ANNUAL TECHNICAL REPORT

Pine Creek Property
EL 27732

REPORTING PERIOD

25\textsuperscript{th} November 2011 to 24\textsuperscript{th} November 2012

Target Minerals: Au, REE

January 2013

Tim Hronsky
SUMMARY

EL 27732 forms part of St George Mining’s Blue Thunder Gold Project which is a contiguous area comprised of EL 27732, EL 28016, EL 28017, EL 28232, EL 28332, EL 28463 and EL 28465. All tenements are held in the name of Blue Thunder Resources Pty Ltd, a wholly owned subsidiary of St George Mining, other than for EL 27732 which is held by James Stewart (50%) and Geotech International (50%). St George Mining is the manager of the Project.

On the 1st of March 2009, St George Mining Ltd entered into an option to acquire 80% of EL 27732.

This current reporting year was the second year of exploration by St George in the Pine Creek Area. The drill-hole was logged using the CSIRO HyLogger, a hyperspectral logging tool, before the cut core samples were sent for analysis. There was no Report prepared in respect of the logging carried out using the HyLogger.

The orientated drill core was further assessed to see if it warranted manual logging of the structures present. However, it was found that the intense alteration (quartz + albite) and the extent of brecciation obscured any important information in the important part of the hole below the horizontal layered post-mineral Cambrian carbonate units. The activity was abandoned as it was not possible to meaningfully measure discreet structures.

This was later explained by the subsequent geological, stratigraphic and structural review that suggested PCDD-001 intersected the steeply dripping and unconformable boundary between the base of the Koolpin Formation (South Alligator Group) with the underlying Mt Partridge Group. Such a setting would be the focus for extensive hydrothermal fluid flow and structural deformational movement.

The core was analysed for gold and for representative rare-earth elements (REE). Select light, medium and heavy rare earth elements were assayed for to test the broader potential of this area for REE, especially in light of the Quantum REE Project of TUC Resources Ltd (ASX:TUC) that is immediately north of EL 27732.

The gold results were disappointing and indicated a very tight control on the gold mineralisation previously intersected in that same area. The representative REE samples indicated some anomalism and a fuller suite of REE’s were submitted for analysis. These results have now been received and don’t justify immediate follow-up.

All assays are attached as Appendix A and Appendix B.

The disappointing drilling results for gold and REE samples in PCDD-001 necessitated a complete review on the current understanding of the geological setting and the controls on gold mineralisation.

An extensive exploration review of EL 27732, incorporating all previous and new exploration data, was conducted. Particular attention was given to the localised structural controls as viewed in the nearby Cosmo Howley gold deposit, also hosted within the upright folded Koolpin Formation.

A new predictive and diagnostic exploration model was developed. The use of a predictability model for mineral zonation associated with various positions within the orogenic gold system was particularly helpful in challenging past assumptions and in the recognition of a new exploration target in the north of the tenement area.

A large multi-element MMI soil geochemical survey was planned to assess this new priority gold target during the 2013 field season.
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BACKGROUND

EL 27732 forms part of St George Mining's Blue Thunder Gold Project which is a contiguous area comprised of EL 27732, EL 28016, EL 28017, EL 28232, EL 28332, EL 28463 and EL 28465. On the 1st of March 2009, St George Mining Ltd entered into an option to acquire 80% of EL 27732, which is currently held by James Stewart (50%) and Geotech International (50%). All tenements are held in the name of Blue Thunder Resources Pty Ltd, a wholly owned subsidiary of St George Mining, other than for EL 27732. St George is the Project Manager in respect of EL 27732.

LOCATION AND ACCESS

The Company’s Pine Creek Property is located 130 km SE of Darwin, Northern Territory, Australia and hosts the Blue Thunder Gold Project, centred on EL 27732. The logistics of the property are excellent: the area is well serviced by a major highway that runs from Darwin to Alice Springs, it is proximal to the main Darwin-Adelaide rail link, and any project should be able to access the main gas-pipeline from the north coast.

