EDISON

Volt Resources

Quarterly report

Positioning for the next phase

Metals & mining

Volt's quarterly report provides few surprises, with all critical path work programmes and project financing requirements still in a state of progress. Unfortunately, delays getting core samples out of Tanzania has caused Volt's management to push out deadlines for the estimation of resources and reserves, the calculation of production schedules and also revenue projections. With the much-awaited Stage 1 Bunyu feasibility study (FS) due by the end of June, as well as financing and project approvals, the next few months will be critical for the company to demonstrate its abilities to get Bunyu firmly into the next stage of its development.

Year end	Revenue (A$m)	PBT* (A$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
06/15	0.0	(0.7)	(0.2)	0.0	N/A	N/A
06/16	0.0	(3.3)	(0.4)	0.0	N/A	N/A
06/17	0.0	(2.4)	(0.3)	0.0	N/A	N/A

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Stage 1 offtakes advancing to binding terms

The key to securing Stage 1 project revenues will be obtaining offtake agreements on commercial binding terms. There are three such agreements being progressed to commercial terms with Chinese companies. Increased interest by Chinese companies (VRC met with six groups in all on its recent China visit) in non-Chinese graphite sources is likely to be a result of China's central government looking to clean up its heavy industries.

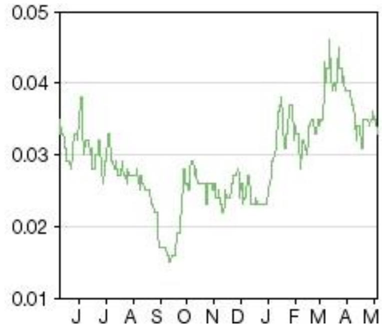
Valuation: Illustrative 7.90 cents for Stage 1

While we await the results of the revised pre-feasibility study (PFS) (due by end-June 2018), keeping our base-case valuation on hold, we provide an illustrative valuation scenario based on a potential phased development of the Bunyu project. We have reworked our model (which was based on the outdated PFS on Namangale, Bunyu's previous name) to provide an illustrative view on Bunyu's Phase 1 value. This incorporates the broad remit for Phase 1 provided by Volt in its 18 May 2017 RNS, detailing a 10–20ktpa operation and capex of US$30m. We assume 20ktpa and costs at the same level as those in the Namangale PFS, sustaining capital at 7% of operating costs, and a capex raised as debt (ie simulating bond issuance) incurring 16% interest. On this basis, using a 10% discount rate to reflect general equity risk and an average US$1,684/t graphite basket price for revenue calculations, we see a potential 7.90 cents/share value for Bunyu Phase 1 under our assumptions. Obviously, the completion of a revised FS for Phase 1 will detail costs and capex within an estimated accuracy of ±10% and potentially a different graphite basket price to reflect a mix of end-uses (batteries, expandable and graphene). Our illustrative 7.90 cent valuation is presented on an FY19 basis and also reflects all dilution from recent equity raises and option exercises and we pro-rate its Appendix 3B cash-flow report figures to end-June 2018.

8 May 2018

Price	**A$0.03**
Market cap	**A$45m**
	US$/A$0.75
Net cash (A$m) at 31 March 2018	2.4
Shares in issue	1368.4m
Free float	78%
Code	VRC
Primary exchange	ASX
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	(10.8)	6.5	3.1
Rel (local)	(15.0)	3.1	(2.1)

52-week high/low	A$0.05	A$0.02

Business description

Volt Resources is a graphite development company. Its main asset is the currently 100%-owned Bunyu graphite project located in Tanzania. The company has completed a PFS, is now undertaking an FS on a revised modular project design and intends to initiate first graphite production by mid-2019.

