# NORTHERN TERRITORY PROJECTS

RSL has five projects within Australia's Northern Territory. All are situated within a few tens of kilometres of the main north-south Stuart Highway and are within 300km of Darwin (Figures 1 and 3). They are within, or marginal to, the Paleoproterozoic Pine Creek Geosyncline that is richly endowed with uranium, polymetallic, gold, and iron deposits.

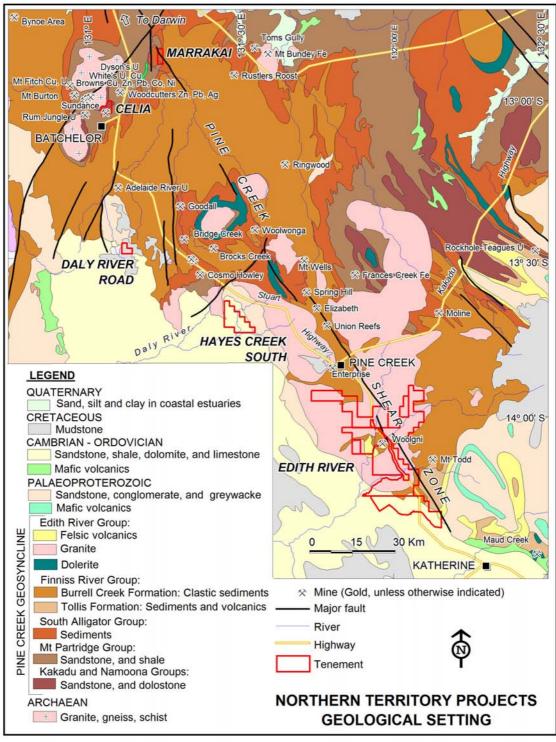


Figure 3 Northern Territory Projects – Geological setting

The Pine Creek Geosyncline consists of Paleoproterozoic metasedimentary rocks that overly a gneissic and granitic Archaean basement. The geosynclinal sequence is intruded by granitic plutons that are also of Paleoproterozoic age. The basement outcrops in two domes in the northwest of the region near the town of Batchelor. Uranium and polymetallic mineralisation is present within the Paleoproterozoic sediments in the vicinity of the domes, associated with major faults and shears. Dormant mines and deposits under development or exploration in the area include Woodcutters (Zn, Pb, Ag), Rum Jungle and Dysons (U), Whites and Mt Fitch (Cu, U), and Browns (Cu, Zn, Pb, Co, Ni).

The major Alligator Rivers Uranium Field that includes the Ranger, Narbarlek, and Jabiluka deposits is in the northeast of the Pine Creek Inlier. The smaller deposits of the South Alligator Valley Mineral Field are situated to the northeast of Pine Creek.

Iron ore mining has also taken place at Mt Bundey in the north of the geosyncline and is currently occurring at Frances Creek, in its central portion.

A regional north-northwest trending shear zone, the Pine Creek Shear, passes through RSL's Edith River and Marrakai project areas (Figure 3). The shear zone contains a number of sub-parallel faults present within corridor that has a width of up to 5km. It postdates the granitic intrusions and is considered to have been a major locus for the passage of gold-bearing fluids. It is spatially related to a number of major gold deposits. The pre-mining resources of the larger gold deposits within the region are summarised in Table 2.

Table 2 Pre-mining resources of major Pine Creek Geosyncline gold deposits

Deposit	Mt	Au (g/t)	Gold (Moz)
Mount Todd	194	1.0	6.4
Union Reefs	23	1.9	1.4
<b>Brocks Creek</b>	18	1.7	1.0
Maud Creek	11	3.0	1.0
Cosmo Howley	9.6	3.0	0.94
Enterprise	8.8	2.7	0.76
Woolwonga	5	3	0.5

## **EDITH RIVER PROJECT**

#### Introduction

The Edith River Project consists of eight contiguous Exploration Licences ("ELs"), six of which are granted. They cover almost 1000km² between Pine Creek and Katherine in the Northern Territory, approximately 230km south of Darwin (Figure 1). The tenements are situated at the southern end of the Pine Creek Geosyncline, in the vicinity of the Pine Creek Shear. The project includes a number of uranium and gold prospects.

## **Tenements and Agreements**

The Edith River Project comprises six granted ELs and two applications for ELs ("ELAs"). A portion of one of the granted ELs has been applied for as a mining lease ("ML"). The licences and applications are variously held by Orion Exploration Pty Ltd (Orion); Eastbourne Exploration Pty Ltd ("Eastbourne"); Jupiter Uranium Pty Ltd ("Jupiter"); and Bluekebble Pty Ltd, Redstone Metals Pty Ltd, and Zircon international Pty Ltd ("BRZ"). Eastbourne and Orion are wholly owned subsidiaries of RSL. The mining lease application is in the name of Tennant Creek Gold (NT) Pty Ltd ("TCG").

Agreements are in place whereby RSL is the beneficial holder of all of the tenements. Details are given in the solicitor's report and are summarised in Table 3.

**Table 3 Edith River Project - Tenement summary** 

Tenement	Area	Holder	Beneficial	Grant	Term	Annual
	$(km^2)$		Holder	Date	(years)	Commitment
EL23568	228.8	Orion	RSL	17/02/2003	8	\$350,000
EL23569	230.4	Orion	RSL	17/06/2003	8	\$40,000
EL26219	124.2	Eastbourne	RSL	16/11/2007	6	\$10,000
EL26220	18.0	Eastbourne	RSL	16/11/2007	6	\$10,000
ELA25884	65.0	BRZ	RSL	Application	6	NA
EL25885	211.7	Jupiter	RSL	22/10/2007	6	\$5000
EL26341	39.9	Jupiter	RSL	22/04/2008	6	\$5000
ELA27149	78.2	Orion	RSL	Application	6	NA
MLA24342	1.6*	TCG	RSL	Application	25	NA
Totals	996.2					\$420,000

<sup>\*</sup> MLA24342 is over a portion of EL23569

Portions of the project area are the subject of native title claims and aboriginal land rights agreements, details of which are given elsewhere in this Prospectus.

The historical workings within the mining lease application are subject to an area of Historical Exclusion, which has been accepted by RSL and which is currently with the Northern Territory Government for final approval. The location of the exclusion is shown on Figure 7.

#### **Location and Access**

The Edith River Project is located either side of the sealed Stuart Highway and the adjacent Alice Springs to Darwin railway. Its northern boundary is approximately

10km south of the town of Pine Creek, it has a north-south extent of approximately 50km, and its southern boundary is approximately 30km northwest of the town of Katherine. Access within the project area is mostly by pastoral tracks.

## **Geological Setting**

The Edith River Project is at the southern end of the Pine Creek Geosyncline (Figures 3 and 4). The project area is dominated by the southern portion of the granitic Cullen Batholith. The batholith is intrusive into metamorphosed shale, siltstone, and greywacke of the Burrell Creek Formation, pendants of which are present to the south of the Fergusson River in the central portion of the project area. The formation also covers portions of the north and southeast of the project area. Areas of Cambrian basalt and of Paleoproterozoic Edith River Group felsic volcanics are present within the centre and southeast of the project and Paleoproterozoic sediments are in the northwest and south of the area.

The Mount Todd gold mine, which had a pre-mining resource of 194Mt @ 1.0 g/t Au for 6.4Moz of gold, is a few kilometres to the east of the project area within the Burrell Creek Formation.