Figure 1 - Location of Pine Creek Property
REGIONAL GEOLOGY & MINERALISATION

The Pine Creek Property is located in the western section of the Central Domain of the Pine Creek Orogen (PCO), which is a major gold and uranium province in the Northern Territory, and with a known gold endowment of approximately 11MozAu.¹

The region is characterised by early Proterozoic meta-sedimentary rocks occurring in a geosynclinal setting over a gneissic and granitic Archean basement. The PCO sequence is unconformably overlain by the Middle Proterozoic McArthur Basin to the east and by the Middle Proterozoic Victoria Basin and Cambrian-Ordovician and Mesozoic sequences (Daly and Bonaparte Gulf Basins) to the west and southwest. Major sedimentation and volcanism occurred between 2000 to 1870 Ma in an intra-cratonic basin formed by crustal extension of the predominantly Achaean granitic basement. The stratigraphic sequence is dominated by mudstones, siltstones, greywackes, sandstones, tuffs, and limestones. The sediments and basic intrusions were folded and metamorphosed to amphibolite facies between 1870 to1899 Ma and then subsequently intruded by the Cullen batholith.

The Cullen Batholith is comprised of 23 individual plutons, which are mostly highly fractionated, and sometimes metal-enriched leuco-granites. The extent of contact zone with the host rocks varies and is comprised of an albite + epidote + hornblende metamorphic facies. Hydrothermal fluids associated with this event are concentrated at the roof and margins of these plutons. The presence of numerous roof pendants and the distribution of a thermal aureole around these plutons suggest a preserved high level of emplacement.

At a regional scale, gold mineralisation in the PCO occurs in linear belts associated with regional structures at or near the green schist facies brittle-ductile transition phase. Gold deposits within the western area of the Central Domain of the PCO are concentrated within the sedimentary Koolpin Formation, the basal unit of the South Alligator Group.

The rocks of the South Alligator Group form a distinctive sequence of iron-rich sediments resting unconformable on older rocks. The area of the South Alligator Group includes the basal Koolpin Formation which is overlain by the Gerowie Tuff, which is conformable with the Mount Bonney Formation. The Gerowie Tuff and overlying Mount Bonney Formation are similar in composition and may act as a stratigraphic seal for mineralisation found in the ferruginous and carbonaceous rocks of the underlying and preferentially mineralised Koolpin Formation.²

Although the Cullen Batholith is not magnetic, the surrounding contact aureoles can be. The vast majority of PCO gold deposits, including all the larger ones, lay within these contact aureoles. This appears to be largely related to the physical properties of the alteration zones around the granite contact and their deformational pattern (micro-fracturing) during localised shearing.

The magnetic response of these zones implies hydrothermal iron enrichment has occurred as part of the contact alteration. Epigenetic iron may play an important role in localising gold mineralisation. A similar relationship between gold and concentrations of iron exists at the Tennant Creek Goldfield (5+MozAu), to the south, which lies to the south within the same Proterozoic terrane.

¹“Proterozoic Lode Gold and (Iron)-Copper-Gold Deposits: A Comparison of Australian and Global Examples”; Partington GA and Williams PJ; IN Australian & Global Proterozoic Lode Au & (Fe)-Cu-Au Deposits (Chapter 2), 2000

²“A contribution of geology, petrology and geochemistry to the Cullen Batholith and related hydrothermal activity responsible for the mineralisation, Pine Creek Geosyncline, Northern Territory”; Bajwah ZU (1994); NT Geological Survey Report No. 8
The Cosmo Howley deposit (2+MozAu) is one of these gold deposits that are situated in the inner contact aureole of the Cullen Batholith. Cosmo Howley and most of the known gold deposits in this district are hosted by the Koolpin Formation, situated on the eastern limb of a regional antiform. The Pine Creek Property is situated on the sheared western limb of this interpreted regional anticline (Fenton Shear) and hosted by the folded continuation of the prospective Koolpin Formation. The core of this anticline may have been intruded by a major pluton.

The deposit style and the host-rock sequence at Cosmo Howley are similar to those of the giant Homestake gold deposit (~57MozAu) in South Dakota. A direct genetic link is inferred on the basis of similar age, sedimentology, deformation style, sulphide species, pathfinder elements, isotopic data, and forensic signatures in the sulphides. This is an important consideration for the prospectivity of the local area: Cosmo Howley and the Blue Thunder gold prospect (EL 27732). Both gold occurrences are hosted by the same stratigraphic unit and are also similar in their setting and strata-bound style of mineralisation.

