CRCLEME
Cooperative Research Centre for
Landscape Environments
and Mineral Exploration

Government of South Australia
Primary Industries and Resources SA

OPEN FILE
REPORT
SERIES

REGOLITH CHARACTERISATION AS AN AID TO MINERAL EXPLORATION IN THE WUDINNA NORTH AREA, CENTRAL GAWLER PROVINCE, SOUTH AUSTRALIA

VOLUME II

M.J. Sheard

**CRC LEME OPEN FILE REPORT 232 /
PIRSA MINERAL RESOURCES REPORT BOOK RB 2007/14**

July 2007

Government of South Australia
Primary Industries and Resources SA

CRCLEME
Cooperative Research Centre for
Landscape Environments
and Mineral Exploration

REGOLITH CHARACTERISATION AS AN AID TO MINERAL EXPLORATION IN THE WUDINNA NORTH AREA, CENTRAL GAWLER PROVINCE, SOUTH AUSTRALIA

VOLUME II

M.J. Sheard

CRC LEME OPEN FILE REPORT 232 /
PIRSA MINERAL RESOURCES REPORT BOOK RB 2007/14

July 2007

Headquarters: CRC LEME c/o CSIRO Exploration and Mining, PO Box 1130, Bentley WA 6102, Australia

This report presents outcomes of a CRC LEME research project involving the Department of Primary Industries and Resources, Adelaide, South Australia (PIRSA) that commenced in mid 2004 and continued until mid 2006. There were no confidentiality agreements entered into regarding any aspects of this research project or covering any primary data and images or derived data and images obtained during the execution of this project. All contents, data and samples associated with this report are open file items. All reference materials (regolith samples, thin and polished sections) have been retained by PIRSA at their Drill Core Storage Facility, 23 Conyngham St, Glenside, South Australia, 5065. Those materials can be viewed without restriction by prior arrangements with the Drill Core Storage Facility Manager [ph: (08) 8379 9574 ; Fax: (08) 8338 1925].

Electronic copies of the publication in PDF format can be downloaded from the CRC LEME website: http://crcleme.org.au/Pubs/OFRSindex.html. Information on this or other CRC LEME publications can be obtained from http://crcleme.org.au
Hard copies will be retained in the Australian National Library, the J. S. Battye Library of West Australian History, and the CSIRO Library at the Australian Resources Research Centre, Kensington, Western Australia.

Reference:
Sheard, M.J., 2007. Regolith Characterisation as an Aid to Mineral Exploration in the Wudinna North area, Central Gawler Province, South Australia. *CRC LEME Open File Report 232. PIRSA Report Book 2007/14*, Volume 2 – Appendices 65 pages.

Keywords
1. Regolith – South Australia. 2. Basement Weathering – South Australia. 3. Landforms – South Australia. 4. Covered Terrain – South Australia. 5. Gold – South Australia. 6. Wudinna – South Australia. 7. Gawler Ranges National Park – South Australia. 8. Pinkawillinie Conservation Park – South Australia.

ISSN: 1329-4768
ISBN: 1 921039 81 7

Address and Affiliations of the Author:
M.J. Sheard
Principal Geologist
Cooperative Research Centre for Landscape Environments and Mineral Exploration,
C/- PIRSA, Mineral Resources Group, Geological Survey Branch,
GPO Box 1671, ADELAIDE SA 5001, Australia

Published by: CRC LEME, c/o CSIRO Exploration and Mining, PO Box 1130, Bentley, western Australia 6102

CRC LEME OFR 232: **Volume 2 – Appendices**

Contents Page

——oo0oo——

APPENDIX 1:

Sample Register

Regolith Logs, Baggy Green Au Prospect,

Regolith Logs, Barns Au Prospect,

Regolith Logs to Additional Barns Au Prospect,

Transported vs *in situ* regolith parameters for Baggy Green + Barns Au prospects,

Chiptray Photos (profile sections A-B + C-D

Table A1-1: Sample Register

Wudinna north Regolith Landform Map: Sample Register, coordinates in GDA94 projection & Zone 53l.

Sample R #	easting	northing	Field #	Description	Petrology	PIMA	Munsell, Texture
977100	546017	6369826	301/14	bog iron in palaeochannel sediment	Y		
977101	546017	6369826	301/14 #2	bog iron in palaeochannel sediment	Y		
977102	537914	6375018	303/9a	silcreted saprolite	Y		
977103	537914	6375018	303/9b	silcreted saprolite	Y		
977104	537914	6375018	303/9c	silicified pallid saprolite	Y		
977105	541560	6371234	303/56b	Fe-megamottle, weakly silicified	Y		
977106	541689	6371368	303/58	GRV felsic dyke, ?rhyolitic protolith, dark brown	Y		
977107	534412	6370327	305/23	Hiltaba Granite, protolith-saprock	Y		
977108	546846	6367920	326/4a	orange silcrete	Y		
977109	546846	6367920	326/4b	megamottled silcrete	Y		
977110	546846	6367920	326/4c	megamottled silcrete	Y		
977111	546966	6363083	BG-Ca	baggy green calcrete with Fe-mottle fragments	Y		
977112	541741	6371145	303/55a	granular-fragmentary Fe-capping	Y		
977113	544148	6366757	326/37	Fe-pisoliths + fragments, ferruginous cap	Y		
977114	546549	6369969	301/9	Fe-megamottle	Y		
977115	546549	6369969	301/9b	bog iron in palaeochannel colluvium	Y		
977116	545662	6369496	301/16	megamottle from collapse zone	Y		
977117	542191	6371540	303/50	silcrete-complex, has megamottles	Y		
977118	541665	6371513	303/57	Fe-megamottle, heavy, collapsed zone	Y		
977119	534995	6364077	324/9	calcrete, complex nodule-pisolith agglomerate	Y		
977120	543997	6364079	326/38	silicified megamottled pallid saprolite	Y		
1039929	541592	6371144	303/54d	pallid saprolite, mottle zone		Y	
1039930	541560	6371239	303/56a	pallid saprolite, incipiently silicified		Y	
1039931	542099	6365481	BnsSap_8a	megamottled pallid saprolite below dune		Y	Y
1039932	542099	6365481	BnsSap_8b	megamottled pallid saprolite below dune			Y
1039933	542099	6365481	BnsSap_8c	megamottled pallid saprolite below dune			Y
1039934	535880	6369653	324/23	weathered gruss, Hiltaba Gtanite source		Y	Y
1039935	541927	6371394	W-GRV	Gawler Range Volcanic, saprolitic dyke		Y	
1039936	528813	6361462	227/2	playa sediment		Y	
1039937	529955	6360572	227/4	playa sediment		Y	
1039938	530149	6360950	227/7	playa sediment, dark mud		Y	
1039939	531427	6362553	227/9	playa sediment		Y	
1039940	531337	6361590	227/11	playa sediment		Y	
1039941	530846	6363008	227/14	playa sediment		Y	
1039942	530511	6362631	227/15	playa sediment		Y	

Continued overleaf

Wudinna north Regolith Landform Map: Sample Register (part 2), coordinates in GDA94 projection & Zone 53I.

Sample R #	easting	northing	Field #	Description	Petrology	PIMA	Munsell, Texture
1039943	530116	6361282	227/16	playa sediment		Y	
1039944	537277	6360939	229/4	playa sediment		Y	
1039945	537645	6361047	229/7	playa sediment		Y	
1039946	537087	6361143	229/8a	playa sediment, dark mud		Y	
1039947	537087	6361143	229/8b	playa sediment, orange/pale grey mud		Y	
1039948	544140	6371292	301/18	playa mud, light brown, mod sticky		Y	
1039949	546323	6370212	301/30A	playa mud, light brown, sticky		Y	
1039950	546294	6370162	301/31B	playa mud, light brown, sticky		Y	
1039951	537373	6375108	303/15	playa sediment		Y	
1039952	538238	6372269	303/34	playa sediment		Y	
1039953	539551	6371344	303/36	playa sediment		Y	
1039954	540342	6371057	303/38	playa sediment		Y	
1039955	542321	6371322	303/52	playa sediment		Y	
1039956	529769	6375119	305/1a_1	playa sediment		Y	
1039957	531554	6374312	305/5a	playa sediment		Y	
1039958	538019	6364378	324/2	playa sediment		Y	
1039959	537293	6363680	324/4	playa sediment		Y	
1039960	537435	6363092	324/7	playa sediment		Y	
1039961	546686	6367502	326/3	playa sediment		Y	
1039962	537138	6363587	324/5	playa sediment		Y	
1039963	537425	6363203	324/6c	palaeo-playa sediment		Y	
1039964	529947	6375336	305/2a	palaeo-playa mud, 2m above modern pan		Y	
1039965	530592	6361193	227/12a	palaeochannel sediment		Y	
1039966	529769	6375189	305/1a_2	palaeochannel sediment		Y	
1039967	537167	6360877	229/6	bright orange sand			Y
1039968	538546	6372807	303/31	playa island sand			Y
1039969	538525	6372387	303/32	playa island dune crest sand			Y
1039970	542455	6371388	303/51a	orange sand			Y
1039971	542455	6371388	303/51b	pale yellow sand overlying sample site 303/51a			Y
1039972	537425	6363203	324/6a	orange sand		Y	Y
1039973	537425	6363203	324/6b	red-brown sand		Y	Y
1039974	534954	6366440	324/15	brownish sand			Y
1039975	542099	6365481	Barns_0.3	yellowish dune, Podsol			Y
1039976	542099	6365481	Barns_1.0	yellowish dune, Podsol			Y
1039977	542099	6365481	Barns_2.15	yellowish dune			Y
1039978	542099	6365481	Barns_2.5	yellowish dune, earthy CO_3 zone			Y

Continued overleaf

Wudinna north Regolith Landform Map: Sample Register (part 3), coordinates in GDA94 projection & Zone 53I.

Sample R #	easting	northing	Field #	Description	Petrology	PIMA	Munsell, Texture
1039979	542095	6365402	Bns_OD_1.5	orange dune-sandplain relic, buried			Y
1039980	539847	6365307	324/19a	podsol in yellowish dune sand			Y
1039981	539847	6365307	324/19b	yellowish dune sand			Y
1039982	539847	6365307	324/19c	orange dune sand			Y
1039983	539847	6365307	324/19d	orange dune sand			Y
1107117	530592	6361193	227/12	palaeochannel sediment, mottles			
1107118	536084	6375068	303/23	goethite, botryoidal-mammilliary to massive, heavy			
1107119	541606	6371161	303/53	Surface Fe-duricrust			
1107120	541592	6371144	303/54a	Surface Fe-duricrust, cliff edge			
1107121	541592	6371144	303/54b	surficial red sandy soil below lag			
1107122	541592	6371144	303/54c	slabby Fe-duricrust			
1107123	541592	6371144	303/54e	megamottle, mottle zone			
1107124	541741	6371145	303/55b	dark orange loamy sand below nods			
1107125	541741	6371145	303/55c	dark red-brown clayey sand			
1107126	541741	6371145	303/55d	brown sand			
1107127	529870	6375129	305/3a	palaeochannel sediment?			
1107128	546549	6369969	LQ-Fe (1)	Bog-iron, resampled at location 301/9			
1107129	546549	6369969	LQ-Fe (2)	megamottles under bog-iron, resampled at 301/9			
1107130	541986	6372117	BLO-1	pallid clay, megamottle zone, 1.2m			
1107131	541986	6372117	BLO-2	pallid clay, megamottle zone, 0.4m			
1107132	546928	6363045	Bg-Gn Ccr	Baggy Green 'central' calcrete			
1107133	546846	6367920	326/4	Assorted coloured silcrete (m-mottled arenose zn)			
1107134	544148	6366757	326/37	Calcrete + Fe-pisoliths & m-mottle fragments			

Cross-Sections Drillhole Logs on the Regolith Landform Maps A + B

Symbols & methods used in descriptions

Colours: standard word forms after Kelly and Judd (1976) as used and modified by Sheard & Bowman (1996).

Textures: of fines and granular materials, follow those described in Northcote (1979) and Eggleton (2001).

Mineralogy: identifications made with hand lens and details observed via a binocular microscope.

Carbonate acid reaction: through observation of 10% HCl dripped onto cuttings, indicative of calcrete presence or absence only:

- no acid reaction (no carbonate present),
- moderate acid reaction (low to moderate carbonate presence),
- strong acid reaction (abundant calcrete and earthy carbonate).

Drill site Locations & Elevations: Data provided by Adelaide Resources Limited, digital terrain model, AMG 84 projection (Zone 53I).

NOTES

1. Some of the early drillholes within the Barns Au prospect have been renumbered to conform with later drillhole designations and adjoining tenements. For those early drillholes the original identification numbers are displayed on the log sheets after the newer number but in italics within square brackets (i.e. **RHBN-27**, [*Barns 355*] …).
2. Angled drillhole logs have **not** had their sample depths corrected to true vertical depths on the Log Sheets. To convert the –60^{o} sample depths to true vertical depths, multiply the sample depths by 0.86. All angled depths have been converted to vertical equivalents for the Regolith Landforms Map – Regolith Profile Sections A-B & C-D. Moreover, the –60^{o} angled drillholes, when displayed at a vertically exaggerated scale of 10:1, become nearly vertical (~86^{o}, *c.f.* Rod, 1974 pp. 204) and so for practicality have been drawn in section as if they were vertical drillholes.

References

Eggleton, R.A. (Ed.), 2001. *The Regolith Glossary: surficial geology, soils and landscapes*. Cooperative Research Centre for Landscape Evolution and Mineral Exploration. ISBN 0 7315 3343 7.

Kelly, K.L. and Judd, D.R., 1976. *Color – Universal Language and Dictionary of Names*. National Bureau of Standards, United States Commerce Department, Washington, D.C..

Northcote, K.H., 1979. *A Factual Key for the Recognition of Australian soils*. 4th Edition. Rellim Technical Publications, Adelaide. (pp. 26-28).

Rod, E, 1974. Misrepresentations by indiscriminate use of vertical exaggeration in geological sections. *Geological Society of Australia. Journal*, 21:203-208.

Sheard, M.J. & Bowman, G.M., 1996. Soils, stratigraphy and engineering geology of near surface materials of the Adelaide Plains. *South Australia. Mines and Energy Department. Report Book*, 94/9. (pp. 118-125).

——oo0oo——

Chiptray Regolith Logs, Baggy Green Au Prospect drilling

Drillhole: WUD6-180, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 546999.6E, 6363502.9N. **DTM Elevation:** 127.25 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported + *in situ* materials. Dark orange quartz aeolian sand (fine- to medium-grained) with Fe-stained frosted grains + FeOH capping (very thin) + silicified mottled upper saprolite – some to silcrete, no visible calcrete, **unconformity**. Weak acid reaction.
2-4	*In situ* materials. Megamottled upper saprolite, multi-coloured: dark red-brown to dark red to pallid, kaolinite + quartz grit, competent. No acid reaction.
4-8	*In situ*. Upper saprolite, weakly mottled, pale pink and white, kaolinite + quartz grit, chalky to earthy.
8-12	*In situ*. Pallid upper saprolite, white & soft to chalky, kaolinite-rich, soft and earthy.
12-26	*In situ*. Upper saprolite, white + reddish and yellowish, kaolinite dominant, variably Fe-stained (redder near top & more yellow to orange near base), soft to chalky.
26-34	*In situ*. Lower saprolite, pale greenish grey + white blotches, kaolinite + quartz, plastic (moist), coherent. >20% weathered.
34-36	*In situ*. Lower saprolite transition to saprock, yellow-brown stained, partly weathered felsic gneiss, coarse-grained. 5-20% weathered.
36-39	*In situ*. Protolith, pinkish, altered felsic gneiss with variable incipient weathering, coarse-grained, K-feldspar + quartz + mica + minor chlorite + minor clays along fractures. <5 weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-185, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 547200.0E, 6364100.0N. **DTM Elevation:** 120.11 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-6	Transported materials. Yellowish quartz aeolian sand (fine- to medium-grained) with weakly stained frosted grains, loose to free running. No acid reaction.
6-8	Transported materials. Pale yellowish quartz sand to grit, slightly clayey, subrounded to angular coarse-grained, unconsolidated, fluvial-colluvial sediment near to source, loose unconsolidated. No acid reaction.
8-10	Transported materials. Orange to yellow quartz sand to grit (coarse-grained) + rounded quartz gravel (fine- to medium-grained, subrounded to rounded) + kaolinite, unconsolidated, fluvial-colluvial sediment + basal gravel. No acid reaction.
10-12	Transported materials. Silicified quartz sand to grit (coarse-grained), white to very pale grey, + rounded lithic gravel (fine-grained, subrounded), competent, fluvial sediment + basal gravel, **unconformity**.
12-14	*In situ*. Upper saprolite, yellow and orange stained (FeOH) clay-rich, relict and **truncated**, competent.
14-16	*In situ*. Upper saprolite, pale yellow and pale orange stained (FeOH), kaolinite dominant, chalky to earthy.
16-22	*In situ*. Upper saprolite, pallid, kaolinite-rich, earthy to chalky to semi-competent.
22-26	*In situ*. Lower saprolite, yellow-brown to olive-brown, degraded chlorite + kaolinite + weathered gneiss + quartz, coherent to semi competent. >20% weathered
26-32	*In situ*. Saprock, multi coloured + dark olive-brown, degraded chlorite + clays + weathered gneiss + quartz, competent. >5% to <20% weathered.
32-40	*In situ*. Protolith, multi coloured chloritic felsic gneiss, fine- to very coarse-grained, chlorite + quartz + pink K-feldspar + sericite + minor clays, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-559, Baggy Green Au Prospect, Adelaide Resources Ltd. **Coords:** 547517.8E, 6364934.7N. **DTM Elevation:** 119.99 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.	
Depth (m)	**Description**
0-6	Transported materials. Yellowish orange quartz aeolian sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running. No acid reaction.
6-8	Transported materials. Yellowish quartz sand (coarse-grained, angular to rounded) unconsolidated. Fluvial sediment. No acid reaction.
8-12	Transported materials. Pale yellowish to greyish quartz sand (coarse-grained, angular to rounded) unconsolidated. Fluvial sediment.
12-14	Transported materials. Pale yellowish to grey clayey quartz sand to sandy clay (medium- to coarse-grained, subrounded to angular). Unconsolidated to compact. Fluvial sediment.
14-16	Transported materials. Near white quartz sand (fine- to medium-grained, gritty, well sorted). Unconsolidated free running. Fluvial sediment.
16-18	Mixed provenance, transported + *in situ* materials. Fine-grained quartz sand (as above) + dark red silty clay with quartz grit, unconformity within this interval. Fluvial sediment on megamottled upper saprolite, **unconformity + truncated** *in situ* profile.
18-28	*In situ*. Upper saprolite, pallid, kaolinite dominant, chalky.
28-38	*In situ*. Upper saprolite, pale grey, kaolinite dominant, chalky.
38-58	*In situ*. Lower saprolite, grey to greenish grey+ yellow, highly weathered chloritic quartz rock, kaolinite + degraded chlorite-rich material, chalky to coherent to semi-competent. >20% weathered.
58-68	*In situ*. Saprock, grey to greenish grey + bright yellow staining, chlorite + clays + quartz, partly weathered and altered felsic gneiss, strongly foliated, competent. >5% to <20% weathered.
68-69	*In situ*. Saprock to protolith, foliated chloritic felsic gneiss, grey + dark greenish grey + dark olive-grey, fine- to coarse-grained, chlorite + quartz + minor clays, competent. <5% to ~10% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: WUD6-570, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 547200.1E, 6364296.7N. **DTM Elevation:** 119.99 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported materials. Orange quartz aeolian sand (fine- to medium-grained) with Fe-stained frosted grains, loose to free running + plant roots. No acid reaction.
2-6	Transported materials. Yellowish quartz aeolian sand (fine- to medium-grained) with weakly stained frosted grains, loose to free running. No acid reaction.
6-8	Transported materials. Yellowish quartz aeolian sand (as per 2-6 m) + paler yellow quartz sand to grit (medium- to coarse-grained, subrounded to rounded) unconsolidated to weakly bound by calcrete earth, fluvial-colluvial sediment. Moderate acid reaction.
8-10	Transported materials. Orange to yellowish quartz sand to grit (medium-grained, subrounded to angular) + ~5% clay, unconsolidated to weakly bound, fluvial sediment. No acid reaction.
10-12	Transported / *in situ* materials. Similar to above interval + dark red and brown upper saprolite, kaolinite-rich with some quartz grit, coherent, fluvial sediment-saprolite contact, **unconformity + truncated *in situ* profile**. No acid reaction.
12-24	*In situ*. Upper saprolite, pallid, kaolinite dominant, coherent to chalky to earthy.
24-34	*In situ*. Upper saprolite, weakly coloured, kaolinite dominant, chalky to earthy.
34-36	*In situ*. Lower saprolite, pale pink and pale olive-grey, weathered lithics + clay + ?degraded chlorite, coherent. >20% weathered
36-42	*In situ*. Transitional interval lower saprolite to Saprock, pale olive-grey, degraded chlorite + clays + quartz, partly weathered chloritic gneiss, competent. ~10% to >20% weathered.
42-43	*In situ*. Protolith, chloritic felsic gneiss, dark grey to dark olive-grey, fine- to very coarse-grained, chlorite + quartz + pink K-feldspar + opaques + minor clays, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-595, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 547132.7E, 6363921.4N. **DTM Elevation:** 120.90 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-8	Transported materials. Yellowish quartz aeolian sand (fine- to medium-grained) frosted angular to subrounded grains, loose to free running. No acid reaction.
8-10	Transported materials. Yellowish quartz sand to grit, slightly clayey, rounded to angular coarse-grained, unconsolidated, fluvial sediment near to source. No acid reaction.
10-12	Transported materials. Pale yellow-brown quartz sand to grit + rounded quartz gravel + kaolinite, unconsolidated, fluvial sediment + basal gravel, **unconformity**. No acid reaction
12-16	*In situ*. Upper saprolite, yellow-brown, clay-rich, FeOH stained interval, possibly a mottled zone or remnant Fe-capping, coherent to competent.
16-36	*In situ*. Pallid upper saprolite, near white to greyish towards base, kaolinite dominant, chalky to earthy.
36-44	*In situ*. Lower saprolite, pale grey to dark olive-grey, kaolinite + degraded chlorite, coherent to semi competent. >20% weathered.
44-46	*In situ*. Saprock to protolith, pale grey quartzite, fine-grained metamorphic rock, competent. <5% to >10% weathered.
46-47	*In situ*. Protolith, pale grey quartzite, fine-grained metamorphic rock, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-693, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 546901.4E, 6363081.5N. **DTM Elevation:** 131.14 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.

Depth (m)	Description
0-2	*In situ* materials. Calcrete cemented Fe-rich capping of collapsed megamottles and fragments of silicified saprolite, brown + yellow-brown + pale yellow, competent to fragmental. Strong acid reaction.
2-4	*In situ* materials. Silicified upper saprolite (to silcrete in thin bands), Fe-mottles and stains, pallid grey + dark FeOH browns, kaolinite + QAZ cement + angular quartz grit. No acid reaction.
4-8	*In situ*. Megamottled upper saprolite, near white to pale brown to pale pink, kaolinite + fine-grained quartz grit, chalky to weakly coherent.
8-14	*In situ*. Pallid upper saprolite, near white to pale grey, soft to chalky and earthy, kaolinite + fine-grained quartz grit, chalky to weakly coherent.
14-16	*In situ*. Upper saprolite, pale yellow, soft to chalky, kaolinite-rich + fine-grained quartz grit.
16-18	*In situ*. Upper saprolite, strongly coloured orange (FeOH), weakly coherent to chalky, kaolinite-rich + fine-grained quartz grit.
18-22	*In situ*. Upper saprolite, pale orange-brown, mildly coherent, kaolinite-rich + fine-grained quartz grit.
22-26	*In situ*. Upper saprolite, pallid: blotchy white and yellowish pale grey, mildly coherent, kaolinite-rich + fine-grained quartz grit.
26-38	*In situ*. Lower saprolite, blotchy greys, kaolinite-rich, plastic (moist), coherent. >20% weathered.
38-42	*In situ*. Saprock, blotchy greys + browns and pinks, relict foliation and gneissic texture, competent, partly weathered felsic gneiss. 5-20% weathered.
42-49	*In situ*. Protolith, dark grey-green + white, chloritic felsic gneiss, coarse-grained, relict K-feldspar + quartz + chlorite + clays along fractures. <5 weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-708, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 546501.0E, 6362315.3N. **DTM Elevation:** 130.24 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.

