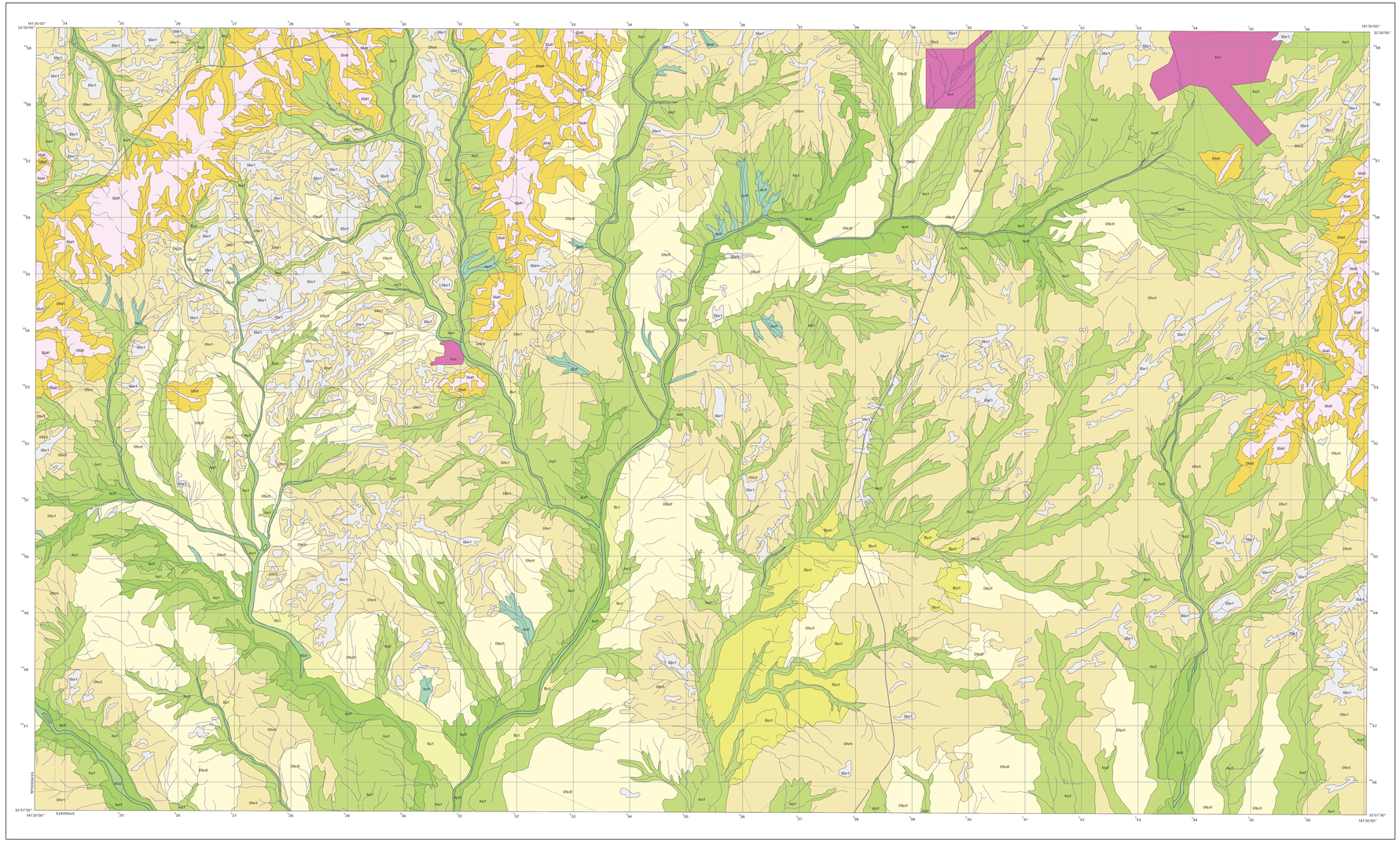
BROKEN HILL 1:25,000 REGOLITH-LANDFORM SERIES

