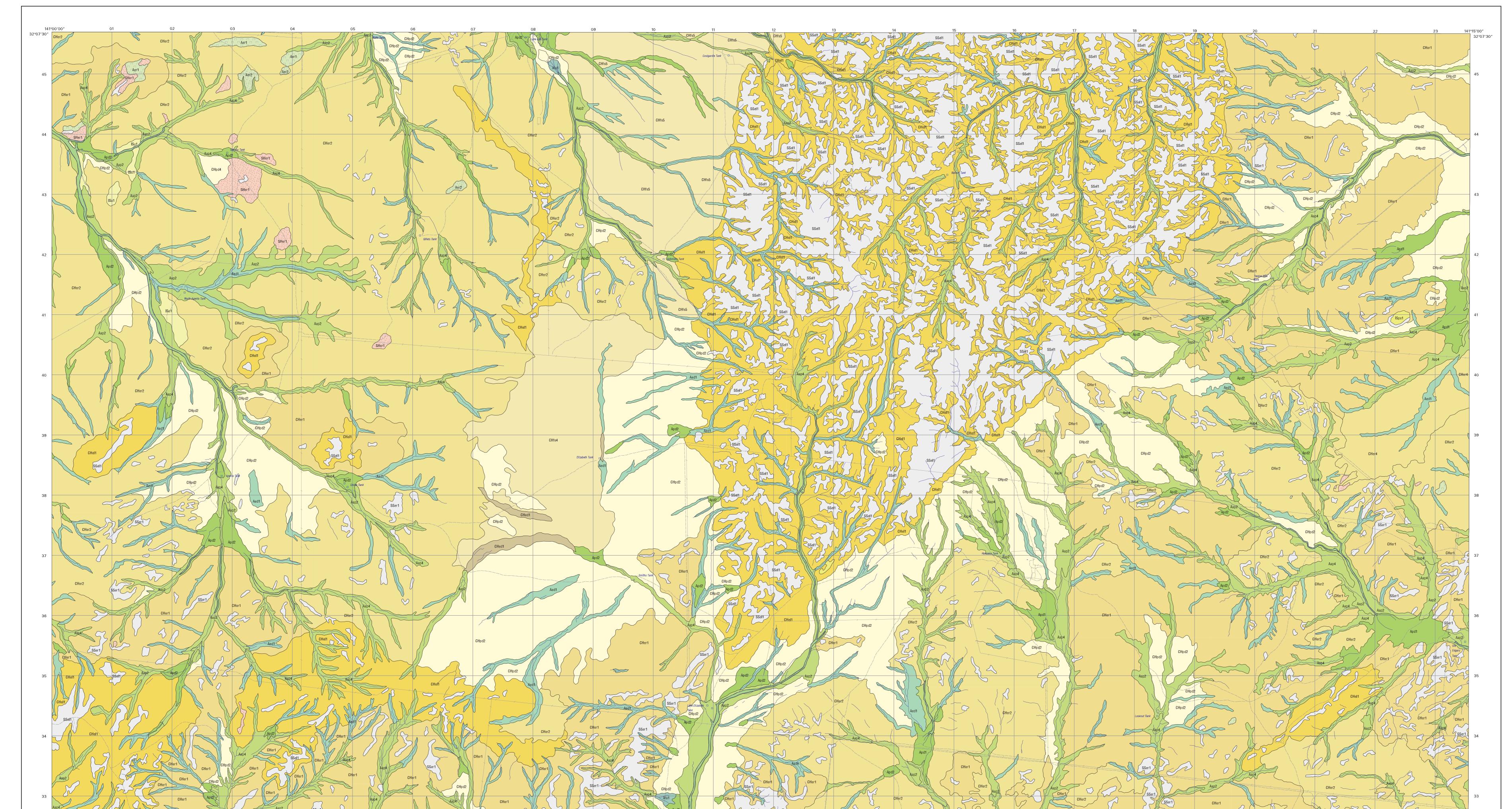
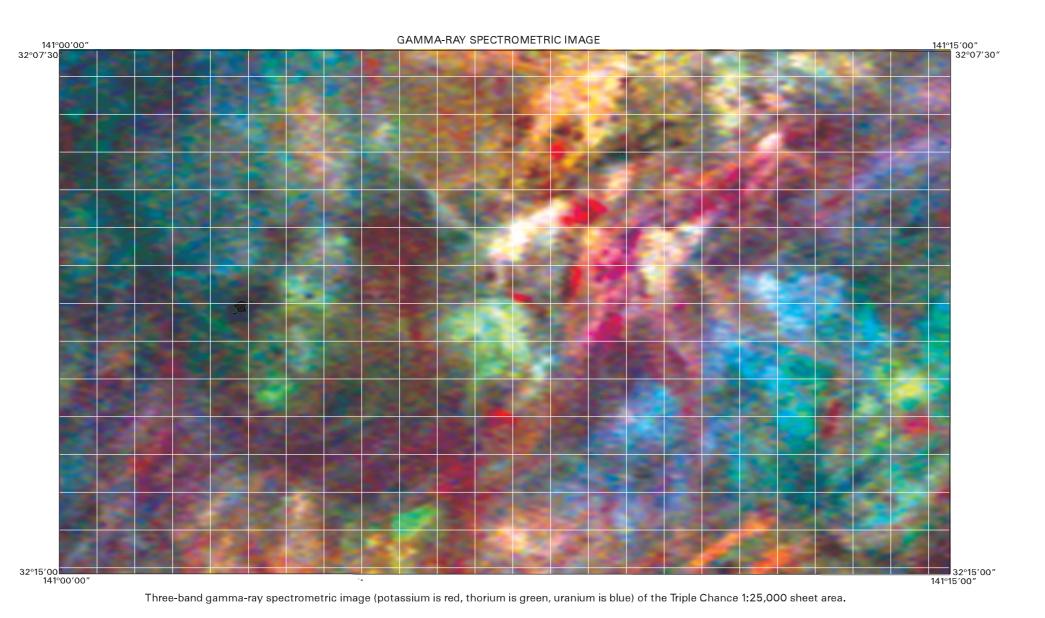
TRIPLE CHANCE
NEW SOUTH WALES SCALE 1:25 000 BROKEN HILL 1:25,000 REGOLITH-LANDFORM SERIES

