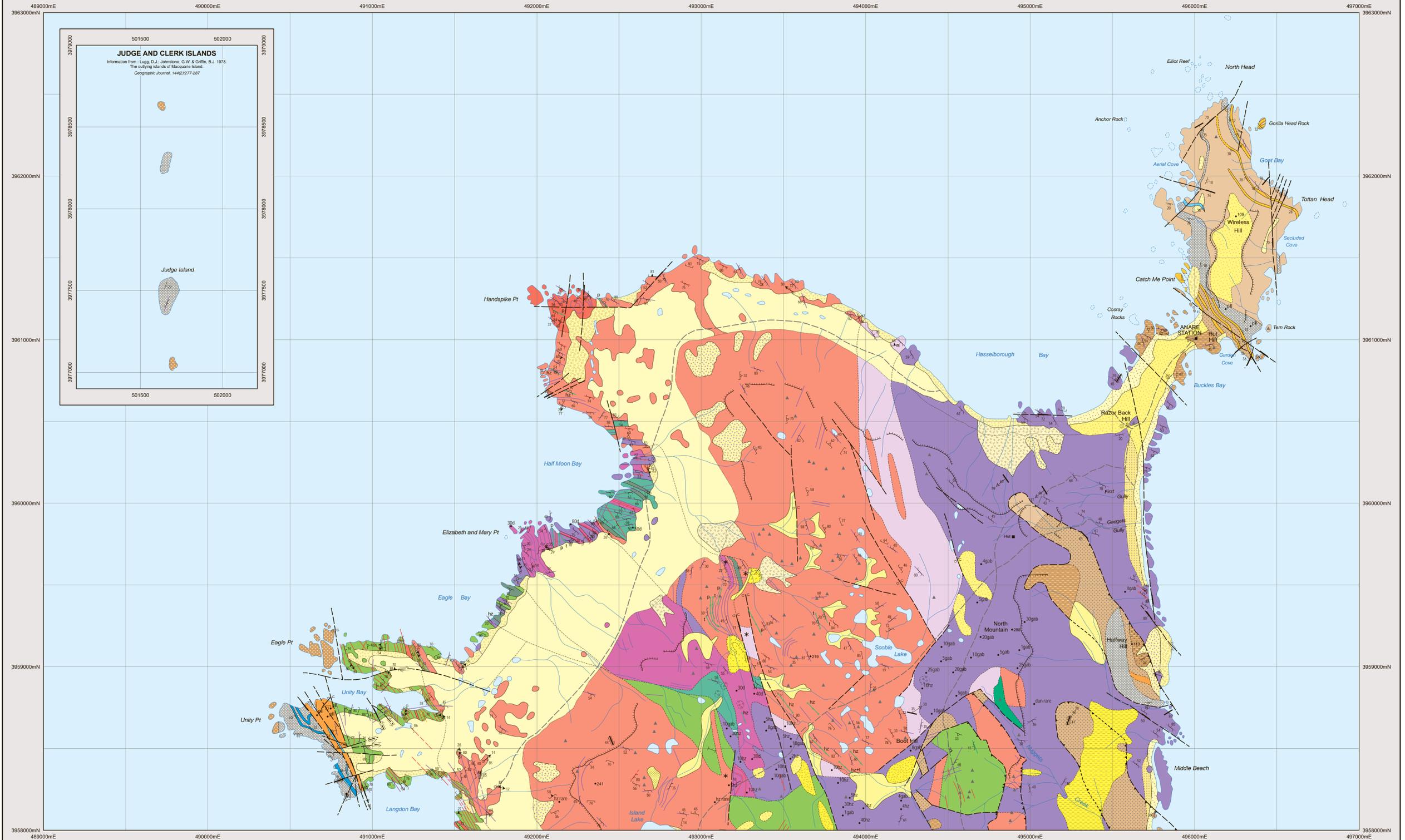


GEOLOGY OF MACQUARIE ISLAND - SHEET 1



Geology by B.D. Goscombe, BSc (Hons), PhD and J.L. Everett, BSc (Hons), December 1994 - 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 produced March 1998. Absolute position with respect to horizontal datum and topographic features is approximate.

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- ALLUVIAL, LACUSTRINE AND SWAMP DEPOSITS**
 - Alluvium, including deposits at the margin of lakes.
 - Bogs, swamps and "waterbars" (includes significant areas of peat without bedrock outcrop); on the north-west coast these peat deposits cover palaeo-beach deposits on an elevated wave-cut platform (5-8m above sea level).
 - Palaeo-like deposits of laminated mud, silt and organic material; water-released, usually concentrated between younger alluvium (not shown). Exposed palaeo-like deposits indicated (base case).
- SLOPE DEPOSITS**
 - Scree slopes.
 - Alluvial fans, with slopes of less than 22 degrees.
 - Deposits of large (2-20m) boulders along coasts, typically in bays or west coast.
- BEACH AND AEOLIAN DEPOSITS**
 - Beach deposits with sand.
 - Coastal wind blown and dune sand.
 - Beach deposits with sand.
 - Coastal wind blown and dune sand.
 - Beach deposits with sand.
 - Coastal wind blown and dune sand.
- GLACIOGENE DEPOSITS**
 - Deposits of grey clay with striated, faceted and polished cobbles and pebbles.