Depth (m)	Description
0-2	Transported materials. Orange quartz aeolian sand (fine-grained) with Fe-stained frosted grains + pale hued calcrete pisoliths and plates, **unconformity**. Strong acid reaction. Some plant root fragments (soil zone).
2-4	*In situ* materials. Megamottled upper saprolite, multi-coloured: pallid + red to orange to yellow mottles & stains, kaolinite + quartz grit. No acid reaction.
4-6	*In situ*. Megamottled upper saprolite, white and pink to reddish, kaolinite + quartz grit, chalky to weakly coherent.
6-18	*In situ*. Pallid upper saprolite, white & soft to chalky, kaolinite-rich, soft and easily powdered.
18-26	*In situ*. Upper saprolite, white & soft to chalky, kaolinite-rich, more competent material, more quartz grit, some pink FeOx staining, becomes greyer towards 26 m.
26-28	*In situ*. Lower saprolite, greyish, semi-coherent rock, kaolinite + quartz + degraded chlorite, Fe-staining. >20% weathered.
28-31	*In situ*. Lower saprolite to Saprock, greyish, partly weathered gneiss, relict K-feldspar + quartz + chlorite + kaolinite & other clays. <20% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: WUD6-709, Baggy Green Au Prospect, Adelaide Resources Ltd. **Coords:** 546600.0E, 6362477.3N. **DTM Elevation:** 130.43 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.	
Depth (m)	**Description**
0-4	Transported materials. Orange quartz aeolian sand (fine-grained) with Fe-stained frosted grains + pale hued calcrete pisoliths and nodules in 2-4 m interval, **unconformity**. Strong acid reaction throughout.
4-6	*In situ* materials. Mottled upper saprolite, pallid + pink mottles, kaolinite + quartz grit, chalky to semi-coherent. No acid reaction.
6-24	*In situ*. Pallid upper saprolite, near white, kaolinite-rich + greyish quartz veins at 12-14 & 18-20 m, chalky to weakly coherent.
24-30	*In situ*. Pallid upper saprolite, near white, more competent than above, kaolinite-rich.
30-43	*In situ*. Lower saprolite, dark grey, has intervals of less weathered rock, more competent material, relict chloritic gneiss, becomes greyer towards 43 m. >20% weathered.
43-50	*In situ*. Saprock, dark grey, competent fine-grained gneissic rock, clay + quartz + degrading chlorite. 5-20% weathered.
50-52	*In situ*. Protolith, dark grey, incipiently weathered gneiss, medium- to coarse-grained, pink K-feldspar + quartz + abundant chlorite. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: WUD6-722, Baggy Green Au Prospect, Adelaide Resources Ltd. **Coords:** 546948.7E, 6363313.3N. **DTM Elevation:** 128.54 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.	
Depth (m)	**Description**
0-2	Transported materials. Reddish quartz aeolian sand (fine- to medium-grained) with Fe-stained frosted grains + pale hued calcrete pisoliths-nodules (pale yellowish) + rounded gravel lag clasts, **unconformity**. Moderate to strong acid reaction.
2-8	*In situ*. Upper saprolite, strongly red mottled, kaolinite + fine-grained quartz grit, chalky to weakly coherent. No acid reaction.
8-10	*In situ*. Upper saprolite, weakly reddish & pale yellow-brown mottled, kaolinite + fine-grained quartz grit, chalky to weakly coherent.
10-16	*In situ*. Pallid upper saprolite, kaolinite dominant, chalky to weakly coherent.
16-34	*In situ*. Lower saprolite + corestones of saprock, strongly FeOH stained pale orange, abundant coarse-grained quartz grit + vein quartz + kaolinite + greyish to olive-grey relict chlorite + Fe-stained relict K-feldspars, competent. >20% weathered.
34-37	*In situ*. Saprock, grey + orange-pink + greenish grey, partly weathered chloritic gneiss, fine-grained, variably weathered and altered. 5-20% weathered.
37-39	*In situ*. Protolith, greenish dark grey + white-grey + black + pink, incipiently weathered chloritic felsic gneiss, medium- to coarse-grained, relict pink K-feldspar + quartz + chlorite + micas. Some thin partings and joints more altered to clay (yellowish). <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: WUD6-728, Baggy Green Au Prospect, Adelaide Resources Ltd. **Coords:** 547049.9E, 6363696.9N. **DTM Elevation:** 125.96 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.	
Depth (m)	**Description**
0-8	Transported materials. Yellowish quartz aeolian sand (fine- to medium-grained) with weakly stained frosted grains, loose to free running. No acid reaction.
8-10	Transported materials. Pale orange quartz aeolian sand (fine- to medium-grained) with weakly Fe-stained frosted grains + calcrete nodules and plates, unconsolidated. Moderate to strong acid reaction.
10-12	Transported + *in situ materials*. Yellowish quartz aeolian sand (fine- to medium-grained) with weakly Fe-stained frosted grains + silcrete (silicified upper saprolite) + dark brown Fe-stained silcrete clasts as gravel lag, **unconformity**. No acid reaction.
12-14	*In situ*. Silicified mottled upper saprolite, dark red-brown to maroon and pallid hues, + vein quartz (white to grey) chalky, coherent to competent to fragmentary.
14-18	*In situ*. Upper saprolite, pink, FeOx stained or mottled, kaolinite dominant, chalky to earthy.
18-26	*In situ*. Pallid upper saprolite, kaolinite dominant, weakly coherent.
26-44	*In situ*. Pallid upper saprolite, kaolinite + medium- to coarse-grained quartz grit, coherent to chalky to powdery.
44-46	*In situ*. Transition interval: lower saprolite to saprock to protolith, pallid to pale pink to pink to pale olive-grey, variably weathered gneiss with relict to fresh K-feldspars + quartz + degraded to fresh chlorite + clays. Multiple weathering zones within sample interval. >20% to <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: WUD6-743, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 547399.6E, 6364713.3N. **DTM Elevation:** 119.94 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported materials. Yellow-orange quartz aeolian sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running. No acid reaction.
2-4	Transported materials. Yellowish aeolian sand (as above) + pale yellow quartz sand (medium- to coarse-grained, subrounded to rounded) unconsolidated to weakly bound + cream coloured calcrete (?thin sheet-capping on or in fluvial sand but below dune sand). Aeolian + fluvial sediment. Strong acid reaction.
4-6	Transported materials. Very pale yellowish grey quartz sand (medium- to coarse-grained, subrounded to rounded) unconsolidated to weakly bound, fluvial sediment. Medium to strong acid reaction.
6-10	Transported materials. Bright yellow-orange quartz sand (medium-grained, subrounded to angular). Unconsolidated, fluvial sediment. No acid reaction.
10-14	Transported materials. Near white to bright yellow quartz sand + some clay beds, sand is less well sorted than in interval above (subangular to well rounded). Unconsolidated to coherent, fluvial sediment.
14-18	Transported materials. Gravelly sand + clay, well rounded quartz + lithic clasts to 8 mm in coarse sand, dark reddish to yellowish and white. Fluvial-colluvial sediment.
18-22	Transported materials. Gravelly sand (dark reddish) + clay (pale yellow-brown to light yellow, quartz clasts (angular to subrounded to rounded, poorly sorted, <1-4 mm), coherent. Fluvial sediment.
22-24	Transported + *in situ* materials. Clayey sand-sandy clay (light yellow) similar to interval above, [unconformity within this interval], + pallid saprolitic clay (upper saprolite), coherent. Fluvial sediment, **unconformity** + **Truncated** *in situ* profile.
24-34	*In situ*. Upper saprolite, pallid + some pinkish to brownish staining, kaolinite dominant, chalky to coherent.
34-42	*In situ*. Lower saprolite, medium to dark grey + pink-grey + olive-grey, highly weathered chloritic rock, clays + degraded chlorite-rich material, coherent to semi-competent. >20% weathered.
42-48	*In situ*. Saprock, dark grey + dark olive-grey + green + bright yellow-green, chlorite + ?epidote + clays + quartz, partly weathered and altered felsic gneiss, competent. >5% to <20% weathered.
48-49	*In situ*. Protolith, chloritic felsic gneiss, grey + dark grey + dark olive-grey, fine- to coarse-grained, chlorite + quartz + minor clays, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: WUD6-840, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 546720.0E, 6362700.0N. **DTM Elevation:** 135.28 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Transported materials. Orange quartz aeolian sand (fine-grained) with Fe-stained frosted grains + pale hued calcrete pisoliths and plates well developed, **unconformity**. Strong acid reaction.
2-4	*In situ* materials. Collapsed megamottled horizon capping, pedolith, strong browns + red-brown + yellows + near black, FeOH + FeOx minerals + kaolinite + quartz grit, semi-coherent. No acid reaction.
4-6	*In situ*. Upper saprolite, dark brown to yellow-brown mottled sub-zone, dominantly kaolinite + quartz grit + FeOH, semi-coherent.
6-8	*In situ*. Upper saprolite, pale reddish and brownish mottled sub-zone, kaolinite-rich.
8-26	*In situ*. Upper saprolite, pallid, weakly coherent, kaolinite + quartz grit.
26-28	*In situ*. Upper saprolite, yellowish, chalky to weakly coherent, kaolinite + quartz grit.
28-42	*In situ*. Lower saprolite, pale & dark grey, more competent sub-zone, relict chlorite, more quartz grit than above. >20% weathered.
42-50	*In situ*. Lower saprolite to saprock transition, strongly FeOH stained orange & dark yellow, some grey hues too, semi-competent.
50-52	*In situ*. Saprock, as above but only weakly Fe-stained, dark grey, competent, fine-grained foliated rock, kaolinite + quartz + chlorite. 5-20% weathered.
52-60	*In situ*. Protolith, 52-56 m is pink to grey-pink, rest is grey to dark grey, incipiently weathered chloritic gneiss, medium- to coarse-grained, pink K-feldspar (to 3 mm) + quartz + abundant chlorite. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: BGRC-841, Baggy Green Au Prospect, Adelaide Resources Ltd.
Coords: 546850.8E, 6362927.2N. **DTM Elevation:** 132.3 m.
Azimuth: 090°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Transported + *in situ* materials. Transported: gravel-lag colluvium, **unconformity**. *In situ*: thinly calcreted Fe-rich capping (remnant collapsed megamottle horizon, pedolith). Weak to moderate acid reaction.
2-6	*In situ*. Upper saprolite, weakly pink mottled, kaolinite dominant, chalky to semi-coherent. No acid reaction.
6-20	*In situ*. Pallid upper saprolite, near white, kaolinite-rich, chalky to earthy.
20-56	*In situ*. Lower saprolite, variably Fe-stained, greyish, kaolinite-rich + degraded chlorite, chalky to mildly competent. >20% weathered.
56-60	*In situ*. Lower saprolite to saprock transition, dark grey, has intervals of less weathered more competent material, relict fine-grained chloritic gneiss. >20% weathered.
60-68	*In situ*. Saprock, greyish with pale and dark grey intervals, competent to less competent, fine-grained gneiss, clay + quartz + chlorite. 5-20% weathered.
68-74	*In situ*. Protolith, dark grey, incipiently weathered felsic gneiss, medium- to coarse-grained, pink K-feldspar + quartz + abundant chlorite. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: BGRC-1057, Baggy Green Au Prospect, Adelaide Resources Ltd. **Coords:** 547384.0E, 6364499.0N. **DTM Elevation:** 120 m. **Azimuth:** 095.5^{o}, **Dip Angle:** -60^{o}, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-4	Transported materials. Yellowish quartz aeolian sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running. No acid reaction.
4-6	Transported materials. Yellowish quartz aeolian sand (as above) + paler yellow quartz sand to grit (medium- to coarse-grained, subrounded to rounded) unconsolidated to weakly bound by pallid calcrete, fluvial sediment. Strong acid reaction.
6-~9	Transported materials. Yellowish clayey quartz sand to grit (medium- to coarse-grained, subrounded to rounded) weakly bound by ~5% clay, fluvial sediment. No acid reaction.
~9-12	Transported materials. Mottled clay + quartz sand to grit (medium-grained, subrounded to angular) + lithic gravel (rounded, 3-10 mm) composed of Fe-pedolith or remnant megamottle clasts. Coherent, fluvial sediment. No acid reaction.
12-20	Transported materials. Pale yellowish brown to dark brown quartz sand (fine-grained grading to coarser grained with depth, angular to well rounded) fluvial, well to poorly sorted sediment, clayey in basal 2 m. Unconsolidated.
20-22	Transported materials. Fluvial basal gravel, greyish quartz clasts (subrounded to well rounded, ~4->15 mm), no fines, Unconsolidated palaeochannel basal bed, **unconformity**.
22-28	*In situ*. Upper saprolite, **Truncated** profile, pale yellow-brown to variably pallid clay + fine-grained quartz grit, competent to coherent.
28-34	*In situ*. Lower saprolite, greenish grey to dark olive-grey, clay + degraded chlorite-rich material, coherent. >20% weathered
34-36	*In situ*. Transitional interval lower saprolite to saprock, dark olive-grey, chlorite + clays + quartz, partly weathered chloritic gneiss, competent. ~10% to >20% weathered.
36-76	*In situ*. Protolith, chloritic felsic gneiss, dark green-grey and olive-grey, fine- to very coarse-grained, chlorite + quartz + minor clays, competent. <5% weathered.
76-196	*In situ*. Protolith, variably chlorite altered felsic gneiss, dark grey to dark olive-grey to pink with pale grey, fine- to very coarse-grained, chlorite + quartz + pink K feldspar + opaques, competent. Essentially unweathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Barns prospect Logs follow on overleaf

Chiptray Regolith Logs, Barns Au Prospect drilling

Drillhole: ACBN-162, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 543283.8E, 6366671.9N. **DTM Elevation:** 110.51 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported materials. Pale orange aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + yellowish fluvial quartz sand (medium- to coarse-grained, poorly sorted, subangular to rounded), unconsolidated, + plant roots. No acid reaction.
2-4	Transported materials. Pale yellowish fluvial sand (fine- to coarse-grained, poorly sorted, subrounded to rounded), unconsolidated free running, + carbonate earth throughout. Strong acid reaction.
4-6	Transported materials. Pale yellowish orange fluvial sand (fine- to coarse-grained, poorly sorted, subrounded to rounded), unconsolidated free running. No acid reaction.
6-8	Transported materials. Strong orange fluvial sand (medium- to coarse-grained, moderately sorted, subangular to subrounded), + ~2-3% clay as grain coatings, unconsolidated.
8-10	Mixed provenance materials. Transported: strong orange fluvial sand (medium- to coarse-grained, moderately sorted, subangular to subrounded), + ~2-3% clay as grain coatings, unconsolidated, + *in situ*: greyish kaolinitic clay with dark maroon mottles to streaks and stains (mottled upper saprolite). Channel basal sand and **Unconformity**, with truncated upper saprolite just penetrated.
10-12	*In situ*. Upper saprolite, red mottled (FeOx), + clayey arenose zone, quartz grit-rich, collapsed and fines reduced, 5-10% kaolinite, unconsolidated, **Truncated** profile.
12-33	*In situ*. Pallid upper saprolite, kaolinite dominant + minor quartz grit, earthy to chalky.
33-40	*In situ*. Lower saprolite, grey to olive-grey, kaolinite + degraded chlorite + fine-grained quartz grit, coherent to compact. >20% weathered.
40-42	*In situ*. Transition interval, saprock to protolith, variably weathered chlorite altered felsic gneiss, yellow + yellow-brown + greyish green + olive-green, semi-competent. <20% to <5% weathered.
42-44	*In situ*. Protolith, dark green-grey + pale grey + greens + dark pink-grey, chlorite altered felsic gneiss, foliated, chlorite + quartz + K-feldspar + sericite, medium- to coarse-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: ACBN-165, Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 543091.2E, 6366442.5N. **DTM Elevation:** 116.90 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.	
Depth (m)	**Description**
0-2	Transported materials. Orange to pale brown fluvial sand (medium- to coarse-grained, subrounded to rounded, unconsolidated) + minor amount of yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + carbonate earth and calcrete plates. Strong acid reaction.
2-8	Transported materials. Pale grey to pale yellowish grey fluvial sand (fine- to coarse-grained, poorly sorted, subrounded to rounded), unconsolidated free running. No acid reaction.
8-10	Transported materials. Pale orange fluvial sand (fine- to very coarse-grained, poorly sorted, clasts are angular to subrounded) + minor white clay (?kaolinite) flecks, , unconsolidated, channel basal sand and **unconformity**, with upper saprolite just penetrated.
10-12	*In situ*. Pallid upper saprolite, pinkish (possibly FeOx stained or weakly mottled), kaolinite dominant, earthy, **truncated** profile.
12-40	*In situ*. Pallid upper saprolite, white to very pale yellow + very pale grey, kaolinite + quartz grit, earthy.
40-42	*In situ*. Lower saprolite, pale grey, kaolinite + degraded chlorite + quartz grit, earthy to chalky. >20% weathered.
42-44	*In situ*. Saprock, darker grey + dark olive-grey + greenish + yellow-brown + brownish pink, weathered chlorite altered felsic gneiss. <20% to >5% weathered.
44-48	*In situ*. Protolith, dark grey + greens + brownish pink, variably chlorite altered felsic gneiss, foliated, chlorite + quartz + K-feldspar + sericite, medium- to very coarse-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: ACBN-194, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 540299.4E, 6365000.3N. **DTM Elevation:** 125.74 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported materials. Yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + white calcrete nodules and plates. Strong acid reaction.
2-4	Transported materials. Pale orange clayey sand, fine- to coarse-grained, poorly sorted, angular to subrounded, has >5% clay fines, fluvial to colluvial sediment, some earthy calcrete, unconsolidated. Mild acid reaction.
4-6	Transported materials. Dark orange clayey sand to sandy clay (10-15% clay), quartz sand is fine- to very coarse-grained, poorly sorted, clasts are angular to subrounded, fluvial to colluvial sediment, unconsolidated. Mild acid reaction.
6-8	Transported materials. Bright yellow silt + fine quartz sand, moderately well sorted, angular to subrounded grains, fluvial sediment, unconsolidated. No acid reaction.
8-12	Transported materials. Pale yellow-brown silty clayey quartz sand, coarse-grained, poorly sorted sediment, clasts are subrounded to rounded, fluvial, unconsolidated.
12-14	Transported materials. Pale yellow quartz sand with some silt and clay (coarse-grained, poorly sorted sediment), fluvial, unconsolidated.
14-18	Transported materials. Bright yellow to pale orange quartz sand (medium-grained) plus some fines + beds of clay, moderately sorted and bedded unit, clasts are subrounded to rounded, fluvial sediment, unconsolidated, **unconformity** contact.
18-50	*In situ*. Pallid upper saprolite, kaolinite dominant, chalky to earthy, **truncated** profile.
50-55	*In situ*. Lower saprolite, greyish, kaolinite + quartz grit + quartzite (recrystallised granular rock), compact to competent. >20% weathered.
55-60	*In situ*. Saprock, greys, abundant vein quartz + quartzite (recrystallised granular rock) + remnant K-feldspars, semi-competent to competent. <20% to >5% weathered.
60-66	*In situ*. Protolith, dark grey to grey + dark green-grey + pink, variably chlorite altered felsic gneiss + bands of quartzite (recrystallised granular rock) + dark grey vein quartz, foliated, olive hued chlorite + quartz + pink K-feldspar + sericite, coarse- to very coarse-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: ACBN-204, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 543149.7E, 6366977.8N. **DTM Elevation:** 110.06 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Aircore.

