandstone. Gordon Group (Ol).
- Os — Undifferentiated or poorly constrained conglomerate-sandstone sequences of Late Cambrian to Ordovician age (€O). Shallow marine sandstone-mudstone +/- conglomerate +/- limestone sequences, typically grey. Ordovician fossils and trace fossils in places. Includes Moina Sandstone, Pioneer Beds, Butler Island Formation(Os).

Unconformity on older rocks in places.

### LATE CAMBRIAN (OWEN GROUP, DENISON GROUP AND CORRELATES)

- €Os, €Ob — Shallow marine sandstone, typically pink, cross-bedded to thin-bedded, with some siltstone and minor conglomerate. Includes Upper Owen Sandstone (€Os). Basalt lava (€Ob).
- €Oc — Mainly siliciclastic conglomerate with sandstone interbeds, shallow marine to non-marine, pebble to boulder grade. Includes Middle Owen Conglomerate, Mt Zeehan Conglomerate, Roland Conglomerate (€Oc).
- €Oms — Marine sandstone-siltstone-conglomerate sequences, typically tubiditic, siliciclastic to polymict. Late Cambrian fossils in places. Includes Newton Creek Sandstone, Middle Owen Sandstone, upper Dundas Group, much of 'Rosebery Group' (€Oms).
- €Ocl — Lower conglomerate sequences in some areas, typically pebble to boulder grade, with sandstone interbeds. Includes Lower Owen Conglomerate (€Ocl).

Angular unconformity in some areas, apparent conformity in others.

### MIDDLE CAMBRIAN

#### SMITHTON - ROCKY CAPE REGION

- €m — Polymict conglomerate, lithicwacke, siltstone and mudstone with rare marine fossils (Scopus Formation) (€m).

Inferred disconformity

#### DUNDAS, FOSSEY MOUNTAINS AND DIAL RANGE TROUGHS OF WESTERN AND NORTHERN TASMANIA (MT READ VOLCANICS)

- €ds — Dominantly sedimentary sequences with minor volcanic and volcaniclastic units (€ds).
- €dtl, €dtll — Upper sequence of felsic to intermediate volcaniclastic and volcanic rocks, with sedimentary units, of late Middle Cambrian age. Tyndall Group and correlates - part of Mt Read Volcanics (€dtl). Felsic lavas within Tyndall Group (€dtll).
- €da — Andesitic lavas, breccias and intrusive rocks. Includes Anthony Road Andesite, Que-Hellyer Volcanics, Beulah andesite (€da).
- €db, €dsvl, €dv, €dq, €dsv, €dsvs, €ds, €dsq — Dominantly volcano-sedimentary sequences with some felsic to intermediate volcanic rocks; Middle Cambrian fossils in places. Western Volcano-Sedimentary sequences, including Yolande River Sequence, part of lower Dundas Group, Mt Charter Group, Gog Range Greywacke (€dsv). Basaltic volcanics and minor intrusives(€db). Felsic lavas within Western Volcano-Sedimentary sequence (€dsvl). Dominantly felsic to intermediate volcanic rocks, typically massive, feldspar-phyric. Central Volcanic Complex of Mt Read Volcanics (€dv). Dominantly felsic volcanic, volcaniclastic and intrusive rocks, typically quartz-feldspar-phyric. Eastern Quartz-Phyric Sequence and correlates (€dq).
- €dsq — Siliciclastic sandstone-siltstone-conglomerate units of metamorphic derivation, includes Sticht Range Beds, Animal Creek Greywacke, Miners Ridge Sandstone (€dsq).

#### ADAMSFIELD - JUBILEE REGION (MT READ VOLCANICS)

- €a, €al, €aq, €as, €ac — Undifferentiated conglomerate-sandstone sequences (€a); lithicwacke and conglomerate, may contain ultramafic detritus (€al); dominantly conglomerate and lithic sandstone (upper member of Trial Ridge Beds) (€as); dominantly quartzwacke and lithicwacke turbidite with rare fossils in some sequences (€aq); dominantly siliceous conglomerate and sandstone (€ac). (€a, €as, €aq, €ac: Island Road Formation, Boyd River Formation, Trial Ridge Beds and possible correlates including Clytie Cove Group and Ironbound Group).

