Final Report for EL 25689

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Executive Summary

Exploration license EL25689 was granted to Tianda Uranium (Australia) Pty Ltd on August 23rd, 2007 for a period of six years. It originally contained 72 subblocks, and 50% of the tenement was relinquished. Therefore 36 subblocks are retained.

The early phase of reconnaissance-style exploration was focused on uranium by investigating several airborne radiometric anomalies, and the results were not encouraging. Exploration in the last reporting period was focused on phosphate. As outcrop across the tenement is poor, and the phosphate-bearing stratigraphic unit (Middle Cambrian Gum Ridge Formation) is mostly covered by the Middle Cambrian Anthony Lagoon Beds. In order to examine the phosphate potential, cuttings from water bores within and adjacent to the tenement were logged, sampled and assayed. Generally the assay results were disappointing. As a result, it has been decided that no more exploration work will be carried out in this tenement during this reporting period, and the exploration license is applied to be relinquished.

The exploration results of last reporting period was reported in the 2010 annual technical report, and this report is essentially based on that report.

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Figures

1 Introduction

The Barkly Tablelands tenement, EL 25689, lies on the Barkly Tablelands within Rockhampton Downs station. EL25689 has 72 subblocks and covers 234 square kilometres.

The tenements are within the Barkly Sub-basin of the Georgina Basin, which is comprised of mostly Cambrian sediments, possibly underlain Helen Springs Volcanics and then by Proterozoic Lake Woods Beds. The accessible stratigraphic section in the tenement area is of surface soils and pisolites of Cenozoic-Quaternary age, disconformably overlying the middle Cambrian Anthony Lagoon Beds. These in turn disconformably overly the Gum Ridge Formation. No surface contact has been observed between the latter formations.

Investigation in 2010 focussed on accessing drillhole information archived by the Northern Territory Geological Survey and the NT Department of Natural Resources, Environment, The Arts and Sport (NRETAS). A fence of drillholes starting to the west of EL25690, including a hole within the tenement and then crossing to EL25689 was sought. This proved difficult, as only some water wells have samples in the archive. The outcome was that some logging and sampling was done of drillholes outside the tenements.

Data downloading from the NRETAS site provided bore reports for 57 water wells in the vicinity of the tenements. Most of these contained drillers' logs, though not where they were really needed. A number of holes within and between the two tenements lacked any lithological description. The drillers' logs themselves gave very superficial and probably misleading descriptions of the lithology.

Samples from four holes were sent for ICP analysis by a laboratory in Perth. Of these 82 samples, the highest phosphorus assay was 1656ppm in RN020696 in the far southeast of the area. This was near the disconformity between the Anthony Lagoon Beds and the underlying Gum Ridge Formation.

Preparation of stratigraphic cross-sections was done along west-east fences of water wells. These "fences" showed the Anthony Lagoon Beds to be between zero and seventy metres thick, with the formation being thickest in the northeast and thinning against the outcropping Gum Ridge Formation in the southwest. In much of the tenements, the Anthony Lagoon Beds are overlain by a few metres of Quaternary black soils, or by Cenozoic pisolites. In rare localities, surface exposures of chert and stromatolites were observed.

The most encouraging phosphate enrichment was found in the south of district, outside the two tenements. The highest assays were found by the NTGS during their phosphate search, while drillholes sampled by Terra Search staff gave modest results.

2 Location and access

Two exploration licenses are held on the Helen Springs 1:250,000 sheet: EL 25689 (Barkly Tablelands) and EL 25690 (Bullcamp Creek). These are physically quite close to each other, the distance apart being less twenty kilometres apart at their closest points. However, EL 25689 is best accessed from the Barkly Highway via Rockhampton Downs Homestead, while EL 25690 is accessed from Stuart Highway near a turnoff at Attack Creek through Brunchilly Station.

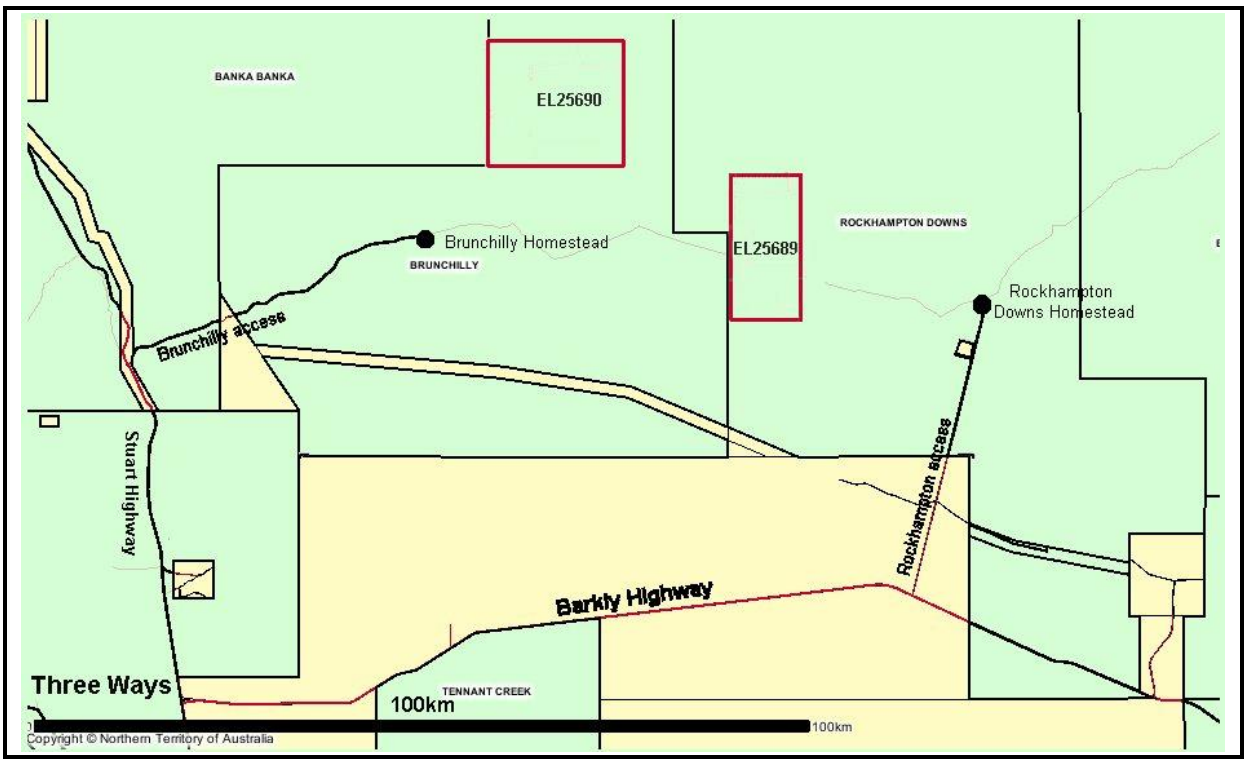

Figure 1 Location of and access to ELs 25689

There is no access track or gateway from Rockhampton Downs to Brunchilly Station, so it is necessary to travel via Three Ways on Stuart Highway to get from one to the other.

The tenements are readily accessible with station tracks and contain several watering points.