Depth (m)	Description
0-2	Transported materials. Pale orange aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + plant roots. No acid reaction.
2-4	Transported materials. Pale yellow-grey fluvial quartz sand (fine- to medium-grained, moderately sorted, subangular to subrounded), unconsolidated. No acid reaction.
4-6	Transported materials. Off-white to pale yellowish grey fluvial quartz sand (fine- to medium-grained, moderately sorted, subangular to subrounded), unconsolidated. Low to moderate acid reaction.
6-8	Transported materials. Off-white to pale yellowish grey fluvial quartz sand (fine- to medium-grained, moderately sorted, subangular to subrounded), + bright reddish orange fluvial quartz sand (medium- to coarse-grained, moderately sorted) with ~2-3% clay as grain coatings, unconsolidated to compact.
8-10	Transported materials: dark grey-brown colluvium (fine- to coarse-grained, poorly sorted, angular to subrounded) sand to grit + fine-grained gravel + ~2-3% fines (silt + clay), unconsolidated. Channel base unit, **unconformity**.
10-22	*In situ*. Pallid upper saprolite, kaolinite dominant, chalky to coherent, **truncated** profile.
22-36	*In situ*. Lower saprolite, grey + dark grey to olive-grey to dark olive-grey, kaolinite dominant + degraded chlorite + quartz grit + prominent vein quartz at 30-32 m, coherent to compact. >20% weathered.
36-38	*In situ*. Saprock, partly weathered chlorite altered felsic gneiss, browns + greenish to dark green-grey, fine-to medium-grained, chlorite + quartz + K-feldspar + FeOH minerals + some clay, semi-competent. <20% to >5% weathered.
38-40	*In situ*. Protolith, dark green-grey + grey, chlorite altered felsic gneiss, foliated, chlorite + quartz + K-feldspar, fine-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RCBN-68, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 542399.2E, 6365899.4N. **DTM Elevation:** 121.40 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Mixed provenance, transported + *in situ* materials. Calcreted aeolian and colluvial sands + silcreted colluvium and collapsed arenose zone (pedolith) with fines-rich upper saprolite (as white porcellanite). Compact to indurated and competent. **Unconformity**. Strong acid reaction.
2-4	*In situ* materials. Pallid upper saprolite, kaolinite, chalky. No acid reaction.
4-12	*In situ* materials. Pallid upper saprolite, kaolinite dominant, chalky to earthy.
12-14	*In situ* materials. Upper saprolite, pale pink quartzite (recrystallised granular rock) + minor kaolinite, semi-competent.
14-16	*In situ*. Lower saprolite, strong yellow-brown, clays + quartz grit (pale grey) + quartzite (recrystallised granular rock), semi-competent. >20% weathered.
16-30	*In situ*. Lower saprolite, pallid to pale yellow-brown to pinkish, kaolinite + quartz grit (pale grey) + quartzite (recrystallised granular rock) + abundant vein quartz + relict micas, semi-competent. >20% weathered.
30-47	*In situ*. Saprock, variably weathered, pale yellow-brown to pinkish + khaki + grey, some clay + quartz grit (pale grey) + quartzite (recrystallised granular rock) + vein quartz + abundant micas + chlorite. Chlorite altered felsic gneiss, fine- to medium-grained, competent. 5-20% weathered.
47-95	*In situ*. Protolith, incipiently weathered chlorite altered felsic gneiss, pink + dark green-grey + greys, coarse- to very coarse-grained, K-feldspar + quartz + abundant chlorite and sericite, foliated. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-87, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 541900.1E, 6365599.3N. **DTM Elevation:** 129.99 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Mostly *in situ* with minor transported materials. Various Fe-rich lags as dark brown gravel + remnant partly silicified megamottled upper saprolite (brown + reddish + pale yellow)+ pinkish calcrete developed in thin sandy soil. Compact to competent. Strong acid reaction.
2-4	*In situ* materials. Pallid upper saprolite, partly silicified with thin silcrete bands developed in quartz grit ?arenose zone, (pale pink to white), competent, indurated. No acid reaction.
4-6	*In situ*. Pallid upper saprolite, pale pink FeOx stained, kaolinite-rich, earthy to chalky.
6-22	*In situ*. Pallid upper saprolite, kaolinite-rich, compact to coherent.
22-34	*In situ*. Pallid upper saprolite, kaolinite-rich + abundant quartzite (recrystallised granular, pale grey), coherent to competent.
34-46	*In situ*. Lower saprolite, pink + grey + white + pale greenish grey, abundant quartzite (recrystallised granular, pale grey) + some kaolinite, less weathered, some relict K-feldspar, competent. >20% weathered.
46-50	*In situ*. Pallid saprolite, more highly weathered than interval above, kaolinite-rich, chalky to compact.
50-53	*In situ*. Saprock, weathered chloritic gneiss, FeOH stained, grey + olive-grey + yellow-brown + pale and dark green, chlorite + relict K-feldspar + quartz + goethite, coherent to competent. 5-20% weathered.
53-61	*In situ*. Protolith, dark grey + dark olive-grey + pink + dark green, incipiently weathered chlorite altered felsic gneiss, fine- to coarse-grained, quartz-rich + K feldspar + chlorite, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-100, Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 541499.3E, 6365399.6N. **DTM Elevation:** 129.78 m. **Azimuth:** 360^{o}, **Dip Angle:** -90^{o}, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-2	Mixed provenance materials. Transported: yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, slightly clayey. And from below **unconformity,** clays deriving from extremely weathered *in situ* ?plasmic zone (pedolith) pale yellow to pale pink + pallid calcrete developed within sandy soil, compact. Strong acid reaction.
2-4	*In situ* materials. Silcrete, pale yellow to pale yellow-grey, silicified arenose zone (pedolith) (QAZ + quartz grit), competent, indurated. No acid reaction.
4-28	*In situ*. Pallid upper saprolite, kaolinite + quartz grit, abundant white to pale grey vein quartz at 6-12 & 14-28 m, some yellow-brown FeOH staining of vein quartz at 22-26 m, chalky to semi-competent.
28-34	*In situ*. Lower saprolite, kaolinite + abundant quartz veining, pale grey + white + pale pink + pale yellow-brown + pale yellow-green, less weathered interval, semi-competent. >20% weathered.
34-42	*In situ*. Saprock, abundant quartz grit and vein quartz + relict K-feldspar and chlorite, dark green-grey + grey + pink + yellow-brown, weathering chloritic felsic gneiss, competent. 5-20% weathered.
42-48	*In situ*. Protolith, incipiently weathered chlorite altered felsic gneiss, dark green-grey + grey quartz, coarse- to very coarse-grained, quartz-rich + chlorite + remnant K feldspar, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RCBN-101, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 540899.5E, 6365200.4N. **DTM Elevation:** 129.87 m.
Azimuth: 090°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Transported materials. Yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + earthy pedogenic carbonate. Strong acid reaction.
2-4	Transported materials. Mixed sands: aeolian sand as above + clayey sand to sandy clay, pale yellow-brown (clay ~5-25%) sand is fine- to coarse-grained, poorly sorted, subrounded to rounded, a fluvial to colluvial sediment with earthy calcrete throughout. Strong acid reaction.
4-6	Transported materials. Orange-brown clayey sand to sandy clay (quartz is fine- to medium-grained, well sorted), clasts are angular to subrounded, fluvial to colluvial sediment. Strong acid reaction.
6-8	Transported materials. Strongly red-brown clayey sand to sandy clay (hard setting plastic clay) fine- to coarse quartz grains, poorly sorted, clasts are subrounded to rounded, fluvial sediment, compact. No acid reaction.
8-10	Transported materials. Strong yellow-brown quartz sand (fine- to coarse-grained), poorly sorted, clasts are subrounded to rounded, fluvial sediment, unconsolidated. No acid reaction.
10-12	Transported materials. Deep orange quartz sand (fine- to coarse-grained), poorly sorted, ~5% clay, clasts are subrounded to rounded, weakly consolidated.
12-14	Mixed provenance materials. Transported: sandy clay as in above interval + *in situ* materials (?plasmic zone, pedolith) mildly silicified, kaolinite + quartz grit (incipient arenose zone). Compact above **unconformity** to competent below it.
14-18	*In situ* materials. Mottled upper saprolite, reddish + brown + near white, mildly silicified, kaolinite + quartz grit, semi-indurated, semi-competent.
18-20	*In situ*. Pallid upper saprolite, kaolinite + quartz grit + abundant vein quartz, mildly silicified, semi-indurated, semi-competent.
20-38	*In situ*. Pallid upper saprolite, kaolinite + quartz grit + abundant quartz veining at 24-28 + 34-38, the latter interval is also mildly pink stained, semi-competent.
38-44	*In situ*. Lower saprolite, pale grey to grey + pale greenish, kaolinite + quartz grit, chalky to semi-competent. >20% weathered.
44-50	*In situ*. Protolith, dark grey to grey + pink + dark olive-grey, brown staining, altered felsic gneiss, foliated, partly altered K-feldspar + chlorite + quartz, coarse- to very coarse-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RCBN-245, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 542099.1E, 6365802.8N. **DTM Elevation:** 120.12 m.
Azimuth: 090°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Mixed provenance, transported + *in situ* materials. Yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + silcreted saprolite (bright yellow + browns + orange + greenish yellow). Unconsolidated above **unconformity** to competent and indurated below it. Strong acid reaction.
2-4	*In situ* materials. Pallid upper saprolite, incipiently silicified, pale FeOx staining and mottling (pink + pale brown + white), kaolinite dominant + vein quartz, chalky to semi-indurated. No acid reaction.
4-22	*In situ*. Pallid upper saprolite, kaolinite-rich, earthy to chalky to coherent.
22-24	*In situ*. Pallid upper saprolite, pinkish stained, kaolinite-rich + vein quartz (pale grey), compact to coherent.
24-26	*In situ*. Pallid upper saprolite, pinkish stained, kaolinite-rich + abundant thin vein quartz (pale grey), compact to coherent.
26-30	*In situ*. Upper saprolite, weakly FeOH stained pale yellow-grey to pale yellow-brown, kaolinite dominant, chalky to earthy.
30-38	*In situ*. Transition from upper saprolite to lower saprolite, variably hued, kaolinite + abundant vein quartz, quartz-rich, semi-competent.
38-44	*In situ*. Lower saprolite, variably FeOH-stained, pale brown to yellow-brown, kaolinite + abundant vein quartz (pale grey) + relict K-feldspar + degraded chlorite + sericite, quartz-rich, mildly competent. >20% weathered.
44-54	*In situ*. Saprock, FeOH-stained brown, abundant vein quartz + relict K-feldspar + chlorite + sericite, quartz-rich, moderately competent. 5-20% weathered.
54->160	*In situ*. Protolith, dark grey + dark olive-grey + pink + dark green, incipiently weathered chlorite altered felsic gneiss, medium- to coarse-grained, K-feldspar + quartz + abundant chlorite + biotite, variably fractured and sheared. <5% weathered.
E.O.H. at 216m	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-310, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 542250.5E, 6365849.9N. **DTM Elevation:** 128.37 m.
Azimuth: 090°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Mixed provenance, transported + mostly *in situ* materials. Orange sandy clay to clayey sand, + sheet to platy pinkish calcrete + angular gravel lag composed of fragmentary collapsed megamottles (dark brown). Unconsolidated to compact above **unconformity**. Strong acid reaction.
2-48	*In situ* materials. Pallid upper saprolite, kaolinite dominant, chalky to coherent and earthy. No acid reaction.
48-64	*In situ*. Lower saprolite, pinkish to pale orange to pale orange-brown, kaolinite + quartz grit (pale grey) + highly weathered rock, relict texture and fabric, mildly competent. >20% weathered.
64-82	*In situ*. Saprock, pale greys + pale pinks + pale olive-grey, partly weathered chlorite altered felsic gneiss, coarse- to very coarse-grained + remnant K-feldspar + sericite + chlorite + kaolinite, moderately competent. 5-20% weathered.
82-131	*In situ*. Protolith, pink + dark green-grey + greys + dark olive-grey, incipiently weathered chlorite altered felsic gneiss, coarse- to very coarse-grained, K-feldspar + quartz + abundant chlorite and sericite. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-317, Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 539640.0E, 6364901.0N. **AMG Elevation:** ~125 m. **Azimuth:** 095.5°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-12	Transported materials. Yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + earthy carbonate to ~10 m. Strong acid reaction.
12-14	Transported materials. Yellowish aeolian quartz sand (as above) mixed with yellow fluvial sand, fine- to medium-grained, sediment, unconsolidated. No acid reaction.
14-18	Transported materials. Silcreted fluvial sand, QAZ + quartz sand (fine- to coarse-grained, clasts are subrounded to rounded, pale yellow-grey + pink + reddish (?mottle zone), duricrust is massive, competent.
18-22	Transported materials. Reddish becoming orange with depth, fluvial quartz sand, fine- to coarse-grained + gravel to 10 mm, poorly sorted, sand and gravel have subrounded to rounded clasts, unconsolidated.
22-27	Transported materials. Pale yellow-brown quartz sand, medium- to coarse-grained + some gravel to 6 mm, poorly sorted fluvial sediment, clasts are subrounded to rounded, unconsolidated.
27-30	Transported materials. Greyish sandy clay, massive plastic fluvial clay with some sand stringers, compact and coherent.
30-32	Transported materials. Pale yellow-brown fluvial quartz sand (fine- to coarse-grained, subrounded to rounded) + some gravel (subrounded to rounded and dominantly lithic), poorly sorted colluvial to fluvial sediment, unconsolidated.
32-36	Transported materials. Yellow and grey quartz sand (coarse-grained), well sorted, clasts are subrounded to rounded, fluvial sediment, unconsolidated.
36-37	Transported materials. Yellow-grey quartz sand (coarse-grained), well sorted, clasts are subrounded to rounded, fluvial sediment, unconsolidated. **Unconformity** contact.
37-42	*In situ* materials. Pallid upper saprolite, kaolinite dominant, chalky to earthy, **truncated** profile.
42-44	*In situ*. Upper saprolite, yellowish to brownish, has bright yellow staining and ?mottling, kaolinite dominant, chalky to coherent.
44-48	*In situ*. Upper saprolite, pale yellowish grey, kaolinite dominant, chalky to coherent.
48-63	*In situ*. Lower saprolite, khaki coloured, kaolinite + quartz grit, coherent to compact. >20% weathered.
63-71	*In situ*. Saprock, dark grey to khaki + green to dark green to pale grey, highly variably weathered altered felsic gneiss. Hole bottoms in material more like lower saprolite – suggesting the weathering front is complex. Competent to semi-competent zone. >20 to >5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RHBN-1 [*Barns 329*], Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 541800.9E, 6365998.7N. **DTM Elevation:** 120.04 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.	
Depth (m)	**Description**
0-2	Mixed provenance materials. Transported: brownish, silicified colluvial to fluvial sands (medium- to coarse-grained, poorly sorted) + *In situ*: silicified arenose zone (pedolith) fine- to coarse-grained, angular to sub-angular, unsorted quartz grit. Competent, no acid reaction.
2-10	*In situ*. Silicified to incipiently silicified arenose zone (pedolith), fine- to coarse-grained, angular to sub-angular, unsorted quartz grit, + ~5-15% white clay as void infill and grain coatings. Pedolith to upper saprolite, competent, indurated to coherent.
10-20	*In situ*. Pallid upper saprolite, kaolinite dominant + quartz grit, chalky to earthy.
20-22	*In situ*. Lower saprolite, yellowish, kaolinite dominant + quartz grit, chalky to coherent. >20% weathered.
22-27	*In situ*. Saprock, yellowish to brownish + grey + olive-grey + khaki, weathered chlorite altered felsic gneiss, quartz + degrading chlorite + clay, fine- to coarse-grained, foliated, semi-competent. 5-20% weathered.
27-28	*In situ*. Protolith, dark grey + grey + dark green-grey + pale brown + brown, chlorite + quartz grit + sericite, incipiently weathered chlorite altered felsic gneiss, fine- to coarse-grained, foliated, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RHBN-2 [*Barns 330*], Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 541601.4E, 6365997.6N. **DTM Elevation:** 120.17 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer.	
Depth (m)	**Description**
0-2	*In situ* materials. Remnant megamottled horizon (pedolith) dark red-brown + near white kaolinite + quartz grit + FeOx & FeOH minerals. Coherent, no acid reaction.
2-28	*In situ*. Pallid upper saprolite, kaolinite dominant + vein quartz at 22-24 m, coherent to chalky to earthy.
28-42	*In situ*. Pallid upper saprolite, kaolinite dominant + abundant vein quartz, coherent to semi-competent.
42-50	*In situ*. Lower saprolite, yellow + grey + white, vein quartz + clays + quartz grit, coherent to semi-competent. >20% weathered.
50-51	*In situ*. Saprock, dark yellow-brown + greys + dark olive-grey, vein quartz + clays + quartz grit + degraded chlorite, weathered chlorite altered felsic gneiss, fine- to coarse-grained ,foliated, semi-competent. 5-20% weathered.
51-53	*In situ*. Protolith, dark yellow-brown + greys + dark green-grey, chlorite + vein quartz + quartz grit + sericite, incipiently weathered chlorite altered felsic gneiss, fine- to coarse-grained, foliated, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RHBN-27 [*Barns-355*], Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 541199.0E, 6365197.5N. **DTM Elevation:** 129.88 m. **Azimuth:** 090°, **Dip Angle:** -60°, **Drill Type:** RAB Hammer.	
Depth (m)	**Description**
0-4	Transported materials. Orange aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running, + earthy pedogenic carbonate. Strong acid reaction.
4-6	Transported materials. Greyish yellow-brown clayey sand to fine-grained gravel, immature sediment with colluvial character, clasts are angular to subrounded and poorly sorted, quartz + many lithics, + earthy calcrete. Strong acid reaction.
6-8	Transported materials. Bright orange fluvial sand (medium- to coarse-grained), well sorted, clasts are subrounded to rounded, grains have strong FeOH staining, sand is weakly clayey. No acid reaction.
8-10	Mixed provenance materials. Transported: sand as per interval above but clayeyer and darker hued + gravel clasts (~4-9 mm, well rounded basal gravel at **unconformity**) + *in situ*: silcrete fragments (silicified arenose zone, pedolith) with entrapped dark and pale brown mottles. Unconsolidated to competent.
10-12	*In situ* materials. Silcrete (silicified arenose zone, pedolith + silicified upper saprolite), pale yellowish brown to near white, indurated and competent.
12-16	*In situ*. Pallid upper saprolite, kaolinite + coarse-grained quartz grit, coherent to semi-competent.
16-18	*In situ*. Upper saprolite, reddish stained or mottled, kaolinite-rich, chalky to coherent.
18-22	*In situ*. Lower saprolite, pale yellow-brown + bright yellow-green + pallid hues, kaolinite + quartz grit, chalky to semi-competent. >20% weathered.
22-36.5	*In situ*. Saprock, dominated by abundant vein quartz, + relict felsic rock, foliated, pink + yellow-brown + greens + pale red-browns, remnant K-feldspar + chlorite + quartz, moderately competent. >5-<20% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Continued overleaf

Drillhole: RHBN-188 / ACBN-188A, Barns Au Prospect, Adelaide Resources Ltd.
Coords: 540588.7E, 6364976.9N. **DTM Elevation:** 127.54 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** RAB Hammer 0-51 m / Aircore 51-60 m.

Depth (m)	Description
0-4	Transported materials. Yellowish aeolian quartz sand (fine- to medium-grained), frosted angular to rounded grains, loose to free running. Low acid reaction.
4-6	Transported materials. Yellow-brown sand, fine- to coarse-grained, poorly sorted, angular to rounded, has <2% clay fines, fluvial to colluvial sediment, earthy calcrete throughout, unconsolidated. Strong acid reaction.
6-8	Transported materials. Pale brownish clayey sand to sandy clay with specks of white clay + gypsum (quartz sand is fine- to very coarse-grained, poorly sorted), clasts are angular to subrounded, fluvial to colluvial sediment, unconsolidated. Mild to strong acid reaction.
8-10	Transported materials. Dark yellow-brown clayey quartz sand with clay-rich beds (fine- to medium-grained + some coarser clasts), poorly sorted, subrounded to rounded grains, fluvial sediment, unconsolidated. No acid reaction.
10-12	Transported materials. Dark orange to red-brown quartz sand, coarse-grained, well sorted, slightly clayey, clasts are subrounded to rounded, fluvial sediment, unconsolidated.
12-14	Transported materials. Pale yellow quartz sand (coarse-grained) + angular subrounded to rounded gravel, bimodal fluvial sediment, unconsolidated.
14-16	Transported materials. Pale orange quartz sand (coarse-grained), well sorted, clasts are subrounded to rounded, fluvial sediment, unconsolidated.
16-18	Mixed provenance materials. Transported: sand as in above interval + *in situ*: just penetrated pallid upper saprolite. Angular quartz gravel colluvium (fine-grained) may form the **unconformity** contact.
18-42	*In situ*. Pallid upper saprolite, kaolinite dominant + quartz grit, chalky to earthy to coherent.
42-46	*In situ*. Lower saprolite, grey to pale greenish grey, kaolinite + quartz grit, chalky to coherent. >20% weathered.
46-48	*In situ*. Transition interval, lower saprolite to saprock, grey to greenish grey, kaolinite + quartz grit +abundant vein quartz, remnant gneiss, compact to semi-competent. >20% to <10% weathered.
48-54	*In situ*. Saprock, altered felsic gneiss, greys to olive-greys to browns, vein quartz at 48-52 m, semi-competent. <20% to >5% weathered.
54-60	*In situ*. Protolith, dark grey to grey + dark green-grey + pink, chlorite altered felsic gneiss, foliated, chlorite + quartz + K-feldspar + micas + sericite, coarse- to very coarse-grained, competent. <5% weathered.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Additional Barns Au prospect drillhole logs continued overleaf

Chiptray Regolith Logs to Additional Barns Au Prospect drilling

Drillhole: RCBN-62, Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 542299.0E, 6365998.8N. **DTM Elevation:** 121.108 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-2	Transported materials. Pale greyish yellow-brown frosted quartz aeolian sand (fine- to medium-grained) + occasional angular coarse-grained vein quartz fragments 1-2 mm (?colluvial). No acid reaction. Abundant tree root bark fragments (soil zone).
2-4	Transported + *in situ* materials. Calcreted aeolian sand (as above) + pallid saprolite (strong acid reaction). Pallid saprolite fragments – quartz grit + kaolinite & portions are Fe-stained brown (?megamottling). **Unconformity**.
4-6	*In situ*. Upper saprolite, white & coherent, quartz grit + kaolinite, relict foliation, extremely weathered coarse-grained gneiss.
6-16	*In situ*. Upper saprolite, white & soft to chalky – quartz grit + kaolinite, extremely weathered.
16-32	*In situ*. Lower saprolite, yellowish version of material above, becomes more coherent with depth, + relict orange-pink feldspars increase in abundance with depth, remnant foliation, highly weathered gneiss. >20% weathered.
32-48	*In situ*. Saprock, pink to grey to brown, partly weathered gneiss, some FeOH, abundant grey vein quartz fragments. 5-20% weathered.
48-100	*In situ*. Protolith, mildly chloritic altered orthogneiss, coarse-grained, pink K-feldspars in strongly foliated dark grey fine-grained matrix + grey quartz grains, & grey vein quartz fragments. <5% weathered – mostly along fractures. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-67, Barns Au Prospect, Adelaide Resources Ltd. **Coords:** 542299E, 6365899N. **DTM Elevation:** 122.918 m. **Azimuth:** 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-2	*In situ* materials. Upper saprolite, calcreted, orange, with incipient silicification, coherent to hard, little soil matter present in cuttings. Strong acid reaction.
2-24	*In situ*. Upper saprolite, white & chalky to coherent, quartz grit + kaolinite, relict foliation, extremely weathered gneiss. No acid reaction.
24-34	*In situ*. Lower saprolite, yellowish to green & multicoloured kaolinite + relict pinkish feldspars + quartz grit, remnant foliation, highly weathered gneiss. >20% weathered.
34-48	*In situ*. Saprock, pink to grey to brown, partly weathered gneiss, some FeOH. 5-20% weathered.
48-100	*In situ*. Protolith, chloritic altered orthogneiss, strongly foliated, coarse-grained, dark grey, greenish & pink with grey vein quartz. <5% weathered – mostly along fractures. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-69, Barns Au Prospect, Adelaide Resources Ltd.
Coordinates: 542299.7E, 6365799.8N. **DTM Elevation:** 126.385 m.
Azimuth: 360°, **Dip Angle:** -90°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Transported materials. Orange mixture of quartz aeolian dune sand (fine- to medium-grained) + calcrete pisoliths & nodules (3-5 mm, strong acid reaction) + quartz-rich colluvium with mostly angular medium to coarse grains, **unconformity**.
2-4	*In situ* materials. Upper saprolite, pallid, quartz grit + kaolinite with incipient silicification to silcrete, some dark brown staining (?mottling). **Truncated** profile.
4-30	*In situ*. Upper saprolite, white & coherent, quartz grit + kaolinite, relict foliation, extremely weathered gneiss, heavily quartz veined.
30-36	As above but less coherent, chalky & little to no quartz veining.
36-46	As above, yellowish stained and variably coherent.
46-60	*In situ*. Lower saprolite, yellowish, more coherent than above interval. Kaolinite + quartz grit + relict pinkish feldspars + relict micas & chlorite, remnant foliation, highly weathered gneiss. >20% weathered.
60-64	*In situ*. Saprock, greyish to greenish chloritic hydrothermally altered partly weathered gneiss or schist. 5-20% weathered.
64-80	*In situ*. Protolith, chloritic altered schistose rock, strongly foliated, mica + quartz + chlorite, dark grey to greenish with some grey mylonitic quartz. <5% weathered – mostly along fractures.
80-100	*In situ*. Protolith, chloritic altered orthogneiss, strongly foliated, coarse-grained, dark grey to greenish & pink with grey vein quartz. <5% weathered – mostly along fractures. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-74, Barns Au Prospect, Adelaide Resources Ltd.
Coordinates: 542225.9E, 6365901.5N. **DTM Elevation:** 124.853 m.
Azimuth: 090°, **Dip Angle:** -60°, **Drill Type:** Reverse Circulation.

Depth (m)	Description
0-2	Transported materials. Pale yellowish free-running aeolian quartz sand (frosted, fine- to medium-grained) + plant roots + earthy calcrete. Strong acid reaction.
2-4	Mostly *in situ* materials. Transported: pinkish to orange calcreted colluvium, + *In situ*: pallid – kaolinite with quartz grit as fragments (upper saprolite), **unconformity**. Calcrete is both pisolitic and of the invasive-sheet form, and has strong acid reaction.
4-32	*In situ*. Upper saprolite, pallid kaolinite + quartz grit, very weakly bound to chalky to moderately coherent material.
32-50	*In situ*. Lower saprolite, yellow and partly pallid kaolinite + quartz grit, more coherent than sub-zone above, mostly highly weathered gneiss + grey vein quartz. >20% weathered.
50-62	*In situ*. Saprock, chlorite altered gneiss with partly weathered pink K-feldspars + quartz grains in dark fine-grained matrix. Obvious orthogneiss texture & fabric in cuttings. 5-20% weathered.
62-111	*In situ*. Protolith. Coarse-grained orthogneiss, chloritic alteration, pink, reddish K-feldspars + light & dark grey quartz in fine-grained matrix. Greenish alteration, strongly foliated, greyish vein quartz. <5% of the bulk is weathered. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-126, Barns Au Prospect, Adelaide Resources Ltd. **Coordinates:** 542239E, 6365948N. **DTM Elevation:** 124.853 m. **Azimuth:** 090°, **Dip Angle:** -80°, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-2	Transported + *in situ* materials. Strong red-brown gritty to sandy interval, dominated by orange aeolian dune sand, **unconformity**, + calcrete pisoliths + fragments of Fe-rich megamottle horizon (pedolith).
2-4	*In situ*. Upper saprolite, white kaolinite + quartz grit, partially case hardened, retains relict texture & deformational fabric. **Truncated** profile.
4-16	*In situ*. Upper saprolite, pallid kaolinite + quartz grit, very weakly bound material, cuttings are very powdery.
16-18	*In situ*. Upper saprolite, pale brown, kaolinite + quartz grit, more competent than materials above.
18-22	*In situ*. Upper saprolite, pallid to pale brown, kaolinite + quartz grit.
22-24	*In situ*. Upper saprolite, brownish, kaolinite + quartz grit.
24-44	*In situ*. Lower saprolite, yellow-brown, kaolinite + quartz grit, FeOH staining and relict partially weathered minerals. >20% weathered.
44-60	*In situ*. Saprock, brown Fe-stained, becomes redder with depth, relict chloritic alteration + feldspars + quartz. Obvious orthogneiss texture & fabric in cuttings. 5-20% weathered.
60-132	*In situ*. Protolith. Coarse-grained orthogneiss, pink, reddish, light and dark grey. Greenish chloritic alteration, strongly foliated, greyish vein quartz. <5% of the bulk is weathered. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RCBN-132, Barns Au Prospect, Adelaide Resources Ltd. **Coordinates:** 542150E, 6365879N. **DTM Elevation:** 126.104 m. **Azimuth:** 090°, **Dip Angle:** -80°, **Drill Type:** Reverse Circulation.	
Depth (m)	**Description**
0-2	Transported materials. Pale orange frosted quartz aeolian sand (fine- to medium-grained) + occasional angular coarse-grained quartz fragments 1-2 mm (?colluvial).
2-4	Transported & *in situ* materials. Transported: calcreted aeolian sand and quartz grain rich colluvium (strong acid reaction), **unconformity**. *In situ:* dark grey & white vein quartz fragments to 10 mm + orange to brown Fe-stained pallid saprolite, quartz grit + kaolinite.
4-10	*In situ*. Upper saprolite, white & coherent, quartz grit + kaolinite, relict foliation, extremely weathered coarse-grained gneiss.
10-12	*In situ*. Upper saprolite, as above but with some fragments strongly red stained (?megamottling).
12-26	*In situ*. Upper saprolite, white & coherent, quartz grit + kaolinite, relict foliation, extremely weathered coarse-grained gneiss + abundant grey vein quartz.
26-46	*In situ*. Lower saprolite, as above but with yellow FeOH staining of fragments. >20% weathered.
46-60	*In situ*. Saprock, abundant grey vein quartz in partly weathered orthogneiss variably pale pinkish brown to orange to grey. 5-20% weathered.
60-162	*In situ*. Protolith, chloritic altered orthogneiss, coarse-grained, pink K-feldspars in strongly foliated dark grey to greenish chlorite + grey quartz fabric + grey vein quartz. <5% weathered – mostly along fractures. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Drillhole: RHBN-29 [*Barns-357*], Barns Au Prospect, Adelaide Resources Ltd.
Coordinates: 542251.3E, 6365999.5N. **DTM Elevation:** 121.651 m.
Azimuth: 360°, **Hole Dip Angle:** -90°, **Drill Type:** RAB Hammer.

