ASX Release 28 January 2016

Archer December 2015 Quarterly Activities Report

ASX Code: AXE

Directors
Greg English
Executive Chairman

Gerard Anderson
Managing Director

Tom Phillips AM
Director (Non-Executive)

Alice McCleary
Director (Non-Executive)

Company Secretary
Damien Connor

Shares on Issue
84.7 million

Unlisted Securities on Issue
1.3 million Performance Rights

Key focus
Eyre Peninsula Graphite Project (includes Campoona, Sugarloaf and Waddikee)
Additional portfolio opportunities: magnesite, manganese, copper and gold

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DECEMBER 2015 QUARTER HIGHLIGHTS

GRAPHITE

- **Pegging and applying for the Mineral Claim over Campoona Shaft and two miscellaneous purpose licences covering the Sugarloaf processing facility and Pindari wellfield and water pipelines have been completed and are awaiting submission.**
- **Campoona Mining Lease Proposal to be amended to include small-scale start-up operation to allow for product accreditation phase and the incorporation of the production of graphene.**
- **ELA 2015/00215 Cockabidnie granted covering extensions to Central Campoona graphite deposit and Sugarloaf carbon deposit**
- **Micronising and battery test program established and set to commence January 2016.**

GRAPHENE

- **In collaboration with the University of Adelaide, Archer confirmed the ability of Campoona graphite concentrates to produce pure graphene (>99.9%) with outstanding electrical properties that could be used in high-tech applications.**
- **Archer's highly concentrated graphite (>99%) will allow for more efficient scalable graphene production compared with graphene sourced from lower grade graphite.**

LEIGH CREEK MAGNESITE

- **Positive discussions with third parties regarding access to infrastructure required for the development of the Leigh Creek Magnesite Project.**

WONNA GOLD

- **Rock chip sampling of stockwork quartz veins at Wonna (Napoleon's Hat) returned anomalous gold to 8.8 g/t Au.**

SPRING CREEK COPPER

- **Plans to drill a series of diamond drill holes to test for shallow extensions to the high grade underground copper lodes have been reviewed by SA Water.**

FINANCIAL

- **Cash in bank on 31st December 2015 of $1.06 million.**
- **$254,000 was spent on exploration and project evaluation during the quarter.**

Summary of December 2015 Quarter Exploration Activities

1. GRAPHITE MINING LEASE PROPOSAL

The Draft Mining Lease Proposal (MLP) covering the establishment of the Campoona Shaft mine, the mineral processing facility at Sugarloaf and process and potable water supplies was submitted to regulators on 14th May 2015 for review.

During the period further feedback was received from the various regulators and that feedback incorporated into the preparation of the Final MLP. The pegging and application processes for the Mineral Claim and two miscellaneous purpose licences have been completed and the applications await submission.

All of the studies supporting the MLP were carried out assuming a 140,000tpa ore treatment rate, that is, the maximum rate which has greatest impacts and aspects for the community and environment. The studies highlight the small operational footprint and the low impact on the community and environment whilst at the same time providing significant benefits for the local community and region.

Whilst the MLP covered the likelihood of commencing at a lower production rates and expanding throughput in response to marketing opportunities, the Company will modify the MLP prior to final submission to expressly include an initial small-scale operation. The initial small-scale phase will limit the capital requirement during the product accreditation phase and importantly will include the ability to convert some or all of the graphite produced into very high purity graphene.

2. GRAPHENE RESEARCH & DEVELOPMENT

During the Quarter Archer received a formal report from a joint graphene research program designed to test the suitability for production into graphene of the Company's high grade Campoona graphite. The research work is funded by Archer through the University of Adelaide's School of Chemical Engineering under the direction of Professor Dusan Losic.

The aim of Archer's research is in part the development of scalable production of graphene from Campoona and broader industrial, environmental and agricultural applications for the Company's other nearby graphite deposits.

The research work confirmed the ability of Campoona graphite concentrates to produce pure graphene (>99.9% C) which has outstanding electrical properties that could be used in high-tech applications including in solar cells, photovoltaics, wearable/printable electronics, supercapacitors, batteries and sensors.

The results present the Company with an exciting opportunity. Worldwide there is an enormous research effort aimed at commercialising graphene products especially high-tech applications that demand exceptional electrical conductivity that Campoona graphene can achieve.

Summary of Archer-University of Adelaide research program

Methods and methodology

Graphene from concentrated Campoona graphite (>99%) was prepared by the direct liquid phase mechanical exfoliation method developed by the University of Adelaide. This mechanical exfoliation process is scalable and requires fewer steps compared with the conventional methods which involve the preparation of graphene oxide then chemical reduction to produce graphene.

Results and Conclusions

(a) The process ability of graphene exfoliation process

Graphene production yield and exfoliation rates are dependent on the presence of impurities in graphite. Highly concentrated Campoona graphite (>99%) achieved high yields (>80%) and far higher exfoliation rates in producing graphene compared to a control sample (lower grade graphite concentrates grading <94% Cg) using the same process.

Archer's highly concentrated graphite (>99%) will allow for more efficient scalable graphene production compared with graphene sourced from lower grade graphite.

(b) The purity and quality of prepared graphene

Exfoliation of high purity Campoona graphite concentrate produced high quality and high-purity graphene (>99.9 %) with single to few layers. It was only possible to make such high purity graphene because of the high purity graphite sourced from the Company's Campoona project. *Not all graphite can make graphene of such high purity.*

Graphene powder and graphene water dispersion products were prepared (Plate 1) which are used in the preparation of other high-value graphene based products.

Plate 1. Graphene powder and graphene water dispersion prepared from Archer graphite

(c) High-value products validation

The purity of graphene is critical for its application in high-value graphene-based products such as conductive inks, highly conductive films, flexible electronics, micro-antennas, sensors, electrodes for batteries and supercapacitors.

Several products including conductive ink, graphene conductive coating, and graphene electrodes were prepared.

Plate 2. Selected graphene products produced from Archer graphite (graphene conductive film, conductive flexible polymer, graphene composite and electrodes for battery and supercapacitor applications

Graphene conductive inks and transparent conductive films

Prepared graphene from Campoona high grade graphite can be well dispersed in organic solvent with controllable contents (1-10 wt%) having long-term stability. The coating of inks on various substrates such as PET, PDMS, PVC, glass, quartz and metals was tested using different techniques including bar coating, spray coating, dip coating and spin coating.

