ASX ANNOUNCEMENT
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INNOVATIVE FLOWSHEET DESIGN UTILISED FOR PRODUCTION OF BATTERY ANODE MATERIAL FROM BUNYU GRAPHITE

Highlights

- **Innovative inverted flowsheet used to produce coated spherical purified graphite (CSPG) for battery anode material from Bunyu graphite**
- **Process also yields graphite products suitable for high value commercial applications**
- **Testwork program undertaken by U.S. company AETC as part of a technology integration program including long-term cycle testing of Bunyu graphite for lithium ion batteries (LIB)**
- **Excellent results achieved from cycle testing to date**

Graphite producer, developer and gold explorer **Volt Resources Limited** (**ASX: VRC**) ("**Volt"** or "**the Company"**) is pleased to provide the below information in relation to the innovative flowsheet utilised to produce coated spherical purified graphite (CSPG) from Bunyu natural flake. The results from the testwork program, including LIB cell cycle testing using CSPG produced from Bunyu graphite, are also reported. The testwork program is being undertaken by established commercial graphite producer and processor, American Energy Technologies Co. (**"AETC"**) which is headquartered in Illinois, USA.

Battery Anode Material Flowsheet

In a traditional flowsheet, graphite concentrates are milled, and then shaped into a sphere. The particles that have been spherodised are purified by a potentially environmentally damaging acid leaching process. In addition, only 35% - 40% of the graphite is spherodised and converted into battery-grade material. The non-spherical particles, amounting to 65% - 70% of the feed in the traditional circuit, are collected and sold into lower-margin markets such as re-carburizers, pencils, aftermarket brake pads, and others.

With the flowsheet developed by AETC to produce spherical purified graphite (SPG), purification is completed first with all of the subsequent sizing and shaping undertaken with purified material. The purification process was undertaken exclusively using high temperature furnaces. No environmentally damaging acid leaching or caustic bakes were employed.

The main benefits Volt enjoys from this inverted flowsheet are:

- Reduced wear and tear on shaping mill parts (due to processing being accomplished with high purity graphite, which is a natural lubricant), and
- The ability to divert non-spherical portions of the purified graphite to higher-margin markets such as conductivity enhancement applications in LIB cathodes.