Depth (m)	Description
0-2	*In situ* materials. Upper saprolite, heavily Fe-megamottled, strong brown to dark strong red, quartz grit + kaolinite, + calcrete pisoliths + fragments of grey vein quartz, no aeolian sand or soil in cuttings.
2-4	*In situ*. Upper saprolite, white, has minor mottling, quartz grit + kaolinite + fragments of grey vein quartz, slight to medium induration.
4-14	*In situ*. Upper saprolite, pallid, quartz grit + kaolinite, soft and powdery.
14-26	*In situ*. Lower saprolite, pale hued, yellowish to brownish FeOH + FeOx staining, dominantly quartz grit + kaolinite. >20% weathered.
26-46	*In situ*. Saprock, pinkish to brownish, partly weathered orthogneiss, some FeOH + FeOx staining, some white & grey vein quartz. 5-20% weathered.
36-60	*In situ*. Protolith, chloritic altered orthogneiss, strongly foliated, coarse-grained, pink to grey, dark grey, red & greenish. <5% weathered – mostly along fractures. Tunkillia Suite orthogneiss.
E.O.H.	Regolith Logged by M.J. Sheard (PIRSA-GSB)

Table A1-2: Transported versus *in situ* regolith parameters for selected drillholes over the Barns and Baggy Green Au prospects, as displayed on the accompanying Regolith Landforms Map. Log data by M.J. Sheard (PIRSA-GSB).

Barns Prospect, selected drillhole, gross regolith parameters

Hole_ID	Ref_East	Ref_North	Ref_Grid_ID	Max_Depth	Cover Thickness (m)	Protolith Depth (m)
ACBN-140	541912.3	6368150.2	AMG84_53	**33**	**8**	**>33**
ACBN-141	541680.4	6367562.0	AMG84_53	**49**	**11**	**49**
ACBN-150	542415.7	6367659.4	AMG84_53	**30**	**9**	**27**
ACBN-157	542249.0	6367149.8	AMG84_53	**48**	**10**	**48**
ACBN-189	539399.7	6364299.4	AMG84_53	**54**	**24**	**48**
ACBN-197	539400.3	6364000.5	AMG84_53	**42**	**15**	**40**
ACBN-208	542957.0	6366748.7	AMG84_53	**48**	**14**	**41**
ACBN-209	542836.6	6367233.1	AMG84_53	**60**	**7**	**56**
RCBN-79	542149.5	6365000.3	AMG84_53	**56**	**0**	**42**
RCBN-103	542599.7	6366200.2	AMG84_53	**58**	**<1**	**50**
RCBN-109	542250.3	6365384.5	AMG84_53	**64**	**0**	**52**
RCBN-130	541700.8	6364850.9	AMG84_53	**120**	**1***	**50***
RHBN-8	542001.6	6365998.0	AMG84_53	**49**	**1**	**>49**
RHBN-14	541200.3	6366028.0	AMG84_53	**46**	**2**	**>46**
RHBN-16	542600.3	6365168.8	AMG84_53	**40**	**<1**	**40**
RHBN-25	541600.5	6365197.1	AMG84_53	**43**	**<1**	**41**
RHBN-26	541400.8	6365197.4	AMG84_53	**40**	**4**	**>40**
RHBN-34	541998.2	6366398.7	AMG84_53	**36**	**1**	**31**
RHBN-38	542401.6	6366399.7	AMG84_53	**40**	**0**	**24**
RHBN-39	542399.6	6365622.7	AMG84_53	**61**	**<1**	**46**
RHBN-46	541950.8	6365198.5	AMG84_53	**58**	**0**	**48**
RHBN-178	541400.6	6365696.8	AMG84_53	**63**	**3**	**57**
RHBN-183	541100.6	6364900.1	AMG84_53	**57**	**16**	**50**
RHBN-189	539399.7	6364299.4	AMG84_53	**23**	**24**	**48**
RHBN-226	541700.7	6366100.1	AMG84_53	**60**	**<2**	**55**
RHBN-239	542500.6	6364799.6	AMG84_53	**54**	**0**	**47**
RHBN-0274	543231.0	6365429.0	AMG84_53	**43**	**3**	**42**
RHBN-0279	542571.0	6364964.0	AMG84_53	**50**	**0**	**>34**
RHBN-0288	542039.0	6364598.0	AMG84_53	**40**	**<1**	**39**
					*** values corrected for angled hole**	

Note: drillholes: RHBN-8, 14, 16, 25, 26, 34, 38, 39 & 46 were originally numbered "*Barns 336, 342, 344, 353, 354, 362, 366, 367 & 374*" respectively.

Baggy Green Prospect, selected drillhole, gross regolith parameters

Hole_ID	Ref_East	Ref_North	Ref_Grid_ID	Max_Depth	Cover Thickness (m)	Protolith Depth (m)
WUD6-0247	547600.2	6364097.8	AMG84_53	42.5	7	41
WUD6-0290	546851.3	6363792.6	AMG84_53	36.5	12	>37
WUD6-0552	546100.7	6364903.9	AMG84_53	36	7	36
WUD6-0554	546500.6	6364910.6	AMG84_53	50	4	49
WUD6-0557	547100.4	6364909.6	AMG84_53	43	13	41
WUD6-0562	546098.8	6364498.2	AMG84_53	24	2	>24
WUD6-0564	546496.1	6364499.3	AMG84_53	29	1	>29
WUD6-0579	547701.4	6364701.4	AMG84_53	32	12	>32
WUD6-0590	546197.2	6363920.4	AMG84_53	32	<1	>32
WUD6-0592	546594.9	6363908.2	AMG84_53	20	0	20
WUD6-0600	546199.6	6363501.2	AMG84_53	19	0	17
WUD6-0602	546604.1	6363499.6	AMG84_53	34	2	34
WUD6-0607	546407.3	6363089.7	AMG84_53	13	0	12
WUD6-0615	547199.3	6362924.3	AMG84_53	42	<1	34
WUD6-0617	547595.0	6362901.2	AMG84_53	43	0	37
WUD6-0630	547593.8	6363503.9	AMG84_53	54	2	41
WUD6-0704	546800.0	6362303.9	AMG84_53	38	0	34
WUD6-0758	547352.8	6363713.6	AMG84_53	51	10	>51
WUD6-0769	546847.5	6364507.5	AMG84_53	31	<2	29
WUD6-0774	546058.2	6362308.4	AMG84_53	61	8	59
BGRC-0878	546450.0	6362700.0	AMG84_53	172	<1	40

SE of Baggy Green Prospect, selected drillhole, gross regolith parameters

Hole_ID	Ref_East	Ref_North	Ref_Grid_ID	Max_Depth	Cover Thickness (m)	Protolith Depth (m)
WBN-0879	549800.0	6360000.0	AMG84_53	49	<1	38
WBN-0882	550400.0	6360000.0	AMG84_53	34	2	30
WBN-0883	549600.0	6360600.0	AMG84_53	46	3	40
WBN-0888	550600.0	6360600.0	AMG84_53	73	5	72
WBN-0890	550200.0	6361000.0	AMG84_53	49	<2	55
WBN-0964	550153.0	6360600.0	AMG84_53	37	3	35
WBN-0968	549850.0	6361000.0	AMG84_53	49	<1	48
WBN-0969	549550.0	6361000.0	AMG84_53	37	<4	35

Chiptray Photos (profile sections A-B + C-D)

Explanations

Chiptrays were photographed (dry) in sunlight using 200 ASA Fugichrome slide film, the individual slides were then scanned at 2,400 dpi, each image was subsequently cropped to best frame the 4 or 5 chiptray spread. **Note**: a number of drillholes are angled at -60^{o}; reference to the Drillhole Logs (above) and a correction factor-multiplier of 0.86 is needed to obtain true vertical depths. High resolution images are provided on the accompanying CD-ROM.

Scale bars displayed in the following images are 10 centimetres long x 3 cm wide and are only there to provide approximate scales for chips and large clasts. Some photo distortion has resulted from the off-centre camera alignment (used to avoid shadows) and therefore the scale bars won't be accurate across the whole of each image.

Chiptray photos follow on the next two pages.

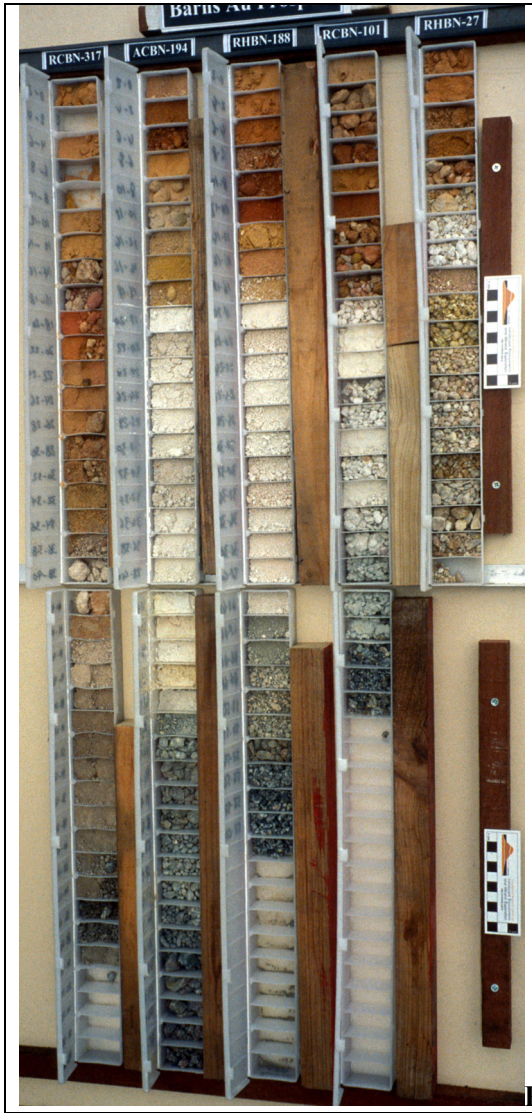
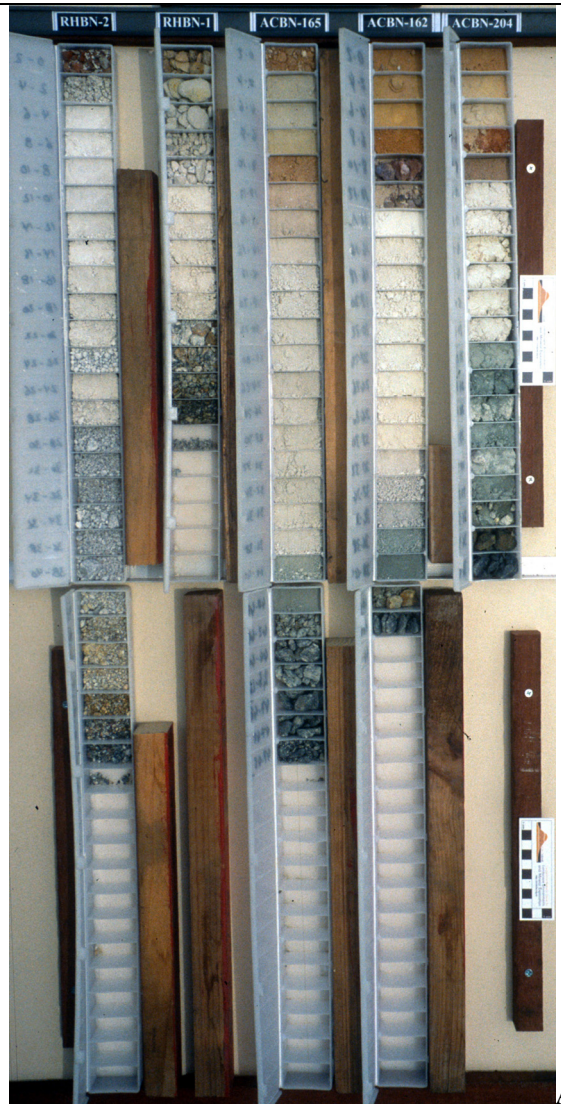


Plate A1-1

RCBN-317, ACBN-194, RHBN-188, RCBN-101 & RHBN-27.

A1-2

RCBN-100, 87, 245, 310 & 68.



A1-3

RHBN-2, 1, + ACBN-165, 162 & 204.

Regolith Profile Section A-B, Barns chiptrays (W on left, E & NE on right). Chiptray samples deeper than 80 m are not shown. Sampling interval = 2 m.

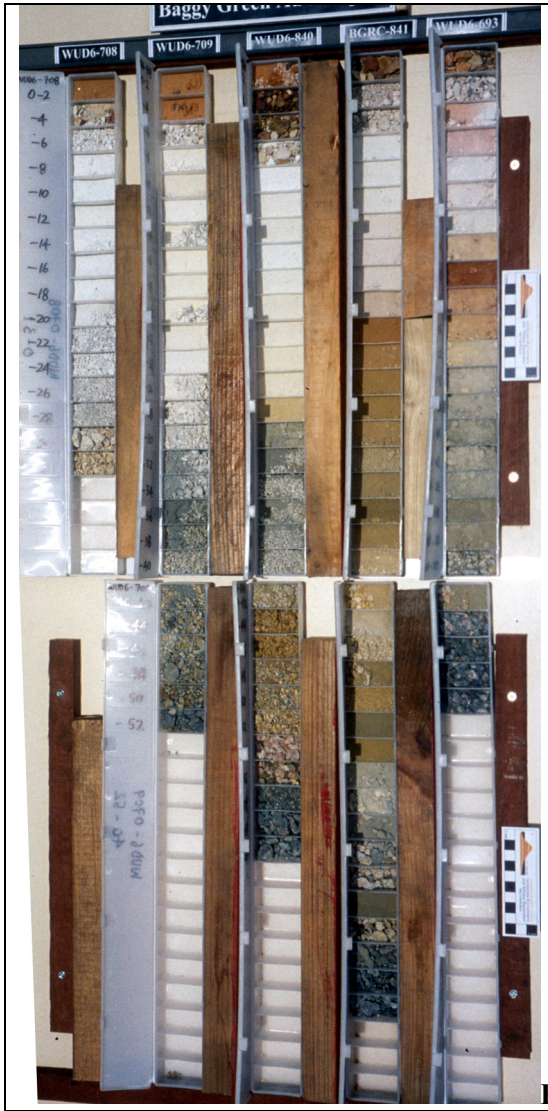
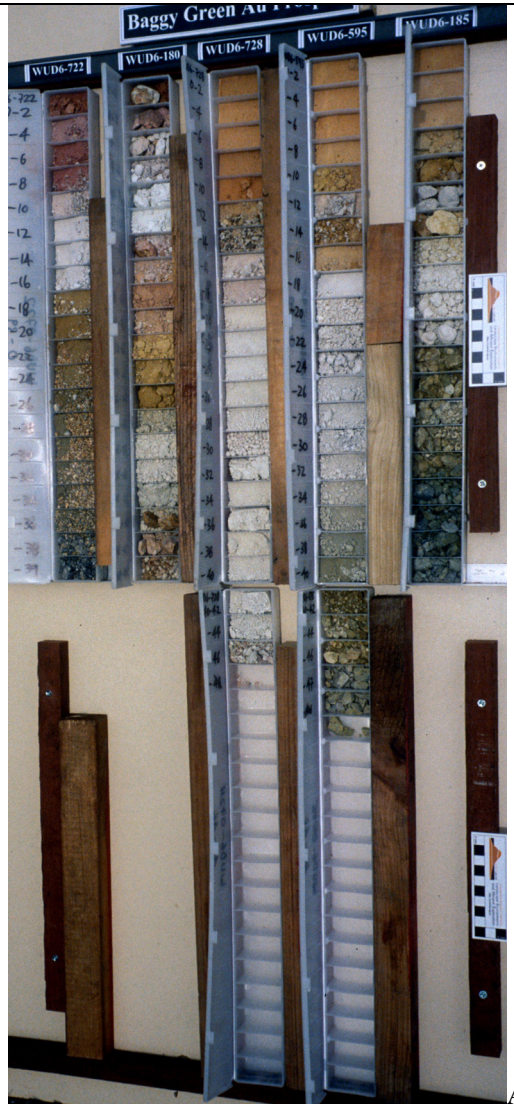


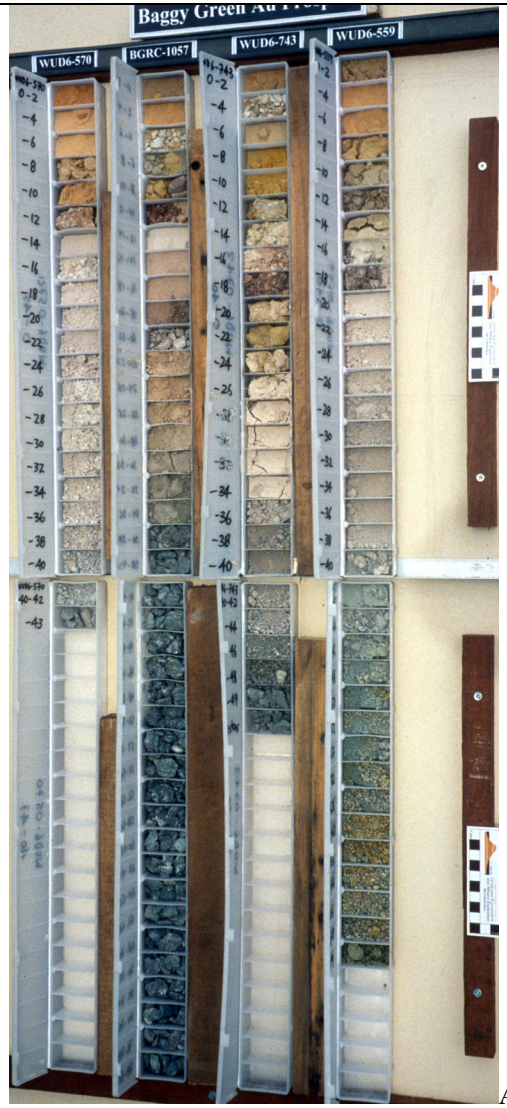
Plate A1-4

WUD6-708, 709, 840, BGRC-841 & WUD6-693.



A1-5

WUD6-722, 180, 728, 595 & 185.



A1-6

WUD6-570, BGRC-1057, WUD6-743, 559.

Regolith Profile Section C-D, Baggy Green chiptrays (S on left, N on right). Chiptray samples deeper than 80 m are not shown. Sampling interval = 2 m.

APPENDIX 2:

Assay data,

Surface geochemistry plans

SampleID	Data_Type	Easting	Northing	Ref_Grid_ID	Pattern	From (m)	To (m)	Date	Au (ppb)	Ag (ppb)	Cu (ppm)	Fe (ppm)	Mg (%)	Mn (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Zn (ppm)	Ca (%)	eDol (%)	eCal (%)	eCO3 (%)
9232	Calcrete	535469	6377882	AMG84_53	Reconn	0.8	1	22-Sep-97	-0.05	4.00	3	2350	0.06	35	-1	2	-3	4	0.27	0.46	0.43	0.88
569	Calcrete	538554	6377829	AMG84_53	Reconn	0.9	1	6-Nov-96	-0.05	0.50	4		0.06		2	6	-3	7	0.36	0.46	0.65	1.11
8952	Calcrete	531388	6377396	AMG84_53	Reconn	1.4	1.6	13-Oct-97	0.3	4.00	3	9350	0.34	35	2	6	6	10	0.37	2.58	0.00	2.58
9120	Calcrete	537485	6377357	AMG84_53	Reconn	2.7	2.9	18-Sep-97	-0.05	4.00	1	2750	0.09	25	-1	2	-3	3	0.60	0.68	1.13	1.81
9231	Calcrete	534071	6377263	AMG84_53	Reconn	0.6	0.8	22-Sep-97	0.35	7.50	5	5400	0.39	45	-1	3	6	6	2.70	2.96	5.14	8.10
12545	Calcrete	536388	6377226	AMG84_53	Infill	1.6	1.8	19-Jan-98	-0.05	1.50	1	2100	0.12	15	-1	1	-3	4	2.10	0.91	4.75	5.67
12544	Calcrete	535633	6377160	AMG84_53	Infill	1	1.2	19-Jan-98	1.35	17.00	9	31300	0.6	65	-1	7	6	10	1.05	4.56	0.15	4.71
12543	Calcrete	534752	6377138	AMG84_53	Infill	2.5	2.7	19-Jan-98	0.1	2.00	1	2000	0.08	10	-1	1	-3	3	1.15	0.61	2.54	3.15
568	Calcrete	538820	6376630	AMG84_53	Reconn	0.3	0.4	6-Nov-96	0.1	0.50	4		0.12		2	6	8	17	1.60	0.91	3.50	4.42
8947	Calcrete	545917	6376563	AMG84_53	Reconn	0.8	1	13-Oct-97	0.8	4.50	3	4300	0.35	20	-1	3	4	4	3.40	2.66	7.05	9.71
8953	Calcrete	532517	6376487	AMG84_53	Reconn	2.3	2.5	13-Oct-97	0.25	2.50	2	4300	0.14	35	-1	3	4	2	0.16	1.06	0.00	1.06
8949	Calcrete	535646	6376469	AMG84_53	Reconn	1.6	1.8	13-Oct-97	1.2	15.00	7	8150	0.31	60	-1	5	4	9	2.50	2.36	4.97	7.33
12546	Calcrete	536519	6376446	AMG84_53	Infill	1	1.2	19-Jan-98	0.05	3.50	1	2600	0.09	20	-1	2	-3	4	0.93	0.68	1.95	2.64
12554	Calcrete	533170	6376443	AMG84_53	Infill	1.2	1.4	19-Jan-98	0.05	2.00	2	2800	0.14	20	-1	2	-3	5	1.65	1.06	3.55	4.61
12553	Calcrete	533895	6376427	AMG84_53	Infill	1.2	1.4	19-Jan-98	0.5	1.50	5	2750	0.23	20	-1	2	-3	4	2.20	1.75	4.55	6.30
8954	Calcrete	529751	6376412	AMG84_53	Reconn	3.7	3.9	13-Oct-97	0.45	2.00	4	4700	0.15	10	1	3	6	12	5.00	1.14	11.88	13.02
8798	Calcrete	535772	6376398	AMG84_53	Reconn	1.8	2.2	11-Oct-97	0.68	41.00	5	2150	0.16	20	-1	2	-3	3	3.00	1.22	6.84	8.06
12542	Calcrete	534859	6376382	AMG84_53	Infill	1.5	1.7	19-Jan-98	0.45	1.50	2	5200	0.97	35	-1	3	-3	5	4.70	7.37	7.74	15.12
7699	Calcrete	537976	6376380	AMG84_53	Infill	1.5	1.7	16-Jan-98	0.15	6.00	7	5300	0.19	45	-1	4	-3	8	1.85	1.44	3.84	5.28
12549	Calcrete	537110	6376367	AMG84_53	Infill	3.2	3.4	19-Jan-98	-0.05	1.00	3	42500	0.19	25	-1	3	10	4	0.52	1.44	0.52	1.96
12550	Calcrete	535669	6376354	AMG84_53	Infill	1.7	1.9	19-Jan-98	0.3	9.00	2	1350	0.09	10	-1	1	-3	3	1.75	0.68	4.00	4.69
9227	Calcrete	548089	6376044	AMG84_53	Reconn	0.3	0.4	18-Sep-97	0.95	30.00	12	9550	0.54	135	-1	7	4	16	8.00	4.10	17.77	21.87
9226	Calcrete	549314	6376029	AMG84_53	Reconn	0.8	1	18-Sep-97	0.55	4.00	6	7650	0.63	40	-1	6	4	8	6.00	4.79	12.40	17.19
928	Calcrete	550962	6375953	AMG84_53	Reconn	0.7	0.9	4-Nov-96	0.75	1.00	10		0.4		2	12	-3	12	4.06	3.04	8.50	11.54
12541	Calcrete	534799	6375713	AMG84_53	Infill	1.8	2	19-Jan-98	0.1	2.00	1	2700	0.24	25	-1	1	-3	3	2.10	1.82	4.26	6.08
12551	Calcrete	535563	6375708	AMG84_53	Infill	2	2.2	19-Jan-98	0.5	2.00	1	1300	0.18	10	-1	1	-3	3	2.40	1.37	5.26	6.62
12548	Calcrete	537133	6375702	AMG84_53	Infill	1.7	1.9	19-Jan-98	-0.05	5.50	1	1600	0.07	15	-1	1	-3	3	1.35	0.53	3.09	3.62
12547	Calcrete	536380	6375680	AMG84_53	Infill	1.2	1.4	19-Jan-98	0.75	3.50	4	4550	0.37	25	-1	4	4	6	1.40	2.81	1.97	4.78
12555	Calcrete	533173	6375643	AMG84_53	Infill	1.8	2	19-Jan-98	0.23	2.50	2	3050	0.11	25	-1	2	-3	4	1.65	0.84	3.67	4.51
12552	Calcrete	533941	6375627	AMG84_53	Infill	1.4	1.6	19-Jan-98	2.2	5.50	3	1700	0.15	15	-1	1	-3	3	1.55	1.14	3.26	4.40
12801	Calcrete	538013	6375593	AMG84_53	Infill	2.5	2.7	18-Jan-98	0.45	4.00	2	4800	0.12	40	-1	3	-3	6	0.55	0.91	0.88	1.79
9148	Calcrete	540558	6375573	AMG84_53	Reconn	0.6	0.9	11-Oct-97	0.85	10.00	6	4750	1.09	30	-1	5	-3	6	6.00	8.28	10.50	18.78
8797	Calcrete	534205	6375567	AMG84_53	Reconn	0.4	0.6	11-Oct-97	2.9	7.00	12	5200	1.06	40	-1	4	-3	5	15.50	8.06	34.37	42.43
8948	Calcrete	544015	6375557	AMG84_53	Reconn	0.7	0.9	13-Oct-97	1	7.50	8	13300	0.76	75	2	6	6	7	8.50	5.78	18.11	23.89
8800	Calcrete	537318	6375499	AMG84_53	Reconn	2	2.2	11-Oct-97	8.95	152.50	5	5200	0.21	40	-1	3	14	7	1.25	1.60	2.26	3.85
8946	Calcrete	547600	6375438	AMG84_53	Reconn	1.2	1.4	13-Oct-97	1	6.00	5	8350	0.67	35	1	6	4	6	7.50	5.09	15.98	21.07
12804	Calcrete	536378	6374977	AMG84_53	Infill	1.5	1.7	18-Jan-98	0.4	4.00	3	3400	0.09	75	-1	2	-3	6	0.55	0.68	1.00	1.69
12803	Calcrete	537056	6374906	AMG84_53	Infill	0.7	0.9	18-Jan-98	0.35	2.00	2	2900	0.13	50	-1	4	8	5	0.45	0.99	0.59	1.58
571	Calcrete	535785	6374900	AMG84_53	Reconn	0.6	0.8	6-Nov-96	2.8	6.00	8		0.17		2	7	-3	11	0.10	1.29	0.00	1.29
14502	Calcrete	535840	6374870	AMG84_53	Infill			27-Jan-99	21.5	14.50	20	4100	0.8	35	-1	4	4	9	0.13	6.08	0.00	6.08
14501	Calcrete	535855	6374868	AMG84_53	Infill	0.3	0.4	27-Jan-99	1.7	10.50	24	48400	1.11	240	-1	10	8	22	0.87	8.44	0.00	8.44
929	Calcrete	550029	6374853	AMG84_53	Reconn	0.6	0.7	4-Nov-96	0.58	9.00	9		0.36		2	12	-3	12	4.27	2.74	9.19	11.92
12557	Calcrete	533911	6374834	AMG84_53	Infill	2.2	2.4	19-Jan-98	0.05	4.00	3	1750	0.07	15	-1	1	4	3	1.65	0.53	3.84	4.37
12805	Calcrete	535589	6374834	AMG84_53	Infill	0.7	0.9	18-Jan-98	0.4	4.50	3	3500	0.17	40	-1	2	-3	5	0.52	1.29	0.60	1.89
9149	Calcrete	542144	6374832	AMG84_53	Reconn	0.6	0.9	11-Oct-97	1.6	7.00	5	7150	0.91	60	-1	9	4	7	6.00	6.92	11.24	18.16
1068	Calcrete	550019	6374830	AMG84_53	Reconn	0.3	0.4	19-Dec-96	1.6	3.50	11		0.67		1	12	6	12	12.10	5.09	27.48	32.57
570	Calcrete	537771	6374815	AMG84_53	Reconn	0.2	0.4	6-Nov-96	0.35	-0.50	2		0.01		2	4	14	1	0.03	0.08	0.03	0.11

Table A2-1: A single page extract from the Wudinna north calcrete data set supplied by Adelaide Resources Ltd. The complete data are available on the data CD-ROM. Note: there were no As analyses in this single page extract, therefore that column is not displayed. Element distribution plots for Au, Ag, Cu, As & Ni from the full data set are displayed on the following fold-out A3 pages.

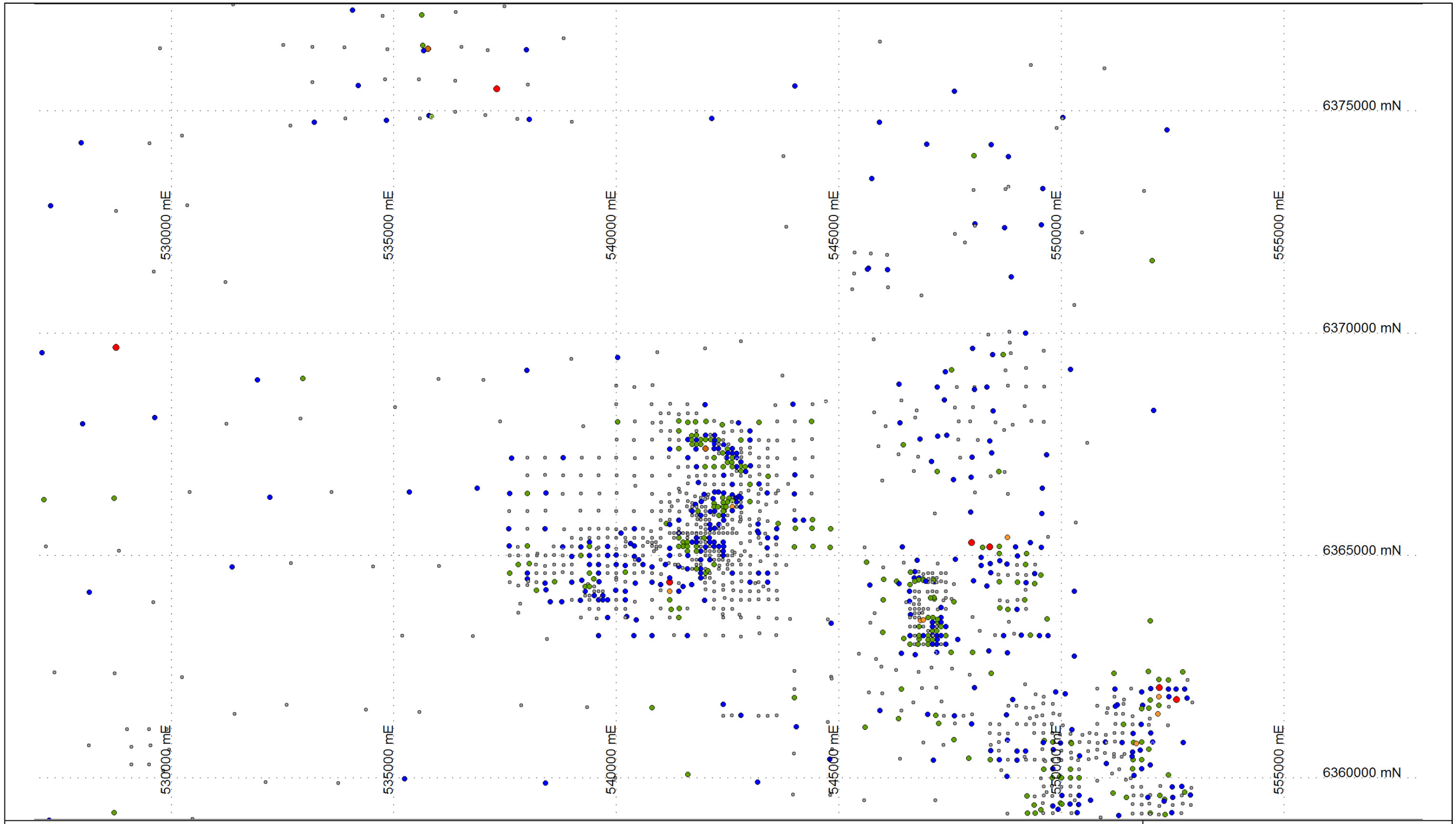


Figure A2-1: Calcrete assay Ag data covering the Regolith Map area (raw data supplied by Adelaide Resources Ltd). Assay values have been grouped to highlight most significant values and perhaps anomalism in a broad sense. However, to properly analyse this data it requires plotting within a GIS where the Regolith Map (accompanying this Report) can provide sample host provenance, and thereby a true *vs* false reliability on any obvious or more cryptic anomalism. Refer to Text Volume 1 for analysis of patterns.

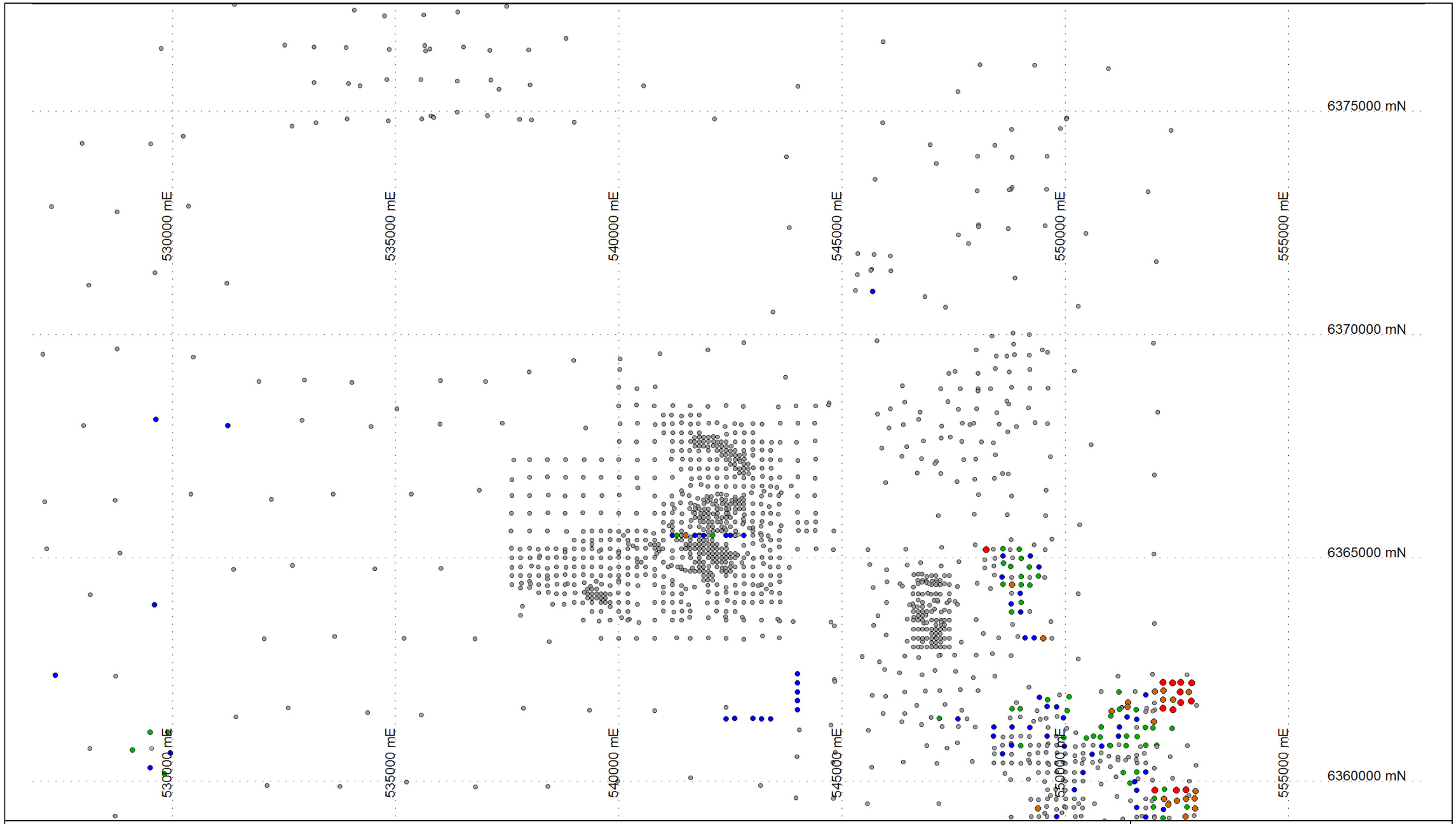


Figure A2-2: Calcrete assay As data covering the Regolith Map area (raw data supplied by Adelaide Resources Ltd). Assay values have been grouped to highlight most significant values and perhaps anomalism in a broad sense. However, to properly analyse this data it requires plotting within a GIS where the Regolith Map (accompanying this Report) can provide sample host provenance, and thereby a true *vs* false reliability on any obvious or more cryptic anomalism. Refer to Text Volume 1 for analysis of patterns.

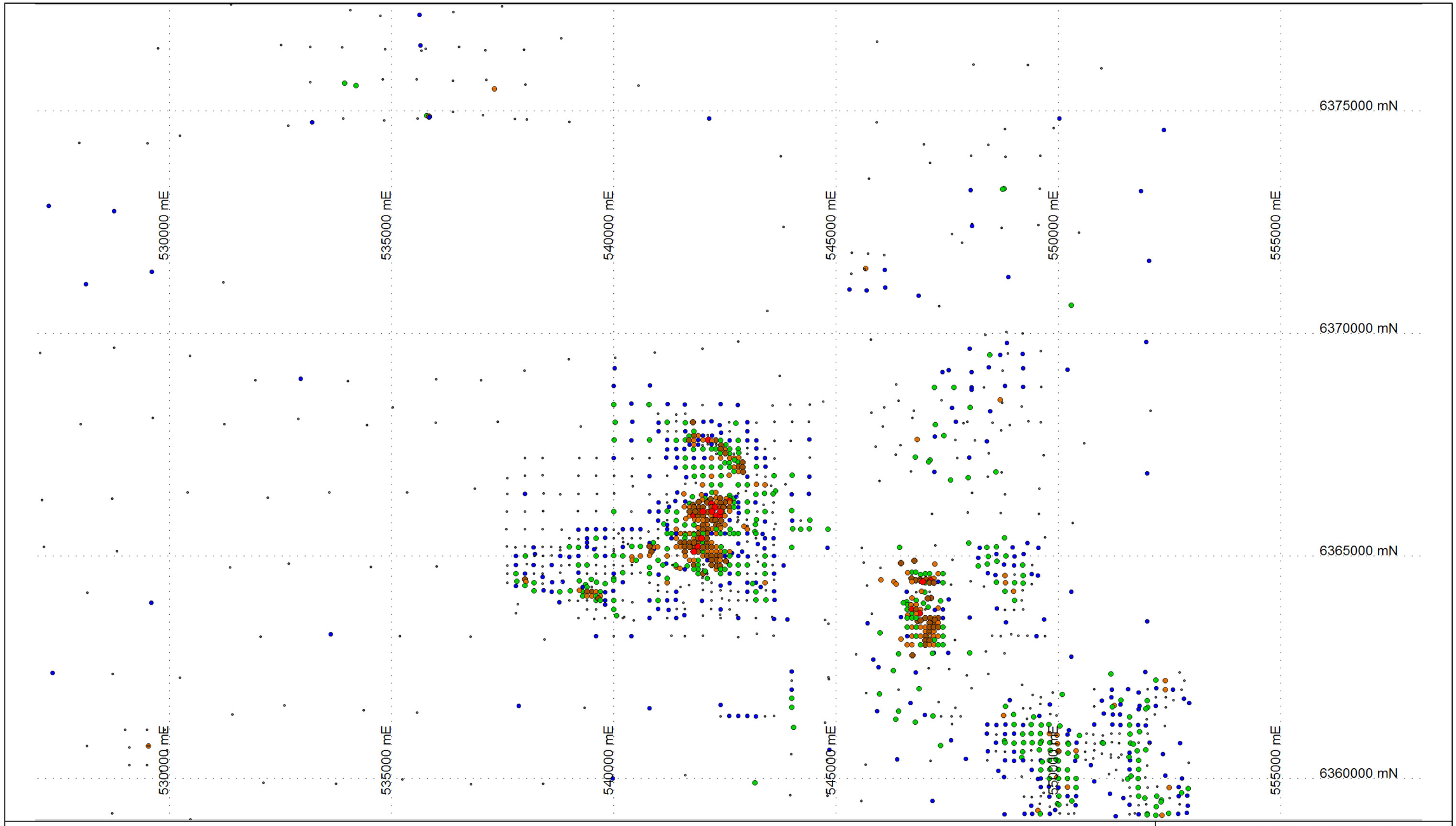


Figure A2-3: Calcrete assay Au data covering the Regolith Map area (raw data supplied by Adelaide Resources Ltd). Assay values have been grouped to highlight most significant values and perhaps anomalism in a broad sense. However, to properly analyse this data it requires plotting within a GIS where the Regolith Map (accompanying this Report) can provide sample host provenance, and thereby a true *vs* false reliability on any obvious or more cryptic anomalism. Refer to Text Volume 1 for analysis of patterns.

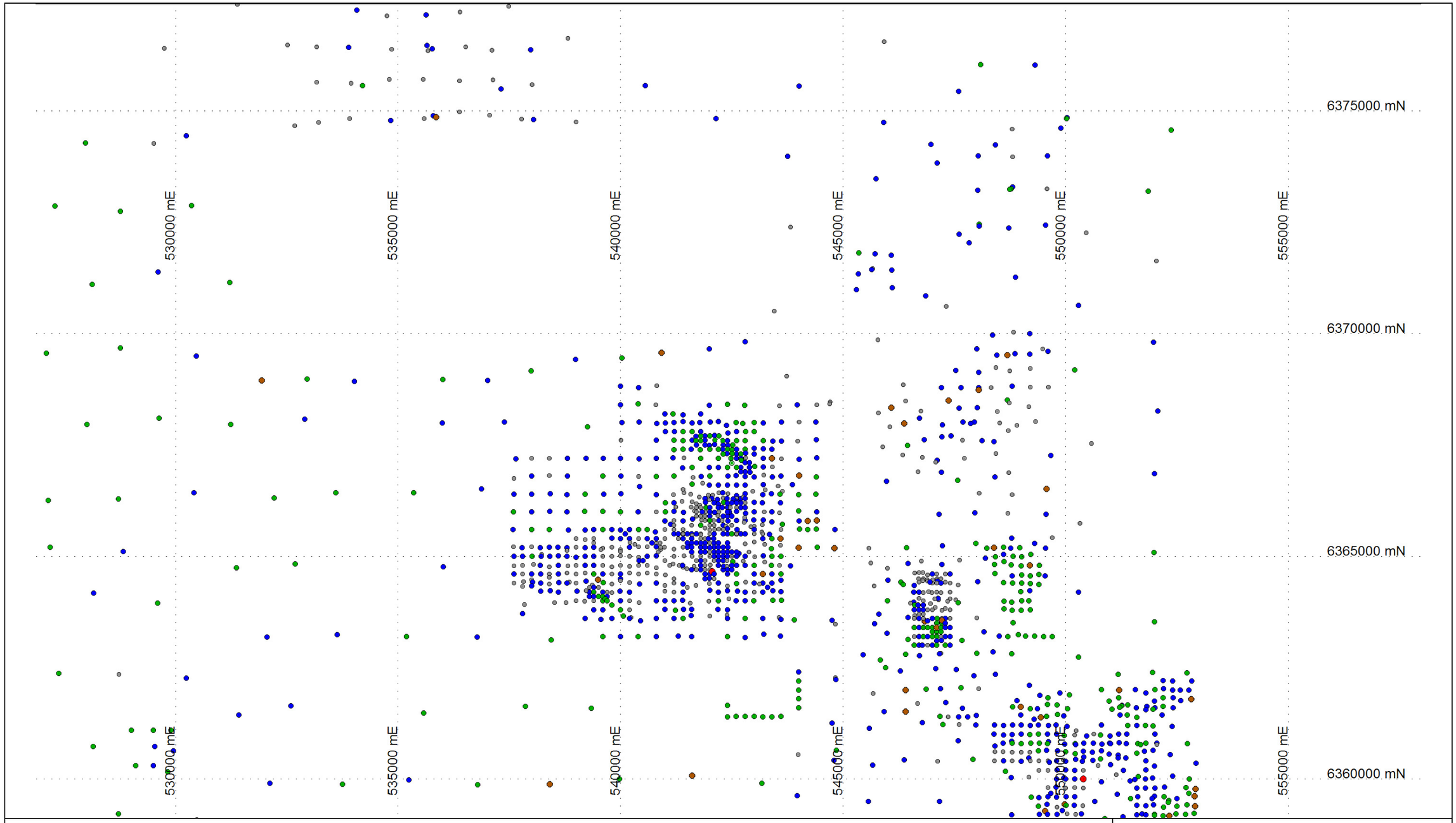


Figure A2-4: Calcrete assay Cu data covering the Regolith Map area (raw data supplied by Adelaide Resources Ltd). Assay values have been grouped to highlight most significant values and perhaps anomalism in a broad sense. However, to properly analyse this data it requires plotting within a GIS where the Regolith Map (accompanying this Report) can provide sample host provenance, and thereby a true *vs* false reliability on any obvious or more cryptic anomalism. Refer to Text Volume 1 for analysis of patterns.