PINNACLES

NEW SOUTH WALES

SCALE 1:25 000



TRANSPORTED REGOLITH

Alluvial sediments

Alluvial sediments

Aae1 — *Sub-rounded to sub-angular sands, silts and minor clays and gravels, mostly composed of quartz and lithic fragments. Low relief landsurface with minor channels (< 1m). Coarse quartz sands with minor quartzose and lithic gravel surface lag. Pewdery, rhizomorphic and minor hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Atriplex vesicaria and minor Maireana spp.*

Aae2 — *Sub-rounded to sub-angular sands, silts and minor clays and gravels, mostly composed of quartz and lithic fragments. Low relief landsurface with minor depofs (< 1m) incised channels. Coarse quartz sands with minor quartzose and lithic gravel surface lag. Pewdery, rhizomorphic and minor hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Atriplex vesicaria and minor Maireana spp.*

Aae-t — *Silts and clays with minor sub-rounded quartzose sands Swampy depressions and clay pans. Clayey silt and minor sand with organic rich sands. Chenopod shrubland dominated by Sclerolaena muricata, Muehlenbeckia cunninghamii and Asteliaspp., with minor shrubland of Acacia victoriae and Rhagodium hookeriana.*

Aaz1 — *Sub-rounded to sub-angular quartzose and lithic sands, silts and occasional gravels. Depression with minor channel Quartzose and lithic silts, sands and gravels. Rounded red-brown fine sands and silts, with pewdery rhizomorphic and minor hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Atriplex vesicaria and minor Maireana spp. and Enchylaena tomentosa.*

Apd1 — *Sub-rounded to angular quartzose and lithic sands, silts and minor gravels. Low relief landsurface. Quartzose sands, silts and minor gravels. Rounded red-brown fine sands and silts, with minor pewdery regolith carbonate. Chenopod shrubland dominated by Atriplex vesicaria and Maireana spp.*

Channel deposits

ACa1 — *Sub-rounded to sub-angular sands, silts and gravels, composed of quartz and lithic fragments with minor heavy minerals and clay. Ephemeral meandering and minor braided channels, with occasional levees. Imbricated gravel lags and sands. Minor exposures of slightly weathered bedrock. Open woodland of Eucalyptus camaldulensis.*

ACa2 — *Sub-rounded to sub-angular sands, silts and gravels, composed of quartz and lithic fragments with minor heavy minerals and clay. Ephemeral meandering and minor braided channels, with occasional levees. Imbricated gravel lags and sands. Minor exposures of slightly weathered bedrock. Open shrubland of Acacia victoriae with minor Rhagodium hookeriana.*

Aeolian sediments

Aeolian sand

Eqs1 — *Clayey silt to fine rounded quartzose sands. Low relief landsurface with low (< 1m) hummocky dunes. Rounded red-brown fine quartzose sands and silts with occasional coarser quartzose and lithic sands. Minor pewdery rhizomorphic and hardpan regolith carbonate accumulations. Closed shrubland dominated by Casia spp. and Dodonaea spp., and minor chenopod shrubland dominated by Maireana spp.*

Eu1 — *Sub-rounded to rounded fine quartzose, and minor lithic, sands. Transverse dunes and low relief landsurface. Rounded red-brown fine quartzose sands and silts with occasional coarser quartzose and lithic sands. Minor pewdery rhizomorphic and hardpan regolith carbonate accumulations. Open woodland dominated by Stipa spp. & Acrotriche spp. with occasional chenopods and scattered Casuarina pauper, Acacia spp. and Callitrisin shrublets, dominated by Stipa spp. & Acrotriche spp. with occasional chenopods and scattered Casuarina pauper, Acacia spp. and Callitrisin shrublets.*

