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EL 2871 AND EL 2872

BORDERTOWN AREA

PARTIAL SURRENDER REPORT FOR THE PERIOD 30/11/2001 TO 29/11/2002

Submitted by
Iluka Resources Ltd
2003

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PRIMARY INDUSTRIES AND RESOURCES SA

ILUKA RESOURCES LIMITED

TECHNICAL REPORT

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PARTIAL SURRENDER REPORT EL2871 & EL2872 Bordertown 30/11/2001 to 29/11/2002

BY

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DIGITAL FILES

EL2871 & EL2872_200211_01_Report.pdf	: This Report
EL2871 & EL2872_200211_02_Logging_Codes.pdf	: Iluka Logging Codes
EL2871 & EL2872_200211_03_collars.txt	: Surface Location File
EL2871 & EL2872_200211_04_geolass.txt	: Lithological Logging File
EL2871 & EL2872_200211_05_verification list.txt	: Files included with report

PARTIAL RELINQUISHMENT REPORT

1. INTRODUCTION

1.1 Tenure

This is a partial relinquishment report for EL 2871 and EL 2872, in the Ngarkat-Naracoorte area in the south-east of South Australia. These tenements were granted in November 2001, with the partial surrender of the tenements occurring early 2003. EL 2871 was reduced in size from 2438 sq. km to 2564 sq. km, while EL2872, to the south, was reduced from 2437 sq. km to 460 sq. km. This report covers work carried out on the relinquished portion of the licence from the grant of the title to the time of relinquishment.

1.1.1 Location

The licenses are located in the south east of South Australia, on the Victorian border between the Ngarkat Conservation Reserve to the north and Naracoorte township to the south.

The relinquished portions of the licence areas are highlighted in Figure 1.

1:250,000	***Map Sheets***	***1:100,000***
Pinaroo SI541		Tintinara 6926
Naracoorte SJ5402		Keith 6925
Penola SJ5406		Cannawigara 7025
		Lucindale 6924
		Naracoorte 7024
		Penola 7023

1.2 Exploration History and Rationale

Iluka Resources exploration rationale in the Murray Basin has been to target the mineralised sediments deposited during the Pliocene marine transgression (Loxton-Parilla Sand), concentrating on higher grade, coarse grained strands in regions of favourable mineral assemblage. The exploration for heavy mineral sand placer deposits has been performed using two techniques.

Airborne magnetics have been used by Iluka Resources Limited as a first pass coverage of the license to delineate direct drill targets from magnetic anomalies (derived from both airborne magnetic surveys commissioned by Iluka Resources and the VIMP magnetic data). This approach has been extremely successful in delineating heavy mineral strands in Victoria and other parts of NSW.

Drilling traverses are planned based on drilling of the magnetic targets, previous data, regional structural contour maps (enhanced by our own drilling) and detailed digital terrain models. Drilling traverses usually commence with wide spaced holes to investigate the broad geological setting closing down to close spaced drilling as required by geology and mineral intersections.