Next event

Stage 1 Bunyu feasibility study	Q418

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Edison profile page

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Battery materials get their time in the ethical limelight

Publicity surrounding the ethical use of certain metals in the manufacture of electric vehicles has increased in recent weeks. The most publicised example being the artisanal mining of cobalt in the Democratic Republic of Congo (DRC). Cobalt is used in the manufacturing of cathode material for use in lithium-ion battery production. While the media stories surrounding the DRC tend to reflect on the use of child labour, the broader issues of ethical mining extends to other high-tech and green-tech relevant commodities.

China's raw material needs being forced abroad

China's mining of graphite may not relate to the issues surrounding mining practices in the DRC; instead its ethical concerns relate to the environment – a deeply political issue in China and one that has been addressed in recent years by state authorities closing down polluting, illegal, artisanal mining operations. This has affected not only graphite producers, but also the more strategically important rare earth element miners that have now been consolidated under a handful of state-owned enterprises. The high-temperature, thermal purification of petroleum coke into synthetic graphite is a major component of global battery-ready graphite supply. An example of the polluting practices of unregulated graphite production was reported by the Washington Post in an article dated 2 October 2016, entitled, *In your phone, in their air*.

Western-listed entities see heightened interest

The Chinese companies that Volt is currently looking to engage with in terms of securing offtake agreements on commercial terms may indeed reflect a migration of Chinese graphite investment from domestic to international graphite projects. This is likely to be a result of Chinese authorities following through on mine closures and forcing companies producing finished graphite goods to obtain their raw materials from elsewhere. The interest in east African graphite projects by Chinese companies could be seen as the start of a general migration of raw-material sourcing abroad. To this end, western-listed mining companies, including Volt, with their adherence to international accounting guidelines and environmental standards, pave the way for a far more ethically robust supply of a naturally sourced (though artificially purified) graphite for use in green-technology applications.

Volt advances on all project milestones

A delay in getting core samples out of Tanzania has caused a delay to the development of mine schedules and production estimates, mining operating costs and revenue calculations, which are all based on the Stage 1 pit shell developed using the resource and reserve estimations calculated using drill data. Volt's management states the aforementioned delays should not impact the overall development timeline to produce first graphite at Bunyu in 12 to 15 months' time (ie mid-2019). This will depend on a successful financing round for Stage 1 capex and obtaining off-takes on commercial terms.

As stated by the company in its quarterly activities report to 31 March, the Bunyu project is progressing on a number of fronts, including:

- A draft prospectus for the US$40m Tanzanian Note has been lodged with the Tanzanian Capital Markets and Securities Authority and the Dar es Salaam Stock Exchange for review and feedback.

- Mining licence applications lodged with the Ministry of Energy and Minerals of Tanzania. Volt states that this represents a critical approval required for the Stage 1 development of the Bunyu project.
- Environmental studies have also been lodged with the relevant authorities for review. This is also a critical path project approval.

Completion of the above in good time will be critical to the company achieving first production at Bunyu within its stated "12 to 15 months" timeframe.

Stage 1 Bunyu FS pegged for Q2 CY18 release

The announcement of the Stage 1 Bunyu FS will be the first opportunity to apply value to Volt after the release of its outdated Namangale (the former name of Bunyu) PFS, released December 2016. This study contemplated output of 170ktpa of graphite concentrate for use in the lithium-ion battery sector. However, the size of the Namangale project was out of step with current demand for graphite to be used in lithium-ion batteries and Volt now considers a far smaller operation to be more viable (see the illustrative Phase 1 valuation presented on page 4). A smaller operation would better match Bunyu's graphite supply to current demand as well as providing for a lower funding hurdle, operating experience that can be used to scale-up the operation as expected increases in graphite demand take hold. The delivery of graphite to customers is also crucial and getting Volt's graphite sold into the market place will help significantly de-risk Stage 2 development.

