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**Corkscrew GR198-11**  
**Annual Group Report**  
**27 February 2017 – 26 February 2018**  
**EL10120 and EL23509**

**Hayes Creek Project**  
**Northern Territory**

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<b>Date</b>	25/4/2018		
<b>Tenements:</b>	Exploration License	10120	Yam Creek (Priscilla)
	Exploration License	23509	Corkscrew
<b>Map Sheets:</b>	1:250,000	Pine Ck (SD5208)	
	1:100,000	Tipperary (5170)	
		Pine Ck (5270)	
<b>Datum:</b>	GDA94 UTM52		
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## 1. SUMMARY

Exploration licences EL10120 and EL23509 are part of Rockland Resources Pty Ltd Hayes Ck Project, situated in the central part of Pine Creek Orogen. This report documents the exploration activities undertaken during the reporting period for one year ending on 26 February 2018.

Delays with establishing a land access agreement with the local pastoral lease holder for Douglas Station has hindered field programs.

A trial SkyTEM airborne electromagnetic survey has been completed over a) the Priscilla prospect within EL10120 totalling 2.75 line km, b) the south west corner of EL23509 (just west of the Davies prospect and MCN4267) for a total of 7.6 line km, and c) west of Thunderball within EL23509 for a total of 2 line km. The digital data has been divided by licence and submitted with this report as raw electromagnetic data (\_EM), conductivity data (\_LCI), and multiplots (\_multiplots).

## 2. INTRODUCTION

Exploration licences EL10120 and EL23509 are part of Rockland Resources Hayes Ck Project, situated in the central part of Pine Creek Orogen. EL10120 covers part of the Priscilla Line also known as the Yam Creek mining area, which contains gold mineral deposits Princess Louise and North Point. EL23509 is located to the west of the Thunderball uranium deposit. In 2014, Oz Uranium Pty Ltd, a wholly owned subsidiary of Rockland Resources Pty Ltd, purchased the licences from Element 92 Pty Ltd (a wholly owned subsidiary of Thundelarra Pty Ltd) along with all other exploration interests in the Hayes Creek area. The Hayes Ck project is being explored for gold, uranium and base metal mineralisation. EL10120 and EL23509 were granted combined reporting status in 2011 (GR198-11).

### 3. LOCATION AND ACCESS

The Hayes Ck project is located approximately 150 km south east of Darwin and about 55 km north of Pine Creek in the Northern Territory (Figure 1). The project area can be reached from Darwin via the Stuart Highway for about 140 km and then turning on to the Fountain Head Road. A track leads off the Fountain Head Road less than 1 km towards the south east, and it enters into the project area. Alternatively, it can be approached by a track coming of the Grove Hill Road and then via station tracks. A railway line also transects the Hayes Ck project.

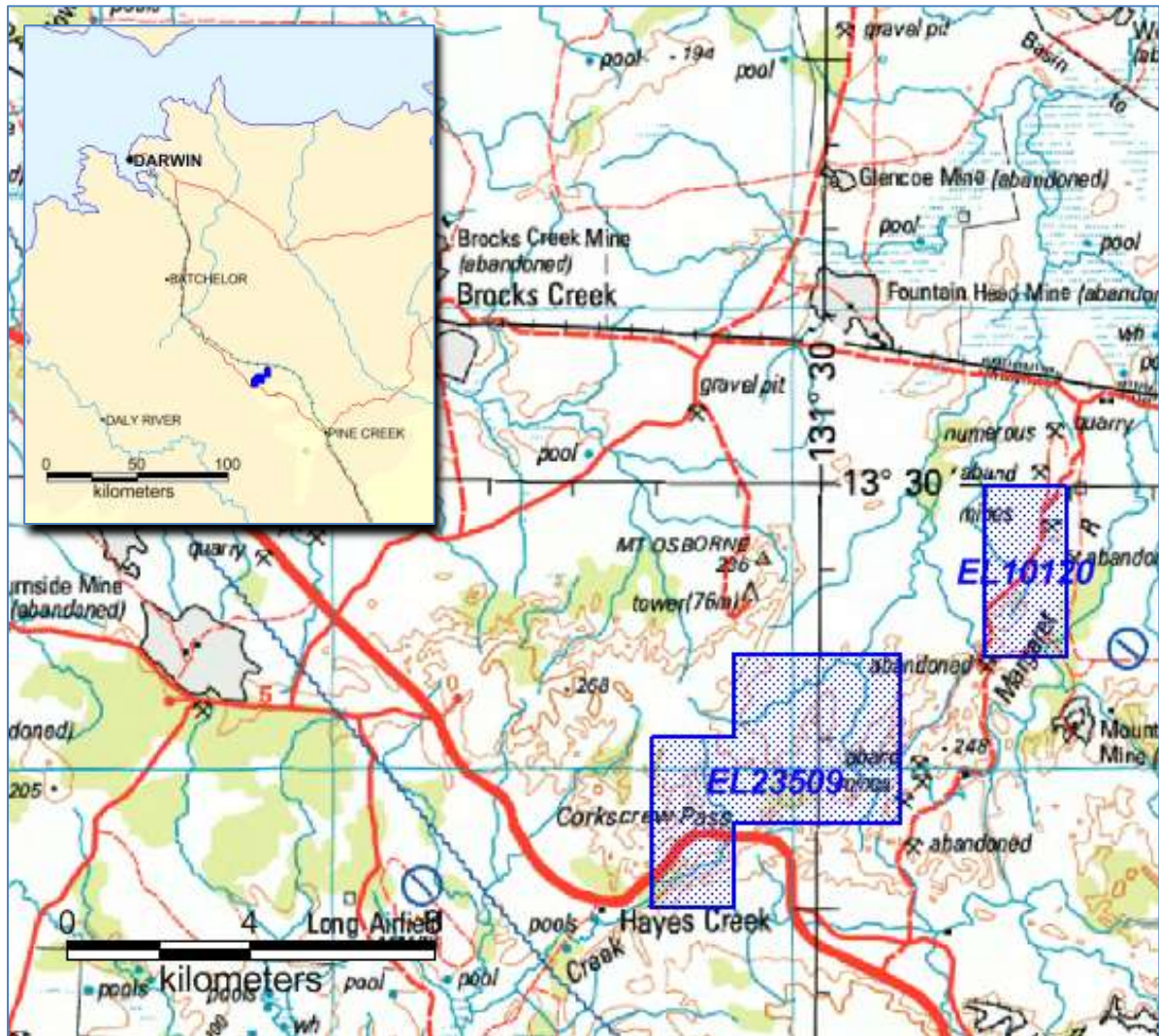


Figure 1 Location of GR138 Tenements EL10120 and EL23509 (overlying Auslig 1:250,000 topography)

#### 4. TENEMENTS

EL10120 was granted on 14 August 2002 and EL23509 was granted on the 27 February 2003. In 2011 these tenement were awarded group reporting status GR198-11 for the reporting period ending on 26 February.

In 2014, Oz Uranium Pty Ltd, a wholly owned subsidiary of Rockland Resources Pty Ltd, purchased the licences from Element 92 Pty Ltd (a wholly owned subsidiary of Thundelarra Pty Ltd) along with all other exploration interests in the Hayes Creek area.

EL10120 covers part of the Yam Creek mining area also known as the Priscilla Line which stretches south from the gold deposits Princess Louise and North Point. There are a number of mining licences which overlap the exploration licence, some of which are held Rockland Resources: ML29933 and ML29937.

Tenements details are shown in Table 1 below:

**Table 1** Tenement Schedule for Corkscrew Tenements

EL	Name	Licensee	Sub Blocks	KM <sup>2</sup>	Grant Date
10120	Yam Creek (Priscilla)	Oz Uranium Pty Ltd	2	6.6	15.08.2002
23509	Corkscrew	Oz Uranium Pty Ltd	6	19.8	27.02.2003

## 5. GEOLOGY

### Regional Geology

The project geology is depicted in Figure 2 (as defined by Cotton, 2010). The project area is situated within the Pine Creek Orogen (PCO), a tightly folded sequence of Palaeoproterozoic rocks, 10 km to 14 km in thickness, laid down on a rifted granitic Achaean basement during the interval ~2.2-1.87 Ma. The geology for Hayes Creek uranium project is best described by Chan (2010), Bajwah (1994) and Ahmad et al., (1993). The sequence is dominated by pelitic and psammitic sediments with minor inter-layered tuff units. Pre-orogenic mafic sills of Zamu Dolerite event (~1.87Ma) intruded the lower formations of the South Alligator Group and part of the Mt Partridge Group. During the Top End Orogeny (1870-1800 Ma), the sequence was tightly folded and pervasively altered with metamorphic grade averaging greenschist facies to phyllite. The Cullen Batholith introduced a suite of fractionated calc-alkaline granitic magma into the sequence in the period 1820 – 1850 Ma, and thought to be responsible for introduction of a variety of mineralisation in the adjacent metasediments (Bajwah, 1994).

### Project Geology

Central to the Hayes Ck project is the Cullen Supersuite (Burnside Granite) which is rimmed by the younger Zamu Dolerite and Palaeoproterozoic South Alligator Group (Mt Bonnie Formation, Gewowie Tuff, Koolpin Formation) which also occurs to the south including the Thunderball area. In places the Palaeoproterozoic Finniss Group (Burrell Ck Formation) is present which overlies the South Alligator Group. Unconformably overlying the Paleoproterozoic basement rocks is the Mesoproterozoic lower members of the Tolmer Group sediments (Depot Ck Sandstone) which is part of the Litchfield Province/Domain and forms the eastern margin of the broader Birrindudu Basin.

