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**ANNUAL REPORT
EXPLORATION LICENCE 27/90
CORINNA, TASMANIA**

for the period
22nd March, 1991 to 22nd March, 1992

BY

C.H.C. SHANNON

26-2-1992

CORINNA CLAYS PARTNERSHIP

(South Raeburn Pty. Ltd & C.H.C. Shannon)

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Introduction

During the early part of the reporting period it was expected that samples dispatched to Ballarat for Savage Resources would be available for chemical and ceramic test work. Once it was apparent that it was unlikely that the material could not be retrieved with any certainty it was decided to take a new set of samples from the area. This was achieved using an excavator, but owing to wet conditions in the early summer this project was delayed until January. Previously a series of samples had been taken for assessment as single source craft pottery material, and the fired specimens were also rather late in being processed. Aliquots of samples from the excavator program have been prepared for chemical assay. The field notes of the Savage Resources drilling program have been obtained and the logs have been typed up for this report.

In summary the project so far has cost more and achieved less than was originally hoped for, but is still considered a live prospect.

History of previous exploration

The Browns Plains area was the site of some old timer gold diggings, apparently not terribly successful. Mostly gold was won from sluicing of creekbeds and there is some evidence of amateur activity continuing at present. There were some attempts to follow conceived (or misconceived) deep leads with adits and trenches. A section of water race can be followed for a few hundred metres and this work includes aligned sections of deep trench that are apparently intended to cut through a divide. It appears this work was given up although it is conceivable that there was a tunnel that is now silted over. Some of the access to the more famous Rocky River diggings crossed the area and segments of the early bridle track can be discerned were it was necessary to cut through the peat.

In the 1970's there was a program by Industrial and Mining Investigations (which became Savage Resources later) targetted on tin but it was concluded that the resource was sub-economic even before the price dropped.

The clay was noted by the author as a geological curiosity prior to 1985 but became of some interest when the Deloraine Pottery was being set up and Mr Stan Cumberbatch of Bamix, suggested that a dark organic looking sedimentary clay derived from a granite would be a better proposition than the non-white firing ball clay from Pipers River that was being discussed at the time. Subsequently samples were collected from the discovery site and examined by the consultant John Hosking of Marafield Ltd whose initial examination for pottery use was fairly favourable, but overshadowed by his assessment that the clay had much better potential as a calcined clay pigment extender. Later work including the auger drilling conducted by Savage Resources was directed to this end use and included a second report from

Hosking. But after the samples were delivered to Ballarat he claimed that two other deposits in N.S.W. showed superior potential and he refused to examine the material further. The samples were then moved around inside a shed very roughly and later put outside and the majority dumped somewhere in an excavation which was being used to dispose of unwanted clay slurry. The samples that remained outside were in Nitropril bags which disintegrate in sunlight and it was found by November last year that the sample numbers could not be read on any of them (R.W. Annett pers. comm.). It is conceivable that the excavation could be dug out with in theory a rather better chance of getting bags on which the essential identification could be read, since they would be better protected from the light in their muddy grave but the chances seem against getting more than the odd legible bag after much trouble and expense.

After all this the ceramic usefulness of the deposit had hardly been tested.

Geography and Vegetation

The Exploration Licence area is mostly gently dissected plateau draining towards Timbs Creek. Relicts of an intact plateau surface at around 260-265m occur about the old council quarry and along the divide between Timbs Creek and the Whyte River. In the North there is a distinct step in the divide to a higher plateau surface at c.275m. On the Whyte River side there is a steep escarpment from the plateau edge. On approaching the tops country gullies transform into wide inclined marshes. The tops and gentle slopes are peat covered and support a short heath which includes but is by no means dominated by buttongrass (*Gymnoschoenus sphaerocephalus*). The marshes have other rushes as the dominant sedge and little buttongrass. There are pockets of tall heath with *Banksia*. The only eucalypt species is Smithton peppermint *Eucalyptus nitida*. It occurs sparsely as isolated individuals and clumps on the plateau. The escarpment vegetation is stunted *Eucalyptus*, *Leptospermum* and *Acacia* at the edge developing into *Nothofagus* with horizontal rainforest lower down and in the gullies. The stripped areas associated with the council quarry and roads are revegetating with wildflower species and shrubs. The corresponding dump areas where the peat is piled up have tall heath with sagg (*Gahnia grandis*). The disturbed peat covering the track system put in for Savage Resources has acquired lots of seedlings but not yet 10% vegetation cover. The area seems free of environmental weeds.

Apart from the Corinna road itself the major track through the area is the access to the Whyte River gauging station. It is much used for recreation. The branch tracks from it are dead-end logging roads following spur ridges. Quite a lot of use is made of the quarry itself since it is comfortable open space with a view, accessible to ordinary vehicles. The two ponds are artificial explosion craters.

Geology

The bedrock unit for the whole area is the Precambrian Timbs Formation which is a turbidite unit of micaceous schist usually with thin (0.1-10.0cm) alternating more sandy/less sandy beds and some thicker sandstones. The Tertiary rocks unconformably overlie the Precambrian. In previous work the author distinguished a provisional "Bullocks Head Formation" of channel-filling, polymictic gravels of cobble to boulder size with simple, rational heavy mineral suites and a "Brown Plains Formation" with basal sheet-forming pebble to cobble gravels overlain by lacustrine clay and coarse sand, and with indications of a very diverse heavy mineral assemblage. The Bullocks Head Formation was conceded to be overlain by the local basalts but it appeared that the Brown Plains Formation could be younger than the basalt, unfolded and related to accordant plateau surfaces. It has since been shown that other outcrops of Brown Plains Formation type sheet gravel and clay and sand are covered by the basalt at 451910 on the Corinna Road.

The Brown Plains Formation was seen to be folded with dips up to 10 degrees in some excavations of the January digging program, and once the concept is admitted dipping strata can be seen in the council quarry at several points and in the main exposure at 483917. It now appears to be folded in a puff-and-saucer style of some complexity with basins typically some 100m across and amplitude of 10m or so. The two belts of clay now seem to be separated by a structural high rather than being confined to separate fossil vallies. Of particular relevance is the recognition of a separate higher clay bed at several localities and on both sides of the high. Some contemporaneous folding would have to be involved since the main clay seam thins out markedly over the high and at the edge of a saucer-basin. In the interior of the saucer-basin the thickness of the main clay seam is about 5 metres. A unit folded to this degree cannot be deposited by the process that gives rise to typical accordant plateau surfaces. The "Bullocks Head" of which there is a small outcrop at 473917 could perhaps survive as a member of the "Brown Plains".

Achievements to February 1992

Data salvage

The logs and sample descriptions for the Savage Resources Ltd auger drilling program have been extracted from the field books and are reported for the first time in Appendix 1. The clay samples from this investigation that were sent to Ballarat have been deemed irretrievable. Although it is possible that some of the samples buried under mud might be able to be salvaged, those left on the surface have lost their identification. The more detailed log information does provide some useful information not discernable on the cross-sections shown in the Savage Resources reports.

Excavator pit program

The project had been relying on these samples. To cover the deficiency a new set of samples were collected by excavator, so that at least a skeleton coverage of chemical analyses and ceramic performance tests could be obtained. The sites chosen for the excavator pits have also increased slightly the area of ground known to be underlain by clay deposits. Appendix 2 contains the sample descriptions and stratigraphic sections for the January excavator digging program.

Density determinations and tonnage estimate

Other work has been done using samples from surface exposures. Density tests were run on repeat samples of the Savage Resources GS series based on the concept of extracting a cylinder of measurable length and diameter with a suitable hand auger. Samples were oven dried at 150 degrees C. Results were as follows.

TABLE 1

Sample	D(cm)	L(cm)	V(cc)	M(wet)	D(wet)	M(dry)	D(dry)	Moisture
GS 1	8.5	30	1702.35	2638	1.55	1908	1.12	27.7%
GS 2	8.5	25	1418.63	2339	1.65	1740	1.23	25.5%
GS 3	8.5	24.5	1390.26	2234	1.61	1525	1.10	31.7%

Average dry matter density - 1.15 (tonnes/cubic metre)

These samples are all of the unleached brown form of the clay which is noticeably less dense than the pale brown to white leached form. Nevertheless the tonnage estimate based on Savage Resources arbitrary figure of 1.5 for the density, i.e. 500,000 to 700,000 tonnes should be revised downward in terms of contained dry matter to 383,000 to 536,000 tonnes. It is considered that sufficient volume of clay is established by the Savage Resources investigation and there is no practical need to adjust for density or to count the additions found in January.

Craft pottery experiment

Data for a craft pottery experiment is shown in Appendix 3. This includes field information and Munsell scale colours from the author and the ceramics consultant's comments. The processing applied was a basic blunging, straining through a rather coarse wet seive, drying and a second slaking. It is fairly unusual to achieve a base from which pots can be thrown with this amount of work and it is usual for pottery bases to be blends to be made up from several sources. The leached material was usable though lacking in plasticity after this treatment, but it does appear that the darker material may be unsuitable for craft use as was anticipated at first. The problem may be connected with the difficulty of disaggregating clays affected by

the case-hardening phenomenon, so dark clays in the body of the deposit may do better. The lignite particles were effectively removed. The plasticity can probably be improved by screening out more of the sand and undispersed clay aggregates. To quote previous work by Hosking (1987) "Most of the clays are not very strong or plastic, but this is almost certainly a function of the high level of fine sand present, as evidenced by high >10um contents. The finer fractions increased dramatically in strength and plasticity. ---The GS clays --- contained some very tough particles which resisted dispersion."

The vitrification of the pots was good, as could be anticipated from the high potash contents shown by previous assays. In terms of iron and titania content, all the assays for the area (Hosking 1987, 1987b) would appear to be superior to all the clays designated ball clays of the table of Tasmanian clays in van Moort (1978), although some allowance needs to be made for higher loss on ignition values in the Brown Plains material. Comparison on LOI free basis with five export ball clays in Bristow (1987) shows comparable iron and titania values as follows.

TABLE 2

Assay value	Hywhite Superb	Hymod Blue	1001 S Schmidt	Bandy Black	Troup Texas	GS 34 calcined	GS 30/31 "
SiO2	55.5	57.8	70.4	63.0	68.2	60.81	60.28
Al2O3	35.9	33.8	22.7	30.0	36.0	31.79	30.79
Fe2O3	1.2	1.5	1.03	1.31	1.62	1.13	1.35
TiO2	1.0	1.0	1.5	1.72	1.41	0.89	1.55
CaO	0.22	0.32	0.22	0.09	0.14	0.03	0.05
MgO	0.45	0.55	0.81	0.39	0.63	0.88	1.06
K2O	2.0	3.3	2.27	1.82	1.06	4.16	4.66
Na2O	0.22	0.44	0.23	0.28	0.13	0.21	0.23

Proposals for future work.

The option for major industrial use is to be followed up with chemical assays and size determinations on the sample material recently collected, with further ceramic performance tests as appropriate. The craft option is to be followed through supply of appropriate material to resident experts. It may be possible to add the next batch of chemical tests to this report. Early encouragement may lead to a need for a test quarry for pilot scale test work.

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APPENDIX 1
BROWN PLAINS AUGER LOGS
SAVAGE RESOURCES PROGRAM
JULY 1987

Brown Plain 01. Location co-ords. 91700N, 48100E. Station level 262.14m. Logged by R.W. Annett, 7-7-1987. Weather cold, fine.

