

Archer Exploration Limited: Half Yearly Report and Accounts

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Adelaide, Australia (ABN Newswire) - Development activities for [Archer Exploration Ltd.](#) (ASX:AXE) during the six months ended 31 December 2015 focused primarily on the Campoona Mining Lease Proposal and on the Leigh Creek Magnesite deposits. Exploration activities included barite at Beltana (near Leigh Creek), copper exploration at Spring Creek and gold exploration on the Company's Wanna gold prospect. Research activities included further investigation into the soil amelioration properties of the Sugarloaf carbon deposit. Research in collaboration with the University of Adelaide demonstrated that >99.9% pure graphene could be produced from high grade Campoona graphite concentrates. All projects are located in South Australia.

The following summary lists the operational activities for the half-year ended 31 December 2015:

GRAPHITE

Campoona 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 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 potentially has the greatest likelihood of impacting the local community and local 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.

Graphene Research

- Archer received a formal report from a joint graphene research program funded by Archer through the University of Adelaide's School of Chemical Engineering under the direction of Professor Dusan Losic. The aim of the 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.

Sugarloaf Carbon Deposit

- Previous test work by Archer identified that Sugarloaf samples were high in carbon but that much of the carbon was non-graphite carbon. 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.

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 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 trials. 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.

LEIGH CREEK MAGNESITE

- During the Quarter, Archer undertook additional magnesite test work and commenced negotiations both with third parties regarding infrastructure access and also with the 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 analysed 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 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.

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 to 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.

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 ($\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$) and azurite ($2\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$). Copper 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.

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 were designed to avoid the water reservoir and would be drilled dry without drill additives and grouted immediately each drill hole reached target depth. 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 try to reach a suitable resolution.

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%).

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

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).

To view the full half year report, please visit:

<http://media.abnnewswire.net/media/en/docs/ASX-AXE-906786.pdf>

About Archer Exploration Limited:

[Archer Exploration Ltd.](#) (ASX:AXE) is an Australian Stock Exchange listed company with 100% ownership of 15 tenements and one Exploration Licence Application all in South Australia covering 6,053 km².

Archer also has the rights to all minerals other than uranium on EL4693 covering a further 816 km². Archer's main project is the Campoona Graphite Project which is located within reach of established and major developing infrastructure. It has a JORC 2004 Resource of 5.27 million tonnes @ 7.6 % TC (based on 2% TC cut-off).

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