ANNUAL REPORT

EXPLORATION LICENCE 27898

FOR THE PERIOD

13 OCTOBER 2011 – 12 OCTOBER 2012

(Gold and Uranium Exploration Project)

Batchelor: 1:1000 000

PINE CREEK: 1:250 000

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Element 92 Pty Ltd (Thundelarra Exploration Ltd)
SUMMARY

EL 7898 is located about 110 SE of Darwin and approximately 32 km NE of Adelaide River township. It is situated in the central part of Pine Creek Orogen, covering part of Mt Ringwood area. The EL was granted to Element 92 Pty Ltd (wholly owned subsidiary of Thundelarra Exploration Limited) on 13 October 2010 and will expire on 12 October 2013. The tenement covers an area of 6.68 km$^2$ (2 blocks).

The project area is located within central part of the Pine Creek Orogen, which is a folded sequence of Palaeoproterozoic pelitic and psammitic sediments with interlayered cherty tuff units. Mafic sills of the Zamu Dolerite (~1.87Ga) intruded the lower sequence of the package. These rocks have been intruded by the late-orogenic Palaeoproterozoic granites, causing wide spread contact/thermal aureole metamorphism, which contains most of the gold, uranium and base metals mineralisation in the Orogen. The EL lies over an area of tightly folded meta-sedimentary rocks assigned to the Burrell Creek Formation of the Finniss River Group. Much of the project area is covered by a thick layer of recent sedimentary cover, which includes Quaternary alluvium (Qa) and Cainozoic material (Cz).

During the year under review, a thorough review of historical exploration, geological and geophysical data was undertaken. EL 27898 covers part of the north-trending anticlinal structure which contains an abandoned gold mine (Great Northern). It is located just outside the northern tenement boundary and is defined by a magnetic anomaly as other gold deposits in the PCO. Unfortunately, no surface geochemical assay data were found, except single drill hole with limited drill chip assays. TMI image of the project area shows a significant magnetic NW-trending ridge which represents the Pine Creek Shear Zone, known for its gold potential in the Pine creek region. Other activities included reconnaissance visits of the project area, report writing, tenement administration and future planning.

A detail examination of geological, geophysical and historical exploration data has highlighted mineral potential of the project area. It is suggested that a program of aircore drilling to retrieve soil/rock sampling program should be conducted to test the potential for gold, uranium and base metals mineralisation. If successful, then target areas in conjunction with geophysical and geological information should be tested by RC drilling.
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- **Figure 2**: Geological setting of the project area
- **Figure 3**: Exploration Index map of the project area
- **Figure 4**: TMI image of the project area
1.0 INTRODUCTION

Exploration Licence (EL) 27898 is located in the central part of Pine Creek Orogen, and covers part of Mt Ringwood area. Element 92 Pty Ltd, a wholly owned subsidiary of Thundelarra Exploration Ltd is exploring the region for gold, uranium and base metals mineralisation. This communication documents the exploration activities undertaken during the period ending on 12 October 2012.

2.0 TENEMENT LOCATION

EL 7898 is situated about 110 km SE of Darwin and approximately 32 km NE of Adelaide River township (Figure 1). The tenement can be accessed via Stuart Highway and then by Grove Hill Road, which takes off from Stuart Highway. The Grove Hill Road runs towards east and leads towards Ban Ban Springs station. From here, it turns north and runs through EL 27898. Alternative access to the tenement from the Stuart Highway is along the Tortilla Flat Road, which turns south after a distance of 10 km and passes through the tenement area. Within the tenement access is available via station track.

The climate is hot with periodic monsoonal rains between November and April, for the remainder of the year, it is warm to hot and largely dry. During wet season, access within the tenement is limited.

The underlying cadastre belongs to Ban Ban Springs pastoral lease PL903.

3.0 TENEMENT DETAILS

Element 92 Pty Ltd (wholly owned subsidiary of Thundelarra Exploration Limited) applied for EL 27898 on 6 January 2010 for a period of three year. It was granted on 13 October 2010 and will expire on 12 October 2013. The tenement covers an area of 6.68 km$^2$ (2 blocks).

Thundelarra Exploration Limited/Element 92 Pty Ltd are exploring the central part of Pine Creek Orogen actively for gold, uranium and base metals with dedicated exploration programs, and has discovered new gold, uranium and base metals mineralisation at a number of localities and intends to establish sufficient resource base feasible for mining.
Figure 1: Location of the project area
4.0 GEOLOGICAL SETTING

The project area is located within central part of the Pine Creek Orogen (PCO). Regional geology of the PCO is outlined in many publications, notably Ahmad et al. (1994), Needham and Stuart-Smith (1984), and Needham et al. (1988). The PCO is a folded sequence of Palaeoproterozoic pelitic, psammitic, carbonate, and volcanic sediments with interlayered cherty tuffaceous units, unconformably overlying Neoarchaean (ca 2670 – 2500 Ma) granitic and gneissic basement. The sequence experienced regional metamorphism and deformation of varying grades in various parts of the PCO in a period ca 1867 – 1850. Mafic sills of the Zamu Dolerite (~1.87Ga) intruded the lower sequence of the package. Syn- to post tectonic granites were emplaced at 1830 – 1800 Ma, causing wide spread contact/thermal aureole metamorphism, which contains most of the gold, uranium and base metals mineralisation in the Orogen (Bajwah, 1994). Less deformed Mesoproterozoic sedimentary and volcanic sequences unconformably overlie the Palaeoproterozoic rocks and is overlain by Cambrian-Ordovician lavas, sediments and Cretaceous strata. Cainozoic sediments, laterite and recent alluvium may obscure parts of the Orogen lithologies.