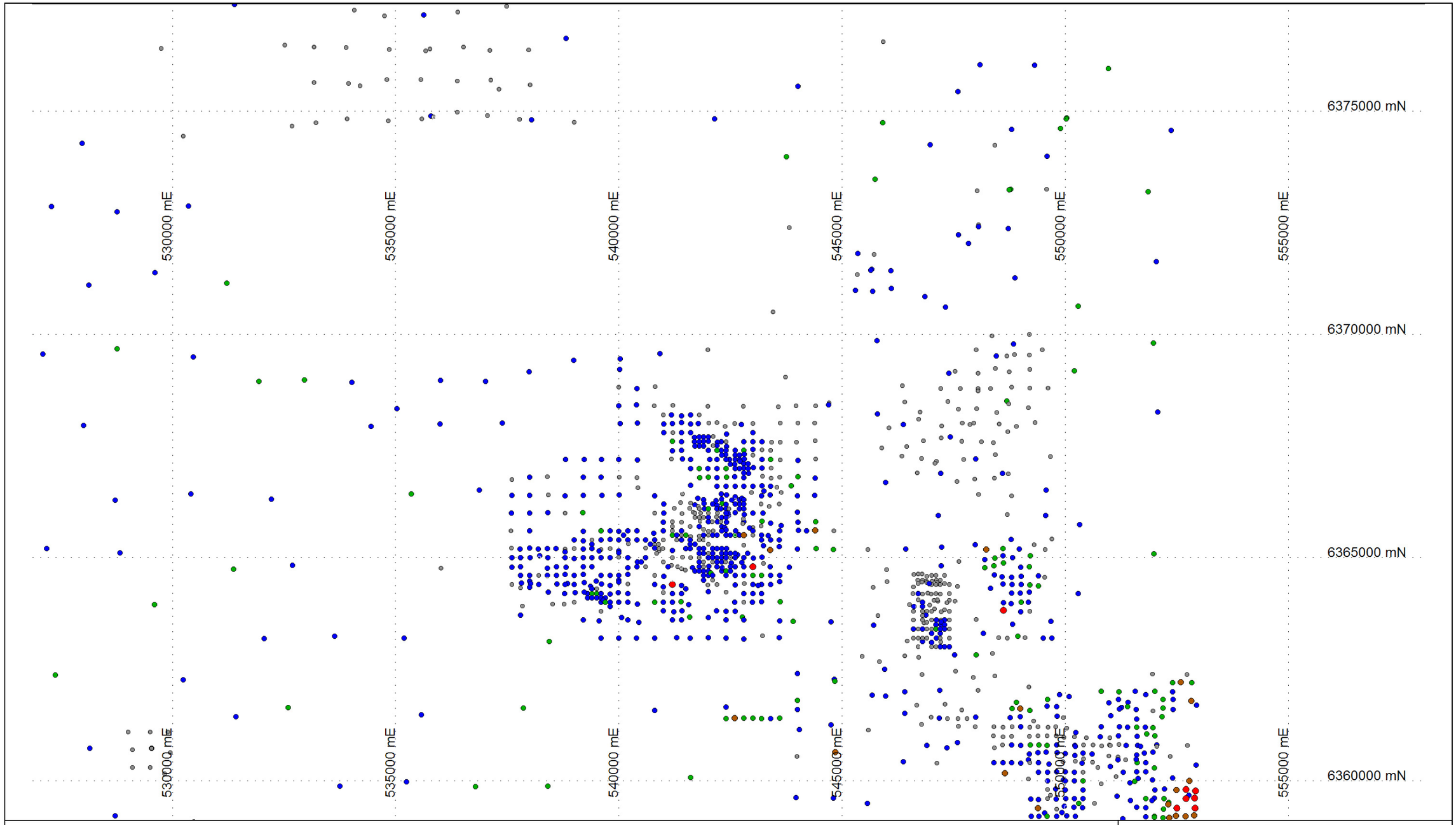


Figure A2-5: Calcrete assay Ni data covering the Regolith Map area (raw data supplied by Adelaide Resources Ltd). Assay values have been grouped to highlight most significant values and perhaps anomalism in a broad sense. However, to properly analyse this data it requires plotting within a GIS where the Regolith Map (accompanying this Report) can provide sample host provenance, and thereby a true *vs* false reliability on any obvious or more cryptic anomalism. Refer to Text Volume 1 for analysis of patterns.

APPENDIX 3:

PIMA interpretive mineralogy & spectra

Table A3-1: PIMA Sample coordinate, general description and PIMA mineralogy data.

Sample R #	Easting	Northing	Material / Provenance (Field #)	PIMA Mineralogy	Spectra quality comments
1039936	528813	6361462	playa sediment, gypseous (227/2)	Gypsum dominant	Good
1039937	529955	6360572	playa sediment, dark sticky-plastic mud (227/4)	Halloysite and K-alunite, both subdominant	Poor but reasonable interpretation
1039938	530149	6360950	playa sediment, dark mud, gypseous (227/7)	Gypsum dominant	Average, interpretation OK
1039939	531427	6362553	playa sediment, silt-sand-gypsum (227/9)	Gypsum dominant	Good
1039940	531337	6361590	playa sediment, clayey, gypseous (227/11)	Gypsum dominant	Good
1039941	530846	6363008	playa sediment, dark sticky clay (227/14)	Halloysite, minor K-alunite	Poor but reasonable interpretation
1039942	530511	6362631	playa sediment, dark sticky-plastic (227/15)	K-alunite and ?gypsum (sample too dark)	Very poor
1039943	530116	6361282	playa sediment, sandy (227/16)	Kaolin and illite	Average, interp. possible, no gypsum
1039944	537277	6360939	playa sediment, sand-silt-clay (229/4)	Halloysite with minor Na-alunite	Poor, possible interpretation
1039945	537645	6361047	playa sediment, light-mod. sticky clay (229/7)	K-alunite with minor halloysite	Good, interpretation OK
1039946	537087	6361143	playa sediment, dark sticky mud (229/8a)	Halloysite	Poor, TSA also indicates ?palygorskite
1039947	537087	6361143	playa sediment, orange & pale grey (229/8b)	Halloysite with minor K-alunite	Good
1039948	544140	6371292	playa mud, light brown, mod. sticky (301/18)	Kaolinite	Good
1039949	546323	6370212	playa mud, light brown, sticky (301/30A)	Kaolinite	Good
1039950	546294	6370162	playa mud, light brown, sticky (301/31B)	Kaolinite	Good
1039951	537373	6375108	playa sediment, very sticky light clay (303/15)	Kaolinite	Good
1039952	538238	6372269	playa mud (303/34)	Kaolinite	Average
1039953	539551	6371344	playa mud, dark organic, gypseous (303/36)	Aspectral?	Very poor
1039954	540342	6371057	playa mud, red-dark organic, gypsum (303/38)	Gypsum? (aspectral)	Very poor
1039955	542321	6371322	playa sediment, brown (303/52)	Kaolinite (poorly crystalline?)	Average
1039956	529769	6375119	playa sediment, greyish silty-sandy (305/1a_1)	Halloysite and K-alunite	Average, alunite OK, montmorillonite?
1039957	531554	6374312	playa mud, sticky organic, gypsum (305/5a)	Muscovite and kaolin	Poor, no gypsum
1039958	538019	6364378	playa sediment, clayey, gypseous (324/2)	K-alunite and halloysite, subdominant	Good
1039959	537293	6363680	playa sediment, sandy clay, organic (324/4)	Gypsum dominant	Very good
1039960	537435	6363092	playa mud, clayey, gypseous (324/7)	Gypsum dominant	Good
1039961	546686	6367502	playa mud, light clay, not very sticky (326/3)	Kaolinite (moderate crystallinity)	Good
1039962	537138	6363587	palaeo-playa sediment, white clay (324/5)	Gypsum dominant	Very good
1039963	537425	6363203	palaeo-playa mud, clayey, gypseous (324/6c)	Halloysite with minor K-alunite?	Average

Cont.

Table A3-1: PIMA Sample data (continued).

Sample #	Easting	Northing	Material / Provenance	PIMA Mineralogy	Spectra quality comments
1039964	529947	6375336	palaeo-playa mud, 2m above modern pan (305/2a)	Halloysite and K-alunite	Good
1039965	530592	6361193	palaeochannel sediment? (227/12a)	Montmorillonite dominant with kaolinite	Good
1039966	529769	6375189	palaeochannel sediment? (305/1a_2)	Halloysite and K-alunite	Average
1039972	537425	6363203	orange-brown dune sand, gypseous (324/6a)	Montmorillonite dominant with gypsum	Good
1039973	537425	6363203	red-brown dune core sand (324/6b)	Montmorillonite dominant with gypsum	Good
1039929	541592	6371144	saprolite, pallid, mottle zone, Tunkillia Suite (303/54d)	Kaolinite (poorly crystalline?)	Average (wet sample)
1039930	541560	6371239	saprolite, pallid, Tunkillia orthogneiss (303/56a)	Kaolinite	Very good
1039931	542099	6365659	megamottled saprolite below Barns dune (BnsSap_8a)	Kaolinite (well crystalline)	Very good
1039934	535880	6369653	weathered gruss, Hiltaba Granite source (324/23)	Halloysite and montmorillonite	Average (kaolin poorly crystalline?)
1039935	541927	6371394	GRV dyke, saprolite, intrudes Tunkillia Suite (W-GRV)	Kaolinite (well crystalline)	Good (wet sample)

The following three PIMA spectral stacked plots are provided for quick visual inspection only. For more detailed examination and interpretations the reader is referred to the Data CD-Rom "PIMA Data Folder". That contains the individual spectral files by R-number order, these must be used with *The Spectral Geologist* (TSG) proprietary software (available from Integrated Spectronics, Sydney, Australia; see comments under Methods - PIMA infrared spectra analysis and the sample descriptive PIMA infrared spectra analysis sections.

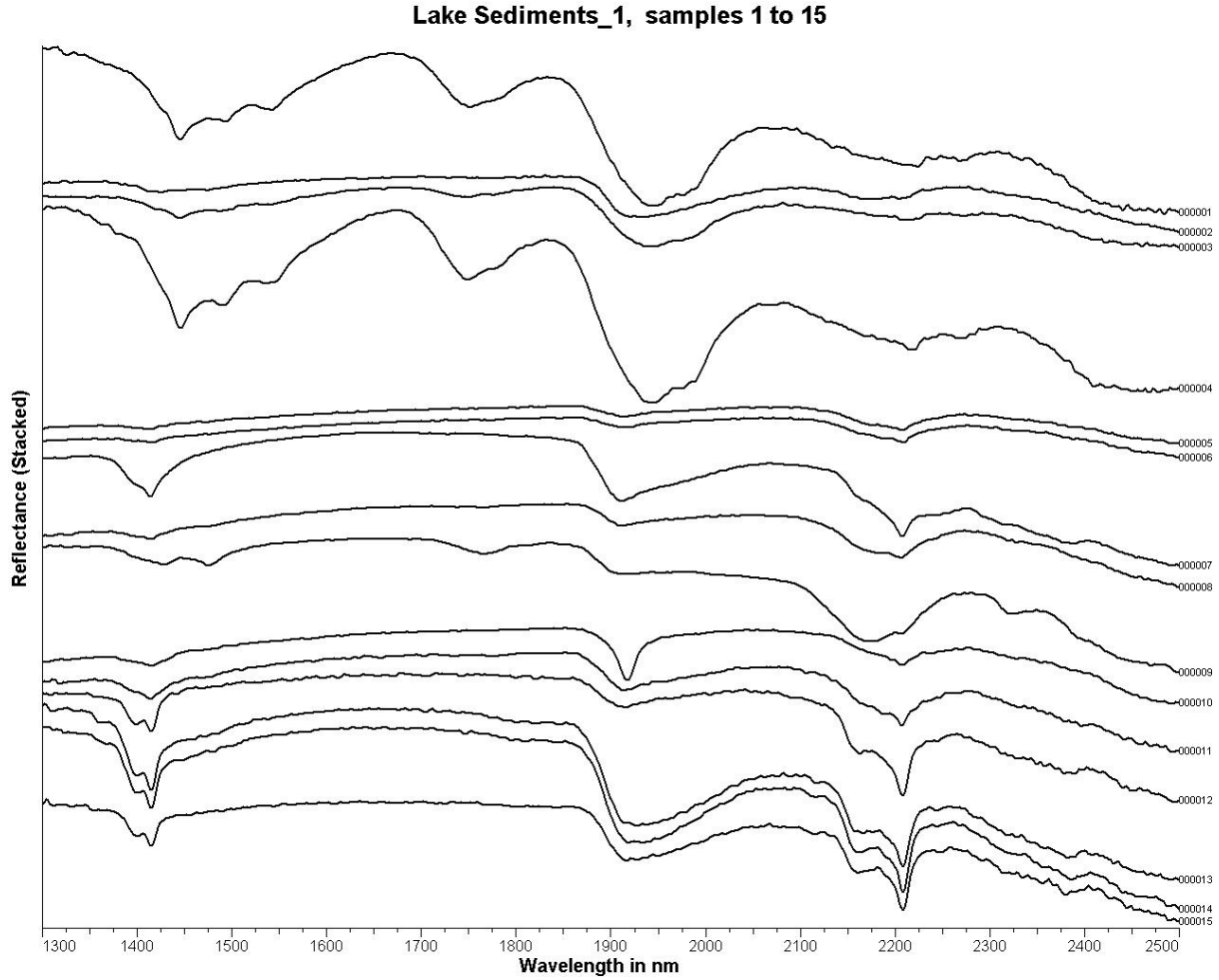


Figure A3-1: Wudinna north regolith study area: PIMA short wave infrared spectra of playa lake sediment, samples R1039936 to R1039950. Spectra are stacked in a top down order).

Continued overleaf.

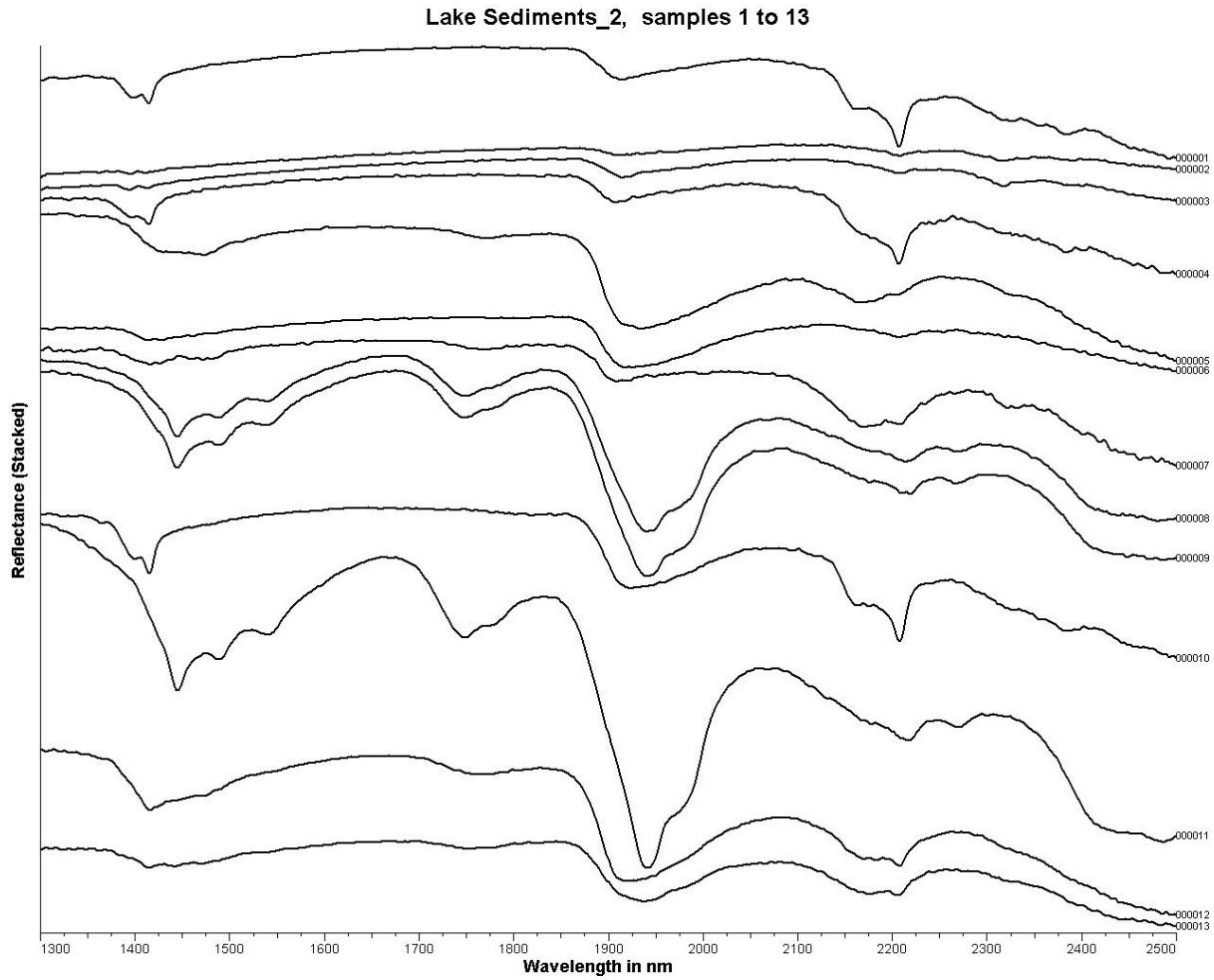


Figure A3-2: Wudinna north regolith study area: PIMA short wave infrared spectra of playa lake sediment, samples R1039951 to R1039964. Spectra are stacked in a top down order.

Continued overleaf.

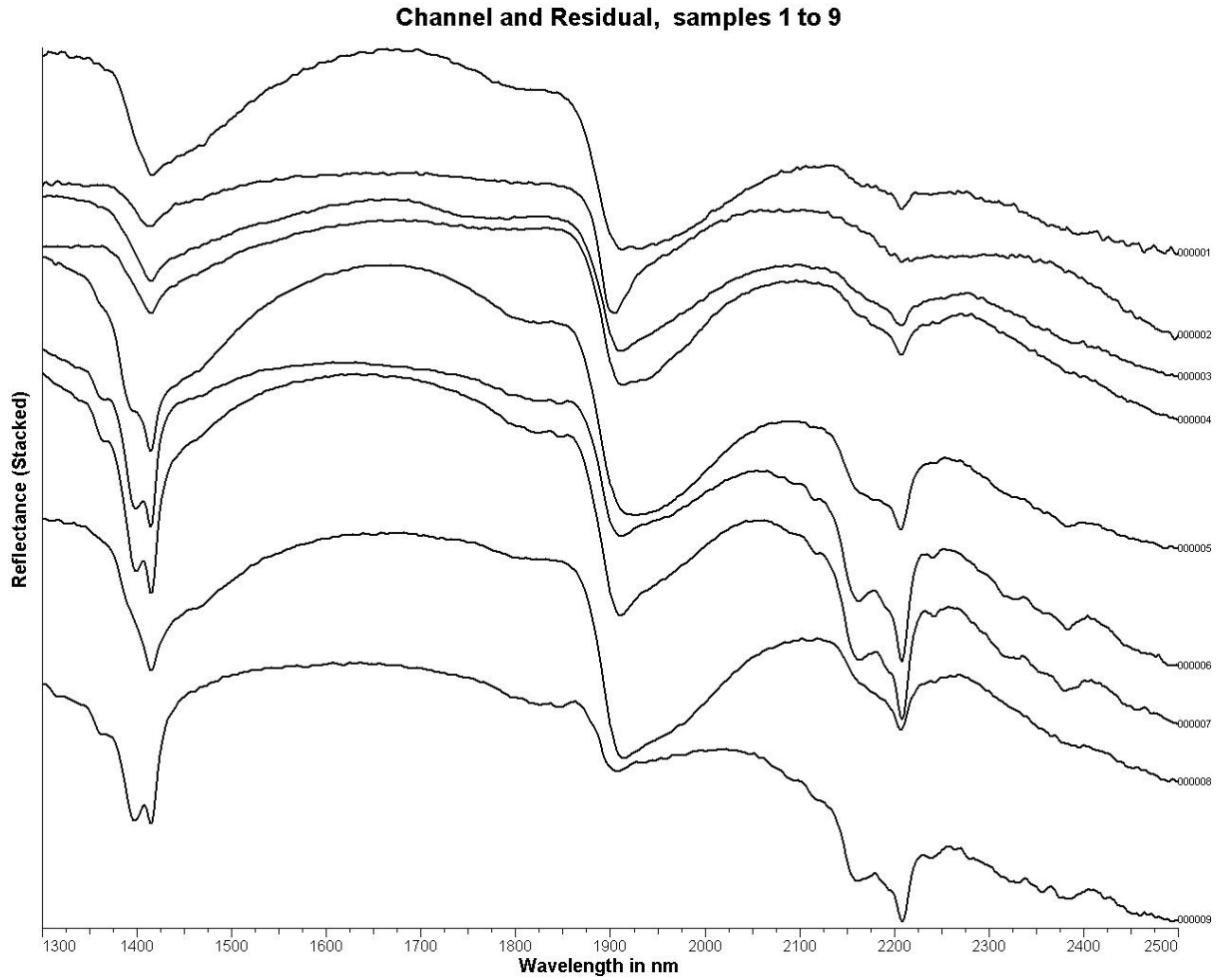


Figure A3-3: Wudinna north regolith study area: PIMA short wave infrared spectra of samples R1039951 to R1039964, spectra are stacked in a top down order. Refer to Table A3-1 for sample details, materials include palaeochannel clay, dune core clayey sand, and *in situ* weathered residual basement (saprolite to saprock).

APPENDIX 4:

Petrography

Table A4-1: Surface regolith sample descriptions and petrography from direct observation augmented by microscope inspection of thin-sections, impregnated and polished block mounts (for loose granules) and from sawn slab inspection. Petrology by M.J. Sheard. [**Note:** all samples and thin-sections are referred to by their PIRSA 'R number' reference.]

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977100	546017	6369826	Palaeochannel sediment with indurating black bog-iron (FeOx-MnOx) overprint. From inverted topography outcrop where ~1 m of remnant sediment overlies a thinned collapsed megamottle horizon on megamottled saprolite. Hand specimen is an even dark grey massive quartz-rich sandstone (fine – medium sand) with occasional random lithics to ~2 mm and randomly spaced irregular voids 2-3 mm across. [Field # 301/14]	Observations: a sandstone composed of fine- to medium-grained quartz sand. Clasts are dominantly well rounded with less abundant angular forms, quartz is commonly strained and some grains have cloudy or wispy zones of entrapped sericite (after micas or micro-feldspars). Lithic clasts are very rare and tend to be of composite metamorphic quartz. Numerous grains display embayed and etched edges suggesting partial dissolution post deposition. There is also void partial infill and grain rims of secondary silica composed of partly recrystallised chalcedony. Sediment texture ranges from matrix supported to clast supported – in crude bands ~10 to 15 mm thick. Matrix cement is black-opaque and ultra fine-grained sesqui-oxide, and where thinned against grains or within grain fractures it is dark brown to yellow brown. This oxide-rich cement has replaced the original clay and silt matrix where sand grains are now matrix supported. Interpretation: this rock is a mature fluvial sediment that has undergone fines removal concomitant with sesqui-oxide cementation, and silica etching with redeposition where some predates and the rest post dates sesqui-oxide cementation. A swampy – reducing and acid environment has modified the original sediment to form a 'bog-iron' sandstone.
977101	546017	6369826	Palaeochannel sediment with indurating black bog-iron (FeOx-MnOx) overprint. From inverted topography outcrop. where ~1 m of remnant sediment overlies a thinned collapsed megamottle horizon on megamottled saprolite. Hand specimen is an even dark grey, vaguely layered quartz-rich sandstone (fine – medium sand) with rare random lithics to <2 mm and randomly spaced irregular voids 1-2 mm across. [Field # 301/14 b]	Observations: regolith texture, fabric and mineralogy closely resembles that of sample R977100 except in the following aspects. The sample is dominantly densely clast supported and has a minimal fine-grained inter-clast matrix infill. Void spaces are smaller and tend to be occupied by small quartz grains (silt sized). Sand grains are rounder and have less entrapped sericite. Interpretation: this rock is a mature fluvial sediment that has undergone cementation by sesqui-oxides. Silica etching and redeposition have occurred where some predate and the rest post date sesqui-oxide cementation. A reducing and acid environment (swamp or bog) has provided conditions suitable for modifying the original sediment to form a 'bog-iron' sandstone.