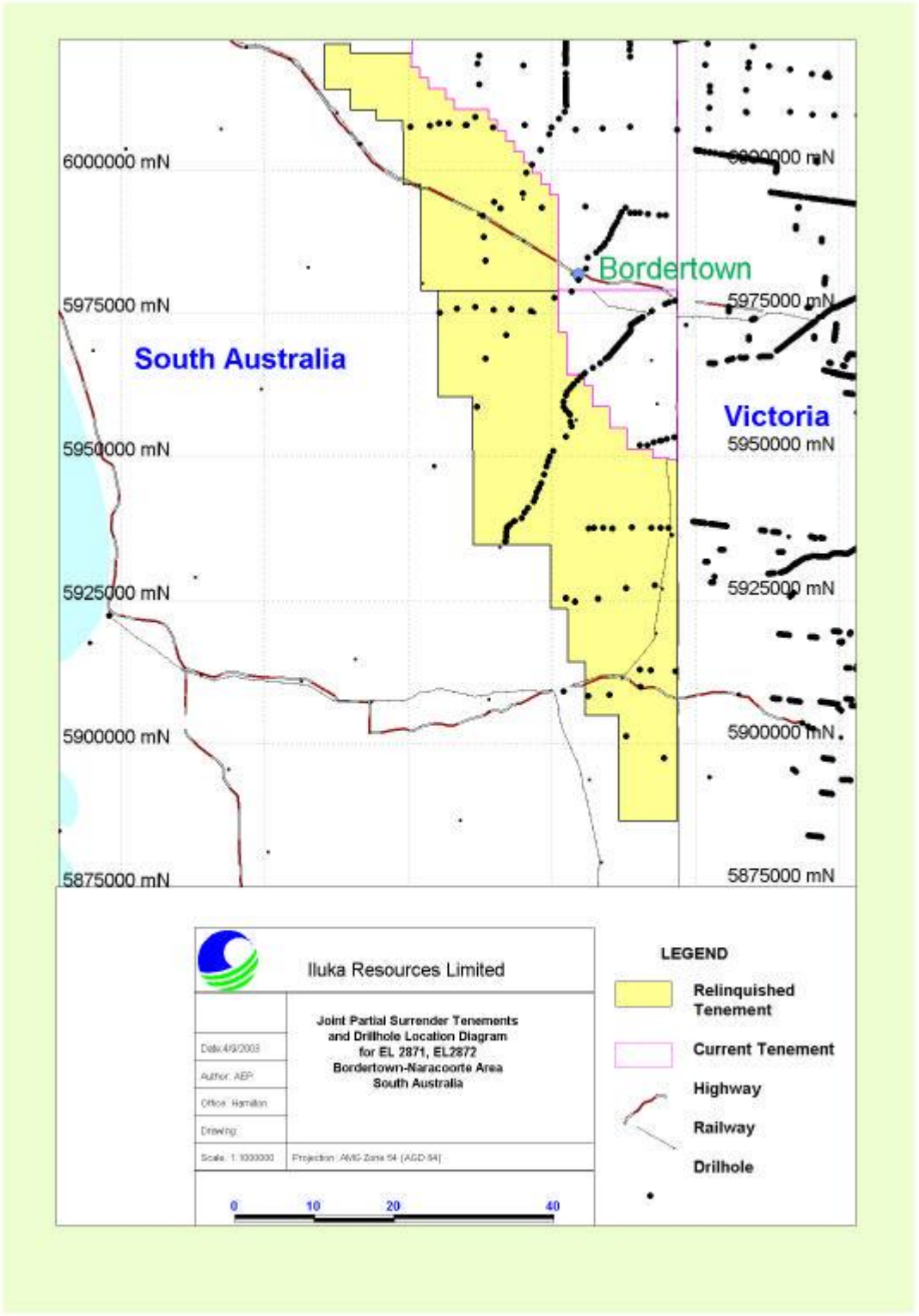

Figure 1: Locality Map

2. GEOLOGY

2.1 Regional Geology

The Murray Basin has been described as a shallow, intracratonic Cainozoic basin covering an area of 300,000 km^2 in south eastern South Australia, south western New South Wales and north western Victoria. The Murray Basin is flanked by low mountain ranges of Proterozoic and Palaeozoic rocks.

Much of the sedimentary sequence within the basin is the result of repeated marine incursions from the southwest, with the latest transgressive-regressive event resulting in deposition of the Late Miocene to Late Pliocene Loxton-Parilla Sand. These sediments were deposited in shallow-marine, littoral and fluvial conditions and comprise fine to coarse-grained, generally well-sorted sand, with minor clay, silt and gravel and host the Murray Basin mineral sand deposits.

Overlying the Loxton-Parilla Sand in the northern and eastern Murray Basin is the Shepparton Formation. This deposit style consists of mixed fluvial channel and floodplain deposits, including some aeolian sediments. The lithology of the Shepparton Formation varies between gravel and clay. The source material varies between regions, leading to the subdivision of the unit based on geomorphic forms and soils, but all are consistent with Riverine Plain sedimentation (Brown & Stephenson, 1991). The relationship of this unit with the Blanchetown clay is still unknown yet from geology logs obtained from Iluka Resources exploration programs, the Shepparton Formation is found either underlying or within the Blanchetown Clay.

A unit of greenish grey Blanchetown Clay disconformably overlies the Parilla Sand. The unconformity is often marked by a weathering profile that is locally siliceous or lateritic and termed the Karoonda Surface (Brown & Stephenson, 1991). The Blanchetown Clay is a fluvio-lacustrine deposit with most sedimentation taking place in a large freshwater lake. Within South Australia, the unit was deposited together with the Bungunnia Limestone (Douglas and Ferguson, 1988).

