

Aerial orthophoto mosaic of Hotel Paddock and parts of Laneway and Saloon Paddocks compiled from 1:50,000 scale colour aerial photographs of the Bancannia (acquired 16.08.99) and Fowlers Gap (acquired 11.08.1999 and 03.09.1995) 1:100,000 sheets by the New South Wales Department of Lands. Photographs were orthorectified using camera parameters, the SRTM DEM and ground control points collected using hand-held GPS receivers during field work. The final ground pixel resolution of the orthophoto mosaic is approximately 3 m.



FOWLERS GAP



TRANSPORTED REGOLITH

Alluvial sediments

- Red-brown, rounded to angular lithic and quartzose sand, gravel and silt. Low relief (< 9 m) landforms containing a mixture of incised channels and overbank Aap1 deposits, typically associated with local depocentres and floodouts of alluvial channels and drainage depressions. Chenopod shrubland dominated by Atriplex vesicaria and Myoporum montanum.
- Red-brown, rounded to angular lithic and quartzose sand, gravel and silt. Low relief (< 9 m) landforms containing a mixture of incised channels and overbank Aap2 deposits, typically associated with flanks of alluvial channels. Chenopod shrubland dominated by Atriplex vesicaria and Myoporum montanum.
- Rounded and minor angular sand and silt with sparse gravel composed of lithic fragments, quartz and minor silicified sediment clasts. Low-lying depressions Aaw1 holding ephemeral standing water within stream channels. Woodland dominated by Eucalyptus camaldulensis trees.
- Rounded and minor angular sand and silt with scattered gravel composed of lithic fragments, quartz, and minor silicified sediment clasts. Low-lying depres-Aaw2 sions forming pools with ephemeral standing water, typically associated with station dams. Sedges and forbs on exposed sediments with dense shrubland around margins dominated by Acacia victoriae and Myoporum montanum.
- Rounded and angular lithic and quartzose sand, gravel and minor silt. Sandy meandering and braided channels. Riparian woodland dominated by Eucalyp-ACah1 tus camaldulensis and minor Grevillea striata trees.
- Rounded and angular lithic and quartzose sand, gravel and minor silt. Sandy meandering and braided channels. Riparian woodland dominated by Acacia ACah2 victoriae and Myoporum montanum small trees and shrubs.
- Rounded to minor angular gravel, sand and silt composed of vein quartz and lithic fragments with minor silicified sediment clasts and some weathered Aed1 bedrock exposures. Incised channels and gullies and flanking valley-sides. Chenopod shrubland dominated by Atriplex spp. and Maireana spp. with riparian shrubland of Acacia victoriae, Myoporum montanum, Hakea leucoptera, Xanthium spp. and grasses including Cymbopogon ambiguus.
- Rounded to minor angular gravel, sand and silt composed of sandstone lithic fragments, minor quartz and silicified sediment clasts and some weathered Aed2 bedrock exposures. Incised channels and gullies and flanking valley-sides. Chenopod shrubland dominated by Atriplex spp. and Maireana spp. with riparian shrubland of Acacia victoriae, Myoporum montanum, Hakea leucoptera and Xanthium spp. and grasses including Cymbopogon ambiguus.
- Rounded to sub-angular gravel of quartzose and silicified sediment clasts and sand with quartz and muscovite. Minor red-brown quartzose sand and silt. Aed3 Incised channels and gullies and flanking valley-sides. Chenopod shrubland dominated by Atriplex spp. and Maireana spp. with riparian shrubland of Acacia victoriae, Myoporum montanum, Hakea leucoptera and Xanthium spp. and grasses including Cymbopogon ambiguus.
- Rounded and angular gravel of quartzose, silicified sediment, ferruginised sediment and saprolite clasts and sand with muscovite. Minor red-brown quartz-Aed4 ose sand and silt. Incised channels and gullies and flanking valley-sides. Chenopod shrubland dominated by Atriplex spp. and Maireana spp. with riparian shrubland of Acacia victoriae, Myoporum montanum, Hakea leucoptera and Xanthium spp. and grasses including Cymbopogon ambiguus.
- Rounded and minor angular quartzose sand and gravel with localised accumulations of plant impressions indurated by micro-crystalline quartzose and minor Aep1 micro-crystalline anatase and hematite. Low to slight topographic relief (< 9 m), locally shedding sediment into flanking channels and drainage depressions. Sparse chenopod shrubland dominated by Atriplex vesicaria and Sclerolaena spp.
- Rounded and minor angular quartzose sand and gravel with localised accumulations of plant impressions indurated by micro-crystalline quartzose and minor micro-crystalline anatase and hematite. Slight topographic relief (< 9 m), locally shedding sediment into flanking channels and drainage depressions. Sparse Aer1 chenopod shrubland dominated by Atriplex vesicaria and Sclerolaena spp.
- Rounded to minor angular gravel, sand and silt composed of vein guartz and lithic fragments with minor silicified sediment clasts and some weathered Afa1 bedrock exposures. Low to slight topographic relief (< 9 m) fan including distributary channels and sheetflow outwash downstream of intersection points. Chenopod shrublands dominated by Maireana spp., Atriplex spp., Sclerolaena spp. and Xanthium spp.
- Red-brown sub-rounded to sub-angular quartzose and lithic sand, gravel and silt. Smooth, low relief (< 9 m) landforms typically associated with intersection Apd1 point floodouts of alluvial channels and drainage depressions. Chenopod shrublands dominated by Maireana spp., Atriplex spp., Sclerolaena spp. and Xanthium spp.
- Red-brown sub-rounded to sub-angular quartzose and lithic sand, gravel and silt. Smooth, low relief (< 9 m) landforms typically associated with flanks of Apd2 alluvial channels. Chenopod shrublands dominated by Maireana spp. and Atriplex spp.