Large gold systems cluster within well-defined periods of lithospheric growth including the Paleoproterozoic. Recent geochronology offers new constraints on evolution of the Pine Creek Orogen, allowing inter-regional comparisons and correlations to be made with the Tanami and Tennant Creek Regions. Previously, age dating of Paleoproterozoic gold mineralisation in the Northern Territory appears to have based on inferred genetic links between the ages of spatially related granites and the gold mineralisation (e.g. Tennant Creek). Contrasting views has also argued that the gold mineralisation in the Pine Creek area is much younger than previously thought. While dating is still imprecise and incomplete, it is suggested the NT gold deposits appear to be clustering around an age range of 1760-1700 Ma, and this represents a major orogenic gold event towards the end of the Paleoproterozoic.

This is suggestive of a major global-scale late Paleoproterozoic gold event, post regional metamorphism and magmatism, during shift from brittle-ductile to brittle deformation, and provides an approximate correlation between gold deposits of the Northern Territory and the mineralising event responsible and capable of forming the giant Homestake gold deposit.

The Pine Creek lode gold deposits are spatially related to regional anticlines that were formed early, above thrust-ramp and thrust duplex structures. Suitable trap sites within these structures appear to have been present as illustrated by the strata-bound nature of some of the gold deposits beneath thick dolerite sills or greywacke units on the crests of anticlines. The thrusts appear to have acted as channel ways for hydrothermal fluids from deep larger structures into anticlines and other trap sites. Dolerite dykes provide local competency contrasts.

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3 "Geochemistry and depositional environment of the gold-mineralized Proterozoic Koolpin Formation, Pine Creek Inlier, Northern Australia: a comparison with modern shale sequences"; Matthai SK and Henley RW; Precambrian Research 78 (1996) 211-235

4 "Lithospheric controls on the formation of provinces hosting giant orogenic gold deposits"; Bierlein FP, Groves DI, Goldfarb RJ &Dubé B (2006)

5 Pine Creek Orogen: a synthesis through time and space"; Worden K, Geoscience Australia - Evolution and Metallogenesis of the NAC (ALICE SPRINGS, 20-22 JUNE 2006)

6 "Metallogenic Potential of Australian Proterozoic Granites"; Budd AR, Wyborn LA, Bastrakova IV; Geoscience Australia Record 2001/12

7 "Timing of gold mineralisation in the Pine Creek orogen, Northern Territory, Australia: its significance to the thermal aureole gold model"; Sener AK, Groves DJ and Fletcher IR; Mineral Exploration and Sustainable Development
Two major phases of deformation that pre-date granitoid intrusions have been recognised in the Pine Creek Geosyncline. The earliest widely recognised structures in the Pine Creek Geosyncline are bedding-concordant fabrics and breccia zones ($D_1$). The second phase of deformation produced the north to north-west trending folds that still dominate the district ($D_2$). The folds vary from open and upright to overturned and isoclinal with the development of a penetrative slaty cleavage.

Gold occurs in all rock types except granite. The higher-grade deposits have an association with carbonaceous or iron and sulphur rich sedimentary horizons, such as the Koolpin Formation. More competent lithologies in turbidite-style sequences form vein-stockwork deposits (e.g. Enterprise and Mount Todd), whereas those with both contrasting competency and geochemistry form strata-bound vein and replacement style of deposits (e.g. Cosmo Howley).

Figure 2 – Regional Geology and Gold Deposits of the Pine Creek Orogen, the blue circle showing the approximate location of St George’s Pine Creek Property
Figure 3 – Regional relationship between the Blue Thunder Gold Project and the Cosmo Howley Deposit against a magnetics background.
Figure 4 – Stylised model of the alteration domains surrounding a granite-country rock contact, showing optimal zone for mineralisation.
PREVIOUS EXPLORATION

The Pine Creek Orogen has been explored for gold for over a century, following the discovery of gold from a hole dug for the construction of the overland telegraph line in the 1870’s. A substantial quantity of gold was then produced from 1884–1915, with peak production around 1891–1895.

