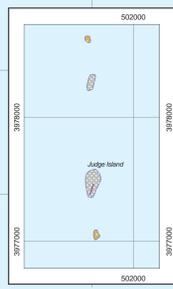
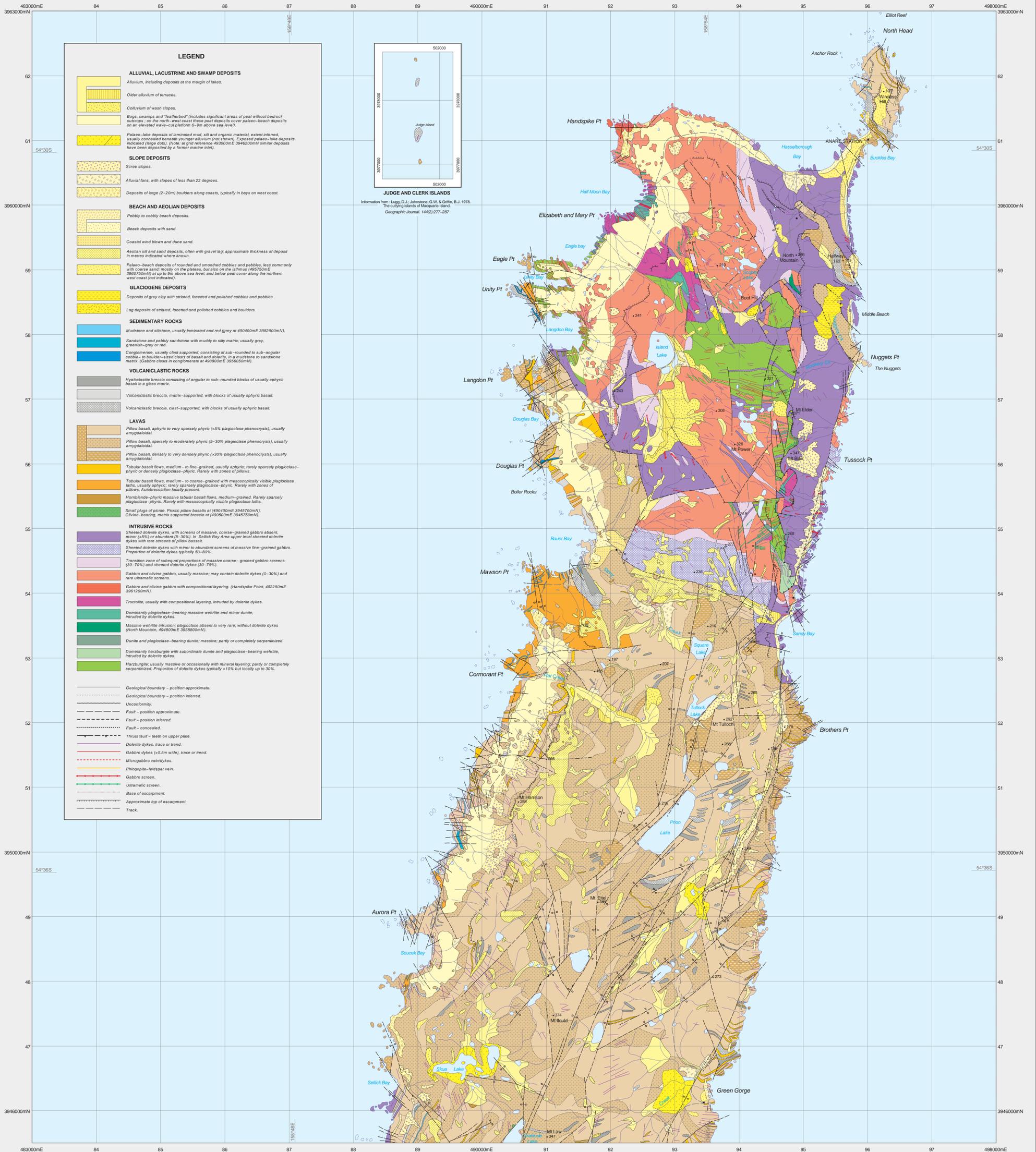


GEOLOGY OF MACQUARIE ISLAND



JUDGE AND CLERK ISLANDS
Information from: Lugg, D.J., Johnston, G.W. & Griffin, B.J. 1978.
The outlying islands of Macquarie Island.
Geographic Journal, 144(2):277-287

LEGEND

ALLUVIAL, LACUSTRINE AND SWAMP DEPOSITS
Alluvium, including deposits at the margin of lakes.
Older alluvium of terraces.
Colluvium of wash slopes.
Bogs, swamps and "flashed" (includes significant areas of peat without bedrock outcrops; on the north-west coast these peat deposits cover palaeo-beach deposits on an elevated wave-cut platform 6-8m above sea level).
Palaeo-lake deposits of laminated mud, silt and organic material, extent inferred, usually concealed beneath younger alluvium (not shown). Exposed palaeo-lake deposits indicated (large dots). (Note: at grid reference 493000mE 3946200mN similar deposits have been deposited by a former marine inlet).