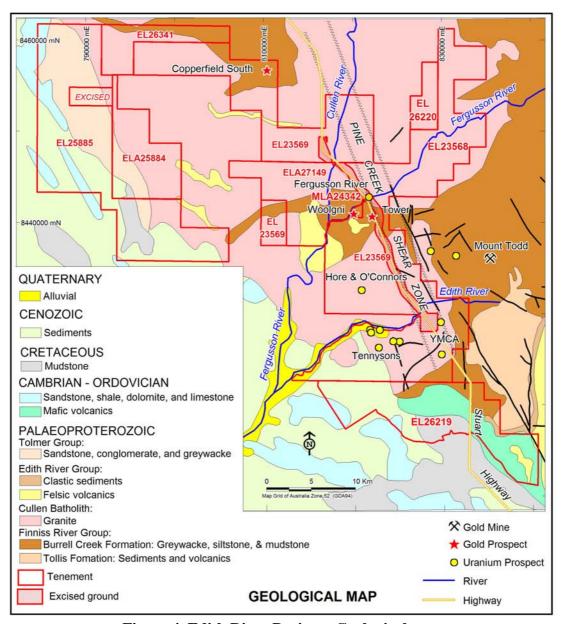


Figure 4 Edith River Project - Geological map

## URANIUM PROSPECTS

#### Introduction

The southern part of the Edith River Project contains a number of occurrences of uranium mineralisation (Figure 4) and regional radiometric surveys have identified uranium channel radiometric anomalies within its northern section (Figure 6).

# **Project Geology and Mineralisation**

The project is at the southern end of the north-northwest trending Pine Creek Shear Zone and the granite within the project area contains a number of shears that have a similar north-northwest orientation. These shears are associated with occurrences of uranium mineralisation, to the south of the Edith River, that were discovered by prospectors in 1952 (Figure 4). Occurrences to the east of the Stuart Highway were named the YMCA Prospects and six occurrences to the west were named the Tennyson's Prospects. The Hore and O'Connors and Fergusson River occurrences are to the north of the Edith River. Three shafts were sunk to between 10m and 30m in depth into the YMCA Prospects and another shaft was sunk about 16km to the north-northwest at the Fergusson River Prospect.

The mineralisation is within steeply dipping north-northwest trending shear zones that are up to 100m in width and contain en-echelon quartz veining. The granite within the shear zones is greisenised and the quartz is locally brecciated and cemented by a brown apatite-haematite-fluorite assemblage. Oxide zone uranium minerals are autunite, metaautinite, and torbernite.

## **Previous Exploration**

The YMCA and Tennyson's Prospects were explored by the Bureau of Mineral Resources ("BMR") during 1952-1954. The shafts at the YMCA Prospects were sunk on breccias that were interpreted to occur at the intersection of shears and cross-fractures. Two diamond drill holes were completed by the BMR into each of two of the YMCA Prospects, for a total length of 315m. The only available intersections, as measured by a downhole radiometric logging tool, were 1.5m @ 1,000ppm  $eU_3O_8$  at one prospect and 1m @ 1,000ppm  $eU_3O_8$  at the other.

EL25885 was explored by NuPower Resources Ltd ("NuPower") in joint venture with Jupiter during 2008. NuPower investigated weak radiometric anomalies in the northwest and southeast of the tenement that had been located by regional airborne survey. The anomalies were found to be in flat-lying, ferruginised sandstones of the Cambro-Ordovician Jindare Formation associated with lateritic weathering. Samples were collected sand analysed, but no significant uranium values were obtained.

# **Current Exploration**

During 2006 Orion carried out a rock chip sampling programme over the Fergusson River U Prospect. An altered metasediment from within a small shaft at the site contained 2.7% Cu, 0.5g/t Au, and 158ppm U.

Samples of altered and sheared granite from the area of the YMCA Prospects were submitted to Roger Townend and Associates ("Townend") for petrological examination. Townend reported that indications of hydrothermal alteration associated with possible uranium mineralisation were fine iron oxide (possibly haematite), sericite, and monazite containing above average contents of uranium and thorium. He, however, noted that the low chlorite content was a negative feature.

Orion commissioned the geophysical consultants, AsIs International Pty Ltd ("AsIs") to carry out a reinterpretation of exploration data over the Edith River project area, with an emphasis on the existing geophysical data. AsIs concluded that the area was highly prospective for uranium mineralisation, including vein, and Iron Oxide Copper Gold Uranium ("IOCGU") deposit types. It also suggested that interpretation of aeromagnetic data could reveal structures and shears that may host gold and/or base metal mineralisation within the Cullen Batholith.

During 2008 RSL used high resolution satellite images to delineate structures and zones of significant alteration in the Cullen Granite. These were followed-up on the ground by reconnaissance geological mapping and radiometric surveys.

Results from the Tennysons Prospect were encouraging, with 40 outcrops returning spectrometer readings greater than 200ppm  $eU_3O_8$ . The results are summarised in Table 4, in which the results from similar exploration in the vicinity of the YMCA 2 mineralisation are given for comparison. Due to the method of collection of the data, the readings should not be taken as quantitative measurements of the uranium content of the outcrops sampled, but rather as a qualitative indication of the extent and level of mineralisation. Readings were taken with a gamma-ray spectrometer held against outcrops, which method results in the preferential sampling of resistant veins as against more weathered inter-vein material.

**Table 4 Tennysons Prospect – Outcrop spectrometer readings** 

Prospect	Number of Readings	Readings >200ppm eU <sub>3</sub> O <sub>8</sub>	Readings >500ppm eU <sub>3</sub> O <sub>8</sub>	Average Reading ppm eU <sub>3</sub> O <sub>8</sub>	Maximum Reading ppm eU <sub>3</sub> O <sub>8</sub>
Tennysons	247	40	9	292	1522
YMCA 2	12	7	3	354	1210

The reconnaissance mapping revealed that the length, width, degree of iron alteration, brecciation, and quartz veining is visibly much stronger in the Tennysons prospect area than in the area of the YMCA Prospect. The areas of alteration are within deeply weathered, dark brown, coarse-grained granite. Intense iron alteration, multiple quartz veins, shearing, and breccia zones are present. Haematite and epidote alteration is present. Veins trend north-northwest and northeast and have steep dips. Individual alteration zones are up to 20m wide and individual veins are up to a metre in thickness.

High spectrometer readings were returned from areas of intense iron alteration, quartz veining, shearing, and brecciation.

