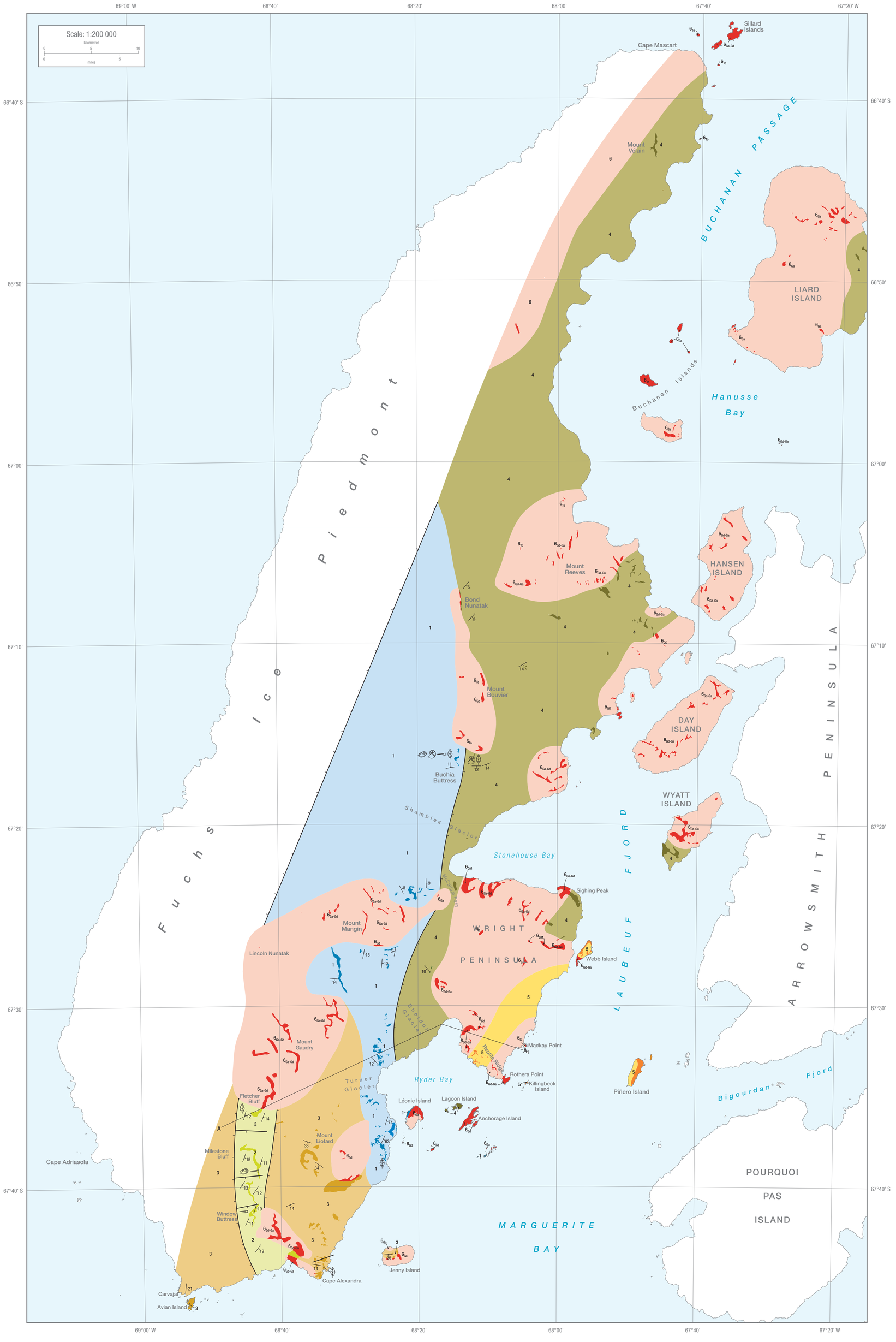

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

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1:200 000 Scale

Geological Map of Adelaide Island, Graham Land

BAS GEOMAP 2 Series, Sheet 2, Edition 1

Geological interpretation and map compilation by T.R. Riley, M.J. Flowerdew and C.E. Haselwimmer. Geological cross section compiled by T.R. Riley and C.E. Haselwimmer. Data preparation, digital cartography, design, and layout by C.E. Haselwimmer. Geological mapping and digital map production was undertaken as part of the BAS Environmental Change and Evolution (ECE) programme.