The Koolpin Formation is oldest of the rock units, it unconformably overlies the Mount Partridge Group and has a conformable upper contact with Gerowie Tuff. Sills of Zamu Dolerite intrude the upper contact in places or is faulted (Stuart-Smith et al., 1993). Johnston (1984) suggests that the base of the Koolpin Formation is thrust and disconformable. The Koolpin Formation is informally subdivided into lower, middle and upper members (Nicholson, 1980). The lower member consists of up to 250 m of carbonaceous mudstone, mudstone and siltstone. The upper member is 50 – 150 m thick and contains mainly carbonaceous mudstone with minor mudstone and siltstone with interbedded tuff and shale near the contact with the Gerowie Tuff.

The Gerowie Tuff is not classified as a formation, as it only constitutes a time-stratigraphic and conformable subdivision of the South Alligator Group between the Koolpin Formation and Mt Bonnie Formation. The Gerowie Tuff is estimated to have a thickness of 200 to 400 m and consists of a sequence of ferruginous shale, siltstone, nodular chert and tuff. Tuff represents at least a quarter of the unit and is represented by three varieties: 1) black cherty, dull green and white spotted, 2) fine-grained and feldspathic and 3) grey-green, coarse-grained (Stuart-Smith et al., 1993). The Gerowie Tuff hosts parts of the Thunderball uranium deposit.

Zamu dolerite is a suit of pre-orogenic continental to calc-alkaline tholeiite intrusive rock that are concordant to stratigraphy. They occur throughout the central region of the PCO and have been

dated at  $1870 \pm 6$  Ma (OZCHRON, Geoscience Australia) where they are interpreted to be intruded immediately prior to the onset of the ca. 1870-1850 Ma Nimbuwah Event (D<sub>1</sub> & D<sub>2</sub>). In the Thunderball and Extended areas, Zamu dolerite was found cutting both the Mt Bonnie Formation and Gerowie Tuff.

The Mt Bonnie Formation conformably overlies the Gerowie Tuff. The lower contact is marked by a sequence of feldspathic greywacke, whereas the upper contact is defined by a tuffaceous horizon. The Formation comprises interbedded slate, mudstone, shale, siltstone, greywacke, tuffaceous chert, crystal tuffs, dolomite and subordinate banded iron formations, forming a 500-700 m succession (Stuart-Smith et al., 1993). The Mount Bonnie Formation hosts the Thunderball uranium deposit and a number of gold, base metals and tin deposits.

The Burrell Creek Formation forms a thick sequence towards north and east of the project area. It comprises interbedded shale, slate, phyllite, siltstone, sandy siltstone, greywacke and rare volcanolithic conglomerate. In the Pine Creek Orogen, a variety of mineral deposits such as gold, uranium, base metals and tin are hosted by the formation.

Intruding the South Alligator Group is the Cullen Supersuite I-type granites. The Burnside Granite is situated in the central part of the project but there are also other smaller occurrences: McMinns Bluff Granite, Margaret Granite, McMinns Bluff Granite. The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic magma into the sequence in the period ~1.85-1.78Ma. These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies to more extensive biotite and andalusite hornfels facies (Bajwah, 1994).

Unconformably overlying the South Alligator and Finniss Group is the Depot Creek Sandstone. This is described as amassive arenaceous cross-bedded quartz sandstone, commonly ripple marked; quartzite, quartz-pebble conglomerate lenses.

Cainozoic sediments, laterite and recent alluvium obscure parts of the Orogen lithologies.

There is a tendency for gold and uranium 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. Some of the gold mineralisation appears to be related to the I-type members of Cullen Batholith, formed during the evolution of hydrothermal fluids as a result of fractionation and differentiation processes (Bajwah, 1994).

The Project area is located in one of the most prospective regions of the Pine Creek Orogen where significant gold, uranium and base metals mineralisation has been identified in the past, and a number of gold and base metals mining and processing mills have been operational. Recent discovery of uranium further highlights the importance of the area.

