

# REGOLITH MATERIALS

## REFERENCE

- RESIDUAL (R)** Residual sand, duricrust, and gravel derived by weathering in situ; includes proximal reworked material
- Rf** comprising mainly iron-rich material (ferrisite)
  - Rk** comprising mainly carbonate-rich material (calcrete)
  - Rl** comprising mixed material (ferrisite over either sandstone, shale, or older colluvium)
- EXPOSED (X)** Outcrop of saprock and bedrock, with locally derived sand, silt, clay, and rubble
- Xkc** derived from carbonate-rich bioclastic sedimentary rock (thinly bedded, stromatolitic dolomite and allstone; largely SKATES HILLS FORMATION)
  - Xto** derived from heterogeneous sedimentary rock (sandstone, allstone, shale, conglomerate, evaporite, chert, and dolomite; largely SKATES HILLS FORMATION)
  - Xtm** derived from heterogeneous sedimentary rock (shale, allstone, minor sandstone, and chert; largely QUADRIO FORMATION)
  - Xth** derived from heterogeneous sedimentary rock (sandstone, wacke, and minor shale, and banded chert; largely CORNELIA SANDSTONE)
  - Xwh** derived from ferromagnesian hypabyssal rock (dolerite; typically deeply weathered)
  - Xqt** derived from quartz-rich allodolastic sedimentary rock (sandstone and allstone; largely BRASSEY RANGE FORMATION)
  - Xqct** derived from quartz-rich allitified sedimentary rock (sandstone and allstone; OLDHAM SANDSTONE)
  - Xqct2** derived from quartz-rich allitified sedimentary rock (sandstone, allstone, wacke; CORNELIA SANDSTONE)

- COLLUVIAL (C)** Unconsolidated and semi-consolidated silt, sand, gravel, and rubble
- Cf** comprising mainly iron-rich material
  - Ck** derived mainly from carbonate-rich rock
  - Ct** derived from mixed rock types and heterogeneous sedimentary rocks
  - Cq** derived mainly from quartz-rich rock (sandstone, and minor wacke)
- LOW-GRADIENT SLOPE (W)** Sand- and clay-dominated colluvium and sheetwash
- Wd** undivided

- ALLUVIAL (A)** Cobbles, gravel, sand, silt, and clay
- Ac** In alluvial channels
  - Ad** In drainage depressions
  - Aok** In drainage depressions; carbonate-rich (calcrete)
  - Av** In alluvial fan or floodout
- LACUSTRINE (L)** Clay, silt, sand, gravel, and evaporite material, largely related to palaeodrainages
- Ls** In playas and lakes
  - Lm** In mixed dune and playa terrain

- SANDPLAIN (S)** Eolian, colluvial and residual sand
- Sd** undivided
  - Sf** In sandplain environment with ironstone pebble veneer; locally eolian
  - Sk** In sandplain environment with low dunes; sand and calcrete filling older drainage depressions (palaeodrainages)

## SYMBOLS

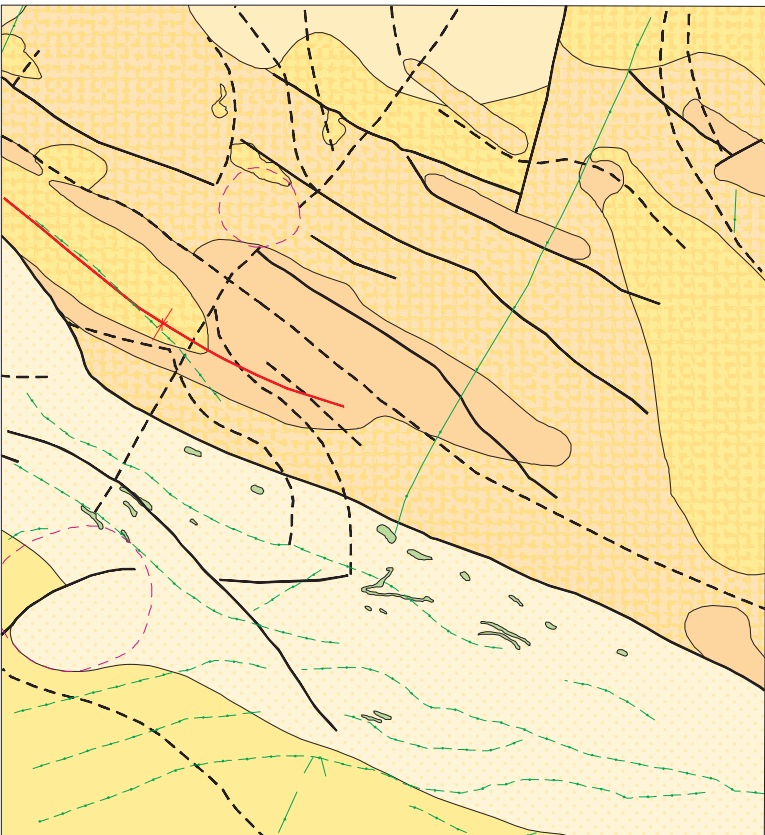
- Regolith boundary
- Breakaway
- Dune crest
- Landslit lineament
- Track
- Watercourse
- Phonoclast Hill
- Locality
- Water bore
- Stratigraphic drillhole