Angular unconformity of €a on Pw, Pt.

### ? EARLY CAMBRIAN

- €s, €t, €b, €ba, €bt — Layered peridotite, serpentinite and associated rocks (€s); tonalite and associated rocks (€t); undifferentiated low-Ti tholeiitic and boninitic lavas (€b); boninitic lavas (€ba); low-Ti tholeiitic lavas (€bt). Structurally emplaced.
- €s, €sd — Layered peridotite, serpentinite and associated rocks (€s); dominantly serpentinised layered dunite and harzburgite ("LDH association") (€sd). Structurally emplaced.
- €cw, €cwb, €cwc — Mafic volcaniclastic sandstone-siltstone-mudstone-chert-minor carbonate sequences, with intercalated tholeiitic basalt flows. Considered allochthonous. Cleveland-Waratah Association and correlates, including 'Mainwaring Group' (€cw). Tholeiitic basalt and picrite units, includes Miners Ridge Basalt, Birchs Inlet Volcanics, Motton Spilite and basalt of Mainwaring River area (€cwb). Chert-rich sequences, including Barrington Chert (€cwc).
- €cw, €cwb, €cwc — Feldspathic and quartz-rich lithicwacke, mudstone and chert sequences. Considered allochthonous. Cleveland-Waratah Association and correlates, including 'Ragged Basin Complex' (€cw). Tholeiitic basalt and picrite units (€cwb). Chert-rich sequences (€cwc).

### LATE NEOPROTEROZOIC (TOGARI GROUP, AHRBERG GROUP AND CORRELATES)

- Psr, Psd, Psv, Psb, Ps, Pss, Psc — Pale-weathering, thin bedded, laminated quartz siltstone with subordinate interbedded fissile shale, commonly silicified (Salmon River Siltstone) (Psr). Shallow marine dolomite and minor limestone (Smithton Dolomite and correlates) (Psd). Turbiditic mudstone, siltstone, lithicwacke and diamictite with dominantly mafic detritus (Psv); tholeiitic basalt (Spinks Creek Volcanics, Bernafai Volcanics and correlates) (Psb). Shallow marine dolomite, chert, shale and diamictite (Black River Dolomite, Savage Dolomite and correlates) (Pss); basal siliceous conglomerate and sandstone (Forest Conglomerate and Quartzite, Donaldson Formation and correlates) (Psc).

Low-angle unconformity or inferred disconformity.

#### ARTHUR METAMORPHIC COMPLEX

- Pac, Paa — Chloritic schist, with minor phyllite, dolomite and magnesite (Pac); amphibolite (Paa).
- Pap — Phyllite with minor pelitic schist, foliated quartzite and dolomite, and rare conglomerate (Pap).
- Pat — Quartz-mica schist, quartzite, phyllite and rare dolomite (Keith Schist and correlates) (Pat).
- Pdv, Pdb, Pds — Turbiditic volcaniclastic and mafic volcanic rocks (Pdv); tholeiitic basalt (Pdb). (Crimson Creek Formation and correlates). Shallow marine quartz sandstone and siltstone with carbonate and chert beds (Success Creek Group and correlates) (Pds).
- Pdp — Strongly faulted succession of pyritic, carbonaceous and cherty shale, chert, greywacke, laminated siltstone, dolomite and basalt, structurally emplaced (Port Sorell Formation and possible correlates) (Pdp).

Angular unconformity of Pds on Po.

- Pq, Pob, Pod — Quartzwacke turbidite sequences with minor dolomite (Pq); quartzwacke of high-grade metamorphic provenance (Poq). (Burnie and Oonah Formations and correlates). Alkali basalt and dolerite (within Burnie and Oonah Formations, includes Cooee Dolerite) (Pob). Dolomite, dolomitic mudstone, siltstone and sandstone (Pod).

