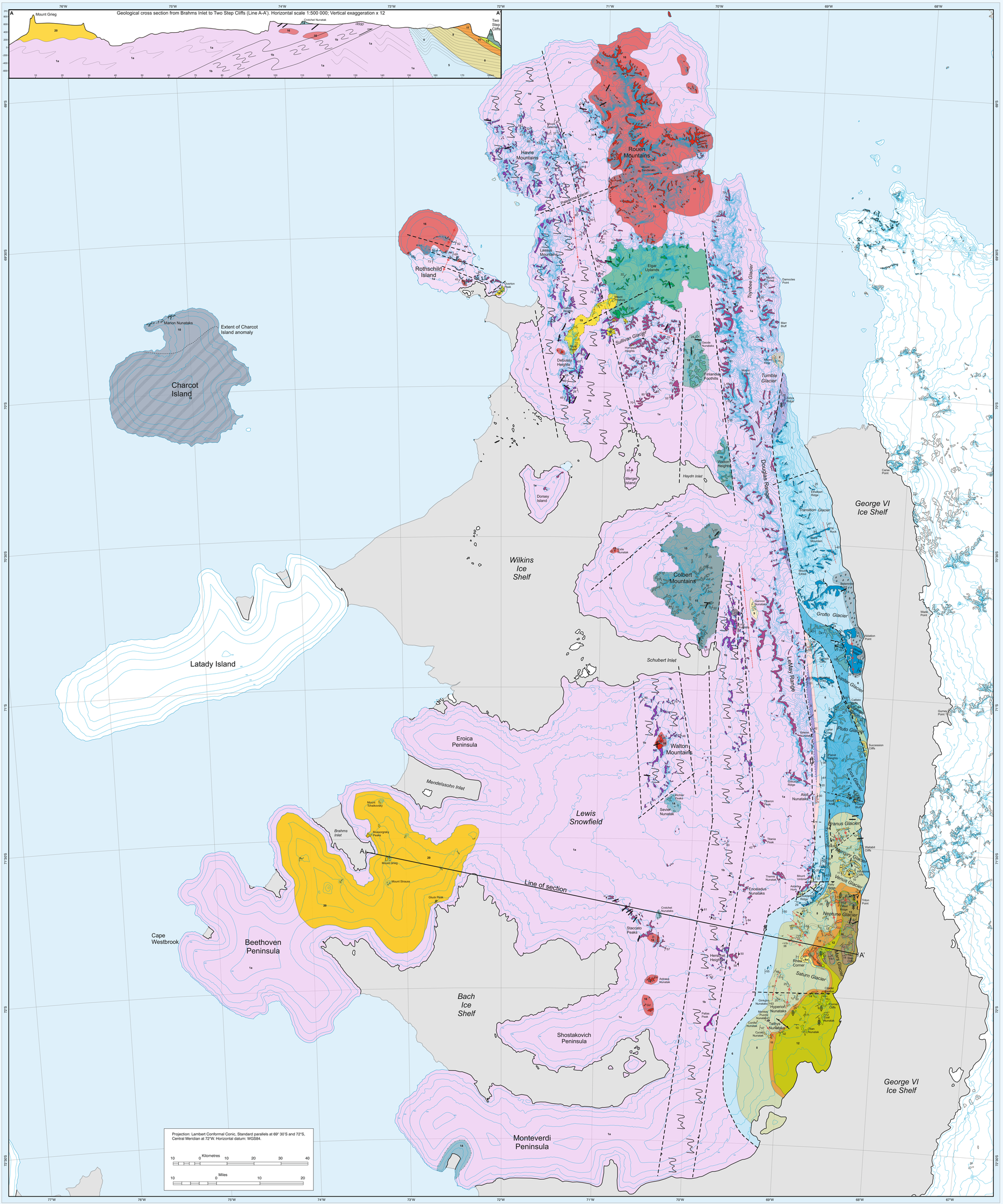

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NATURAL ENVIRONMENT RESEARCH COUNCIL

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1:500 000 Scale

Geological Map of Alexander Island

BAS GEOMAP 2 Series, Sheet 8, Edition 1

Geological interpretation and map compilation by T.R. Riley, M.L. Curtis, J.A. Crame, D.J. Cantrill and D.I.M. Macdonald. Geological cross section compiled by T.R. Riley. Data preparation, digital cartography, design and layout by T.R. Riley and M.L. Curtis.

Base map data for coastlines, rock outcrops and ice shelves from the SCAR Antarctic Digital Database, accessed 2023. Ice shelf fronts updated 2025.