Water bore locations from STEVENS, M. K., and CARLSEN, G. M., 1998. A compilation and review of data pertaining to the hydrocarbon prospectivity of the Savory Sub-basin, Officer Basin, Western Australia: Western Australia Geological Survey, Record 1998/5, 65p.

## MINERAL OCCURRENCES

- MINERALIZATION STYLES**
- Vein and hydrothermal G undivided
- MINERAL AND ROCK COMMODITY GROUPS**
- Industrial mineral
- OCURRENCE NUMBERS**
- Numbers refer to GSWA WAMNI mineral occurrence database
- KEY TO OPERATING STATUS**
- Italic numbers* Mineral occurrence or prospect
- MINERAL COMMODITY**
- Barite..... Bt

## INTERPRETED BEDROCK GEOLOGY



- NEOPROTEROZOIC**
- Disappointment Group
  - McFADDEN FORMATION: laminated fine- to coarse-grained sandstone, felspathic sandstone, quartz wacke, minor conglomerate, and allstone
  - Sunbeam Group
  - SKATES HILLS FORMATION: stromatolitic dolomite and limestone, fine- to medium-grained sandstone, allstone, shale, local conglomerate
- PROTEROZOIC**
- Solvation Group
  - BRASSEY RANGE FORMATION: fine- to coarse-grained sandstone and allstone, quartzose and felspathic; typically moderately indurated
  - Coller Group
  - OLDHAM SANDSTONE: fine- to medium-grained allitified sandstone, allstone; moderately dipping
  - Edmund Group
  - CORNELIA SANDSTONE: fine- to medium-grained intensely allitified sandstone, allstone, wacke; steeply dipping
  - QUADRIO FORMATION: shale, allstone, minor sandstone, chert; steeply dipping to subvertical
- Geological boundary**
- Syncline
  - Interpreted circular gravity feature
- Fault, exposed**
- Fault, concealed



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SCALE 1:100 000  
1000 0 1 2 3 4 5 6 7 8 9 10  
METRES KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION  
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM  
HORIZONTAL DATUM: GEOCENTRIC DATUM OF AUSTRALIA 1994  
Grid lines indicate 1 000 metre interval of the Map Grid Australia, Zone 51

The Map Grid Australia (MGA) is based on the Geocentric Datum of Australia 1994 (GDA94)  
GDA94 positions are compatible within one metre of the datum WGS84 positions

## REGOLITH MATERIALS

### REGOLITH GEOCHEMISTRY SERIES

## NICHOLLS

SHEET 3448  
FIRST EDITION 2002  
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WARNING: Inks are water soluble and will fade with prolonged exposure to light

Edited by G. Hall, K. Greenberg, and G. Brian

Cartography by M. Vicenti

Topography from Australian Surveying and Land Information Group, and Department of Land Administration Sheet 5G 51-2, 3448

This map was compiled and produced using a Geographic Information System (ArcInfo), and the data are available in digital form

Published by the Geological Survey of Western Australia. Copies of this map, or extracts of the data, are available from the Information Centre, Department of Mineral and Petroleum Resources, 100 Plain Street, East Perth, WA 6004. Phone (08) 9222 3459. Fax (08) 9222 3444. Web www.mpr.wa.gov.au. Email geological\_survey@mpr.wa.gov.au



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SAMUELSON 3248	LEE 3248	DOONBIE 3248	BRASSEY 3248	BRASSEY 3248	HENRY 3248

1: 100 000 maps shown in black  
1: 250 000 maps shown in brown  
Gravity survey shown in magenta

Compiled by A. J. Sanders 2001

Field observations 2000-2001 by A. J. Sanders

Compiled using: Landsat TM Images (1994 data); ASTER Images (2000 data); 1995 images 1:50 000 scale black and white aerial photography; WILLIAMS, I. R., 1995. Trainer, W.A. Sheet 5G51-2 Grid edition; Western Australia Geological Survey, 1:250 000 Geological Series; and field observations 2000-2001.

The recommended reference for this map is:  
SANDERS, A. J., 2002. Regolith materials, Nicholls, W.A. Sheet 5G 51-2, 3448. in: Geochronological mapping of the Nicholls 1:100 000 sheet. by A. J. SANDERS. Western Australia Geological Survey, Regolith Geochemistry Exploratory Notes, Plate 2