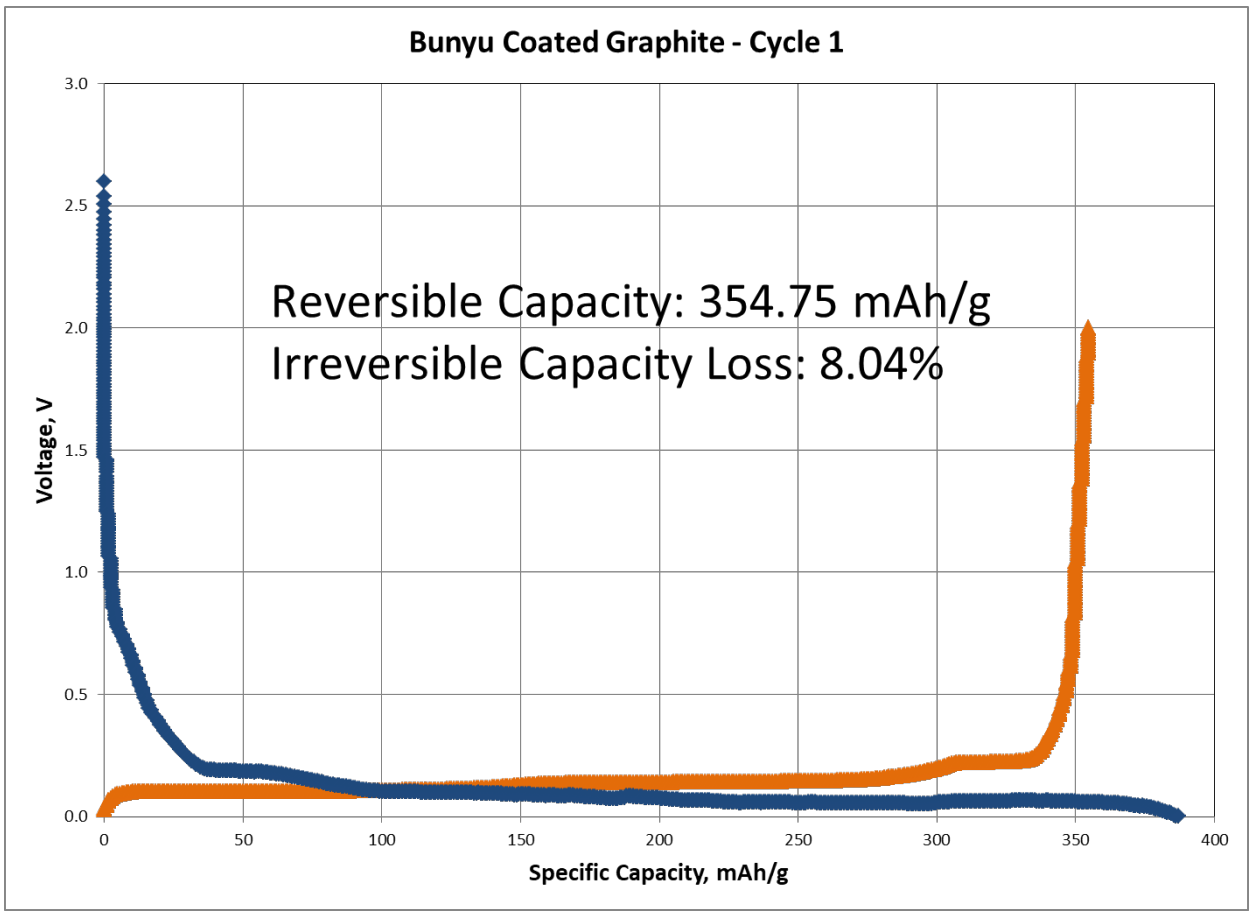
Battery Cell Cycling Testwork

The testwork program goal is to develop a technical support data package for market introduction of the Bunyu product and the provision of CSPG material for samples to be provided to potential LIB manufacturing customers.

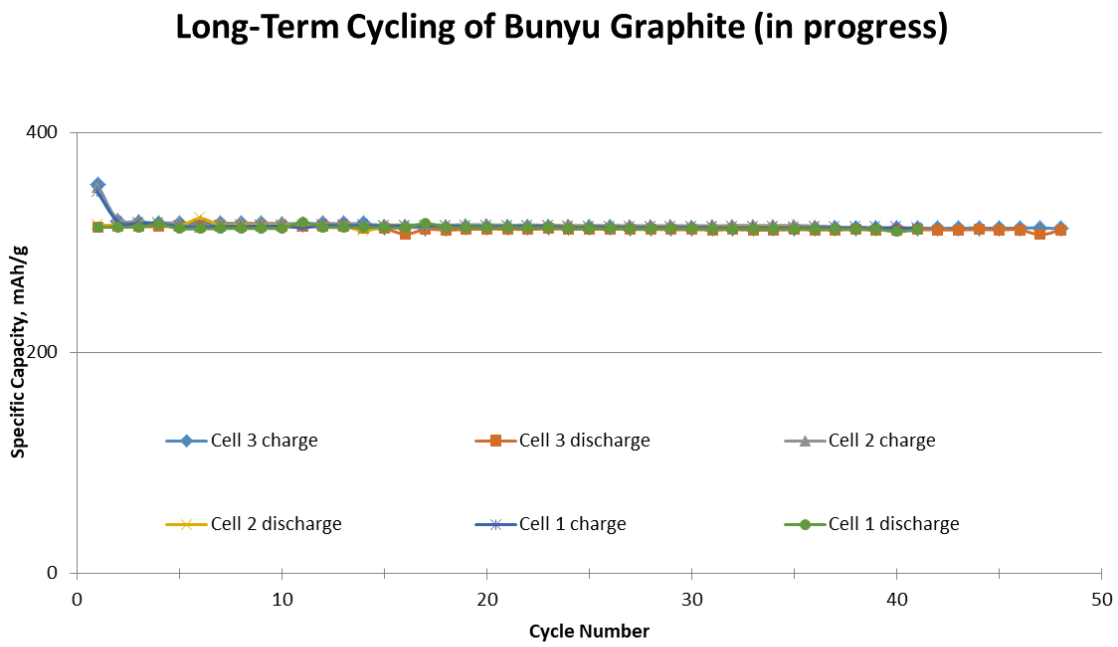
The program involved the production of SPG, followed by its surface coating prior to commencing extended cycling in batteries. Cycling tests assess the initial electrochemical performance of carbon coated spherodised graphite in the industry standard CR2016 coin cells (i.e. reversible, irreversible capacity and irreversible capacity loss). The program is designed to perform long term cycling (100 cycles initially), which is used to assess the viability of the Bunyu CSPG for energy storage applications.