The very high technical quality of Bunyu graphite

The production of a graphite concentrate via flotation to a 95% total graphitic carbon (TGC) purity level should be relatively simple for the majority of junior graphite developers, especially within a highly controlled laboratory environment. The production of higher-purity graphite beyond 95% has exponentially higher energy requirements for every extra percentage point in purity gained. The other major factors in determining the quality of graphite concentrates are the inclusion of impurities and the crystalline structure of graphite, which determines, in part, its effectiveness in holding and discharging electrical charge. If the graphite is to be used for fire-retardant applications, another critical factor is how well the graphite expands.

Volt has demonstrated its Bunyu North (which will be the focus of Stage 1 development) graphite to be highly satisfactory in all these areas:

- Bunyu North product samples have returned excellent first-stage processing results, including carbon purity of 99.6% and oxygen content of 0.08%. This test was performed by Volt's US-based offtake partner, NanoGraphene, a producer of graphene products using environmentally friendly technology, with no harmful reagents and only the use of water to produce graphene. Repeatability of this extremely pure carbon sample, at the mine scale, will be critical to understanding the overall costs of processing Bunyu North samples.
- NanoGraphene also identified Bunyu North graphite as a "highly ordered, defect-free material". Again, repeatability of this testing is crucial to demonstrating consistency of supply to customers. The majority of de-risking in this area should be satisfied through due diligence processes undertaken as part of commercial offtake agreements being signed.

Offtake partner status

Critical to the development of any project looking to trade products on a bilateral producer-customer basis is the agreement of long-duration offtake contracts with commercial terms. To this end, Volt has undertaken numerous marketing efforts, predominantly in Asia, but also across the Americas and Europe. The current status of Volt's various agreements is given in the following exhibit.

Exhibit 1: Offtake agreement status

Prospective clients	Offtake size (tpa)	Estimated timeline to complete binding offtake
NanoGraphene (US)	1,000	Complete
GEM	5,000	In progress, no specific time frame given
Aoyo Graphite Group	10,000–20,000	In progress, no specific time frame given
China National Building Materials General Technology (formerly CNBM General Machinery)	10,000–15,000	In progress, no specific time frame given
Qingdao Tianshengda Graphite	10,000	In progress, no specific time frame given
Haida Graphite	N/A	Early-stage, no specific time frame given
Qingdao Baixing Graphite	N/A	Early-stage no specific time frame given

Source: Volt Resources

Illustrative Phase 1 valuation

While the company completes its FS on Bunyu (expected in the March quarter of 2018), our previous earnings forecasts and base case valuation remain on hold. However, a number of data points are available (see Volt's press release dated 18 May 2017) concerning the scope and size of the new, smaller Bunyu Phase 1 operation to be built, as well as resource and cost data that can be taken from the now outdated Namangale (Bunyu's previous name) 2016 PFS. As such, we have made an attempt to generate an illustrative potential valuation for Phase 1 only of Bunyu's future development.

We use the following valuation assumptions to build our financial model of Phase 1:

- Keep the average mined TGC grade from the PFS across life-of-mine at 4.4%. This grade is the simple life-of-mine average as per the 2016 Namangale PFS.
- Ore production is 0.45mtpa to produce 20ktpa of graphite products across all flake sizes. This is the initial scale of Phase 1 output. Initial production of 10ktpa has been assumed for FY19.
- Ramp up graphite production to 40ktpa by 2023 to simulate the expected growth in global automotive and expandable graphite demand.
- Reduce the life of mine from 22 (in the old PFS) to 10 years for Phase 1 production only.
- Construction time reduced from two years to less than one year.
- Keep operating costs aligned with the old PFS.
- An average Bunyu Phase 1 graphite basket price of US$1,684/t.
- Set initial Phase 1 capex at a notional US$30m (previously US$203m), reflecting the material reduction in scope from a 170ktpa graphite operation to 20kt of graphite concentrates produced per annum.

Based on the aforementioned data points and inputs, we consider that a purely illustrative value for Bunyu Phase 1 could be worth 7.90 cents on an FY19 basis using a 10% discount rate to reflect general equity risk. This does not assume any build out of Phase 2, or reflect the potentially accretive value project expansion would bring. We look to the release of Volt's new FS to provide precise costing and the exact scope for Bunyu Phase 1 development, which will allow us to update our base case valuation.

