



THE GEOLOGY OF
SOME SOUTH AUSTRALIAN IRON DEPOSITS

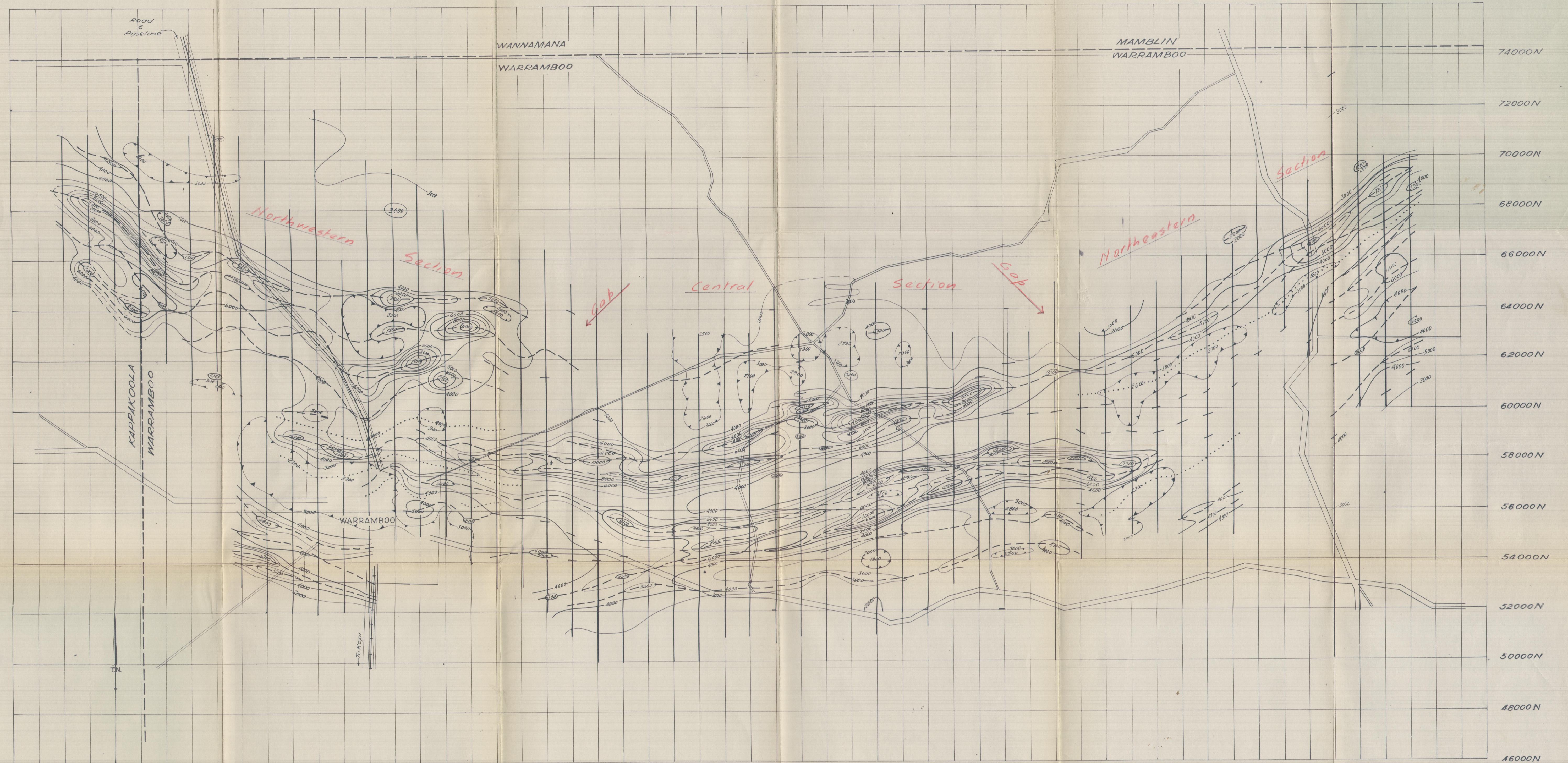
by

GRAHAM F. WHITTEN

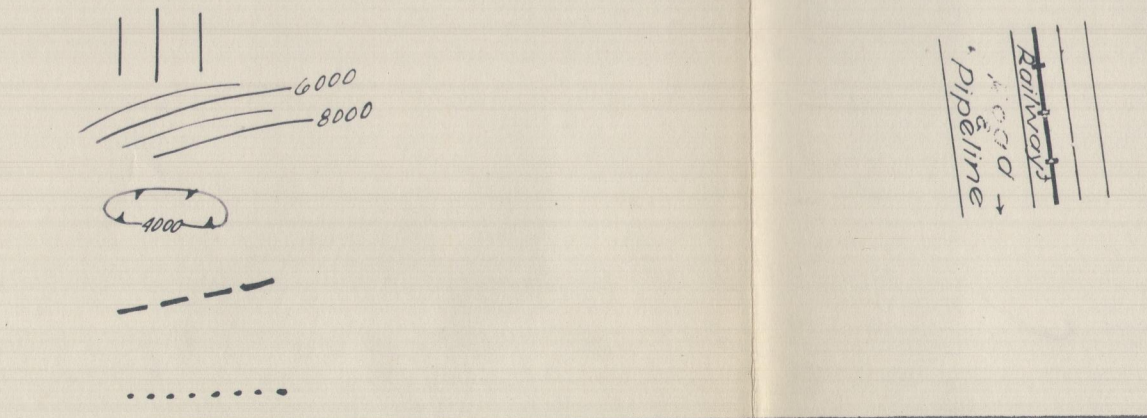
Department of Mines
South Australia

January, 1966.

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Magnetic Traverses
 Magnetic Contours (interval 1000 gammas)
 Magnetic Lows
 Magnetic High Trends
 Magnetic Low Trends



Scale : 1 inch to 2000 feet

Field Data after C. H. Bagot et al. To accompany report by G. F. Whitten and B. G. Risely.

S.A. DEPT. OF MINES
WARRAMBOO AEROMAGNETIC ANOMALY
GROUND MAGNETIC CONTOURS AND TRENDS

Req. No.	
D.M.	
Compiled from	
Associated Drawing	No. No. Amendment Exd. Date

Approved	Passed	Scale: 1" to 2000'
Director of Mines	Drn. Tcd. B. L. S. Ckd. Exd.	65-133 Dt 13 Date 22-12-84



Structural Axis and Plunge →

Kyancutta iron prospect (Shackleton, 1963)

Railway

Water pipeline

Aeromagnetic anomalies (anomalies over the Middleback Ranges are not shown but are predominantly confined to the iron formation indicated). Value in gammas.