Colluvial sediments

- Angular, lithic (mostly quartzite clasts but also variably kaolinised and ferruginised bedrock clasts) and quartzose gravel with red-brown quartzose sand and CHed1 silt. Slight topographic relief (9-30 m). Chenopod shrubland dominated by Atriplex vesicaria and Sclerolaena spp.
- Rounded to minor angular gravel, sand and silt composed of sandstone lithic fragments, minor quartz and silicified sediment clasts, and some weathered CHed2 bedrock exposures. Elongate incised depressions and valleys with irregular 'contour banding' surface lag patterns. Circular depressions ('melonholes') along the long axis of depressions. Chenopod shrubland dominated by Maireana spp., Atriplex spp. and Sclerolaena spp.
- Rounded and angular quartzose, silicified sediment, ferruginised sediment and saprolite clast gravel and sand with muscovite. Minor red-brown quartzose CHed4 sand and silt. Elongate incised depressions and valleys with irregular 'contour banding' surface lag patterns. Circular depressions ('melonholes') along the long axis of depressions. Chenopod shrubland dominated by Maireana spp., Atriplex spp. and Sclerolaena spp.
- Angular lithic (dominantly sandstone clasts) gravel and red-brown quartzose sand and silt and hardpan regolith carbonates. Low-relief (< 9 m), low gradient, CHep2 locally shedding sediment. Chenopod shrubland dominated by Maireana spp. and Atriplex vesicaria.
- Rounded to sub-angular quartzose and silicified sediment clast gravel and sand with muscovite. Minor red-brown quartzose sand and silt. Low-relief (< 9 m), CHep3 low gradient, locally shedding sediment. Chenopod shrubland dominated by Atriplex vesicaria, Maireana spp. and scattered Casuarina pauper trees.
- Rounded and angular quartzose, silicified sediment, ferruginised sediment and saprolite clast gravel and sand with muscovite. Minor red-brown quartzose CHep4
- sand and silt. Low-relief (< 9 m), low gradient, locally shedding sediment. Chenopod shrubland dominated by Atriplex vesicaria and Maireana spp.
- Rounded and minor sub-angular quartzose and silicified sediment clast gravel. Minor red-brown quartzose sand and silt. Low-relief (< 9 m), low gradient, CHep5 locally shedding sediment. Open chenopod shrubland dominated by Atriplex vesicaria.
- Angular lithic (dominantly sandstone clasts) gravel and red-brown quartzose sand and silt and hardpan regolith carbonates. Moderate relief (9-30 m), locally CHer2 shedding sediment. Chenopod shrubland dominated by Maireana spp., Atriplex vesicaria and Sclerolaena spp.
- Rounded to sub-angular quartzose and silicified sediment clast gravel and sand with muscovite. Minor red-brown quartzose sand and silt. Moderate relief CHer3 (9-30 m), locally shedding sediment. Chenopod shrubland dominated by Atriplex vesicaria, Maireana spp. and scattered Casuarina pauper trees.
- Rounded and angular, quartzose, silicified sediment and ferruginised sediment and saprolite clast gravel and sand with muscovite. Minor red-brown quartz-CHer4 ose sand and silt. Moderate relief (9-30 m), locally shedding sediment. Chenopod shrubland dominated by Atriplex vesicaria and Maireana spp.
- Rounded and minor sub-angular quartzose and silicified sediment clast gravel. Minor red-brown guartzose sand and silt. Moderate relief (9-30 m), locally
- CHer5 shedding sediment. Open chenopod shrubland dominated by Atriplex vesicaria and Sclerolaena spp.
- Rounded to sub-angular quartzose and silicified sediment clast gravel and sand with muscovite. Minor red-brown quartzose sand and silt. Low relief (< 9 m) CHfs3 broad fan with 'contour band' surface lag pattern. Chenopod shrubland dominated by Atriplex vesicaria, Maireana spp. and scattered Casuarina pauper trees