Disconformably overlying the Blanchetown Clays is the Quaternary Woorinen Formation. This formation is described as consisting of “red-brown siliceous silty sand, red calcareous silty clay and sandy clay” (Brown & Stephenson, 1991). It is generally 2-3m thick, but contains east-west longitudinal dunes that can locally be considerably thicker. The Woorinen Formation was deposited in an aeolian environment. Other aeolian landforms have been identified on the basin, particularly the Lowan/Molineaux Sands occurring in the western part of the Murray Basin. These Dune Fields, occur as three tongues otherwise known as the Sunset Desert, Big Desert and Little Desert. The dune patterns and types are different from the tear shaped east-west dunes of the Worrinen Formation (Douglas and Ferguson, 1988).

2.2 Local Geology

Situated within the south-western margins of the Murray Basin, the geology is comprised of three basic units; a basal limestone, the Loxton-Parilla Sands unit, and

recent dunes and swales of the Woorinen Formation. The basal limestone is characteristically massive, white to buff in colour and generally dominated by large oyster and bryozoan fragments hosted by a lime and quartz sand matrix. The limestone horizon dips to the north-west with depths varying from a maximum 110 m in the south-east to 35 m in the north-west.

Regional drilling has shown the distribution and thickness of the Parilla sands being generally coincident both with the relative level of the limestone and the thickness of overburden. In the south-east and north-west, where limestone is close to the surface beneath a thin veneer of overburden, a foreshore sequence is not discernable. The overburden in this area is interpreted as fluvio-lacustrine sands and sandy clays; possibly still part of the Parilla unit. In the east and north-east where the limestone dips away and overburden thickness increases dramatically, a typical LPS foreshore, surf zone and lower shore face sequence is apparent.

Foreshore packets are discontinuous across strike, suggesting possible foreshore/dune and swale morphology. These swales are characterised by interbedded fluvio-lacustrine clays, sands and sandy clays. Brown and Stephenson (1991) have classed similar lithology in south-eastern South Australia as a terrestrial, near-coastal extension of the LPS unit.

3. WORK UNDERTAKEN DURING REPORING PERIOD

3.1 Drilling

All drilling was carried out with air core drill rigs. All collars have been surveyed by Differential GPS and are included with the report as an electronic (see *EL2871 &* EL2872*_200309_03_collars.txt*). Rods were NQ size giving approximately 10 cm diameter holes. Sampling of the holes varied from 1.0m to 3.0m (typically 1.5m), intervals depending on the geology with a 1 to 2 kg split taken by rotary splitter for logging and laboratory analysis.

A subsample was taken from each sample for logging and panning. The logging procedure involved using wet panning to remove the clay fraction from the sample and then hydraulic separation to estimate the percentage of heavy mineral. A small portion was retained in chip trays for later inspection.

The ease with which clays were liberated from the sample was logged on a scale of very easy to impossible (see *EL2871 &* EL2872*_200309_02_Logging_Codes.pdf*) and the percentage of clay ("Slimes") was also recorded. The presence and type of cemented fragments was recorded with an estimate of percentage ("Rock"). The ease with which the drill penetrated the ground was recorded on a scale of 1 to 5 ("Hardness"). Colour, dominant grainsize, max grainsize and sorting were also recorded. All geology logs are digitally included with this report (see *EL2871 &* EL2872*_200309_03_geolass.txt*).

3.1.1 SUMMARY

Regional stratigraphic drilling commenced at 3.2 km spaced intervals, however hole spacing was reduced to 1600 or 800 m upon discovery of suspected LPS foreshore sands and to 100 m at any HM intersection greater than 0.5%.

ST01-6

The geology from lines ST01 to 06 is a reasonably consistent fluvio-lacustrine sequence of interbedded well sorted clays, silts and silty clays, and moderately to poorly sorted, fine to coarse grained sands and sandy clays. The depth from surface to the underlying Murray Group limestone varies from zero to fifteen metres, thickening to the north. A thin wedge of well sorted, medium grained sand at the western margin of line ST06 may be the edge of a weak foreshore unit. Otherwise, beach facies sands are absent.

ST08

Three distinct foreshore packets, separated by channel-fill and/or fluvio-lacustrine sediments, distinguish line ST08. The two western-most beach facies are shallow and laterally extensive with well developed gritty surfzones, fine to coarse grained foreshore sands and prominent back-beach dunes. Towards the eastern end of ST08, the seaward tail of a potentially significant sand package is intercepted. The foreshore unit thickens towards the tenement boundary to a maximum 18 metres over a narrow gritty surf zone.

ST09

ST09 displays 2-18m of predominately lacustrine clays and silty clays with minor interbedded fluvial sands over a pervasive and undulating Murray Group limestone basement. LPS foreshore or surf zone sands are absent.