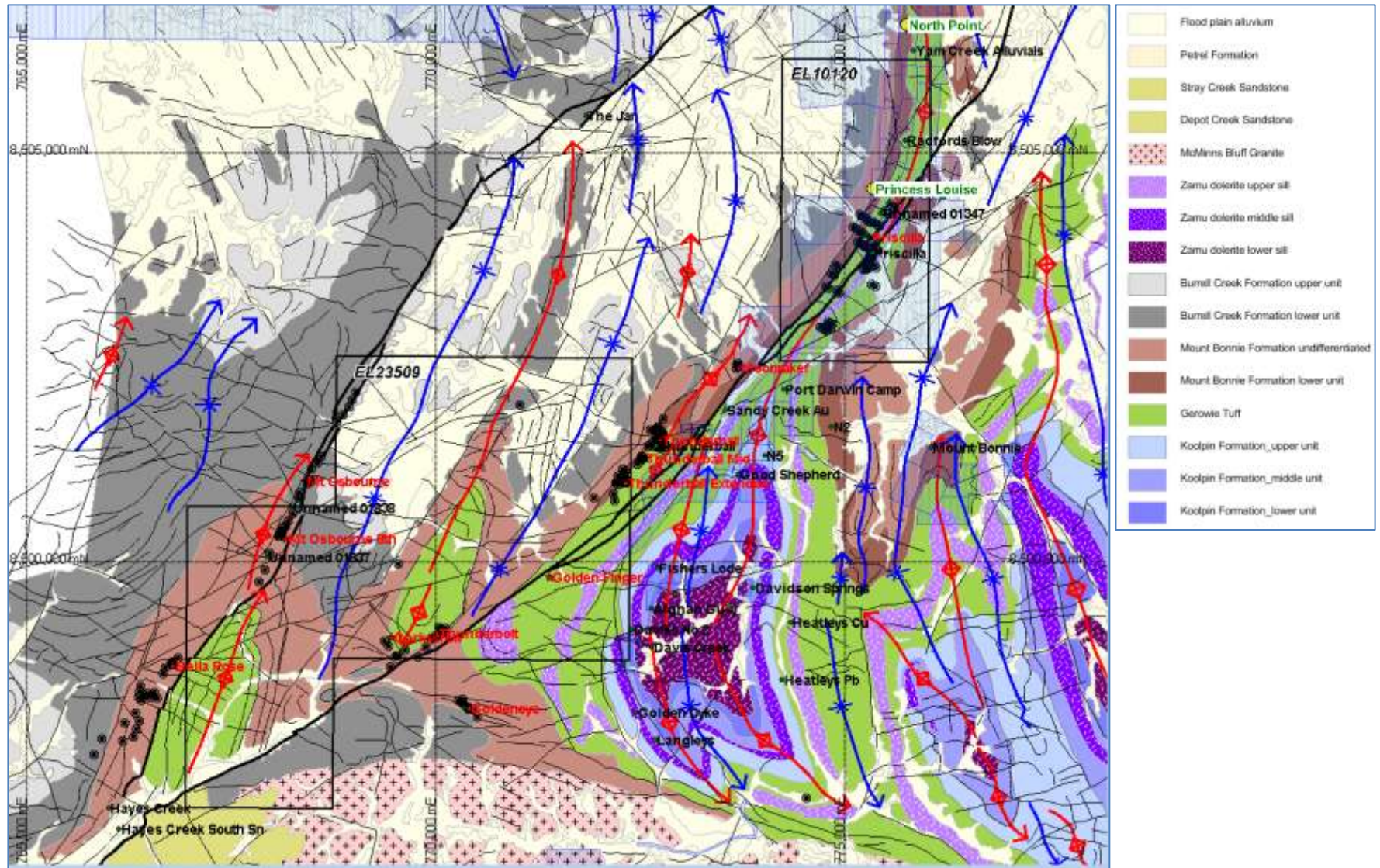


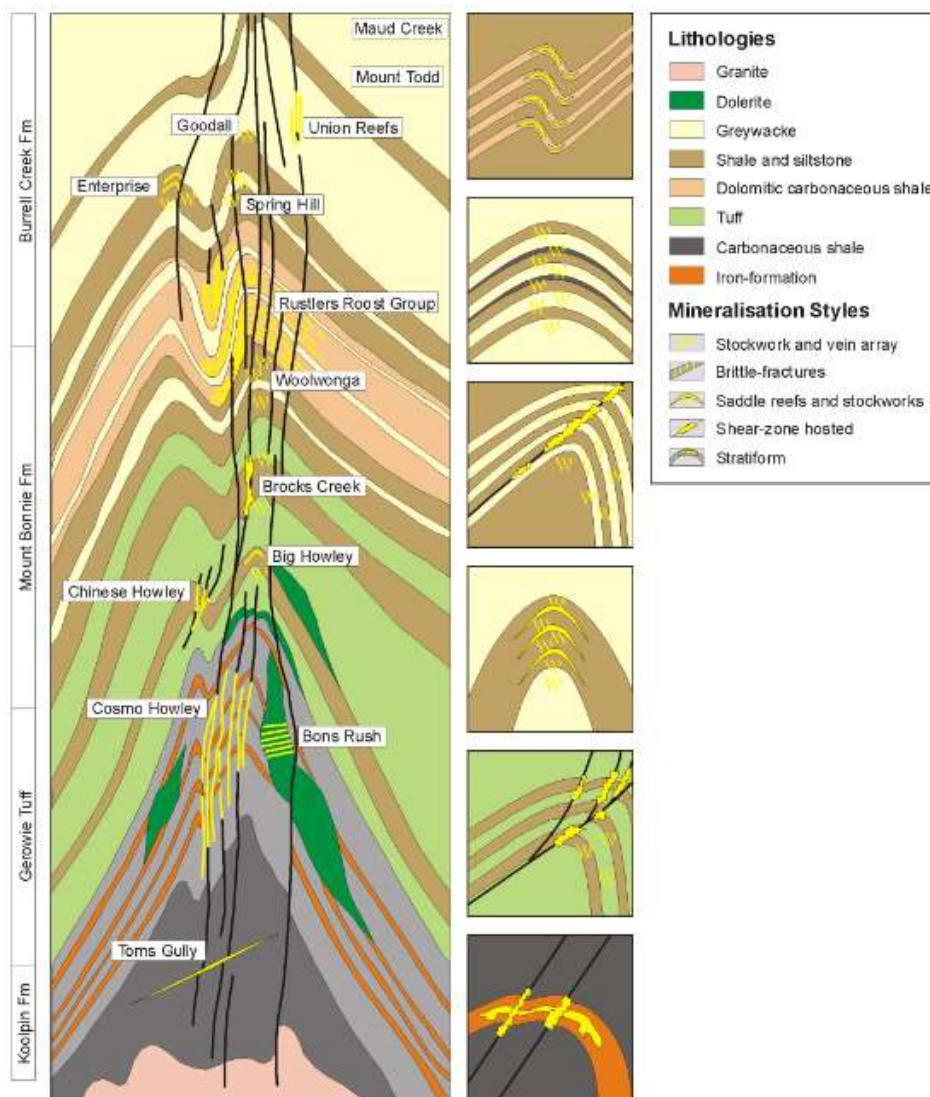
Figure 2 Hayes Creek Corkscrew Project Geology (after Cotton 2010), drilling since 2008 and Licences (mining licences are light blue shaded)

## 6. MINERALISATION SUMMARY

### Hayes Ck Gold Mineralisation

Senner (2004) provides an excellent review of gold exploration within the Hayes Ck and broader Pine Creek region. Figure 3 reproduces a summary cartoon of the geological positions and controls on mineralisation. The main unifying exploration criteria proposed by Senner are:

1. Biotite isograd in the contact-metamorphic aureole;
2. Anticlines (even open) esp. north northwest to north west oriented (synclines may also be prospective);
3. Strongly interbedded and contrasting rock types (e.g. greywacke-siltstone) especially upper parts of Mount Bonnie and Burrell Creek formations; and
4. Carbonaceous or iron-rich lithologies, and any veins within them, may lead to trap sites.



**Figure 3 Geology and Controls for the Pine Creek Gold Deposit (Sener, 2004)**

The Priscilla Line (Yam Ck) area was historically one of the better known bedrock and alluvial gold mining areas in the Northern Territory following the discovery of gold in the area in 1872. The district was famous for its gold nuggets, the largest being 700 ounces (22.5 kilograms). By 1901, a three compartment shaft had been sunk at North Point with two cross-cuts driven west at 42 metres and 62

metres as a prospecting exercise. The lodes in the 62 metre crosscut were reported to average 5 g/t Au over a width of 20m. Further south at Princess Louise, 2,422 tonnes grading 51 g/t Au was reported as having been produced in 1891 (Gillman, 2009).

The discussion of mineralisation is reproduced here from Bajwah (2014). *“At North Point and Princess Louise, auriferous quartz-sulphide veining is associated with greywacke-dominated packages within the west limb and axial zones of the Yam Creek fold, particularly where bedding slip, reverse faults and splays cut the limb at shallow angles. Lithological contrasts between silt-mudstone packages and massive greywackes has been a further focusing factor for auriferous quartz veining.*

*Within the finer grained lithologies the veining has sub vertical, perhaps axial planar foliation dips. Within the more massive brittle greywacke horizons the veins take the form of ladder veins or cross fracture sets sub normal to the bedding and dip shallowly eastwards. The upper greywacke-dominated package hosts most of the gold resource. Refraction of vein dips has been observed passing from one litho-type to the other. The thickness of the finer grained packages appears to be greater at Princess Louise where compared with the North Point sequence, controls to Mineralisation and possible Extensions.*

*The Yam Creek mineralisation is an epigenetic deposit, situated within a greywacke-mudstone association of the Mount Bonnie Formation (South Alligator Group) on the western limb of the Yam Creek Anticline. The anticline plunges 10° to the north, with the west limb dipping at 60° W (range 50°-75° W). Axial plane cleavage (S<sub>1</sub>) is well developed in the mudstone units and is sub-vertical, but is refracted at the mudstone-greywacke contact due to competency contrasts, producing a cleavage dip of 10°-50° to the east.*

*A number of north-east trending faults displace bedding trends in the Yam Creek area. The faults are thought to be sub-vertical and appear to post-date mineralisation.*

*The majority of mineralisation is associated with quartz filled tension gash veins within the greywacke, controlled by the refracted cleavage pattern. The veins are best developed near the hanging wall (western) contact of greywacke and mudstone, occurring as an echelon vein sets, vein thickness varying from stringers to over one metre. Carbonaceous shears within the greywacke and at the mudstone contacts often contain minor but high grade gold mineralisation, associated with quartz stringers and small boudins. This type of mineralisation is thought to originate from tension gash veins rolled into the shears. Low grade gold mineralisation (0.1-0.5 g/t) is pervasive throughout the greywacke host.*

*The mineralised greywacke unit is open along strike to the north and down dip (west). To the south mineralisation has decreased significantly, however drill hole density is low and is situated in an area of structural complexity. It is likely mineralisation continues further south along strike. Similar styles of mineralisation could be targeted further east in a second greywacke unit.*

*Primary mineralisation occurs within quartz veined greywackes and lesser mudstones. Quartz vein gangue mineralogy consists of common pyrite, less common arsenopyrite and rarer chlorite, carbonate and pyrrhotite. Free gold has been recognised in the oxide zone, associated with ferruginous (ex-sulphide?) quartz veins.*

*Gold bearing alluvial material occurs over most of the resource area. The alluvial cover has a maximum thickness of 4m, with gold occurring in basal conglomerates as fine gold, nuggets and in quartz specimens. Auriferous eluvial material is also widespread.*

Primary ore material has been classified as oxide or sulphide, transitional ore has not been recognised. The average depth of the base of oxidation is approximately 33m.

*The recognition of late stage faulting as a 'spatial control' to mineralisation is important, especially at a flitching stage and during optimisation."*

Gillman (2009) lists the resource estimates for North Point and Princess Louise (Table 2) prior to open cut mining in 2010-2011, which achieved an average grade of 1.17 g/t Au which was 14% less than anticipated.

Deposit	Category	Tonnes	Au (g/t)	Ounces	Tonnes
North Point	Indicated	336,000	1.6	17,700	0.50
North Point	Inferred	452,000	1.4	20,900	0.60
Princess Louise	Indicated	298,000	1.4	13,300	0.38
Princess Louise	Inferred	381,000	1.1	13,000	0.37
		<b>1,467,000</b>	<b>1.38</b>	<b>64,900</b>	<b>1.84</b>

**Table 2 Historic North Point and Princess Louise Resources Statement by Crocodile Gold using a 1.7 g/t cut-off (Gillman, 2009)**

### Hayes Ck Uranium Mineralisation

The Thunderball deposit is located just east of EL23509. Mineralisation is located along a northerly trending anticlinal axis proximal to the Hayes Ck Fault, and consists of veins and disseminations of uraninite (pitchblende) hosted within a folded brittle ductile shear that appears to plunge approximately 40 degrees to the north. The highest-grade mineralisation occurs at or near the hinge zone of the interpreted anticlinal structure. There are two parallel stacked zones of mineralisation with the Lower high grade zone hosted within a fine grained tuffaceous sequence consisting of interbedded tuffs, cherts, shales and siltstones. The Upper zone mineralisation is hosted within a black carbonaceous shale and siltstone sequence. These units are interpreted to occur at the Gerowie Tuff – Mount Bonnie Formations boundary. The ore geometry appears to hinge on the fine interplay of focused deformation of sufficient intensity, and favourable geometry for brecciation, with chemically favourable (reduced?) lithologies.

In 2011, SRK calculated a JORC inferred resource of 829,000 t @ 924 ppm U<sub>3</sub>O<sub>8</sub> for 1.7 Mlb (400 ppm lower cut off and conservative upper cut of 4,000 ppm). Drilling by Rockland Resources in 2014 encountered: upper zone mineralisation of 8.8 m (104.9-113.7 m) @ 2,063 ppm U<sub>3</sub>O<sub>8</sub>; and lower zone mineralisation including 2.2 m (210-211.3 m) @ 3,508 ppm U<sub>3</sub>O<sub>8</sub> (max .23 m @ 1.25%) and 10 m (215-225 m) @ 1.7% U<sub>3</sub>O<sub>8</sub> (max 10.4%).

