



## **Emerging natural graphite supplier to global markets**

**Investor Presentation – March 2017**  
**Trevor Matthews - Chief Executive Officer**

**ASX: VRC**

# Disclaimer

The information contained in this confidential document ("Presentation") has been prepared by Volt Resources Limited (the "Company"). It has not been fully verified and is subject to material updating, revision and further amendment.

While the information contained herein has been prepared in good faith, neither the Company nor any of its shareholders, directors, officers, agents, employees or advisers give, have given or have the authority to give, any representations or warranties (express or implied) as to, or in relation to, the accuracy, reliability or completeness of the information in this Presentation, or any revision thereof, or of any other written or oral information made or to be made available to any interested party or its advisers (all such information being referred to as "Information") and liability therefore is expressly disclaimed. Accordingly, neither the Company nor any of its shareholders, directors, officers, agents, employees or advisers take any responsibility for, or will accept any liability whether direct or indirect, express or implied, contractual, tortious, statutory or otherwise, in respect of, the accuracy or completeness of the information or for any of the opinions contained herein or for any errors, omissions or misstatements or for any loss, howsoever arising, from the use of this Presentation.

Neither the issue of this Presentation nor any part of its contents is to be taken as any form of commitment on the part of the Company to proceed with any transaction and the right is reserved to terminate any discussions or negotiations with any prospective investors. In no circumstances will the Company be responsible for any costs, losses or expenses incurred in connection with any appraisal or investigation of the Company. In furnishing this Presentation, the Company does not undertake or agree to any obligation to provide the recipient with access to any additional information or to update this Presentation or to correct any inaccuracies in, or omissions from, this Presentation which may become apparent.

This Presentation should not be considered as the giving of investment advice by the Company or any of its shareholders, directors, officers, agents, employees or advisers. Each party to whom this Presentation is made available must make its own independent assessment of the Company after making such investigations and taking such advice as may be deemed necessary. In particular, any estimates or projections or opinions contained herein necessarily involve significant elements of subjective judgement, analysis and assumptions and each recipient should satisfy itself in relation to such matters.

Neither this presentation nor any copy of it may be (a) taken or transmitted into the United Kingdom, Canada, Japan or the United States of America, their territories or possessions; (b) distributed to any U.S. person (as defined in Regulation S under the United States Securities Act of 1933 (as amended)) or (c) distributed to any individual outside Australia, Canada or Japan who is a resident thereof in any such case for the purpose of offer for sale or solicitation or invitation to buy or subscribe any securities or in the context where its distribution may be construed as such offer, solicitation or invitation, in any case except in compliance with any applicable exemption. The distribution of this document in or to persons subject to other jurisdictions may be restricted by law and persons into whose possession this document comes should inform themselves about, and observe, any such restrictions. Any failure to comply with these restrictions may constitute a violation of the laws of the relevant jurisdiction.

# Volt Resources: Snapshot

## Transitioning to producer

- Volt starts small-scale mining/processing in 1Q2018, post signing a binding offtake agreement with US-based NanoGraphene

## High-grade graphite concentrate product

- High TGC content, flake distribution >60% in large to super jumbo sizes, excellent conductivity/ expandability and no deleterious elements

## Suitable product for key target markets

- Primary target markets are spherical and expandable graphite, then graphene/graphite composites and traditional uses (refractories, recarburisers)

## PFS complete; DFS underway

- Largest resource in Tanzania: 461Mt @ 4.9% TGC; pre-tax NPV US\$1.3B with 170kt/y @ blended price of US\$1,684/t