The performance pf test 10wt% Graphene/PEDOT dispersed in organic solvent and coating on PET film resulted in sheet resistance of 500 Ohms/sq, a result not possible from low purity graphene (sheet resistivity >1000 Ohm/sq). The transmittance of prepared conductive film (Figure 2, left) was higher than 85%.

Even though the graphene formulation has not been fully optimised, the performance data already achieved confirms that these products are likely to be suitable for many applications including in solar cells, photovoltaics, displays, transparent electronics, 2-d printing electronic devices and sensors.

Graphene electrodes and wearable antennas

Several types of electrodes were prepared to prove their electrical properties related to potential battery and wearable antennas applications. The tests returned a sheet resistance of ~ 1 Ohms/sq, corresponding to a very high conductivity of 10,000 S/m.

Prepared graphene electrodes are undergoing testing for battery development to test their performance compared with traditional graphite material.

Summary

High quality graphene can be prepared from Archer's highly concentrated Campoona graphite. Testing produced several highly valuable graphene products (inks, conductive films, electrodes). Preliminary characterisation of these products confirmed excellent electrical conductivity. These graphene-based products have enormous potential applications for solar cells, photovoltaics, wearable/printable electronics, supercapacitors, batteries and sensors.

SUGARLOAF "CARBON" TESTS

Previous test work by Archer identified that Sugarloaf samples were high in carbon but that much of the carbon was non-graphite carbon. Sugarloaf "carbon" has a high resistivity in contrast to crystalline graphite that has a very low resistivity. XRD probing showed that the carbon peaks are identical to the peaks derived from crystalline graphite yet SEM imaging reveals the carbon to be present as matted porous carbon. The carbon does exhibit a degree of lubricity which can be attributed to the presence of some crystalline graphite.

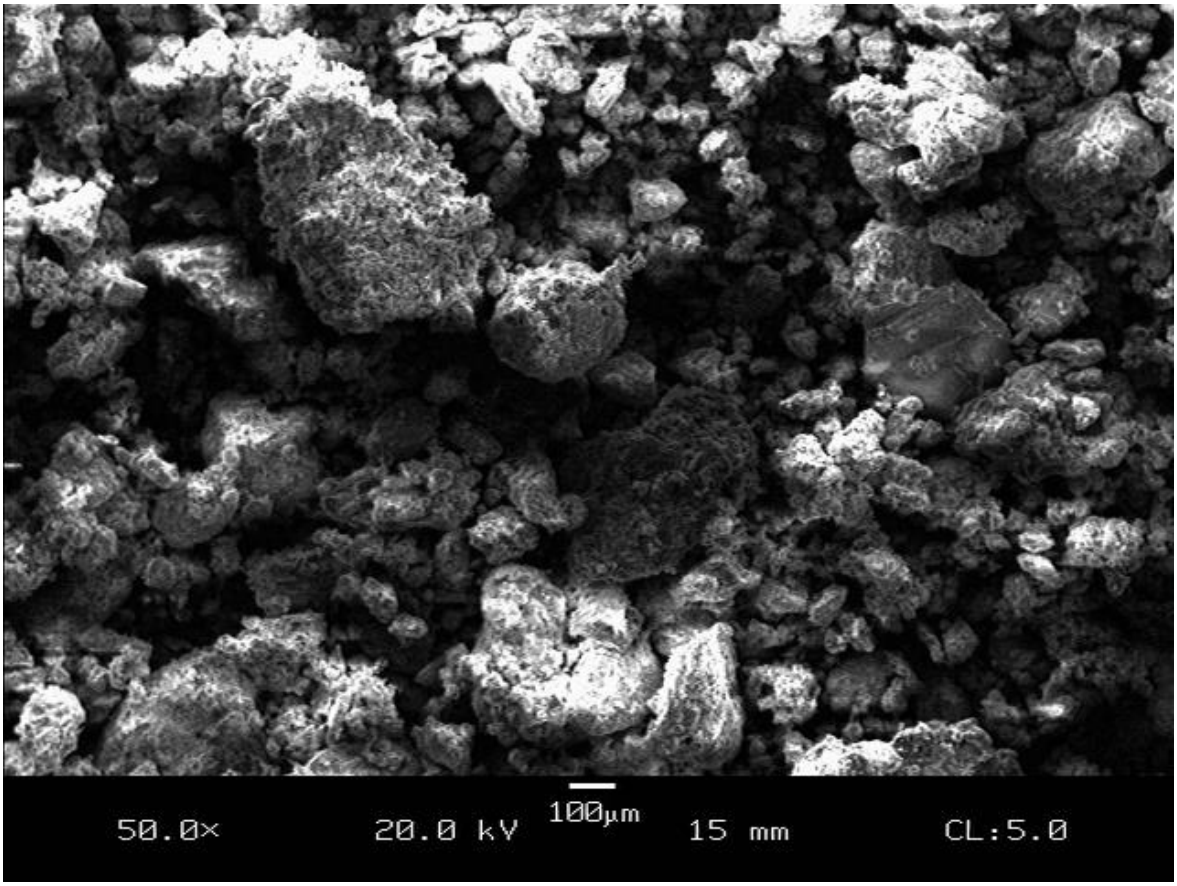


Plate 3. Sugarloaf carbon showing matted porous texture

It was the revelation that Sugarloaf had unique and unusual properties that prompted research in collaboration with the School of Chemical Engineering at the University of Adelaide under the tutelage of Professor Dusan Losic and Researcher Dr Diana Tran.

The initial research work included elemental determination, quantifying nutrient release performance, estimation of soil wettability characteristics and in preliminary plant trails. These results were released in the September 2015 Quarter and included in the Company's September 2015 Quarterly Activity Report.

The next phase of the research set to commence in Quarter 1 calendar 2016 will focus on quantifying the soil conditioning properties of raw and upgraded carbon products with a particular emphasis on identifying opportunities in soil amelioration and soil remediation applications.

ELA 2015/00215

Archer successfully applied for ground formerly covered by EL3609 Cockabidnie which had been relinquished and become available for mining. The principal exploration target is a several kilometer extension of the Sugarloaf carbon deposit. Importantly the ELA also covers known extensions to the Central Campoona graphite deposit that is planned to be mined following the Campoona Shaft mine.