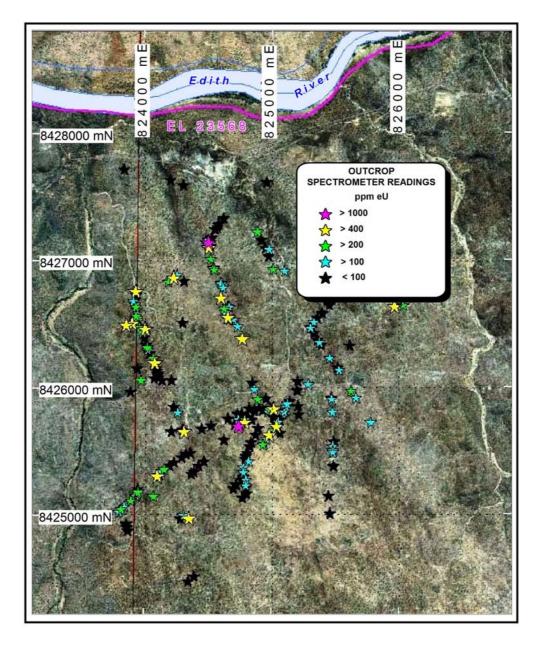


Figure 5 Tennysons Prospect - Outcrop spectrometer readings

## **Exploration Potential**

The project area is within the Pine Creek Geosyncline, a geological unit that is highly endowed with uranium mineralisation. Initial exploration within the south of the project area has identified a number of zones of alteration within granites. Both iron oxide and uranium alteration are present and there is potential for the presence of IOCGU mineralisation. The only drill-testing of these zones has been by two historical holes, both of which intersected mineralisation of the order of 1000eppm  $U_3O_8$ . Other parts of the project have not yet been systematically explored for uranium, but, as can be seen on Figure 6, a uranium channel radiometric map of the area, significant anomalies are also present both in the north and the northeast within granitic terrain.

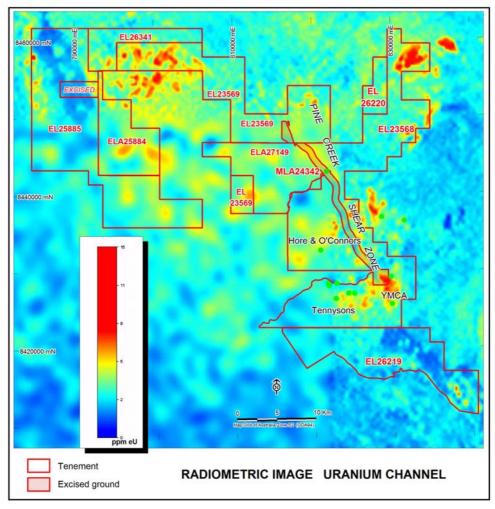


Figure 6 Edith River Project – Uranium channel radiometric image

There is also potential for unconformity hosted uranium mineralisation in the west of the project area, near the base of the Tolmer Group sediments and for sediment hosted roll-front type mineralisation within suitable beds of either the Tolmer Group or the overlying Palaeozoic sandstones.

## **Proposed Exploration**

RSL has begun the systematic exploration of the shear zones within the Cullen Batholith for uranium mineralisation. CRM recommends that this initial exploration of the Cullen Batholith by means of the identification and sampling of zones of alteration within it be continued. As good outcrop and only skeletal soil development is present over most of the prospective area, the application of spectral imagery should enable this to be done efficiently. The areas of alteration identified should be mapped in detail and surveyed with soil geochemistry and detailed ground radiometrics. Targets identified from these surveys should then be drill-tested.

## **GOLD PROSPECTS**

#### Introduction

The Edith River Project contains three gold prospects and is prospective elsewhere within its area for other gold mineralisation. The historical Woolgni Goldfield is within the project area, which is approximately 200km south of Darwin in the Northern Territory (Figure 1). The tenements are situated near the southern extent of the Pine Creek Geosyncline, in the vicinity of the Pine Creek Shear (Figure 3). The three prospects are the Woolgni Prospect, the Tower Prospect, and the Copperfield South Prospect. The Tower Prospect has never been drill-tested. Within it, gold mineralisation was uncovered in three trenches over a strike length of 600m; however the known mineralisation is marginal to an excised portion of the tenement.

## **Geological Setting**

The project area covers parts of the granitic Paleoproterozoic Cullen Batholith and areas of Burrell Creek Formation that occur to the north of the batholith and as a large pendant within it in the vicinity of the Fergusson River (Figure 4). The granite is intrusive into metamorphosed shale, siltstone, and greywacke of the Burrell Creek Formation. The granite and the metasediments are overlain by an outlier of felsic volcanics of the Palaeoproterozoic Edith River Group in the vicinity of Woolgni near the centre of the project area..

# **Woolgni Prospect**

## Mineralisation

Significant gold mineralisation is present at Woolgni, where two mineralised zones are present, each approximately 400m in length. The mineralisation is within pyritic quartz veins in silicified greywacke of the Burrell Creek Formation. The larger veins are of sub-economic grade over most of their lengths, but contain pods or shoots of higher grade material. The mineralised zones occur in two south dipping arcs and have been interpreted to be saddle reefs around the nose of a south-southeast plunging anticline (Figure 7).

#### **Historical Mining**

Alluvial gold mining commenced at Woolgni in 1897. Hard rock mining of rich quartz reefs followed, with two adits and a number of shafts being dug. Total production from the field is recorded as 3,840oz of gold, with the last production in 1905. Mining was concentrated on two lines of workings: Woolgni West and Woolgni East (Figure 7). A quantity of ore grading 3oz/ton was reported to have been obtained from the western lode, which had a width of 1.5m.

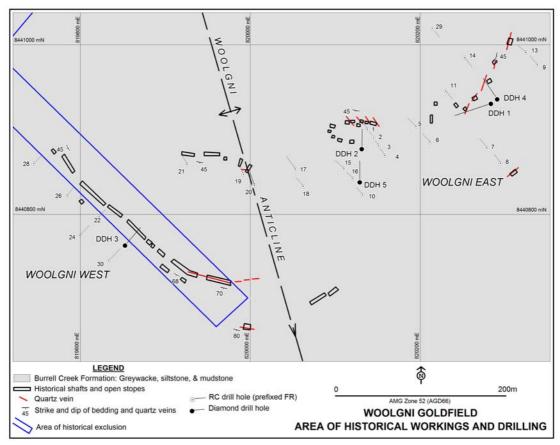


Figure 7 Woolgni Goldfield – Area of historical workings and drilling

# **Previous Exploration**

The Woolgni Goldfield was explored by Zapopan NL ("Zapopan") and its joint venture partners between 1987 and 1990. Initial exploration included the drilling of five diamond holes totalling 263m. The holes were drilled immediately under old mine workings. All holes intersected gold mineralisation. Zapopan also carried out a soil and rock chip sampling programme to the north across the Fergusson River.

Zapopan's second programme, during 1988, included detailed mapping of the area of historical workings, and the excavation and systematic channel sampling of 17 costeans for a total length of 1050m. The costeans were dug across the quartz lodes. Mineralisation of a minimum grade of 0.5g/t Au occupied a total width of 128m within the 17 costeans. Significant intersections included 10.7m @ 4.4g/t, 8.5m @ 2.0g/t, 4.3m @ 5.2g/t, and 1.6m @ 7.0g/t Au.

A RC drilling programme of 26 holes for 1791m was also carried out. Drill intersections with a minimum grade of 0.5g/t Au totalled 152m from the 26 holes. Significant intersections from the two drill programmes are summarised in Table 5 and the drill-hole locations are shown on Figure 7. The drilling intersected multiple zones of mineralisation, not all of which were associated with quartz veining.

Table 5 Woolgni Prospect – Significant drill intersections

 1 8.3	3.0 47.0
ond 20.3 and 33	

4	Diamond	29	1	9.4
FR3	RC	25	1	7.0
		and 60	2	3.8
		and 95	5	1.5*
FR5	RC	18	9	1.7
FR10	RC	60	1	10.1
FR11	RC	24	4	7.8
FR13	RC	23	2	3.5
FR15	RC	32	6	1.3
FR16	RC	57	11	4.0
FR20	RC	72	2	11.2*

<sup>\*</sup> Hole finished in mineralisation

During 1989 and 1990 exploration was restricted to rock chip sampling over areas of the Burrell Creek Formation away from the main area of workings. No significant results were obtained.