Sample	From-to	Sample description
BP1/01	0.0-0.5	gravels and black sandy peat, partially cemented
BP1/02-03	0.5-1.0	black sandy peat (very dusky red 10R 2/2)
BP1/03	1.0-1.3	as above grading to dark reddish brown 10R 3/4.
BP1/04-05	1.3-1.65	dark reddish brown sands (BP 04) and at base first touches of clay (mod. yellowish brown 10YR 5/4).
BP1/05	1.65-2.1	clay entire sample width, 10YR 5/4 grading at depths to lighter colour; yellowish grey 5Y 7/2.
BP1/05	2.1-2.45	clay entire sample width, 5Y 7/2 and 10 YR 6/2.
BP1/06	2.45-2.60	change (gradational) to laminated, very dusky red 10R 2/2.
BP1/07-09	2.6-3.25	clay entire sample, 10R 2/2 very dusky red grading to 5YR 3/2 towards base.
BP1/10-11	3.25-3.65	as above, still variances in shade now 5YR 3/2, a greyish brown.
BP1/12-19	3.65-5.45	clay entire sample 5YR 3/2.
BP1/20-21	5.45-5.85	clay entire sample 5YR 3/2 (possibly a little darker).
BP1/22-23	5.85-6.25	clay entire sample, 5YR 3/2, shade darker?
BP1/24-25	6.25-6.45	as above 5YR 3/2 (possibly darker, on site comment H.S.)
BP1/26-27	6.45-6.8	as above 5YR 3/2 (possibly lighter, on site comment H.S.).
BP1/28-29	6.8-7.0	as above 5YR 3/2; at end of interval slight change, occasional light patches 10YR 8/2 very pale orange clay with quartz clasts.

BP1/30	7.0-7.25	laminated very pale orange clay/quartz clasts and greyish brown clay, now at base clay of 10YR 6/6 dark yellowish orange.
BP1/31	7.25-7.35	dark yellowish orange and very pale orange; transition to bedrock?
BP1/32	7.35-7.85	orange-brown and white sands, foliated but with no definately evident mica (hard to drill).
BP1/33	7.85-8.15	more of the above; end of hole.

Brown Plain 2 location co-ords 91700N, 48200E. station level 261.21m , Stacpoole's post auger rig, logged by Bob Annett, 7/7/1987, weather fine.

Sample	From-to	Description
BP2/1-2	0.0-0.8	gravels
	0.8-1.0	fine gravels and touches of clay.
	1.0-1.25	fine gravels (surface hugging type), brown peaty sand component. Troubles with water and hole collapsing.
	1.25-1.95	orange-brown clays/sands with numerous quartz clasts.
	1.95-3.25	as above with occasional peaty colour and smears of light grey clays, N7. Hole abandoned.

Brown Plain 3. Location 91800N, 48200E. Station level 258.18m. large diameter post auger, Stacpoole's contractor. 7/7/1987, fine weather.

Sample	from-to	Description
BP3/1	0.0-0.9	light grey silty sand
BP3/2	0.9-1.25	peaty-brown clayey sands grading to sandy clay
BP3/3	1.25-1.6	peaty-brown sandy clay, partially cemented.

BP3/4-5	1.6-2.05	peaty-brown sandy clay, occasional patches of lighter material.
BP3/6-7	2.05-2.5	peaty-brown sandy clay grading into light grey sand with some quartz gravel.
BP3/8	2.5-2.8	light grey sand with some quartz gravel.
BP3/9-12	2.8-3.65	as above. occasional rounded quartz clast.
BP3/13	3.65-3.95	as above, deeper orange colouration at depth.
BP3/14-15	3.95-4.45	moderate yellowish brown granular sands, occasional rounded quartz pebble.
BP3/16	4.45-4.8	granular sands again, blotchy orange brown and greys, occasional grain size differences.
BP3/17-18	4.8-5.25	as above grading to sticky light grey sands (weathered arkosic sand, on site comment H.S.).
BP3/19	5.25-5.6	as above (i.e. sticky light grey sands), occasional rounded pebble.
BP3/20	5.6-5.95	sticky light grey sands, etc.
BP3/21	5.95-6.25	grey sands, occasional rounded quartz pebble, no stickiness.
BP3/22	6.25-6.4	Icky grey brown sands. End of hole.

Brown Plain 4 auger log Location co-ords 91800N, 48280E. Station level 261.01m drilled 8/7/1987, logged by Bob Annett. Stacpoole's large auger, fine weather.

Sample bag No.	From-to	Sample description
BP4/01	0.0-0.9	gravels
BP4/02	0.9-1.95	brown peaty sands, no sample.
BP4/03-06	1.95-2.25	pale yellowish brown, 10YR 6/2, (presumably clay, ed.), contamination from side, grading through moderate yellowish brown to greyish brown 5YR 3/2.

BP4/07	2.25-2.5	again contamination but complete sample interval of clays; 5YR 3/2.
BP4/08-11	2.5-3.0	complete interval of greyish brown clay 5YR 3/2, quite dry and powdery, plant fossils.
BP4/12	3.0-3.25	greyish brown clay, 5YR 3/2, less fossil material.
BP4/13-14	3.25-3.45	as above, possible occasional quartz clast 2mm. 5YR 3/2.
BP4/15-19	3.45-4.1	greyish brown clay, 5YR 3/2, part of this sample fell off.
BP4/19	4.1-4.35	greyish brown clay, 5YR 3/2, most fell off; this small amount c.f. BP4/19 bag 1 above.
BP4/20-23	4.35-4.7	greyish brown clay, 5YR 3/2, with pyrite clots.
BP4/24-27	4.7-5.45	greyish brown clay, 5YR 3/2, with pyrite clots - masses; with spots of very pale orange clay 10YR 8/2.
BP4/28-30	5.45-5.95	slight touches of 5YR 3/2 in top part then mainly dark yellowish grey 5Y 8/1 with small and big amounts of dark yellowish orange 10YR 6/6 (presumably clay ed.). More towards base.
BP4/31-32	5.95-6.25	complete sample interval of dark yellowish orange, 10YR 6/6, at base of interval small sand horizon.
BP4/33	6.25-6.6	pieced sample of dark yellowish grey 5Y 8/1 and dark yellowish orange 10YR 6/6, sample becoming sandy, bottom of interval mix (? ed.) or grey clayey sand.
BP4/34	6.6-7.25	light grey and speckled orange granular sands in clayey matrix, akin to decomposed granite.
BP4/35	7.25-7.65	orange-brown granular sands with clay matrix.
BP4/36-37	-7.65	very pale orange 10YR 8/2 and pale yellowish orange 10YR 8/6 material basically clay.
BP4/38	7.65-8.15	no sample - auger broke (possibly on stream boulders, ed.). End of hole.

Brown Plain 5 auger log, Location co-ords 91900N, 48450E. Station level 263.78m drilled 8/7/1987, logged by Bob Annett. Stacpoole's medium auger, raining misty to cold overcast weather.

Sample bag No.	From-to	Sample description
BP5/01-02	0.0-1.0	surface hugging gravels and finer grained grey and brown sands.
BP5/03-10	1.0-3.0	coarse sand c.f. above, 2mm grainsize, no large pebbles
BP5/11-13	3.0-3.5	coarse sand as above, slight clay matrix giving it a "decomposed granite look".
BP5/14-17	3.5-4.2	grey sands
BP5/18	4.2-4.35	grey sand; increase in moisture and harder.
BP5/19	4.35-4.50	hardpan, distinct colour change peaty-brown sands some clay component.
BP5/20-22	4.5-5.0	dark peaty-brown stained sand, some cementig giving nodules, poorly sorted, >6mm clasts; sands much more sticky.
BP5/23	5.0-5.15	start as above, then distinct change to silty clay, dark yellowish brown 10YR 4/2.
BP5/24	5.15-5.35	hard drilling interval of greyish brown 5YR 3/2 clay, finely laminated, crumbly with sand contamination.
BP5/25	5.35-5.45	complete sample interval of clay, 5YR 3/2. At very bottom slight trace of 10YR 6/2 pale yellowish brown. Good clean sample.
BP5/26-27	5.45-6.0	complete 5YR 3/2
BP5/28	6.0-6.4	complete 5YR 3/2 and patches of pale yellowish brown 10YR 6/2, occasional touches of pyrite.
BP5/29	6.4-6.8	complete interval of clay, banded greyish brown 5YR 3/2 and pale yellowish brown 10YR 6/2.
BP5/30	6.8-7.0	complete interval of clay, 80% pale yellowish brown 10YR 6/2; 20% 5YR 3/2, small nodules of pyrite.

BP5/31-32	7.0-7.2	varying shades of clay lightening with depth to a predominant yellowish grey 5Y 7/2 also a touch sandy in "teeth test".
BP5/33	7.2-7.5	all clays of various shades, touches of greyish brown, moderate brown 5YR 4/4, yellowish grey 5Y 7/2 and now a dusky yellow 5Y 6/4.
BP5/34	7.5-7.7	dark yellowish grey clay 5Y 7/2, some sandy component, touch of 5YR 3/2.
BP5/35	7.7-8.0	again clays, mixture of colours top half dominated by "sandy" clays pale yellowish brown which grades to complete clay of dark yellowish orange 10YR 6/6.
BP5/36-37	8.0-8.3	top part of interval has dark yellowish orange clays which grade to dark yellowish orange sands. Some contamination.
BP5/38	8.3-8.5	mixture of orange clays and sands, quite a few large flat subrounded pebbles >6cm. of quartzite and nodules of cemented quartz grains Fe-stained.
BP5/39	8.5-9.0	orange clayey sands with lots of sub-rounded quartz gravel (>5cm clasts).
BP5/40	9.0-9.4	as for previous interval, end of hole.

Brown Plain 6 auger log Location co-ords 91900N, 48350E. Station level 259.04m drilled 12/7/1987 (failed first attempt, stopped by hardpan at 0.3m) and successfully on 23/7/1987, logged by Bob Annett. Stacpoole's auger, sunny cold weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	precollar hardpan
BP6/01-02	1.2-1.5	clay interval in part sandy, a blackish red 5R 2/2
BP6/03-06	1.5-2.4	clay interval basically a dark yellowish brown with a small horizon of moderate brown 5YR 5/6 sandy clay.
BP6/07	2.4-3.0	dark medium brown 5YR 3/4 sandy clays with pebbles; at base of interval buff sands.

3.0-4.5	sands, either dark brown or grey with some clay component
4.5-5.4	sands and gravels, buff to off white. One section "decomposed granite" appearance. End of hole.

Brown Plain 7 auger log Location co-ords 91900N, 48250E. Station level 258.49m drilled 12/7/1987, logged by Bob Annett. Stacpoole's auger, weather overcast, freezing.

Sample bag No.	From-to	Sample description
BP7/01	0.0-0.55	surface hugging gravels, no real large pebbles.
BP7/02	0.55-0.75	clay entire interval! greyish brown 5YR 3/2.
BP7/03-05	0.75-1.5	complete section of 5YR 3/2, crumbly (clay, ed).
BP7/06	1.5-1.85	complete section of 5YR 3/2, (clay, ed.) , pyrite nodules, crumbly.
BP7/07-16	1.85-3.75	complete section of greyish brown, 5YR 3/2. (Clay, ed.), crumbly.
BP7/17-18	3.75-4.2	as above, perhaps a touch lighter?
BP7/19-20	4.2-4.6	half way through interval a change; upper section 5YR 3/2 (clay, ed.), lower section mix of 5YR 3/2 and light grey N7 with pale yellowish orange 10YR 8/6 (clay, ed.). Some sandy horizons.
BP7/21	4.6-4.9	interval of poorly sorted gravels (fines to <5cm pebbles), grey colour.
BP7/22	4.9-5.3	as above, small part of the matrix is clay (brown colour).
BP7/23	5.3-5.75	as above, clay quite poddy.
BP7/24	5.75-6.0	as above, hard. End of hole.