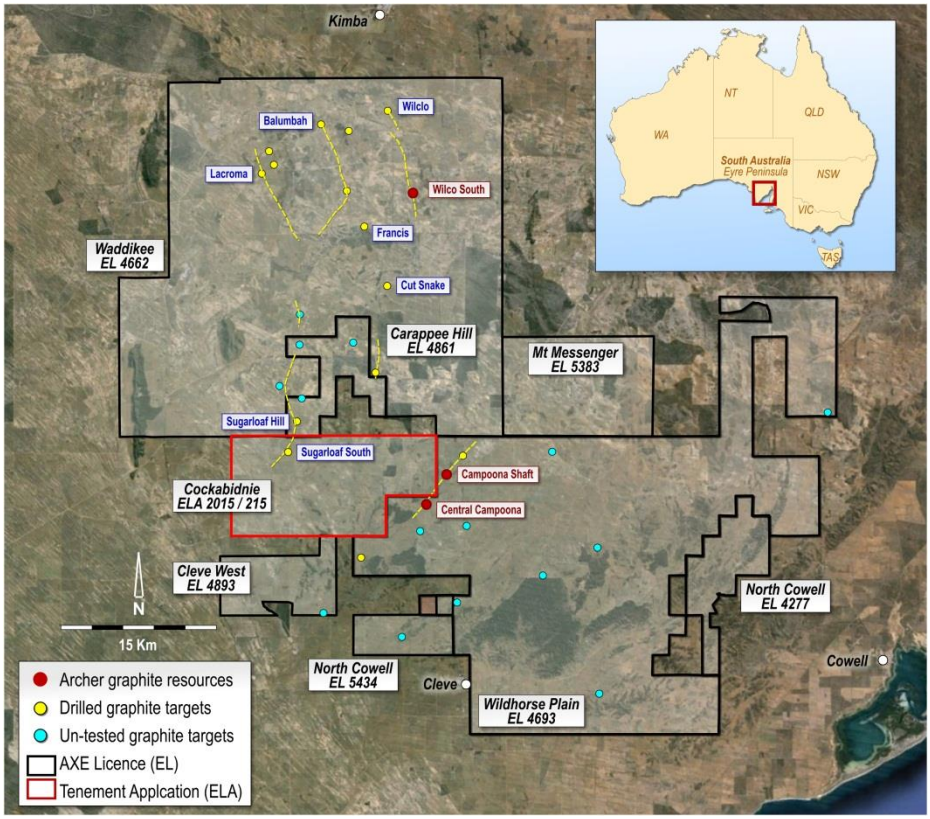


Figure 1. Location of ELA 2015/215 Cockabidnie and Archers graphite projects

LEIGH CREEK MAGNESITE

During the Quarter, Archer undertook additional magnesite test work, negotiations with third parties regarding infrastructure access and discussions with government regarding the permitting of Archer's Leigh Creek Magnesite Project.

Bench-scale batch tests were conducted to determine whether Archer Exploration's Leigh Creek magnesite could be a viable feedstock for caustic calcined magnesia (CCM) production. Calcination tests were conducted under various conditions, followed by reactivity testing of the product calcines. The results were anlaysed using Differential Thermogravimetric Analysis (DTA) which indicated that the Archer magnesite was likely to respond normally to calcination. The magnesite sample also did not show appreciable signs of decrepitation during calcination. Archer is in the process of sourcing a pilot scale calciner and will undertake a larger bulk sample calcination test early this year.

Archer has been in negotiations with several parties regarding access to the infrastructure required to develop the magnesite project. The existing infrastructure is open to third party access meaning that Archer should be able to develop the project without having to construct expensive infrastructure such as rail.

WONNA GOLD

Rock chip sampling returned encouraging gold results from recent rock chip sampling at the Wonna Prospect which is part of the Watervale / Wonna Gold Project area located approximately 60km NNE from the township of Burra, South Australia.

The gold at Wonna and Watervale is hosted in quartz veins within sandstones.

The most significant results from the latest testing at Wonna come from quartz vein samples which returned 8.88 g/t gold (Sample WN291015_001) and 1.91 g/t gold (sample WN291015_002). Samples collected to the northwest reported minor gold up to 0.18 g/t (sample WN291015_003). No samples were collected south east along the structure.

Six samples were taken during a recent visit to the Wonna area. The results of the gold analyses are presented below in Table 1.

SAMPLE NO	EASTING	NORTHING	LITHOLOGY - COMMENT	Au g/t
WN291015_001	321310	6320116	Honeycomb Su -+ Qtz+Fe	8.88
WN291015_002	321307	6320123	Trench - Qtz - Fe	1.91
WN291015_003	321264	6320196	Qtz - Li	0.182
WN291015_004	321281	6320157	Xcut Vqtz Fe	0.012
WN291015_005	321286	6320157	Xcut Vqtz-Fe - Remnant Su	0.01
WN291015_006	321272	6320173	Xcut Vqtz-Fe - Remnant Su	0.005

Table 1. Results of rock chip sampling

Archer first sampled the tenement area in 2010 for gold and over a couple of sampling programs identified two mineralised prospects, Wonna and Watervale.

At Watervale the most significant historical results were from quartz veined sandstone samples located 50m apart on a NW trending ridge which returned 6.42 g/t and 3.84 g/t gold (refer to ASX announcement dated 15 January 2010).

Previous sampling of quartz veins at Wonna returned grades up to 4.77 g/t and 3.09 g/t (refer to Figure 2) on a vein set that trends parallel to the western vein set that is the subject of the latest rock chip results.