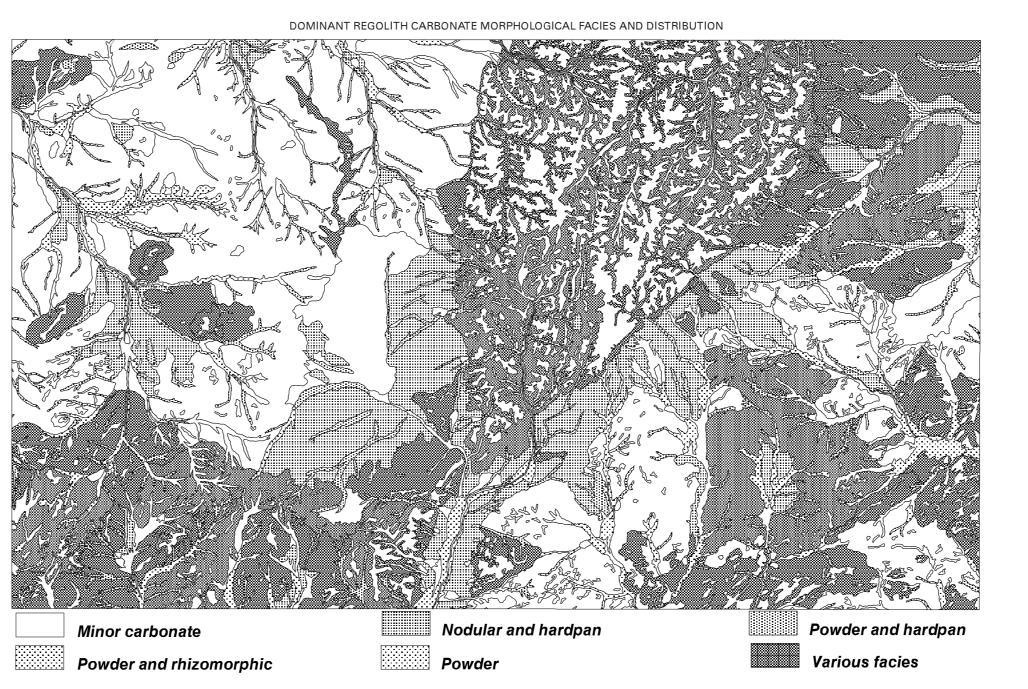


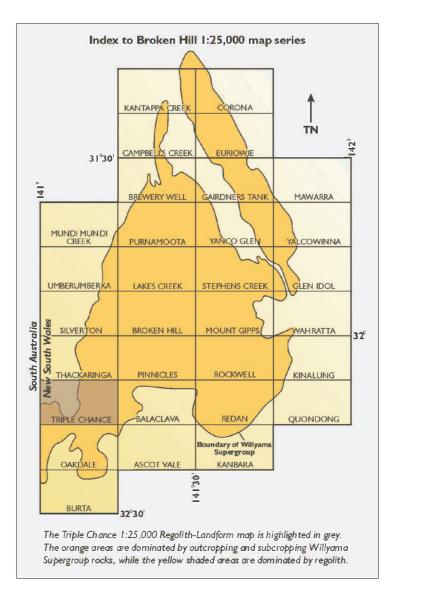


DIGITAL ELEVATION MODEL

False colour Digital Elevation Model of the Triple Chance 1:25,000 sheet area. Maximum elevations exceed 324 m (red areas) and lowest areas are less than 230 m (blue).