Initial electrochemical performance of Bunyu Graphite is presented in the chart below. This graph represents a galvanostatic charge-discharge curve commonly used in the industry to derive values of reversible and irreversible capacity, as well as irreversible capacity loss. It is evident that Bunyu graphite has a reversible capacity in the order of 355 mAh/g, with irreversible capacity loss amounting to less than ten percent (i.e. 8.04%).

Initial cycle characteristics.

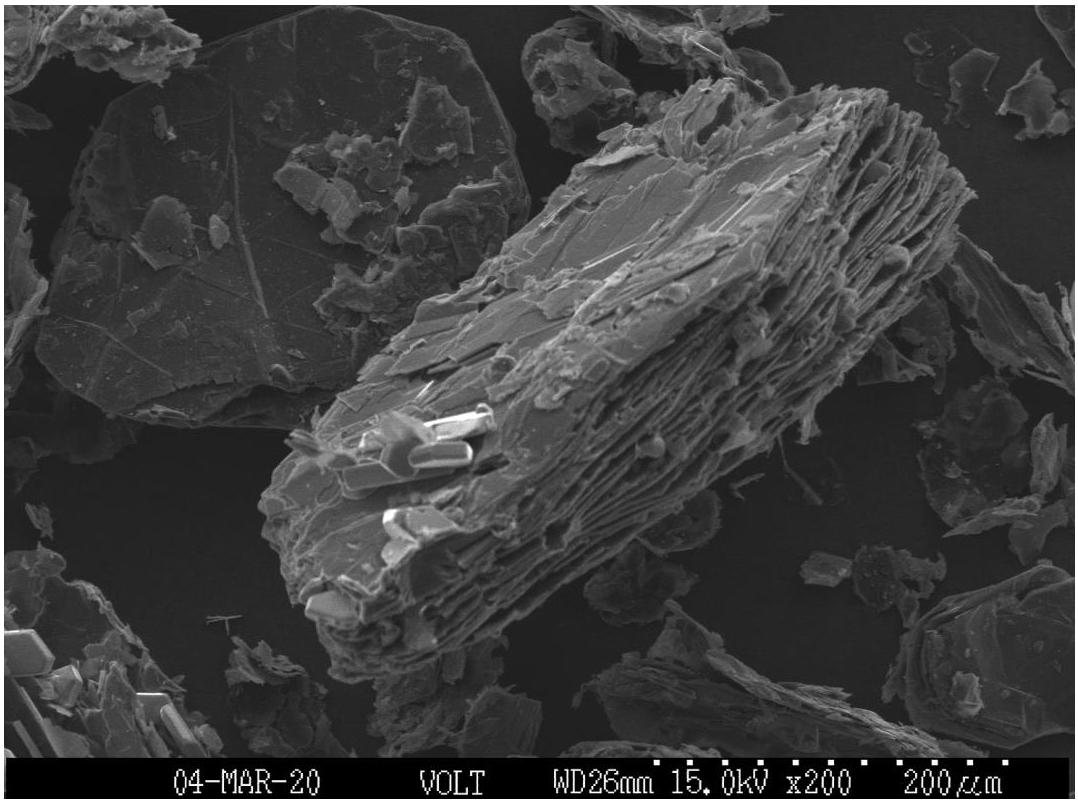


The second chart illustrates the initial 40+ cycles of long-term cycling. Three cells containing Bunyu CSPG are being used for the long term cycling testwork. The results from the three cells cycling performance are shown below and are consistent with LIB battery-grade material's specifications. It is worth noting that cells designed for long term cycling are intentionally built for slightly lower capacity ratings, therefore the reversible capacity values for the three cells in the test series range between 315 and 320 mAh/g. These cells demonstrate highly consistent performance with virtually negligible degradation from cycle to cycle. The flat curve signals that Bunyu graphite could compete not only with natural, but also a great number of costlier synthetic graphite offerings, in its long-term cycling performance.