Within the project there are a number of high grade rock chip and drilling intercepts in excess of 1% U, which testify to the wide-spread mineralisation and high prospectivity of the region. Along the Thunderball trend within EL33509 mineralisation has been encountered at Thunderball Extended, Thunderbolt and Corkscrew prospects. A sub-parallel trend further to the west is the Bella Rose trend at Mt Osborne prospect which has also been the focus of exploration and drilling. The best results at prospects within EL23509 are:

- Thunderball Extended: 10 m @ 556 ppm U<sub>3</sub>O<sub>8</sub>;

- Thunderbolt: 4 m @ 120 ppm  $U_3O_8$  ;
- Corkscrew: 1 m @ 229 ppm  $U_3O_8$ ; and
- Mt Osborne South: 3 m @ 894 ppm  $U_3O_8$ .

## Hayes Ck Base Metal Mineralisation

*The discussion of mineralisation is reproduced here from Bajwah (2014). “The Iron Blow deposit occurs on the eastern side of the EL 10120 and is covered by other party MCNs. It comprises a strata-bound massive sulphide deposit of zinc-lead-silver- copper gold mineralisation. The deposit occurs in basal sediments (carbonaceous siltstone, shale, greywacke, chert, conglomerate and carbonate of the Mt Bonnie Formation. It is geologically similar to the Mt Bonnie deposit to the south.*

*The Iron Blow gossan was discovered in 1873 and developed as an underground mine in 1886 when 100t was mined. Between 1898 and 1906 Northern Territory Goldfields of Australia produced 13,700t from underground and surface mining. It was extensively explored between 1957 and 1971 by the BMR, mining companies and NTGS.*

*A Geopeko-BHP JV explored the deposit from 1975, drilling 15 core holes, 8 of which met with massive sulphide. They determined that Iron Blow comprised two stacked lenses. The Upper Lode contained 92,000t, averaging 400g/t Ag, 8.1% Zn, 3.0% Pb, 0.4% Cu and 4.3g/t gold.*

*The Lower Lode was larger and of lower grade comprising 887,500t averaging 87.3 g/t Ag, 6.7% Zn, 0.7% Pb, 0.4% Cu, and 1.9 g/t Au.*

*The oxide zone was relatively enriched in gold and silver and the deposit was open pitted to 40m by Henry and Walker in 1984. The ore was treated at the Mt Bonnie plant along with the Mt Bonnie deposit’s oxide component. Records show that Iron Blow produced 10,000t of oxide @ 9.0g/t gold and 250g/t Ag and 25,000t of sulphide @ 7.0g/t Au, and 360g/t Ag in this period.*

*Both Mt Bonnie and Iron Blow coincide with significant airborne magnetic anomalies. No other comparable anomalies occur in the area so this appears to downgrade the potential for repetitions of these stratiform, perhaps syngenetic exhalative deposits.”*

## 7. PREVIOUS EXPLORATION

During 2008-2014 Thundelarra conducted a number of investigations in conjunction with their project wide exploration. These included high a resolution airborne radiometric-magnetic survey, reconnaissance mapping, detailed geological and structural mapping programs by consultant geologists (Cotton, 2010 and Rankin, 2011). These were especially to understand the geomorphological, geological and structural setting of gold, uranium and base metals mineralisation in the area. A trial VTEM trial survey was flown over the Thunderball Deposit in 2009 by Thundelarra at a line spacing of 350 m and in the same year Geoscience Australia (GA) flew a large TEMPEST survey over Rum Jungle and the Pine Ck regions at 2 km lines spacing including a more detailed survey over the Thunderball Deposit at line spacing of 300 m. In 2011 a 150 m line spaced VTEM survey was flown over the Burnside project by Crocodile Gold, which clipped part of EL10120 and EL23509.

### EL10120 Historical Exploration

EL10120 encompasses the mining lease ML29933 and ML29937.

The discussion of previous exploration is reproduced here from Bajwah (2014). *“The EL10120 forms part of the historical Yam Creek Goldfield where gold was first discovered in 1870. The area of the EL would have been subjected to intensive historical prospecting. Several hard rock gold and alluvial/eluvial occurrences were mined on the EL between 1872 and 1910.*

*Modern company exploration appears to have commenced in the late 1970’s with regional assessments for base metals by Geopeko and others. The modern phase of gold exploration appears to have commenced in 1988 with percussion drilling near Port Darwin Camp by Geonorth. A total of 20 holes were drilled within the area of EL10120. The best reported intercept was 3 m @ 1. **Error! Hyperlink reference not valid.***

*Subsequent to this Dominion Gold Ltd explored the area of the EL between 1993 1996. Work carried out included soil sampling, vacuum drilling, geophysical interpretation and RC drilling. A total of 8 RC holes were drilled by Dominion although all of these were on MCN’s excised from the current EL.*

*Following this Northern Gold obtained an interest in the area. Northern Gold explored the EL between 1996-and 1997. Northern Gold carried out a Mobile Metal Ion soil sampling programme and drilled 8 RC holes in the area of EL10120.*

*A number of gold explorers were active on MCN’s excised from the EL during the late 1990’s to recently, including AngloGold and GBS Gold. This has included several exploration and resource definition drilling programmes. Little company exploration seems to have been done on other areas of EL10120 during this period.*

*During 2007 Armada Exploration carried out an infill soil sampling programme on the area of EL10120.*

*Small scale prospecting for gold has been intermittently carried out over EL10120 by Mr R.M. Biddlecombe from at least the early 1990’s to the present. During the last reporting period a bulk sample of 5000t of material at a grade of 0.25 g/t Au producing 41 oz. fine gold was put through an alluvial testing plant.”*

During 2009-2014 Thundelarra conducted a number of investigations in conjunction with their project wide exploration. These included high a resolution (25 m line spacing) airborne radiometric-magnetic

survey, reconnaissance mapping, detailed geological and structural mapping programs by consultant geologists (Cotton, 2010; Rankin, 2011; Taylor 2011). In particular mapping by Taylor (2011) focussed on the Priscilla Line which identified a number of targets and recommended sampling programs.

Thundelarra conducted RC drilling on the overlapping mining licence (ML29933) in 2011 and 2013. In 2011 a total of 30 holes were drilled for 3,580 m. Drilling met with significant success with intercepts in excess of 1 g/t Au. The best results encountered 4m @ 62 g/t Au (including 1m @ 906 g/t Au) in hole TPCRC159, and 1m @ 1.2 g/t Au in hole TPCRC158 on the same section (G).

Thundelarra conducted RC drilling on the overlapping mining licence (ML29933) in 2011 and 2013. In 2011 a total of 30 holes were drilled for 3,580 m. Drilling met with significant success with intercepts in excess of 1 g/t Au. The best intersection is 4 m (36-40 m) @ 229.3 g/t (including 1 m @ 908 g/t Au) in hole TPCRC159 calculated from individual 1 m assays (original 4 m composite was 62 /g/t Au). In addition to the main zone there is weaker upper mineralisation within TPCRC159 from 16-20 m having a 4 m @ .9 g/t Au from four individual assays with 4 m composite of 1.4 g/t Au. On the same section (G) there is also 1m @ 1.2 g/t Au in hole TPCRC158, which although elevated does show significant mineralisation is not continuous down dip.

Three holes were drilled in 2013 for a total of 288 m. Of these, two were stepped outs of 30 m and 127 m to the north of TPCRC159. The upper zone of mineralisation was intersected but apparently not the zone of high grade mineralisation, which lies in the footwall of the dolerite. This suggests that either the high grade zone has no continuity, or that unlike the known zones of mineralisation, it is strongly cross-cutting rather than being sub-parallel to the stratigraphy (Bajwah, 2014). No drilling was attempted to the south.

Although unclear from the reports, it is likely that the mapping by Taylor only partially guided the 2011 drilling (since the final reports were completed after the drilling), and the limited follow up drilling in 2013 was focused on drilling targets from 2011 drilling. It is therefore quite possible that some of the targets identified by Taylor and Rankin have not yet been followed up.

### **EL23509 Historical Exploration**

The discussion of previous exploration is reproduced here from Bajwah (2014). *“The area of EL23509 was previously explored for gold, tin and base-metals.*

*The Hayes Creek or Bells Tin Mine and a number of smaller prospecting workings are located on the tenement which indicates considerable historical prospecting effort.*

*Some 156t of tin concentrate were mined from the Hayes Creek Tin Mines from 1914-1934 and briefly in 1962. There is also substantial evidence for earlier prospecting for alluvial gold in the headwaters of Yam Creek by Chinese prospectors at the turn of the century.*

*A number of MCN’s have been held over the area of EL23509, although no information on activities on many of these could be obtained from the Departments’ Industry Report Management System. They seem to have been mainly concerned with alluvial gold and tin mining.*

*Recorded modern company exploration commenced in 1967 when Placer Prospecting carried out stream sediment surveys over part of the tenement in a search for base-metals.*

*From 1977-1980 and 1982-1985 Geopeko carried out extensive exploration activities over the EL area. This included regional and prospect mapping, rock-chip sampling, soil sampling, photogeology and an airborne spectrometer-magnetometer survey. Target minerals were base- metals, tin and gold.*

*From 1976-1979 CRA carried out a soil sampling and mapping program over the area of the Bells Tin Mines in a quest for tin and base-metals.*

*Between 1985-1990 Oceania Exploration & Mining and Norgold carried out stream-sediment sampling, photogeology and rock-chip sampling.*

*During 1989 Trescabe Pty Ltd carried out an evaluation of the waste dumps of the Bells Tin Mines and determined an average grade of 0.28% Sn.*

*From 1990-1991 Magnum Gold carried out stream sediment and rock-chip sampling over part of the EL.*

*Between 1990 and 1994 parts of the EL were held by prospectors who carried out loaming and alluvial sampling and minor rock chip sampling for gold. Small scale gold prospecting continues over the EL to the present.*

*During 1994-1996 Solomon Pacific carried out BLEG stream sediment sampling, structural interpretations, geological mapping, soil and rock-chip sampling in a search for gold mineralisation.*

*During 1997-1998 Northern Gold carried out regional soil sampling programs over part of the EL in the search for gold.*

*More recently during 2007 Armada Exploration carried out a program of rock-chip sampling and scintillometer traverses over the current EL in a search for gold and uranium mineralisation.*

*None of the above exploration efforts has resulted in the discovery of economic mineralisation apart from the limited production from the Hayes Creek/Bells Tin Mines.”*

A trial VTEM trial survey was flown over the Thunderball Deposit in 2009 by Thundelarra at a line spacing of 350 m.