TRANSPORTED REGOLITH

Afa1

CHfs4

CHfs5

Alluvial sediments Alluvial sediments Sub-rounded to sub-angular sands, silts and minor gravels, composed of quartz and lithic fragments, in low relief areas with minor shallow channels. Surface materials consist of coarse quartz sands and minor quartzose and lithic gravel lag. Minor powdery and rhizomorphic regolith carbonates. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Sub-rounded to sub-angular sands, silts and minor gravels, composed of quartz and lithic fragments, in low relief areas with minor deeply (> 1m) incised channels. Surface materials consist of coarse quartz sands and minor quartzose and lithic gravel lag. Minor powdery and rhizomorphic regolith carbonates. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Sub-rounded to sub-angular sands, silts and minor gravels, composed of quartz and lithic fragments in low relief areas with minor sheet erosion and scalds. Surface materials consist of coarse quartz sands and minor quartzose and lithic gravel lag. Colonised by sparse chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Sub-rounded to sub-angular quartzose and lithic sands with occasional gravels within depressions containing minor channels. Surface materials consist of quartzose sands and gravels. Minor powdery and hardpan regolith carbonates with fine red-brown sands. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Rounded to angular quartzose sands with minor gravels and clayey silts mostly indurated by secondary silica in areas of slight relief. Surface materials consist of angular to sub-rounded silicified material and quartzose gravels. Minor powdery and hardpan regolith carbonates along with fine red-brown sands. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Rounded to angular quartzose sands with minor gravels and clayey silts with mostly ferruginous induration in areas of slight relief. Surface materials consist of angular ferruginous and minor quartzose gravel lag. Minor fine red-brown sands. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp Sub-rounded to angular lithic and quartzose sands, silts and gravels within outwash fans with braided distributary channels. Surface materials consist of lithic gravel lag in proximal settings and quartzose sands in distal settings. Minor fine red-brown sands. Colonised by chenopod shrublands dominated by Maireana pyramidata and minor Codonocarpus cotinifolius and Xanthium spp. Sub-rounded to angular quartzose and lithic sands, silts and minor gravels within low relief areas. Surface materials consist of quartzose sands and silts. Minor fine red-brown sands and powdery regolith carbonate accumulations. Colonised by chenopod shrublands dominated by Atriplex vesicaria Sub-rounded to angular quartzose and lithic sands, silts and minor gravels within low relief areas. Surface materials consist of quartzose sands and silts. Minor fine red-brown sands colonised by open grasslands. Channel deposits

Sub-rounded to sub-angular sands, silts and gravels, composed of quartz and lithic fragments and minor heavy minerals within ephemeral meandering and minor braided channels. Surface materials consist of imbricated gravel lag and minor sandy braid bars and channels. Minor exposures of slightly weathered bedrock. Colonised by shrublands dominated by Acacia victoriae and minor western boobialla. Aeolian sand

Aeolian sediments Clayey silt to fine rounded quartzose sands within low relief areas with low (< 1m) hummocky dunes. Surface materials consist of fine, rounded, red-brown, quartzose sands with occasional coarser sands. Minor powdery regolith carbonate accumulations. Colonised by chenopod shrublands dominated by Atriplex vesicaria and Maireana spp. + or - open woodland typically dominated by Casuarina cristata.

Sub-rounded to rounded fine quartzose sands within source bordering transverse dunes. Surface materials consist of fine, rounded, red-brown quartzose sands with occasional coarser sands. Minor lithic, quartzose and occasional indurated gravels within depressions. Colonised by grasses (Stipa spp. & Astrebla spp.) and thickets of Myriocephalus stuartii with occasional chenopods and scattered Casuarina pauper, Acacia spp. and Alectryon oleifolias.