Brown Plain 8 auger log. Location co-ords 92000N, 48400E. Station level 258.99m. First attempt at drilling using middle sized auger stopped by hardpan at 1.2m on 12/7/1987 in clear weather. Successfully drilled 23/7/1987, using a smaller auger. Logged by Bob Annett. Stacpoole's contractor for the auger, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	precollar, surface hugging gravel, sand, hardpan.
BP8/01-03	1.2-2.0	slight touch of peaty-brown sands at top then all greyish brown clay 5YR 3/2, occasional patch of sand.
BP8/04-05	2.0-2.4	complete interval of 5YR 3/2 (clay, ed.).
BP8/06-08	2.4-3.0	clays, change half way from 5YR 3/2 to light yellowish brown 10YR 5/6, noticeably sticky, then 10YR 6/2 towards base.
BP8/09-13	3.0-3.9	complete interval of pale yellowish brown 10YR 6/2 (clay, ed.), touch sandy.
BP8/14-15	3.9-4.5	small top interval of 10YR 6/2 grading down to a sandy clay, light grey N7 then to a buff sand (sand not samples).
	4.5-5.4	grey sands and pebbles; end of hole.

Brown Plain 9 auger log. Location co-ords 92000N, 48450E. Station level 260.86m. First attempt at drilling using middle sized auger stopped by hardpan at 1.2m on 12/7/1987 in overcast drizzle weather. Successfully drilled 23/7/1987, using a smaller auger. Logged by Bob Annett. Stacpoole's contractor for the auger, sunny warm weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	precollar, surface hugging sand, hardpan.
	1.2-1.5	peaty brown sands, minor clays.
BP9/01-02	1.5-2.4	small part of top interval as above, the remainder is a typical greyish brown 5YR 3/2 clay.

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BP9/03-06	2.4-3.0	complete interval clay 5YR 3/2; at very base a touch of blue grey sand.
BP9/07-13	3.0-3.9	clay interval 5YR 3/2, top part a touch sandy & crumbly before grading to typical plastic clays (also less of a touch sandy).
BP9/14-19	3.9-4.5	clay section, top half 5YR 6/2, bottom half 10YR 6/2 pale yellowish brown.
BP9/20-23	4.5-5.4	sandy clays pale yellowish brown 10YR 6/2 grades into light grey N7 sandy clay.
	5.4-6.9	grey sand, no clay component at all, end of hole.

Brown Plain 10 auger log. Location co-ords 92100N, 48400E. Station level 261.93m. Drilled 12-13/7/1987, using medium size auger. First attempt aborted at 1.4m, second attempt on same day successful. Logged by Bob Annett. Stacpoole's contractor for the auger, cold, fine weather.

Sample bag No.	From-to	Sample description
BP10/1-2	0.0-0.8	virtually straight into clay, dark greyish-orange pink 5YR 7/2 grading to light yellowish brown 10 YR 6/2.
BP10/3-4	0.8-1.15	complete clay interval; varying shades of 10YR 6/2, laminated and sticky
BP10/5	1.15-1.25	clays 10YR 6/2 and shades of 5YR 3/2 greyish brown.
BP10/6	1.25-1.4	as above, greater proportion of 5YR 3/2 component. Hole abandoned.
Repeat hole alongside first attempt.		
BP10/1a-2a	0.0-0.5	clay interval minor contamination, greyish brown 5YR 3/2
BP10/3a	0.5-0.65	clay interval minor contamination greyish brown 5YR 3/2.
BP10/4a-5a	0.65-0.95	complete interval clays 5YR 3/2, crumbly, trace of very pale orange 10YR 8/2.

BP10/6a	0.95-1.2	greyish brown clays 5YR 3/2 with fair amount of subrounded quartz pebbles (>3cm) & moderate brown.
BP10/7	1.2-1.5	complete section clays 5YR 3/2.
BP10/8	1.5-1.85	clay all interval, grey-brown 5YR 3/2 at top grading to light greyish orange 10YR 7/4.
BP10/9	1.85-2.2	clays, shades of very pale orange 10YR 8/2 & pale yellowish orange 10YR 8/6, very crumbly (contamination from 5YR 3/2).
BP10/10	2.2-2.5	very crumbly fine clays mix of mostly very pale orange 10YR 8/2 and greyish brown 5YR 3/2.
BP10/11-12	2.5-3.0	very crumbly clays of mostly 10YR 8/2 with touches of dark yellowish brown 10YR 6/6 micaceous (talcose?) and part sandy. Bedrock?
BP10/13	3.0-3.25	as above increasing amounts of dark yellowish brown now 50:50.
BP10/14	3.25-3.55	probably bedrock, end of hole

Brown Plain 11 auger log. Location co-ords 92100N, 483500E. Station level 257.12m. Drilled 13/7/1987, using medium auger. Logged by Bob Annett. Stacpoole's contractor for the auger, cold, fine weather.

Sample bag No.	from-to	Sample description
BP11/01	0.0-0.4	surface hugging sand, handpan.
BP11/02	0.4-1.1	moderate yellowish brown clay 10YR 5/4.
BP11/03	1.1-1.3	yellowish clay 5YR 7/2
BP11/04	1.3-1.5	grey clayey sand
BP11/05	1.5-2.0	no returned sample. Hole abandoned.

Brown Plain 12 auger log. Location co-ords 92200N, 483000E. Station level 263.04m. Drilled 13/7/1987, using medium auger. Logged by Bob Annett. Stacpoole's contractor for the auger, occasional drizzle.

Sample bag No.	from-to	Sample description
BP12/01	0.0-0.5	surface hugging gravels.

BP12/02	0.5-0.7	surface hugging gravels.
BP12/03	0.7-0.85	surface hugging gravels, hardpan, unable to penetrate, switched to smaller bit.
BP12/04	0.85-1.2	touches of grey clayey sands, quartz clasts to 2mm.
	1.2-1.35	sand set in a brown clay matrix
	1.35-1.45	as above?
	1.45-1.6	dark brown clayey sands, could not penetrate, end of hole.

Brown Plain 13 auger log. Location co-ords 92200N, 48300E. Station level 263.04m. Drilled 13/7/1987, using medium auger. Logged by Bob Annett. Stacpoole's contractor for the auger, weather occasional drizzle.

Sample bag No.	from-to	Sample description
	0.0-0.3	surface hugging sands partially cemented.
	0.3-0.8	dark brown clayey sands.
	0.8-1.0	dark brown clayey sands over hardpan could not penetrate. End of hole.

Brown Plain 14 auger log. Location co-ords 92140N, 48375E. Station level 259.96m. Drilled 13/7/1987, using medium auger. Logged by Bob Annett. Stacpoole's contractor for the auger, weather drizzle, overcast, rain.

Sample bag No.	From-to	Sample description
BP14/01	0.0-0.3	thin veneer of quartz cobbles, passing quickly to clays greyish brown 5YR 3/2 or dusky brown 5YR 2/2
BP14/02-03	0.3-0.65	complete section of clays 5YR 2/2 dusky brown to 5YR 3/2, quite hard and laminar.
BP14/05	0.65-0.8	complete section of clays 5YR 2/2 and 5YR 3/2 (no sample BP14/04).
BP14/06	0.8-1.05	complete section clays lightening with depth.

BP14/07-08	1.05-1.5	complete section clays probably now a 5YR 3/4 moderate brown.
BP14/09-12	1.5-2.1	clays moderate brown 5YR 3/4 and 5YR 3/2
BP14/13	2.1-2.3	complete interval of clay 3YR 3/2 abundant fossil leaves
BP14/14-20	2.3-3.8	complete clay interval 5YR 3/2
BP14/21-22	3.8-4.3	complete colour change this interval to a dark yellowish grey 5Y 7/2 with small (2mm) quartz clasts, bottom of section more sandy.
BP14/23	4.3-4.7	grey sands (fine grained) and mixtures of very plastic brown buff and cream clays.
BP14/24	-4.7	pled clays
BP14/25 abundant.	4.7-5.05	sands and clays, now laminated and less abundant.
BP14/26	5.05-5.35	brown and grey sands
	5.35-6.0	brown and grey sands, end of hole.

Brown Plain 15 auger log. Location co-ords 91700N, 48000E. Station level 263.55m. Drilled 14/7/1987, using medium auger. Logged by Bob Annett. Stacpoole's contractor for the auger, weather raining.

Sample bag No.	from-to	Sample description
BP15/01	0.0-0.15	surface hugging gravels.
BP15/02	0.15-0.75	pale brown 5YR 5/2 sandy clays showing cleavage? micaceous?
BP15/03	0.75-1.1	moderate yellowish brown 10YR 5/4 clays and sandy clays, banded and cleaved? no talcose smearing on fingers.
BP15/04	1.1-1.4	mid yellowish brown 10YR 5/4 no fabric to clays.
BP15/05-06	1.4-1.75	as above and numerous poorly sorted quartz clasts (rounded). From <1mm to >10mm bedrock chips?
BP15/07	1.75-2.0	It's bedrock, end of hole.

Brown Plain 16 auger log. Location co-ords 91700N, 47950E. Station level not given; maybe 0.7m or so below peg station 260.87m. Drilled 14/7/1987, using medium auger, followed by deepening with hammer bit 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger, windy overcast weather.

Sample bag No.	from-to	Sample description
BP16/01	0.0-0.3	surface hugging gravels, slight hardpan, slight brown clay component at bottom of interval.
BP16/02	0.3-0.4	hard dark brown clayey sand (changed bits).
BP16/03	at 0.5	dark brown clay at end of small bit. Calico bag sample. Could not penetrate, end of hole 14/7/87. (interval with no record, ed.).
	2.4-3.0	bedrock; schistose rock fragments, cleavage, mica etc. End of hole (hammer drill).

Brown Plain 17 auger log. Location co-ords 91900N, 48050E. Station level 261.74m. Drilled 14/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger, weather very cold and wet.

Sample bag No.	From-to	Sample description
BP17/01	0.0-0.5	clays at surface, greyish brown 5YR 3/2
BP17/02	0.5-0.65	clays 5YR 3/2 lots of wood debris.
BP17/03-04	0.65-0.95	clays with fossil plant debris and pyrite clots, occasional small bands of quartz clasts (1 mm? cm? ed.).
BP17/05	0.95-1.15	greyish brown clays 5YR 3/2, sand component increasing.
BP17/06	1.15-1.25	hard very dusky red 10R 2/2 and dusky brown 5YR 2/2 (peaty-organic cemented silty clay? ed.) change to new drill bit
BP17/07	1.25-1.65	hard as above
BP17/08-09	1.65-1.9	clay 5YR 3/2

BP17/10-11	1.9-2.2	clay 5YR 3/2
BP17/12-13	2.2-2.5	as above
BP17/14-15	2.5-2.75	clay 5YR 3/2
BP17/16-17	2.75-3.3	clay 5YR 3/2
BP17/18-20	3.3-3.75	complete interval of clay, greyish brown 5YR 3/2.
BP17/21-22	3.75-4.0	complete clay interval 5YR 3/2, shade lighter?
BP17/23-24	4.0-4.35	as above
BP17/25-26	4.35-4.5	as above, perhaps 5YR 3/4 moderate brown.
BP17/27-28	4.5-4.85	complete clay interval, moderate brown 5YR 3/4 or greyish brown (5YR 3/2, ed.). later goes pink? (obscure, ed.), at very end of interval sticky clays of pale yellowish brown 10YR 6/2.
BP17/29	4.85-5.0	light olive-grey 5Y 6/1, quite plastic (clay, ed.).
BP17/30-31	5.0-5.4	as above, touch more sandy
BP17/32	5.4-5.8	light grey and dark yellowish orange clayey sands 10YR 6/6. End of hole.

Brown Plain 18 auger log. Location co-ords 91800N, 47900E. Station level 261.13m. Drilled 14/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger, raining, freezing weather.

