

## YORKE PENINSULA (MOONTA SUBDOMAIN)

## PRE-NEOPROTEROZOIC BASEMENT GEOLOGY

Scale 1:250 000 5 0 5 10 15 20 Kilometres Projection: Universal Transverse Mercator, Zone 53 Grid Coordinates: Map Grid of Australia 1994 (MGA 94) Horizontal Datum: Geocentric Datum of Australia (GDA 94) <sub>137°E</sub> DOMAIN MAP Olympic Domain Late argillic alteration zone; very weakly magnetic, magnetite-destructive alteration SPENCER DOMAIN Alkali feldspar + magnetite  $\pm$  calcsilicate  $\pm$  biotite metasomatic alteration bodies Hiltaba Suite Moderately to strongly magnetic granitoids Tickera Granite Predominantly strongly magnetic granite OLYMPIC DOMAIN (Moonta Subdomain) Wandearah Formation intruded by Tickera Granite at shallow depth; strong magnetic signature of granite evident through metasedimentary cover Moderately to weakly magnetic granitoids Weakly magnetic to non-magnetic granitoids Strongly magnetic granitoids (including Curramulka Gabbronorite), with some Wallaroo Group metasediments and metavolcanics Predominantly moderately to strongly magnetic granitoids, with some Wallaroo Group metasediments and metavolcanics Wallaroo Group Predominantly weakly magnetic, albitic, quartzose and calcsilicate metasediments with minor more strongly magnetic horizons; minor intercalated metavolcanics; possible Wandearah Formation minor Hiltaba Suite granitoid intrusions Scale 1:2 000 000 50 Kilometres Predominantly very weakly magnetic metasiltstone, sandstone and some calcsilicates Variably weak to moderately magnetic metasediments and intercalated metavolcanics Domain boundaries modified after Ferris et al, 2000 (including the Wandilta Amphibolite); some narrow, linear, strongly magnetic anomalies — Major fault —∪—∪— Unconformity probably represent magnetite-biotite metasomatism along shear zones ---- Domain boundary inferred - obscured by younger granites Weakly magnetic metasediments, sometimes graphitic or calcareous; carbonate-rich breccia and skarn bodies; some discontinous strongly magnetic anomalies, probably metasomatic Downfaulted and covered by thick Neoproterozoic sediments Weakly magnetic metasiltstone with minor calcareous horizons Predominantly weakly magnetic metasediments with scattered small, strong magnetic anomalies, probably metasomatic bodies MOONTA INSET MAP showing

MINES and PROSPECTS Weetulta Formation Felsic metavolcanics and intercalated metasediments Variably magnetic felsic and minor mafic metavolcanics (Renowden Metabasalt) Lxew Wardang Volcanics with intercalated metasediments of the Aagot Member Weakly to moderately magnetic felsic metavolcanics Intercalated felsic metavolcanics and metasediments of the Moonta Porphyry and Doora Member Moderately to weakly magnetic, felsic and lesser mafic (Willamulka Metabasalt) metavolcanics and intercalated metasediments (Wokuma Member); intruded by the Bute Metadolerite Mona Volcanics Moderately to weakly magnetic, undifferentiated Weetulta Formation, intruded by Hiltaba Suite granitoids Undifferentiated metasediments and metavolcanics, variably weakly to moderately magnetic, intruded by Hiltaba Suite granitoid Undifferentiated Wallaroo Group and Hiltaba Suite granitoids, containing strong magnetic anomalies, probably metasomatic bodies Broad areas of moderately to very strongly magnetic Wallaroo Group probably reflecting widespread magnetite ± biotite ± albite alteration and some intrusion by Hiltaba Suite granitoids Undifferentiated Olympic Domain Basement

Mines and lodes (abandoned) Commodities

17 Yelta lodes Cu, Au 18 MacDonnell, Fergusson, Dominic, Cu, Au

Moonta Extended, Wild Dog lodes Cu, Au

Devon lodes Kurilla mine (Morphetts, Halls lodes)