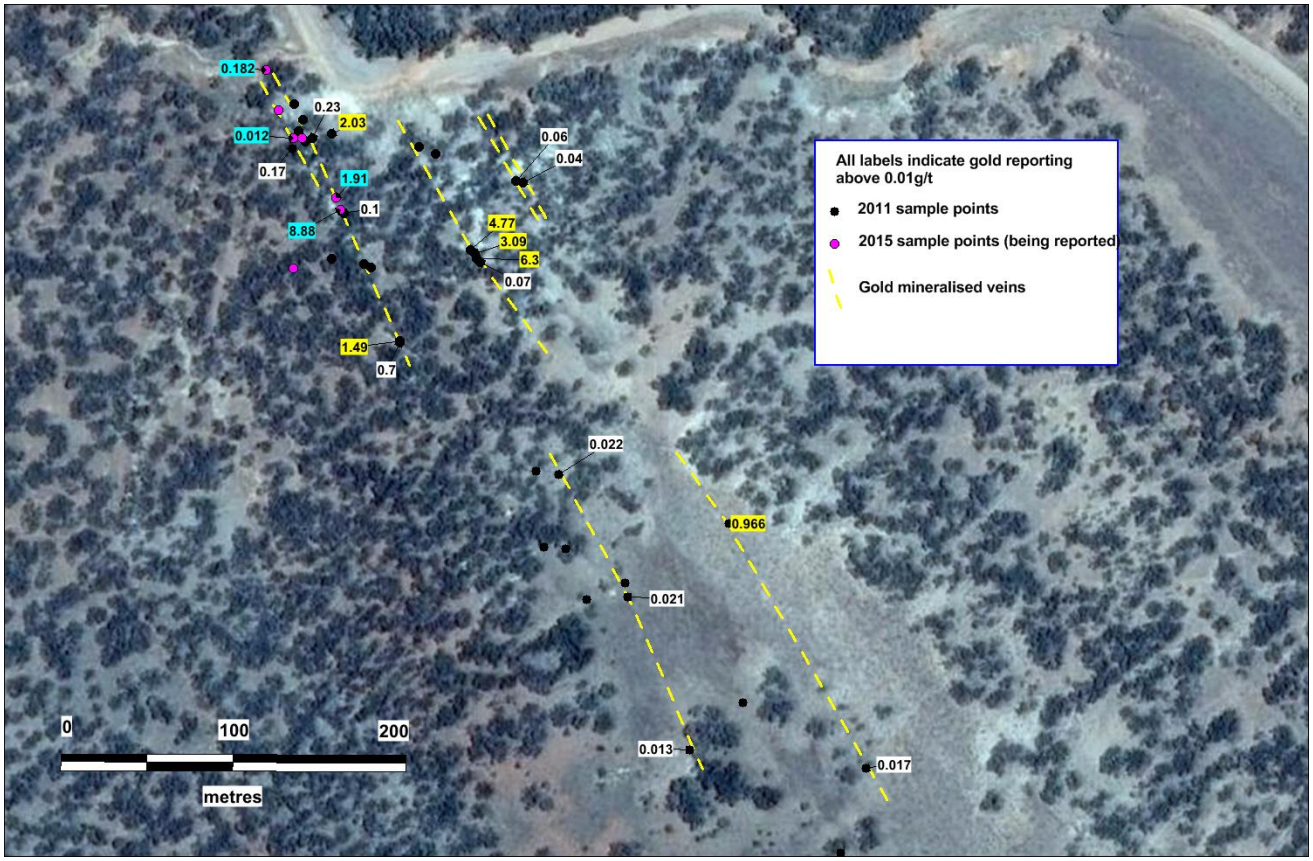


Figure 2. Location of reported rock chips from Wonna Prospect.

Regional potential

The local area had been historically mined for gold on and off since the mid to late 1800's. The Wonna has a history of gold production since its discovery in the 1800's, with historical mining records report high grades reaching 1 ounce to the ton.

Exploration in the 1980's by Aberfoyle identified the Willara (gold-copper) anomaly, shallow drilling (<25m) did not reveal the source of gold, figure 2.