Sample bag No.	From-to	Sample description
BP18/01	0.0-0.8	peaty-brown stained quartz clast (grit, ed.) approx 3mm size.
BP18/02	0.8-1.0	quite contaminated clays and sands dusky brown 5YR 2/2.
BP18/03-04	1.0-1.5	full interval of clay dusky brown 5YR 2/2.
BP18/05-07	1.5-2.1	as above with the very occasional sticky patch of pale yellowish brown 10YR 6/2.
BP18/08-10	2.1-2.75	much lighter clay interval, a pale yellowish brown 10YR 6/2 grades into a yellowish grey 5Y 7/2.
BP18/11-13	2.75-3.15	a thin section of light yellowish brown clays, before long blobs of moderate reddish brown 10R 4/6 before passing into dark yellowish orange sands 10YR 6/6. Dark yellowish orange sands possibly bedrock.
	3.15-3.85	light grey and orange sands, probably bedrock. End of hole.

Brown Plain 19 auger log. Location co-ords 91800N, 48100E. Station level 262.38m. Drilled 14/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger, cold, wet weather.

Sample bag No.	from-to	Sample description
BP19/01	0.0-1.7	mostly surface hugging sands, then at base of interval sticky clays moderate yellowish brown 10YR 5/4.
BP19/02	1.7-2.0	moderate yellowish brown (clay, ed.) 10YR 5/4 and darker patches of 5YR 3/2.
BP19/03	2.0-2.4	moderate yellowish brown and patchy grey brown clays.
	2.5-2.55	no sample
BP19/04	2.55-3.0	clay 5YR 3/2 greyish brown and quartz clasts

(annotation B/R may mean a later conclusion that this was bedrock, ed.).

BP19/05	3.0-3.3	clay 5YR 3/2, lots of caving in hole and contamination. Some signs of schistosity (?) greyish and blackish laminae; perhaps bedrock but very much a sticky plastic clay.
BP19/06	3.3-3.65	as above but some micas probably bedrock.
BP19/07	3.65-4.0	more of the same; it doesn't resemble any of the previous clays and appears foliated with micas. Hole caving so stop. End of hole.

Brown Plain 20 and Brown Plain 63 auger logs (both holes on same site). Location co-ords 91700N, 47650E. Station level 261.65m. Drilled 15/7/1987 in wet weather (BP 20) and 28/7/1987 in sunny warm weather (BP 63). Logged by Bob Annett. Stacpoole's contractor for the auger rig.

Sample bag No.	from-to	Sample description
BP20/-	0.0-1.3	surface hugging gravels/sands/hardpan to 1.3m. could not penetrate; tried for 1 hour. End of hole.

New start on same site.

BP63/-	0.0-2.5	precollar, hardpan.
BP63/02	2.5-3.0	complete interval greyish brown 5YR 3/2 clay.
	3.0-	top hard, abandoned hole.

Brown Plain 21 auger log. Location co-ords 91700N, 47650E. Station level 260.23m. Drilled 15/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, wet, freezing weather.

Sample bag No.	from-to	Sample description
	0.0-0.9	surface hugging sands, hard
	0.9-1.0	peaty-brown stained quartz clast (>2mm) hard.
	1.0-1.2	dusky brown hard sands with clay component.

BP21/01	1.2-1.5	complete interval of clay, dusky brown, 5YR 2/2.
BP21/02	1.5-1.75	complete interval of of dry, crumbly dusky brown 5YR 2/2 clay.
BP21/03-04	1.75-2.0	as above now greyish brown 5YR 3/2.
BP21/05-06	2.0-2.45	as above, very dry and crumbly.
BP21/07-08	2.45-2.80	greyish brown 5YR 3/2 clays, very crumbly, some laminae of black (fossil debris?).
BP21/09-10	2.8-3.0	as above
BP21/11-12	3.0-3.2	as above, large lumps appearing at surface i.e. less crumbly.
BP21/13-14	3.2-3.55	complete section of clay greyish brown 5YR 3/2
BP21/15-18	3.55-4.6	complete section of olive grey 5Y 7/2 (clay, ed.) touch more sandy and sticky.
BP21/19	4.6-5.0	(clay, ed.) 5Y 7/2 and 5YR 3/2, trouble pulling up the auger, the interval could be contaminated.
BP21/20-21	-5.0	composed of mixtures of greyish brown 5YR 3/2 and olive grey 5Y7/2 (clays, ed.)
BP21/22-24	5.0-5.5	clays of 5Y 7/2.
BP21/25-26	5.5-5.8	as above, so apparent change in sand content or plasticity, looks very homogeneous.
BP21/27	5.8-6.0	as above, shade lighter and/or greener?? approx. olive grey. At base several hard grey sub-rounded nodules appearing (bedrock?).
BP21/28	6.0-6.25	as above nodules increasing, touch greenness to sample and very much more sandy.
BP21/29-30	6.25-6.65	olive grey colour, no nodules in this section and a touch less sandy.
BP21/31	6.65-7.0	as above but bottom interval getting a lot more sandy.
BP21/32	7.0-7.3	olive grey, very much more sandy with nodules

again. At base of interval clays very much resemble of bedrock seen in BP19. End of hole in "bedrock"??

Brown Plain 22 auger log. Location co-ords 91700N, 47800E. Station level 262.02m. Drilled 15/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, weather rain, cold.

Sample bag No.	From-to	Sample description
BP22/-	0.0-1.4	surface hugging gravel/sand, hardpan.
	1.4-1.5	peaty brown stained sands, hard.
	1.5-1.8	as above some clay component.
	1.8-2.0	as above
	2.0-2.4	brown sands/gravels very minor clay component.
	2.4-2.7	as above
	2.7-3.0	as above
	3.0-3.25	moderate brown stained sands and dark brown (sands? ed.).
	3.25-3.75	distinctly moderate brown sands minor clay component.
	3.75-4.0	as above
	4.0-4.7	mainly sands but tantalizing small lumps of quartz grains and mid brown clays (lots of water).
BP22/01	4.7-5.0	clay interval, dark brown to greyish brown 5YR 3/2. Lots of dark to black fossil debris? minor pyrite.
BP22/02-03	5.0-5.2	greyish brown crumbly clays 5YR 3/2.
² BP/04 ^	5.2-5.5	as above
BP22/05	5.5-5.85	most of lower half sucked off, top interval 5YR 3/2, bottom same.
BP22/06-07	5.85-6.25	complete clay interval of greyish brown clay

		5YR 3/2, smearing of moderate brown.
BP22/08	6.25-6.65	complete interval of greyish brown clay 5YR 3/2, minor bits of black debris (fossil).
BP22/09-10	6.65-6.9	all clay 5YR 3/2, quite crumbly and homogeneous.
BP22/11-12	6.9-7.4	as above, clods of pyrite, some approx. 3mm quartz clasts, angular.
BP22/13-14	7.4-7.85	complete interval of greyish brown 5YR 3/2 (clay, ed.); at base of bottom blades hint of yellowish grey?.
BP22/15-16	7.85-8.35	complete section of greyish brown clay 5YR 3/2.
BP22/17-18	8.35-8.6	as above
BP22/19-20	8.6-8.9	complete section of greyish brown clays 5YR 3/2, at very end of bottom teeth grey sands/pyrite.
	8.9-9.35	no sample, fell off on 4 rods, sands at bottom of teeth must be close to bottom, End of hole.

Brown Plain 23 auger log. Location co-ords 91600N, 48150E. Station level 262.47. Drilled 16/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, cloudy, clear weather with snow on the ground.

Sample bag No.	From-to	Sample description
BP23/01	0.0-1.5	surface hugging gravels and sands, at base a glimpse of brown coloured sands, hardpan.
²³ BP 21 /02	1.5-2.4	hardpan contamination and platy, brown stained gravels/sands.
²³ BP 21 /03	2.4-2.6	as above, slight increase in clay component of sands. End of hole.

Brown Plain 24 auger log. Location co-ords 91600N, 48100E. Station level 263.81m. Drilled 13/7/1987 in cloudy cold weather, using medium auger, which then broke; and continued using hammer drill/ small auger, 21/7/1987 in fine weather. Logged by Bob Annett. Stacpoole's contractor for the auger rig.

Sample bag No.	From-to	Sample description
BP24/01	0.0-0.7	sandy clays, friable; greyish orange 10YR 7/4 followed by -
	0.7-1.0	greyish orange sandy clays grading to moderate brown sands (>5mm) 5YR 3/4.
BP24/02	1.0-1.2	brown sands and gravels minor clay component, followed by -
	1.2-1.4	as above, definite clay component.
	1.4-1.85	broke auger - again.

hole continued

-3.0	precollar using hammer, contamination? quartz sands & gravels.
3.0-3.9	peaty brown stained quartz sands and gravels.
3.9-4.5	clayey sands, greyish brown 5YR 3/2
4.5-5.0	very much the dark peaty brown stained sands and pebbles seen just before the clays.
5.0-6.0	lighter sands, gravels (pebbles approx. 2cm.).
6.0-6.8	sticky clayey sands distinctly orange brown and sed (sedimentary, ed.) no cleavage or "greasiness (i.e. B/R).
6.8-8.4	distinct orange-brown clayey matrix holding quartz pebbles sub-rounded (>4cm).
8.4-9.4	(no record, ed. Presumably end of hole, not necessarily after any indication of bedrock).

Brown Plain 25 auger log. Location co-ords 91600N, 48050E. Station level 265.32m. Drilled 21/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, fine, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-2.0	pre-collar hammer, material is peaty stained quartz sands.
BP25/01-03	2.0-2.45	complete interval of clay, colour grades lighter at depth; dark yellowish grey NY 7/2 (sic. ed. possibly 5Y 7/2) grading to very pale orange 10YR 8/2. At very bottom back to NY 7/2 (sic.ed.) and sandy.
BP25/04-06	2.45-3.0	interval of clay, top sandy, light grey then clays of very pale orange 10YR 8/2 & dark yellowish orange 10YR 6/6.
BP25/07-08	3.0-3.5	top of interval clay, weird colours; pinks, greys, oranges etc then into brown-orange sands and gravels.
	3.5-3.8	definitely out of clays into sands and hard gravels, not bedrock. No texture (i.e, metamorphic texture, ed.) and too much quartz? Very very hard, couldn't hammer.

Brown Plain 26 auger log. Location co-ords 91600N, 47950E. Station level 262.57m. Drilled 21/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	pre-collar, peaty sands
BP26/01	1.2-2.3	moderate brown very clayey sand quite sticky. Water 2.2-2.3.
	2.3-3.0	no returned sample
BP26/02	3.0-3.8	very small sample of grey sands and thin bands of grey clays.
	3.8-5.0	no sample
BP26/03	5.0-5.3	very small sample of clay, a light olive brown 5Y 5/6 and patches of dusky brown 5YR 2/2 and pyrite.

BP26/04-07	5.3-6.0	complete section of clay, greyish brown 5YR 3/2.
BP26/08-11	6.0-6.4	as above, very homogeneous 5YR 3/2.
BP26/12-13	6.4-6.9	as above 5YR 3/2.
BP26/14-21	6.9-7.5	as above, greyish-brown 5YR 3/2.
BP26/22-26	7.5-8.0	complete section of clay 5YR 3/2. some small quartz clasts.
BP26/27-30	8.0-8.3	as above
BP26/31-37	8.3-9.0	as above
BP26/38-42	9.0-9.4	complete section of clay (as above 5YR 3/2 implied, ed.)
BP26/43	at 9.4	at very end of interval grades to yellowish grey 5Y 7/2 and smears of dark yellowish orange 10YR 6/6. End of rods/hole.