The Hayes Ck fault trend has been the focus of extensive exploration by Thundelarra especially at the Thunderball Deposit. In 2011, a JORC resource was calculated for Thunderball Uranium Deposit of 829,000 t @ 924 ppm U<sub>3</sub>O<sub>8</sub> for 1.7 Mlb (400 ppm lower cut off and a low upper cut of 4,000 ppm). Along the same trend within EL33509 there has also been extensive exploration at Thunderball Extended, Thunderbolt and Corkscrew prospects. A sub-parallel trend further to the west is the Bella Rose trend at Mt Osborne prospect which has also been the focus of exploration and drilling. A total of 35 holes have been drilled for a total of 4,956 m, of which 34 holes were drilled in 2010 and one hole was drilled in 2011. The best results are:

- Thunderball Extended: 10 m @ 556 ppm U<sub>3</sub>O<sub>8</sub>
- Thunderbolt: 10 m @ 556 ppm U<sub>3</sub>O<sub>8</sub>
- Corkscrew: 1 m @ 229 ppm U<sub>3</sub>O<sub>8</sub>
- Osborne South: 3 m @ 894 ppm U<sub>3</sub>O<sub>8</sub>

## 8. ROCKLAND EXPLORATION

### 2014

Since purchasing the Hayes Ck project from Thundelarra Pty Ltd (trading as Element 92 Pty Ltd) early in 2014, Rockland Resources has undertaken significant due diligence work, deposit studies and field activities including sampling, drilling and airborne electromagnetics. Prior to the purchase, Global Ore Discovery were engaged to assess the exploration potential for the project (Beckitt, 2013). Parus Exploration Services (Harry Mees) sub-contracted to Rockland Resources during the 2014 field activities. Work carried out on compilation and reprocessing of historical data primarily focused on:

- Rebuilding the geochemistry database from raw laboratory reports,
- Relogging of historical holes and improvements to hole logging codes,
- Identification of radiometric anomalies (both gridded and line data), and
- Specialised display of airborne electromagnetic data (3D and as stacked GIS sections)

Mark Hinman (of Hinman GeoSolutions Pty Ltd) was engaged to review the gold prospectivity of the Hayes Ck project. His work emphasised the importance of intrusions at depth for robust gold systems. Above fertile intrusive systems, deposits are focussed along major, first order, regional anticlines and outside regional contact 'hornblend-present' aureoles (generally within or close to 'biotite-present' zones) which they post-date. Local controls are related to post-peak metamorphic, late brittle, reverse re-activation structures of ill-defined kinematics (Shoobridge Deformation). Gravity was identified as a key dataset to interpret sub-surface intrusions and aureoles, however, much of Rockland's Hayes Creek tenements have poor gravity coverage (1-5 km stations) so definitive regional prospectivity analysis away from known gold mineralisation is limited.

In 2014, a diamond drilling program was conducted by Rockland Resources at the Hayes Ck project, including one hole within EL23509 at the Thunderball Extended prospect. The hole was drilled to a depth of 158.7 m and was ended in massive dolerite without reaching the Koolpin Formation. No significant uranium or gold results were recorded by the geochemistry.

Several airborne electromagnetic surveys have been completed at Hayes Ck, which have helped to map lithologies under cover including the highly carbonaceous/sulphidic Koolpin Formation and lesser carbonaceous/sulphidic Mt Bonnie and Gerowie Tuff Formations. The airborne electromagnetics at Hayes Ck has successfully imaged the anticlines at Thunderball, Bella Rose, Mt Osborne and Corkscrew. The data has been assessed to determine structural targets representing perturbations/offsets of these previous known anticlines. Also processing has focussed on identifying strong conductors with possible base metal origins.

A detailed airborne electromagnetic VTEM survey has been flown over parts of the Hayes Ck Project in 2014 by Rockland Resources, of which 200 line km is within EL23509 and 3 line km is within EL10120. The survey was flown by UTS Geophysics Pty Ltd as job number UT140168 and submitted to the government as CR2015-0016. A terrain clearance of 80 m was utilised with lines oriented 116 degrees and spaced 100 m. A portion of the survey over the Thunderball deposit area was in-filled to 50 m line spacing. Airborne electromagnetic data can help map lithologies under cover including the highly carbonaceous/sulphidic Koolpin Formation and lesser carbonaceous/sulphidic Mt Bonnie and Gerowie Tuff Formations. The VTEM successfully imaged the Thunderball anticline in 3D. A number of second

order targets have been identified at the deposit including the possibility of a conductive unit stratigraphical higher than the present drilling at Thunderball. However, there are no first order structural targets or isolated conductors indicative of base metal sulphides. It is noted that the VTEM previously flown by Crocodile Gold at a spacing of 150 m was not optimal in orientation since it was flown northeast, whereas most anticlines trend northward and in places trend north northeast.

Rockland’s assessment of the historical drilling has re-affirmed the Priscilla prospect as a high priority target where drill to date has encountered up to 4 m (36-40 m) @ 229.3 g/t and 4 m (16-20 m) @ .9 g/t Au in hole TPCRC159. Integrated targeting has highlighted the possibility of a new mineralised corridor which stretches north north-west, linking to mineralisation in hole TPCRC167 (4 m @ 11.8 g/t Au) located 230 m away, and also mineralisation a further 200 m away in hole TPCRC161 (4 m @ 2 g/t Au). This prospective corridor covers a relatively large area with potential to host economic mineralisation.

Field assessment is required to investigate the possible corridor; however, the basement geology is mostly obscured by shallow cover. Drill planning should be along the corridor trend, up dip and down dip from the high grade gold in hole TPCRC159; and down dip of hole TPCRC167 which ended in mineralisation (12 m @ .87 g/t Au).

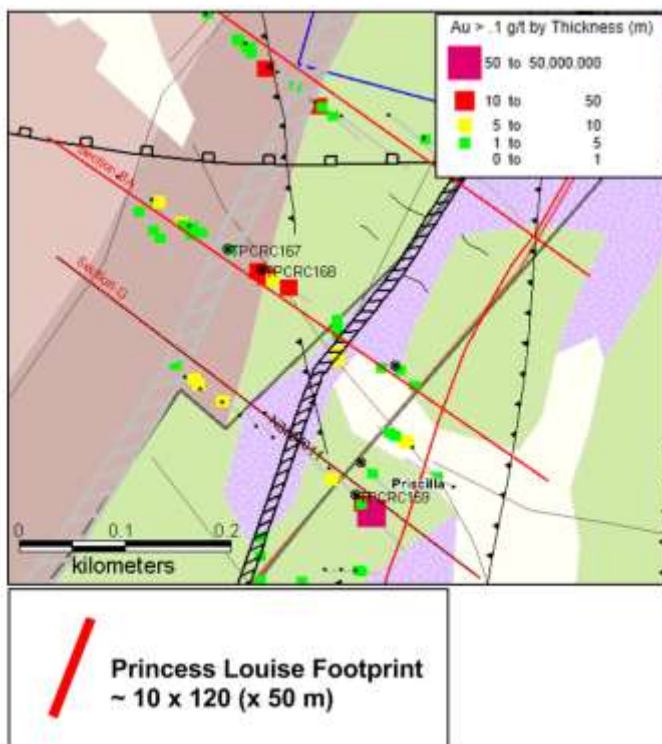


Figure 4 High Grade Gold corridor trending north northwest from Priscilla prospect

**2015-2016**

In 2015-2016 there has been detailed analysis of the geochemistry for the Hayes Ck region and integrated targeting. In addition to the Thunderball Deposit, there are nine prospects within six kilometres of the deposit with high grade uranium samples exceeding percentage levels. Drilling has shown that although the uranium reaches ore grade levels at these prospects, there is a failure to reach the necessary size and continuity of a deposit. Presumably, the missing ingredient relates to the fluid pathway and depositional trap. A key question is whether the scenario that led to the Thunderball deposit is reflected uniquely in the geochemistry like a fingerprint, which can be used for ranking

purposes and to recognise near-miss opportunities with similar characteristics, even potentially if the uranium values themselves are low. A similar question is whether detailed understanding of the geochemistry patterns and zonation can help understand the mineralisation processes such as fluid events and migration direction.

