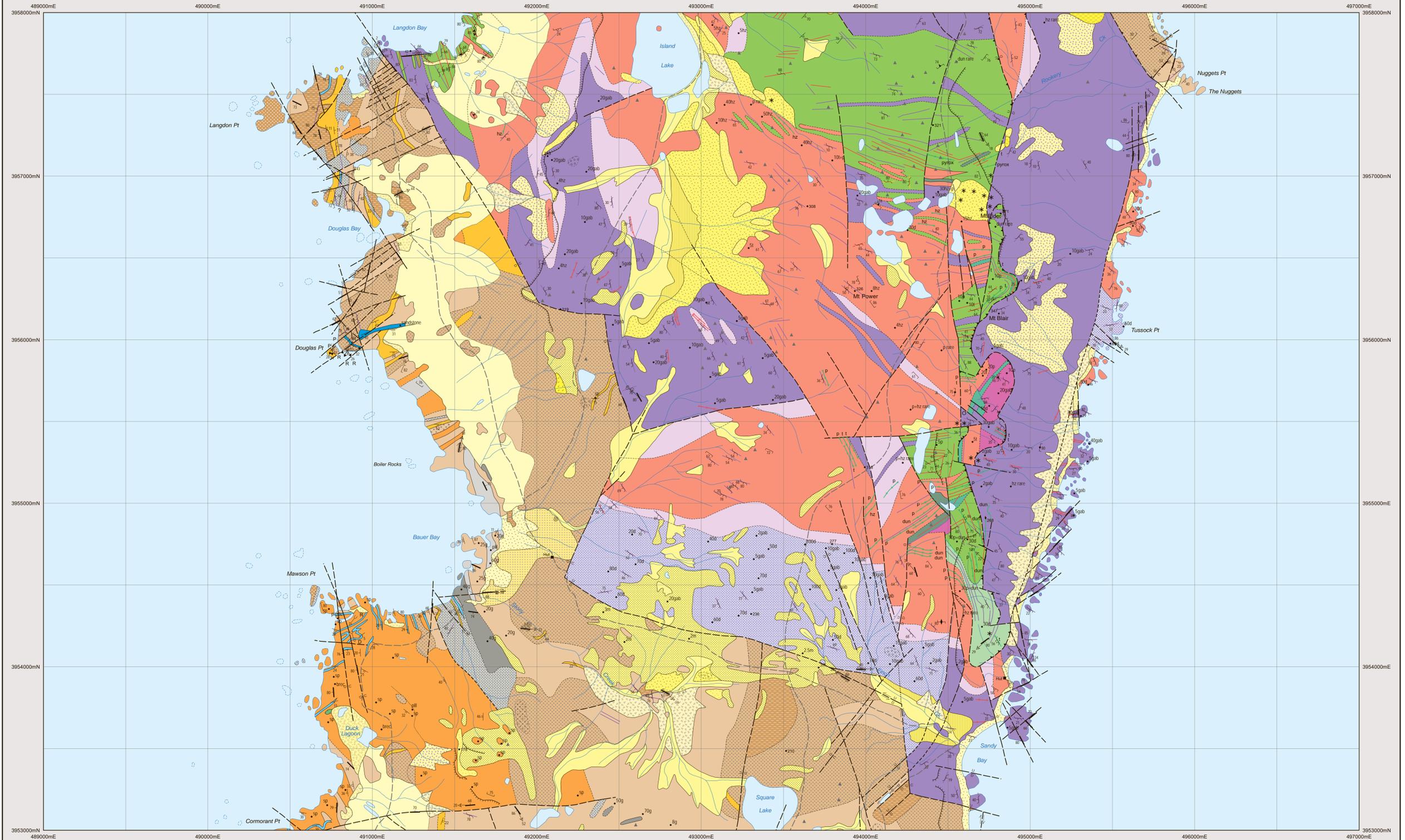


GEOLOGY OF MACQUARIE ISLAND - SHEET 2



Geology by B.D. Goscombe, BSc (Hons), PhD and J.L. Everett, BSc (Hons), December 1984 - May 1985; September 1995 - January 1998. Project initiated and supervised by A.V. Brown, BSc (Hons), PhD, Director, Mineral Resources Tasmania, with funds provided by the Australian Antarctic Foundation, and logistical support provided by the Australian Antarctic Division.