Contact details for the manager of Rockhampton Downs:-

Rockhampton Downs Stn
Barkly Highway
Tennant Creek
08 8964 4548

3 Tenement Status

EL 25689 has its boundaries as shown on Figure 2. It was granted to Tianda Uranium on the 23 August 2007 for a period of 6 years. It originally contained 72 subblocks, and 50% of the tenement was reduced in the last reporting period. Therefore only 36 subblocks are retained.
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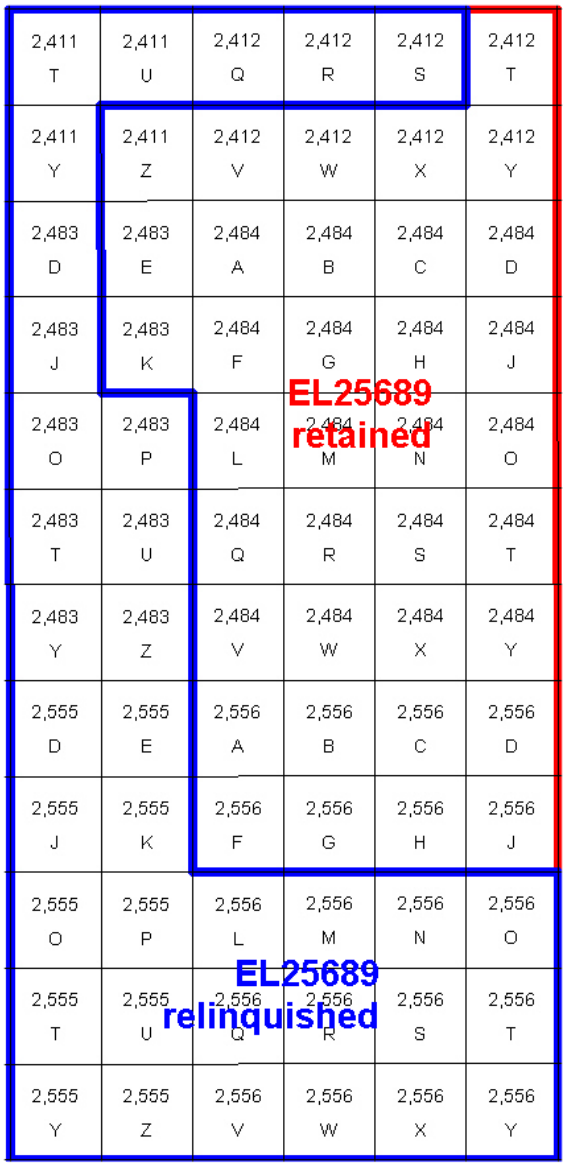


Figure 2 EL 25689 tenement subblocks

4 Geology

The East Georgina Basin project area, consisting of EL25689 and EL25690, is dominantly covered by extensive exposures of Anthony Lagoon Beds and limestones, sandstones and mudstones of the Gum Ridge Formation and widespread Cainozoic undifferentiated grey clay-rich soils.

The Cambrian sediments of the Georgina Basin host economic phosphate deposits caused by the upwelling of phosphorus-rich waters. The most important of these is at Duchess Hill in western Queensland, having over 100 million tonnes of reserves with a grade exceeding 23% P_2O_5.

The tenements are within the Georgina Basin and the oldest outcrop within them is Middle Cambrian, being the Anthony Lagoon Beds comprised of sandstone, dolomitic siltstone, dolomite, dolomitic limestone and containing chert nodules. Such formations are often also phosphate-rich. Within the exploration licenses, the beds are overlain by Cainozoic lateritic rocks (Czf) described as "ferricrete, ferruginised rock: pisolitic lag gravel."

Elsewhere within the district, outcrop of Gum Ridge Formation has been mapped. This is dominated by limestone with lesser intervals of dolomite, siltstone and mudstone. It sometimes hosts phosphorite horizons. It has been correlated with the Montejinni Limestone of the Wiso Basin, which has also been shown to host phosphate-rich horizons. The Gum Ridge Formation underlies much, if not all, of the tenements.

Quaternary formations within the areas include Qap – "clay-rich soils in alluvial floodouts and depressions" (shown in pale green) and Qb (all the white area) "undifferentiated grey clay-rich soils: expanding clay, some sand and gravel, certified, pisolitic rock."

On the exploration license, the Anthony Lagoon Beds are usually overlain with a pisolitic lag and loamy soil. Chert (often worked for stone tools) is occasionally encountered, but the only visible limestone and dolomite is where excavations have been made.

The 250k surface geology of the East Barkly project area is shown overleaf in Figure 3. Water wells (blue)and surface geochemistry sample locations (red, and reported in 2008) are also shown.

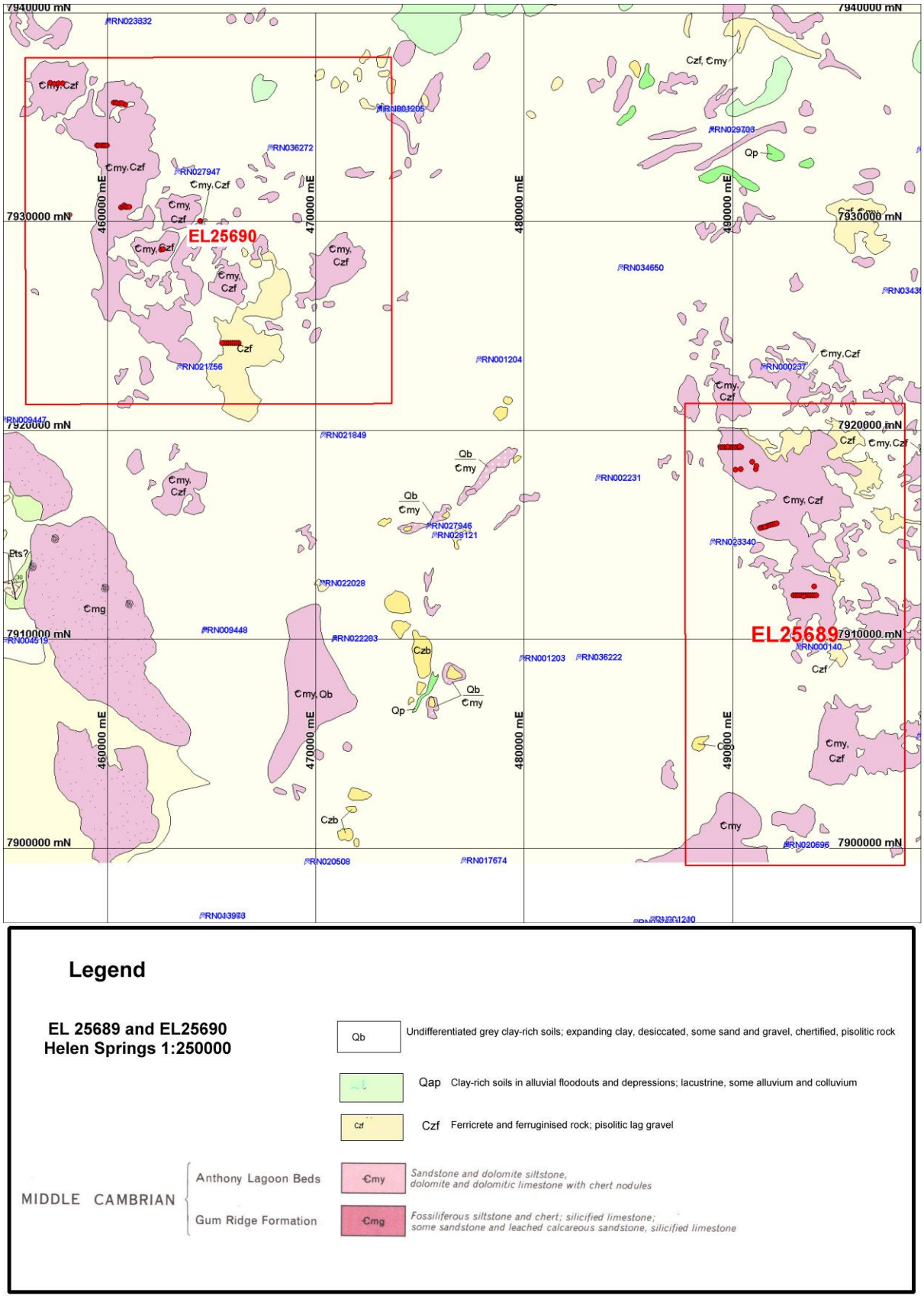


Figure 3 Geology, water wells and soil sample locations for the East Barkly project, including ELs 25689 and 25690

5 Exploration Completed

During early July 2010, the Terra Search geologist spent several days at the Northern Territory Geological Survey core farm at Winnellie, in Darwin. The objective was to search, log and sample water bores in and around the tenements. Four holes were sampled and several more were logged. All the chips were photographed for future reference.

Additionally, the Northern Territory Mines Department offices in central Darwin were visited to obtain reference materials. These included NTGS Record 2007-003: "Phosphate testing of waterbores and diamond drillcore in the Georgina, Wiso and Daly basins, Northern Territory". the Hydrogeological division of NRETA was visited in Palmerston. The latter proved invaluable for guidance to the online waterwell database.