Brown Plain 27 auger log. Location co-ords 91600N, 47850E. Station level 259.83m. Drilled 21/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	pre-collar, hardpan.
	1.2-2.35	no sample, slight touches of sandy clay (grey).
BP27/01-04	2.35-3.1	complete interval of clay top interval a dusky yellow 5Y 6/4 grading to greyish brown 5YR 3/2.
BP27/05-08	3.1-3.6	complete interval of greyish brown 5YR 3/2 (clay, ed.).
BP27/09-11	3.6-3.9	as above
BP27/12-14	3.9-4.5	mostly greyish brown clays, 5YR 3/2, about 40% of bottom interval grey coarse-medium grained sands.
	4.5-6.0	grey sands complete interval

6.0-6.9	mostly grey sands with at base of interval clays pale yellowish brown 10YR 6/2.
6.9-7.5	no returned sample
7.5-8.4	no sample, end of hole.

Brown Plain 28 auger log. Location co-ords 91600N, 47700E. Station level 256.55m. Drilled 22/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny weather.

Sample bag No.	from-to	Sample description
BP28/-	0.0-1.5	pre-collar
	1.5-2.4	dark peaty brown stained sand and pebbles.
	2.4-3.0	as above slight increase in clay content
	3.0-3.9	schistose rock fragments very greasy b/r; end of hole.

Brown Plain 29 auger log. Location co-ords 91800N, 47800E. Station level 263.96m. Drilled 22/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-3.0	peaty brown stained quartz sands.
	3.0-5.4	no returned sample
BP29/01	5.4-6.2	at base of interval clay, greyish brown 5YR 3/2.
BP29/02-03	6.2-6.9	complete interval of clay 5YR 6/2.
BP29/04-05	6.9-7.5	interval of greyish brown sandy clay c.f. with that at grid ref. 4810098000.
BP29/06-11	7.5-8.4	complete interval of greyish-brown clay, occasional sandy patches.
BP29/12-16	8.4-9.0	clays, top greyish-brown 5YR 3/2 and bottom pale yellowish brown 10YR 6/2.

BP29/17 9.0-9.9 complete interval of clay pale
yellowish-brown 10YR 6/2. No more rods; end
of hole.

Brown Plain 30 auger log. Location co-ords 91800N, 48150E. Station
level 256.21m. Drilled 22/7/1987. Logged by Bob Annett. Stacpoole's
contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.5	hardpan then yellow-orange bedrock. End of hole.

Brown Plain 31 auger log. Location co-ords 91900N, 48150E. Station
level 264.31m. Drilled 22/7/1987. Logged by Bob Annett. Stacpoole's
contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.5	pre-collar, peaty sands

BP31/01 1.5-2.0 pale yellow-orange bedrock. End of hole.

Brown Plain 32 auger log. Location co-ords 91900N, 48100E. Station
level 265.09m. Drilled 22/7/1987. Logged by Bob Annett. Stacpoole's
contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-2.0	pre-collar, hardpan
	2.0-2.4	buff coloured clayey sand, top interval peaty- brown quartz clasts.
BP32/01	2.4-3.0	buff coloured clayey sand then bottom (interval, ed.) of peaty brown quartz clasts.
	3.0-3.9	peaty-brown sticky quartz clasts (some very minor clay).
BP32/02-04	3.9-4.9	interval of clays, moderate brown 5YR 3/4 and greyish brown 5YR 3/2, occasional very dark fossil rich layers. Upper section quartz clasts set in clay/fossil material.

BP32/05	4.9-5.4	usual greyish brown clay 5YR 3/2, top part very dusky brown and crumbly.
BP32/06-10	5.4-6.0	complete interval of greyish brown clays 5YR 3/2.
BP32/11-14	6.0-6.6	clays, mostly 5YR 3/2 but occasional v. dark charcoal black 5YR 2/2 horizons which are slightly sandy. Darker 5YR 2/2 clays bottom sample.
BP32/15-18	6.6-7.5	clays in shades of 5YR 3/2 & 2/2, occasional quartz clasts.
BP32/19-21	7.5-8.4	still clays of greyish-brown 5YR 3/2 and dusky brown 5YR 2/2.
BP32/22-23	8.4-9.0	clays of 5YR 3/2 grade to pale yellowish brown 10YR 6/2 with grey and orange sands at base of interval.
	9.0-9.9	not very much sample, but of grey and orange coloured sands. End of hole.

Brown Plain 33 auger log. Location co-ords 92100N, 48300E. Station level 256.27m. Drilled 23/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny weather.

Sample bag No.	From-to	Sample description
	0.0-1.5	pre-collar hardpan
	1.5-2.4	light grey sands and gravels
	2.4-3.0	n/s, as above
	3.0-3.3	as above, another hardpan (changed back to hammer).
	3.3-4.1	hammer all way, sands/gravels, possibly bedrock at 3.9. End of hole.

Brown Plain 34 auger log. Location co-ords 92200N, 48350E. Station level 263.54m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny mild weather.

Sample bag No.	From-to	Sample description
	0.0-1.0	hammer used, pre-collar hardpan
BP34/01-02	1.0-1.5	very dark peaty brown sands to 1.2m then through to clay, very crumbly, moderate yellowish brown 10YR 5/4.
BP34/03-04	1.5-2.4	top portion a continuation of 10YR 5/4 then passing to moderate brown clayey sand.
BP34/05-40	2.4-6.9	complete interval of greyish brown 5YR 3/2 clays.
BP34/41-44	6.9-7.5	complete section of clays, top half 5YR 3/2, bottom half slightly more sandy, dark yellowish grey 5Y 7/2.
BP34/45-46	7.5-8.4	top interval of sandy clays, dark yellowish grey 5Y 7/2, bottom interval grey sands.
	8.4-9.0	grey sands not a touch clayey.
	9.0-9.9	no sample. End of hole.

Brown Plain 35 auger log. Location co-ords 92200N, 48250E. Station level 259.37m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, mild weather.

Sample bag No.	from-to	Sample description
	0.0-1.0	pre-collar, yellowish-brown clay.
BP35/01	1.2-1.5	sandy clay, dark yellowish grey 5Y 7/2.
BP35/02	1.5-2.4	as above sandy clay or clayey sand?.
BP35/03	2.4-3.0	complete interval of above.
BP35/04	3.0-3.9	orange-brown clays/gravels grading to grey gravels.
BP35/05	3.9-4.5	grey gravels and sands.

4.5-5.4 as above. End of hole.

Brown Plain 36 auger log. Location co-ords 92075N, 48475E. Station level 264.23m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, mild weather.

Sample bag No.	From-to	Sample description
	0.0-1.2	pre-collar
	1.2-1.5	peaty brown sands
	1.5-2.4	as above, greater in clay component
	2.4-3.0	peaty brown and white gravels/sands, some very minor clay
BP36/01	3.0-3.9	mixtures of above and minor greyish-brown clays and sandy clays.
BP36/02	3.9-4.5	grey and brown sands
BP36/03	4.5-5.4	as above with greater amount of clay in matrix.
BP36/04-05	5.4-6.9	moderate brown 5YR 3/4 clayey sand.
BP36/06	6.9-7.5	white quartz gravel set in moderate brown 5YR 3/4 clay matrix; 80% matrix, 20% gravels, powdery at base.
	7.5-8.4	no returned sample, probably sands. End of hole.

Brown Plain 37 auger log. Location co-ords 91500N, 48100E. Station level 262.73m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cool weather.

Sample bag No.	From-to	Sample description
	0.0-1.3	pre-collar, hammer drilled.
	1.3-1.5	no sample, dark peaty brown stained quartz sands
BP37/01	1.5-2.4	light brown crumbly clayey sands, affinities with ground bedrock? Slight talcose feel,

but no foliation.

BP37/02	2.4-3.0	fawn coloured as above, nearly a schistosity, bedrock?
	3.0-3.9	as above plus chips of bedrock. End of hole.

Brown Plain 38 auger log. Location co-ords 91500N, 48050E. Station level 263.66m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, overcast weather.

Sample bag No.	From-to	Sample description
	0.0-1.1	pre-collar hardpan
	1.1-2.4	peaty brown sands
BP38/01	2.4-3.0	quartz gravels, bright orange-red, browns, greys.
BP38/02	3.0-3.9	gravels
BP38/03	3.9-4.5	orange brown and reds with white pebbles probably bedrock, with a slight foliation and greasiness.
BP38/04	4.5-5.4	much lighter, micas? bedrock probably. End of hole.

Brown Plain 39 auger log. Location co-ords 91500N, 48000E. Station level 263.10m. Drilled 24/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, overcast weather.

Sample bag No.	From-to	Sample description
	0.0-1.0	pre-collar, hardpan
	1.0-1.5	surface-hugging gravels
	1.5-2.4	peaty brown stained sands and gravels, not much sample.
BP39/01	2.4-3.0	complete interval pale buff and orange friable clays, greasy - possible bedrock. Above, a smear of brownish clay??
BP39/02	3.0-3.9	as above - bedrock. End of hole.

Brown Plain 40 auger log. Location co-ords 91500N, 47950E. Station level 264.14m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, overcast weather.

Sample bag No.	From-to	Sample description
	0.0-1.1	pre-collar, hardpan
	1.1-1.5	peaty brown stained sands and gravels
BP40/01	1.5-2.4	as above, at very bottom clay, dark yellowish orange 10YR 6/6 with quartz clasts.
BP40/02	2.4-3.0	orange clay as above, 10YR 6/6 over orange clay as matrix between quartz pebbles.
BP40/03	3.0-3.9	orange gravels with clay matrix c.f. roadside cutting (probably outcrop at 48059145, ed.).
BP40/04	3.9-4.5	orange gravels as above grading to pale buff and orange clays with foliation and greasiness - bedrock. End of hole.

Brown Plain 41 auger log. Location co-ords 91500N, 47900E. Station level 263.76m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.2	pre-collar, hardpan
	1.2-1.5	small sample surface-hugging sands.
BP41/01	1.5-2.4	buff and grey coloured sandy gravel.
BP41/02	2.4-3.0	orange red and buff coloured gravels, slightly clayey. At base clayey sand - very light grey N8.
BP41/03	3.0-3.9	gravels with buff and orange clay matrix; at base peaty brown sand.
BP41/04	3.9-4.5	peaty brown sands and gravels, slight clay component.
BP41/05	4.5-5.4	peaty brown sands and gravels, slight clay component, over buff and brown greasy bedrock, End of hole.

Brown Plain 42 auger log. Location co-ords 91500N, 47850E. Station level 263.22m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.0	pre-collar, hardpan
	1.0-1.5	grey sands and gravels, not much material.
	1.5-2.4	light grey sands and gravels, as above.
BP42/01	2.4-3.0	as above
BP42/01cont.	3.0-3.8	as above at top, then at base peaty brown sands and gravels, slight clay, hard. End of hole.

Repeat hole 3m away from previous attempt.

	0.0-1.5	pre-collar
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BP42/01a	1.5-3.0	light grey sands and gravels
BP42/02	3.0-3.9	as above; at very bottom peaty brown sands and gravels - hardpan.
BP42/03	3.9-4.5	peaty brown sands and gravels, clay component.
BP42/04	4.5-5.4	buff, micaceous, greasy bedrock. End of hole.

Brown Plain 43 auger log. Location co-ords 91500N, 47750E. Station level 261.77m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.5	pre-collar
BP43/01	1.5-3.0	white/grey sands and gravels.
BP43/01cont.	3.0-3.9	top as above, then peaty brown sands then orange/yellow through to buff bedrock. End of hole.

Brown Plain 44 auger log. Location co-ords 91500N, 47700E. Station level 261.19m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny, cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.2	pre-collar hardpan
BP44/01	1.2-1.5	grey sands and gravels.
BP44/01cont.	1.5-2.4	as above
BP44/01cont.	2.4-3.0	as above grading to buff and brown greasy and foliated bedrock, at transition sands become slightly clayey. End of hole.