Base map drawn from several sources: The Spot multispectral satellite mosaic produced by the Australian Centre for Remote Sensing (ACRES) 1994. Division of National Mapping Macquarie Island 1:50,000 topographic map (1971) warped to conform with the satellite mosaic along coastline and lakes. Incomplete aerial photography flown in 1976 (mainly in the north of the island). GPS positions and field observations.

Map produced by the Data Management Group, Mineral Resources Tasmania, using GIS software. Original map produced March 1998. Absolute position with respect to horizontal datum and topographic features is approximate.

While every care has been taken in the preparation of this data, no warranty is given as to the correctness of the information and no liability is accepted for any statement or omission or for any error or omission. Corrections and updates are available on request. This map is provided as a service to the public and is not intended to be used for any purpose other than that for which it was prepared. Crown copyright reserved.



ALLUVIAL, LACUSTRINE AND SWAMP DEPOSITS

- Older alluvium of terraces
- Colliculum of wash slopes
- Beige, orange and 'heartbeater' (includes significant areas of peat without bedrock outcrop; on the north-west coast there are deposits of peat-beach deposits on an elevated wave-cut platform 5m above sea level)
- Fine-grained deposits of laminated mud, silt and organic material, silted, silted, usually concentrated towards younger alluvial fans (shown). Exposed peat-beach deposits indicated (large dots)
- Slope deposits
- Slope shales
- Alluvial fans, with slopes of less than 22 degrees
- Deposits of large (2-20m) boulders along coasts, typically in bays on west coast

BEACH AND AEOLIAN DEPOSITS

- Probably to cobbly beach deposits
- Beach deposits with sand
- Coastal wind blown and dune sand
- Aeolian silt and sand deposits, often with gravel lag; approximate thickness of deposit in metres indicated where known
- Peat-beach deposits of rounded and smoothed cobbles and pebbles, less commonly with coarse sand mostly on the plateau, but also below peat cover along the northern west coast (not indicated)
- Scattered peat-beach cobbles and pebbles (shown as outcrop on underlying units)

GLACIOGENE DEPOSITS

- Deposits of grey clay with silted, faceted and polished cobbles and boulders
- Lag deposits of silted, faceted and polished cobbles and boulders
- Isolated silted, faceted and polished cobbles and boulders
- Stacks of angular coarse sandstone and gravel scattered over a 10m² area (484500mE 395600mN)

SEDIMENTARY ROCKS

- Mudstone and siltstone, usually laminated and red
- Conglomerate, usually clay supported, consisting of sub-rounded to sub-angular cobbles to boulder-sized clasts of basalt and dolerite in a mudstone to sandstone matrix (Gabbro clasts in conglomerate at 493000mE 395600mN)
- Sedimentary rock matrix between pillows in lenses or blocks in breccia indicated (shown)
- Time - from grey to green siliceous rock
- Time - from grey to pink limestone
- Time - from grey to green siliceous rock
- Transition zone of subequal proportions of massive coarse-grained gabbro (20-70%) and sheeted dolerite dykes (30-70%)
- Gabbro and dolerite gabbro, usually massive; may contain dolerite dykes (3-30%) and rare ultramafic screens as indicated (shown)
- Proportion of hornblende screens indicated (shown)
- Proportion of dolerite dykes indicated (shown)
- Dolerite screens within sheeted dolerite, orientation known, rare

VOLCANIClastic ROCKS

- Hyaloclastite breccia consisting of angular to sub-rounded clasts of basalt and dolerite in a glass matrix
- Hyaloclastite breccia, matrix-supported, with blocks of usually aphyric basalt, plagioclase-phyric basalt blocks indicated (shown)
- Volcaniclastic breccia, clay-supported, with blocks of usually aphyric basalt, plagioclase-phyric basalt blocks indicated (shown)
- Blocky containing isolated pillows or lenticular zones of pillows indicated (shown)