To help answer these questions, in 2014 Rockland Resources undertook laboratory analysis using a very comprehensive suite of elements (74 elements including lead isotopes) for soil, rock chip and drill hole samples (particularly from the Thunderball Deposit). In 2016 the geochemistry was assessed in detail using a number of approaches including a neural network method called SOM (Self Organising Maps: by Kohonen, 1982). The neural network method has been chosen to help with the Hayes Ck geochemistry interpretation since it is a data-driven unsupervised machine learning approach for recognising subtle patterns and groupings even if relationships are non-linear. It is particularly appropriate for handling skewed and missing multivariate datasets like geochemistry (Fraser and Hodgkinson, 2009; and Dickson et al. 2005). Furthermore, since the method highlights multivariate pattern similarity, it is less concerned with variance in absolute values which can arise due to differing analysis methods, sample interval dilution and even the sampling media (i.e. soils vs bed-rock). An Emerging SOM (ESOM) two stage clustering methodology has been adopted involving a large SOM neural network to tease apart the data (allocated to neurons), and then K-means or density slice to group together neurons that are broadly similar (class). The SOM analysis was firstly undertaken on laboratory rock chip and drilling geochemistry data acquired by Rockland Resources and also in the past by Thundelarra. The analysis was later expanded to assess soil and portable XRF data.

At Thunderball, multi-element geochemistry and analysis has helped to develop targeting tools for exploration. It has been found that in addition to high uranium, first order uranium targets have high:  $Pb^{206}/Pb^{204}$ , REE especially Y, and Pb/Cu. The latter ratio is particularly useful for assessing historical geochemistry that generally has a more limited suite of analysis which does not include uranium. For gold mineralisation, As is sometimes (but not always) elevated. One of the targeting approaches was to use a neural network clustering analysis (Rapid Miner - Self Organise Map) of the multi-element dataset collected by Rockland and Thundelarra. Targeting has utilised all available soil, stream and rock chip geochemistry. Drill hole geochemistry has been assessed in 3D and as grade - thickness.

The Mt Osborne South area has been the focus of drilling by Thundelarra who encountered up to 3 m @ 894 ppm  $U_3O_8$ ; however, the mineralisation has been inconsistent and discontinuous. The new statistical analysis has highlighted the mineralisation is associated with high Y similar to Thunderball, with a broader more consistent response possibly due to hydrothermal alteration involving Xenotime. A surface soil/chip sampling program is planned along with re-analysis of a complete hole utilizing a broader suite of elements which includes lead isotopes. The 2014 VTEM covering the Mt Osborne South prospect does indicate an anticline with relatively deep Mt Bonnie Formation, but does not indicate any additional targets.

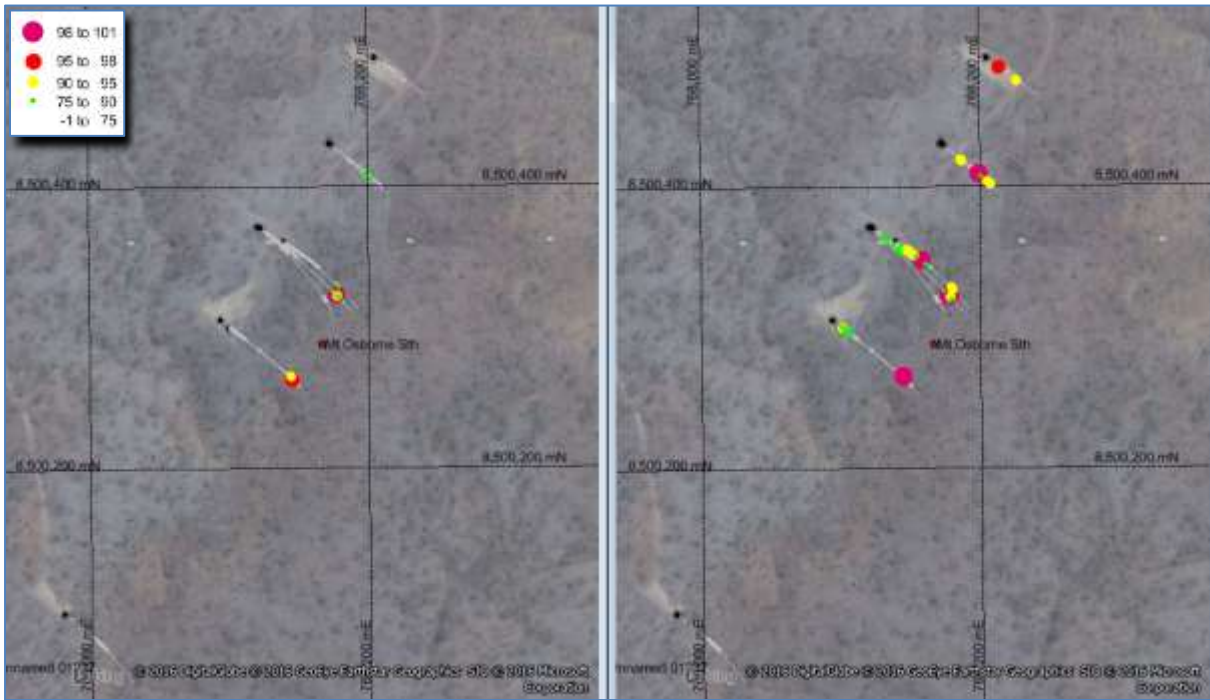


Figure 5 Mt Osborne South Drilling Percentile Results where left image is U and right image is Y (exhibiting a broader response likely due to alteration)

## 9. CURRENT REPORTING PERIOD

### 2017 SkyTEM Trial - Priscilla

Three trial SkyTEM airborne electromagnetic lines were flown over the Priscilla prospect within EL10120 in 2017, whilst the system was in the area undertaking work nearby for PNX Metals Pty Ltd. The lines were flown in a direction of 126 deg, each less than 1 km long at a spacing of 100 m for a total of 2.75 line km. It is noted that the previous VTEM airborne electromagnetic survey flown over the prospect in 2011 had flight lines spaced 150 m apart with an inappropriate flight orientation (northeast instead of north northwest). The previous VTEM survey has highlighted an anomaly 200 m north of Priscilla and several anomalies 500m-1km south of Priscilla. The test survey was to follow up the northern anomaly and also to fly over the Priscilla prospect itself. The data was inverted using the LCI algorithm to produce a quasi-2D model section. Plan view late time electromagnetic data, drilling and imagery is shown in Figure 6, and Figure 7 shows the SkyTEM multi-plots. The logistics report, line data and the multi-plots are submitted as data with this report as described in the Verification List also submitted with this report.

There are SkyTEM anomalies identified in the northern (L400901) and southern (L401101) lines but not the middle line. It is possible that these anomalies are due to the same geological source but the middle anomaly has not coupled well with the target or sulphides are weaker in this area. The former northern anomaly corresponds with an 2011 VTEM anomaly, however, the latter southern anomaly is new and is located within 150 m southwest of the high grade gold in hole TPCRC159. It is noted that the SkyTEM anomalies are high moment late anomalies similar to those at the Iron Blow and Mt Bonnie VMS Deposits flown by PNX Pty Ltd in 2017. In fact, according to the conductivity inversion the new anomaly is more than twice the conductivity (to 182 mS/m) and potentially larger in strike length (since the two anomalies are not closed off due to the limited flight lines).

The Iron Blow and Mt Bonnie SkyTEM anomalies are discrete in size with the latter only occurring on one of the 100 m lines. The response is likely due to massive sulphide associated with the VMS feeder zone which is pyrrhotite rich, rather than the disseminated and strataform parts of the deposit. It is noted that economically important parts of the deposit are very high in zinc (sphalerite), silver and gold; which may not be restricted to the feeder massive sulphides or show up as an airborne electromagnetic response. Similarly, the magnetic response at Iron Blow and Mt Bonnie is likely due to the pyrrhotite component and therefore may not be truly representative of the economic potential. This is important because the Priscilla anomalies are not associated with significant magnetic anomalies.

There has been more than one hundred years of exploration along the Priscilla Line at Yam Ck and so it seems unlikely that a significant VMS deposit would have been missed. However, much of the work has been restricted to gold and there is reasonable significant cover which could potentially obscure deep VMS mineralisation. A historical MMI soil survey indicates anomalous Au-As at Priscilla, but does not indicated any base metal anomaly (MMI assays did not include Ag or Zn). However, there is a significant MMI Bi (Cu-Pb) anomaly 250 m north of Priscilla. Historical drilling does exist nearby to the two SkyTEM anomalies near Priscilla, however, these holes have not adequately test the conductors since the holes are either too short, located too far away or did not assay for elements apart from gold.

It is noted that culture, in the form of dongas, sheds and car wrecks, does exist in the Priscilla area and could contribute to the electromagnetic anomalies (especially the northern one). Similarly, the 2011 VTEM anomalies .5-1 km to the south could also be due to culture. However, it seems plausible and potentially probable, that the response is due to deep sulphides since the anomalies manifest in the very late time channels and in the high moment data for the SkyTEM.

It is recommended that detailed ground electromagnetics be undertaken to follow up the two SkyTEM anomalies proximal to Priscilla, and also the 2011 VTEM anomalies .5-1 km south of Priscilla. The ground electromagnetics would help confirm the likelihood of a bedrock source, and also to provide a more precise location of for drilling. Any deep drilling should be followed up with down-hole electromagnetics.