### WELD RIVER GROUP AND CORRELATES

- Pwc — Dolomite, diamictite and mudstone (Pwc).
- Pwt, Pwa — Shallow marine dolomite (Pwt); basal conglomerate and sandstone (Pwa).

Low-angle unconformity or inferred disconformity.

### NEOPROTEROZOIC - MESOPROTEROZOIC

#### ROCKY CAPE GROUP

- Prj — Shallow marine to peritidal, well-bedded, cross-bedded orthoquartzite, platy quartzite and siltstone (Jacob Quartzite) (Prj).
- Pri — Shallow marine, laminated grey siltstone, mudstone and dolomite (Irby Siltstone) (Pri).
- Prd — Shallow marine to peritidal, well-bedded, cross-bedded orthoquartzite and subordinate siltstone (Detention Subgroup) (Prd).
- Prc — Dominantly dark, laminated, commonly pyritic, marine siltstone and mudstone (Cowrie Siltstone and similar sequences) (Prc).
- Prb — Interbedded cross-bedded quartz sandstone and siliceous-carbonaceous siltstone, fining up to laminated chloritic siltstone (Balfour Subgroup) (Prb).
- Prl — Parallel-to cross-bedded quartz sandstone with rare quartz-pebble conglomerate and shale (Lagoon River Quartzite) (Prl).
- Prp — Interbedded to interlaminated siltstone and quartz siltstone-sandstone with erosional structures, grading and cross-lamination (Pedder River Siltstone) (Prp).
- Prs — Unassigned quartzite sequences (Prs).

#### TYENNAN AND SIMILAR REGIONS

- Puf — Schistose conglomerate, quartzite, slate, phyllite and silicified carbonate (sequences of uncertain assignment including Wedge River Beds) (Puf).

Inferred angular unconformity of Puf on Pt.

- Pt, Pts, Ptsl, Ptsg, Ptp, Ptpc, Ptpg, Ptd, Ptb — Undifferentiated metasedimentary sequences, with greenschist facies metamorphism (Pt). Dominantly quartzite sequences (Pts). Platy or schistose micaceous quartzite (Ptsl). Garnetiferous quartzite (Ptsg). Dominantly pelitic sequences, mainly phyllite (Ptp). Pelitic schist (Ptpc). Garnetiferous pelitic schist (Ptpg). Dolomite (Ptd). Dominantly schistose conglomerate (Goat Island Conglomerate and correlates) (Ptb).

### CLARK GROUP AND CORRELATES

- Pq — Massive quartz sandstone (Wings Quartzite) (Pq).
- Pc, Pcm, Pcd, Pcq — Dominantly laminated marine mudstone and siltstone (Pcm); dominantly shallow marine carbonate (Pcd); dominantly shallow marine, cross-bedded orthoquartzite (Pcq).
- Ph — Quartz-rich lithicwacke, conglomerate and black slate (Ph).

## PROTEROZOIC

### EASTERN TASMANIA

Angular unconformity.

- Dp — Felsic pyroclastic rocks (St Marys Porphyrite, volcanic equivalent of I-type granodiorite) (Dp).

Angular unconformity

- OD, ODq, ODp — Micaceous quartzwacke turbidite sequences (ODq); dominantly pelitic turbidite sequences (ODp). (MATHINNA SUPERGROUP)

### IGNEOUS ROCKS

#### TERTIARY

- Tb — Basalt (tholeiitic to alkalic) and related volcaniclastic rocks (Tb).

#### CRETACEOUS

- Ka — Appinitic lava and intrusive rocks, associated with lamprophyre dykes (Cape Portland area) (Ka).
- Ks — Syenite and related alkaline rocks (Cygnet and Kettering area) (Ks).

#### JURASSIC

- Jb — Basalt (tholeiitic), comagmatic with Jurassic dolerite (Lune River area) (Jb).
- Jd — Dolerite (tholeiitic) with locally developed granophyre (Jd).