SCALE: 1 inch = 16 miles

To accompany report by G.F. Whitten & B.G. Risely

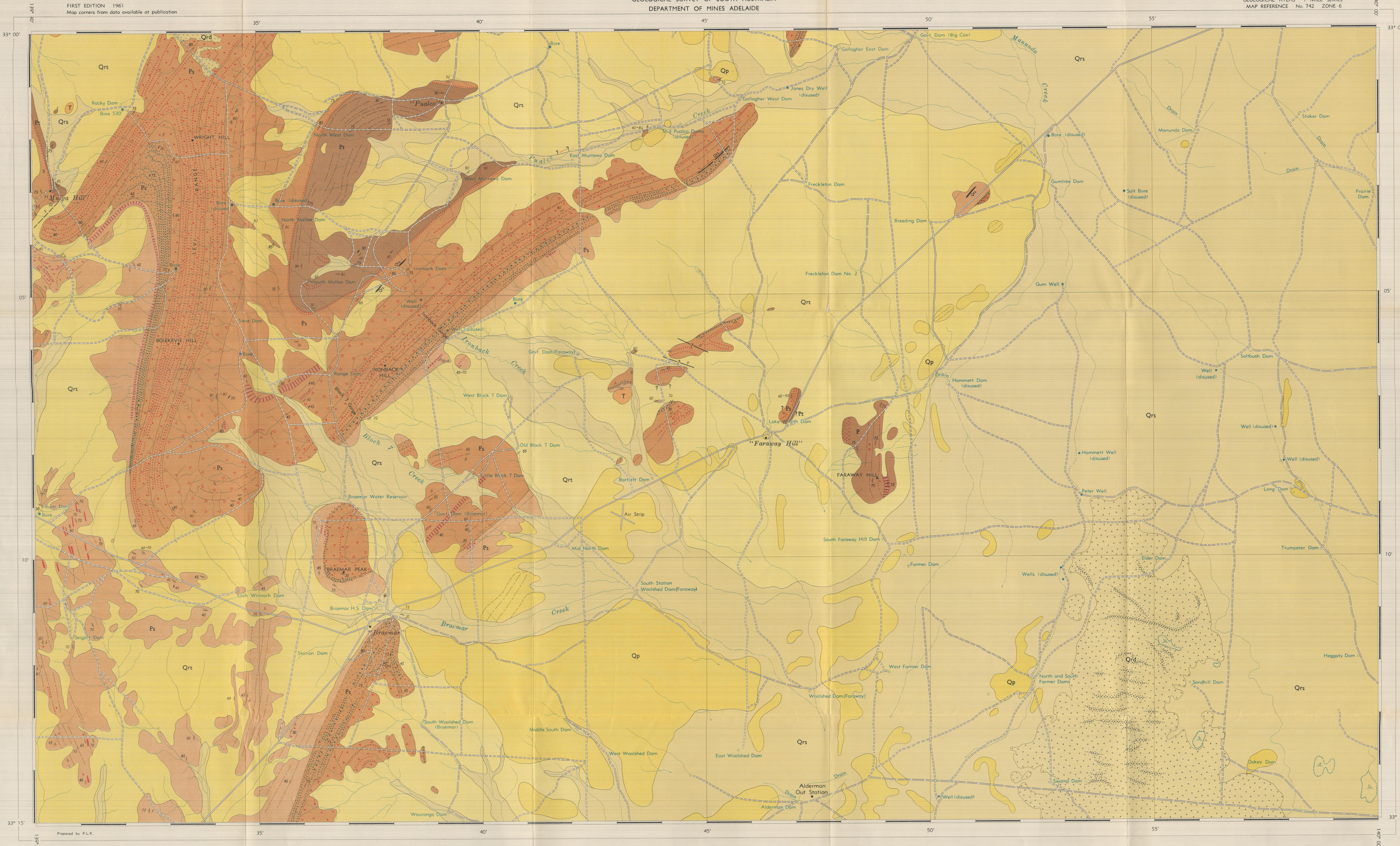
- QUATERNARY
 - Sands, clays and alluvium
 - Calcareous aeolianite capped with travertine.
 - MIDDLE PROTEROZOIC
 - Sandstones, grits, conglomerates, limestones and shales.
 - Hutchison Group—mica schists with minor quartzites, amphibolites, graphitic schists, iron formations, quartz-feldspar gneisses, migmatites and dolomites. Abundant pegmatitic rocks.
 - Iron Formations—Jaspilites with schists, dolomites and hematite bodies; and meta-jaspilites with gneisses etc.
 - Flinders Group (Johns) or Gneiss Complex (Miles)—metasedimentary quartz-feldspar gneisses with massive coarse grained non-foliated granitic rocks in areas of intense metamorphism, and minor quartzites, migmatites, quartz-feldspar schists, dolomites, amphibolites and iron formations. Abundant pegmatitic rocks.
 - MIDDLE PRECAMBRIAN LOWER PROTEROZOIC ?
 - Coarse grained massive non-foliated granitic rocks.
 - Gawler Range Volcanics.
- N.B. Schists & Gneisses of the Marble R. are now placed in Dutton Metamorphics (See Text)

DEPARTMENT OF MINES — SOUTH AUSTRALIA	
EYRE PENINSULA	
GEOLOGICAL SKETCH PLAN	
Drn.	SCALE:
Tcd. G.M.	65-130
Ckd.	DE
Ext.	DATE: 26.3.65
Director of Mines	

BRAEMAR

GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF MINES ADELAIDE