Brown Plain 45 auger log. Location co-ords 91500N, 47600E. Station level 260.43m. Drilled 25/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.4	pre-collar, hardpan
BP45/01	1.4-2.4	grey sands and gravels
BP45/01cont.	2.4-3.9	as above, very slightly clayey.
BP45/02	3.9-4.5	top as above grading to peaty brown sands at very bottom.
BP45/02cont	4.5-5.4	top peaty brown sands grading to buff/grey bedrock; greasy. End of hole.

Brown Plain 53 auger log. Location co-ords 91545N, 48065E. Station level 265.2m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.1	pre-collar
BP53/01	1.1-1.5	mixture of light grey N7 and dark yellowish orange clays.
BP53/02	1.5-2.4	dark yellowish orange material grading from sandy clay through to clayey sand.
BP53/03	2.4-3.0	complete interval dark yellowish clayey sands.
BP53/04	3.0-3.9	top brownish orange clays with gravels, at base peaty brown "icky" gravels.
	3.9-4.5	no sample.
BP53/05	4.5-5.4	quartz gravels, well sorted approx 4mm, at very base grey, yellow and orange sandy material; probably bedrock.
	5.4-6.0	no sample.
BP53/05cont.	6.0-6.9	pale cream, pink, orange talcose bedrock. End of hole.

Brown Plain 54 auger log. Location co-ords 91600N, 48000E. Station level 264.37m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.1	pre-collar
	1.1-1.5	not much return sample - moderate brown sands, clays at base.
BP54/01	1.5-2.4	moderate brown and buff sands and clays; N7 and moderate brown 5YR 4/4.
BP54/02	2.4-3.0	at top clayey sand; dusky yellow 5Y 6/4 grading to dusky yellow sands.
BP54/03	3.0-3.8	icky sands; dusky yellowish brown.
BP54/03cont.	3.8-4.5	as above with some minor intervals of light dusky yellow sandy clay 5Y 6/4.
BP54/04	4.5-5.4	sands, with at very bottom clay; dusky yellow 5Y 6/4.
BP54/04-05	5.4-6.0	clays complete interval: At very top dusky yellow 5Y 6/4 grading to greyish brown 5YR3/2.
BP54/06-07	6.0-6.9	clay, greyish brown 5YR 3/2 for complete interval.
BP54/08	7.5-8.4	greyish brown 5YR 3/2 clay at top grades to light grey N7 clay.
BP54/09	8.4-9.0	complete interval clay, light grey N7, a touch sandy.
BP54/10	9.0-9.9	at top grey sandy clay, some quartz pebbles, grading to very light silver grey micaceous, talcose bedrock. End of hole.

Brown Plain 55 auger log. Location co-ords 91600N, 47900E. Station level 261.94m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny mild weather.

Sample bag No.	from-to	Sample description
	0.0-1.0	pre-collar hardpan.
	1.1-1.5	peaty brown stained sands and gravels.
	1.5-2.4	yellowish brown sands and gravels.
	2.4-3.0	no return sample.
	3.0-3.9	no sample but quartz sands present.
BP55/01-03	3.9-6.0	clay for complete interval; greyish brown 5YR3/2.
BP55/04	6.0-6.9	top half clay, greyish brown 5YR 3/2 grading to grey sand with clay about half.
BP55/05-06	6.9-9.0	grey sands with about half clay; also grey.
	9.0-9.9	no sample. End of hole.

Brown Plain 56 auger log. Location co-ords 91650N, 48065E. Station level 265.7m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny mild weather.

Sample bag No.	from-to	Sample description
	0.0-1.0	pre-collar.
BP56/01	1.1-1.5	light grey N7 clay, atouch sandy.
BP56/02	1.5-2.4	top light grey N7 clay grades into brownly orange sands and gravels. Clay component gets sandier with depth.
BP56/02-03	2.4-3.9	orange yellow and reddish sands and gravels, clay component.
BP56/04	3.9-5.4	top interval as above, lower portion buff, pale yellow/orange, slightly talcose, grading to grey with small chips of quartz - bedrock. End of hole.

Brown Plain 57 auger log. Location co-ords 91700N, 48050E. Station level 264.09m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny warm weather.

Sample bag No.	from-to	Sample description
	0.0-1.3	pre-collar.
BP57/01	1.3-1.5	light brown, tans, micaceous; probably bedrock.
BP56/01cont.	1.5-2.4	as above with chips of rock fragments - bedrock. End of hole.

Brown Plain 58 auger log. Location co-ords 91725N, 47900E. Station level 258.43m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny mild weather.

Sample bag No.	from-to	Sample description
	0.0-1.1	pre-collar.
BP58/01	1.1-1.5	peaty brown stained gravels and sand grading to greyish brown clay 5YR 3/2.
BP58/02-05	1.5-4.5	complete section clay 5YR 3/2 greyish brown.
BP58/06	4.5-5.4	top interval as above (sampled). Remainder not sampled; transition to light grey N7 clay with large (approx 20mm) rounded quartz pebbles.
	5.4-6.0	no return sample, but some 5YR 3/2, N7 and dusky yellow 5Y 6/4 present.
	6.0-6.9	no sample. End of hole.

Brown Plain 59 auger log. Location co-ords 91800N, 48230E. Station level 259.90m. Drilled 27/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cool weather.

Sample bag No.	from-to	Sample description
	0.0-1.0	pre-collar, hardpan.

BP59/01	1.1-1.5	complete interval clay, pale yellowish brown 10YR 6/2.
BP59/02-03	1.5-2.4	at top clay, greyish brown 5YR 3/2 grades to light olive grey 5Y 6/1 sandy clay.
BP59/04-05	2.4-3.9	complete interval light olive grey 5Y 6/1 sandy clay.
BP59/06-07	3.9-4.5	top interval very light grey N8 grading to dark yellowish orange sticky clay 10 YR 6/6.
BP59/08-09	4.5-6.0	dark yellowish orange sands & gravels in clay matrix. End of hole.

Brown Plain 60 auger log. Location co-ords 91850N, 48330E. Station level 258.8m. Drilled 28/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cold weather.

Sample bag No.	from-to	Sample description
	0.0-1.3	pre-collar, hardpan.
BP60/01	1.3-1.5	peaty brown/black sand and gravel; small clasts.
BP60/02	1.5-2.4	complete interval clay, greyish brown 5YR 3/2.
BP60/03	2.4-3.0	top 5YR 3/2 clay with pale yellowish brown 10YR 6/2 clay at very bottom.
BP60/04	3.0-3.9	clay; at top 5YR 3/2, plus 10YR 6/2 plus dark yellowish orange 10YR 6/6 grading to N8 - at times a bit sandy.
BP60/05	3.9-4.5	clay for entire interval; mainly dark yellowish orange 10YR 6/6 with some very light grey N8.
BP60/06	4.5-6.9	light grey and dark yellowish orange sands; sands with some gravel in lower half.
BP60/07	6.9-7.5	grey sands and gravels with well rounded quartz pebbles; gravel with larger pebbles up to 30mm in lower half. End of hole.

Brown Plain 61 auger log. Location co-ords 91950N, 48450E. Station level 263.7m. Drilled 28/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny cool weather.

Sample bag No.	from-to	Sample description
	0.0-1.5	pre-collar.
BP61/01	1.5-3.0	grey sands.
BP61/01cont	3.0-3.9	top grey sands grading to peaty brown stained quartz sands.
BP61/02-03	3.9-6.9	dark peaty brown stained sands and gravels, slight clay component.
BP61/04	6.9-7.5	top interval dusky yellow 5Y 6/4 clay grading to greyish brown 5YR 3/2 clay.
BP61/05	7.5-8.4	complete interval 5YR 3/2 clay, some pockets of sand, crumbly particularly at base.
BP61/06-07	8.4-9.9	complete interval of clay, 5YR 3/2.
BP61/08	9.9-10.5	top interval 5YR 3/2 clay grading to very small interval very light grey N8 clay which then grades to grey sands and gravels. End of hole.

Brown Plain 62 auger log. Location co-ords 92080N, 48520E. Station level 263.4m. Drilled 28/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny warm weather.

Sample bag No.	from-to	Sample description
	0.0-1.6	pre-collar.
	1.6-2.4	no sample.
BP62/01	2.4-3.0	grey sands and gravels.
BP62/01cont	3.0-3.9	top as above grading half way to peaty brown sands and gravels. Traces of 5YR 3/2 (clay? ed.) particularly at bottom.
BP62/02	3.9-5.4	greyish brown coloured sands and gravels, fair clay component.

BP62/03	5.4-6.9	greyish brown 5YR 3/2 sands and gravels with greatly increased clay component. Less clay, more sandy in lower half.
BP62/04	6.9-7.5	top half as above, grading to beige clayey sands with quartz pebbles (start of bedrock? ed.).
BP62/04 cont.	7.5-8.4	as above, probably bedrock, not very talcose. End of hole.

Brown Plain 63 auger log. Location co-ords 91700N, 47650E. Station level 261.64m. Drilled 28/7/1987. Logged by Bob Annett. Stacpoole's contractor for the auger rig, sunny warm weather. Attempt to get a hole down at the site of BP 20. Two tries with poor results.

BP 63 first attempt

Sample bag No.	from-to	Sample description
	0.0-1.5	pre-collar, hardpan.
BP63/01	1.5-2.4	complete interval very dusky red 10R 2/2 clay.
BP63/01cont.	2.4-3.0	as above, crumbly.
	3.0-	hardpan, could not hammer; moved 3m.

BP 63 second attempt

	0.0-2.5	pre-collar, hardpan.
BP63/02	2.5-3.0	complete interval greyish brown 5YR 3/2 clay!
	3.0-	too hard. Abandoned hole.

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**APPENDIX 2
EXCAVATOR PIT LOGS AND SAMPLES
JANUARY 1992**

QP 1 Pit. Location 91782N, 47604E, RL262.0. Dug on 12-2-1992 in fine weather on the site of a prospecting scrape probably put in by the local council while searching for gravel.

Sample From-to Description

QP1/1	0.0-1.5	Granitic sand 10YR 7.5/1 pale grey, hardpan.
QP1/2	1.5-2.5	Pebbly granitic sand 10YR 7/1 pale grey, 20% quartz pebbles to 2cm.
QP1/3	2.5-4.5	Hard peat-cemented sandy gravel and sand 10YR 3/2 dark brown. Pit abandoned.

Comment: The nature of the sand and sandy gravel matched the sequence overlying the clay zone, which is therefore expected to occur at this site. But since the excavator was limited to about 5.5m penetration a full section of the clay could not have been obtained. A move was made to the next site c. 5m lower.

QP 2 Pit. Location 91831N, 47612E, RL 258.2. Dug 12-2-1992, also on a council prospecting scrape.

Sample From-to Description

QP2/1	0.0-1.0	Peat-cemented gravel over mixed clay and gravel; abundant plant fossil debris (lignite) 0.7-1.0m.
QP2/2	1.0-2.0	Clay; leached form, buff, somewhat sandy.
QP2/3	2.0-3.0	Clay to sandy clay; leached form, pale buff.
QP2/4	3.0-4.7	Sandy clay grading to sand with clay bands. At base; coarse granite sand. End of pit.

Comment: The lower portion of the major clay seam is represented by a sandy facies c.f. BP 3. The concentration of plant fossil debris at the top of the clay bed proved to be fairly common. Some "driftwood" preserved as lignite was seen lower in the pit.

QP 3 Pit. Location 91681N, 47536E, RL 260.2. Dug 12-2-1992, on large council prospecting scrape which exposes Timbs Formation schist in soft weathered form.

Sample	From-to	Description
	0.0-1.0	Brown sand, peaty, hard
QP3/1	1.0-1.2	White clay, (some white clay with orange stain on the same horizon not sampled). A centimetre or so of brown peat-stained clay at the top.
	1.2-1.3	Orange iron-stained clay (not sampled).
	1.3-1.4	Bright orange iron-stained granite sand.
	1.4-2.4	Granitic sand, mostly white but yellow at top.
	2.4-2.5	Brown peat-stained granite sand.
	2.5-3.4	Light grey to buff pebble to cobble gravel with granite sand matrix.

from c. 4.0 Pale brown weathered schist.