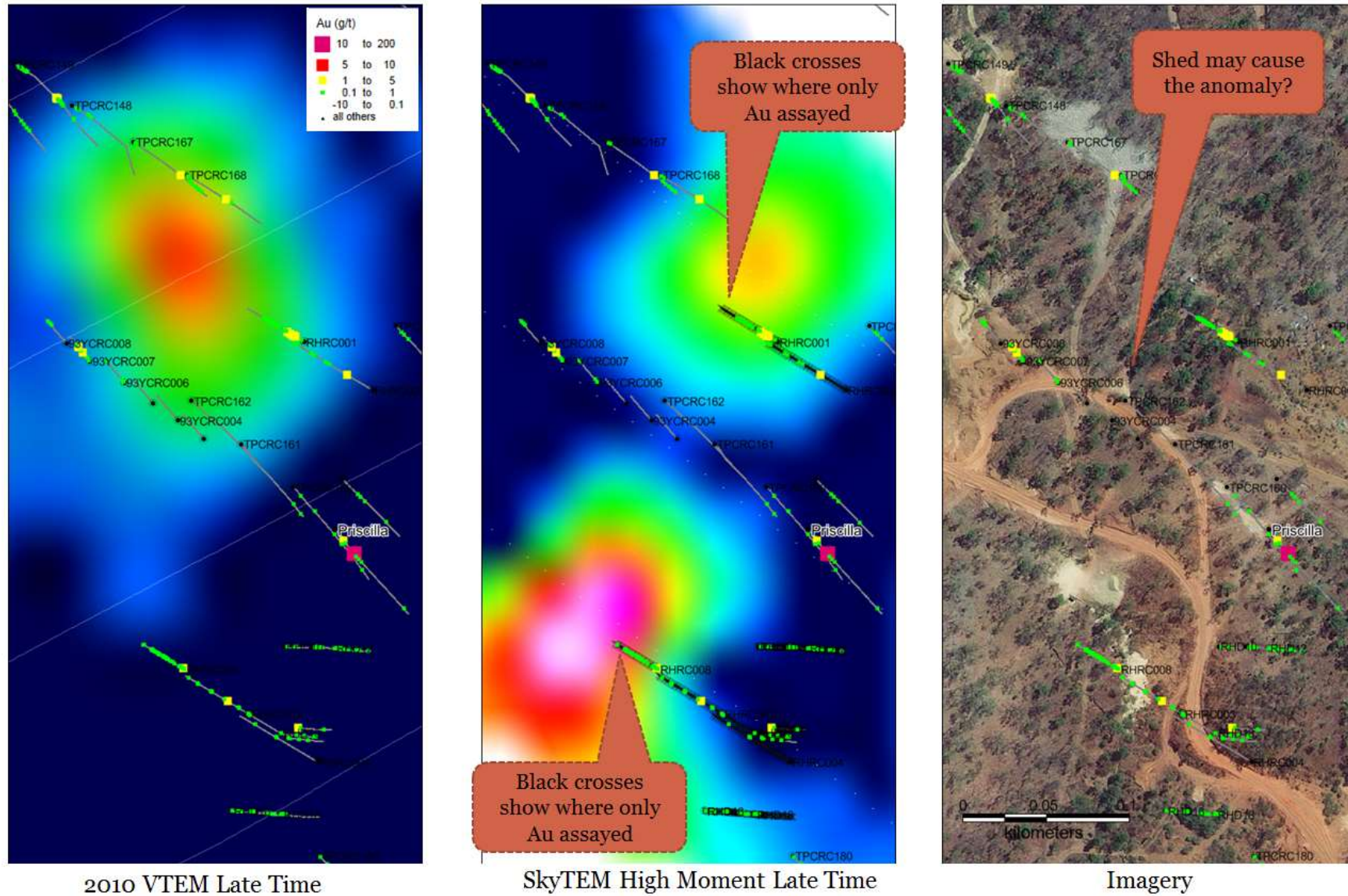


Figure 6 Data Compilation for Electromagnetic Surveys at Priscilla

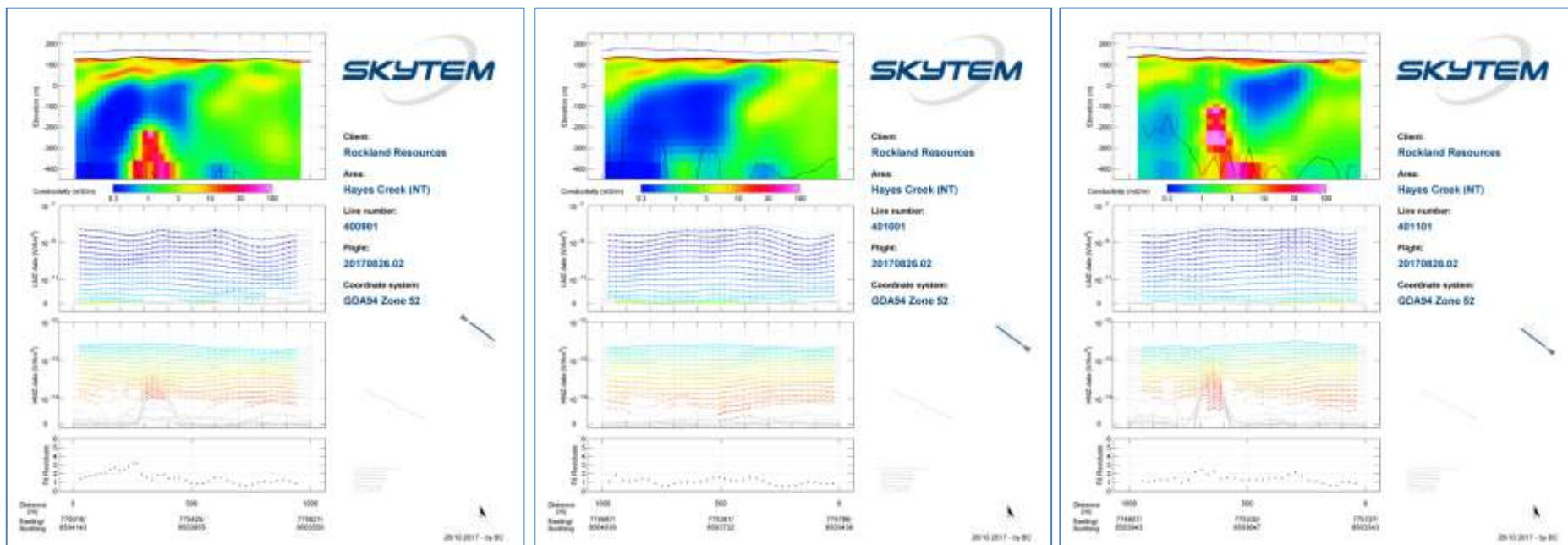
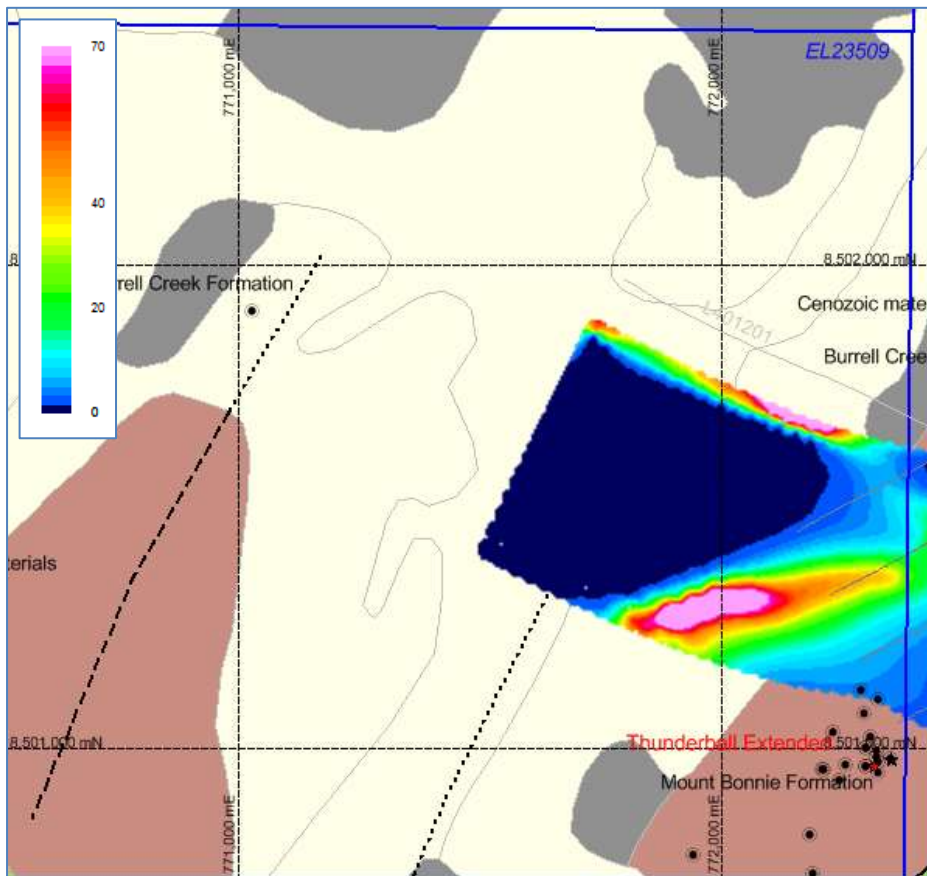


Figure 7 Skytem Data and Inversions (Northern, middle and southern Lines)

**2017 SkyTEM Trial - Thunderball**

A single trial SkyTEM airborne electromagnetic line was flown over the Thunderball Deposit extending a small distance to the west into EL23509. The survey was flown whilst the system was in the area undertaking work for PNX Metals Pty Ltd. The line was flown in a northwesterly direction for approximately 2 line km. Previous VTEM for the area shows the western edge of the Thunderball anticline to be conductive, which is also show in the new SktyTEM test line and increases with depth (Figure 8). It is unclear what the cause of this conductor is (to 140 mS/m), could be thicker components of graphite/sulphides within the Mt Bonnie or Gerowie Tuff.