No site investigation was performed. The geologist had visited the tenements two years earlier, observing at that time the poor outcrop and extremely flat terrain. Without subsurface investigation by drilling, he felt that no useful purpose could be served by a time-consuming field visit. Spending time in the NTGS core shed would be more useful.

5.1 Literature Review

"Phosphate testing of waterbores and diamond drillcore in the Georgina, Wiso and Daly basins, Northern Territory" by Khan, Ferenczi, Ahmad and Kruse was supplied by the NTGS during a visit to their office during early July. Figure 4 from their paper shows the distribution of phosphorite-bearing strata within the Georgina and Wiso Basins.

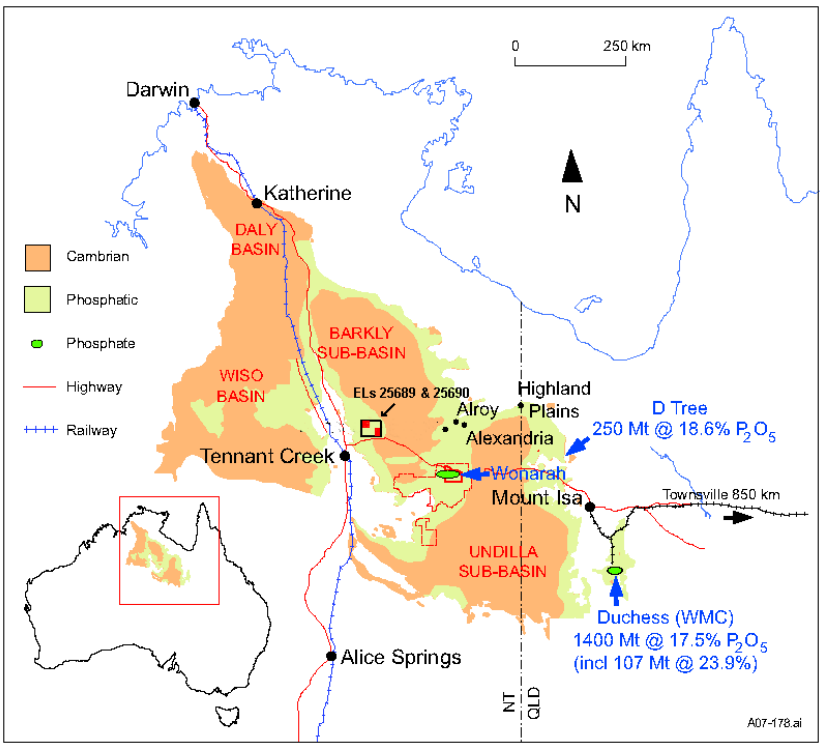
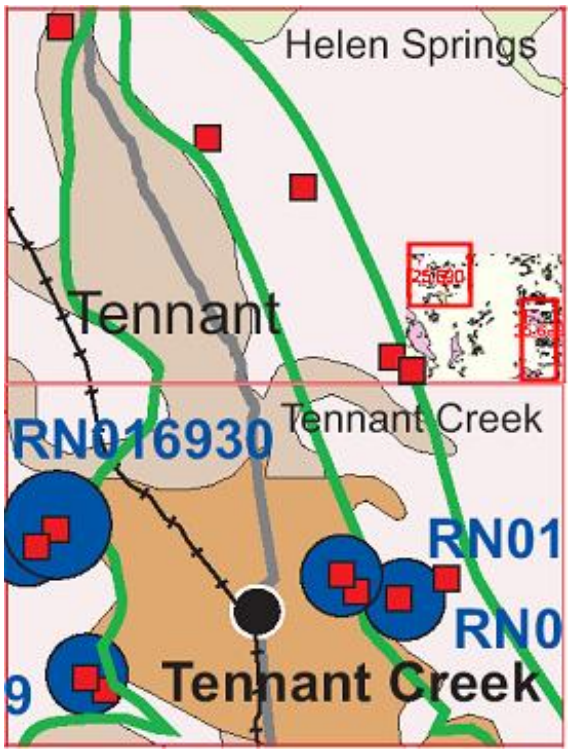


Figure 4 Distribution of phosphorite within the Daly, Wiso and Georgina Basins



The figure 5 on the left (from Khan et al) shows that phosphate testing had been performed on drill cuttings from water bores near the tenements. The red boxes indicate where they gave a strong reaction with ammonium molybdate reagent, while the blue circles show economically-interesting phosphate assays. The nearest of the latter is about a hundred kilometres from the tenement

Closer investigation of the data package revealed a Mapinfo file of source data. When overlaid on outlines of Els 25689 and 25690, it showed that a number of water wells close by, and within the tenements had been studied.

Figure 5 NTGS phosphate survey with strong indications in red boxes, economically-interesting in blue circles

The results of this study, together with significant assays found by Tianda, are shown below in Figure 6.

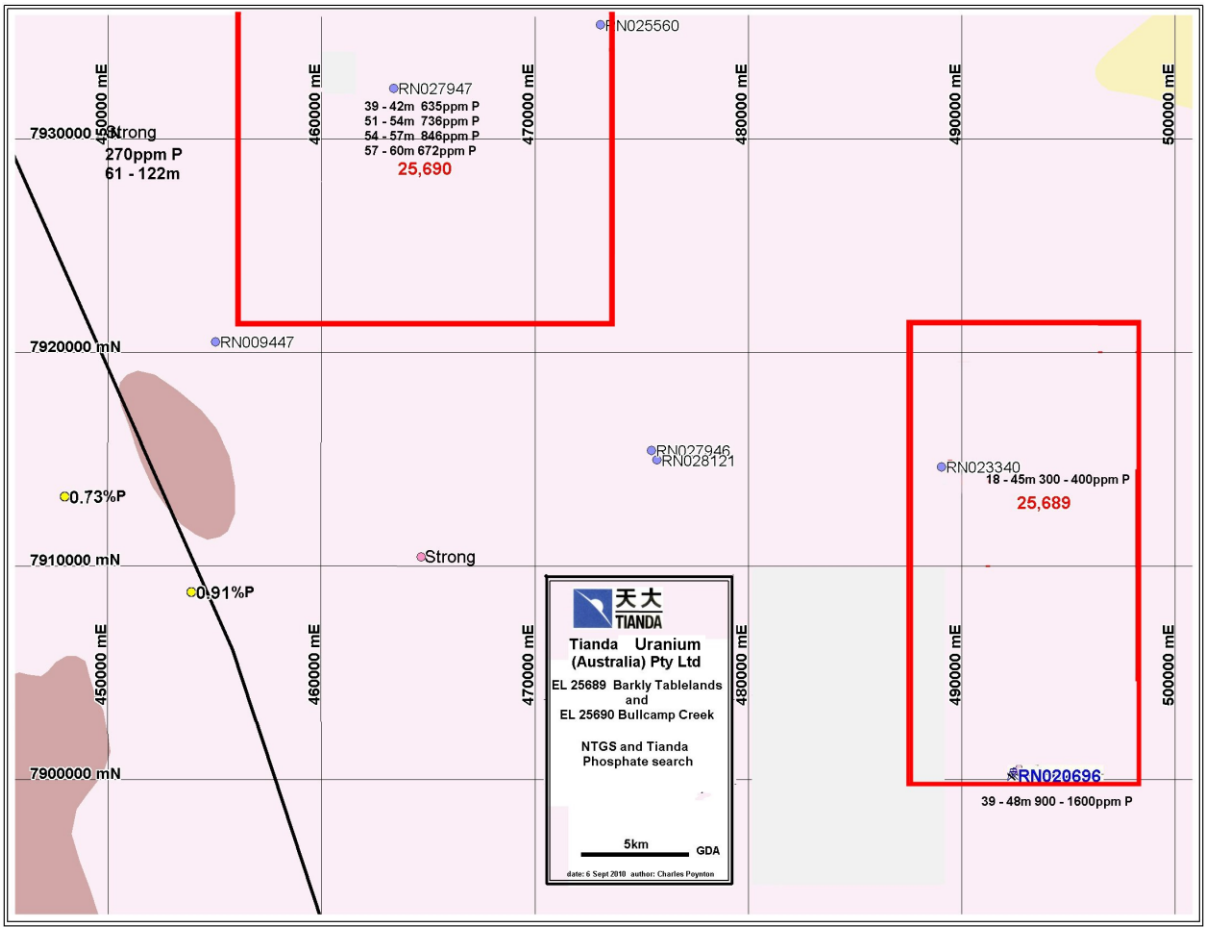


Figure 6 NTGS and Tianda phosphate search in SE corner of Helen Springs 250k

This revealed that a strong $PO_4^{=}$ reaction had been observed in the 61-122m metre interval on RN 07447, while 0.73% and 0.91% had been assayed on two holes to the southeast.