#### TRIASSIC

- Rb — Alkali olivine basalt/hawaiite (St Marys area) (Rb).

#### EARLY CARBONIFEROUS - EARLY DEVONIAN

- Dd — Dolerite dykes (Dd)
- Dg, Dga, Dgat, Dgafs, Dgaa, Dgaas, Dgacs — Undifferentiated granitic rocks (Dg); undifferentiated alkali-feldspar granite/granite/adamellite, I-type (Dga); S-type (Dgas); dominantly alkali-feldspar granite, I-type (Dgat); S-type (Dgafs); dominantly adamellite/granite, I-type (Dgaa); S-type (Dgaas).
- Dgn — Dominantly granodiorite/adamellite, I-type (Dgn).
- Dgr — Dominantly granodiorite, I-type (Dgr).
- Dgd — Dominantly diorite (Dgd).
- Dp — Felsic pyroclastic rocks (St Marys Porphyrite, volcanic equivalent of I-type granodiorite) (Dp).

#### DEVONIAN

- Dl — Lamprophyre dykes and intrusive bodies (Dl).

#### ORDOVICIAN

- €Ob — Tholeiitic basalt (Mt Tor; Upper Wilmot River area) (€Ob).
- €Od — Tholeiitic dolerite (Black Bluff Range) (€Od).

#### MIDDLE - LATE CAMBRIAN (MT READ VOLCANICS (IN PART) AND ASSOCIATED INTRUSIVES)

- €dd — Tholeiitic dolerite (Mt Charter area; upper Leven River), diorite (Wilmot area) and basalt (Gog; Golden Valley area) (€dd).
- €dtl — Felsic lavas within Tyndall Group (€dtl).
- €dsvl — Felsic lavas within Western Volcano-Sedimentary Sequence (€dsvl).
- €db — Basaltic volcanics and minor intrusive rocks, includes Que-Hellyer Volcanics (€db).
- €da — Andesitic lavas, breccias and intrusive rocks (€da).
- €doi — Major intrusive bodies related to andesites, includes Beulah Granite and Lobster Creek Volcanics (€doi).
- €dv — Felsic to intermediate, calc-alkaline volcanic rocks (Central Volcanic Complex and correlates) (€dv).
- €qfp — Quartz feldspar porphyry (€qfp).
- €gr — Granite (includes Murchison, Darwin, Elliott Bay and Dove Granite) (€gr).

#### ? EARLY CAMBRIAN

- €g — Gabbroic rocks (€g).
- €ba — Boninitic lavas (€ba).
- €bt, €btg — Low-Ti tholeiitic lavas (€bt); gabbroic rocks associated with low-Ti lavas (€btg).
- €t — Tonalite and associated rocks (€t).
- €s, €sd, €sp, €sx — Layered peridotite, serpentinite and associated rocks (€s); dominantly serpentinised layered dunite and harzburgite ("LDH association") (€sd). Dominantly layered pyroxenite and dunite ("LPD association") (€sp). Dominantly serpentinised layered pyroxenite, peridotite and associated gabbro ("LPG association") (€sx).
- €cwb — Tholeiitic basalt and picrite units of Cleveland-Waratah Association. Includes Miners Ridge Basalt, Birchs Inlet Volcanics, Motton Spilite and basalts of Mainwaring River area (€cwb).

#### PROTEROZOIC

- Psb — Tholeiitic basalt (Spinks Creek Volcanics, Bernafai Volcanics and correlates) (Psb).
- Pdb — Tholeiitic basalt (within Crimson Creek Formation and correlates) (Pdb).
- Pdd — Dolerite dykes (Port Sorell area) (Pdd).
- Pm — Tholeiitic dolerite (including Rocky Cape Dyke Swarm) (Pm).
- Pob — Alkali basalt and dolerite (within Burnie and Oonah Formations; includes Cooee Dolerite) (Pob).
- Pta, Paa — Amphibolite within Tyennan Region (Pta) and within Arthur Metamorphic Complex (Paa).
- Pg — Granitic rocks (on King Island) (Pg).