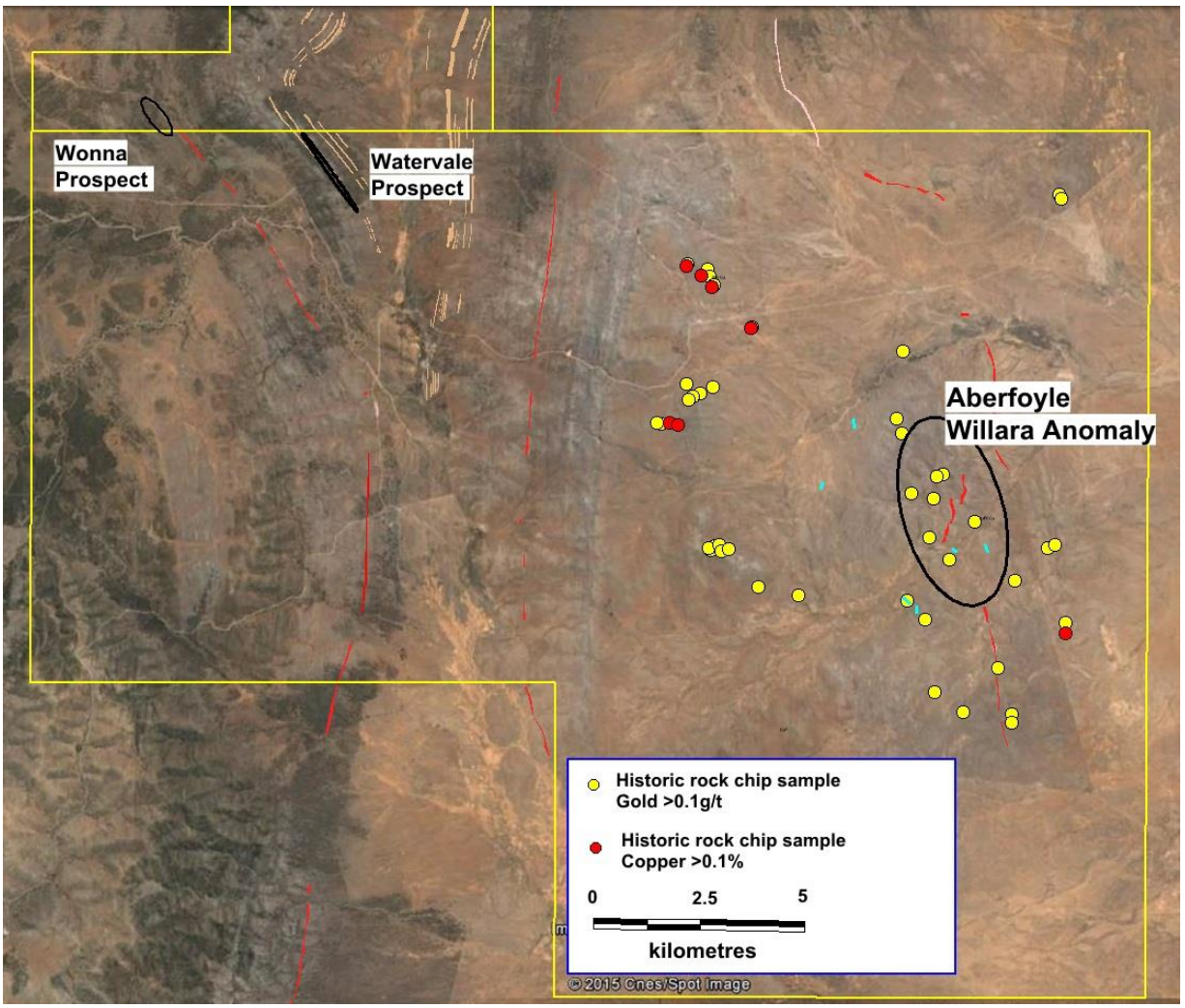


Figure 3. Location of Wonna and Watervale gold prospects

In the district, gold is associated with iron oxides (at the surface), which have resulted from the weathering of sulphides. Deeper sulphide targets are supported by the presence of electro-magnetic anomalies below the gold mineralisation at the Wonna. Figure 4 (below) is a "slice" at 80m depth, where the discrete EM anomalies can be seen under the Wonna gold mineralisation. The presence of sulphides and associated gold will be tested at a later date with drilling.

Plate 5. Shaft on the Wonna workings

In addition to Wonna and Watervale, several other sites are identified as having anomalous EM signatures (Figure 4) and require additional investigation. These additional targets are located at the northern end of the Watervale prospect, south of Wonna and cross cutting the Tapley Hill Formation and other stratigraphy.

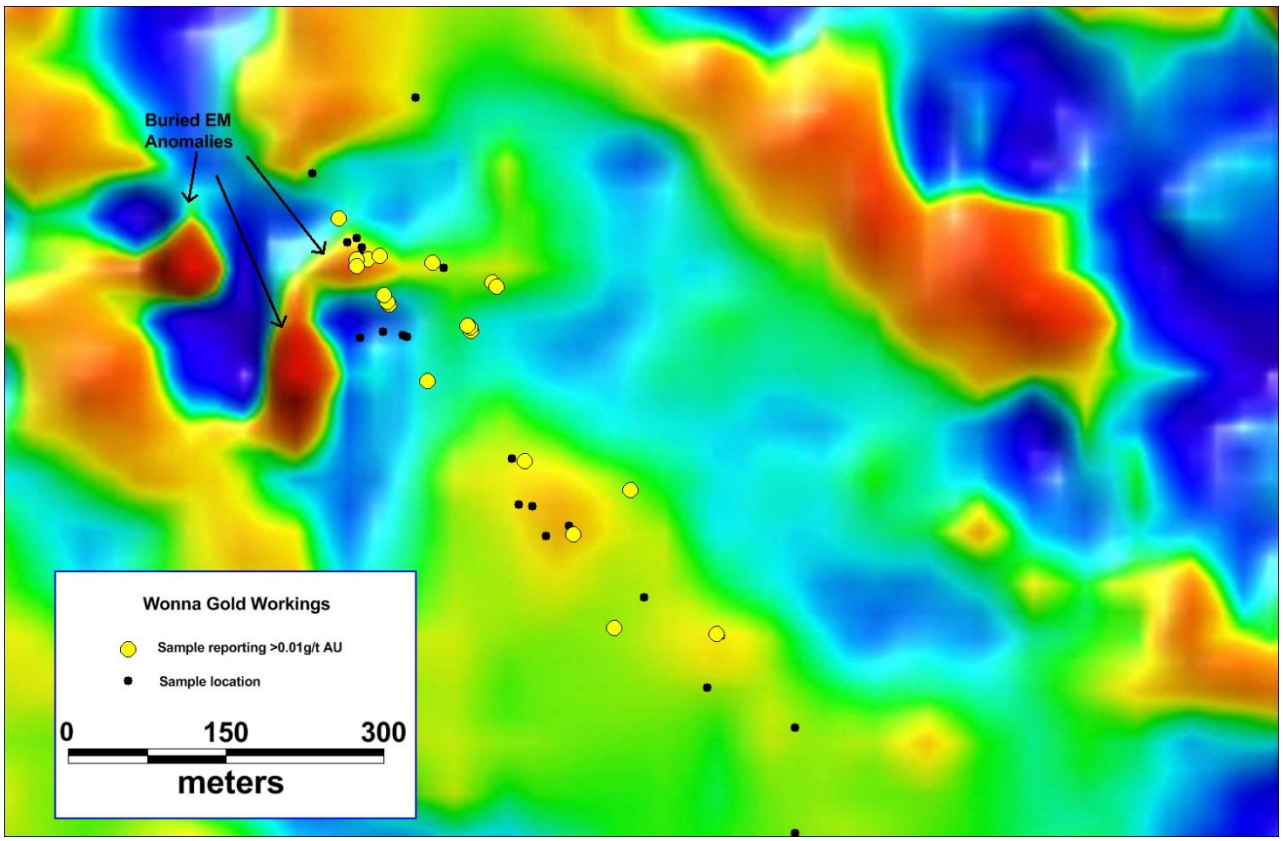


Figure 4. EM signature below the Wonna gold mineralisation

ELA 2015/233 'Blue Hills'

Additional ground to the North of the Wonna gold workings was applied for during the period, under ELA 2015/233, figure 5. As a part of the ELA two other parcels of land were included to cover prospective copper and gold targets nearby.