GEOLOGICAL ATLAS 1 MILE SERIES
MAP REFERENCE No. 742 ZONE 6



REFERENCE

QUATERNARY	RECENT	Qrs	Alluvial deposits of creek channels and flood plains.
		Qrt	Low angle slope deposits, talus, residual soils.
		Qrd	Sand, sand dunes.
PLEISTOCENE		Qp	High level sands and gravels. Trend lines in underlying bedrock.
TERTIARY		T	Latentite remnants (Silicification at Faraway Hill).
PROTEROZOIC	UPPER GLACIAL SEQUENCE	Pu	Laminated slates and siltstones, calcareous and coarser grained near the top with local tillite occurrences. Tillite. Dolomites near the base.
	MIDDLE GLACIAL SEQUENCE	Pm	Haematite and magnetite siltstone and thin dolomites, graphitic slates and tillites. Major ferruginous haematite and magnetite tillite. Boulder tillite with sandy matrix. Boulder tillite with numerous interbedded quartzites. Tillite with shaly matrix.
	LOWER GLACIAL SEQUENCE	Pt	Shales and felspathic siltstones with tillitic phases. Numerous thin dolomitic bands near the top. Arkosic quartzites and sandstones near the base. Felspathic siltstones, shales, black slates with dolomitic and pyritic beds.
	UNDIFFERENTIATED	P	Quartzites; silicified graded and current bedded siltstones, with rare scattered boulders, dolomites and dolomitic arkoses of Faraway Hill.
	IGNEOUS ROCKS		Rhyolite dykes.
			Quartz veins.