With respect to the RN 07447 sample, it covered an interval of 61 metres. This was the deepest of the four bores that were sampled, but few chips in the plastic phial could hardly be representative. This illustrates the difficulties of assessing the phosphate (or any other) prospectivity of these tenements based on the available drill cuttings. Furthermore, the hole is (like two others) not even within one of the tenements.

5.2 Data downloads from NRETA

A comprehensive database of borehole data is held by NRETA. A Mapinfo file of all waterwells in the Northern Territory was displayed for the tenement area. The were searched and files downloaded. Unfortunately, drill cuttings have only been retained for a small proportion of wells, due to storage constraints and mineral core priorities. Such wells as are stored have only a small phial of cuttings to observe and sample.

The PDF files downloaded were of more or less use for interpreting the lithology and stratigraphy. The vast majority of holes had drillers' logs describing the lithology. These were usually inadequate, with only a few words to describe the intervals. Some holes had no lithological description at all, particularly among holes which could provide a stratigraphic connection between the two tenements.

5.3 Sampling of waterwell drill cuttings

The NTGS core facility at Winnellie was visited to log and sample waterwell drill cuttings, such as were available. Furthermore, all the cuttings were photographed, albeit with mediocre results due to poor light and working conditions. Due to the small samples available, very modest quantities could be taken for analysis: about a teaspoonful, ie 7 grams.

Ideally, logging would be done with washed drill chips and maybe even a stereo microscope. Having only a small sample, this luxury was not available, nor was the light satisfactory. It was hoped that the geologist might recognize phosphate in the chips.

Altogether, there were six holes in vicinity of the exploration licenses available for inspection. These were :-

borenumber	mga_E	mga_N	logged	photographed	sampled	
RN007887	449717.8	7930295	yes	yes	481501 - 509	
RN009447	455032.8	7920504	yes	yes	no	
RN020696	492577.7	7900137	yes	yes	481301 - 327	
RN023340	489052.7	7914646	yes	yes	481401 - 411	<=problems with sample records
RN027946	475449.7	7915419	yes	yes	no	
RN027947	463371.8	7932377	yes	yes	481201 - 235	

No exotic mineralisation, nor any macrofossils, were observed and it was felt that the most reliable way to determine whether phosphate was present was by chemical analysis. Accordingly, the samples were sent to Perth for ICP analysis.

The logs and analysis results for calcium, iron, potassium and phosphorus are displayed in the following six figures, Figures 7 to 12 Three of the holes are within a tenement.

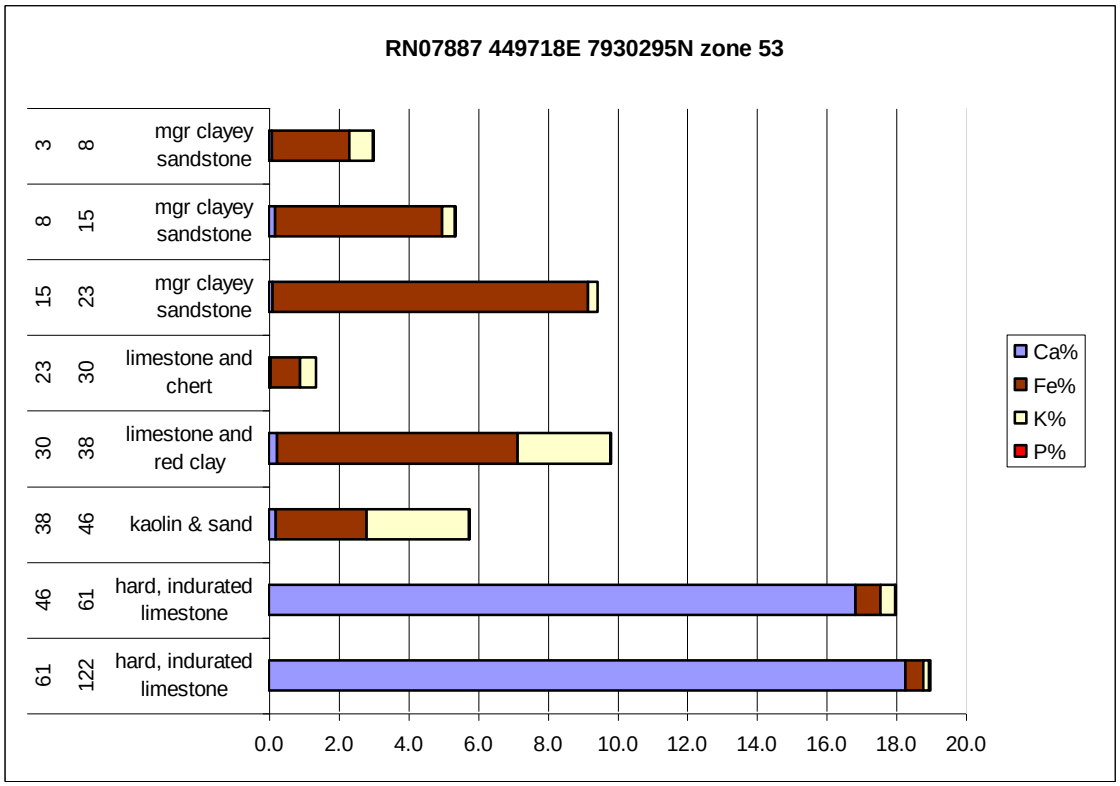


Figure 7 RN 07887 logs and assays – note the very long drill intervals (particularly the last) represented by a tiny "sample."

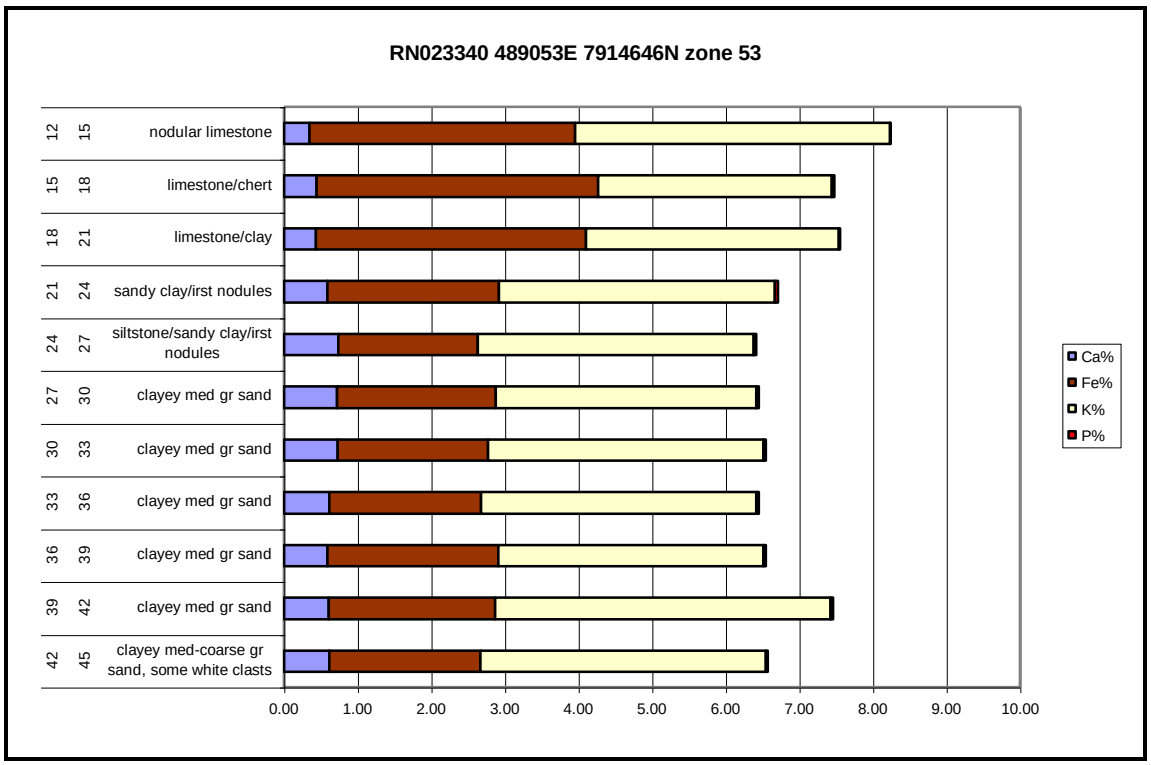


Figure 8 RN 23340 logs and assays – note that this hole was missing samples in both the early and late section, and the chips were labelled with 2m sample intervals. This conflicted with the 3m interval on all other holes and with the driller's logs, so adjustments were made