Colluvial sediments

Sheet flow deposits

CHe5 — *Sub-angular to sub-rounded lithic and quartzose sands and gravels. Areas with moderate topographic relief. Coarse lithic and quartz sands and gravel surface lags with rounded red-brown fine sands and silts and occasional maghemite. Minor pewdery, hardpan and nodular regolith carbonates. Chenopod shrubland dominated by Atriplex vesicaria and minor Maireana spp. and an open woodland of Acacia aneura.*

CHe1 — *Angular to sub-rounded lithic and quartzose gravels, sands and silts. Areas with slight topographic relief. Angular to sub-rounded lithic and quartzose gravel lag. Minor pewdery nodular and hardpan regolith carbonates and rounded red-brown fine sands and silts. Chenopod shrubland dominated Maireana spp.*

CHe6 — *Angular to sub-rounded lithic and quartzose gravels, sands and silts. Areas with slight topographic relief. Angular to sub-rounded lithic and quartzose gravel lag. Minor pewdery nodular and hardpan regolith carbonate and minor nodular and hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Maireana pyramidata and Maireana sedifolia. Minor Atriplex vesicaria.*

CHp1 — *Sub-angular to sub-rounded lithic and quartzose sands, silts and gravels. Area with low topographic relief. Surface lag of coarse lithic and quartzose sands. Minor nodular and hardpan regolith carbonate accumulations, minor maghemite, rounded red-brown fine sands and silts. Chenopod shrubland dominated by Maireana spp.*

CHp2 — *Sub-angular to sub-rounded lithic and quartzose sands, silts and gravels. Area with low topographic relief. Surface lag of coarse lithic and quartzose sands. Minor pewdery, nodular and hardpan regolith carbonate surface patcem. Rounded red-brown fine sands and silts. Chenopod shrubland dominated by Atriplex vesicaria.*

Fill

Fm1 — *Fill*

Urban area with paved and landscaped area, and the immediate surrounds of major mines. Surface lags are highly variable. Vegetation is highly variable and includes abundant exotic species.

IN-SITU REGOLITH

Saprolith

Saprock

SSe11 — *Bedrock exposure with thin surficial weathering, slight fenoglinous staining and open fractures. Area of moderate topographic relief. Bedrock exposure and coarse, angular lithic and quartzose gravels, and occasional clasts of fragmented regolith carbonate accumulations. Minor rounded red-brown fine sands and silts with minor to extensive hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Maireana spp., Atriplex vesicaria, with Acacia anaura trees.*

SSe1 — *Bedrock exposure with thin surficial weathering, slight fenoglinous staining and open fractures. Area of slight topographic relief. Bedrock exposure and coarse, angular lithic and quartzose gravels, and occasional clasts of fragmented regolith carbonate accumulations. Minor rounded red-brown fine sands and silts with minor to extensive hardpan regolith carbonate accumulations. Chenopod shrubland dominated by Maireana spp., Atriplex vesicaria, with Acacia anaura trees.*

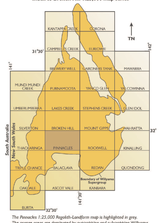
LANDFORMS

a - Alluvial landform
ap - Alluvial plain
ed - Drainage depression
ep - Erosional plain
pd - Depositional plain
pf - Depositional fan
pp - Sand plain
u - Longitudinal dunefield
ef - Erosional low hill
m - Made land

Highway
Vehicle track
Railway
Landing ground
River or creek

MAP INDEX LOCALITY

Index to Broken Hill 1:25,000 map series



The Pinnacles 1:25,000 Regolith-Landform map is highlighted in grey.
The orange areas are dominated by outcropping and subcropping Willyama Supergroup rocks, while the yellow shaded areas are dominated by regolith.