GEOLOGICAL BOUNDARIES

OBSERVED: ————

APPROXIMATE: - - - - -

FAULTS

OBSERVED: ————

APPROXIMATE: - - - - -

BEDDING

STRIKE AND DIP: ————

VERTICAL: ————

OVERTURNED: ————

STRUCTURE FORM LINES: ————

PITCH: ————

CLEAVAGE: ————

VERTICAL: ————

MAIN ROAD: ————

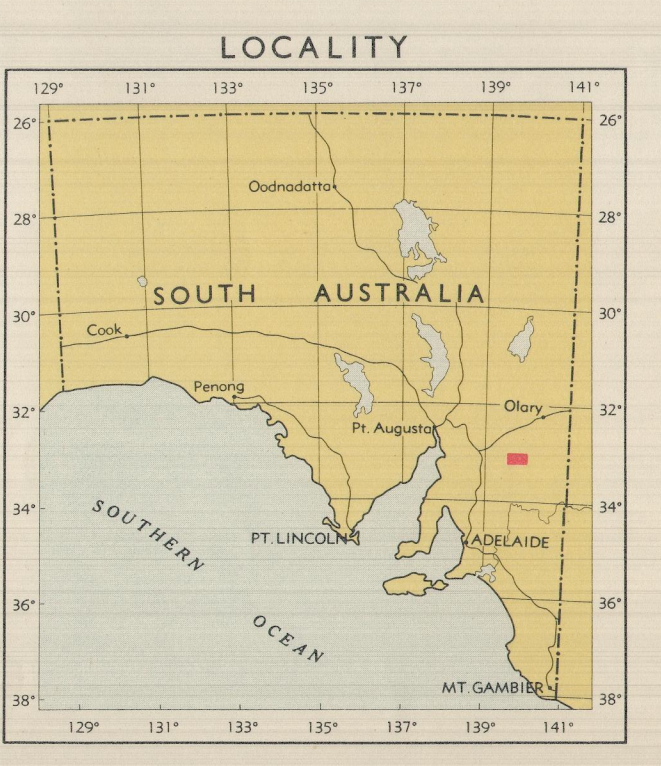
SECONDARY ROAD: ————

TRACK: ————

RIVER OR CREEK: ————

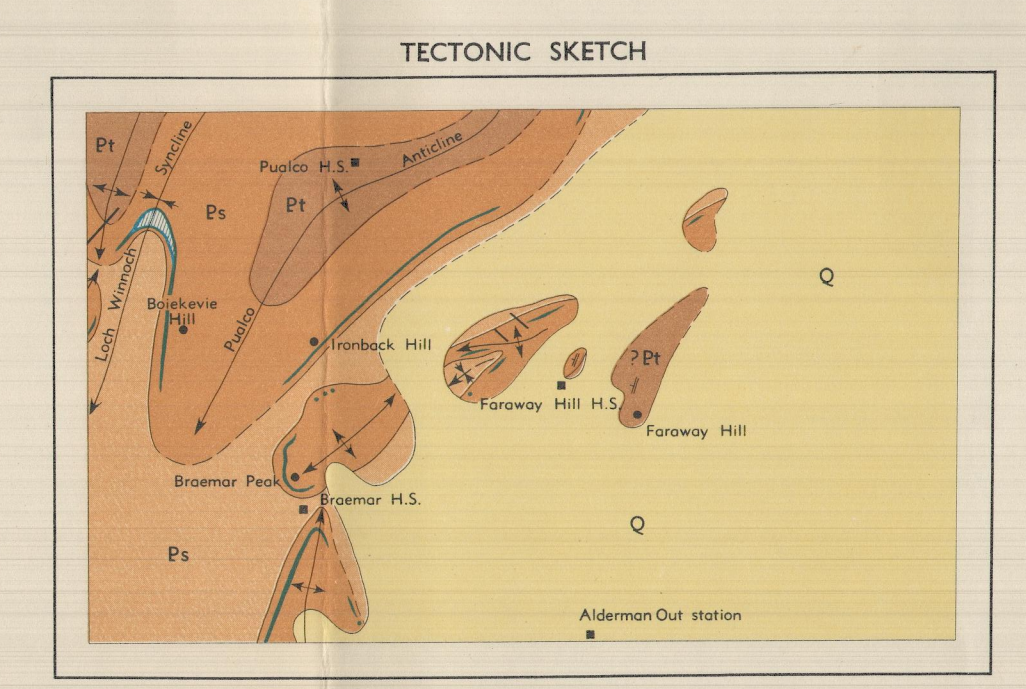
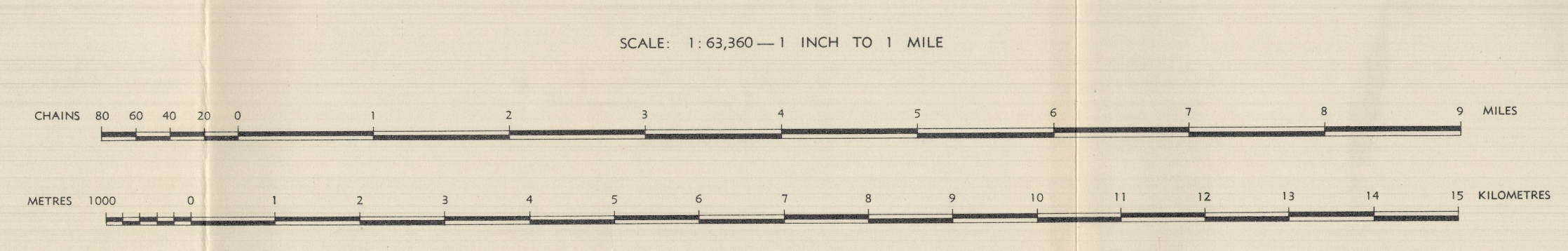
SWAMP: ————

DAM: ————



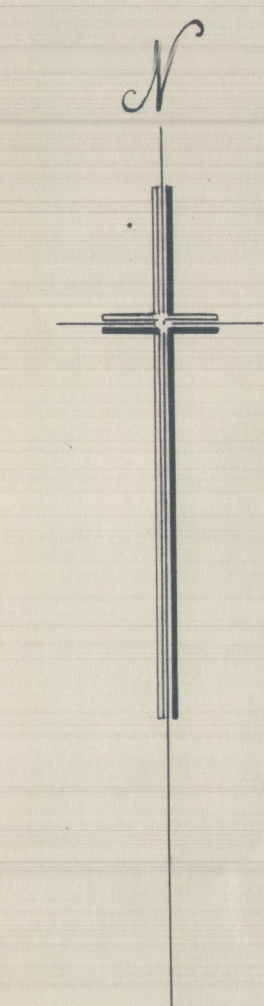
INDEX TO ADJOINING SHEETS

HACKARA	MANUNDA	ANABAMA
FRANKLYN	BRAEMAR	LILLYDALE
CARDONA	MURKAY	PINE VALLEY



Quaternary	Q
Recent	Qrs
Inter Glacial	Pu
Lower Glacial	Pm
Tertiary	Pt
Anticline	↕
Syncline	↔
Fault	— —
Braemar Iron Formation	— —

Geology by G. F. WHITTEN, B.Sc., Senior Geologist,
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B. P. Webb, M.Sc., Senior Geologist in charge of regional map co-ordination.
J. E. Webb, B.Sc., A.S.A.M., Senior Geophysicist in charge of aeromagnetic surveys.
E. S. O'Driscoll, B.Sc., Chief Geologist.
Base map and cartography by Geological Drafting Section, Dept. Mines, S.A.
Compiled under the direction of T. A. Barnes, M.Sc., Government Geologist.
Issued under the authority of the Honourable Sir A. Lyell McEwin, M.L.C., Minister of Mines.
Published 1961.



LEGEND

- Iron Ore Outcrop
- Heavy Scree
- Light Scree
- Area of no outcrop with scattered silicate scree (epidote rich)

Reddish, prominently outcropping quartzite

Green and red to purple shales & siltstones with lesser dolomite & sandstone bands

Calc. silicate rocks, many fine grained & epidote rich. Contains minor copper mineralization. Grad up into associated grey limestones showing partial haematite replacement, which are overlain by poorly outcropping impure and sandy limestones. Minor quartzite and marble.