Modern gold exploration did not commence until 1980, when increased gold prices and improved mining and metallurgical technology drove renewed exploration. Systematic geological mapping, geochemical surveys and drilling, mostly were conducted around previously known occurrences. A number of previously known occurrences such as Enterprise, Cosmo Howley, Golden Dyke, were re-evaluated and subsequently mined. Several new gold deposits were also discovered. The depressed gold price during the 1990s curtailed exploration from the late 1990’s until a recovery in 2005 stimulated further exploration and mining.

The Pine Creek shear hosts most of the known deposits including the Cosmo Howley gold deposit (2+ MozAu). The Pine Creek Property is located approximately 50 km to the south west from the Cosmo Howley Mine but connected by the same target horizon (Koolpin Formation).

The project is hosted by the regional Fenton shear zone, which is covered by some younger sedimentary unit, notably the Gerowie Tuff, the Mount Bonney Formation and Cambrian limestone units. This region remains substantially under explored with the majority of past exploration efforts being focused on uranium. The Fenton shear was not seriously explored until the regional Homestake programme in the 1990’s.

Initial limited exploration in the area involved an aero-magnetic survey, some geochemical surveys and a photo-geological survey. An exploration to this time appeared to rule out any major surface or subsurface gold mineralisation because of the younger overlying sedimentary horizons.

Homestake Gold of Australia (HGAL) was subsequently granted tenure over the ground and approached the area with the new strategy of exploring for concealed (“under cover”) gold deposits. HGAL had noted the similarities between the stratigraphy and mineralisation of the South Alligator Group, especially similarities between the Koolpin and Homestake Formation, which hosts the giant Homestake deposit (~57 MozAu) in Lead, South Dakota (the “Homestake deposit”). This assumption was the basis of their exploration model.

The deposit style and host rocks of Cosmo Howley and the Homestake deposit are independently noted as being similar with respect to their character and stratigraphic succession. It is also noted by St George to have similarities in style, age and setting to the giant Obuasi gold deposit (30+ MozAu) in SW Ghana.

HGAL had purchased geophysical data, magnetic and gravity data from a multi-client survey and also acquired a 1:100,000 TMI (total magnetic intensity) image. The TMI image was from the Aerodata multi-client survey and E-W line spacing of 200m, sensor height was 70m and image pixel size was 50m.

In 1995, HGAL conducted a gravity survey along 2 E-W lines with lengths of 14 and 16km. Readings were taken at 100m spacing in milli-gals. These lines were combined with regional Northern Territory Geological Survey (NTGS) and AGSO (Australian Geoscience Survey Organisation) data.

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8 “Proterozoic Lode Gold and (Iron)-Copper-Gold Deposits: A Comparison of Australian and Global Examples”; Partington GA and Williams PJ; IN Australian & Global Proterozoic Lode Au & (Fe)-Cu-Au Deposits (Chapter 2), 2000

9 “Geochemistry and depositional environment of the gold-mineralized Proterozoic Koolpin Formation, Pine Creek Inlier, Northern Australia: a comparison with modern shale sequences”; Matthai SK and Henley RW; Precambrian Research 78 (1996) 211-235
All available geophysical images, satellite TM imagery, topographical and geology maps, and air photos were synthesised at the 1:500,000 scale map of the south western section of the Pine Creek Orogen. The compilation provided the basis for the subsequent regional diamond drilling programme.

The two key drill holes from this drilling programme were FEND 14 and FEND 18.

FEND 14 intersected a 150 metre thick zone of high magnetic susceptibility that corresponded with a pyrrhotite-rich, chlorite + cherty iron formation under a hanging wall unit similar to the Gerowie-Tuff-like. The hole was critical in that it intersected 17 metres @0.74ppm Au (from 610 - 627m and with no cut-off) in a low arsenopyrite bearing part of the ironstone. The modest grade was coincidental with the comparatively low level of arsenic but confirmed the presence of a broad and auriferous iron-formation, and confirmed the presence of Homestake-style gold mineralisation.