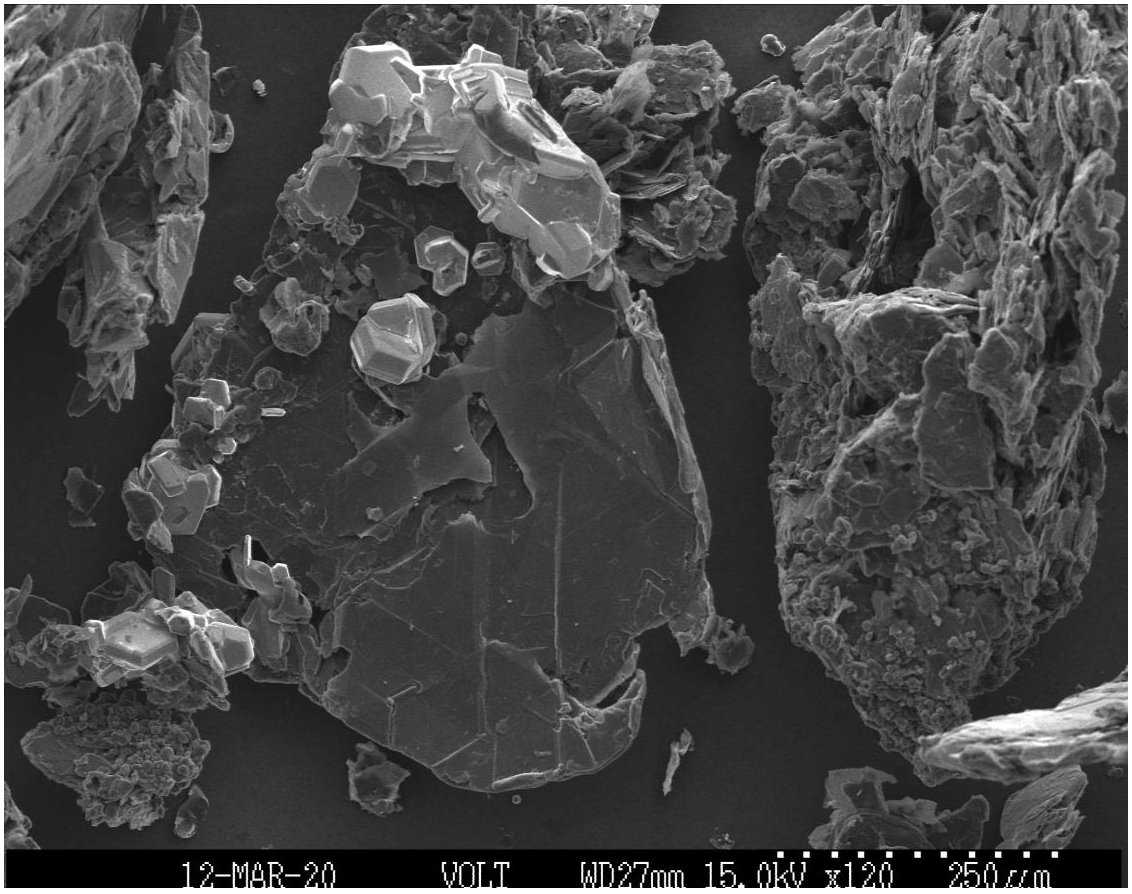


Other Testwork Results

The Bunyu graphite is composed of extremely thick particles. The thinner stacks of graphene layers are partially primed open, as seen in the scanning electron microscopy image below. This is a unique feature that will facilitate easier intercalation and deintercalation of lithium ions that could lead to longer LIB cycle life.



Bunyu flake graphite showing thickness



Impurities on the surface of Bunyu flake graphite

Purification

The microscopy image above of the concentrate-purity Bunyu graphite shows pale inclusions attributed to gangue, clearly located either on the surface of larger flakes or on edge planes. Typically, impurities are embedded as gangue in between flake layers of classic graphite. However, Bunyu flakes are unique in their impurity topography, allowing for the easy removal of impurities and therefore lower processing costs.