FIELD SITE LOCATIONS

Site description data can be found in Geoscience Australia corporate database

GRID
Corresponding to GDA*

GRAM/magnetic 2.25°
2000

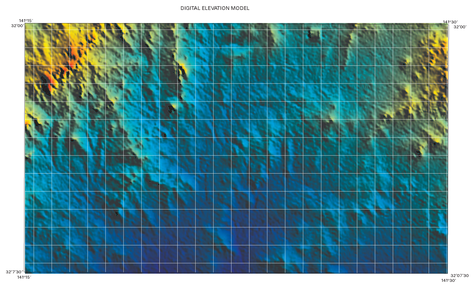
Magnetic north is correct for 2000 and moves westwards by 0.07 per year

SCALE 1:25 000

0.5 0 0.5 1.0 1.5 2.0 2.5 Kilometres

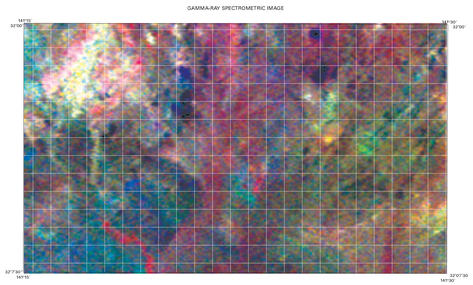
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
LATITUDE OF ORIGIN: 0°, LONGITUDE OF ORIGIN: 141°
HORIZONTAL DATUM: GDA94, UTM ZONE 54

DIGITAL ELEVATION MODEL



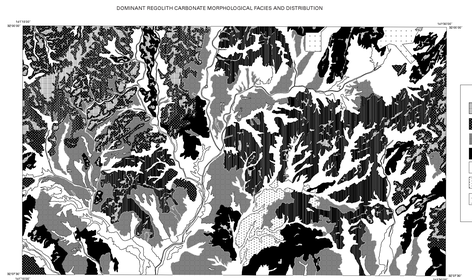
False colour Digital Elevation Model of the Pinnacles sheet area. Maximum elevations exceed 350 m (red areas) and lowest areas are less than 220 m (blue).

GAMMA-RAY SPECTROMETRIC IMAGE



Three-band gamma-ray spectrometric image (potassium is red, thorium is green, uranium is blue) of the Pinnacles 1:25,000 sheet area.

DOMINANT REGOLITH CARBONATE MORPHOLOGICAL FACIES AND DISTRIBUTION



- Hardpan coating
- Nodular and hardpan
- Various facies
- Abundant nodular
- Minor carbonate
- Powder and rhizomorphic
- Disturbed carbonates, various facies

Compiled by A. B. Senior (CRC LEME/GA), S. C. Dobenham (CRC LEME/GA) and S. M. Hill. (CRC LEME/UC), 2002

Cartography and GIS by K. A. Foster (CRC LEME/GA), A. B. Senior (CRC LEME/GA) and the GMA Division, Geoscience Australia.

It is recommended that this map be referred to as:

Senior, A. B., Dobenham, S. C. & Hill, S. M., 2002, Pinnacles Regolith-Landform Map 7133,000 scale1 Cooperative Research Centre for Landscape, Environments and Mineral Exploration, Canberra.

The regolith/landform polygons on this map are based on interpretation of 1:50 000 aerial photography and Landsat imagery, and are at a scale of 1:25 000 or better. They show characteristic surface materials and processes in a prospective area with up to 80% regolith cover.

Sources of data: The drainage and cultural data were obtained from BHS CD 1997. Geophysical imagery was obtained from the Geophysical Aquisition and Databases group, Geoscience Australia.

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Horizontal coordinates on this map are based on the new Geocentric Datum of Australia (GDA) or Australian Height Datum (AHD).
To convert GDA to AGD (around 10 metre accuracy):
Geographicals (from GDA94 to AGD66,84) – Add 5.58" to latitude and 7.54" to longitude (Australia wide).
UTM grid coordinates (from MGA94 to AMG66/84)– subtract 183m from Northing; subtract 172m from Easting

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Cooperative Research Centre for LANDSCAPE ENVIRONMENTS and MINERAL EXPLORATION

MINERAL RESOURCES
Geological Survey of New South Wales

PINNACLES

REGOLITH-LANDFORMS

SHEET 7133-4-N

FIRST EDITION 2002

SUBJECT TO REVISION