Local Geology

Figure 2 shows geology of the project area, where the EL lies over an area of tightly folded meta-sedimentary rocks assigned to the Burrell Creek Formation of the Finniss River Group. However, much of the project area is covered by a thick layer of recent sedimentary cover which includes Quaternary alluvium (Qa) and Cainozoic material (Cz) as shown in Figure 2. The eastern part of the tenement contains north plunging anticline that contains great northern gold prospects covered by third party MCNs.

The Burrell Creek Formation is wide spread in the PCO and is a flysch sequence that contains feldspathic greywacke, siltstone, shale and phyllite. It is generally brown to grey-green, thickly bedded to massive. Generally rock formation is fine to coarse-grained with graded bedding in places, and minor lenses of volcanilithic pebble conglomerate.

There is a tendency for gold mineralisation to be focused in anticlinal settings within strata of the South Alligator Group and lower parts of the Finniss River Group. This sequence evolved from initial low energy shallow basinal sedimentation to higher energy deeper water flysch facies. Mostly gold mineralisation appears to be related to the I-type
Figure 2: Geological Setting of the Project Area
members of Cullen Batholith, formed during the evolution of hydrothermal fluids as a result of fractionation and differentiation processes (Bajwah, 1994).

### 5.0 PREVIOUS EXPLORATION ACTIVITY

EL 27898 is located about 6 km east of Goodall abandoned gold mine and other gold prospects, confined to NNW-trending anticlinal structures, and the area been subject to extensive exploration programs over the years. A summary of historical exploration is presented below. Gold was discovered in Pine Creek in 1878 and production started in 1897 from Great Northern (Figure 2) and other gold mines in the area. Since then, the area has been searched for gold by early explorers. Perhaps, the first exploration program commenced with systematic mapping of Pine Creek (1:250 000) sheet by BMR (now GA Australia) which was completed in 1963. Following the discovery of association of gold with anticlinal structures, intensive exploration commenced by many exploration companies.

Peko commenced exploring the area in 1977 for gold, base metals and uranium mineralisation. Exploration activities included reconnaissance geological traverses, airborne radiometric and magnetic survey, which failed to identify any economic mineralisation. In 1977, Optimal Mining Limited acquired EL 1653, 1654 and EL 1655 and started to explore the area for economic mineralisation such as gold, base metal and uranium.

Part of the project area was explored by Pan D’or Mining Ltd JV and ACA Howe Australia (1980) who entered into JV with Optimal Mining Limited for EL 1653, 1654 and EL 1655. It involved geophysical survey, geological mapping and photogeological interpretation. Geophysical survey involved ground radiometric survey, airborne radiometric survey. The airborne radiometric survey was conducted by Geotex Ltd with a fixed wing aircraft, fitted with 4-channel integrating spectrometer with a 2000 inch$^3$ detector crystal. This survey identified many radiometric anomalies but ground check failed to substantiate these anomalies.
Assessment of data were undertaken in 1980 by Treasure, (1980), which led to recommendations for further exploration program in the project area. It was suggested that radiometric anomalies may indicate presence of uranium at depth.

Current EL 27898 covers southern blocks of expired EL 2361 which was granted to G. Mainchili in 1980. EL 2361 contains Great Northern 1 (GML 259B and 260B) abandoned gold mine, and during exploration, a fair effort was directed to assess further gold potential of the area. It involved shallow trenching, grab sampling and gridding. A report prepared by Mr John Shield on the abandoned gold mine is part of this annual report (CR 1981-200). According to this report, gold is confined to quartz veins which are mostly lensoid and are about 0.5 m thick. Gold is considered to be patchy.

WR Grace Australia explored in and around EL 27898 in 1980’s under expired EL 2362 and EL 2361 (Fisher and Eupene, 1983). During this program, geological mapping, soil/rock chips and assaying was undertaken which provided some interesting results. It supported presence of gold under alluvial cover. Data point towards erratic and variable gold mineralisation in the project area.

Part of EL 27898 was also explored by Western Mining Corporation Limited under expired EL 1656 (Hancock and Wards, 1987) which was held by WR Grace Australia since 1980’s. The area was subjected to geological mapping, soil sampling and geophysical survey with limited success.

Expired EL 2362 was granted to WR Grace Australia Limited in 1980’s, which covered part of the current project area (EL 27898). EL 2362 was explored for gold and base metals mineralisation. Geological mapping, gridding and soil sampling was undertaken. Some anomalous gold values were detected from assayed samples (Fisher and McDonald, 1983).