ground resolution. Devonian sandstones outcropping in the far northwest the image. Devonian sandstones and Cretaceous sediments in the are shown as speckled dark green-blue materials, signifying low overall eTh northwest of the image are largely non-magnetic and appear blank. and eU saturation. Cretaceous sediments unconfomably overlie the Devonian in a narrow band in the mid-northwest and tend to have speckled but slightly higher overall eTh and eU saturation (slightly brigher green-blue colours) signifying sandstone colluvium on the surface. Red-speckles (moderate K-saturation) indicate the presence of relatively fresh Cretaceous sediments in gullies and creek sections. Modern (Recent) sediments in Fowlers Creek and the Fowlers Creek alluvial fan, running diagonally from the southwest, have higher K saturation reflecting at least partial derivation from Paleoproterozoic rocks of the Willyama Supergroup some tens of kilometres to the west, but principally Neoproterozoic rocks including the Sturts Meadows Siltstone.

570000 mE 571000 mE 572000 mE Gamma-ray spectrometric image of Hotel Paddock and parts of Laneway First Vertical Derivative (1VD) aeromagnetic image of Hotel Paddock and and Saloon Paddocks from the Broken Hill Exploration Initiative 2nd edition parts of Laneway and Saloon Paddocks from the Broken Hill Exploration (BHEI-2) dataset of the Geological Survey, NSW Department of Primary Initiative 2nd edition (BHEI-2) dataset from the Geological Survey, NSW Industries. Potassium (K), Thorium (eTh) and Uranium (eU) are displayed as Department of Primary Industries. The 1VD image has an 80 m pixel ground red, green and blue respectively, with an 80 m pixel ground resolution. This resolution and highlights generally weakly magnetised Recent materials image highlights the three main regolith materials present, but is of very low related to the Fowlers Creek alluvial fan which drains from the southwest of





Hotel Paddock 1:12,500 regolith-landform map incorporating parts of Laneway and Saloon Paddocks

Regolith-landform units compiled by Dr S.M. Hill (CRC LEME, University of Adelaide) and Dr I.C. Roach (CRC LEME/Australian National University), cartography and images compiled by Dr I.C. Roach.

It is recommended that this map be referred to as:

Hill S.M. & Roach I.C. 2008. Hotel Paddock 1:12,500 regolith-landform map. Cooperative Research Centre for Landscape Environments and Mineral Exploration, Perth, WA.

The regolith-landform polygons on this map are based on an interpretation of 1:10,000 scale aerial photographs, airborne geophysical imagery (gamma-ray spectrometrics and magnetics) and extensive field mapping. The intent is to identify and characterise surface materials and landforms for the purposes of landscape evolution studies, natural resource management and mineral exploration.