Cont.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977102	537914	6375018	Silcrete, pale yellow-brown with darker yellow-brown weathering rind. That rind is relatively smooth, irregularly pitted and entrapped quartz clasts slightly protrude. Silcrete is 50-100 mm thick, it overlies a more porcelanitic zone ~300-400 mm thick. These together form a resistive capping on quartz veined pallid saprolite retaining a gneissic fabric. Outcrop forms an eroding escarpment on NW shores to the large northern playa. [Field # 303/9 a]	Observations: particulate material is dominantly quartz grit, fine- to coarse-grained + lithic composite quartz clasts (~2 mm). Most quartz is strained (undulose extinction) but ~15% is unstrained. >90% of grains are highly angular, some are equant, and a few are well rounded. Rock texture is clast supported, a disruption to the original grain association-arrangement is evident. Matrix cement is cryptocrystalline quartz-anatase-zircon (QAZ) where the anatase content is highly variable. Some matrix is unsilicified kaolinite, a significant portion of which has plucked during thin-sectioning. Patches >10 mm across have a near black to very dark brown opaque cement-void infill and that may represent either relict ferruginous mottling or secondary titaniferous mineral deposition. Interpretation: this rock is a moderately silicified arenose zone where profile collapse has been induced by fines removal. Minor colluvial-fluvial input was probably via surface cracking and via open root tubes plus invertebrate burrows. Subsequent silicification has cemented most grains and replaced a major portion of any remaining clay matrix. Dark oxide cementation seems to have accompanied the silicification process.
977103	537914	6375018	Silcrete, pale yellow-brown from the same outcrop as sample R977102. The weathering rind is a similar colour to the bulk, it is smoother and more embayed, is similarly pitted and some entrapped quartz fragments resemble collapsed & disassembled vein quartz. [Field # 303/9 b]	Observations: texture is similar to sample R977102 but with the following differences. Some quartz grains are embayed, and there is more of the opaque cement within intergrain spaces. There are mm-sized well rounded quartz grains (<<1%). Some quartz grain complexes have entrapped minute muscovite flakes. QAZ cement is similar to sample R977102. Interpretation: this rock represents a silicified arenose zone where profile collapse has been induced by fines removal. Minor colluvial-fluvial input was probably via surface cracking and via open root tubes plus invertebrate burrows. Subsequent silicification has cemented the grains and replaced all of any remaining clay matrix. Dark oxide cementation seems to have accompanied the silicification process.
977104	537914	6375018	Silicified pallid saprolite, very pale brownish yellow, rough to the touch and some entrapped grains can be dislodged with one's fingers. A moderate yellow staining occurs within this rock and maybe relict mottling (partly bleached). Outcrop same as for samples R977102 & R977103 but this sample comes from the semi-silicified horizon below the main silcrete cap. [Field # 303/9 c]	Observations: particulates are dominantly quartz grit, fine- to coarse-grained + lithic composite quartz clasts (~2 mm). Most quartz is strained (undulose extinction). All grains are highly angular, and some are equant. Rock texture is clast supported and disruption to the original grain association-arrangement is evident. Matrix cement is cryptocrystalline QAZ where the anatase content is highly variable and in places contains 'floating' silt sized quartz grit. A significant portion of the cement is either opaque or a very dark brown and that may represent either relict ferruginous staining or secondary titaniferous mineral deposition. Interpretation: this rock represents a silicified arenose zone where profile collapse has been induced by fines removal. Subsequent silicification has cemented the grains and replaced most of any remaining matrix fines. Dark oxide cementation seems to have accompanied the silicification process.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977105	541560	6371234	Red Fe-megamottle within pallid saprolite, profile exposed by erosion at a lakeside escarpment (SE corner, large northern playa). Megamottle is partially porous where fines have been lost. Relict gneissic fabric discernable. Sample was carefully extracted for microscopic examination. [Field # 303/56 b]	Observations: strong red ferruginous overprint on host materials, quartz is all highly angular and highly strained, some quartz aggregates are complex, entrapped micro micas and sericite occur within numerous quartz grains. Metamorphic foliation is well preserved in many large patches, original mica sheafs and feldspars are replaced with textural and fabric preservation by kaolinite after sericite. Red FeOx cement is dominantly haematitic and has invaded grain boundaries + fractures. Weathering + cementation seem to be isovolumetric because there is little disruption to delicate mineral textures and primary fabric. Interpretation: this sample is saprolite after gneiss and has been overprinted by FeOx minerals without significant grain disruption-distortion during a megamottling phase of the weathering process.
977106	541689	6371368	GRV felsic dyke cropping out at SE end of large northern playa. An hydrothermally altered protolith, dark greyish brown with vague to prominent flow banding (paler bands) and mm-sized phenocrysts. The weathering rind is brown and highlights both phenocrysts and flow banding. Outcrop is rubbly due to the spaced joints and weathering processes. [Field # 303/58]	Observations: dominantly an aphanitic felsic igneous rock displaying subtle compositional banding (3-4 mm thick) + randomly spaced 1-2 mm sized quartz and feldspar phenocrysts. This rock is pervasively altered, the original glassy matrix has devitrified to initially form a spherulitic texture which has in most part been subsequentially altered (less spherulitically fibrous and more randomly flaky sericite) + some fibrous to flaky kaolinite – together forming a tartan-like textural matte. Quartz phenocrysts (1-2 mm) are partly flattened or stretched parallel to original banding, complex quartz crystal strings and lines of sub-mm opaque oxide grains delineate original weak compositional banding. Relict feldspar phenocrysts (1-2 mm) are strongly sericite replaced and are commonly very cloudy or diffuse. Interpretation: this is an altered aphanitic intrusive felsic rock (rhyolite or rhyodacite) emplaced below a sub-volcanic depth (there are no obvious volcanic textural features). Magmatic cooling was rapid, forming mostly a glassy rock. Alteration is by a mixture of hydrothermal and weathering processes.
977107	534412	6370327	Hiltaba Granite, saprock-protolith from a cluster of small low tabloid bodies protruding sandplain-low dunes N of Poondana Rocks. Non foliated, pink coarse-grained, biotite granite. Outcrop has been exhumed relatively recently from a deeply weathered profile. [Field # 305/23]	Observations: a coarse-grained igneous felsic rock containing: quartz (weakly strained – undulose extinction) + microcline (tartan twinned, some sericite alteration) + orthoclase (simple or no twinning, some sericite alteration) + plagioclase (albite + pericline twinning, some sericite alteration) + biotite (<2%, no alteration) + muscovite (<2%, no alteration) + trace accessory zircon (rare minute crystals). Interpretation: this rock is an intrusive granite, emplaced deep enough to permit coarse crystallisation. Subsequent mild deformation has strain affected the quartz phenocrysts. Weathering has induced incipient alteration of the feldspars.

Cont.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977108	546846	6367920	Silcrete, orange, well indurated quartz sandstone. Occurs in a long silicified zone at N end of small playa-escarpment area ~2.6 km E of Little Pinbong Rockhole. Compare with samples R977109 & R977110. [Field # 326/4 a]	Observations: this is dominantly a quartz sandstone, containing silt to medium-grained sand, a mixture of angular to rounded clasts in a densely packed clast supported texture. Some quartz grains exhibit embayed-etched edges while others have rims of recrystallised chalcedony. Matrix cements consist of cryptocrystalline opaque to dark brown titaniferous-FeOx and QAZ materials, anatase content is highly variable. Interpretation: this rock represents a silicified sediment (*in situ* derived colluvium + alluvium) where some components are very locally derived and others have a long transport history. A quartz-anatase cementation has occurred post deposition.
977109	546846	6367920	Silcrete, mega-mottled, well indurated quartz sandstone. Occurs in a long silicified zone at N end of small playa-escarpment area ~2.6 km E of Little Pinbong Rockhole. Compare with samples R977108 & R977110. [Field # 326/4 b]	Observations: dominantly quartz sandstone with >70% of grains well rounded, remainder are subangular to angular, grains are fine- to medium sand but ~3% are coarse, a few biotite + hornblende + opaque mineral grains occur, texture is mostly clast supported and grains are poorly sorted. Cement is both cryptocrystalline quartz-anatase-zircon and brown titaniferous or red-brown ferruginous in form. Cement infills intergrain voids and some Fe-staining colours grain fractures, many quartz grains also have surface Fe-staining. Interpretation: this rock represents silicified sediment where a large grain percentage is derived from mature medium to long transport history material, the remainder is immature and colluvial in origin. A mixed provenance – perhaps near to a fluvial channel bank where bank material shedding was also occurring or where an escarpment was shedding primary grains. Subsequent silicification has cemented the grains and replaced any matrix fines. Dark oxide cementation has accompanied silicification.
977110	546846	6367920	Silcrete, mega-mottled, well indurated quartz grained rock. Occurs in a long silicified zone at N end of small playa-escarpment area ~2.6 km E of Little Pinbong Rockhole. Compare with samples R977108 & R977109. [Field # 326/4 c]	Observations: dominantly quartz sandstone with ~60% as well rounded grains, ~20% are subangular & ~20% are angular, grains are fine- to medium sand + occasional ferruginous lithic pellets (3-4 mm) containing angular quartz silt. Many quartz grains are sericite clouded, trace minerals are epidote + complex quartz with enclosed micro-biotite & muscovite. Rock texture is mostly clast supported and grains are poorly sorted. Cement is both cryptocrystalline quartz-anatase-zircon and brown titaniferous or red-brown ferruginous in form. Cement infills intergrain voids and some Fe-staining colours grain fractures, many quartz grains also have surface Fe-staining. Interpretation: this rock represents a silicified sediment where a large grain percentage is derived from mature medium to long transport history material, the remainder is immature and colluvial in origin. A mixed provenance – perhaps near to a fluvial channel bank where bank material shedding occurred or where a nearby escarpment was shedding primary grains into the channel. Subsequent silicification has cemented the grains and replaced any matrix fines. Dark oxide cementation has accompanied silicification.

Cont.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977111	546966	6363083	Calcrete, an off-white to very pale pinkish cobble sized carbonate clast enclosing cm sized brown Fe-rich fragments derived from an underlying *in situ* ferruginous host (?collapsed megamottle capping or megamottled saprolite). Sample is surface float exhibiting a micro-karstic dissolution surface that accentuates the contained insoluble clasts so they protrude the cobble's surface by several mm. Collected over the Baggy Green Au-in-calcrete anomaly. [Field # BG-Ca]	Observations: a carbonate cemented rock containing yellow-brown or red-brown ferruginous gravel clasts and quartz sand. The sand is fine- to medium-grained and is a mixture of angular to well rounded grains where all are matrix supported. The matrix-cement is ultra fine-grained and ranges from generally amorphous to partly laminated around large encapsulated clasts and where calcrete pisoliths have been incorporated it is concentrically laminated within those. Several foram tests and minute shell fragments were observed as: distinct discs (~0.2-0.5 mm) with coiled tube + many internal chambers, or as globular-lobate chambered tests, or as lattice-like forms. All are carbonate and most have a thin dark carbonate rind. *Lepidocyclina* sp. was identified, this was a benthic type (water depth of ~400 m) of marine foram of Lower to Middle Miocene age (exotic components, windblown in from the coast). Foram identification by L. Stoian, PIRSA Geological Survey—Biostratigraphy. The entrapped angular ferruginous fragments are probably derived from a shedding collapsed megamottle capping but a single more rounded clast has an incomplete cutan – implying firstly Fe-pisolith generation followed by limited surface transport (as down slope colluvium). Quartz within the densely ferruginous clasts is all very angular, fine-grained grit and they are cement matrix supported (matrix is dark yellow-brown or dark red-brown where thinned enough to pass light). Other lithic grains within the matrix include some relict plagioclase + composite quartz with enclosed micro micas + sericitic quartz. Carbonate has also infilled many cracks within the ferruginous fragments. Interpretation: this rock represents a cemented colluvial lithosol where wind + water borne sand has been incorporated prior to aeolian carbonate dust input and pedogenic cementation into a B_{Ca} hardpan horizon (sheet calcrete). Exotic dust from a distal coastal area is indicated by the numerous marine foram and shell fragment microfossils identified. Later deflation has exhumed and broken up that hardpan to form bouldery surface calcrete float.
977112	541741	6371145	Granular-fragmentary Fe-capping derived from underlying collapsed megamottled horizon. Upper most armouring cap of a retreating escarpment exposure revealing collapsed megamottles on megamottled saprolite derived from Tunkillia Suite orthogneiss. [Loose components placed in epoxy resin, thin-sectioned + block mount polished for opaque mineral work.] [Field # 303/55 a]	Observations (thin-section): all ferruginous fragments are highly angular and without cutans, they are FeOx + FeOH cemented saprolite with fine-grained angular quartz grit in matrix suspension. Some fragments are porous or vesicular, several are fractured (radially or concentrically) many are infilled with a dark yellow FeOH amorphous cement or an isotropic orange hyaline silica. Observations (polished mount): complex internal structure within the FeOx-FeOH materials, these resemble either relict metamorphic fabric in some clasts but in others it is a newer mesh-like or vein-like or zoned regolith fabric. Some fragments have FeOx lined fractures. A few fragments have remnant secondary overgrowth rinds (FeOx) these are weakly zoned towards their outer edge. Fragments are densely haematitic or goethitic or porous mixtures of both minerals. Interpretation: rock fragments represent a surficial gravel formed from the break up of a collapsed megamottle horizon where ongoing surficial exposure processes have reduced all fragments to sizes from sand to coarse gravel.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977113	544148	6366757	Roadside borrow pit profile exposure S of Little Pinbong Rockhole. Site is on the flank of a topographic rise. Fe-pisoliths + Fe-rich fragments within a grit-rich red-brown pedolith–soil. This forms a semi-consolidated cap to megamottled saprolite derived from Tunkillia Suite orthogneiss. [Loose components placed in epoxy resin, thin-sectioned + block mount polished for opaque mineral work.] [Field # 326/37]	Observations (thin-section): ferruginous granules to fragments are 50% subrounded & 50% subangular, they range from dark reddish to browns to near black. Two granules have orange cutan remnants implying re-cementation and subsequent erosional release. Some other clasts consist of red or brown stained clay-rich saprolite. One subrounded fragment consists of an Fe-pisolith aggregate. Its contains Fe-pisoliths (<1-~4 mm) that have multiply banded rinds on complex cores and are cemented with opaque Fe oxides. Observations (polished mount): haematite + goethite dominate the mineralogy. One Fe-pisolith bearing aggregate clast contains many tiny Fe-pisoliths (<1 mm) + a few larger pisoliths (<4 mm) + multiply banded rinds on complex cores and are cemented with more structureless haematite + goethite. One clast has sectioned tubules infilled with concentric banded haematite (?fossil root channel or invertebrate burrow). Two other dense goethite-rich clasts contain a complex web-like fabric and are probably of an Fe-pedolith cap in origin. Interpretation: this collection of fragments represent mixed source materials: collapsed megamottle surface gravel lag + colluvial Fe-rich cap derived pisolith aggregates + complex Fe-pedolith fragments + soil. *In situ* derived + some colluvial transport is suggested.
977114	546549	6369969	A weathered Fe-megamottle from a collapsed megamottle horizon below a thin residual bog-iron overprinted sediment. Megamottle is dark red with brown and yellowish streaks. It's also vuggy and porous due to fines loss. Remnant gneissic fabric can still be recognised. 50 x 75 mm thin section. [Field # 301/9].	Observations: an FeOx + quartz-rich rock, relict strained quartz aggregate strings and augen retain the original gneissic fabric, relict muscovite books & sheaves (<1%) occur. All clays and sericite are replaced by Fe-oxides (red, black, brown). This rock also has open voids. Quartz occurs as 'floating' individual angular grains within Fe-rich matrix, or as jig-saw-fit assemblages and as close-knit string and augen complexes. Some irregular patches are much less ferruginised. Much of this section is very opaque to transmitted light. Interpretation: this rock represents a ferruginous megamottle, formed originally in pallid saprolite. Fe-oxides have replaced most clay and sericite, however, the hydration alteration and Fe-cementation appear to have been isovolumetric, thereby leaving the original gneissic fabric mostly intact.
977115	546549	6369969	Bog-iron overprinted colluvium, sandy to gritty, overlying collapsed megamottle horizon of sample R977114. Rock is dark reddish to dark brown to dark grey with yellowish wisps. Numerous angular to subrounded lithic clasts of gravel to small pebble sizes occur ('plum pudding effect'). 50 x 75 mm thin section. [Field # 301/9 b]	Observations: dominantly a silty sand and grit containing some lithic gravel clasts (~5-7%). Quartz is ~65% well rounded, 20% subrounded and ~12% highly angular. The randomly scattered coarse-grained gravel clasts-fragments are rounded to subrounded and consist of: bright orange to brown Fe-stained saprolite where sericite and kaolinite fibres–flakes–laths are well preserved; + Fe-rich megamottle fragments with near opaque cement and 'floating' angular quartz fine grit. Overall this sediment is poorly sorted and of mixed maturity. The overall cement to this sediment is black & opaque to transmitted light, it is amorphous and infills many grain fractures. This cement resembles the bog-iron over prints of samples R977100 & R977101. Interpretation: this rock represents primarily a fluvial sediment with some colluvial input and its components are of variable maturity. Deposition near a channel bank where colluvial input was occurring is suggested. A bog-iron overprinting cementation occurred post deposition.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977116	545662	6369496	Vesicular Fe-megamottle, dark red, vuggy and partly porous, released from an eroding escarpment exposing a collapsed megamottle horizon on megamottled saprolite. 50 x 75 mm thin section. [Field # 301/16]	Observations: section is primarily an opaque ultra fine-grained Fe-oxides cement that is dark brown where thinned enough to pass light. By naked eye view this cement is vaguely mottled yellow-brown and very dark grey on a patchwork scale of 5-10 mm per patch. Voids of 1-7 mm in size (~15%), these are elongated parallel to relict foliation, as exhibited by strings of remnant strained quartz. Quartz (~7%) mostly occurs as 'floating' angular grains in a dark matrix (quartz: medium-grained silt to medium-grained grit). Some grit strings + stretched grain complexes + jig-saw-fit grain assemblages delineate relict augen bands and foliation. The dark matrix cement has penetrated most grain fractures and appears to have 'exploded' some grain complexes. There are ovoid patches (4-7 mm) infilled with brown semitranslucent cryptocrystalline to microcrystalline matter (?silica ± clay ± sericite). Removal of these materials during weathering and profile collapse may have led to the vesicular character of this rock. Interpretation: this rock is a ferruginous megamottle, now bereft of most fines (clay, sericite, etc) and where continued weathering and erosion has produced a vesicular structure. The parent protolith was gneissic.
977117	542191	6371540	Silcrete, complex internal structures and vaguely megamottled. Cream to yellowish to pale brown. Sample from large float block eroded off nearby megamottled saprolite. Primary silcrete capping no longer visible due to erosion and later dune cover. East shores of large N playa. 50 x 75 mm thin section. [Field # 303/50]	Observations: Quartz grit and fragment rock comprising single to complex interlocked grains, mostly strained, completely unsorted and randomly oriented, these form >80% of the section. Grit size ranges from medium silt to >2.8 mm. Framework support is dominantly grain-to-grain but matrix support also occurs in patches of more than 12 mm in diameter. Many quartz grains contain cloudy microscopic sericite + tiny sericite and clay flakes and fibres after micas and feldspars. No primary metamorphic fabric remains. Matrix cement is a mixture of titaniferous silica + QAZ forming a cryptocrystalline overprint, invasive of fractures. It is darker where red mottling is obvious to the naked eye. These cements have replaced remnant clays and sericite infilling voids and intergrain spaces prior to silicification. Interpretation: this rock is a silcreted arenose zone (pedolith) within a weathered profile. The quartz grit derives from a moderately to highly deformed rock – possibly a gneiss.
977118	541665	6371513	Dense and heavy, near black haematite-rich megamottle with large holes and vugs. Collected from a collapsed megamottle horizon at SE corner of large northern playa, 50 x 75 mm thin section. [Field # 303/57].	Observations: rock consists of cemented angular quartz: fine-grained silt to medium-grained grit (~75% of grains) + subrounded grit (~15% of grains) + ovoid or rounded grit (~10% of grains). Grains are a mixture of strained and unstrained, some are cloudy or contain micro micas and micro feldspar laths. Occasional angular lithic fragments occur, they are sericitic ± minute biotite flakes ± tiny quartz grains, these lithics may be partially silicified. Many quartz grains are embayed (etched by fluids). Fabric is a mix of grain supported and matrix supported in a ratio ~65:35. Matrix cement is dark reddish grey to black (haematitic) dense and unstructured cryptocrystalline. It infiltrates all grain fractures and has split multi-grain intergrowths into jig-saw-fit assemblages. Interpretation: this rock represents a collapsed arenose zone (pedolith) with possibly some colluvial sediment input. This arenose zone had few clay-sericite fines prior to Fe-oxide cementation. Some grain etching by fluids occurred before cementation was completed.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977119	534995	6364077	Calcrete, complex nodule–pisolith agglomerate, pale cream to pinks. Exterior of float cobble displays karstic solution features. Outcrop in cleared cereal paddock where deflation has exhumed the carbonate hardpan leaving surficial scattered boulders, broken sheet and cobble sized fragments. 50 x 75 mm thin section. [Field # 324/9]	Observations: a carbonate groundmass encapsulating quartz silt to sand and grit in a matrix supported framework. Quartz grains are of mixed provenance (Fluvial + aeolian + *in situ* weathering derived). The enclosing carbonate has complex structure, there are brown to dark yellow-grey pisoliths (2-5 mm) – many are recemented into larger nodules (10-25 mm) and these are recemented into an aggregate-sheet form where infilled invertebrate burrows or plant root tubes abound. Fractures cross-cut this rock and all are infilled or lined by later carbonate, some cross-cut pisoliths & nodules while others go around them. Pisoliths have concentric banding and distinct cutans (rinds). Pisoliths and nodules are of several generations and from different source materials because most have very distinct quartz grain forms (*i.e*. rounded *vs* angular). Darker ghosts of carbonate replaced angular lithics also occur (1-4 mm) these may have been sericitic due to remnant texture preserved, all contain 'floating' tiny quartz grit grains. Carbonate cement ranges from translucent pale yellow-grey to dark yellow-grey to brown and red-brown to near opaque. It infiltrates clastic grain fractures. More than ten relict foram tests and minute shell fragments were observed (~0.2-0.5 mm or smaller) as distinct discs with coiled tube + many internal chambers, or as globular-lobate forms, or as lattice-like forms, or fragments displaying parallel growth rings. All are carbonate and many have dark thin carbonate rinds. Fragments of *Lepidocyclina* sp. were identified, this was a benthic type (water depth of ~400 m) of marine foram known in sediments of Lower to Middle Miocene age. *Globigerina* sp. was also identified, this was a pelagic type of marine foram known from sediments of Lower Miocene age (both forms are exotic components, windblown in from the coast). Foram identification by L. Stoian, PIRSA Geological Survey—Biostratigraphy. Interpretation: this calcrete represents multiphase carbonate deposition: firstly, as aeolian dust, converted to pedogenic pisoliths by meteoric waters and pedogenic processes. Those pisoliths were then incorporated into larger nodules, and later these were incorporated within a single aggregate B_{Ca} horizon—hardpan sheet. The different quartz grain morphology between pisoliths and nodules suggest formation at several separated sites – possibly on sloping terrain. Some nodules and their cutans display breakage, suggesting a little surface transportation. The whole rock suggests a down slope (catena) migration of pisoliths and nodules prior to final cementation into a single pedogenic calcrete sheet. During the carbonate cementation phases some sericitic lithic fragments were replaced by cryptocrystalline carbonate but preserving the precursor mineral texture. An input of exotic dust from a distal coastal area is indicated by the relatively plentiful marine foram microfossils.

Continued overleaf.

R #	Easting	Northing	Sample & Outcrop Description	Petrographic Description
977120	543997	6364079	Silicified mottled saprolite, cream + yellow + red + brown. A hard silcrete horizon of variable thickness (<100-300 mm). Exposed by large road-metal borrow pit on rise just S of Little Pinbong Rockhole. Silcrete underlies remnant Fe-pisolith & collapsed megamottle fragment horizons. Extremely weathered Tunkillia Suite gneiss. 50 x 75 mm thin section. [Field # 326/38]	Observations: rock consists mostly of matrix supported angular quartz suspended in QAZ to titaniferous-ferruginous cements. Quartz grains are strained, some are in wavy strings and remnant stretched augen, these preserve a relict gneissic fabric. Grains range from coarse-grained clay to coarse grit, the larger grains host inclusions of micro mica, sericite and micro feldspar. Lithic fragments are either sericite replaced or silica altered. Some quartz grains are embayed and some are expanded jig-saw-fit assemblages. The mega-mottling has complex internal structure resembling collapsed webbing where strands are dark red-brown FeOx + granule-like bodies that are dark brown and distinctly rimmed. Cements have replaced all intergrain clays & sericite to yield a dominantly matrix supported rock. Interpretation: this rock represents megamottled saprolite derived by weathering a gneissic precursor, the whole has later been silicified preserving mottling and its detailed structure.

APPENDIX 5:

Wudinna North Regolith Landform Maps A & B unit symbols

Table A5-1: Modified RED scheme landforms and symbols as used on the Wudinna North Regolith Landform Maps A & B. Regolith terminology follows that of Eggleton (2001), Robertson and Butt (1997), and Robertson *et al*. (1996).