In 1986, Western Mining Corporation Limited explored the current project area under expired EL 2362 and EL 4919 (Hancock, 1987). This program involved grid-soil sampling, geological mapping, photo-geological interpretation and assaying. Part of EL 27898 was explored by Western Mining under expired EL 5318 which was amalgamation of early granted ELs to WR Grace Limited. A gold prospect C2 was discovered during exploration of EL 2362 and that was tested with six traverses of shallow airtrack holes up to 9 metres deep..
Assay returned an interval of 1.5 m at 2.48 g/t, however, no significant tonnages of economic grade of gold mineralisation was delineated.
6.0  EXPLORATION YEAR ENDING 12 OCTOBER 2012

Element 92 Pty Ltd/Thundelarra Exploration Limited are exploring the project area for gold, uranium and possibly for base metals mineralisation. In the last few years, company has successfully discovered new uranium, gold and base metals resources in the central part of the PCO and Ngalia Basin with a multi-million dollars exploration budget. Amongst these significant new discoveries are Thunderball, Afghan Swan (uranium), Cleo’s (uranium and copper) and Priscilla Line of tenements (gold).

During the year under review, Element 92 Pty undertook a thorough review of EL 27898, involving historical exploration and geophysical data. Exploration index map is shown in Figure 3. The project area covers part of the north-trending anticlinal structure which contains an abandoned gold mine (Great Northern) as shown in Figures 2 and 4. It is located just outside the northern tenement boundary and is defined by a magnetic anomaly as other gold deposits in the PCO. Others gold deposits/prospects located in the vicinity of the project area are Goodall and Great Western, and have similar geological setting to that in the project area. Geological and structural studies of the area shows that anticlinal structures are ideal prepared-sites for the localisation of gold mineralisation and therefore, presence of anticlinal structure points towards the presence of gold mineralisation in the project area. It may be noted that hinge zone of anticlinal structure is more likely to contain gold mineralisation, but fold limbs are also known to contain gold mineralisation e.g Cosmo Howley and Chinese south.

NTGS online and GIS databases were searched for historical exploration data such as soil/rock chip sampling and assaying, drilling and any other data which may be useful in exploration of the project area. Unfortunately, no surface geochemical data were found within EL 27898, except assay results from drilling undertaken in 1978 by CRA Exploration (Wills et al. 1979). Location of drill hole is shown in Figure 3.

Rocks of the Burrell Creek were intersected within drill hole 78OPD2, comprising weathered hornfelsed shale, grey pyritic highly sheared fresh hornfelsed shale with traces of chalcopyrite, galena and sphalerite. Assaying of drill chip samples returned moderate concentrations of base metals and traces of gold. Overall results were disappointed and further drilling was abandoned. Petrographic examination of rocks showered effects of regional metamorphism and in places effects of thermal metamorphism.

Figure 4 shows Total Magnetic Intensity (TMI) of the project area. Most of project area appears to be flat and characterised by low amplitude magnetic response. However, NW-trending
Figure 3: Exploration Index map of the project area
Figure 4: TMI image of the project area
magnetic ridge stands out with elevated magnetic response. This magnetic ridge resents the Pine Creek Shear Zone which contains significant gold deposits in the PCO. In the immediate vicinity of EL 27898, Goodall gold mine produced 7.1 tonnes of gold from an estimated 4.095 million tonnes of ore with head grade of 1.99 g/t Au. Here, gold mineralisation is confined to the Burrell Creek Formation. In the main open cut, the host rock is greewacke-shale sequence. Gravity data suggests presence of granite body at depth below the Goodall gold mine, which is supported by contact metamorphic effects within the host rocks. Hydrothermal alteration associated with the mineralised zone is sericite, carbonate, K-feldspar, tourmaline and apatite. Mineralisation is controlled by upright anticlinal structure, plunging 30-35° and strikes 320°, characterised by strong axial planar cleavage. On TMI image, Goodall mine is located on a faint subtle magnetic anomaly.

It may be noted that much of the area is covered by thick Quaternary and Cainozoic sediments which hamper access to bed rock geology. Surface soil sampling program has not been very successful in the past. Therefore, it is imperative to employ aircore or RC drilling to penetrate deep into bed rock geology in order to retrieve rock chip samples for meaning full geochemical sampling program. Previous exploration programs have achieved partial success in testing gold anomalous areas which show potential of the project. It is imperative that the project area be explored with dedicated exploration program.

Other activities included reconnaissance visits of the project area, report writing, tenement administration and future planning.

7.0 PROPOSED EXPLORATION PROGRAM

A detail examination of geological, geophysical and historical exploration data has highlighted mineral potential of the project area. It is suggested that a program of aircore drilling to retrieve soil/rock sampling program should be conducted to test the potential for gold, uranium and base metals mineralisation. If successful, then target areas in conjunction with geophysical and geological information should be tested by RC drilling.
8.0 REFERENCES


Cotton, B., 2010, Photogeological Mapping at 1:250,000 Scale of the Thunderball Area, Hayes Creek Project, Northern Territory. Consultant Report to Element 92 Pty Ltd.