## Key project milestones

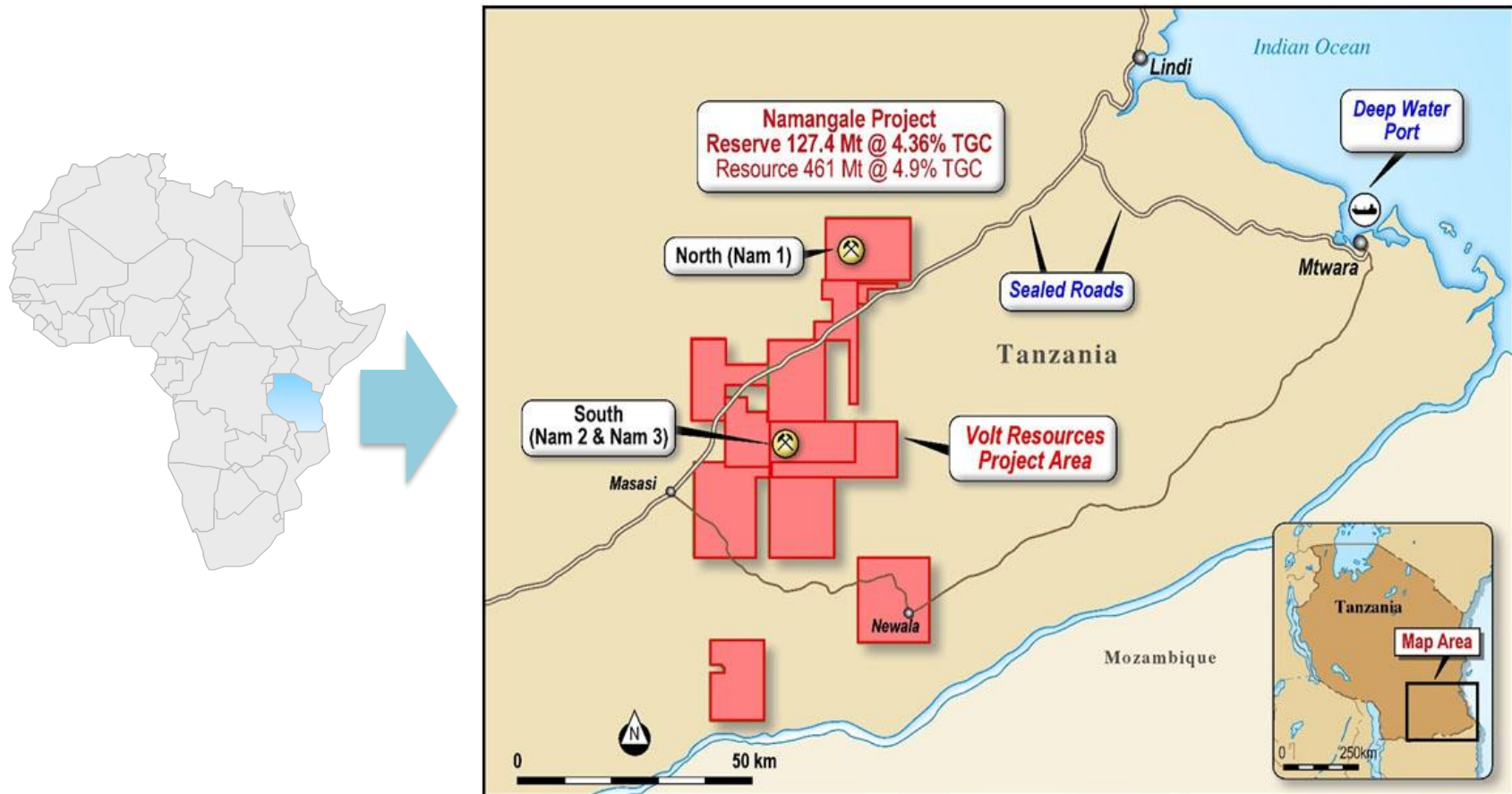
- Following excellent stakeholder meetings, next milestones are securing environmental certificate then special mining license, completing DFS and closing project finance

## Global marketing team priorities

- Follow through on Chinese MOUs (100ktpa); penetrate China's rapidly growing expandable graphite market; secure incremental US/European MOUs.

# The Namangale project (100%-owned)

- The Namangale project is a graphite development located in south-east Tanzania now moving into small scale mining and processing from early 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. (Volt JORC Resource 286Mt Inferred, 155Mt Indicated, 20Mt Measured).