CRC LEME acknowledges the support of Dr David Croft, Director, University of New South Wales' Fowlers Gap Arid Zone Research Station, in the production of this map. Shuttle Radar Topography Mission Digital Elevation Model (SRTM DEM) courtesy of NASA. Geophysical images courtesy of the Geological Survey, NSW Department of Primary Industries.

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- Rounded and angular quartzose, silicified sediment and ferruginised sediment and saprolite clast gravel and sand with muscovite. Minor red-brown quart CHfs4 ose sand and silt. Low relief (< 9 m) broad fan with 'contour band' surface lag pattern. Chenopod shrubland dominated by Atriplex vesicaria and Maireana
- Angular lithic (dominantly sandstone clasts) gravel and red-brown guartzose sand and silt and hardpan regolith carbonates. Low-relief (< 9 m), with surficial CHpd2 contour band patterns and receiving sediment. Chenopod shrubland dominated by Maireana spp., Atriplex vesicaria and Sclerolaena spp.
- Rounded to sub-angular quartzose and silicified sediment clast gravel and sand with muscovite. Minor red-brown quartzose sand and silt. Low-relief (< 9 m), CHpd3 with surficial contour band patterns and receiving sediment. Chenopod shrubland dominated by Atriplex vesicaria, Maireana spp. and scattered Casuarina pauper trees.
- Rounded and angular, quartzose, silicified sediment and ferruginised sediment and saprolite clast gravel and sand with muscovite. Minor red-brown quartz-CHpd4 ose sand and silt. Low-relief (< 9 m), with surficial contour band patterns and receiving sediment. Chenopod shrubland dominated by Atriplex vesicaria, Maireana spp. and Sclerolaena spp.
- Rounded and minor sub-angular quartzose and silicified sediment clast gravel. Minor red-brown quartzose sand and silt. Low-relief (< 9 m), with surficial CHpd5 contour band patterns and receiving sediment. Open chenopod shrubland dominated by Atriplex vesicaria.

Fill

Fm1

Regolith disturbed by machinery and construction. Irregular landforms. Sparse vegetation, often introduced weed species, to barren.

IN SITU REGOLITH

Saprolite

- Kaolinitic and friable quartzose weathered bedrock. Slight surficial ferruginisation and hardpan regolith carbonates. High topographic relief (30-90 m). Cheno-SMel2 pod shrubland dominated by Atriplex spp., Maireana spp. and Sclerolaena spp. with Acacia aneura and Alectryon oleifolius trees and Acacia tetragonophylla and Eremophila spp. shrubs.
- Kaolinitic and friable quartzose weathered bedrock. Slight surficial ferruginisation and hardpan regolith carbonates. Low-relief (< 9 m), low gradient, locally SMep2 shedding sediment. Chenopod shrubland dominated by Atriplex spp., Maireana spp. and Sclerolaena spp. with Acacia aneura and Alectryon oleifolius trees and Acacia tetragonophylla and Eremophila spp. shrubs.
- Kaolinitic and friable quartzose weathered bedrock. Slight surficial ferruginisation. Hardpan regolith carbonates. Moderate relief (9-30 m), locally shedding SMer2 sediment. Chenopod shrubland dominated by Atriplex spp., Maireana spp. and Sclerolaena spp. with Acacia aneura and Alectryon oleifolius trees and Acacia tetragonophylla and Eremophila spp. shrubs.

Saprock

- Hard, quartzose, slightly weathered bedrock with prominent bedding planes. Low-relief (< 9 m), low gradient, locally shedding sediment. Chenopod SSep2 shrubland dominated by Atriplex spp., Maireana spp. and Sclerolaena spp. with Acacia aneura and Alectryon oleifolius trees and Acacia tetragonophylla and Eremophila spp. shrubs.
- Hard, quartzose, slightly weathered bedrock with prominent bedding planes. Moderate relief (9-30 m), locally shedding sediment. Chenopod shrubland SSer2 dominated by Atriplex spp., Maireana spp. and Sclerolaena spp. with Acacia aneura and Alectryon oleifolius trees and Acacia tetragonophylla and Eremophila spp. shrubs.