## **Tower Prospect**

In 1988, Hilltop Enterprises Pty Ltd ("Hilltop") conducted a reconnaissance geochemical survey over the area to the east of the Woolgni workings, targeting outcropping siltstones and greywackes of the Burrell Creek Formation. Three areas showed anomalous gold values. The most significant of these, immediately to the west of the Stuart Highway and east of a telecommunications tower, was named the Tower Prospect. Three samples, collected about 300m apart on a north-northwest line assayed 17.3g/t, 0.5g/t, and 1.1g/t Au. The samples were of gossanous metasediments.

Hilltop excavated and channel sampled nine widely spaced trenches over the prospect. The trenching confirmed the presence gold mineralisation. The northern gossanous zone was cut by two trenches 100m apart. A best assay of 1m @ 26.2g/t Au was obtained from the northernmost trench and the same zone was uncovered 100m to the south in the adjoining trench. Three channel samples totalling 7.3m in length returned between 0.26g/t and 0.28g/t Au in another trench excavated 500m further south. The approximate locations of the costeans and all anomalous results are shown on Figure 8.

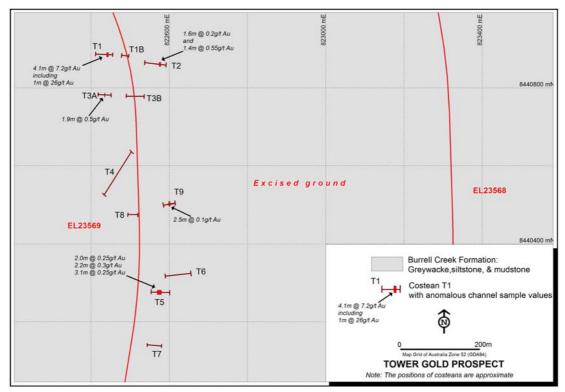


Figure 8 Tower Gold Prospect - Costean map

# **Copperfield South Prospect**

The Copperfield South Prospect, in the north of EL 23569, is situated about 14km south of the township of Pine Creek and about 2km west of the Stuart Highway. Gold mineralisation is associated with sulphidic quartz saddle reefs in greywackes of the Burrell Creek Formation. The veining is concentrated along the crest of the Woollybutt Anticline, which trends 330° and plunges at approximately 40° to the northwest (Figure 9).

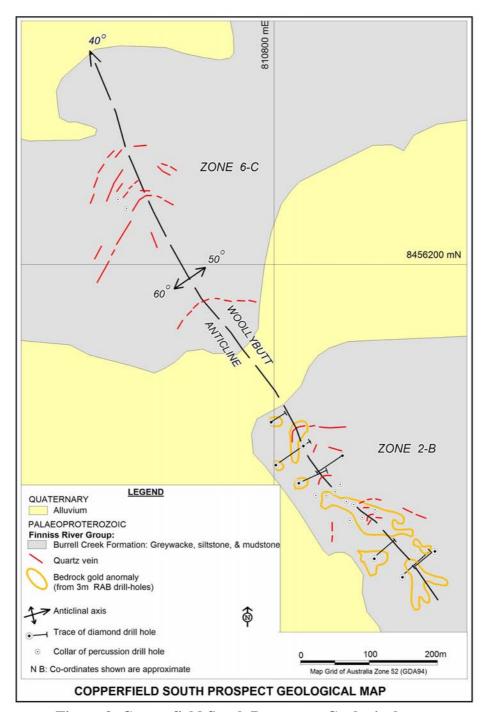


Figure 9 Copperfield South Prospect – Geological map

# **Previous Exploration**

Gold Fields Exploration Pty Ltd (1986-1989)

Exploration within the prospect was begun in 1986 by Gold Fields Exploration Pty Ltd ("Gold Fields"), which had obtained gold values up to 7.7g/t Au within quartz veining associated with the anticlinal axis during a regional rock chip sampling survey. Gold Fields carried out:

• Geological mapping and rock chip sampling over the rocks of the Burrell Creek Formation and the axial zone of the Woollybutt Anticline;

- Excavation and sampling of 13 trenches totalling 1601m in length over the axial zone. Two areas of mineralisation were defined by the trenching: Zones 2-B and 6-C. The zones contained increased quartz veining and wallrock alteration. The veining was predominantly of bedding-parallel "saddle reefs". The alteration included pitting after pyrite and arsenopyrite, chloritisation, and silicification;
- The drilling of 11 percussion holes for a total of 313m. The drilling indicated that within zone 6-C the gold mineralisation is confined to the western limb of the anticline. The two holes into this zone intersected 6m @ 0.6g/t and 10m @ 0.4g/t Au. Within Zone 2-B the mineralisation is more widespread, but is, in general, low-grade. Intersections >2g\*m were 12m @ 1.45g/t, 17m @ 0.7g/t, 24m @ 0.4g/t, and 10m @ 0.3g/t Au in different holes;
- The drilling of 250 shallow RAB holes for geochemical sampling. The drilling indicated a number of anomalies within Zone 2-B;
- The drilling of 10 diamond holes for 829m which gave only one intersection above 1g/t (10m @ 1.1 g/t Au within Zone 2-B).

Rosequartz Mining NL (1990-1994)

From 1990 to 1994 Rosequartz Mining NL (Rosequartz) continued the exploration of the area around the Woollybutt Anticline. Its exploration comprised:

- The collection and analysis of 17 bulk leach extractable gold ("BLEG") drainage sediment samples. The sampling indicated an area of about 3km2 of gold-anomalism, situated approximately 1km to the north of the known Woollybutt Anticline mineralisation;
- The soil sampling, with negative results, over the northern extension to the Woollybutt Anticline.

#### **Current Exploration**

During 2006 Orion carried out a rock chip sampling programme over the Woolgni Gold Prospect.

CRM has examined the drill and costean data from the area of the Woolgni workings and has reported that an Exploration Target of the order of 100,000t to 300,000t @ 2.0g/t to 3.0g/t Au is present down dip of the historical workings. It should be noted that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a Mineral Resource on the property and it is uncertain if further exploration will result in discovery of a Mineral Resource on the property.

AsIs reviewed existing geophysical data and recommended that RSL acquire and interpret detailed low-level airborne magnetic data over the tenement area. In order to locate structures and shears that may host gold/base metal mineralisation within the Cullen Batholith and the Burrell Creek Formation.

# **Exploration Potential**

The Pine Creek Geosyncline Burrell Creek Formation metasediments, situated in the north, centre, and southeast of the project area are worthy of further exploration for gold. The dormant Mt Todd Gold Mine is approximately 15km to the southeast of the Tower Prospect. A large-tonnage low-grade gold resource remains at the mine and a study is underway into the economics of reopening the mine and treatment facilities. It is conceivable that the treatment facility could be available for treatment of gold mineralisation outlined by RSL within the Woolgni project area.

The gold mineralisation at the Woolgni Prospect has not been closed off down dip and the limits and orientations of known high-grade shoots have not been tested.

At the Tower Prospect a strongly gold anomalous gossanous zone has never been drill tested. It is within the vicinity of, and parallel to, the Pine Creek Shear Zone and must be considered a prime gold target. The prospect is, however, situated close to the boundary of the Stuart Highway easement and, until exploration is carried out over the prospect, it cannot be determined how much of the potentially mineralised zone is within the easement, which contains a mixture of land types. It is not clear at the moment what effect the easement would have on potential development.