# Corporate overview

## Capital Structure

|                            |                  |
|----------------------------|------------------|
| Shares on Issue            | 976,784,137      |
| Options and Rights         | 236,314,983      |
| Share Price ( 10 Mar 2017) | A\$0.036         |
| 52 week high / low         | A\$0.145 / 0.011 |
| FD Market Cap              | A\$44m           |
| Cash (31 Dec 2016)         | A\$3m            |
| Avg daily volume (shares)  | 4m (3 mths)      |

## Substantial Shareholders

|                           |       |
|---------------------------|-------|
| Kabunga Holdings (vendor) | 15.1% |
| Board & Management        | 2.6%  |
| HSBC Custody Nominees     | 2.0%  |
| CS Fourth Nominees        | 1.3%  |
| Citicorp Nominees         | 1.3%  |

## VRC Share Price Chart (12-months)



# Board and executive management

|                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Stephen Hunt</b><br/> <b><i>Non-Executive Chairman</i></b><br/>           B Bus (Marketing)<br/>           AICD</p>             | <ul style="list-style-type: none"> <li>○ Minerals marketing specialist with 25 years experience in global roles: 15 yrs at BHP and 10 years as Director of ASX listed companies.</li> <li>○ Ex-founding director at graphite focused Magnis Resources.</li> </ul>                                                                                                                          |
| <p><b>Trevor Matthews</b><br/> <b><i>Chief Executive Officer</i></b><br/>           B Comm GDipAppFinInv AICD</p>                     | <ul style="list-style-type: none"> <li>○ Finance and accounting background with 30 years experience in the resources industry including roles with North and WMC Resources in executive-level positions.</li> <li>○ Ex-MD for MZI Resources (2012-16) and Murchison Metals (2005-11), gaining considerable experience managing nascent resource projects through to production.</li> </ul> |
| <p><b>Alwyn Vorster</b><br/> <b><i>Non-Executive Director</i></b><br/>           B Sc (Geology) MBA M Sc (Mineral Economics) AICD</p> | <ul style="list-style-type: none"> <li>○ Experienced mining industry professional with 25 years in senior roles covering the total resources supply chain. Expertise in project development, complex corporate transactions and risk mitigation.</li> </ul>                                                                                                                                |
| <p><b>Matt Bull</b><br/> <b><i>Non-Executive Director</i></b><br/>           B Sc (Hons ) (Geology /Geophysics)</p>                   | <ul style="list-style-type: none"> <li>○ Chief Geologist with a decade's experience in gold, iron ore and graphite mining / exploration. Ex-CEO &amp; Chief Geologist at Baru Resources.</li> </ul>                                                                                                                                                                                        |