ST12

Shallow limestone with a thin cover of lacustrine silty-clays at the south-western end of ST12 grades gradually to the best expression of beach facies sands across the two tenements. As the limestone basement dips away to the north and surface RL's increase, a broad, continuous LPS sequence some 6km across is evident in the north-eastern third of the drill line. Again, the north-eastern extremity is the most promising with 24m of well-sorted, medium to very coarse foreshore sands over a well developed pebbly surf zone. Top foreshore is between 6 to 10m in the north-east.

ST13

ST13 is dominated by a thick sequence of fluvio-lacustrine sands, sandy clays, indurated clay and sandstone. The seaward edge of a possible beach sequence appears in the last drill hole to the north.

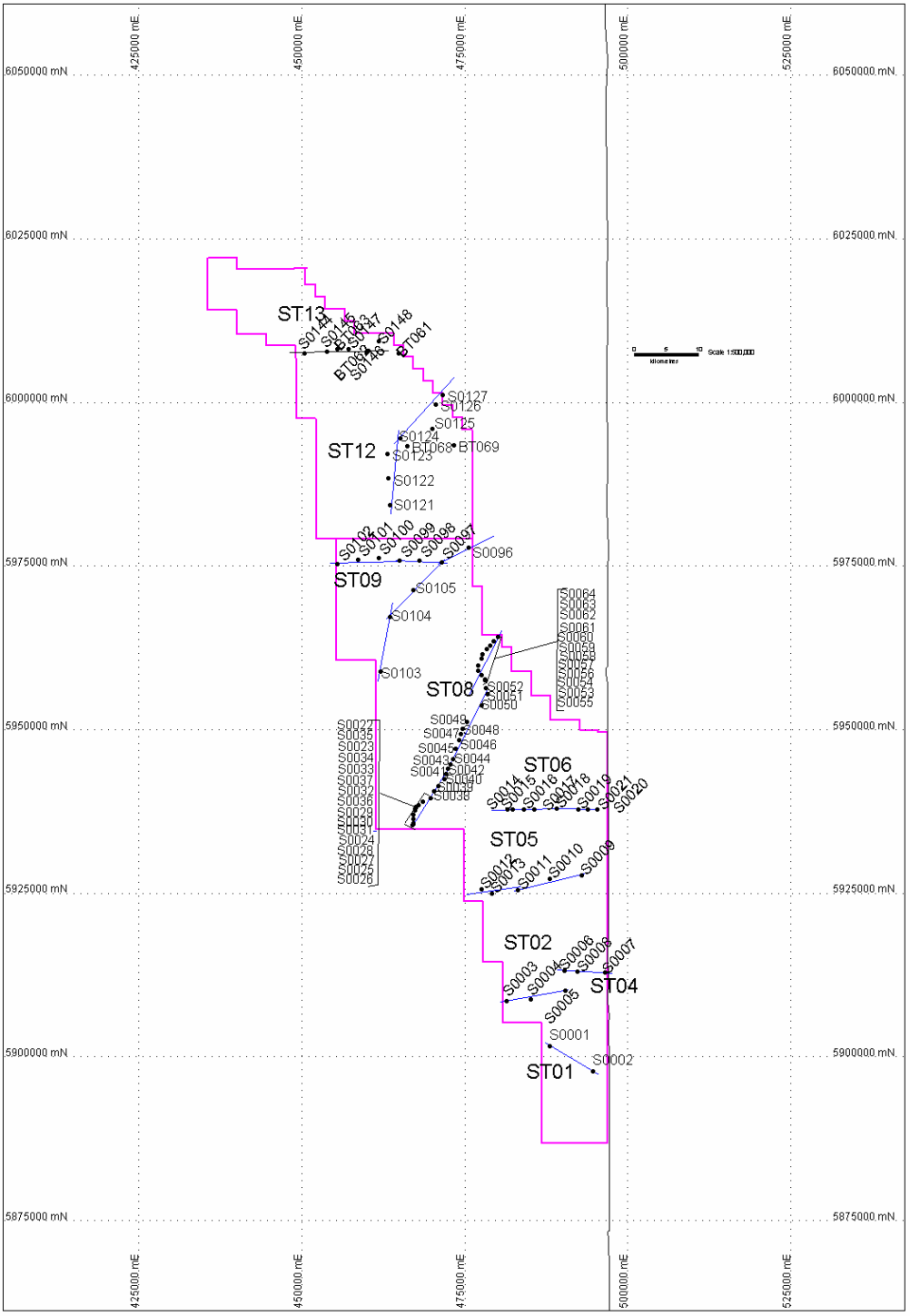

Figure 2: Drill hole Location Plan (Grid Projection in MGA Zone 54 (GDA94)).