Comment: The clay bed encountered is interpreted as the main clay seam in attenuated form, but it may represent the low level sandy clay seam of the road section.

QP 4 Pit. Location 47650N, 91630E, RL 261.4. Dug 12-1-1992 on level, undisturbed peat. 2 attempts to start the hole were frustrated by tough hardpan thought to be well above the main clay seam.

QP 5 Pit. Location 91669N, 47786E, RL 259.0. Dug 12-1-1992 on a gentle escarpment, fairly close to the top.

Sample	From-to	Description
	0.0-0.4	Peat
	0.4-0.8	Surface hugging gravel/sand.
QP5/1	0.8-2.2	White clay (leached form) with trace of orange iron stain and a 1cm layer of orange clay (not sampled) at the base.
	2.2-2.6	Buff medium sand.

Comment: This clay bed is thought to be the main seam in attenuated form. It is possibly incomplete at the top and with the medium sand lens developed at the base at the expense of some of the usual clay.

QP 6 Pit. Location 91648N, 47719E, RL 259.4. Dug 12-1-1992 on gentle escarpment, near a spring interpreted as caused by clay subcrop. It was possible to channel sample the entire excavation since the slope allowed a costean form and a fortuitous small anticline expanded the section available for sampling.

Sample	From-to	Description
	0.0-0.4	Peat
	0.4-0.8	Surface hugging granite sand
	0.8-1.0	Granite sand considered part of the Tertiary formation.
QP6/1	1.0-2.0	Brown clay, rather hard
QP6/2	2.0-3.0	As above.
QP6/3	3.0-4.0	As above.
QP6/4	4.0-5.0	As above.
QP6/5	5.0-6.2	White clay, rather hard (leached form). No suggestion of orange iron stain.
QP6/6	6.2-6.5	Grey medium sand.

Comment: This is quite definitely the main clay seam. It contains some plant fossil material including well preserved leaves. Some fine sand/silt and mica flakes are evident in hand specimen.

QP 7 Modified drain at location 91817N, 47950E, RL 259.2m, dug 12-1-1992, sampled 15-1-1992. Excavated in stripped area of abandoned council gravel pit and adjacent dump.

Sample	From-to	Description
	0.0-0.5	Buff granitic sand, rather coarse, grades to hard brown peat cemented form at base.
QP7/1	0.5-1.5	Pale brown to white clay (leached form), minor orange iron stain spots towards base.
	1.5-1.7	Orange iron stained clay.
	1.7-2.2	Medium grained sand. At the sampled section it is iron stained but 2m away the same interval is peaty brown and buff and free of iron staining.

Comment: This must be the main clay seam since the higher seam outcrops nearby. The bed is attenuated by approach to a bedrock high which also outcrops nearby in the quarry, and also by the appearance of the medium sand facies replacing the lower part of the main clay bed (below 1.7m.).

QP 8 Modified drain at location 91887N, 48033E, RL 261.5m, dug 12-1-1992, sampled 15-1-1992. Excavated in stripped area of council gravel pit.

Sample	From-to	Description
	0.0-1.0	Coarse granite sand with pebbles, light grey to buff. (Nearby exposures indicate >5m of this unit).
QP8/1	1.0-1.6	Pale brown clay (upper clay bed).
	1.6-3.0	Coarse granite sand (Pit surface at RL 261.5m)
QP8/2	3.0-4.0	Clay, affected by surficial case hardening in part, brown and some pale brown (leached form).
QP8/3	4.0-5.0	Clay as above, mostly the brown type.
QP8/4	5.0-6.0	As above.
QP8/5	6.0-6.6	Light brown to white plastic clay, some orange iron stain at base.
	6.6-7.0	Pebble to cobble gravel with sandy matrix, clast-supported.
	7.0-7.5	Weathered schist.

Comment: Both upper and main clay seams are present, but the material from the main seam in this exposure is affected by surficial migration of humic acids and this appears to adversely affect its usefulness in craft pottery applications (see comments on sample MS 4 which comes from this area). In retrospect it would have been better to put in a pit and so obtain material that would better represent the bulk of the deposit.

QP 9 Pit. Location 91909N, 48082E, RL 265.5m. Dug on 12-1-1992 adjacent to and up hill from a council prospecting scrape which exposes weathered schist and apparently the basal gravel of the Tertiary formation.

Sample From-to Description

0.0-0.5 Peat over surface hugging granite sand with some pebbles.

0.5-1.5 Pale brown weathered schist.

Comment: The presence of bedrock so close to thick sections of Tertiary rocks including clay implies rather sharp folding or faulting. The nearby gravel exposure must be a veneer only.

QP 10 Pit. Location 91920N, 48102E, RL 265.3m. Dug on 12-1-1992 on stripped ground just inside the council quarry.

Sample From-to Description

0.0-1.8 Coarse granitic sand with pebbles, rather hard.

Comment: The indications were that a thick overburden was being encountered, with the target clay to be reached at too great a depth for a complete section to be gained.

QP 11 Pit. Location 92000N, 48142E. RL 264.49m. Dug on 12-1-1992 on undisturbed peat.

Sample From-to Description

0.0-0.6 Peat over surface hugging sand.

0.6-2.6 Coarse granitic sand with some pebbles, clay binder present towards base.

Comment: This section was considered to be overburden above the clay seams. The hypothesis was successfully tested with the next pit.

QP 12 Pit. Location 91998N, 48168E; RL 262.6m. Dug on 12-1-1992 on undisturbed peat.

Sample From-to Description

0.0-0.4 Peat

0.4-0.8 Surface hugging sand, bleached hardpan.

QP12/1 0.8-2.0 Brown clay, some bleached at top, plant fossils, channel sample.

QP12/2	2.0-3.0	Brown clay as above, channel sample.
QP12/3	3.0-4.0	Brown clay as above.
QP12/4	4.0-5.0	Brown clay as above.
QP12/5	5.0-5.8	Brown clay over white clay with a trace of orange iron stain at base.
	5.8-6.3	Sand.

Comment: This must be the main clay seam.

QP 13 Pit. Location 91740N, 48050E, RL 263.9. Dug 12-1-1992, on undisturbed peat at edge of track.

Sample	From-to	Description
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	0.0-1.2	Peat over sand over hardpan over weathered schist. Hole abandoned once weathered schist appeared on the ripper tine.
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Comment: This test confirmed the high bedrock problem in this area.

QP 14 Pit. Location 91715N, 48145E, RL 260.8m. Dug 12-1-1992 on stripped ground adjacent to the track.

Sample	From-to	Description
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	0.0-1.0	Sand, grading to peat-stained hardpan at base.
QP14/1	1.0-2.2	Plastic clay, mostly off white and some pale brown. Peat stained at top, some dark brown clay at base.
QP14/2	2.2-3.0	Brown clay.
QP14/3	3.0-3.8	Brown clay.
QP14/4	3.8-4.6	Brown clay.
QP14/5	4.6-5.4	Brown hard clay.
	5.4-	White clayey sand appears in bottom of excavation. End hole.

Comment: This is a near-complete section through the main clay seam.

QP 15 Pit. Location 91650N, 47950E; RL 262.2m. Dug 13-1-1992 on undisturbed peat, in drizzling weather.

Sample	From-to	Description
	0.0-2.6	Granitic sand below surficial peat, sand and hardpan.
	2.6-2.7	white clay over dark brown clay.

Comment: The major clay seam would appear to be present below too much overburden to allow for good sampling. This despite absence of the clay layer 50m North.

QP 16 Pit. Location 91657N, 47890E; RL 257.8m. Dug 13-1-1992 on undisturbed peat, in drizzle/light rain. A nearby soak was thought to be caused by the clay subcrop. The site was near the base of the slope.

Sample	From-to	Description
	0.0-1.0	Overburden of peat/transported sand/hardpan.
QP16/1	1.0-2.0	Brown clay with 10cm white clay at top.
QP16/2	2.0-3.0	Brown clay. (sample lost)
QP16/3	3.0-4.0	Brown clay (Approximately 7.5YR 3/4 darkening on exposure to 7.5 YR 3/2 in 10 minutes or so).
QP16/4	4.0-4.9	Brown clay as above.
	4.9-	Water struck, milky water rapidly invaded the excavation. Apparently the basal white clay layer was torn through giving access to a sand aquifer.

Comment: A good development of the main clay seam was intersected.

QP 17 Pit. Location 91829N, 48368E, RL 257.9m. Dug 13-1-1992 on undisturbed peat, on a spur leading to the escarpment to the Whyte River. Weather drizzle and light rain, windy.

Sample	From-to	Description
	0.0-0.3	Peat over sand over hardpan granitic sand.
QP17/1	0.3-1.5	White clay becoming sandy towards base.
	1.5-1.6	Orange iron-stained sand.
	1.6-1.7	Buff medium grained sand.

Comment: This clay is considered to be an incomplete section of the main clay seam (the top is missing) and with the medium grained sand facies in place of part of the lower portion. Some indication of higher than usual iron content is evident.

QP 18 modified drain at location 91985N, 48485E, RL 261.4m. Dug 13-1-1992 and sampled 15-1-1992. Dug in showery, windy weather at the scarp edge next to the track in stripped ground and dump material, above an old time prospectors cut which exposes the basal gravel of the Tertiary formation.

Sample From-to Description

QP18/1	0.0-1.0	White clay with minor iron stained patches at top and 10 cm sandy clay at bottom.
QP18/2	1.0-2.2	Pale brown leached and brown unleached clay.
	2.2-	Coarse peaty brown granitic sand. About 1.5m to start of >1.5m cobble/pebble gravel.

Comment: The main clay seam is present but may be cut off at the top. The dip is some 10 degrees downslope so the section is thinner than it first appears. If a full section is present it is somewhat attenuated. There is indication of higher than usual iron content.

QP 19 Pit. Location 92149N, 48302E, RL261.4m. Dug 13-1-1992, on a slope of undisturbed peat, in windy wet weather.

Sample From-to Description

	0.0-0.2	Peat.
	0.2-0.5	surface hugging granite sand.
	0.5-1.0	Hardpan granite sand.
QP19/1	1.0-2.0	Brown and pale brown clay.
QP19/2	2.0-2.3	White and pale brown clay.
	2.3-2.4	Orange iron oxide stained clay and sand.
	2.4-2.5	White sand.

Comment: The section comprises the lower portion only of the main clay seam.

QP 20 Pit. Location 91929N, 48298E, RL259.8m. Dug 13-1-1992, on a spur of undisturbed peat, in continuous rain and strong wind.

Sample	From-to	Description
	0.0-0.6	Peat over loose granitic sand over hardpan granitic sand.
QP20/1	0.6-1.8	White clay
QP20/2	1.8-2.8	Brown clay
QP20/3	2.8-3.8	Brown clay
QP20/4	3.8-5.0	White clay becoming sandy towards base.

Comment: The main clay seam is present the base was not reached but would not be more than a metre off. The weather was getting worse so the sampling was cut short at this point.

APPENDIX 3
FIRING TESTS ON CLAY SAMPLES
JANUARY 1992

Craft level performance tests of clay samples from Brown Plains conducted by Rynne Tanton, Crickhollow Pottery/University of Tasmania, Launceston Campus.

CLAY TESTING

Code number MS 1

Site (from upper clay bed 0.2m thickness near track through West portion of old gravel pit near crater pond, grid ref. 4791591770. A good white clay with no evidence of iron stain the dip is around 5 degrees SW, towards the pond).

Raw state Significant amount of quartz gravel (granite sand adheres to top and bottom of the clay bed).