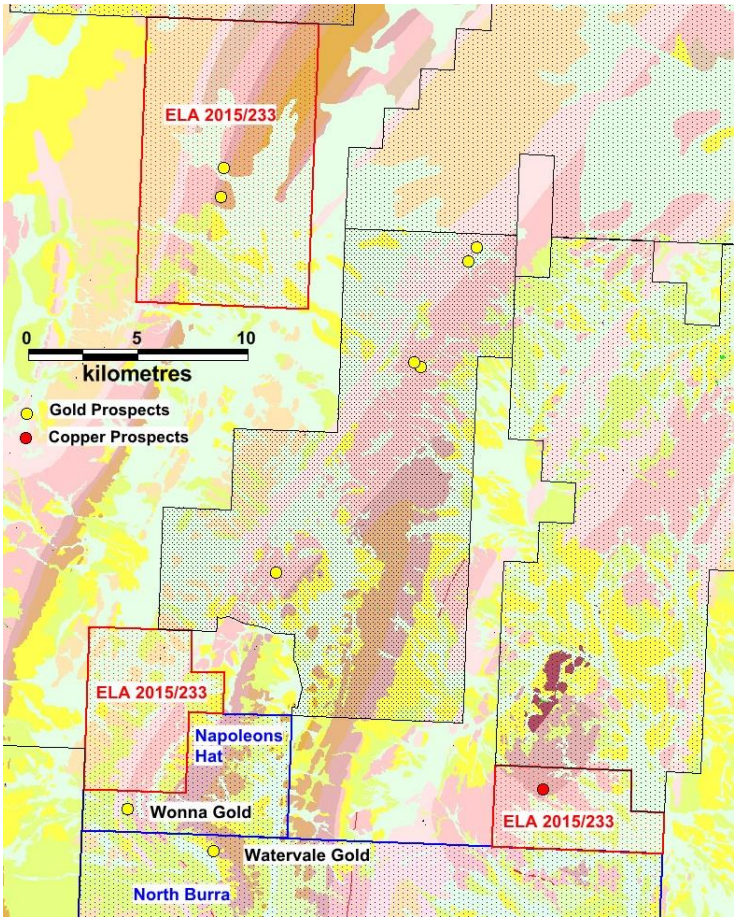


Figure 5. Location of ELA (Blue Hills) with gold and copper prospects

SPRING CREEK COPPER

Archer is in discussions with SA Water regarding access to drill what the Company believes are extensions to the historic high grade copper workings at the historic Spring Creek copper mine located 30km south of the township of Wilmington, South Australia.

The Company was granted access during 2015 to conduct underground face sampling. Three separate drives were sampled (highlighted in figure 4 below) and assayed for copper. The results demonstrate that the multiple high grade copper bodies (8-10% Cu) have a halo of mineralisation averaging 1-3% Cu. Point sampling of remnant pillars within one stope accessible on the one level sampled indicate grades up to 8% Cu which mirrors historic mined grades.

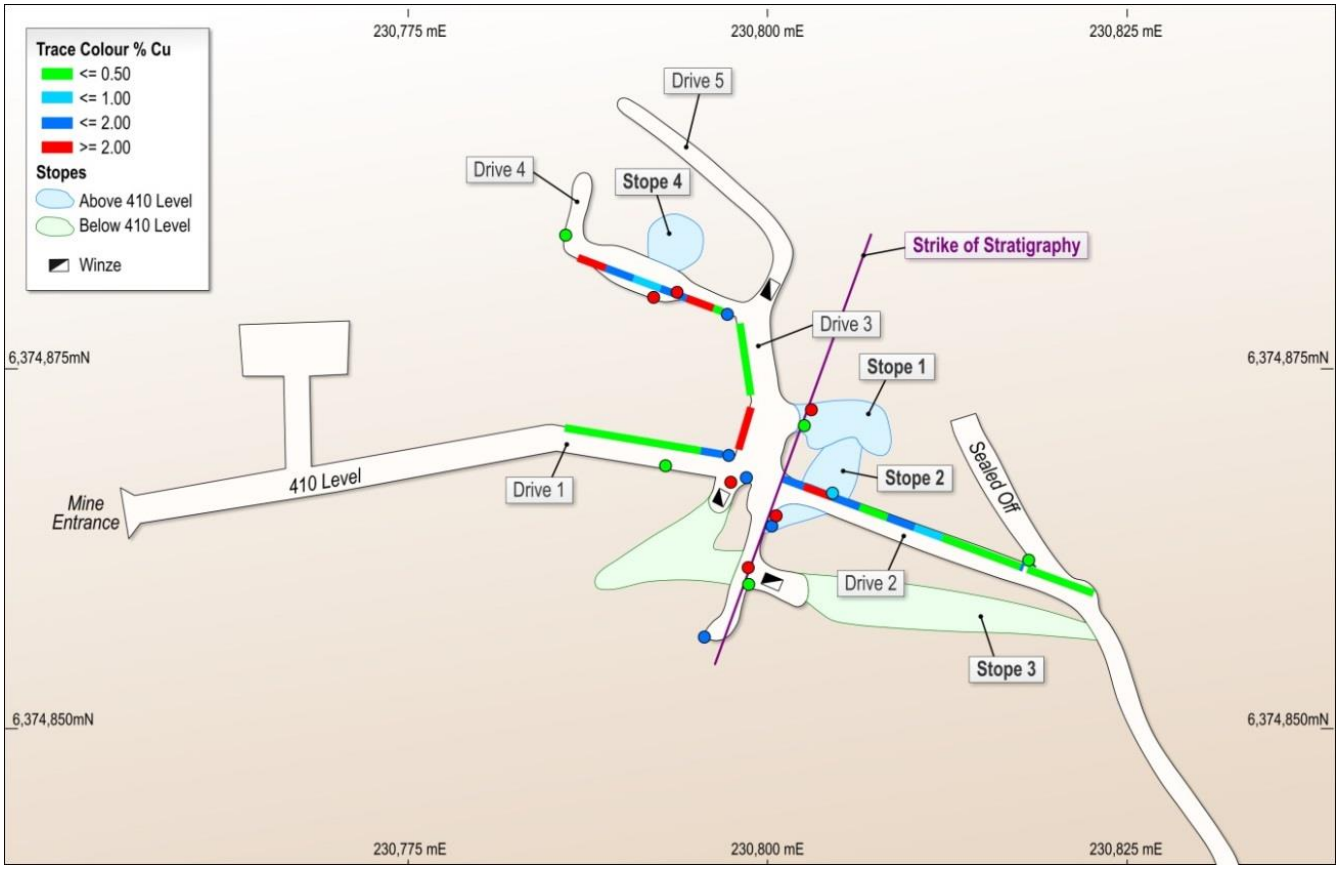


Figure 6. Plan view of underground workings, face and point sampling copper assays

The historic mining records at Spring Creek document what can be described as a classic supergene copper profile with the uppermost portion comprised solely of copper carbonates malachite ($CuCO_3 \bullet Cu(OH)_2$) and azurite ($2CuCO_3 \cdot Cu(OH)_2$) which pass vertically into copper oxides cuprite (Cu_2O) and native copper (Cu) before passing vertically into transition sulphide zone consisting of chalcocite (Cu_2S) and covellite (CuS).