Financials

Volt's Appendix 3B to end-March 2018 provides abridged detail over the company's financings and level of expenditures. At end-March, Volt recorded cash of A$2.8m, a q-o-q decrease of 46% (Q2: A$4.1m).

Net cash used in operating activities was negative A$5.8m. The majority of this was spent on exploration and development of the Bunyu graphite project, with a further A$2.3m of expenditure on staff and central costs.

Year-to-date, Volt has bolstered its coffers with financing, including the exercise of options and equity issuances totalling A$7.5m, and a convertible loan note valued at A$1.0m.

With expected Q418 expenditure stated in the Q3 Appendix 3B of A$2.4m, Volt's current cash balance should adequately cover these planned costs. However, it is clear that the company will want to dovetail its current financial position with the construction phase for Stage 1 of Bunyu using the potential Tanzanian Note issue for US$40m.

Exhibit 2: Financial summary

Accounts: IFRS; year-end: June; A$000s	2015	2016	2017
Total revenues	0	0	0
Cost of sales	0	0	0
Gross profit	0	0	0
SG&A (expenses)	(668)	(3,351)	(3,307)
Other income/(expense)	0	0	0
Exceptionals and adjustments	0	0	0
Depreciation and amortisation	(3)	0	0
Reported EBIT	(670)	(3,351)	(3,307)
Finance income/(expense)	5	24	52
Other income/(expense)	0	0	0
Exceptionals and adjustments	0	0	0
Reported PBT	(666)	(3,327)	(3,255)
Normalised PBT	(666)	(3,327)	(2,368)
Income tax expense (includes exceptionals)	0	0	153
Profit from discontinued operations (net of tax)	0	(480)	0
Reported net income	(666)	(3,807)	(3,102)
Basic average number of shares, m	244	583	968
Basic EPS (cents)	(0.3)	(0.7)	(0.3)
Normalised EPS (cents)	(0.2)	(0.4)	(0.3)
Balance sheet	2015	2016	2017
Property, plant and equipment	0	0	124
Goodwill	0	0	0
Intangible assets	0	0	0
Other non-current assets	703	10,773	16,614
Total non-current assets	703	10,773	16,738
Cash and equivalents	554	7,618	102
Inventories	0	0	0
Trade and other receivables	17	104	148
Other current assets	0	104	52
Total current assets	571	7,826	303
Non-current loans and borrowings	0	0	0
Other non-current liabilities	0	0	0
Total non-current liabilities	0	0	0
Trade and other payables	160	1,108	667
Current loans and borrowings	0	0	0
Other current liabilities	0	0	22
Total current liabilities	160	1,108	689
Equity attributable to company	1,336	17,707	16,570
Non-controlling interest	(222)	(216)	(218)
Cash flow statement	2015	2016	2017
Profit for the year	(666)	(3,807)	(1,965)
Depreciation and amortisation	3	0	0
Share based payments	216	1,774	0
Other adjustments	3	554	0
Movements in working capital	91	117	0
Cash from operations (CFO)	(353)	(1,362)	(1,965)
Capex	(24)	(3,039)	(6,400)
Acquisitions & disposals net	(178)	(364)	(10)
Other investing activities	0	0	0
Cash used in investing activities (CFIA)	(202)	(3,403)	(6,410)
Net proceeds from issue of shares	590	11,829	866
Movements in debt	0	0	0
Other financing activities	0	0	0
Cash from financing activities (CFF)	590	11,829	866
Currency translation differences and other	0	0	0
Increase/(decrease) in cash and equivalents	36	7,064	(7,509)
Cash and equivalents at end of period	554	7,618	102
Net (debt) cash	554	7,618	102
Movement in net (debt) cash over period	554	7,064	(7,516)

Source: Company data, Edison Investment Research