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GEOLOGICAL LEGEND

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

PERIOD	GROUP	UNIT	VOLCANIC AND SEDIMENTARY ROCKS	MAGMATIC AND METAMORPHIC ROCKS
QUATERNARY / NEOGENE	Bellingshausen Sea Volcanic Group	20	**Beethoven Peninsula Volcanic Field** c.2.5 Ma - 0.1 Ma. Basaltic lavas, pillow lavas, lapilli tuff and tuff breccia. Lava-fed delta and subaqueous tuff cone lithofacies.	
		19	**Mount Pinafore Volcanic Field** c.7.7 Ma - 5.4 Ma. Basaltic lavas, lapilli tuff, hyaloclastite breccia and tuff breccia.	
PALEOGENE / Maastrichtian–Campanian	Alexander Island Volcanic Group	18	**Finlandia Formation** c.50 Ma - 46 Ma. Basaltic and basaltic andesite lavas, and rare high-Mg andesite flows.	
		17	**Elgar Formation** c.54 Ma - 49 Ma. Basaltic and basaltic andesite lavas, rare high-Mg andesite flows. Bedded tuffs and agglomerates. Up to 2000 m thick.	
		15	**Colbert Formation** c.65 Ma - 62 Ma. Rhyolitic to dacitic ignimbrite, crystal-lithic tuffs, breccia and volcaniclastic units. Total thickness is >2000 m.	
		14	**Staccato Magmatic Complex** c.82 Ma - 71 Ma. Massive andesite lavas on the southern coast of Monteverdi Peninsula. Diorite intrusion at Staccato Peaks.	
			Emplacement of allochthonous mélange belt and translation of Charcot Island associated with Late Cretaceous plate reorganisation.	
CRETACEOUS / Albian–Aptian	Fossil Bluff Group / Neptune Glacier Formation	13	**Mars Glacier Member** Sandstone, subordinate mudstone and conglomerate. Fossil forest horizons. Up to 1000 m thickness. c.102 Ma.	
		12	**Triton Peak Member** Coarse sandstone and conglomerate. Fossil forest horizons and rare tuff beds. Up to 900 m thickness. c.105 Ma.	
		11	**Deimos Ridge Member** Sandstone with interbedded mudstone. Bed thickness increases upwards. Up to 700 m thickness. c.114 Ma.	
Barremian–Aptian	Fossil Bluff Group	8 -8a	**Pluto Glacier Formation** Mudstone-siltstone succession with rare sandstone-conglomerate beds. Up to 800 m thickness. 8a: Rhea Corner Member conglomerates. c. 126 Ma.	
Hauterivian	Fossil Bluff Group	7	**Spartan Glacier Formation** Monotonous succession of mudstone and siltstone. Up to 1000 m in thickness. c. 130 Ma.	
Valanginian–Berriasian	Fossil Bluff Group	6 -6a	**Himalia Ridge Formation** Basal succession of mudstone and upper 1000 m arenite/rudite dominated. Rare rift-related basaltic units. Up to 2600 m in thickness. c. 140 Ma. 6a: Jupiter Glacier Member - 90 m sandstone beds representing an abrupt shallowing event.	
Tithonian–Kimmeridgian	Fossil Bluff Group	5	**Ablation Point Formation** Slumped blocks of sandstone and interbedded sandstone/mudstone. rare volcanic beds. Up to 440 m in thickness. c. 155 Ma. *?Hiatus?*	
JURASSIC / Tithonian	Fossil Bluff Group	4	**Atoll Nunataks Formation** Thinly bedded green and black siliceous mudstone with rare granule conglomerates. Up to 1050 m in thickness. c. 177 Ma.	
	Fossil Bluff Group	3	**Selene Nunatak Formation** Conglomerate and sandstone units derived from the accretionary complex. Fluvial succession at Zebra Ridge. Up to 150 m in thickness. c. 182 Ma.	
	Fossil Bluff Group	2	**Mount King Beds** Basal mudstone units transition to abundant sandstone-conglomerate units. Locally, mudstone units preserve a diverse macrofauna. Up to 1000 m. c. 182 Ma.	
PERMIAN	LeMay Group	1a	**LeMay Group (accretionary prism)** Succession of variably deformed trench-fill and trench-slope turbidites. Up to 4000 m in thickness. c. 255 Ma. Accretion at c. 230 Ma.	
				Rouen Intrusive Complex 16 — c.56 Ma. At least five mappable intrusions ranging from granite to diorite emplaced at shallow crustal levels. G: granite; Gd: granodiorite; To: tonalite; D: diorite.
				LeMay Group (mélange belt) 1b, 1c — Thrust-bound allochthonous slices of blueschist facies oceanic crust, mudstones and radiolarian-bearing cherts. Possible seamount at Lully Foothills (1c). Likely emplacement age of c. 90 Ma.
				Charcot Island Beds 10 — Weakly deformed sandstone-conglomerate-shale beds. Possible unexposed gabbroic basement (Charcot Anomaly). c. 112 Ma.
				Gannon Nunataks Volcanic Beds 9 — Coarse grained volcaniclastic beds uncomformably overlying the LeMay Group accretionary complex. c. 118 Ma.

GEOLOGICAL SYMBOLS

- Inferred contact
- Unconformity
- Normal fault (tick on downthrown side)
- Reverse fault (teeth on hanging wall)
- Strike-slip fault
- Axial trace of antiform
- Axial trace of synform
- Bedding (38)
- Cleavage (78)
- Overturned bedding (15)
- Laterally continuous bedding
- Dyke
- Fossil forest locality
- Significant plant fossil locality
- Significant invertebrate fossil locality
- Radiolaria-bearing cherts

OTHER SYMBOLS

- Coastline (adjacent to ice shelf)
- Coastline (adjacent to ocean)
- Contours (100 m intervals)
- Ice shelf

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