FEND 14 was significant in that it confirmed HGAL’s conceptual target by identifying the presence of the predicted gold system.

FEND 18 was drilled 1200 m SSE of FEND 14 and intersected 20 m @ 1.74ppm Au within a broad zone of continuous strata-bound mineralisation (no cut-off) from 423 to 443m. The FEND 18 intersection was approximately 200m above the intersection made in FEND 14.

FEND 18 was significant in that it was the “discovery hole”, confirming not only the consistency of broad zones of gold mineralisation initially identified in FEND 14, but also confirming the strength of the system as demonstrated by the high-grade gold intersections. From an exploration perspective, an important milestone was reached with the drilling of the discovery hole (FEND 18) and follow-up exploration would ordinarily follow as a matter of course. However, due to a corporate restructuring at Homestake, the property was relinquished and further exploration was not conducted.

Homestake had spent at least $1.382M on exploration at the property, based on available annual expenditures reports from the Northern Territory Mines Department. The exploration concept that the Fenton Shear was a mineralised zone capable of hosting Homestake (Lead-Dakota) style of mineralisation was been clearly proven by HGAL’s previous diamond drilling activity.

The significant post mineral coverage (+200 m of Cambrian limestone) presents specific exploration and operational challenges for this property. Further exploration work is required to demonstrate that the controls on the mineralisation initially discovered at this prospect could be shown to be predictable and of an economic nature.

At the stage that the project was acquired by St George, there was surprisingly little contextual data that provides a framework for advancing exploration beyond these two wide spaced gold intersections. The objective of PCDD-001 drilled by St George in the 2010-2011 reporting period was to test the local area of the higher grade intersection (FEND-18) and better understand the local geology and structure. The follow up work on the PCDD-001 was within the following reporting period (2011-2012) and the results of the drill hole are discussed in detail in the following section.

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THUNDERBOLT AU PROSPECT GEOLOGY

The Blue Thunder Project covers 7-8km of strike length along the Fenton Shear, which is a significant north trending regional structure, located to the west of and sub parallel with the well-endowed Pine Creek Shear. The Fenton Shear appears to form on the western margin of a large competent body, which forms a regional gravity high. This feature is interpreted as an Archean basement dome that is draped with younger Paleoproterozoic sediments. The sub-horizontal stratigraphy (including the target Koolpin Formation) was rotated in a vertical orientation up against the margin of this competent “dome” feature by westward directed compression. The Fenton Shear was subsequently formed during a successive extensional phase, forming as a subsequent strike-slip shear zone along the original trace of an overturned thrust-fold closure.

The cherty and ferruginous Koolpin Formation reflects the formation of this sedimentary unit prior to the main metamorphic event, which led to dewatering of the basin and the remobilisation and then precipitation of ferrous and metal rich fluids in favourable structural settings. Post metamorphic sedimentation is marked by a sharp shift to more siliceous sedimentation ahead of the main orogenic gold event. The prior concentration of metallic (specifically iron-rich minerals) in low pressure sites would have acted as favourable sites (good oxidation-reduction setting among other favourable chemical gradients) to precipitate gold from the SO2 and CO2 rich hydrothermal gold fluids.

The prospective cherty, chloritic ironstone host unit at the Thunderbolt prospect is well defined by high magnetic responses and was confirmed by magnetic susceptibility measures of the gold-rich intersection in the drill core. This magnetic response was coincident with a strong gold MMI (partial-leach) geochemical soil anomaly generated over the black soil plains. Regional magnetics show a distinct northerly deflection of the magnetic trend within the Blue Thunder Project area likely representing a dextral shear reversal of the regional Fenton shear zone associated with the onset of late brittle deformation and the occurrence of tensional structures that channel and trap gold-rich hydrothermal fluids.

The discovery of the Thunderbolt prospect was the result of drilling FEND 18 as a step-out hole from a lower grade intersection of 17 metres @0.74gpt Au from 610-627m (no cut-off) in drill-hole FEND 14. The drill intersections made in FEND 14 and FEND 18 are shown in the tables below.