AETC was able to consistently produce a 99.987% TGC grade graphite from Bunyu concentrate-grade starting material. The purified Bunyu flake graphite had extremely low concentrations of deleterious elements such as iron (Fe) at 7.4 ppm, nickel (Ni) at 4.8 ppm and cobalt (Co) at 3.7 ppm. Of special note is the extremely low concentration of Boron at 0.46 ppm. For reference, there are only a handful of deposits worldwide where Boron concentration naturally occurs at a low value. Low-Boron feedstocks represent standalone value since graphite with this feature can be qualified for nuclear applications. Nuclear-grade graphite achieves significant price premiums depending on the end-use application within the nuclear industry.

Low sulphur levels at 62.7 ppm were also achieved using thermal purification. Such low levels are linked to the extended calendar life of LIBs.

Spherodisation

Using the Bunyu purified flake graphite as feed material, a milling stage was used to appropriately size or micronise the purified flake graphite prior to its spherodisation. The purified and micronised material may then be used for applications in lead acid batteries and in alkaline batteries. Alternatively, they are further processed into SPG for LIBs.

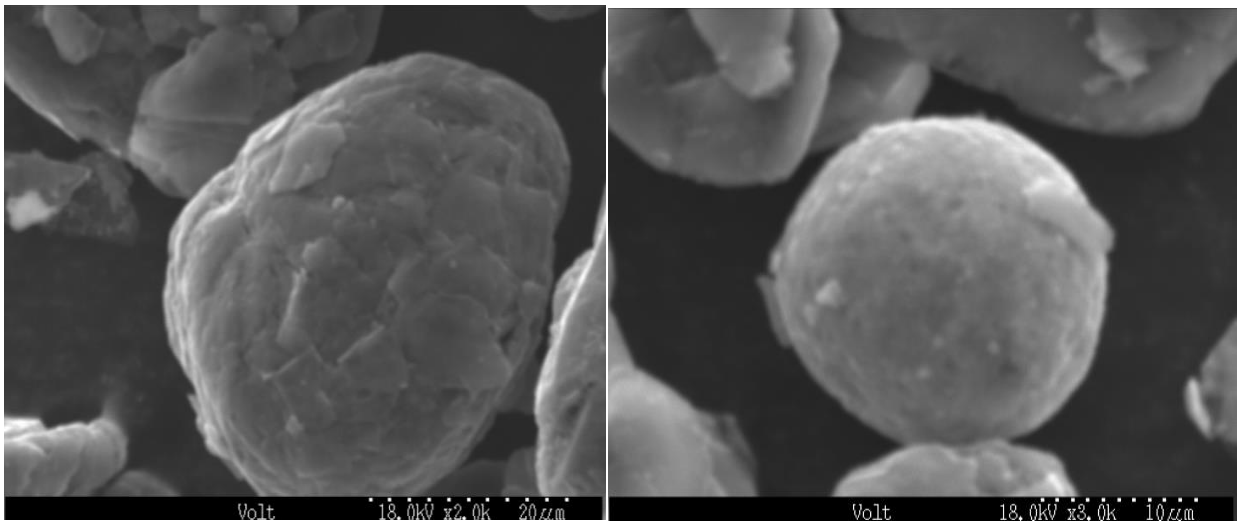
Spherodisation yields two different batches of product, depending on mill settings and residence time in the mill. AETC characterised the key physiochemical properties (i.e. Tap density, Scott volume, particle size, BET surface area and SEM) of the two sample lots. The testwork identified the record high yield of flake graphite spheres on the order of 70 wt.% of feed into spherodisation mill and the optimal spherodisation conditions that would be specific to the Bunyu flake.

AETC classified the two batches of spherodised Bunyu product into seven size fractions and characterised each size fraction by scanning electron microscopy (SEM), laser diffraction, Tap density, LOI/ash, and BET surface area. Two of these fractions of uncoated SPG, of particular interest to Electric Vehicle battery application, are featured below.

Classified fraction	D50 (micron)	Tap Density (g/cc)	Scott Volume (g/cc)
1	21.90	0.91	0.63
2	17.52	0.906	0.58

The above two materials were further combined to produce a harmonized fraction of graphite, then surface-coated to convert them into a battery-ready anode active material. Carbon coating was performed through the application of soft carbon precursor-dissolved in a compatible liquid medium and sprayed atop spheronised particles via a nanosized mist-aerosol technique. This was followed by a staged heat-treatment process under the cover of inert gas resulting in curing and polymerization of the exterior coating atop SPG. Scanning electron microscope images of coated material are presented below and reveal a smooth, spheroidal morphology. It is noteworthy that the resultant surface area amounted to 1.14 m^2/g at a particle size of d50=11.9 microns, d90=20.4 microns and Tap density of 0.971 g/cm^3. All of the above are part of a battery-ready matrix used in anode active material in successful LIBs.