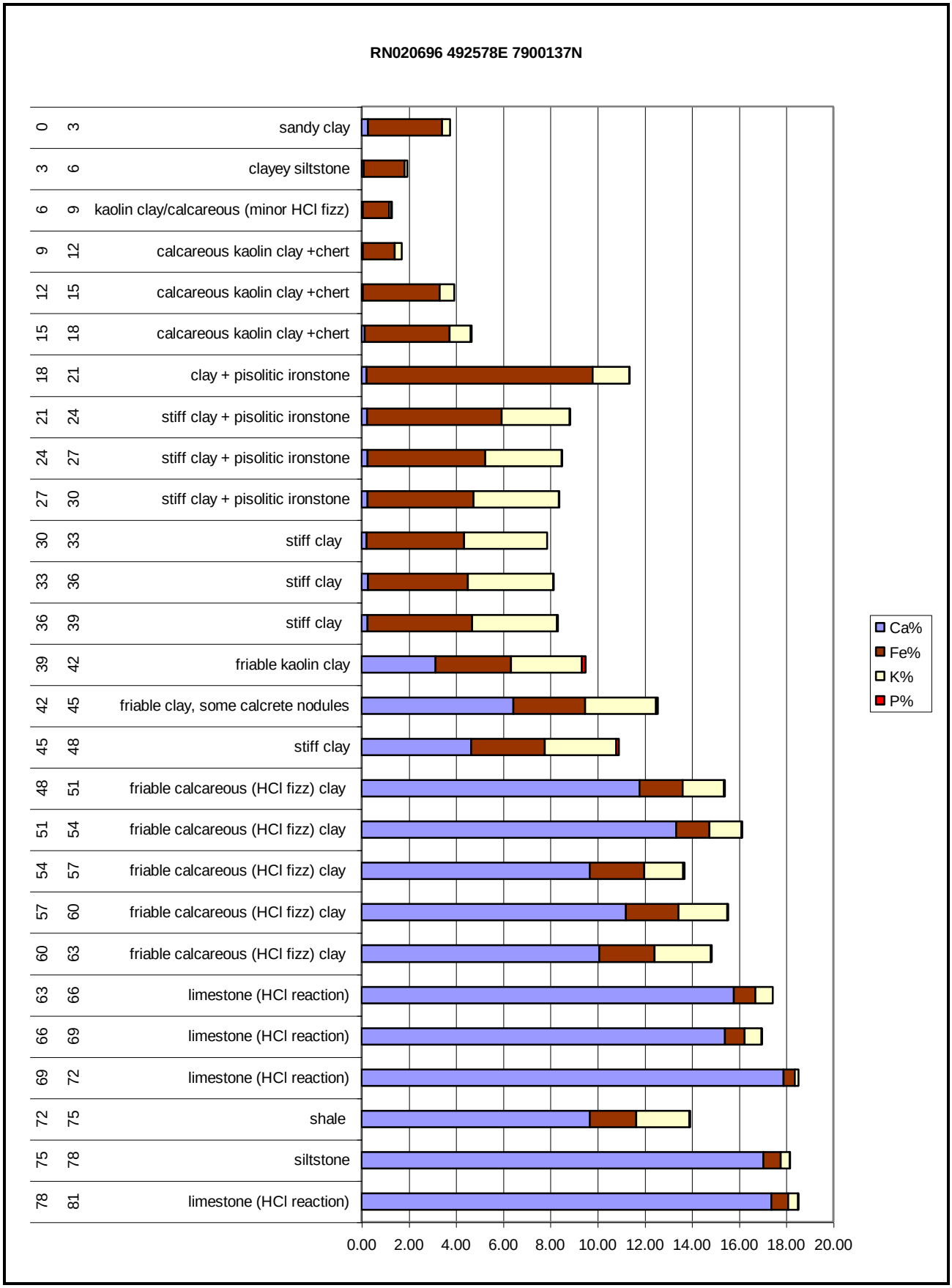


Figure 9 Rn 020696 logs and assays: this hole is one where there is sufficient phosphate to visible on the graph (39 - 42m). It is still far below any economic threshold

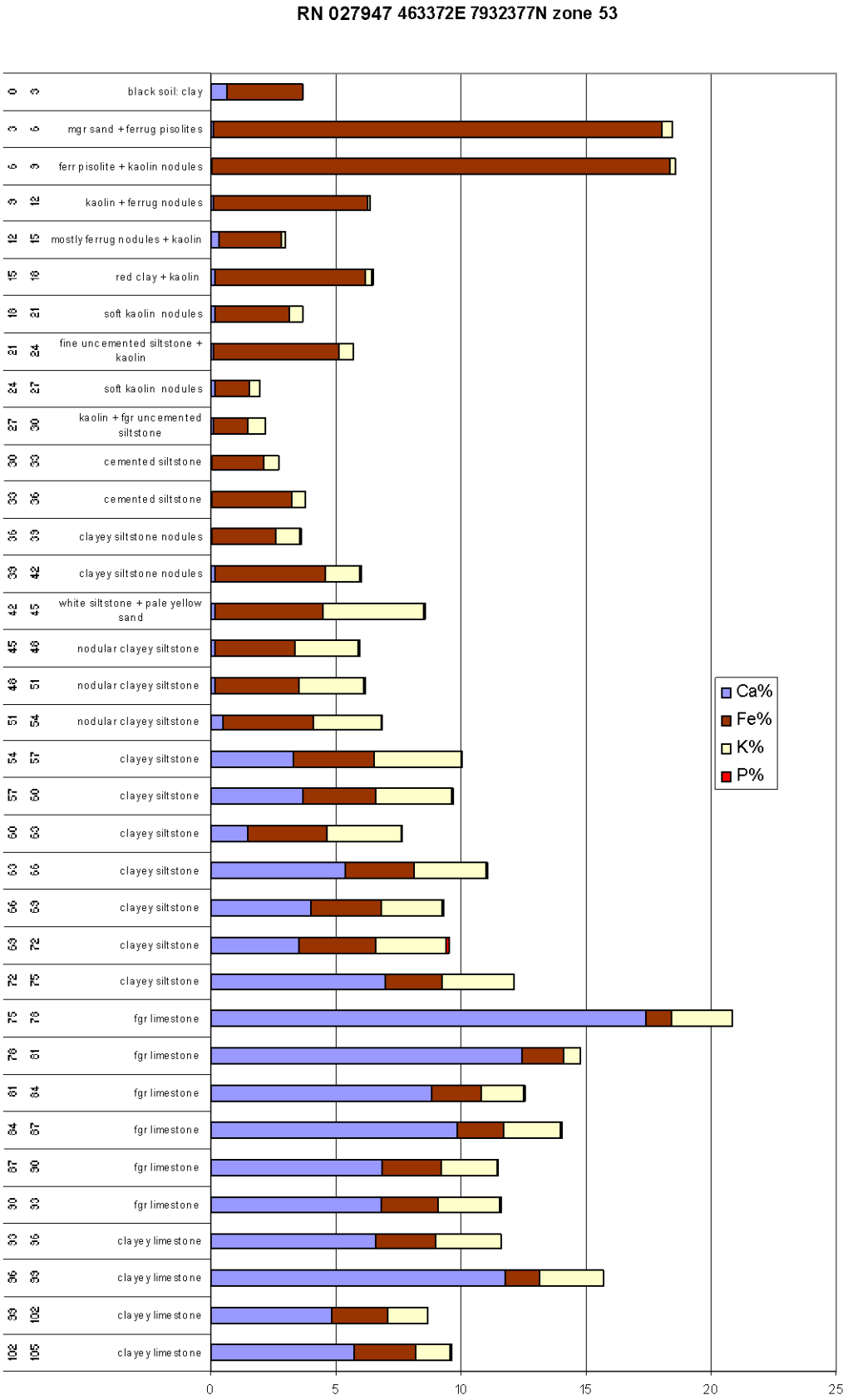


Figure 10 RN 27947 assays and logs: traces of phosphate are visible at depths of 30 - 45 metres