LAVAS

- Flow basalt, aphyric to very sparsely phytic (<5% plagioclase phenocrysts), usually amygdaloidal
- Flow basalt, sparsely to moderately phytic (5-30% plagioclase phenocrysts), usually amygdaloidal
- Flow basalt, densely to very densely phytic (>30% plagioclase phenocrysts), usually amygdaloidal
- Hyaloclastite (glass and basalt fragments) matrix of pillows indicated: in proportion of glass (20%) with hyaloclastite matrix containing plagioclase phenocrysts (20-30%)

INTRUSIVE ROCKS

- Sheeted dolerite dykes, with screens of massive, coarse-grained gabbro absent, minor (<5%) or abundant (5-30%) to proportion of gabbro present (20-60%) and included gabbro screens indicated
- Sheeted dolerite dykes with minor to abundant screens of massive fine-grained gabbro, proportion of sheeted dolerite dykes indicated (shown) (typically 50-60%)
- Transition zone of subequal proportions of massive coarse-grained gabbro (20-70%) and sheeted dolerite dykes (30-70%)
- Gabbro and dolerite gabbro, usually massive; may contain dolerite dykes (3-30%) and rare ultramafic screens as indicated (shown)
- Proportion of hornblende screens indicated (shown)
- Proportion of dolerite dykes indicated (shown)
- Dolerite screens within sheeted dolerite, orientation known, rare
- Trochilite, usually with compositional layering, proportion of dolerite dykes indicated (shown)
- Dominantly plagioclase-bearing massive and minor dolerite, proportion of dolerite dykes indicated (shown)
- Dolerite and plagioclase-bearing dolerite, massive partly or completely zoned
- Dominantly hornblende with subordinate dolerite and plagioclase-bearing dolerite, proportion of dolerite dykes indicated (shown)
- Hornblende, usually massive or occasionally with mineral layering, partly or completely zoned, proportion of dolerite dykes indicated (<10% and locally up to 30%)
- Ultramafic screen or screen-like tubular zone, orientation known, rare; Pyroxene (pyrox) matrix (shown)
- Hornblende (hz), plagioclase-bearing dolerite (p) and dolerite (dun) indicated

Geological boundary - position approximate

Geological boundary - position inferred

Unconformity

Fault - position approximate

Fault - position inferred

Fault - concealed

Thrust fault - teeth on upper plate

Dolerite dykes, trace or trend

Gabbro dykes (>2.5m wide), trace or trend

Microgabbro vein/dykes

Phlogopite-ledger vein

Gabbro screen

Ultramafic screen

Base of escarpment

Approximate top of escarpment

Peak

Topographic high point

Penguin faecal locality

Bedding in sedimentary rock - right way up

Bedding defined by orientation of massive tubular lava units

Bedding defined by lithological layering of distinct rock units

'Bedding' defined by plane of pronounced flattening of pillows

Azimuth and direction of flow of lava, indicated by pillow (P), rope lava (R), lava tubes (T) or drag on underlying sediments (S)

Trend and plunge of flow of lava, indicated by pillow (P), rope lava (R) or lava tube (T)

Compositional layering in intrusive rocks

Slope and dip of dyke or vein

Slope and dip of screen or screen-like tubular zone within intrusive rock

Cleavage, fracture-cleavage or fractures - dipping

Strong penetrative cleavage with possible grain-reorientation

Fiber foliation

Ductile shear-band orientation (<10mm scale)

Mylonite and ultra-mylonite zone orientation - dipping, vertical

Ductile shear-band orientation (<10mm scale)

Trend and plunge of mineral elongation or mineral aggregate orientation

Slope and dip of outcrop scale fault

Trend and plunge of slickenside, within indicated fault plane

Sense of movement on fault or ductile shear zone - ductile-sensate zones for maps on the plateau, the most recent, but not necessarily the most important, sense of movement is indicated