The Copperfield South Prospect contains low-grade gold mineralisation within the Woollybutt Anticline. Parts of the anticline are beneath recent alluvial cover and drainage sediment sampling has indicated other untested areas in the vicinity. Potential therefore exists for the discovery of further gold mineralisation at the prospect.

# **Proposed Exploration**

CRM recommends that RSL's exploration programme should be designed to test the tenements for gold targets described above.

It proposes that, during the first year, RSL:

- Compiles a detailed structural map and analysis of the Woolgni Goldfield, to determine the controls and disposition of the mineralisation;
- Carries out a first-pass RAB programme over the Tower Prospect;
- Carries out a geochemical sampling programme over the areas of Burrell Creek Formation in the centre the project area.

Exploration during the second year will be dependent upon earlier results. CRM anticipates that the programme should include:

- Possible follow-up drilling of mineralised zones located by the previous year's first pass drill programme at the Tower Prospect;
- An electromagnetic ("EM") survey over the Woolgni Prospect in order to locate sulphidic lodes;
- Carries out a RC drill programme targeted at down dip and down plunge extensions to the known mineralisation at Woolgni and at conductors located by geophysical survey;

•	Either a geochemical RAB or aircore drill sampling programme over alluvial covered portions of the Woollybutt Anticline at the Copperfield South Prospect, or an EM survey over these portions of the anticline.

## MARRAKAI PROJECT

#### Introduction

The Marrakai Project consists of one EL that covers  $10 \text{km}^2$ . It is situated at the northern end of the Pine Creek Shear Zone and is prospective for uranium, gold, and iron mineralisation. Despite the fact that it is only 15km from the Woodcutters Zn-Pb mine, 30km from the Rum Jungle U and polymetallic mines, and along structural and stratigraphic strike from the major gold mines of the Pine Creek region, it has never been systematically explored.

## **Tenements and Agreements**

The Marrakai Project comprises one EL, 24614, held by Orion. It was granted on 2/12/2005 for a period of six years. It has an area of 10km<sup>2</sup>. The minimum expenditure required during the current year is \$10,000.

#### **Location and Access**

The Marrakai Project is located to the east of the Adelaide River about 65km southeast of Darwin and 12km east of the Stuart Highway. Access to the project area from the highway is by the formed but unsealed Marrakai Road and then by pastoral tracks across a clay soil plain. The project area contains area of low rocky rises and areas of clay soils. Access is straightforward during the dry season but difficult during the wet.

## **Project Geology**

The project area is within the Paleoproterozoic Pine Creek Geosyncline, and contains sediments of the Finnis River Group, the South Alligator Group, and the Mount Partridge Group. Figure 10 includes a geological map of the project area. Outcrop occurs along low rises above a plain that contains areas of residual gravel and sand that comprise a Cainozoic duricrust surface and broad alluvium rich in black clays and silt. The alluvial areas in the west of the tenement are part of the Adelaide River flood plain and cover abandoned river channels. The large alluvial channel in the northeast drains a substantial area to the east.

The project area is situated at the northern end of the Pine Creek Shear Zone. A major northwest trending fault related to this zone passes through the tenement and a parallel fault is just to the south. Another regionally significant fault, the northeast trending Giants Reef Fault, is four kilometres to the northwest of the tenement. A number of smaller northeast to east-northeast trending faults dislocate the Proterozoic sequence, which is interpreted to comprise four fault separated blocks within the project area. The sequence is folded along north trending axes that are spaced about 750m apart and along which zones of brecciation and quartz veining have developed.

Figure 10 is a solid geology interpretation of the project with areas of alluvium and floodplain overlain. The Proterozoic geological succession is summarised in the legend. The majority of the units contain similar lithologies, which, in conjunction with the discontinuous outcrop, has led to varying interpretations of the geology within the project area.

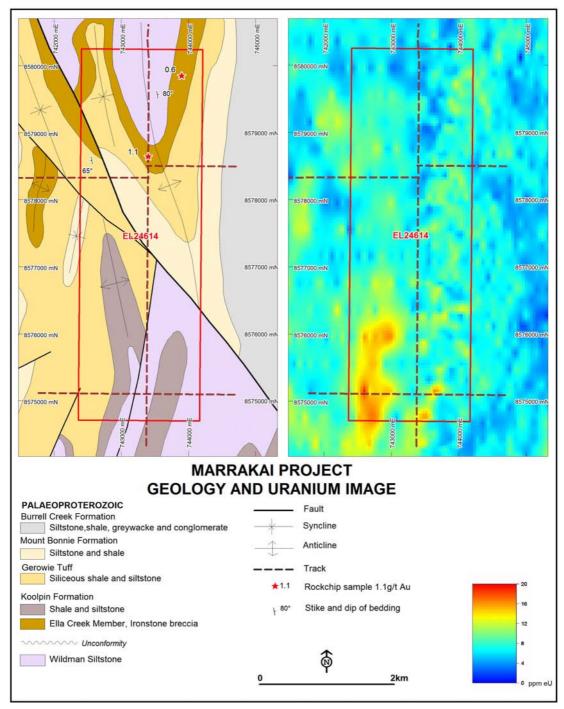


Figure 10 Marrakai Project – Geological map & uranium channel radiometric image

# **Radiometric Image**

Figure 10 incorporates a uranium channel radiometric image of the project area, processed from data collected by regional surveys flown at 200m line spacing and a height of 60m between 1987 and 1999. A north trending anomalous area is present in the south of the project area. It has a length of about 1.5km and a peak value of about 20ppm eU. Two smaller anomalies are present about one kilometre to the east. The larger anomaly is largely over an area of north draining alluvium that is surrounded by low rises of Gerowie Tuff and Koolpin Formation. High spots within the anomaly appear to be over outcrops of the Ella Creek Member of the Koolpin Formation.

Koolpin Formation rocks also appear to be associated with the smaller anomalies to the east.

#### **Mineralisation**

The only known mineralisation in the vicinity of the project area is the Marrakai Iron Prospect. Two north-trending gossanous iron-ore lenses are present on the flanks of an anticline within the Ella Creek Member of the Koolpin Formation. The lenses are stratabound and are interpreted to be formed by the enrichment of a siltstone horizon. The mineralisation is of goethite, haematite, and limonite, with quartz being the major gangue mineral.

# **Previous Exploration**

Previous exploration within the project area has been carried out by Kakadu Resources Ltd ("Kakadu") and Aztec Mining Company Ltd ("Aztec").

Kakadu carried out geological mapping and collected about fifteen stream sediment BLEG samples and fifty rock chip samples between 1987 and 1990 from the present tenement area. The BLEG samples, although widely spaced, indicated the presence of anomalous gold in the area, by returning values up to 8ppb Au. The rock chip sampling returned results of 0.6g/t and 1.1g/t Au respectively from brecciated chert and a ferruginous lens in the Ella Creek Member of the Koolpin Formation. About 700m south of the tenement, a rock chip sample from the Koolpin Formation returned 2.0g/t Au.

Aztec explored the area from 1991 to 1993. It also carried out stream sediment and rock sampling (six stream sediment BLEG, about forty -40# stream sediment, and five rock samples were collected). No anomalous results were obtained.