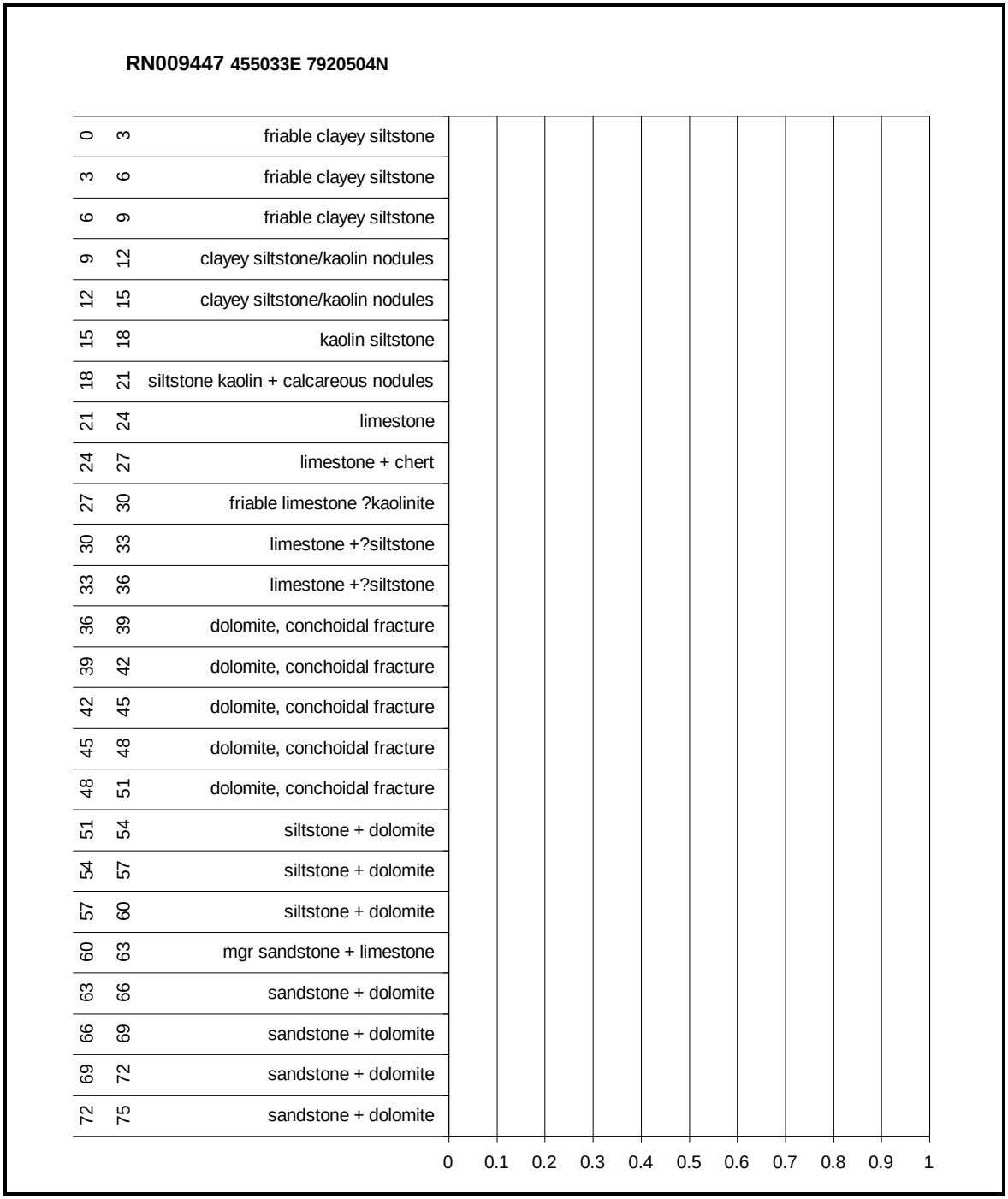


Figure 11 RN 09447 geologist's logs: no assay samples were taken of this hole, as it was outside the tenement.

RN027946 475450E 7915419N

0	3	black soil
3	6	clay
6	9	clay
9	12	clay
12	15	limestone + ?chert
15	18	friable limestone moderate HCl fizz
18	21	friable limestone moderate HCl fizz
21	24	friable limestone moderate HCl fizz
24	27	friable limestone moderate HCl fizz
27	30	friable limestone moderate HCl fizz
30	33	friable limestone moderate HCl fizz
33	36	hard, massive limestone strong HCl fizz
36	39	hard, massive limestone strong HCl fizz
39	126	no sample

Figure 12 RN 27946 geologist's logs: no sample taken as the hole was outside the tenement

5.4 Photography of cuttings

The drill cuttings were photographed as a permanent visible record at the time they were accessed. As mentioned previously, there were limitations due to the working conditions and particularly light. The camera was unsophisticated, nor did the storage containers lend themselves to satisfactory photography. Nevertheless, the photographs are included for the record and are available as digital files.

The drill chip photography is shown in Figure 13, where it is obvious that most of the holes are outside the tenement boundaries. This is an outcome of storage of only some drillholes by the NTGS, coupled with the simple reality that there are only a limited number of water wells. The photography is not very useful at this scale and is reproduced on an A0 sized PDF file in the Appendix.

