DEPARTMENT OF MINES–TASMANIA

# STRUCTURAL MAP OF PRE-CARBONIFEROUS ROCKS OF TASMANIA

SCALE 1:500,000

## REFERENCE

HOLOCENE TO LATE CARBONIFEROUS — Flat-lying Parmeener Super Group with Jurassic dolerite sheets and younger deposits.

MIDDLE DEVONIAN — Eugenana cave deposits.

Angular unconformity attributed to late – Early or early – Middle Devonian orogeny (Tasmania – wide folding).

EARLY DEVONIAN TO EARLY ORDOVICIAN — Stable shelf deposits of Ordovician Gordon Limestone and Silurian – Early Devonian Eldon Group of interbedded quartz sandstone and mudstone.

LATE CAMBRIAN — Usually shallow – marine and terrestrial quartz sandstone and conglomerate, including Owen Conglomerate. Volcaniclastic usually shallow – water sequences; turbidite quartzwacke / mudstone sequences.

Mathinna Beds of eastern Tasmania: turbidite micaceous quartzwacke / mudstone sequence.

At some localities transitional to underlying rocks (Misery Hill); erosional level, possibly angular unconformity in some areas (Fossey Mountain Trough); angular unconformity, attributed to local fault movements, particularly at margin of Tyennan Block, in the Dial Range and at Adamsfield.

LATE CAMBRIAN TO EARLY CAMBRIAN — Fossiliferous Middle and Late Cambrian usually greywacke – type turbidite sequences, including Dundas Group, (1); unfossiliferous beds, including Crimson Creek Formation of dominantly mudstone, (4); dominantly acid – intermediate volcanic and associated rocks (2); dominantly basic – intermediate volcanic and associated rocks (3).

PRECAMBRIAN — Massive dolomite / limestone sequences, including Smithton Dolomite and Jane Dolomite; quartzite / mudstone of Success Creek Group and correlates. (5).

Angular unconformity attributed to Penguin Orogeny (>720 my), and older Frenchman Orogeny.

PRECAMBRIAN — Metamorphic rocks with structural trend lines shown, of dominantly pelitic and orthoquartzite sequences and amphibolite; sandstone / mudstone sequences (1), with thin dolomite beds and volcanic horizons in some localities (2).

Concealed approximate limit, maximum limit and minimum limit of Western Tasmania pre – Carboniferous sedimentary and associated rocks.

Concealed approximate minimum eastern limit of Precambrian of Cradle Mountain Block.

Angular unconformity established, inferred.

Erosional level, including possible transgressional boundary and possible angular unconformity.

Transitional boundary.

Conformable litho–stratigraphic boundary.

Intrusive boundary of post – Middle Devonian granite.

Boundary of Cambrian ultramafic – mafic bodies, and intrusive Cambrian granite.

Undefined boundary.

Dominant trend of layering (compositional and transpositional) in comparatively metamorphosed Precambrian rocks.

Normal fault with downthrown side indicated; post – Triassic movement dominant; Devonian movement dominant.

Devonian wrench fault with relative movement shown; proved, probable.

Precambrian wrench fault with relative movement shown; proved, probable.

Devonian thrust and reverse fault with teeth on upper plate; proved, probable.

Cambrian thrust and reverse fault with teeth on upper plate.

Precambrian thrust and reverse fault with teeth on upper plate.

North-east Tasmania Devonian folds. Hinge traces of major folds – symmetrical syncline; overturned syncline, asymmetrical fold with dip direction of axial surface indicated.

North-east Tasmania Devonian folds. Hinge traces of plunging minor folds indicating vergence viewing down plunge – over-riding up to north-east, symmetrical, over-riding down to south-west in inverted strata.

West Tasmania Devonian folds. Hinge traces of major folds – symmetrical anticline, symmetrical syncline, overturned syncline, asymmetrical plunging fold with dip direction of axial surface indicated.

West Tasmania Devonian folds of dominantly earlier generation – West Coast Range / Valentines Peak trend, Loongana / Wilmot trend.

West Tasmania Devonian folds of dominantly later generation – Zeehan / Gormanston trend, Deloraine / Railton trend.

Primary cleavage (dipping, vertical) associated with probable Devonian folds.

Hinge trace of antiformal syncline.

Dominant cleavage (dipping, vertical) associated with probable Cambrian movement.

Major Precambrian folds in comparatively unmetamorphosed rocks. Trace of anticline hinge, syncline hinge, overturned limb of fold with unlocated hinge.

## IGNEOUS ROCKS

LATE DEVONIAN
- Dominantly adamellite.
- Dominantly granodiorite.
- Hypersthene adamellite porphyry.

CAMBRIAN
- Granite.
- Coarse grained basic rocks.
- Serpentinite and associated rocks.
- Dominantly acid – intermediate volcanic rocks.
- Dominantly basic – intermediate volcanic rocks.

PRECAMBRIAN
- Granite.
- Dolerite.

## CAMBRIAN PALAEOGEOGRAPHICAL ELEMENTS

(1) Dundas Trough, (2) Mt Read Volcanic Belt, (3) Smithton Trough, (4) Dial Range Trough, (5) Fossey Mtn Trough, (6) Adamsfield Trough

All named Devonian Blocks were geanticlines. Cradle Mountain and Prince of Wales Range Blocks constituted the Tyennan Block during earlier Devonian folding and, in the Late Cambrian to Early Ordovician, the Tyennan Geanticline.

## ISOTOPIC MINIMUM AGES m.y.

TR = total rock; mins = all essential minerals; f = feldspar; b = biotite; m = muscovite; h = hornblende.

References: Evernden and Richards, 1962; McDougall and Leggo, 1965; Brooks and Compston, 1965; Brooks, 1966.

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Base map from 'Tasmania'. 1:500,000 sheet produced by Lands Department, Hobart.
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## RELIABILITY MAP

GEOLOGY BASED ON 1 : 15840 SCALE MAPPING
GEOLOGY BASED ON >1 : 15840 SCALE MAPPING

## DIAGRAMMATIC REPRESENTATION OF STRUCTURAL RELATIONSHIPS BETWEEN ROCK UNITS

Time Scale W — E

Symbols as on map with addition of local angular unconformity

## VERTICAL SECTIONS

A–B, C–D, E–F, G–H, I–J, K–L, M–N, O–P.

Symbols in sections as on map with addition of–
Bedding trace
Selected igneous intrusion boundaries

HORIZONTAL SCALE IN KILOMETRES
V=H