## **Exploration Potential**

The Marrakai Project is situated at the northern end of the Pine Creek Shear Zone and is prospective for uranium, gold, and iron mineralisation. It has never been systematically explored, despite the fact that it is only 15km from the Woodcutters Zn-Pb mine, 30km from the Rum Jungle U and polymetallic mines, is within the Pine Creek Shear zone, and contains the same stratigraphy and structures as the major gold mines of the Pine Creek region.

#### Uranium

The project area is also prospective for uranium mineralisation. The mineralisation within the Rum Jungle Mineral Field to the southwest occurs within Mount Partridge Group sediments, mainly within the Whites Formation, which is a calcareous and carbonaceous, pyritic argillite. In general, the uranium mineralisation is associated with shearing and brecciation. Within the Marrakai project area, the Koolpin Formation, a pyritic carbonaceous shale, is a similar unit and a potential host for similar mineralisation. The faults within the area may have provided pathways for mineralizing fluids and the project is within a region that hosts numerous uranium deposits and occurrences.

The uranium anomalies depicted on Figure 10 are within an area of the tenement that contains Koolpin Formation rocks. The anomalies can be considered to have located a target area that has the potential to contain significant uranium mineralisation.

#### Gold

The location of the project area within the Pine Creek Shear Zone and the rock units within it make it a prospective location for gold mineralisation. It is unlikely that outcropping mineralisation has been missed, as quartz veined and brecciated outcrops have been sampled by previous explorers. However, the stream sediment sampling that was carried out is unlikely to have been effective in the testing of the area, as outcrop only covers less than half of the tenement, the drainage is poorly defined, and the sample density was low. In addition, the faults, with which gold mineralisation may be associated, are largely under alluvial cover, much of which is likely to have been derived from outside the tenement.

The iron and sulphide rich composition of the Koolpin Formation makes it a favourable host for gold mineralisation (at the 0.94Moz Cosmo Howley deposit, about 75km to the south, the mineralisation is within a sulphidic iron formation, carbonaceous mudstone, and mudstone unit of the Koolpin Formation). The other formations within the project area are also prospective, the Wildman Siltstone being the host formation at the Toms Gully Mine, the Mount Bonnie Formation the host at the 0.5Moz Woolwonga deposit, and some of the Brocks Creek-Zapopan deposits are described as being within or marginal to the Gerowie Tuff.

Locally, the Maureen and Maureen Extended gold prospects, which are respectively located 7km and 10km to the south of the project area, are within the Koolpin Formation.

#### Iron-ore

The outcropping iron mineralisation to the west of the tenement is of sub-economic grade, but apart from the collection of a few surface samples, no exploration of the occurrence, or of the Ella Creek Member within which it occurs, has taken place. The Ella Creek Member crops out as siliceous and ferruginous breccias. Where it is fresh and unaltered it is interpreted to comprise pyritic black shales and cherts. There is potential for the formation of economic iron-ore mineralisation within it, particularly in the vicinity of fault zones and fold axes, where hydrothermal alteration of the iron-rich unit may have formed significant deposits.

Mineralisation within the Frances Creek iron-ore field to the southeast is interpreted to have formed by alteration of similar stratigraphy in a similar setting. The field contains more than fifty separate deposits over a distance of approximately 35 kilometres. The haematite-goethite-limonite mineralisation occurs as alteration of the Wildman Siltstone within fault breccias and fold axial locations.

The Ella Creek Member, which has an interpreted strike length of over 5km within the Marrakai project area, is the most prospective unit for enrichment within the area, but other units also contain horizons that could be subject to iron alteration. For instance, the Wildman Siltstone, which is the host formation at Frances Creek, is also present within the tenement. Prospective locations include the faults and fold axes within the tenement. As many of these locations are beneath surficial cover, drilling, possibly

targeted by geophysical exploration, will be required to systematically explore the project.

## **Proposed Exploration**

CRM proposes that systematic exploration be conducted over the Marrakai Project for uranium, gold, and iron ore mineralisation. All three commodities will require drill based exploration, as many of the target areas are beneath surficial cover.

Initial uranium targets have been located by the radiometric survey. The faults and fold axes should be explored for gold mineralisation and areas of the Koolpin Formation in the vicinity of faults and fold axes should be tested for iron mineralisation, with priority being given to the Ella Creek Member. Geophysical interpretation of the existing 200m spaced aeromagnetic data may be adequate to locate minor fault and shear zones that splay off the major faults, but the acquisition of more detailed data should be considered, especially as the project area is relatively small and the lack of topographical relief should enable high quality low level acquisition.

## HAYES CREEK SOUTH PROJECT

#### Introduction

The Hayes Creek South Project consists of an EL that contains Paleoproterozoic and Palaeozoic sandstones that are unconformable over granitic rocks of the Pine Creek Geosyncline. It is a possible location of unconformity related, fault related, and redox front related uranium mineralisation.

## **Tenements and Agreements**

The Hayes Creek South Project comprises one EL, 24432, held by Orion. It was granted on 2/12/2005 for a period of six years. It has an area of 63.4km<sup>2</sup>. The minimum expenditure required during the current year is \$10,000.

#### **Location and Access**

The project is located to the southwest of the Stuart Highway and a few kilometres to the south of the Hayes Creek Roadhouse and Caravan Park. It is within the Douglas Pastoral Lease. Access to the project area is via station roads that eventually join the old Stuart Highway to the west of Hayes Creek. Access over most of the tenement is straightforward by means of a number of station tracks.

## **Project Geology**

The project area covers a portion of the southwestern margin of the Pine Creek Geosyncline, rocks of which crop out to the west, north and east of the tenement (Figure 3). The southeastern section of the tenement contains shallow to moderately dipping clastic sediments, predominantly sandstones of the Paleoproterozoic Tolmer Group. They are overlain by shallow dipping Cambrian sediments. The geological succession within the area is summarised in the legend to Figure 11, which contains a geological map of the area.

The broad geology of the area is controlled by four structures:

- An arcuate fault in the west that forms the boundary between the Tolmer Group sediments to its east and the stratigraphically-lower Fenton granite to its west. Adjacent to the fault the Tolmer Group rocks dip at a moderate to steep angle away from it;
- A shallow south-southwest plunging syncline that folds the Tolmer Group sediments;
- Two northwest trending faults that dislocate both the Tolmer Group and the Cambrian sediments.

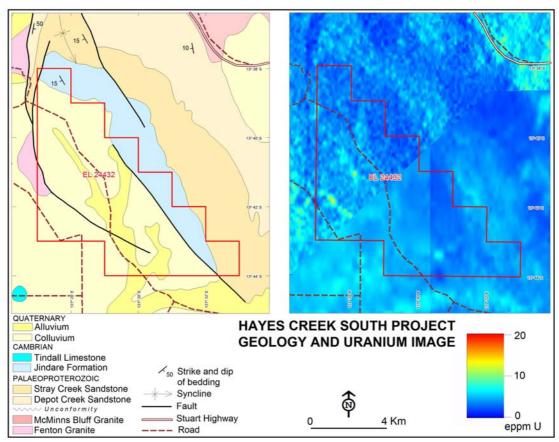


Figure 11 Hayes Creek South Project – Geological map & uranium channel radiometric image

## **Radiometric Image**

Figure 11 incorporates a uranium channel radiometric image of the project area, which is located at the junction of three separate regional airborne surveys. The image displays a northwest trending line of low-level anomalies in the southwest of the project area that have a peak value of about 14ppm eU against a background of about 3ppm eU. The line of anomalies is about two kilometres in length and is coincident with the interpreted position of the arcuate fault that, further north, abuts the basement granite against the Tolmer Group sandstones. The area of interest is covered with surficial sands and clays. The anomaly may extend further to the southeast, as the poorer quality radiometric survey data in this area may not have distinguished it from the background.