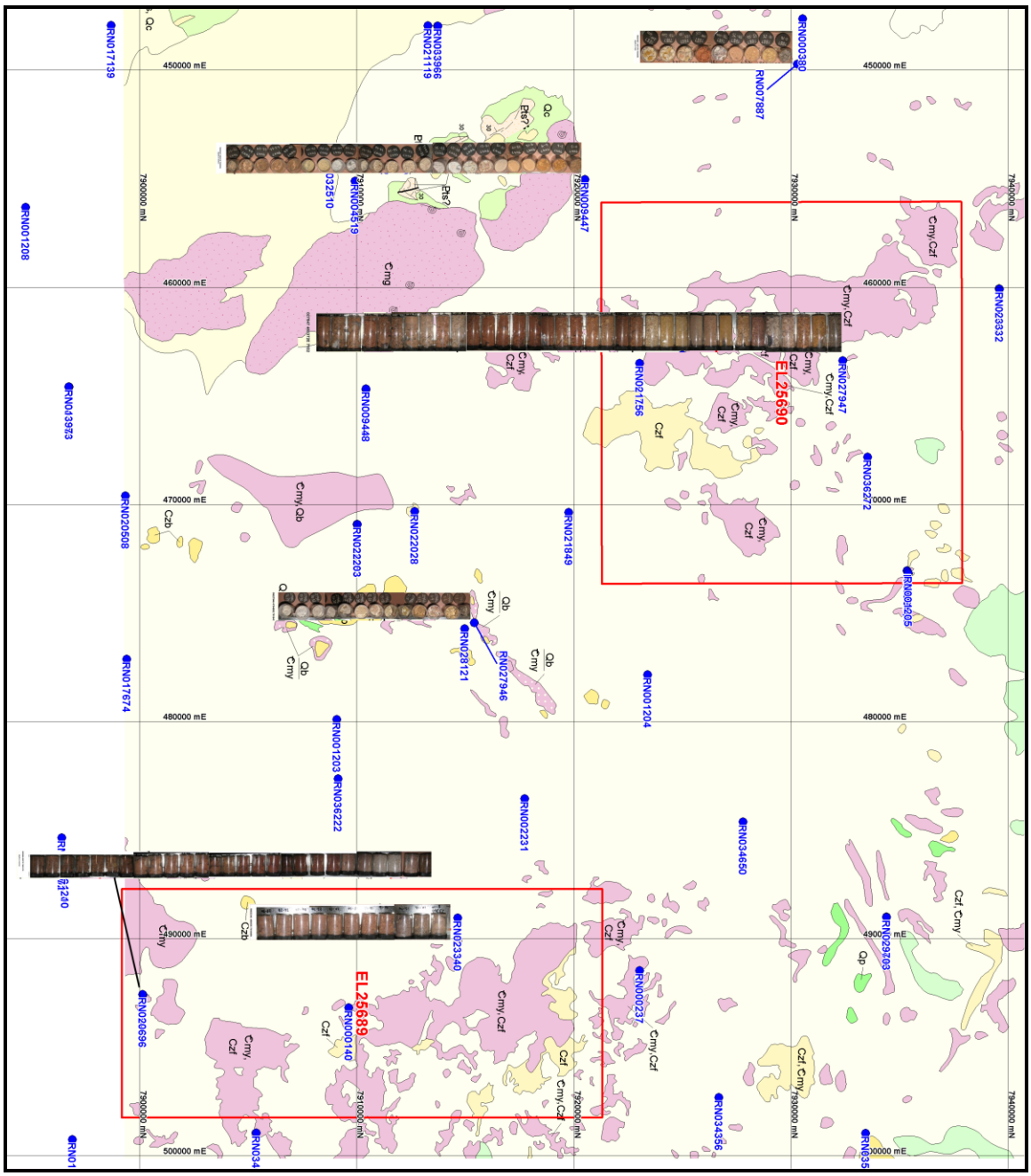


Figure 13 Photography of drill cuttings - available on an A0 sheet as Plate 1 in the Appendix

5.5 Stratigraphic Cross-sections

The borehole reports for fifty-seven water wells were downloaded from the NRETAS database as described in section 5.2, and examined. The drillers' logs were plotted on a basemap and displayed. It is more legible at A0 size and is in the Appendix as Plate 2, but the plan is reproduced below.

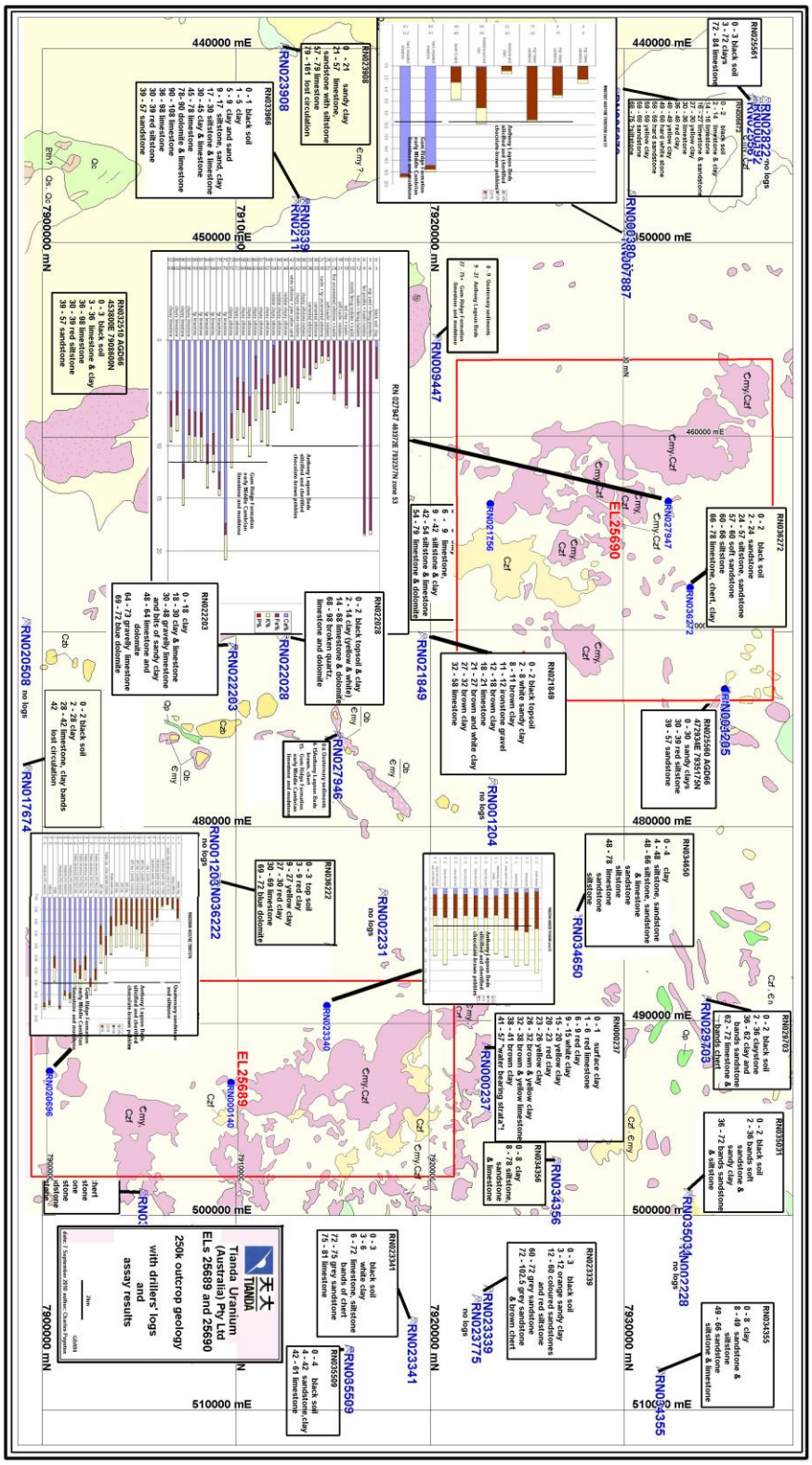


Figure 14 Geological map with drillers' logs and assays. This is reproduced as an A0 sheet in the Appendix as Plate 2

Fences of drillholes were selected to best represent these logs, with three (generally) west-east sets of holes chosen. The E-F fence on Figure 15 had RN032510 at its western extreme: this hole gave a P_2O_5 determination of 0.91% in the NTGS phosphate study (Record 2007-003).