3.2 Geochemistry

3.2.1 Heavy Mineral Determination

The samples collected were assayed for Heavy Mineral content at Iluka's Laboratory in Hamilton. Upon receipt samples were dried, weighed, and attritioned, then wet screened to remove the slime (-53 micron) fraction. The samples were again dried, weighed, and screened to remove the fraction greater than 2 mm (oversize) and an approximate 100g homogenous subsample was obtained for assay. The samples were further screened at 710 microns and the remaining subsample of the -710um +53 um fraction underwent Heavy Mineral (HM) separation using LST (a solution of lithium hetrapoly tungstates) at a specific gravity of 2.85. The weights are then used to calculate percent slimes, percent oversize and percent HM for the entire sample. Backup samples of the oversize and sand fraction plus the separated HM fractions have been retained to allow further analysis.

Both internal and external checks are conducted on random samples for quality assurance purposes. After washing the original sample (~2kg), the sample is riffled three times from alternate sides to end up with 2 X 1kg samples. One of the samples is put aside for internal testing which undergoes the same procedure that is described above. The remaining sample is rifled down to to obtain an approximate 100g sample. This sample is bagged and sent for external testing.

3.2.2 Mineral Assemblage determinations

Mineral assemblage determinations are made using so-called permroll analysis where individual drill hole samples are chosen from final assay sections for assemblage determination. The remaining sand fraction (for selected samples) from the HM assay procedure (see above), are then composited together based on weighting calculated on sample weight, % sand fraction and sample interval. The samples selected generally encompass a >3% HM mineralisation (depending on individual deposits) or a distinctive mineralogical zone identified from the geology (i.e. strand and dunal HM)

The composited bulk sample is passed over a vibrating wet table to separate the HM concentrate from a sand tail. Following sizing and assaying of both the HM concentrate and tail, the HM concentrate is sent to Iluka Resources Limited Capel Laboratory for analysis. The HM concentrate is passed over a rotating variable speed, permanent (rare-earth) magnet which is run at a range of set speeds to produce a suite of magnetic separates which are subsequently analysed by XRF to determine the bulk mineral assemblage and Ilmenite chemistry. The non-magnetic fraction, containing both rutile and zircon (<200rpm non-magnetic fraction) is further separated by SG using TMF (Clerici Solution). The "rutile" and "zircon" fractions are analysed by XRF for mineral quality purposes and percentages of rutile and zircon are used with the Permroll results to determine the mineral assemblage in the wet table concentrate. Recovery losses across the wet table are taken into account to give the final heavy mineral assemblage.

HM within the sand tail (from wet table separation) is sent to Narngalu Laboratory for XRF analysis. The final reported assemblages reflect proportions of rutile, zircon, ilmenite (and chemistry), non-magnetic leucoxene, leucoxene, magnetic others, non-magnetic others and monazite found in the composited sample.

4. RESULTS OF EXPLORATION

No significant mineralisation was recorded across the relinquished portions of either of the two tenements. Closer-spaced drilling (800m) across areas of possible foreshore sand, particularly on line ST08 produced a few minor intersections (based on field HM estimates only). In the south-west of ST08, near the Padthaway Ridge, an approximately 100m wide pod (1.5m@1.2%@15m) was the best intersection for both tenements. Drilled out to 50m hole centres, it is interpreted as fluvial reworked beach sands. Two further minor intersections between 0.5 and 1.0% were drilled out on ST08. Trace (<0.3%) mineralisation was encountered sporadically in all areas of interpreted foreshore sand.

License	Work performed	Holes/metres	Intersections(>1% or >3%) Hole Number	Interval (m)	Grade (%)
EL2872	eg: Lit, Mag interp; geol-modelling; drilling	152/3907	S0034	13.5-15	1.3
			S0036	13.5-15	1.2
			S0037	13.5-15	1.3
			S0041	21-22.5	1.1
			S0041	22.5-24	1.2
			S0041	24-25.5	1.1
			S0093	12-13.5	4.4

Table 1 – List of heavy mineral intersections greater than 1%.

5. CONCLUSIONS

The SW portions of EL2871 and EL2872 have now been relinquished and this final report submitted for viewing by any future exploration companies working in this area.