Coarse grained calc. silicate rocks (epidote & amphibole rich) with minor vein calcite

Grey & very pale mauve fine grained carbonate rocks, same haematite mineralization near base

Impure, laminated, reddish brown sandy limestones & calcarenites. Poorly outcropping

Haematite

Magnetite

Quartzite

Episite-Quartzite

Drill holes

Drill holes intersecting Haematite

Sample for petrological examination

Beading trend

Beading attitude

Plunge of minor fold

Survey pegs used to establish dip needle traverses

Plane table station

Lease peg

Fence

Peak

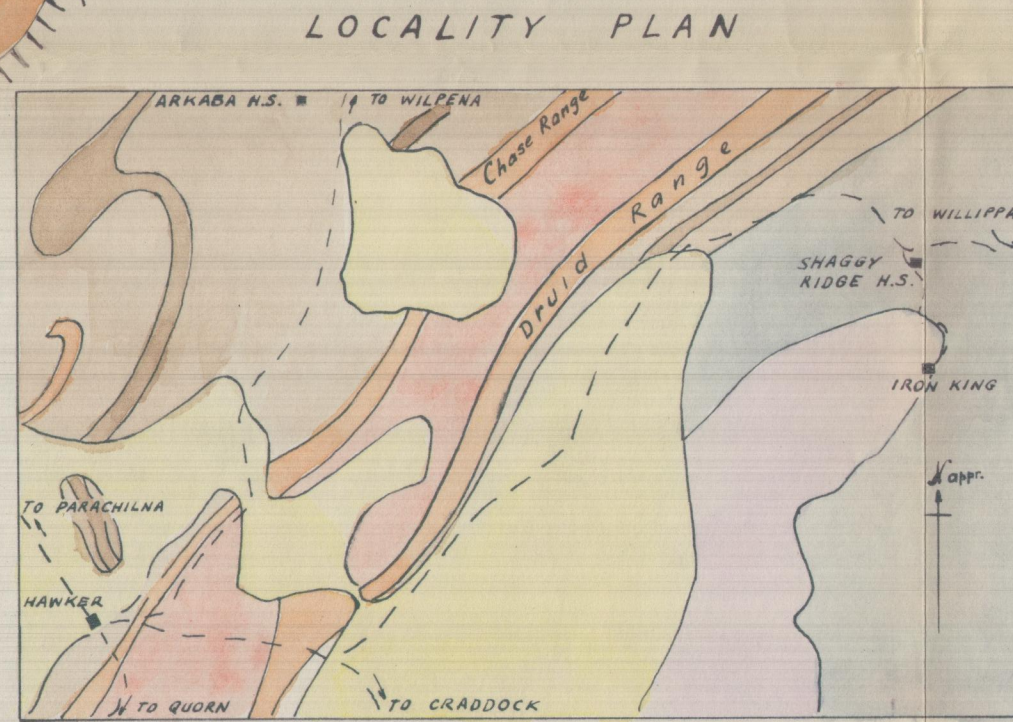
Creek

Form lines (arbitrary datum N1 = RL 1000')

Shaft showing approximate depth

Dip needle deflection (1" swing)

Vertical scale 1" = 10' Baseline 180'



LEGEND

- Alluvium, etc.

LEGEND

- Cambrian Limestones & lesser siltstones
- Marinoan Series Pound Quartzite
- ABC Range Quartzite
- Proterozoic Adelaide system
 - Sturtian Series Fluvio-glacial & marine sediments.
 - Torrensian & Millerran Series Sediments, minor volcanics locally emplaced in diapiric form

Plane table Survey by G. Whitten & R. Heath.

To accompany report by G. Whitten.

S.A. DEPT. OF MINES					IRON KING - IRON OCCURRENCE		Approved _____ Passed _____		Scale: 100ft to 1 inch	
PLS. 1665 & 1665 A Hd. ADAMS Co HANSON					J.L. & E.A. MORGAN		Dm. _____		61 - 787	
Req. No. _____					D.M. _____		Tcd. J.E. _____		Fc 5	
Compiled from _____					Director of Mines		Exd. _____		Date 7-11-1961	
Associated Drawing No. No. Amendment Exd. Date										