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<th>TO (m)</th>
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Table 1 - Drill Intersections FEND 14 with no cut-off

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Table 2 –Drill Intersections FEND 18 at a 1 ppmAu cut-off
EXPLORATION ACTIVITY IN YEAR 2 - 2011-2012

GEOLOGICAL REVIEW OF PCDD-001

Despite the intense deformation, brecciation and alteration of PCDD-001 (“the hole”) there were no significant gold assays. The alteration was dominated by albitionisation (Na-feldspar) and also contained a significant amount of recrystallised sulphides. The core was also tested for an indicative set (heavy, medium and light) of rare earth elements (REE). Geochemically anomalous levels of REE were encountered and the entire area that had been sampled for gold was resubmitted for a broader suite of REE.

The drill core of PCDD-001 was logged using the CSIRO HyLogger (multi-spectral logging tool). Since the time of the initial spectral logging experimental logging for REE was being developed. A review of PCDD-001, using this technology, identified an occurrence of REE associated with a purple siliceous vein (possibly fluorite). The zone was outside the area of core that had been cut and submitted for REE assay. Further action involving cutting and sampling this zone of the core is required in the future. There was no Report prepared in respect of the logging carried out using the HyLogger.

The geology of the diamond drill-hole PCDD-001 core was recorded using the CSIRO HyLogger. The HyLogger is a hyper-spectral scanning tool that creates a very detailed and objective identification of the mineral assemblages present through the drill core. As such, it was deemed that manually logging the drill core was subjective and would prove redundant as it would provide a lower quality product.

The orientated drill core was further assessed to see if it warranted manual logging of the structures present. However, it was found that the intense alteration (quartz + albite) and the extent of brecciation obscured any important information in the important part of the hole below the horizontal layered post-mineral Cambrian carbonate units. The activity was abandoned as it was not possible to meaningfully measure discreet structures.

This was later explained by the subsequent geological, stratigraphic and structural review that suggested PCDD-001 intersected the steeply dipping and unconformable boundary between the base of the Koolpin Formation (South Alligator Group) with the underlying Mt Partridge Group. Such a setting would be the focus for extensive hydrothermal fluid flow and structural deformational movement.

PCDD-001 was drilled in the vicinity of FEND 18 but at an 85 degrees angle to the east. The absence of any significant gold assays in such proximity to the strong intersection of FEND 18 led St George to understand that gold mineralisation had a tight high-angle structural control and a sharp definition between mineralised and non-mineralised areas within this location.
GEOLOGICAL REVIEW

A further comprehensive review was conducted to better understand the local controls on mineralisation and the implications for further exploration at the gold prospect. The conclusions of the review were that Orogenic gold mineralisation at the Pine Creek Property is hosted by the Koolpin Formation. The Koolpin Formation is carbonaceous pelitic schist that forms the basal unit of the South Alligator Group. The unit is significantly enriched in Fe and base metals related to the (metamorphic-related) digenetic precipitation following the circulation of saline-rich basinal fluids. Overlying siliceous units are emplaced after metamorphism and act as a physical and chemical cap.

In the target area, the Koolpin Formation has been pushed up against a competent body and moved into a sub-vertical position. This is believed to be the magnetic “ridge” shown in the regional magnetics. This is one controlling factor on the formation of gold mineralisation. Gold mineralisation is also controlled by subsequent brittle-ductile shearing along the sub-vertical thrust closures, with localized areas of late dextral wrenching.

The more local-scale structural control on the gold mineralisation appears to be overturned thrust folds (“anticlines”) that are later captured and undergo transpressive sinistral and then dextral shearing. This results in a steeply dipping sheared eastern limb that hosts narrow sub-vertical gold shoots (as encountered by FEND18). The sharp cut-off of mineralisation encountered between PCDD-001 and FEND18 is suggested as reflecting the narrow sub-vertical orientation of the sheared eastern limb of the Koolpin Formation.
Figure 6 - Plan and section of Cosmo Howley Au deposit show gold mineralisation best developed at the fold crest and on the attenuated western limb. In contrast, the eastern limb is steeply over turned and gold mineralisation is narrow and vertical.
Figure 7 - A similar structural pattern is shown in the pit wall of the Alligator Au mine.