SLOPE DEPOSITS
Slope slopes.
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
Pebbly 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.
Palaeo-beach deposits of rounded and smoothed cobbles and pebbles, less commonly with coarse sand; mostly on the plateau, but also on the isthmus (495750mE 3957000mN) or up to 5m above sea level, and below peat cover along the northern west coast (not indicated).

GLACIOGENE DEPOSITS
Deposits of grey clay with striated, faceted and polished cobbles and pebbles.
Lag deposits of striated, faceted and polished cobbles and boulders.

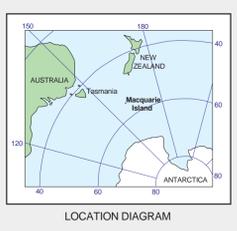
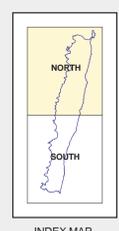
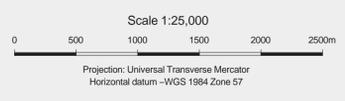
SEDIMENTARY ROCKS
Mudstone and siltstone, usually laminated and red (grey at 490400mE 3952900mN).
Sandstone and pebbly sandstone with muddy to silty matrix; usually grey, greenish-grey or red.
Conglomerate, usually clay supported, consisting of sub-angular cobbles - to boulder-sized clasts of basalt and dolerite in a mudstone to sandstone matrix. (Gabbro clasts in conglomerate at 490900mE 3956000mN).

VOLCANICLASTIC ROCKS
Hyaloclastite breccia consisting of angular to sub-rounded blocks of usually aphyric basalt in a glass matrix.
Volcaniclastic breccia, matrix-supported, with blocks of usually aphyric basalt.
Volcaniclastic breccia, clast-supported, with blocks of usually aphyric basalt.

LAVAS
Pillow basalt, aphyric to very sparsely phytic (<5% plagioclase phenocrysts), usually amygdaloidal.
Pillow basalt, sparsely to moderately phytic (5-30% plagioclase phenocrysts), usually amygdaloidal.
Pillow basalt, densely to very densely phytic (>30% plagioclase phenocrysts), usually amygdaloidal.
Tabular basalt flows, medium- to fine-grained; usually aphyric; rarely sparsely plagioclase-phyric or densely plagioclase-phyric. Rarely with zones of pillows. Auto-brecciation locally present.
Tabular basalt flows, medium- to coarse-grained with mesoscopically visible plagioclase laths, usually aphyric; rarely sparsely plagioclase-phyric. Rarely with zones of pillows. Auto-brecciation locally present.
Hornblende-phyric massive tabular basalt flows, medium-grained. Rarely sparsely plagioclase-phyric. Rarely with mesoscopically visible plagioclase laths.
Small plugs of picrite. Picritic pillow basalts at (490400mE 3945700mN).
Olivine-basalt, matrix supported breccia at (490500mE 3945700mN).

INTRUSIVE ROCKS
Sheeted dolerite dykes, with screens of massive, coarse-grained gabbro absent, minor (<5%) or abundant (5-30%), in Sellick Bay Area upper level sheeted dolerite dykes with rare screens of pillow basalt.
Sheeted dolerite dykes with minor to abundant screens of massive fine-grained gabbro. Proportion of dolerite dykes typically 50-80%.
Transition zone of subequal proportions of massive coarse-grained gabbro screens (50-70%) and sheeted dolerite dykes (20-70%).
Gabbro and olivine gabbro, usually massive; may contain dolerite dykes (0-30%) and rare ultramafic screens.
Gabbro and olivine gabbro with compositional layering. (Handspike Point, 492250mE 3961200mN).
Troctolite, usually with compositional layering, intruded by dolerite dykes.
Dominantly plagioclase-bearing massive whiteite and minor dunite, intruded by dolerite dykes.
Massive whiteite intrusions; plagioclase absent to very rare; without dolerite dykes (North Mountain, 494800mE 3958800mN).
Dunite and plagioclase-bearing dunite; massive; partly or completely serpentinized.
Dominantly harzburgite with subordinate dunite and plagioclase-bearing whiteite, intruded by dolerite dykes.
Harzburgite; usually massive or occasionally with mineral layering; partly or completely serpentinized. Proportion of dolerite dykes typically <10% but locally up to 30%.

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 (>0.5m wide), trace or trend.
Microgabbro vein/dykes.
Phlogopite-feldspar vein.
Gabbro screen.
Ultramafic screen.
Base of escarpment.
Approximate top of escarpment.
Track.



Geology by B.D. Goscombe, BSc (Hons), PhD and J.L. Everett, BSc (Hons), December 1984 - May 1995; September 1995 - January 1996. 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 production March 1998.
Absolute position with respect to horizontal datum and topographic features is approximate.

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