A less intense anomalous zone is shown about 1.8km to the northeast of the anomalous line and parallel to it. The image also shows that the granitic basement to the northeast of the tenement has a relatively high background uranium content compared to the sediments within the project area.

## **Previous Exploration**

No systematic exploration has been reported from the tenement area.

# **Exploration Potential**

The project area has potential to contain uranium mineralisation. It is marginal to the Pine Creek Inlier, which contains the high-grade unconformity-related deposits of the Alligator Rivers Uranium Field and the Rum Jungle Mineral Field. It contains Paleoproterozoic sandstones and quartzites that are unconformable on basement granite with relatively high background uranium content. The granite is a potential source of uranium. The sandstones are cut by a number of steep angle faults that may have acted as conduits for uranium bearing fluids. The sandstones are, in turn, unconformably overlain by Cambrian sediments. Trap sites for uranium mineralisation may be present within and adjacent to the unconformities and the faults.

A positive feature of the project area is that it has not been subject to systematic exploration. Encouragement in the prospectivity of the area for uranium has been given by recent exploration results by Thundelarra Exploration Ltd at its Thunderball Prospect that is 12km to the northeast; and by Haddington Resources Ltd at its Shoobridge Project that is 20km to the northwest.

## **Proposed Exploration**

CRM recommends that exploration to be undertaken within the project area should include the ground checking of the radiometric anomalies in the southwest of the tenement area.

## DALY RIVER ROAD PROJECT

#### Introduction

The Daly River Road Project consists of an EL containing Cretaceous sediments that are unconformable over Paleoproterozoic sandstones of the Tolmer Group, which, in turn, overlie the Burrell Creek Formation of the Pine Creek Geosyncline. It is a possible location of unconformity related uranium mineralisation and a discrete uranium channel anomaly is present in the radiometric data acquired from the regional radiometric survey.

## **Tenements and Agreements**

The Daly River Road Project comprises one EL, 24391, held by Orion. It was granted on 2/12/2005 for a period of six years, and has an area of  $10 \text{km}^2$ . The minimum expenditure required during the current year is \$35,000. The project area is the subject of two registered native title claims, details of which are given elsewhere in this Prospectus.

#### **Location and Access**

The Daly River Road Project is located immediately to the north of the Daly River Road, about 25km due south of Adelaide River. Access to the project area is via the sealed old Stuart Highway and Daly River Road. Cretaceous rocks form a mesa that covers the central portion of the project area and access across it is by a number of tracks and cleared lines.

# **Project Geology**

The project area covers a portion of the southwestern margin of the Pine Creek Geosyncline, rocks of which crop out in the east of the tenement (Figures 3 and 12). The northeastern and northwestern sections of the project area contain shallow dipping clastic sediments, predominantly sandstones of the Paleoproterozoic Tolmer Group and the southwestern section contains shallow dipping Cambrian sediments. The Petrel Formation, a sub-horizontal silty sandstone of Cretaceous age, covers the older rocks in the central portion of the tenement, forming a mesa. The geological succession within the area is summarised in the legend to Figure 12, which contains a geological map of the area.

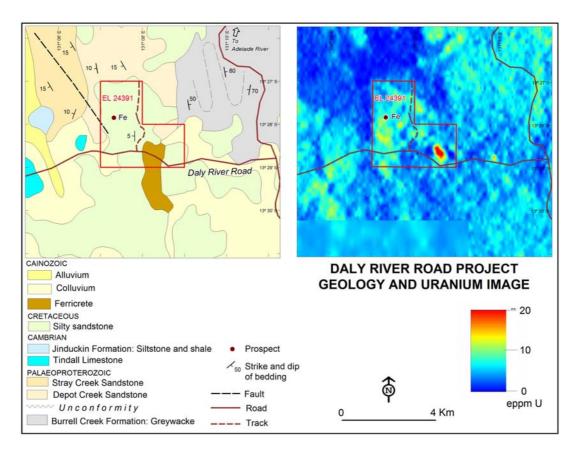


Figure 12 Daly River Road Project – Geological map & uranium channel radiometric image

#### **Radiometric Image**

Figure 12 incorporates a uranium channel radiometric image of the project area, processed from data collected by regional surveys flown at 200m line spacing and a height of 60m between 1987 and 1999. A discrete anomaly that has a length of about 500m and a peak value of about 25ppm eU is present in the southeast of the project area. The anomaly is derived from Cretaceous sediments, which have background values between about 2 and 12ppm eU.

#### Mineralisation

Iron oxide rich clays that contain concentrations of goethite and haematite ironstone occur within the Cretaceous Petrel Formation. The ironstones outcrop within gullies incised into the formation along the western edge of the mesa that is capped by it. Drill-holes that tested the western portion of the mesa intersected lenses of goethite, hematite, lepidocrocite, and limonite mineralisation.

# **Previous Exploration**

The iron mineralisation was explored by Wandaroo Mining Corp. Ltd ("Wandaroo") in 1967-68 by rock chip sampling and the drilling of ten percussion holes for a total of 123m through the Cretaceous Petrel Formation. Three of the holes intersected intervals of haematite or goethite mineralisation grading >40% Fe.

During 1970 Kratos Uranium NL carried out further rock chip sampling and drilled fifteen vertical diamond drill holes for 225m on an incomplete 300m spaced grid over the same area that was drilled by Wandaroo. Intersections of mineralisation grading >45% Fe over a minimum length of one metre were made in only four holes, with the best intersection being 3.4m @ 48% Fe from a depth of 11m. The intersections were over a north-south length of 600m and averaged 2.4m in thickness at an average depth below surface of 8.5m. CRM does not consider that these results indicate potential for significant iron ore mineralisation.

## **Exploration Potential**

Similarly to the Hayes Creek South Project, the Daly River Road project area has the potential to contain uranium mineralisation. Possible trap sites may be associated with the unconformity between the Daly River Sandstone and the underlying Burrell Creek Formation.

#### **Proposed Exploration**

CRM recommends that the uranium channel radiometric anomaly in the southeast of the tenement be investigated, initially by means of a detailed ground radiometric survey, geological mapping, and soil and rock chip sampling, which, depending upon the results, should be followed by first pass drill testing.

## **CELIA PROJECT**

#### Introduction

The Celia Project consists of one ELA that covers 12.9km<sup>2</sup>. It is situated over Palaeoproterozic sediments on the southeastern flank of the Rum Jungle Dome. It is prospective for uranium and polymetallic mineralisation and a magnesite deposit is present within the tenement. The project area, despite being only a few kilometres from the Rum Jungle U and polymetallic mines and the Woodcutters Zn-Pb mine, has been subject to little systematic exploration for minerals other than magnesite.

#### **Tenements and Agreements**

The Celia Project comprises one ELA, 24414, applied for by Tennant Creek Gold (NT) Pty Ltd, with an area of 12.9km<sup>2</sup>. The rights to the tenement were passed to Orion and an agreement is in place whereby they are to be transferred after grant. The ELA is within Aboriginal Freehold Land and the consent of the owners is required before the tenement can be granted and exploration can take place. In November 2007 the indigenous stakeholders in the area indicated that they would not consent to the grant of the tenement and, unless RSL is notified to the contrary by the Northern Territory Land Council, the tenement is consequently under moratorium for a five year period. No expenditure is required while the tenement remains an application.