Primary sulphides were never encountered meaning that the primary mineralisation is likely to occur at depth below the flooded workings. Archer expects that because of this "unmined" high grade copper mineralisation is likely to be found below the stopes.

During the Quarter Archer prepared a drilling proposal and presented that proposal to SA Water. The drilling proposal outlined the drilling of up to seven shallow (<70m) small diameter BQ (36.5mm ID) from one location 40 metres in from the portal. The holes have been designed to avoid the water reservoir and would be drilled dry without drill additives. The drilling proposal is still being considered by SA Water who have indicated that they are not prepared to accept the proposal in its current form. Archer will continue to work with SA Water to reach a suitable resolution.

3. BELTANA BARITE

The Beltana barite ($BaSO_4$) prospect within EL 4869 hosts a number of barite veins varying in width from 0.2m to >1m and strike over many 100's of metres.

Barite is used extensively in oil and gas drilling where its chemical properties and high specific gravity are used to reduce the risk of blow-outs.

The American Petroleum Standards for barite have four critical requirements namely;

- a density of 4.2 g/ml (minimum);
- water-soluble alkaline earth metals as calcium of 250 mg/kg (maximum)
- residue greater than 75 microns (maximum mass fraction 3%), and
- particles less than 6 microns in equivalent spherical diameter (maximum mass fraction 30%).