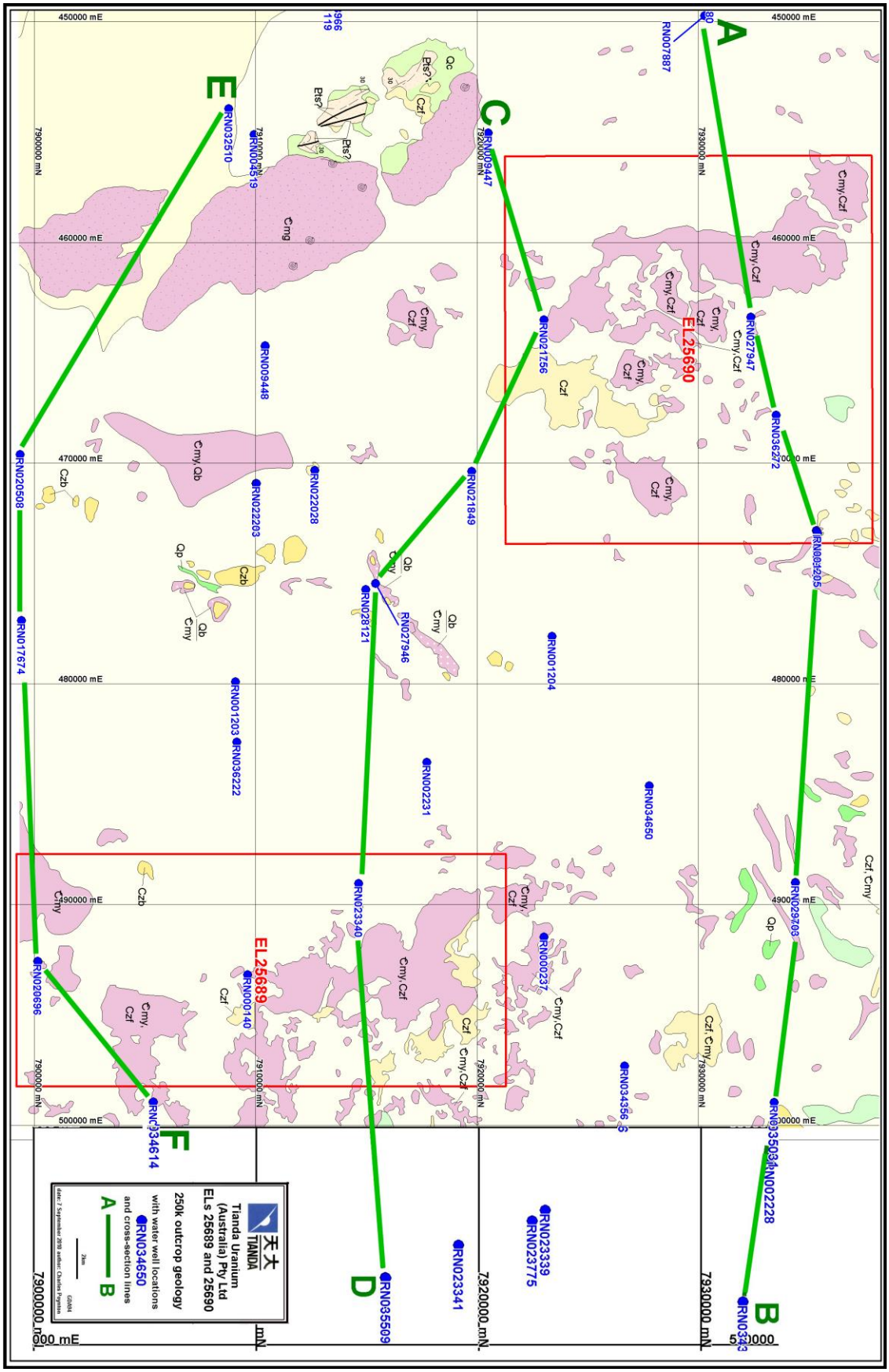


Figure 15 Water well fences chosen for stratigraphic sections.

The cross-sections were generated from the drillers' logs and are displayed below in Figure 16. Unfortunately, the drill depth of the modest phosphate assays in the southwest of the area is unknown and both holes are over 100m deep. It is apparent, however, that the phosphate assays are more promising on the south side of the area.

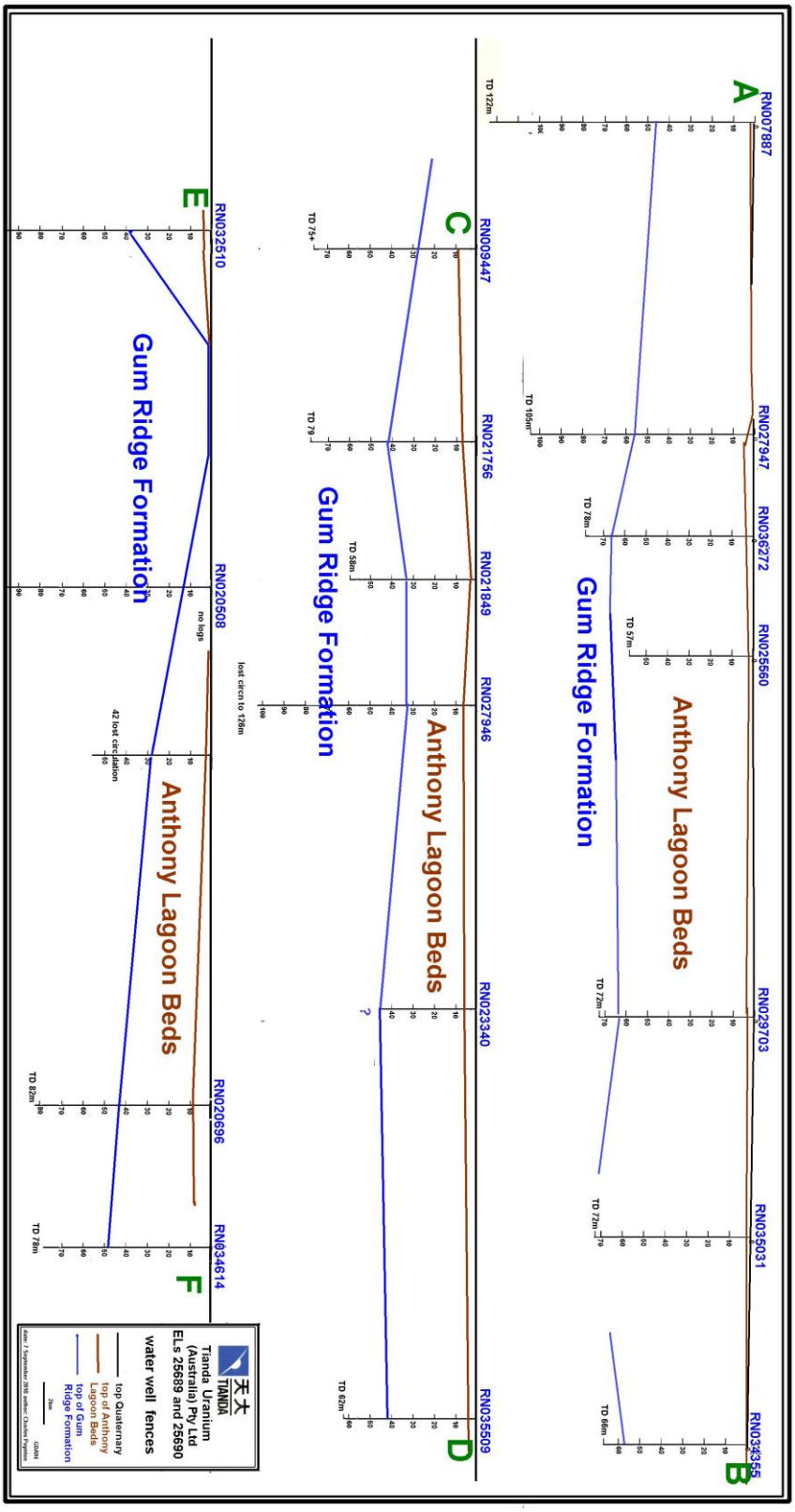


Figure 16 Stratigraphic cross-sections in the southeast of the Helen Springs 250k sheet

6 Discussion

The exploration program consisted of logging and sampling drill cuttings held in the Northern Territory core storage facility. Data from six holes was integrated with drillers' logs held in the NRETAS database and displayed as cross-sections.

The ICP assay data revealed phosphate abundances far below that which is interesting for a phosphate mine. The Duchess Mine in western Queensland has about 100 million tonnes at 24% P_2O_5. The highest assay results in the drill cuttings was 1650ppm P, two orders of magnitude lower. This is not to say that economic accumulations are not possible.

Only four drillholes were assayed, and two of them only covered a part of the drill depth. Two of the holes had problems with the sampling. RN007887 had "samples" covering very wide depth intervals of up to 61 metres. RN023340 was missing much of the hole. No realistic assessment of the prospectivity of the tenements can be made on so little evidence. The interpreted cross-sections suggest that the Gum Ridge Formation is much shallower in the south and west of the district.

Stratigraphic interpretation has been hampered by the sparsity of sampled drillholes, and by the tiny quantities of sample retained. The disconformities between the formations can only be surmised. In two holes, the contact has been assumed to be where the sample becomes much richer in calcium.

The phosphate assays of only one hole are of interest: RN020696. It has phosphate enrichment near the interpreted Anthony Lagoon Beds – Gum Ridge Formation disconformity

The Morginie Waterhole phosphate occurrence was recorded at RN016928 and RN010258, located about 100km south of EL25690, and about 40km from Tennant Creek. These both encountered 1 – 3% P_2O_5 in Gum Ridge Formation chert, clay and siltstone. Closer to EL25690, the water well RN032510 assayed up to 0.91%P. Logs in Record 2007-003 show this was probably in the very deep (>100m) Gum Ridge Formation limestones encountered in this hole. These occurrences show that phosphate does exist within the southwestern part of the Barkly Subbasin.

In summary the assay results of water bore cuttings are very disappointed.

7 Conclusions and Recommendations

As the phosphate exploration results of EL 25689 are very disappointed it has been decided to relinquish this tenement, and no exploration work will be carried out in the future.