Common Drainage line from 1:25,000 topographic sheet

- Track
- Fence



571000 mE 572000 mE 573000 mE 570000 mE Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) pseudocolour image of Hotel Paddock and parts of Laneway and Saloon Paddocks. ASTER Bands 3N, 2 and 1 (visible near infra-red, VNIR) are here shown as red, green and blue respectively, with a 15 m pixel ground resolution, highlighting the different regolith materials. The image is dominated by yellow to buff colours representing quartz-rich lag and silcrete outcrops mixed with red-brown aeolian dust. Devonian sandstone, which outcrops in the northwest of the map, is shown in yellows where is it most weathered and stained with Fe-oxyhydroxides and whites in creek sections where weathering and staining is least. Quartz-rich sediments derived from the sandstone are visible as yellow colours in alluvial fans draining to the east-southeast. Pods of silcreted Cretaceous sediments are visible as buff colours along the western fenceline of Hotel Paddock. Quartz-rich sediments of the Fowlers Creek alluvial fan are visible as mottled white-light yellow colours in the southeast of the image. Green vegetation, including Eucalyptus camaldulensis (river red gum) and other riparian vegetation growing along Fowlers Creek, is depicted as bright red in this image.

Most information is digitised from 1:10,000 scale aerial photographs or is taken directly from digital track logs of hand-held GPS devices. A small proportion of information is taken from the New South Wales Department of Primary Industry's BHEI-2 Geophysical Dataset.



Publications related to the this map:

Pain C., Chan R., Craig M., Gibson D., Kilgour P. & Wilford J. 2007. RTMAP regolith database field book and users guide. Canberra. CRC LEME Report No. 231, 101 p. Hill S.M. & Roach I. C. 2003. The regolith-landforms of Sandstone Paddock, Fowlers Gap, western NSW. In: Roach I.C. ed. Advances in Regolith. CRC LEME, pp. 193-

Hill S.M. & Roach I.C. 2005. Regolith-landforms of northern Lake Paddock, Fowlers Gap Arid Zone Research Station, Western NSW. In: Roach I.C. ed. Regolith 2005 -Ten Years of CRC LEME. CRC LEME, pp. 139-145.

RLU key descriptions for the Hotel Paddock regolith-landform map

141° 45' 00"

The Regolith-Landform Unit (RLU) polygon codes provide a framework to present the regolith materials and associ-ated landforms on the map sheet across the area. They are designed to first list the regolith lithology in capital letter codes, then landform in lower case codes. The modifier number following each RLU code allows for discrimination of variations within broader regolith-landform assemblages (typically due to differences in composition, vegetation assemblages or other attributes). The RLU codes are largely based upon interpretation of the dominant regolith-landform process responsible for their formation (i.e., genetic process), following the scheme of Pain *et al.* (2007). Lithological and other RLU attributes are described in the map legend descriptions and accompanying map report.

Fowlers Gap Arid Zone Research Station

SANDSTONE PADDOCK

SAND-STONE

ANDSTON RIDGE PADDOCK

RLU codes for regolith materials used here are:		RLU codes for landforms used here are:	
А	Alluvial sediments	ah	alluvial channel
AC	Alluvial channel sediments	ар	alluvial plain
СН	Sheetflow sediments	aw	alluvial swamp
F	Fill	ed	drainage depression
SS	Slightly weathered bedrock (saprock)	ер	erosional plain (0-9 m relief)
SM	Moderately weathered bedrock (saprolite)	er	erosional rise (9-30 m relief)
		el	erosional low hill (30-90 m reli
		fa	alluvial fan
		fs	sheetflood fan

man-made depositional plain (0-9 m relief)

Showing completed

1:12,500 scale

regolith-landform maps in this series.

141° 50' 00

Digital Elevation Model (DEM) of Hotel Paddock and parts of Laneway and Saloon Paddocks derived from hand-digitised Fowlers Gap Field Station 1:25,000 scale topographic contours at 5 m vertical contour interval and the Shuttle Radar Topography Mission (SRTM) 90 m ground resolution pixel DEM, with 25 m pixel ground resolution. SRTM heights were used to fill in the topographic contours where gaps of more than 50 m existed horizontally between adjacent contours. The image is sunshaded from the north with a sun elevation of 30 degrees. The speckled appearance on areas of low relief is due to digital noise and levelling errors in the SRTM data and 'steps' in the model are artefacts introduced by the modeling process along topographic contours in low-relief areas.