- Lag deposits of striated, faceted and polished cobbles and boulders.
- Isolated striated, faceted and polished cobbles and boulders.
- 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.
 - Sedimentary rock matrix between pillows in lavas or blocks in breccia indicated.
 - ooze - pale grey to green siliceous ooze.
 - lime - tan to pale grey limestone.
 - mud - red to grey mudstone.
- VOLCANIClastic ROCKS**
 - Volcaniclastic breccia, clay-supported, with blocks of usually aphyric basalt; plagioclase-phyric basalt blocks indicated (sp).
 - Breccia containing isolated pillows or lenticular zones of pillows indicated (sp).
- 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.
 - Hyaloclastite (glass and basalt fragments) matrix of pillows indicated; % proportion of glass (20%).
 - Disaggregated pillows indicated by overprint.

- Tabular basalt flows, medium to fine-grained, usually aphyric; rarely sparsely plagioclase-phyric (sp) or densely plagioclase-phyric (sp). Rarely with zones of pillows (sp).
- Tabular basalt flows, medium to coarse-grained with macroscopically visible plagioclase laths, usually aphyric; rarely sparsely plagioclase-phyric (sp). Rarely with zones of pillows (sp). Auto-brecciated (indicated (sp)).
- INTRUSIVE ROCKS**
 - Shielded dolerite dykes, with screens of massive, coarse-grained gabbro absent; minor (<5%) or abundant (5-30%) % proportion of gabbro screens (30gab) and individual gabbro screens indicated.
 - Transition zone of subequal proportions of massive coarse-grained gabbro screens (30-70%) and shielded dolerite dykes (30-70%).
 - Gabbro and olivine gabbro, usually massive; may contain dolerite dykes (0-20%) and rare ultramafic screens as indicated. Proportion of Harburgite screens indicated (20hz). Proportion of dolerite dykes indicated (30d).
 - Gabbro screens within shielded dolerite dykes; orientation known; trace.
 - Gabbro and olivine gabbro with compositional layering (Handspike Pt, 482250mE, 3861250mN).
 - Troctolite, usually with compositional layering. Proportion of dolerite dykes indicated (30d).
 - Dominantly plagioclase-bearing massive whiteite and minor dunite. Proportion of dolerite dykes indicated (30d).
 - Massive whiteite intrusion; plagioclase absent to very rare; without dolerite dykes (North Mountain, 494600mE, 3958800mN).
 - Dunite and plagioclase-bearing dunite; massive; partly or completely serpentinized.
 - Harzburgite; usually massive or occasionally with mineral layering; partly or completely serpentinized. Proportion of dolerite dykes typically 10% but locally up to 30%.
 - Ultramafic screen or screen-like tabular zone; orientation known; trace. Pyroxene (pyrx), troctolite (tr), harzburgite (hb), plagioclase-bearing whiteite (sp) and dunite (dun) indicated.

- Geological boundary - position approximate.
- Geological boundary - position inferred.
- Uniformity.
- Fault - position approximate.
- Fault - inferred.
- Thrust fault - teeth on upper plate.
- Dolerite dykes, trace or trend.
- Gabbro dykes (>0.5m wide), trace or trend.
- Microgabbro vein/dykes.
- Dunite lenses.
- Phylogne-feldspar vein.
- Gabbro screen.
- Ultramafic screen.
- Base of escarpment.
- Approximate top of escarpment.
- Track.
- Topographic high point.
- Drill hole.
- Penguin fossil locality.

- Bedding in sedimentary rock - right way up; overturned.
- Bedding defined by orientation of massive tabular lava units.
- Bedding defined by lithological layering of distinct rock units.
- "Bedding" defined by plane of pronounced flattening of pillows.
- Compositional layering in intrusive rocks.
- Strike and dip of dyke or vein.
- Strike and dip of screen or screen-like tabular zone within intrusive rock.
- Cleavage, fracture-cleavage or fractures - dipping; vertical.
- Flexor fold.
- Mylonite and ultra-mylonite zone orientation - dipping.
- Ductile shear-band orientation (<10mm wide).
- Trend and plunge of mineral elongation or mineral aggregate lineation.
- Strike and dip of outcrop scale fault.
- Trend and plunge of slickensides, within indicated fault plane.
- Sense of movement on fault or ductile shear zone - dextral; sinistral; rocks for location on the plateau, the most recent, but not necessarily the most important, sense of movement is indicated.

Scale 1:10 000
0 200 400 600 800 1000m

Projection: Universal Transverse Mercator - Zone 57
Horizontal datum - WGS1984