Colluvial sediments Sheet flow deposit Sub-rounded to sub-angular quartzose and lithic sands with occasional gravels within depressions containing minor channels. Surface materials consist of quartzose sands and gravels conforming to a contour banding pattern. Minor powdery and hardpan regolith carbonates with fine red-brown sands. Colonised by chenopod shrublands dominated by Atriplex vesicaria and minor Maireana spp. Sub-angular to sub-rounded lithic and quartzose sands and gravels mantling and flanking areas with moderate relief. Surface materials consist of coarse lithic and quartz sands and gravel surface lag with occasional maghemite and red-brown sands. Minor powdery hardpan and nodular regolith carbonates. Colonised by chenopod shrublands dominated by Atriplex vesicaria. Angular to sub-rounded lithic and quartzose sands and gravels mantling and flanking areas with slight relief. Surface materials consist of coarse lithic and quartz sand and gravel lag with occasional maghemite and red-brown sands. Minor powdery, nodular and hardpan regolith carbonates. Colonised by chenopod shrublands dominated by Scleroleana spp., Maireana spp. and Atriplex vesicaria.

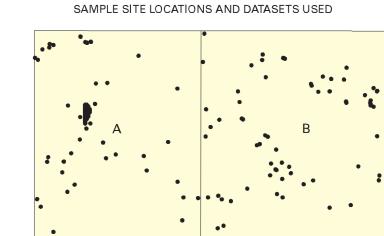
Angular to sub-rounded lithic and quartzose sands and gravels mantling and flanking areas with slight relief. Surface materials consist of coarse lithic and quartz sand and gravel lag with occasional maghemite and red-brown sands conforming to a contour banding pattern. Colonised by chenopod shrublands dominated by Scleroleana spp., Maireana spp. and Atriplex vesicaria. Angular to rounded gravels of indurated material mantling and flanking areas with slight topographic relief. Surface materials consist of coarse quartz sand lag with occasional maghemite and red-brown sands conforming to a contour banding pattern. Colonised by chenopod shrublands dominated by Maireana spp. with sparse Atriplex vesicaria. Sub-angular to sub-rounded lithic and quartz gravels with occasional maghemite within slight relief, low gradient fans. Surface materials conform to a discrete contour banding pattern. Vegetation assemblage consists of chenopod shrublands dominated by Atriplex vesicaria and Maireana spp. Sub-angular to sub-rounded lithic and quartz gravels with occasional maghemite within slight relief, low gradient fans. Surface materials conform to a patchy contour banding pattern. Vegetation assemblage consists of chenopod shrublands dominated by Atriplex vesicaria and Maireana spp. Angular to sub-rounded lithic and indurated sands and gravels in low relief areas. Surface materials consist of coarse lithic, quartz and indurated sands and gravel lag with occasional maghemite, and red-brown sands. Minor nodular and hardpan regolith carbonates. Colonised by chenopod shrublands dominated by Atriplex vesicaria and Maireana spp. **IN-SITU REGOLITH**

Highly weathered bedrock

Kaolinitic saprolite with locally extensive ferruginous induration, and occasional quartz veins, in areas of slight topographic relief. Surface materials are dominated by coarse quartz and ferruginised saprolith sands and gravel surface lag (with occasional ferruginised sediments) with red-brown sands. Colonised by open chenopod shrublands dominated by Maireana spp. and Atriplex vesicaria with occasional Acacia aneura trees.

Bedrock exposure with thin surficial weathering, slight ferruginous staining and prominent fractures, in areas of moderate relief. Surface materials consist of coarse quartz and lithic sands and gravel lag with discontinuous red-brown sands. Colonised by open chenopod shrublands dominated by Maireana spp. and Atriplex vesicaria with occasional Acacia aneura trees. Bedrock exposure with thin surficial weathering, slight ferruginous staining and prominent fractures, in areas of slight topographic relief. Surface materials consist of coarse quartz and lithic sands and gravel lag with discontinuous red-brown sands. Colonised by open chenopod shrublands dominated by Maireana spp., Atriplex vesicaria with occasional Acacia aneura trees.

INDURATION MODIFIER LANDFORMS DEPOSITIONAL LANDFORMS a Alluvial landforms ----- Minor road ap Alluvial plain fa Alluvial fan Siliceous induration fs Sheet-flood fan ed Drainage depression u Dunefield Watercourse ps Sand plain Earth dam or tank pd Depositional plain **EROSIONAL LANDFORMS**



A Aerial photograph, airborne gamma ray spectrometry and Landsat TM imagery interpretation, with detailed field mapping and characterisation. Area A was initially mapped by Grant Jones as part of a University of Canberra Honours thesis during 1999. Reference: Jones, G. L., 1999. Regolith Geology and Geochemistry of Triple Chance West, Broken Hill, NSW. Honours thesis, University of Canberra, Canberra. B Aerial photograph, airborne gamma ray spectrometry imagery and Landsat TM imagery interpretation, with detailed field mapping and characterisation. Area B was initially mapped by Simon Debenham as part of a University of Canberra Honours thesis, during 2000. Reference: Debenham, S. C., 2000. Regolith-Landforms and Environmental Geochemistry of Triple Chance East, Broken Hill, NSW. Honours thesis, University of Canberra, Canberra. Areas A and B have also been mapped and characterised as part of a wider regional study by S. M. Hill. Reference: Hill, S. M., 2000. Regolith and Landscape Evolution of the Broken Hill Block and adjoining area. PhD thesis, Australian National University, Canberra.