Raw colour Off white

Bound water / Organic content $91.9/100 = 8.1\%$

Colour after 1000 C white

Wet sieving 40# Small quantity of quartz gravel

Plasticity	Bend Test	Held together well - a little surface cracking
	Throwing	Tendency to be flabby but was throwable. 2/5 - poor plasticity

Shrinkage	Wet to dry -	9.2 = 8%
	Dry to 1280 C	11%
	Total	19%

Fired colour (reduction 1280 C) Off white (Munsell 2.5Y 7.5/1).

Vitrification High ring - did not feel porous.

General comments Reasonably clean colour. Good potential - needs the plasticity of a ball clay or bentonite for throwing purposes.

Code number MS 2

Site (from upper clay bed near track through West portion of old gravel pit, same as for MS 1; grid ref. 471591770).

Raw state Significant quartz gravel (granite sand adheres to top and bottom of the clay bed).

Raw colour Off white / pale brown

60

Bound water / Organic content 93/100 = 7%

Colour after 1000 C white

Wet sieving 40# Lot of quartz gravel

Plasticity	Bend Test	Held together with a lot of surface cracking
	Throwing	Flabby but throwable. 2/5 - poor plasticity

Shrinkage	Wet to dry - 9.2 = 8%
	Dry to 1280 C 10%
	Total 18%

Fired colour (reduction 1280 C) Off white / grey (Munsell N 8/1)

Vitrification High ring - did not feel porous.

General comments Reasonably clean colour. Potential as for MS 1 - needs more plasticity for throwing purposes.

Code number MS 3

Site (from upper clay bed near track through West portion of old gravel pit, not far from MS 1/2 but shows iron stain; grid ref. 4791091770).

Raw state Small amount of quartz (granite sand adheres to top and bottom of the clay bed, trimmed off during sampling).

Raw colour Off white - small amount of iron staining.

Bound water/Organic content 95/100 = 5%

Colour after 1000 C white with pale pink staining.

Wet sieving 40# small amount of quartz.

Plasticity	Bend Test	<u>Just</u> held together with cracking.
	Throwing	Flabby but throwable. 2/5 - poor plasticity

Shrinkage	Wet to dry - 9.3 = 7%
	Dry to 1280 C 9%
	Total 16%

Fired colour (reduction 1280 C) Pale grey (Munsell 2.5Y 7.5/2 - more pigmented than all the rest).

Vitrification High ring - did not feel porous.

General comments Clean colour. (very faint speckle). Has potential as for MS 1 and 2. Needs plasticity for throwing.

Code number MS 4

Site (from main clay bed, North East end of old gravel pit; grid ref. 4802591890. Case hardened surface exposure cemented with humic acids? May require a dispersant for effective blunging.)

Raw state Black lumps - carbon?.

Raw colour Light brown with black inclusions.

Bound water/Organic content $90.4/100 = 9.6\%$

Colour after 1000 C white.

Wet seiving 40# Large amount of organic material and quartz.

Plasticity Bend Test (not attempted)
Throwing *

Shrinkage Wet to dry -
Dry to 1280 C
Total

Fired colour (reduction 1280 C)

Vitrification

General comments

Slaking - Very hard lumps had to be beaten up. very little went into suspension - the majority of the sandy sludge like material sank to the bottom of the bucket immediately agitation ceased.

Wedging - Tried but THIXOTROPIC! No plasticity - could not shape it. Could have altered pH but indications were that it wasn't worthwhile.

Code number MS 5a

Site (from upper portion of main clay bed in face of road cutting exposure, grid ref. 4827091675, mainly leached material).

Raw state Small amount of black organic matter.

Raw colour Pale brown.

Bound water/Organic content $89.6/100 = 10.4\%$

Colour after 1000 C white

Wet seiving 40# Lots of organic matter.

Plasticity	Bend Test	Surface cracking but did not break.
	Throwing	Very flabby and was difficult to use.

Shrinkage	Wet to dry -	9.4 = 6%
	Dry to 1280 C	11%
	Total	17%

Fired colour (reduction 1280 C) Off white (Munsell N 8/1)

Vitrification High ring test - very little porosity.

General comments Good potential - would need a lot of plastic fine ball clay / bentonite to make it suitable for throwing.

Code number MS 5

Site (from upper portion of main clay bed in face of road cutting exposure, immediately below 5a, grid ref. 4827091675. Mainly unleached brown clay with some pale brown leached clay).

Raw state Quartz gravel and organic patches included.

Raw colour Pale brown - black patches.

Bound water/Organic content $92.2/100 = 7.8\%$

Colour after 1000 C white

Wet seiving 40# Lots of organic matter.

Plasticity	Bend Test	Cracked and broke - very short.
	Throwing	Putty is easier! managed <u>just</u> to get a bowl form.

Shrinkage	Wet to dry - 9.4 = 6%
	Dry to 1280 C 11%
	Total 17%

Fired colour (reduction 1280 C) Off white (Munsell 5Y 7.5/1).

Vitrification High ring - no apparent porosity.

General comments As for 5a has potential but plasticity needs a boost.

Code number MS 6

Site (from middle portion of main clay bed in face of road cutting exposure, immediately below 5, grid ref 4827091675. Unleached, brown organic stained clay representative of the major part of the deposit).

Raw state Clean.

Raw colour light brown/grey.

Bound water/Organic content 83.5/100 = 16.5%

Colour after 1000 C white

Wet seiving 40# considerable organic matter.

Plasticity Bend Test Cracked and broke easily.
Throwing Made something which if provoked I would call a "bowl"!

Shrinkage	Wet to dry - 9.4 = 6%
	Dry to 1280 C 8%
	Total 14%

Fired colour (reduction 1280 C) cream - pale yellow (Munsell 10YR 8/2).

Vitrification good ring - no apparent porosity.

General comments Not high potential. Analysis will be the key to usefulness.

Code number MS Z

Site (water race exposure, distant from the other samples at grid ref. 4838092175. Brown organic material only but including some case hardened clay).

Raw state Lot of organic matter.

Raw colour light brown/grey.

Bound water/Organic content $76.8/100 = 27.2\%$

Colour after 1000 C white

Wet seiving 40# Difficult - full of organic matter.

Plasticity Bend Test Broke easily.
 Throwing Awful.

1/5 - not plastic.

Shrinkage Wet to dry - 9.4 = 6%
 Dry to 1280 C 21%
 Total 27%-28%

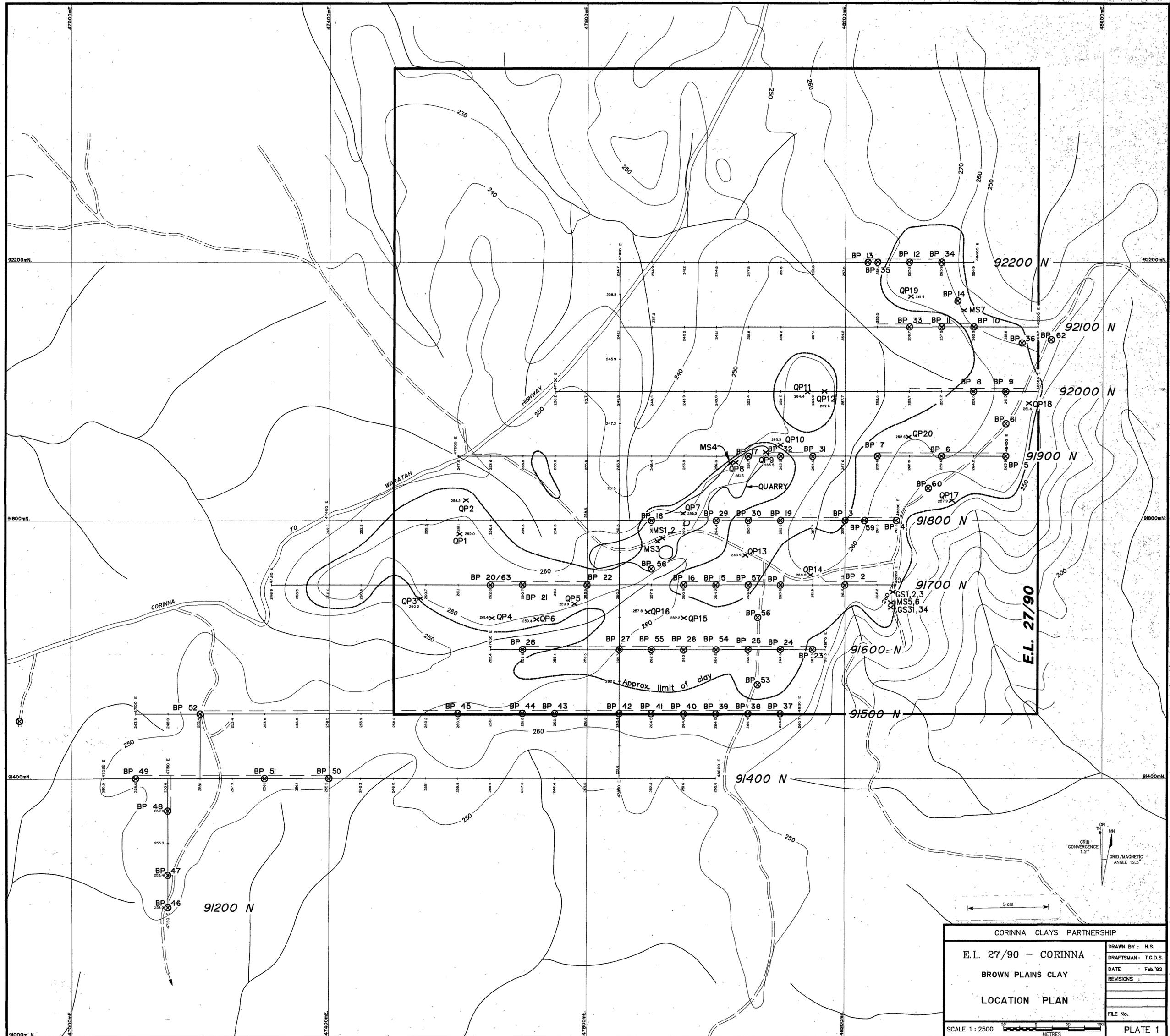
Fired colour (reduction 1280 C) grey

Vitrification high ring - no apparent porosity.

General comments AS for 6. Lot of work needed - Analysis will be the key.

**APPENDIX 4
SAMPLES SUBMITTED FOR ASSAY
FEBRUARY 1992**

1. QP2/2
2. QP5/1
3. QP6/1 & QP6/2 (1 : 1 proportions)
4. QP6/3 & QP6/4 (as above)
5. QP6/5
6. QP7/1
7. QP8/1
8. QP8/2 & QP8/3 & QP8/4
9. QP8/5
10. QP12/1 & QP12/2
11. QP12/3 & QP12/4
12. QP12/5
13. QP14/1
14. QP14/2 & 14/3
15. QP14/4 & 14/5
16. QP16/1 & QP16/2 (or just 16/1 alone if 16/2 is truly lost)
17. QP16/3 & QP16/4
18. QP17/1
19. QP18/1
20. QP18/2
21. QP19/1 & QP19/2 (in proportions 3 : 1 of 19/1 to 19/2)
22. QP20/1
23. QP20/1 & QP20/3
24. QP20/4.



CORINNA CLAYS PARTNERSHIP	
E.L. 27/90 - CORINNA	
BROWN PLAINS CLAY	
LOCATION PLAN	
DRAWN BY : H.S.	
DRAFTSMAN : T.G.D.S.	
DATE : Feb.'92	
REVISIONS :	
FILE No.	
SCALE 1 : 2500	PLATE 1



MS 1

MS 2

MS 3

MS 5a

MS 5

MS 6

MS 7

FIRING TEST POTS BY RYNNE TANTON