Relict Landscape Class	
Basement – Protolith ± Saprolith ± Pedolith ± Duricrusts	
RvP1	GAWLER RANGE VOLCANICS, **felsic volcanics**, porphyritic dacite at Mt Sturt, Protolith to Saprock: flows ± volcanic breccias, highly porphyritic & dark greyish brown, ± surficial fragmentary gibber-lag of parent lithotype. Primary age, Mesoproterozoic. Weathering time frame, Mesozoic-Cainozoic.
RvP2	GAWLER RANGE VOLCANICS, **felsic dykes** (undifferentiated), Protolith to Saprolite: aphanitic to porphyritic & dark greyish brown, ± surficial fragmentary gibber-lag of parent lithotype. Primary age, Mesoproterozoic. Weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RgP1	HILTABA SUITE, **granite,** Protolith to Saprock: weakly to non foliated, pinkish-grey, medium- to coarse-grained, ± quartz veins. Forms large whaleback inselbergs or tor & boulder outcrop – these are exhumed least weathered cores from a prior more deeply weathered profile. Primary age, Mesoproterozoic. Weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RgP2	TUNKILLIA SUITE**, foliated granite (orthogneiss)** Protolith to Saprock: highly deformed, pinkish-grey, coarse-grained, commonly cross cut by folded quartz veins. Forms small low whaleback inselbergs to low tor & boulder outcrop – these are exhumed least weathered cores from a prior more deeply weathered profile. Primary age, Palaeoproterozoic. Weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RbS1	**Weathered mafics**, Saprolith ± Pedolith: mostly dolerite ± basalt, relict amphiboles + plagioclase, ± alteration minerals (chlorite ± epidote ± actinolite). Weathering products: smectite ± kaolinite ± goethite. Banding-layering may be present, relict foliation occasionally exhibited. Dark green to green-grey to dark brown to near black. Variably ferruginous near weathered top where goethitic caps have developed (dark brown to yellowish brown). Primary age, Palaeoproterozoic. Weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RqP-	Q**uartz veins** (significant blows, dykes, stockworks) Protolith: siliceous hydrothermal fracture infill, white to pale grey. Veins may stand well proud of weathered host rock, outcrop usually surrounded by quartz scree-talus apron. Age, coeval & post granite emplacement. Quaternary exhumation.
RgS1	**Highly weathered granite**, Saprolite, (*c.f*. RgP1): medium- to coarse-grained, quartz + kaolinite, pallid ± white to grey vein quartz. Retains relict texture & foliation, upper portions typically red to orange & yellow-brown Fe-mottled &/or stained. Incipient silicification may occur at top as outcrop case-hardening. Weathered HILTABA SUITE granite, weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RgS2	**Highly weathered foliated granite**, Saprolite, (*c.f*. RgP2): coarse-grained, quartz + kaolinite, pallid, ± folded white to grey vein quartz. Retains relict texture & foliation, upper portions are typically Fe-megamottled &/or stained dark red, red, orange or yellow-brown. Incipient silicification may occur at top as outcrop case hardening or complete cementation to silcrete. Weathered TUNKILLIA SUITE orthogneiss, weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RgQm	**Collapsed megamottle horizon** , highly weathered granite (*c.f*. RgS2 & RgQd) Pedolith: Fe-cemented megamottles, collapse merged by clay removal from megamottled saprolite precursor. Forms distinctive Fe-rich indurated horizon capping many escarpments & mesas. Thickness <0.5-1.5 m + irregular base, dark red to dark red-brown to brown or rare yellow-brown. Haematite ± quartz ± goethite ± kaolinite. Horizon may display colluvial-alluvial components: exotic rounded to subangular grains, granules, pebbles incorporated from above by collapse process. Collapsed or disrupted Fe-stained vein quartz may be present. Weathered TUNKILLIA SUITE, weathering time frame, Mesozoic-Cainozoic. Quaternary exhumation.
RgQd	**Pisolitic Fe-pedolith**, extremely weathered granite (*c.f*. RgQm): an Fe-rich pisolitic horizon, ~0.3-1.0 m thick, dark red-brown to brown or yellow-brown. Abundant pisoliths (3-12 mm diam.), formed *in situ*, have well developed cutans, may include Fe-stained relict vein quartz fragments. All primary texture & foliation destroyed by pedogenesis. Where exposed or near surface, top may be calcreted, commonly incorporating Fe-pisoliths. Where landform has associated soil a strong reddish colour is evident, locally referred to as 'red-ground'. Weathered TUNKILLIA SUITE, weathering time frame, Mesozoic-Cainozoic. Poorly to selectively vegetated, mostly by low stands of *Melaleuca* sp.

Cont.

Soils (pedogenic overprint)	
RgQg	**Brownish earthy grit** (*c.f.* RgS1 & RgQm) Pedolith: Fe-stained earthy grit-rich horizon developed exclusively around HILTABA SUITE granite outcrop-subcrop. Reddish brown to strong yellow-brown, quartz + kaolinite + haematite ± goethite, ~1.0->2.0 m thick. Formed *in situ*, ± fragmentary relict vein quartz. If exposed or near surface, top may be variably calcreted (B_{Ca} horizon), usually landform presents surficially as dark orange loamy to sandy soil. Pedogenesis time frame, Quaternary. Where undisturbed, landform is well vegetated by various tree, shrub & grass species.
RgQh	**Red-brown sandy clay** (*c.f.* RgQg) Pedolith: clay-rich soil developed into saprolitic HILTABA SUITE granite. Dominantly red-brown gritty clay + minor redder variants, clay + quartz + FeOx (clay >35%), <2.0 m thick. Formed *in situ*, pedogenic fabric & obvious peds, soil typically has added aeolian sand (<15%). Nodular to platy calcrete is usually present (B_{Ca} horizon). Pedogenesis time frame, Quaternary. Where undisturbed, landform is well vegetated by various tree, shrub & grass species.
RgQe	**Reddish earthy grit** (*c.f.* RgS2 & RgQg) Pedolith: Fe-stained earthy grit-sand, derived mostly from highly weathered granite (gruss), developed exclusively around TUNKILLIA SUITE granite outcrop & subcrop. Red-brown to strong orange-red, quartz + haematite + clay (<15%), ~2.0-<4 m thick. Earthy pedogenic fabric, formed *in situ*, soil may have a variable aeolian sand input (<15%), nodular to earthy calcrete may be present (B_{Ca} horizon). Pedogenesis time frame, Quaternary. Where undisturbed, landform can be well vegetated by various tree, shrub & grass species.
R-Q1	**Reddish Loam,** Pedolith: deep red-brown to orange light sandy clay loam (15-20% clay) to clay loam (30-35% clay) a pedogenically active zone, >0.5-~1.5 m thick. Developed within transported substrate but may also be overlying or partly within deeply weathered *in situ* substrate. Calcrete is usually present as nodules to platy or earthy forms (B_{Ca} horizon). Occurs in western half of mapped area on gently undulating & sloping plains, may be extensively cultivated. Pedogenesis time frame, Quaternary. Where undisturbed, landform can be well vegetated by various tree, shrub & grass species.
Erosional Landscape Class	
Eroding Highly Weathered Basement – Saprolith ± Pedolith ± Duricrusts	
EgS1	**Eroding highly weathered granite** (*c.f.* RgS1) Saprolite: medium- to coarse-grained, quartz + kaolinite, pallid, ± white to grey vein quartz. Retains relict texture & foliation, upper portions usually red to orange & yellow-brown Fe-mottled &/or stained. EgS1 is rare in outcrop, it is exposed in some roadside excavations. Erosion has commonly been by deflational fines loss or by alluvial sheet flow. Weathered HILTABA SUITE granite. Erosional time frame, Quaternary. Vegetation is very sparse, limited to low shrubs & some grasses.
EgS2	**Eroding highly weathered foliated granite** (*c.f.* RgS2) Saprolite: coarse-grained, quartz + kaolinite, pallid, ± folded white to grey vein quartz. Retains relict texture & foliation, upper portions typically Fe-megamottled &/or stained dark red to red to orange & yellow-brown. Slopes are deeply incised 'badlands' terrain near retreating escarpments but become more gently undulating distally. Weathered TUNKILLIA SUITE orthogneiss. Erosional time frame, Quaternary. Vegetation is very sparse in badlands areas, limited to low shrubs & occasional grasses.
EgQm	**Eroding collapsed megamottle horizon** (*c.f.* RgQm) Pedolith: Fe-cemented megamottles merged by partial profile collapse into distinctive Fe-rich indurated horizon. Eroding horizon is <0.5-1.5 m thick with irregular base, dark red to dark red-brown to brown & rare yellow-brown. Slopes are deeply incised near retreating escarpments & release dark to bright red sediment onto lower slopes via fluvial channels into playas. Weathered TUNKILLIA SUITE). Erosional time frame, Quaternary. Mostly unvegetated on steep slopes, or variably vegetated by trees + shrubs.
EgQd	**Eroding Pisolitic Fe-pedolith** (*c.f.* RgQd & EgQg): Fe-rich pisolitic horizon <0.3-1.0 m thick, dark red-brown to brown & yellow-brown. Pisoliths on steep to moderate slopes are shed into soil by alluvial slope wash & colluvial processes, leads to cutan breakage or loss. Upper parts may be calcreted & can shed down slope as conspicuous lag. A strong red-brown hue is imparted to any associated soils by this landform or where it is farm cultivated. Locally, those soils are referred to as 'red-ground'. Weathered TUNKILLIA SUITE. Erosional time frame, Quaternary. Variably covered by stunted trees-shrubs.
EgQg	**Eroding brownish earthy grit** (*c.f.* RgQg, & EgQd) Pedolith: Fe-stained extremely weathered granite derived gruss developed exclusively around HILTABA SUITE granite outcrop & subcrop. Reddish brown to strong yellow-brown, quartz grit ± kaolinite + haematite ± goethite, ~1.0-2.0 m thick. Where exposed or near surface, top may be variably calcreted. On rolling downs S of Gawler Ranges National Park it's farm cultivated & forms dark orange loamy to sandy soils, slowly eroding via wind and slope-wash processes. Erosional time frame, Quaternary. Naturally well vegetated but poor where severely eroded.

Cont.

Eroding Depositional Landforms	
Eroding Colluvium	
Ecps	**Eroding piedmont slope deposit** (*c.f.* Dcps): S flanks of Mt Sturt, dominantly a colluvial long-term mass wasting-fan deposit on moderately steep – low angle slopes. Orange – red-brown sandy clay matrix with variably abundant highly porphyritic clasts of Mt Sturt protolith. Nodular calcrete may be present in a soil B_{Ca} horizon. Age, Quaternary. Poorly to unvegetated where eroding.
Ecdf	**Eroding debris flow** (*c.f.* Dcdf): gravity assisted mass wasting colluvium, loosened material from steep slopes. Grain sizes: clay to boulders in matrix supported framework. Material is derived from Mt Sturt in one or more mass wasting or flow-slide events. Matrix is a red-brown sand-silt-clay mix where larger lithic clasts or fragments are angular to rounded & unweathered. Landform is <1->4 m thick & erodes chiefly around escarpment exposures on N shores to large playa SW of Mt Sturt. Age, Quaternary. Poorly to unvegetated where eroding.
Eroding Aeolian Landforms	
Ee-1	E**roding orange sand dunes** (*c.f.* De-4): deflating–alluvially eroded, commonly overlying deeply weathered basement. Surface lags of calcrete only seen where sand is well eroded. Terrain can be gently undulating to locally gullied or sculptured to form steeper slopes. Some 'badlands' terrain occurs where dune cores are more clayey or are pervasively cemented by earthy calcrete. Erosional time frame, late Holocene. Commonly eroded areas poorly vegetated by shrubs & grasses.
Eegl	**Eroding gypsum lunettes** (*c.f.* De-7): usually low angle dune-like deposits on the E ± NE ± SE (lee sides) of clay pans and playa lakes. White to pale grey seed gypsum crystal fragments ± gypsum flour (kopi) ± gypcrete ± clay. Forms minor 'badlands' terrain fringing gypsum lunettes (De-7) & deposits located mostly around the large southern playa system. Erosional time frame, Holocene. Poorly grass-vegetated.
Depositional Landscape Class	
Lacustrine–Paludal Landforms	
Dl-1	**Playa floors**: landscape lows, depositional areas, grey to dark grey, dark brown to red-brown to red, gypsiferous mud ± clay & silt with minor sand, usually moist and soft to weakly coherent, may be organic-rich, some have thin white halite crusts &/or have thin near surface charcoal-rich lamellae (? land-clearing fires). Playas in this area are ephemerally water filled, some have bright red mud where haematite-rich run-off waters exit nearby Fe-rich outcrop. Age, Quaternary. Unvegetated.
Dl-2	**Playa shores + terraces**: ephemeral flood reworked aeolian sand ± fluvial sand to minor gravel ± lake shore strand-line gravel ± seed gypsum crystal fragments ± halite ± organic flotsam, uncemented. Can stand higher than playa shoreline to form terraces. Can form low hummocky terrain near minor fluvial debouchments. Usually pale yellow to pale brown or pale neutral hued, may be bright red near Fe-rich outcrop. Age, Quaternary. Unvegetated.
Dl-3	**Marshland**: fringing areas to ephemeral playa lakes or sites where seasonal waterlogging occurs or where significant deflation is producing incipient rain run-off concentrating depressions. Sediment/soil is mostly sandy to silty, mildly hummocky and may slope gently (<5^{o}) or be near level. Soils may be saline &/or gypseous and are probably alkaline (pH >8.6). Age, Quaternary. Vegetated by tussocky grasses ± club rushes ± saltbush ± samphire ± succulent creepers.
Dl-4	**Bog-iron**: palaeo-swamp deposit, massive black FeOx-MnOx-rich sand, <1.0-~1.5 m thick. Iron-Mn minerals chemically precipitated within ~~a~~ fluvial sediment (presumed GARFORD FM equivalent). Outcrop exhibits irregular blocky jointing near escarpments. Landform unconformably overlies the irregular top to landform RgS2. Two small areas of Dl-4 occur as inverted palaeotopography where retreating escarpments, buttes and mesas form playa fringing exposures. Age, Cainozoic. Vegetated only where sand covered, by trees, shrubs & grasses.
Dl-5	**Palaeo-claypan** (*c.f.* Dl-1): pallid to medium grey, gypsiferous clay ± silt ± minor sand, variably coherent to weakly lithified, may have darker hued organic-rich lamellae. Landform exposed through deflation or fluvial exhumation, especially significant within large SW playa complex. Many deposits result from aeolian dune ingress to playas cutting off ephemeral water input – leads to playa extinction. May retain relict eroding lunettes. Age, Quaternary. Non or poorly vegetated.
Ephemeral Creeks	
Da-1	**Ephemeral Creeks**: channel confined alluvium, usually loose but may be variably cemented by pedogenic carbonate (calcrete) and/or gypcrete. Silty to sandy to gravelly to pebbly & rare cobbles. Age, Quaternary. Landform can be tree lined: *Eucalyptus* sp, *Acacia* sp. & various shrub species.

Cont.

Colluvial Landforms	
Dcps	**Piedmont slope deposit:** S flanks of Mt Sturt, colluvium dominated, long-term mass wasting on moderately steep slopes. Minor slope-wash and localised fluvial activity have contributed sediment. Orange to red-brown sandy clay + variably abundant clasts of Mt Sturt porphyry. Clasts range from medium-grained gravel to occasional small boulders, & are mostly matrix supported but are occasionally clast supported. Nodular calcrete is present in B_{Ca} horizons. Landform previously recognised as Pooraka Fm. but here it's not typical of that Adelaide Plains defined formation. Landform may mask off from surface sampling techniques some or all of the underlying geochemical signature. Age, Pleistocene. Well vegetated by Mallee *Eucalyptus* sp., *Melaleuca* sp., *Acacia* sp., many shrubs & grasses.
Dcdf	**Debris flow**: a gravity assisted mass wasting colluvium, loosened slide materials from steep slopes. Grain sizes: clay to boulders in matrix supported framework. Material is derived from Mt Sturt in one or more mass wasting flow-slide events. Matrix is red-brown sand-silt-clay mix where larger lithic clasts are angular to rounded & unweathered. Landform is <1->4 m thick & covers an area of several km^2, on lower slopes & near the large NE playa it overlies pallid saprolite. Landform may mask off from surface sampling techniques some or all of the underlying geochemical signature. Age, Pleistocene. Well vegetated by Mallee *Eucalyptus* sp., *Melaleuca* sp., *Acacia* sp. & many shrub types.
Dcta	**Talus**: a gravity assisted, mechanically moved deposit of loosened rock from precipitous slopes around Mt Sturt. Clast sizes: gravel to boulders & large blocks, little or no fines, as brownish clast supported framework. Deposit slopes <15-<25°. Material forms a geomechanically unstable narrow wedge around part of the porphyry outcrop. Age, Late Pleistocene-Holocene. Poorly vegetated by a few shrubs & trees .
Aeolian Landforms	
De-1	**Yellowish sand plain**: light yellowish brown to light greyish brown, fine- to medium-grained siliceous sand, loose free-running at surface but deeper is weakly bound by earthy pedogenic carbonate. Thickness ~0.3-<2.0 m, & <5 m below minor dunes, landform mantles palaeotopography forming low rolling undulations but may display minor linear dunes or dendritic dune patterns. Landform is stratigraphically equivalent to larger dunes of landform De-2. Geological correlation is MOORNABA SAND. Age, Late Pleistocene (see De-2 for dating). Well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees, abundant spinifex & many shrubs.
De-2	**Yellowish longitudinal dunes**: light yellowish brown to light greyish brown, fine- to medium-grained siliceous sand, loose – weakly bound below 1.5 m by earthy pedogenic carbonate. Dunes <2->10 m high. Landforms occur in isolation or form significant dunefields, dunes may be forked & can over-run older aeolian landforms (*i.e.* De-3 & De-4). Dunes are stratigraphically equivalent to the sand plain of landform De-1. Geological correlation is MOORNABA SAND. Age, Late Pleistocene; OSL age range 26,300 ± 1300 yBP to 17,000 ± 1300 yBP. Well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees, abundant spinifex & many shrubs.
De-3	**Orange sand plain**: dark orange-yellow to medium orange-yellow to orange-brown, fine- to medium-grained siliceous sand, loose to moderately bound by pedogenic carbonate. Sand plain is ~0.3-<2.0 m thick, & mantles palaeotopography forming low relief undulating surfaces. Landform is related stratigraphically to larger dunes of landform De-4 & can be overlain by the dunes of landform De-2. Geologically this sand included within MOORNABA SAND. Age ? Late Pleistocene. Usually well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees + spinifex & various small shrubs. Landform is farm cultivated S of Gawler Ranges National Park.
De-4	**Orange longitudinal dunes**: dark orange-yellow to medium orange-yellow to orange-brown, fine- to medium-grained siliceous sand, loose to moderately bound by pedogenic carbonate, indurated carbonate rhizomorphs at depth. Dunes <2.5-~5 m thick & occur in isolation or in minor dunefields but are generally broader & lower than those of landform De-2. Dunes may be forked & can be over-run by younger sands of landforms De-1 & De-2, these may preserve an FeOH bearing palaeosol (<0.5 m thick) in De-4. Dunes commonly truncated or modified by later erosion & in many cases only present as partial dune cores. Geologically this sand included within MOORNABA SAND. Age, ? Late Pleistocene. Typically well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees + spinifex & various small shrubs. Landform is farm cultivated S of Gawler Ranges National Park.
De-2/ De-4	**Complex longitudinal dunes**: landform De-2 over-riding landform De-4. Several occurrences recognised, evidenced in track-road cutting profiles & erosional exposures. Major sand colour contrast De-2 (Munsell Color 10YR 6/3 – 10YR 8/5, dry) *vs* De-4 (Munsell Color 7.5YR 7/7 – 2.5YR 6/8, dry); carbonate induration stronger & texture more clayey in De-4 (>5%) *vs* De-2 (<1%).

Cont.

De-5	**Complex sand plain**: light greyish brown to light yellowish brown, fine- to medium-grained siliceous sand, loose free-running at surface but may be weakly bound by earthy pedogenic carbonate. Thickness ~0.3->2.0 m & <4 m below minor dunes, landform typically thinly mantles palaeotopography forming low rolling undulations & minor anastomosing linear or dendritic to festoon dune patterns. Landform may be stratigraphically equivalent to aeolian landforms De-1 & De-2 but forms distinctive terrains in Pinkawillinie Conservation Park and Gawler Ranges National Park. Age, ? Late Pleistocene. Typically well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees, abundant spinifex & many shrubs.
De-6	**Lunettes**: usually low crescent-shaped clayey to silty parna deposits as low angle dunes on E ± NE ± SE (lee sides) of clay pans & playas. Pale colours, commonly associated with low density—powdery gypsum (kopi), may have darker surficial layers, may be quite clayey towards base. Up to 7 m thick. Some playas exhibit 2-3 generations of overlapping lunettes. Age, Quaternary. Vegetated dominantly by grasses & some low shrubs.
De-7	**Gypsum lunettes**: usually low angle crescent-shaped landforms on the E ± NE ± SE (lee sides) of playas. White to pale grey, composed of seed gypsum crystal fragments, may be partly clayey towards base. May be >3 m thick & most common in-around large SW playa complex. Some playas exhibit 2-3 generations of overlapping lunettes. Age, Quaternary. Sparsely grass vegetated.
De-8	**Playa side dunes**: off-white to pale yellowish to pale brownish, siliceous sand, loose free running, rarely exhibits any calcrete but may contain appreciable earthy to well crystallised gypsum. Irregular to curvilinear asymmetrical dunes, island forms may be complexly crested. Occur on some playa headlands, shore proximal areas & forms playa islands. Thickness 3->20 m. Age, Quaternary. Sparsely to densely vegetated by shrubs of many genera and sometimes by trees of Mallee *Eucalyptus* sp. and *Melaleuca* sp.
De-9	**Playa periphery sand plains**: off-white or pale yellowish or pale brownish, siliceous sand, free running to weakly bound by gypsum, rarely exhibits any calcrete. Near flat to slightly sloping areas of sand associated with playa side dunes (*c.f.* De-8). Occurs around shore proximal areas and islands, may exhibit some deflation or some alluvium or some ephemeral wave action erosion near shore areas. Thickness <1-~3 m. Age, Quaternary. Sparsely to well vegetated by phreatophytic – halophytic shrubs & forbs of several genera, stands of paperbark *Melaleuca* sp. may adorn this landform's near lake fringe.
De-10	**Irregular dunes**: light yellowish brown to pale orange, fine- to medium-grained siliceous sand, loose free-running at surface but at depth may be weakly bound by pedogenic carbonate. Thickness ~3-<6 m. Landform fringes the Gawler Ranges high ground & extending out from it towards the S, forms irregular dendritic to curvilinear dune patterns. Commonly associated with aeolian landforms De-5, De-1 & De-2 but forms distinctive terrains in Gawler Ranges National Park. Age, ? Late Pleistocene. Typically well vegetated: Mallee *Eucalyptus* sp. & *Melaleuca* sp. trees, abundant spinifex & many shrubs.
Induration Modifier (duricrusts & pedogenic cements)	
Cc	**Pedogenic carbonate**, calcrete: laminated sheets to massive horizons to nodular aggregates, surficially exposed mostly in erosional terrain around some playas & minor alluvial channels, also exposed in road cuts, borrow pits, some cultivated land & where deflation occurs. Usually pallid to yellowish & occurs at depths of 200-550 mm within soil B_{Ca} horizons. Where developed on/in RgQd or RgQm then Fe-rich fragments or pisoliths are incorporated. Age, Quaternary. Typically non vegetated where exposed by deflation.
Cg	**Gypcrete** ($CaSO_4.2H_2O$): pale grey to pale yellowish grey, chalky-hard to crusty gypsum cement &/or interlocking crystalline mats, capping powdery kopi. Usually localised near or within playas or on the crests to lower flanks of gypseous lunettes. Thickness <100 to ~500 mm. Age, Quaternary. Typically non vegetated.
Cs	**Silcrete**: dominantly a siliceous cementation of host lithotypes. Greyish to yellowish, very hard & splintery, ± anatase wisps ± relict zircon ± entrapped relict quartz veins. May display internal banding parallel to the original pedogenic surface. Typically 0.1-~0.3 m thick ± underlying incipiently silicified zone to ~0.3 m. Mostly developed within quartz grit-rich arenaceous zone of *in situ* weathered felsic lithotypes but can also cement alluvium & colluvium. Age, ?late Cretaceous-Tertiary. Typically non vegetated.

Cont.

Complex Regolith Terrane	
Striped colours	Landscapes can include complex regolith patterns or mosaics, where distinct landforms overlap or interdigitate in detailed ways, each component with its own provenance or regolith zone (e.g. Dl-1 on RgS2 or De-3 on RgQm plus EgQm ± Cc ± Cs, *etc.*). It is impossible to show details of these complex patterns at 1:20 000 scale, these terranes are therefore represented by stacked tags (e.g. De-1/RgS2 or De-1 + RgQm + EgQm, *etc.*) and striped colours. Adopted bimodal and trimodal striped colours equate to those of each individual landform for that polygon (see Symbol Key) but do not reflect abundance nor stratigraphic order or regolith architecture. Induration overprint symbols may still apply to these striped polygons in some cases.
Regolith Depth Parameters	
•45	Known depth to unweathered basement in metres. (red numbers)
•12	Known thickness of combined transported cover in metres. (blue numbers)

APPENDIX 6:

Wudinna North Regolith Landform Maps

A & B at 1:20,000 scale,

folded & in pockets.

Digital versions are on the CD-ROM (rear of Volume 1.)