CRC LEME has tried to make the information in this product as accurate as possible. However, it does not guarantee that the information is totally accurate or complete. Therefore, you should not rely solely on this information when making a commercial decision.

Cultural features and drainage information reproduced from; Stroud, W. J., 1989. Triple Chance 1:25,000 Geological Sheet, 7133-IV-S. New South Wales Geological Survey, Sydney.

CRC LEME acknowledges the collaboration of the Australian Geological Survey Organisation (BHEI Project) and the support of Pasminco Exploration.

Landscape Evolution

CRC LEME is an unincorporated joint venture between the Australian National University, University of Canberra, Australian Geological Survey Organisation and CSIRO Exploration and Mining, established and supported under the Australian Government's Cooperative Research Centres Program

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SCALE 1:25 000

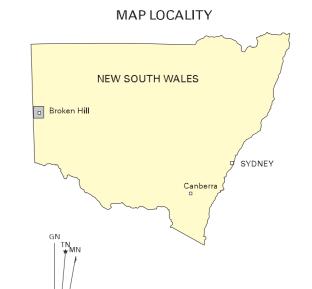
UNIVERSAL TRANSVERSE MERCATOR PROJECTION LATITUDE OF ORIGIN: 0°. LONGITUDE OF ORIGIN: 141°

HORIZONTAL DATUM: GDA94, UTM ZONE 54

er Rises el Low hills

Compiled by S. C. Debenham (CRC LEME/AGSO), G. L. Jones (CRC LEME/UC) and S. M. Hill (CRC LEME/UC), 1999-2001. Cartography and GIS by S. C. Debenham (CRC LEME/AGSO), K. A. Foster (CRC LEME/AGSO), L. M. Highet (AGSO) and P. L. Kilgour (CRC LEME/AGSO). Acknowledgements also to I. Roach (CRC LEME) and the Information Management Branch (IMB) at AGSO. It is recommended that this map be referred to as: Debenham, S. C., Jones, G. L., & Hill, S. M., 2001. Triple Chance Regolith-Landform Map (1:25,000 scale). Cooperative Research Centre for Landscape Evolution and Mineral Exploration (CRC LEME), Canberra/Perth. The regolith-landform polygons on this map are based on interpretation of 1:82,000, 1:12,500 and 1:10,000 panchromatic aerial photographs, airborne gamma-ray spectrometric imagery, Landsat TM imagery and extensive field mapping. It is the intention of this map to identify and characterise surface materials and processes in a prospective area relatively void of exposed bedrock. Copies of this map may be obtained from: CRC LEME c/- CSIRO Division of Exploration and Mining Private Mail Bag Post Office, WEMBLEY W.A. 6014 Tel: (08) 9333 6272 Fax: (08) 9333 6146 http://leme.anu.edu.au/ © CRC LEME 2001 This work is copyright. Apart from any fair dealings for the purpose of study, research, criticism or review, as permitted under the Copyright Act, no part may be reproduced by any process without written permission. Copyright is the responsibility of the Director, CRC LEME. Inquiries should be directed to:

& Mineral Exploration Business Manager CRC LEME c/- CSIRO Division of Exploration and Mining Private Mail Bag Post Office, WEMBLEY W.A. 6014 Tel: (08) 9333 6272 Fax: (08) 9333 6146 FRESOURCES MAP LOCALITY Geological Survey of New South Wales



Horizontal coordinates on this map are based on the new earth-centered GEOCENTRIC DATUM OF AUSTRALIA (GDA) To convert GDA to AGD (around 10 metre accuracy): Geographicals (from GDA94 to AGD66/84) - Add 5.58" to latitude (S); Subtract 4.38" from longitude (E) UTM grid coordinates (from MGA94 to AMG66/84) - subtract 184m from Northing; subtract 113m from Easting

TRIPLE CHANCE **REGOLITH-LANDFORMS** SHEET 7133-IV-S FIRST EDITION 2001

SUBJECT TO REVISION

WARNING: Colour may deteriorate with prolonged exposure to light and moisture

141°00′00″