#### **Location and Access**

The Celia Project is about 90km south of Darwin by road. It is located immediately to the north of the sealed Batchelor Road, 5km west of the Stuart Highway and 3km east of the town of Batchelor. Access within the tenement is not developed, but would not be difficult.

## **Project Geology**

The project area is situated in the northwest of the Paleoproterozoic Pine Creek Inlier. It covers sediments of the lower section of the Paleoproterozic sedimentary sequence and a small section of the Archaean basement. It is on the southeast flank of the Rum Jungle Dome, away from which the sedimentary sequence dips at angles of about  $50^{\circ}$  to  $60^{\circ}$ . The geological succession within the area is summarised in the legend to Figure 13, which contains a geological map of the area.

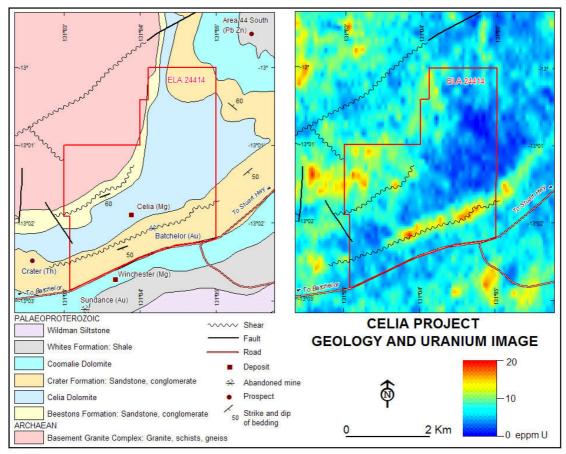


Figure 13 Celia Project – Geological map & uranium channel radiometric image

#### **Radiometric Image**

Figure 13 incorporates a uranium channel radiometric image of the project area, processed from data collected by regional surveys flown at 200m line spacing and a height of 60m between 1987 and 1999. A significant feature is the line of anomalies in the south of the tenement that are coincident with the location of a shear within the Crater Formation. The line is about three kilometres in length and the highest value is about 20ppm eU compared to background values over the formation of 2 to 8ppm eU. Less intense anomalies are present within the Beetsons Formation, coincident with another mapped shear. The radiometrically high area in the northwest corner of the tenement is over the granitic basement, which has relatively high background levels of uranium. Exploration of this area is of lower priority.

#### Mineralisation

#### Magnesite

The Celia Dolomite contains areas of magnesite. Between 1978 and 1983 BHP delineated one such area within ELA24414, shown on Figure 13 as the Celia Deposit, containing a possible 10Mt of high density low silica magnesite following mapping, drilling and metallurgical test work. BHP also located two other areas of high-grade magnesite that are outside RSL's application area. One of these, the Winchester Deposit, within the Coomalie Dolomite to the south of EL24414, was subsequently explored by Mt Grace Resources NL, which estimated an Indicated Resource of 12.2Mt @ 43% MgO within the deposit.

A small abandoned gold working (Batchelor) is associated with a shear in sandstone of the Crater Formation. Surface mining of a vertical north striking quartz-tourmaline vein is reported to have produced 12oz of gold from only 0.6t of ore. Of interest is the location of the working, which is within the bedding parallel shear zone. Other small quartz-tourmaline veins are present nearby.

#### Radioactive minerals

The Crater Prospect, over a radiometric anomaly about one kilometre to the west of the tenement, was tested by a BMR diamond drill-hole in 1970. The hole intersected disseminated mineralisation within a haematitic quartz pebble conglomerate in the Crater Formation. The radioactivity was ascribed to a disseminated thorium bearing phosphate mineral. The maximum value obtained by analysis of the core was 0.12% thorium. The mineralisation was interpreted to be placer in origin. Associated minerals are rutile and zircon.

#### **Previous Exploration**

Previous exploration within the project area has been carried out by BHP between 1978 and 1983, Nicron Resources Ltd from 1990 to 1993, and R.M. Biddlecombe from 1992 to 1995.

BHP mapped and chip sampled outcrops of magnesite within the Celia Dolomite and drilled sixteen percussion holes along two traverses across the unit. It also drilled twenty diamond holes on a detailed 100m by 50m grid to obtain core samples that were subjected to flotation, calcining, and sintering testwork, the results of which indicated that a high density low silica magnesite brick suitable for refractory purposes could be produced from the rock.

Nicron carried out mapping, RC and RAB drilling of the magnesite deposit. It estimated an Inferred Resource of 0.5Mt of magnesite to be present within one section of it. The resource was to 40m depth and averaged 3.0% insoluble residue with a Ca/Mg ratio of <0.03. It was defined on the basis of Nicron's four RC drill-holes that were drilled into an area of low-silica sub-crop. Twenty RAB holes were drilled on a 50m grid around the area of the resource, but intersected karst fill or poor quality magnesite. The testwork concluded that the magnesite is suitable for suspension flash calcining.

Biddlecombe tested mullock from the small, abandoned Batchelor Gold Mine, which exploited a quartz-tourmaline vein to a depth of about 10m over a length of about 10m and a width of about 2m. He reported grades of over 10oz/t Au from mineralised mullock. He also collected twenty-six rock-chip and twenty loam samples, primarily along strike from the mine, but did not obtain any significant results.

## **Exploration Potential**

The project area has the potential to host significant mineralisation and contains a deposit of magnesite. The project is within a region that is richly endowed with a variety of metals including U, Pb, Zn, Ag, Cu, Co, Ni, Au, and Mg; and indications of mineralisation are present in and around the application area. Despite this, it has only

been exposed to cursory exploration for metals other than magnesium – presumably on the basis that the larger known deposits in the region are within formations higher in the sedimentary sequence than those within the project area.

Obvious targets within the tenement are the shear zones within the Beestons and Crater Formations. Uranium channel radiometric anomalies are coincident with their outcrop. Uranium mineralisation may be present within or adjacent to the shear zones. Of interest also is the gold mineralisation associated the shear at the Batchelor gold prospect. The quartz vein associated gold may have been remobilized from extensive low-grade mineralisation associated with the shear zone. Of further interest is the haematitic alteration apparently present within the shear zone at the Crater Prospect to the west of the tenement.

There is also potential for gold mineralisation to be present within the Celia Dolomite. The abandoned Sundance gold mine to the south of the tenement is within the lithologically similar Coomalie Dolomite. The mineralisation at Sundance is within pipe-like structures that, in the oxide zone widen to form silicified haematite quartz breccias. Mineralisation in the primary zone is present as auriferous pyrite within an envelope of talc alteration. The 17,800t of ore mined had a grade of 10.7g/t Au and contained up to 930ppm Sn. Elevated Ag, As, Ba, Bi, and B are associated with the mineralisation. If similar mineralisation is present within the Celia Dolomite, it should be able to be located by geochemical or geophysical prospecting.

## **Proposed Exploration**

No exploration is proposed for the Celia Project while it remains under moratorium in the application stage. CRM recommends that, after grant, RSL's first priority should be to systematically test the bedding parallel shear zones with a combination of ground radiometrics and soil geochemistry, to be followed by first pass drilling.