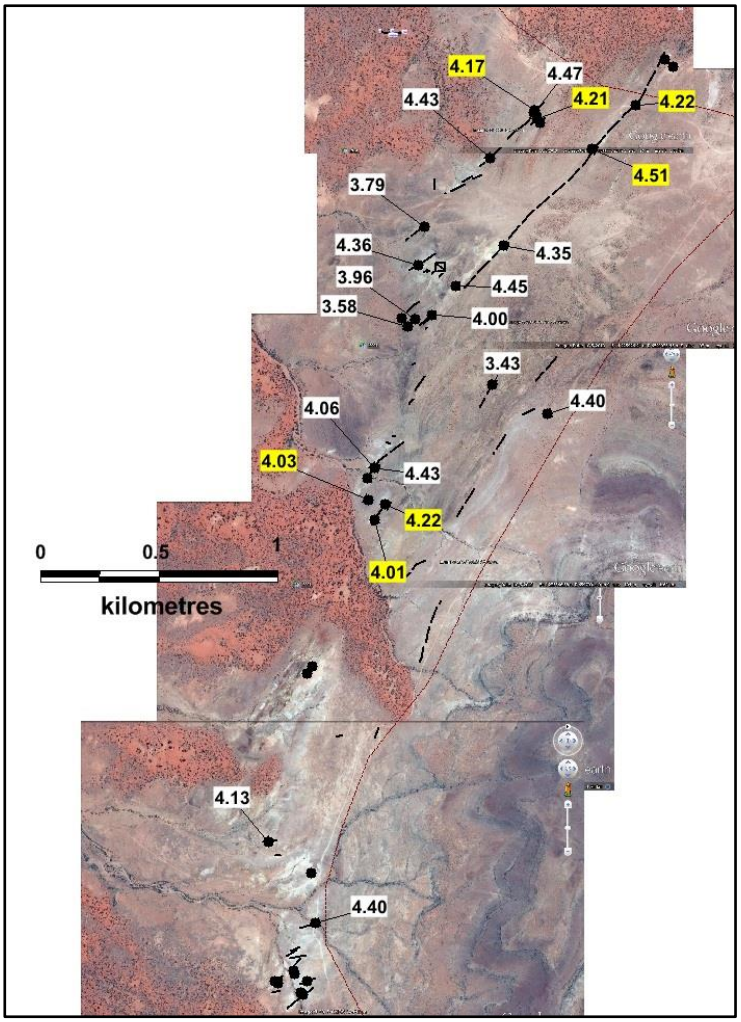


Figure 7. Beltana Barite densities, 2014 data in yellow, 2015 in white

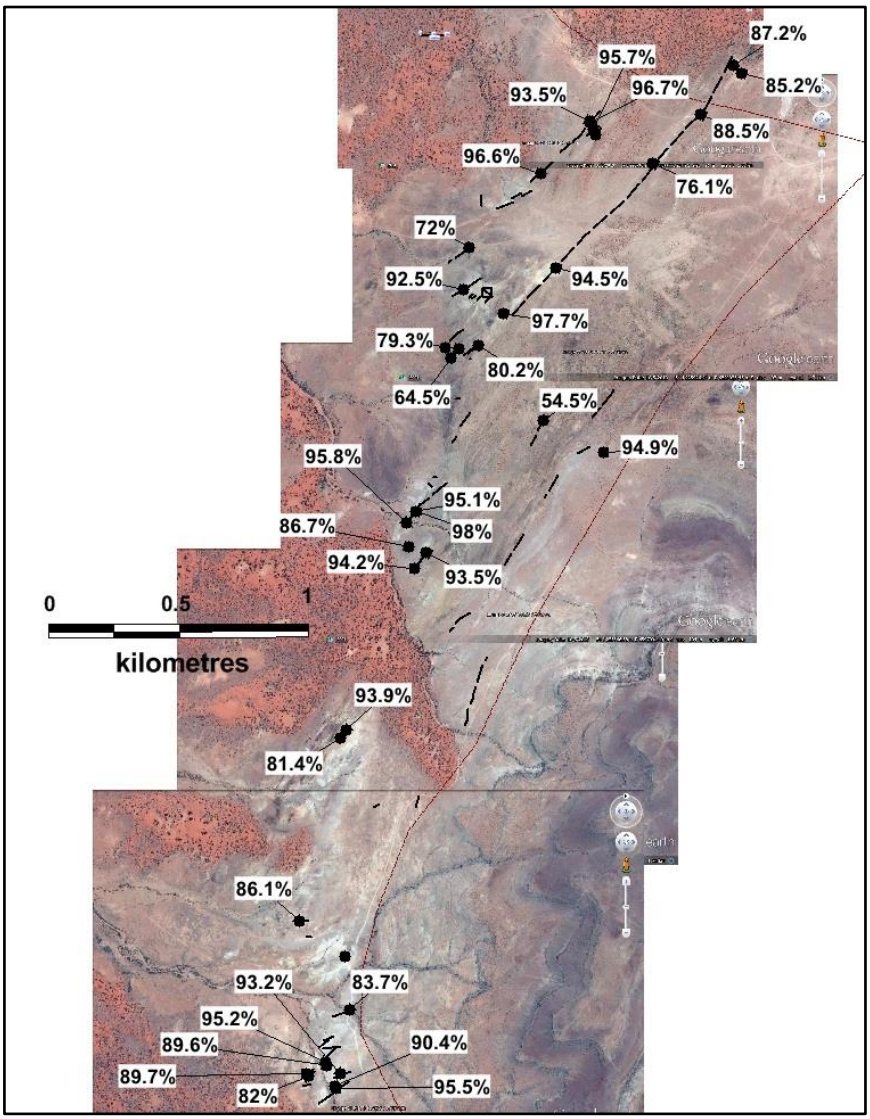


Figure 8. Beltana barite showing all $BaSO_4$ assays

Test work to date indicates that the material present as veins in the areas mapped is of a standard for drilling grade products.

4. FINANCIAL

- The Company's cash balance at the end of the quarter was $1.06 million.
- $220,000 was spent on exploration and project evaluation during the Quarter.

5. ACTIVITIES FOR MARCH QUARTER 2016

Modify the existing MLP Application to expressly include an initial pilot-scale operation and also include the provision to manufacture graphene.

Submit the Final Campoona Mining Lease Proposal.

Conduct further battery testing through CSIRO to define performance specifications. Marketing of Campoona graphite will continue during the quarter.

The closure of Alinta's Leigh Creek coal operations presents opportunities for the Company's Leigh Creek magnesite deposits. The positive discussions held with third parties during the December Quarter will be continued with the aim of undertaking a trial operation which if successful could lead to mine development.

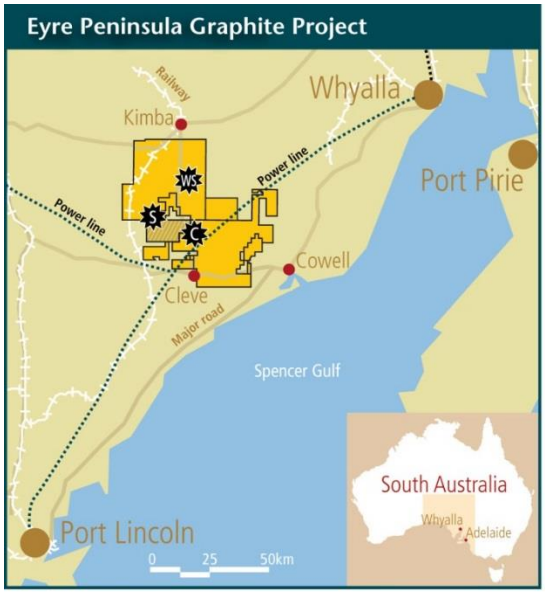
Archer will continue to work with SA Water to secure drilling access to the historic Spring Creek mine.

6. SUMMARY OF ACTIVITIES BY TENEMENT

The Company's interest in tenements is as follows:

Commodity	Tenement Name	Tenement	Work undertaken during the quarter
Graphite	Carappee Hill	EL4861	See report
Graphite	Wildhorse Plains	EL4693*	See report
Graphite	Waddikee	EL4662	See report
Graphite	Mt Shannan	EL4673	No work undertaken in the quarter
Graphite	Mt Messenger	EL5383	No work undertaken in the quarter
Graphite	Cleve West	EL4893	No work undertaken in the quarter
Graphite & Copper	North Cowell	EL5434	No work undertaken in the quarter
Magnesite	Witchelina	EL4729	See report
Magnesite	Termination Hill	EL4567	See report
Magnesite	Collaby Hill	EL 5553	No work undertaken in the quarter
Copper	Worlds End	EL4230	No work undertaken in the quarter
Copper	Spring Creek	EL5540	See report
Gold	Wonna	EL4668	See report
Manganese	North Burra	EL4266	No work undertaken in the quarter
Barite	Ediacara	EL4869	See report
Gold & Copper	Blue Hills	ELA 2015/233	See report
Coal / gas	Ediacara	PELA 567	No work undertaken in the quarter
Graphite	Cockabidnie	ELA 2015/215	See report

Archer Exploration Limited is an Australian Stock Exchange listed company with 100% ownership of 16 tenements and two ELA's all in South Australia. Archer's flagship project is the Eyre Peninsula Project which is located within reach of established and major developing infrastructure.



Advanced Graphite Projects
Campoona Shaft / Central Campoona
Sugarloaf
Wilclo South

Priority 1 and 2 targets:
Graphite
Magnesite
Manganese
Copper
Gold
Barite

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The exploration results reported herein, insofar as they relate to mineralisation, are based on information compiled by Mr. Wade Bollenhagen, Exploration Manager of Archer Exploration Limited. Mr. Bollenhagen is a Member of the Australasian Institute of Mining and Metallurgy who has more than twenty years' experience in the field of activity being reported. Mr Bollenhagen has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" relating to the reporting of Exploration Results. Mr. Bollenhagen consents to the inclusion in the report of matters based on his information in the form and context in which it appears.

The information in this report that relates to the Campoona Shaft and Central Campoona JORC 2012 Mineral Resource estimation has been prepared by Mr B. Knell who is a Member of the AusIMM and peer reviewed by Dr. C Gee who is also a Member of the AusIMM (CP). Mr Knell is a full time employee of Mining Plus Pty Ltd and Dr. Gee is a full time employee of Mining Plus Pty Ltd., both have more than five years' experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Knell has consented in writing to the inclusion in this announcement of the Mineral Resource estimation information in the form and context in which it appears. This information was prepared and first disclosed under the JORC Code 2012.

For further information, please contact:

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