# Volt's two primary target markets: A) spherical graphite...

**Spherical graphite** for use in lithium-ion batteries, driven by:

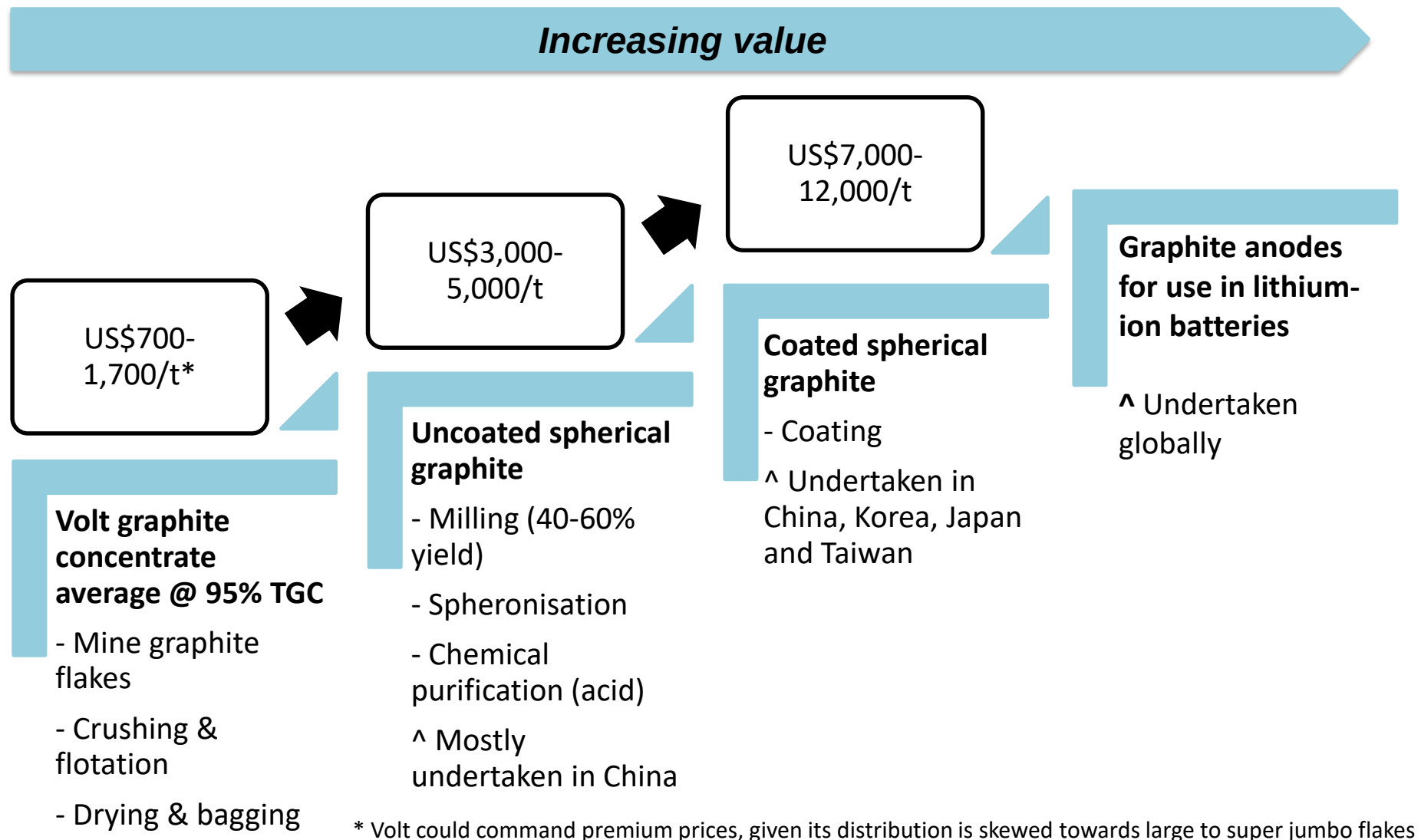
- Accelerating demand for EVs – reaching 7m in 2020F (vs c. 800k in 2015)
- Growing renewable energy take-up driving stationary power storage market

**Resulting in:**

- Huge capacity expansions by >12 global giga factories that could deliver a 500% increase in natural graphite demand by 2020 (refer Appendix A)

|                                                                                                                                                                                                                                                                                                          | 2015 | 2020F |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|
| Global lithium-ion battery installed capacity (GWh)                                                                                                                                                                                                                                                      | 66   | 402   |
| Implied flake graphite required (kt)                                                                                                                                                                                                                                                                     | 210  | 1,300 |
| Assumptions:<br>1) Benchmark Minerals Intelligence (BMI) – estimates Tesla will require 112.5 kt/y flake graphite for it's 35 GWh giga factory to produce spherical graphite for anodes in lithium-ion batteries<br>2) This implies 3,215 t flake graphite per 1 GWh<br>Source: Volt Resources estimates |      |       |

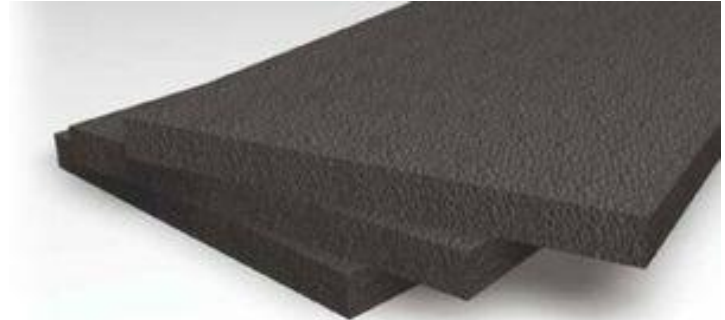
## ...which has an attractive value chain



## ..and B) expandable graphite

**Expandable graphite** for use in core applications:

- Flame retardant polystyrene insulation foam (combined with building materials)
- *“Stricter building regulations in China / Europe, could propel demand to rival the battery sector”*
- Graphite foil (used in electronic products like tablets) and paper/sheets (sealing gaskets, tapes, packing)