Preferred reference for map:
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Projection: WGS 1984 Antarctic Polar Stereographic, Central Meridian: 68.15°W, Spheroid: WGS84. Latitude of true scale: 71°S.

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GEOLOGICAL LEGEND

Geological units are coloured as dark and light tints representing exposed (mountains or nunataks) or inferred geology (under ice or snow)

PERIOD / EPOCH/AGE / PLUTONIC, VOLCANIC AND SEDIMENTARY ROCKS

PALEOGENE

Eocene

6 — Adelaide Island Intrusive Suite
Typically granodiorite - gabbro hybrid plutons which outcrop widely on the Wright Peninsula and the Mount Gaudry-Mount Mangin region. Pluton compositions become increasingly silicic further north with quartz monzonite and tonalite more abundant. An emplacement age in the range, 45 - 52 Ma, is favoured (Pankhurst, 1982; Griffiths & Oglethorpe, 1998; Riley et al., in press). Associated with relatively minor dolerite dyke intrusion. D-diorite; G-granite; Ga-gabbro; Gd-granodiorite; QD-quartz diorite; QM-quartz monzonite; To-tonalite.

Paleocene

5 — Reptile Ridge Formation
Rhyolitic ignimbrites, crystal- and crystal-lithic-tuffs, up to 400 m in thickness. Outcrop extent is restricted to Reptile Ridge, Webb Island, Killingbeck Island and Piñero Island. Eruption age of 67.6 ± 0.6 Ma (Riley et al., in press).

4 — Bond Nunatak Formation
Basaltic volcanic breccias, aphanitic basaltic-andesite lavas and basaltic pillow lavas (at Sighing Peak). Interbedded with coarse-grained, immature sandstones and cobble/boulder conglomerates. Outcrop through central Adelaide Island from Mount Vélain to Bond Nunatak and Lagoon Island. Probable age of ~75 Ma (Griffiths & Oglethorpe, 1998).

3 — Mount Liotard Formation
Up to 1800m of basaltic andesite lavas, hyaloclastites and breccias. Interbedded sedimentary rocks are rare or typically absent. The main area of outcrop is the Mount Liotard area, Carvajal area and Jenny Island. Probable correlative of the Bond Nunatak Formation. An age in the range 75 - 65 Ma is likely and supported by Tertiary-age plant fossils from Cape Alexandra (Jefferson, 1980).

CRETACEOUS

Late

Early

2 — Milestone Bluff Formation
Bedded sedimentary, volcaniclastic and volcanic rocks exposed in the escarpments of south central Adelaide Island at Fletcher Bluff, Milestone Bluff, Window Buttress to Cape Alexandra. Dominated by cobble/boulder conglomerates and sandstones composed of immature volcanic material. Interbedded with rare crystal, crystal-lithic and vitric tuffs. Belemnite, bivalve and plants fossil fragments have been located at Milestone Bluff and Window Buttress. An interbedded silicic crystal tuff has yielded an age of 113.9 ± 2.5 Ma (Riley et al., in press).

JURASSIC

Late

1 — Buchia Buttress Formation
A succession at least 400 m in thickness dominated by volcanic breccias, tuffs, volcaniclastic rocks, accompanied by interbedded coarse grained sandstones and pebble conglometrates. Outcrops at Buchia Buttress, Sheldon Glacier area and Turner Glacier. The sandstones are locally fossiliferous (ammonite, bivalve, plant material) suggesting a Tithonian age (Thomson 1972). An age confirmed by U-Pb (zircon) dating of an interbedded crystal tuff at Buchia Buttress (149.5 ± 1.6 Ma; Riley et al., in press). The Buchia Buttress Formation is overlain by basaltic andesites of the Bond Nunatak Formation.

GEOLOGICAL SYMBOLS

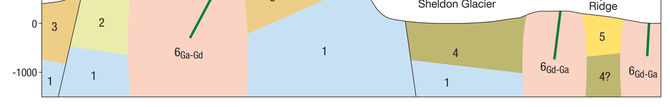
- Fault
- Normal fault (tick on downthrow side)
- Bedding (70)
- Bivalve fossil
- Ammonite fossil
- Belemnite fossil
- Plant fossil
- Trace fossil

OTHER SYMBOLS

- Coastline
- Sea

GEOLOGICAL CROSS SECTION FROM MILESTONE BLUFF TO REPTILE RIDGE
(Line A-A_1 drawn on the map)

Horizontal scale: 1:200 000 Vertical exaggeration x3



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