The bulk of the gold mineralisation is on the more central fold hinge and the more shallowly dipping western limb of the fold (e.g. Cosmo Howley). Both western and eastern limbs are sharply truncated and constrained between the two NW trending boundary shears.

This structural model allows a new interpretation of the results of the FEND 18 and nearby PCDD-001 drill holes. PCDD-001 (drilled at 85° East) is on the footwall of the Koolpin Formation and the intensely altered and brecciated material, with albite and re-crystallised sulphides, likely reflects periodic hydrothermal events localized on the unconformity between the base of the Koolpin and the top of the Mount Partridge Group.

The strong REE response is also consistent with the emplacement of REE’s of mantle source emplaced below the Koolpin Formation along this unconformity.

The two historical drill holes, FEND 14 and FEND 18, were analysed using the CSIRO HyLogger hyperspectral logging technology. The HyLogger detects mineral occurrences and changes not discernible by the human eye. It takes readings at every 10cm along the analysed drill core, providing a detailed and comprehensive record of mineralisation. This information can be correlated to alteration zoning that is known to exist in orogenic gold deposits, and can be used to identify the core of the gold system where the highest grades are anticipated.

The information produced by the HyLogger review greatly improved the understanding of the gold system at the Pine Creek Property including, in particular, the relative position of FEND 14 and FEND 18 within the context of the larger gold system. The findings from the HyLogger has also improved St George’s understanding of the larger mineral system and has had material influence of the design of 2013 exploration work.

There was no Report prepared in respect of the logging carried out using the HyLogger.
The most significant insight was that in the high grade zones intersected in FEND 18, where visible gold had been detected by HGAL, still had “patchy” areas of alteration and that many of these assemblages appeared to be associated with a mix of aqueous fluid and more magmatic fluids. Higher temperature magmatic alteration was not pervasive as was expected, so the mineralisation is more is more likely to be associated with a more peripheral position within the gold system. It was interpreted that the gold mineralisation encountered in FEND18 may be a steep footwall lode, and possibly localised with a localised cross structure.

It follows that St George may encounter larger and higher grade gold intersections in areas associated with more pervasive deformation, alteration and mineralisation, nearer the core of the system.

HyLogger reviews of FEND14 & FEND18 also indicate that the chlorite, quartz and iron oxides are secondary alteration products and that the “Cherty BIF” is an inner alteration facies and not a sedimentary unit as previous alluded.

A model for general pattern of alteration mineralogy was developed using the HyLogger data and employing previous exploration experience in the Tennant Creek Goldfield, which lies to the south.

Surprisingly, the lower grade FEND14 has a much higher content of Mg-chlorite than FEND18, and the new alteration model indicates that it is closer to the core of the system than the higher-grade FEND18. FEND18 has been noted as being on the edge of the system despite the good gold intersection and the St George MMI survey shows the drill hole to be situated proximal to the margin of a granitoid body, immediately to the south.

FEND14 is located approximately 1,200m to the NW of FEND 18, and is near the area that provided the most anomalous geochemical response from the St George MMI survey area. FEND 14 appears to have been drilled in the “valley” between two higher grade sample values (300 m spacing). These high point anomalies may represent narrow vertical mineralised shoots on the eastern limb of the fold structure. This may also explain the lower grade and the depth of the mineralised intersection. Structurally, it would be situated at the deeper part of the fold limb.

Figure 8 - Simplistic model of mineral zonation within orogenic gold system at Pine Creek property
NEW EXPLORATION TARGET

The correlation of the St George MMI survey with the broader exploration information bank, led to the creation of a more robust exploration model that validated the historical HGAL MMI soil geochemistry. The compilation of all available exploration data led to the generation of a new exploration target in the northern area of EL 27732.

The combined geochemistry and exploration model appears to indicate a strong target area in the north of the gold trend at EL 27732, and in the vicinity of FEND14. An Infill MMI soil geochemistry programme will be conducted to screen this new gold target and hopefully provide new drill targets.

Figure 9 - Shows new target area (pink boundary) in relation to initial area of focus (yellow boundary) and past drilling (green)