# Volt's emerging target markets: graphene and graphite composites

## Graphite composites for use in a wide array applications:

- Well known consumer products that use carbon include golf clubs and racing bikes
- Hi-tech applications are parts in fighter jets that travel at extreme speeds



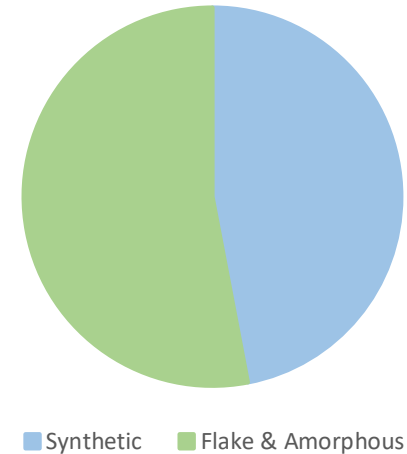
## Graphene which potentially has multiple applications:

- At one extreme graphene could replace plastic once scalable quantities can be produced and technology identifies more applications
- Current commercial products are sporting goods, resins, adhesives, lacquers and as conductive material in lithium-ion batteries

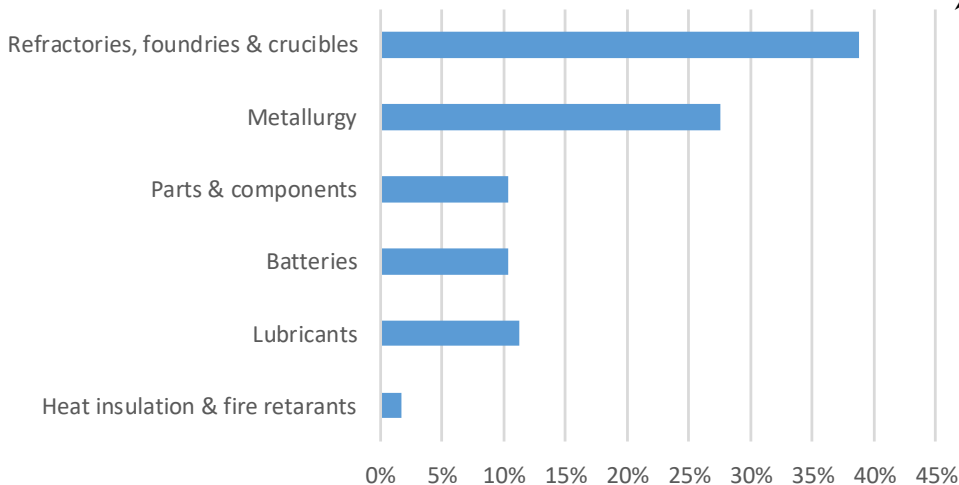
# Exploiting substitution opportunities in traditional markets

- In 2016, c. 2.2Mt of graphite was produced; synthetic graphite accounted for 47%
- Traditional heavy industries remained the dominant natural graphite consumers in 2016

Global supply of graphite 2016E



Natural graphite usage by sector 2016E



- Volt's main opportunity is synthetic graphite substitution in traditional markets:
  - Equal quality product but natural graphite has a materially lower price point; and
  - This dynamic is already happening in China according to industry sources

# Global marketing strategy delivers first binding off-take

- Inaugural binding off-take agreement for 5,000 tonnes over 5-years with US-based graphene producer, Nano Graphene Inc (NGI), commencing 1Q2018



- Volt won the mandate to supply its premium graphite concentrate because it:
  - has exceptionally high conductivity with and no deleterious elements; and
  - exfoliated graphite easily, facilitating lower graphene production costs
- Delivery will commence from 1Q2018 and management is reviewing production options, which include using third party processors

# IMPLICATIONS: Transition to producer status earlier than planned

- The NGI agreement transforms Volt's status to producer well ahead of budget
- From 1Q2018, cashflow starts from small scale mining and processing
- Several key benefits Volt can leverage from this binding agreement comprise:
  - Demonstrable evidence to prospective customers (especially in US/Europe) that Namangale concentrate meets strict technical standards;
  - Door opener to broaden the prospective global client network; and
  - Factor it into discussions with project finance institutions, particularly as it's the first US-based off-take deal for an east African graphite explorer