Cornwall, New Cornwall lodes

Wallaroo main lode Stirling, Matta lodes

Duryea lode Bingo lodes Wandilta lode

Poona lodes Parramatta lode Wheal Hughes

North Yelta, Euko lodes Tuxford (Tank) lode

Hogg, and Buchan lodes

19 Hall, Alice, and Hancock lodes Harvey, Young lodes Beddome lode Musgrave lode

Elder West, Bennett lodes

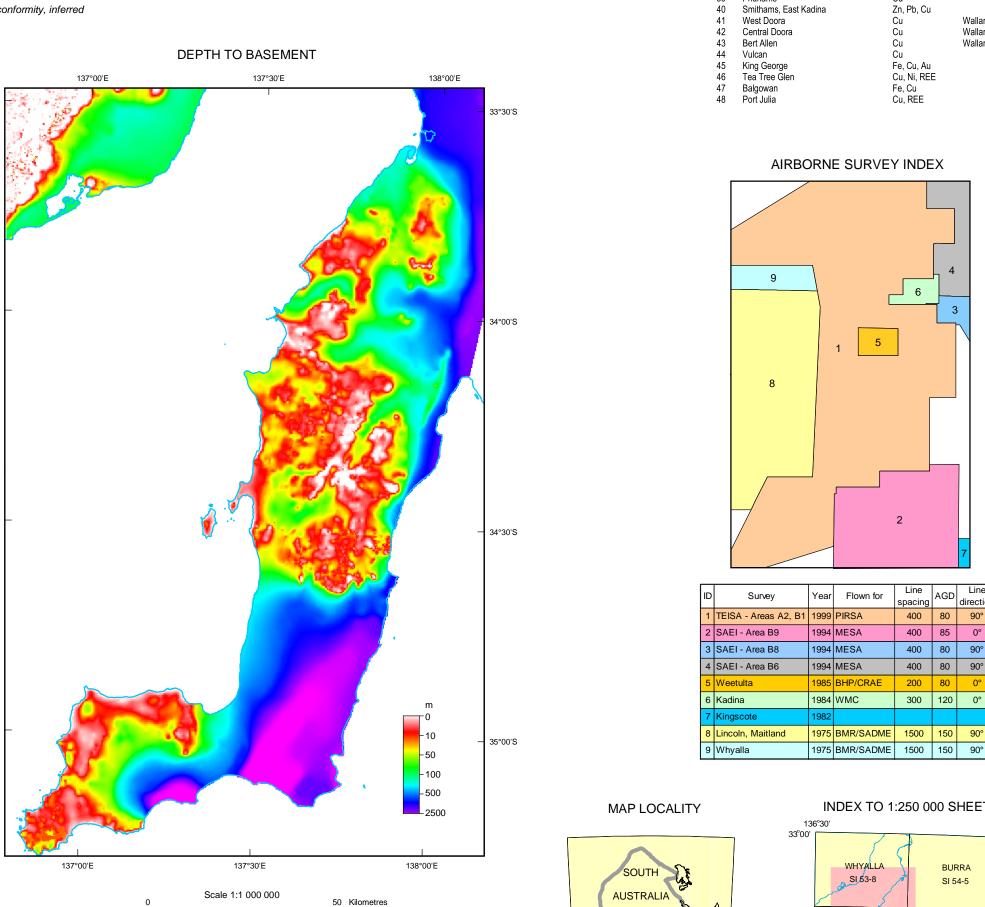
Karkarilla, Treuer lodes

North Kadina Black Oak Plain

Wallaroo Group intruded by predominantly magnetic Hiltaba Suite granitoids; typically buried by thick Neoproterozoic and/or Cambrian sedimentary cover Spencer Domain Lh Hutchison Group and Predominantly weakly magnetic gneissic metasediments with some narrow strongly magnetic horizons Lincoln Complex (predominantly Donington Suite) Weakly magnetic paragneiss (including Corny Point Paragneiss), with weakly to moderately magnetic Donington Suite granitoids and granitoid gneisses Moderately to strongly magnetic gneiss (predominantly Donington Suite granitoid gneisses) with abundant linear magnetic anomalies reflecting shearing and foliation

Moderately to strongly magnetic granitoid and granitoid gneiss Weakly magnetic granitoid and granitoid gneiss ——100 —— Depth to basement contours (m) 35 Abandoned mine or prospect (see table)

Geological boundary, probable — — Anticline ----- Geological boundary, inferred ———— Syncline ----- Trend line, highly magnetic, concealed ————?—- Major fault, inferred — — — Trend line, linear feature of unknown origin Secondary road; town ----- Minor fault, probable — — — Bedding trend, concealed Compositional layering, inferred —\_u—\_u— Unconformity, inferred DEPTH TO BASEMENT



Depth to pre-NeoProterozoic basement pseudocolour image Compiled by O. Raymond, Geoscience Australia, 2001-02. Revised 2003 Geophysical image processing by O. Raymond, Geoscience Australia Gravity data compiled and gridded by N. G. Direen, Geoscience Australia Cartography by L. M. Highet, Geoscience Australia Produced and printed by the Geospatial Applications and Visualisation Unit, Geoscience Australia using ESRI ArcGIS software BIBLIOGRAPHY It is recommended that this map be referred to as: Raymond O., 2003, Yorke Peninsula (Moonta Subdomain), Geophysical Interpretation of Pre-NeoProterozoic Basement Geology 1:250 000 scale map (Second edition). Geoscience Australia, Canberra

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AVAILABILITY Copies of this map can be obtained from: Sales Centre, Geoscience Australia GPO Box 378, Canberra, ACT, 260

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http://www.ga.gov.au

EXPLANATORY COMMENTS The geology dataset was compiled primarily from interpretation of airborne magnetic data and drill hole logging, along with gravity and minor AEM data. The magnetic data used for the interpretation was compiled by GA and PIRSA geophysicists from numerous regional government surveys and more detailed private company surveys. The TEISA magnetic dataset (flown 1999, 400 metre line spacing) comprised the bulk of the data over the land area of Yorke Peninsula. Drill hole data comprised logs from the PIRSA database, as well as logging by the author.

The model of depth-to-basement was calculated using the ANUDEM topographic modelling algorithm and was based primarily on drill hole data and the mapped limits of basement outcrop. Depth-to-basement in the area of the Stansbury Basin (SE of the survey area) was based on previous modelling by SRK Consulting (available from PIRSA). Depth-to-basement data was gridded and contoured using the Topogrid module of ArcInfo 8.0.2 and the Spatial Analyst extension of Arcview 3.2. Geophysical and depth-to-basement images were exported as BIL files from ER Mapper 5.5.

The vector data was digitised and compiled using ArcInfo 8.0.2. The map was constructed using ArcGIS 8.2. Revisions in ArcGIS 8.3 The digital data are also presented as an online GIS at http://www.ga.gov.au and certain datasets are available for download in ArcView and MapInfo formats. Complete metadata is also available: refer to Geocat # 39835.

GEOPHYSICAL DATA Geophysical data can be obtained from: Office of Minerals and Energy Resources, SA 7th Floor, 101 Grenfell St, GPO Box 1671, Adelaide, South Australia, 5001 Ph (08) 8463 4154, Fax (08) 8463 4155 http://www.minerals.pir.sa.gov.au

WARNING: Colours will fade with prolonged exposure to light



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