Given its properties, Bunyu flake meets the established design criteria for negative electrode active materials of lithium ion batteries.



Scanning Electron Microscope (SEM) images of Carbon Coated Spherical Purified (CSPG) Bunyu natural flake graphite

Sulphur analysed by infrared absorption method

Coating

Testing of spherodised graphite products after surface coating was undertaken by analysing for: Loss on Ignition (LOI950), ash, sulphur, laser diffraction (particle size), BET surface area, Tap density, Scott Volume, and SEM.

AETC coated the Bunyu CSPG material and incorporated it into electrodes, which were then, in turn, integrated into LIB coin cells. These cells are currently performing long term cycling testing with more updates to follow.

Management commentary

Volt's Managing Director, Trevor Matthews, commented; "We are delighted with these initial testwork results provided by AETC. This further confirms previous testwork programs' conclusions that Bunyu's flake graphite is suitable for supply to traditional markets and for use in new high demand applications such as energy storage.

"I am especially pleased that we have been able to demonstrate successful spherodisation and purification results with the inverted flow sheet which Volt Resources is adopting for its downstream operations. Introduction of this flowsheet will allow us to not only convert a significant portion of our graphite into battery-ready anode material for lithium ion batteries, but will also generate a range of ultra-high purity by-products for use in battery cathodes and in a variety of valuable non-battery applications."

With two world-class graphite resources incorporated in a strategically located operating mine and processing plant in Ukraine along with a development-ready project in Tanzania, Volt Resources is well-positioned to become a globally significant graphite producer. Volt plans to become a battery anode material producer in Europe and the United States based on an integrated supply chain using graphite manufactured from its own operations. This provides security and continuity of supply for the business and the ability to manage product quality through the graphite supply chain through to the LIB cell manufacturers and for other graphite product end users.

-ENDS-

This announcement was authorised for release by the Board of Volt Resources Ltd.

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About Volt Resources Limited

Volt Resources Limited ("Volt") is a graphite producer/developer and gold exploration company listed on the Australian Stock Exchange under the ASX code VRC. Volt has a 70% controlling interest in the Zavalievsky Graphite business in Ukraine. Zavalievsky is in close proximity to key markets with significant developments in LIB facilities planned to service the European based car makers and renewable energy sector. Zavalievsky benefits from an existing customer base and graphite product supply chains based on excellent transport infrastructure covering road, rail, river and sea freight combined with reliable grid power, ample potable ground water supply and good communications. Zavalievsky has current plans to install a processing plant and equipment in order to commence production of spheronised purified graphite (SPG) for the European LIB market within the next 12 months[1].

[1] Refer to Volt's ASX announcements titled "Volt to Acquire European Graphite Business following Completion of Due Diligence" dated 14 May 2021 and "Completion of the ZG Group Transaction Following Execution of New Convertible Securities Facility" dated 26 July 2021.

Volt is also progressing the development of its large wholly-owned Bunyu Graphite Project in Tanzania, as well as gold exploration in Guinea leveraging the Company's existing extensive networks in Africa.

The Bunyu Graphite Project is ideally located near to critical infrastructure with sealed roads running through the project area and ready access to the deep-water port of Mtwara 140km from the Project. In 2018, Volt reported the completion of the Feasibility Study ("FS") into the Stage 1 development of the Bunyu Graphite Project. The Stage 1 development is based on a mining and processing plant annual throughput rate of 400,000 tonnes of ore to produce on average 23,700tpa of graphite products[2]. A key objective of the Stage 1 development is to establish infrastructure and market position in support of the development of the significantly larger Stage 2 expansion project at Bunyu.

The Guinea Gold Projects comprise 6 permits in Guinea, West Africa having a total area of 348km. The Projects are located in the prolific Siguiri Basin which forms part of the richly mineralised West African Birimian Gold Belt.

[2] Refer to Volt's ASX announcement titled "Positive Stage 1 Feasibility Study Bunyu Graphite Project" dated 31 July 2018. The Company confirms that it is not aware of any new information or data that materially affects the information included in this document and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.