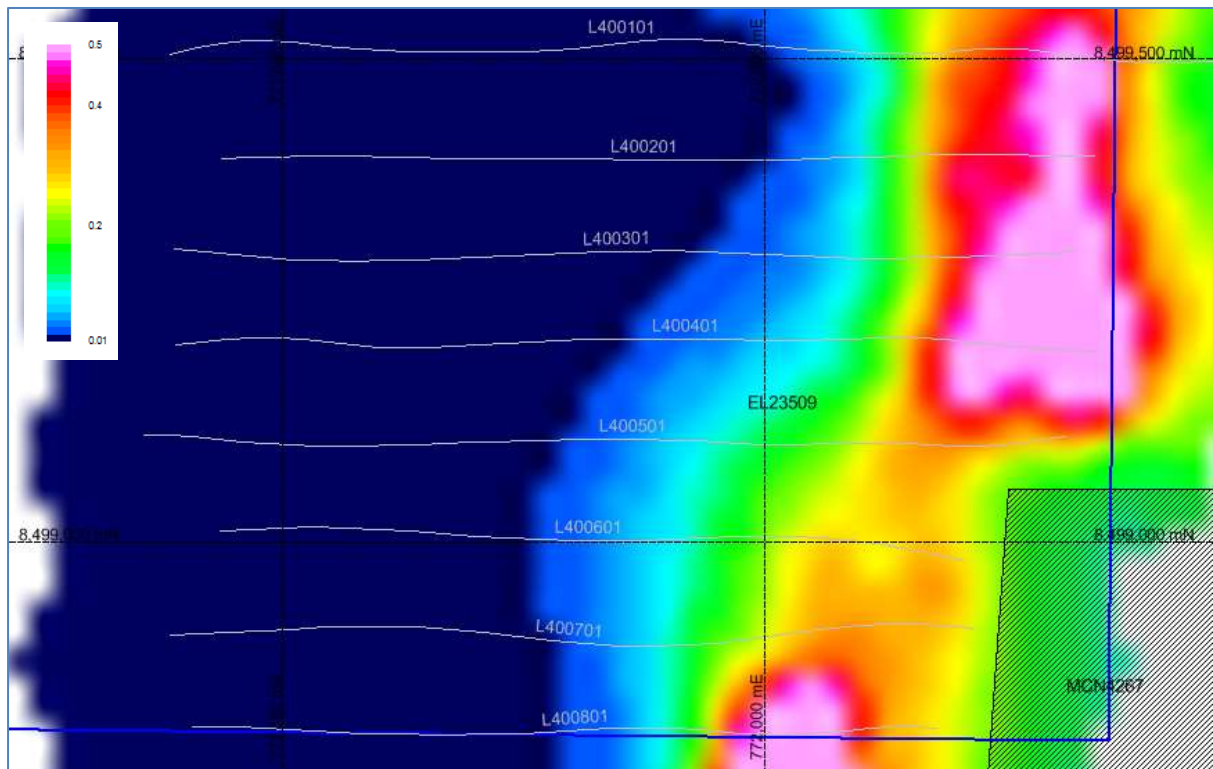
**Figure 8 Trial SkyTEM Conductivity (mS/m) Section west of Thunderball Uranium Deposit**

**2017 SkyTEM Trial - West of Davies (MCN2647)**

Eight trial SkyTEM airborne electromagnetic lines were flown in the south west corner of EL23509 just west of the Davies prospect and MCN4267. The survey was flown whilst the system was in the area undertaking work for PNX Metals Pty Ltd. The lines were flown in a easterly direction, each less than 1 km long at a spacing of 100 m for a total of 7.6 line km.

Previously two TEMPEST flight lines existed in the area flown by Geoscience Australia in 2009. Watson (2011) summarises exploration at the Davies area. A narrow, high grade zone of bedrock mineralisation is hosted by a siliceous gossan within a thin bed of carbonaceous shale in Koolpin Formation. In 1996 Northern Gold NL calculated a resource for Davies No.1 deposit of 49,490 t @ 2.58 g/t Au for 4,100 ozAu (70 m vertical depth and a top cut of 10 g/t Au with a 0.7 g/t lower cut off). The deposit has not been developed. Rockland’s review of the historical activities in the area has failed to identify any systematic soil or rock chip sampling over the prospect or nearby area. There are two apparent east north-easterly oriented dextral fault (s) mapped in the area (as defined by Cotton, 2010).

The SkyTEM survey results are depicted as a late time grid in Figure 9. This shows the apparent offset of a north trending conductor which is likely the carbonaceous upper limb of the Koolpin Formation. At this stage the area is considered weak to moderately prospective for gold.



**Figure 9 SkyTEM (EM Z component channel 30 high moment data) showing conductive Koolpin**

## 10. CONCLUSIONS & RECOMMENDATIONS

Since purchasing the Hayes Ck project from Thundelarra early in 2014, Rockland Resources has undertaken significant due diligence work, deposit studies and field activities including drilling and airborne electromagnetics. There has been assessment and compilation of the previous geological, geochemical and geophysical exploration data along with integrated targeting analysis.

During the reporting period a trial SkyTEM airborne electromagnetic survey has been completed over selected areas of the project. The survey has been completed over a) the Priscilla prospect within EL10120 totalling 2.75 line km, b) the south west corner of EL23509 (just west of the Davies prospect and MCN4267) for a total of 7.6 line km, and c) west of Thunderball within EL23509 for a total of 2 line km. This survey has confirmed a 2011 VTEM anomaly at Priscilla and identified a new anomaly nearby. In addition, there are VTEM anomalies .5-1 km south of Priscilla. These anomalies should be followed up with ground electromagnetics to identify precise drill targets for VMS mineralisation and likelihood the anomalies are geological rather than due to culture.

Rockland's assessment of the historical drilling has re-affirmed the Priscilla prospect as a high priority target where drill to date has encountered up to 4 m (36-40 m) @ 229.3 g/t and 4 m (16-20 m) @ .9 g/t Au in hole TPCRC159. Integrated targeting has highlighted the possibility of a new mineralised corridor which stretches north north-west, linking to mineralisation in hole TPCRC167 (4 m @ 11.8 g/t Au) located 230 m away, and also mineralisation a further 200 m away in hole TPCRC161 (4 m @ 2 g/t Au). This prospective corridor covers a relatively large area with potential to host economic mineralisation.

Integrated targeting has successfully identified several mid-high priority targets predominantly within EL10120.

- There are positions northeast of Moonraker and west of Priscilla which have not been drill tested but have similar geology to other deposits in the area (i.e. Lower Mt Bonnie Formation west of the main anticline trend);
- New sub-surface parasitic anticlines have been identified from the magnetic and electromagnetic data along the western part of the tenement (upper Mt Bonnie Formation);
- The last 4 m composite in hole TPCRC176 has high uranium pathfinder elements (i.e Pb/Cu of 21.17) but was not assayed for uranium or other key elements;
- Soil geochemistry anomalies have been identified which appear to have not been targeted by drilling:
  - A soil sample (LLFA soil sample D41238) has extremely high gold of 1.015 g/t Au, located 102 m northwest of hole TPCRC175;
  - A soil sample (LLFA soil sample D51755) has elevated gold of .85 g/t Au, located 243 m west of hole TPCRC159 and 127 m southwest of hole 93YCRC008;
  - Two auger vacuum drilling soil samples located 50 m apart have extremely high gold of 2.379 and 1.085 g/t Au (LLFA soil sample B18498 and B18499) on the edge of Crocodile Gold mining licence MCN624 but could be followed up within Rockland's ground immediately south within EL10120;

- Several LLFA soil samples from two lines (i.e. sample D41227) have high As (to 330 ppm) and weak Au (.09 g/t which is twice background) along a trend 200-400 m southwest of hole TPCRC175; and
- MMI samples by Northern Gold are up to 40 times background (ie. sample 150093 to .046 g/t) located 230 m north of TPCRC175.

Each of these areas requires detailed prospecting and multi-element soil/chip sampling. An orientation geochemical program (soil and drill-hole geochemistry/pXRF) should be conducted at the Osborne South and Priscilla prospects to refine the methodology and signature. The Priscilla Line is covered by recent sediments and also historical alluvial mining/prospecting, which may adversely affect the ability of geochemistry to correctly identify basement mineralisation. To assist with targeting ahead of drilling, Sub-audio magnetics (SAM) and VTEM is proposed. The VTEM has proven ability to map carbonaceous lithologies in 3D. SAM has not previously been utilised in the region and may provide an important new tool to map in detail resistivity changes related to controlling shears and quartz-bearing structures.

Project scale gravity is being considered to interpret sub-surface intrusions and aureoles to guide regional target filtering and prospectivity for gold mineralisation.

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