# The Namangale project's status: PFS completed; DFS underway

- PFS concludes Namangale project is financially attractive to progress – US\$1.3B pre-tax NPV and 1.4 year payback period
- Based on 3.8Mt ore processed annually @ 4.7% TGC with 1.4:1 strip ratio to deliver 170kt/y graphite over 22-year mine life
- DFS now underway with focus on finalising off-take agreements and project finance

| Parameter                       | Units          | Metric |
|---------------------------------|----------------|--------|
| IRR - before tax                | (%, real)      | 86.9%  |
| IRR - after tax                 | (%, real)      | 66.5%  |
| NPV @ 10.0% - before tax        | (US\$ M, real) | 1,310  |
| NPV @ 10.0% - after tax         | (US\$ M, real) | 890    |
| Payback period                  | (years)        | 1.4    |
| Mine life                       | y              | 22     |
| Nominal ore feed tonnes         | Mt             | 83.4   |
| Average grade TGC               | %              | 4.7    |
| Oxide ore                       | %              | 40     |
| Fresh and transition ore        | %              | 60     |
| Nominal strip ratio             | Waste : Ore    | 1.4    |
| Process throughput              | Mt/y           | 3.8    |
| Recovery                        | %              | 93     |
| Concentrate grade TGC (average) | %              | 95     |
| Average graphite production     | kt/y           | 170    |

*\*\* As described in ASX Announcement "Pre-Feasibility Study Completed dated 15 December 2016*

# Largest graphite Mineral Resource in Tanzania

➤ JORC compliant Mineral Resource Estimate is 461Mt @ 4.9% TGC

| Namangale Project                                                               | Tonnes (millions) | TGC %      |
|---------------------------------------------------------------------------------|-------------------|------------|
| <b>Inferred</b>                                                                 |                   |            |
| North                                                                           | 264               | 5.0        |
| South                                                                           | 23                | 3.6        |
| <b>Total Inferred</b>                                                           | <b>286</b>        | <b>4.9</b> |
| <b>Indicated</b>                                                                |                   |            |
| North                                                                           | 122               | 5.2        |
| South                                                                           | 33                | 4.3        |
| <b>Total Indicated</b>                                                          | <b>155</b>        | <b>5.0</b> |
| <b>Measured</b>                                                                 |                   |            |
| North                                                                           | 20                | 5.3        |
| <b>Total Resource</b>                                                           | <b>461</b>        | <b>4.9</b> |
| Note: Namangale North previously Nam 1 and Namangale South previously Nam 2 & 3 |                   |            |

**\*\* As described in ASX Announcement "Pre-Feasibility Study Completed dated 15 December 2016**

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.

# Maiden Ore Reserve largest of all development projects

➤ Maiden JORC Ore Reserve is 127Mt @ 4.4% TGC

| Ore Reserve Classification                                                      | Ore (Mt)     | TGC (%)     | Contained Graphite (Mt) |
|---------------------------------------------------------------------------------|--------------|-------------|-------------------------|
| <b>Proved</b>                                                                   |              |             |                         |
| Namangale 1 (North)                                                             | 19.3         | 4.32        | 0.8                     |
| Namangale 2 (South)                                                             | -            | -           | -                       |
| Namangale 3 (South)                                                             | -            | -           | -                       |
| <b>Subtotal – Proved</b>                                                        | <b>19.3</b>  | <b>4.32</b> | <b>0.8</b>              |
| <b>Probable</b>                                                                 |              |             |                         |
| Namangale 1 (North)                                                             | 95.8         | 4.40        | 4.2                     |
| Namangale 2 (South)                                                             | 6.4          | 5.11        | 0.3                     |
| Namangale 3 (South)                                                             | 5.8          | 3.05        | 0.2                     |
| <b>Subtotal - Probable</b>                                                      | <b>108.1</b> | <b>4.37</b> | <b>4.7</b>              |
| <b>Total Ore Reserve</b>                                                        | <b>127.4</b> | <b>4.36</b> | <b>5.6</b>              |
| Note: Namangale North previously Nam 1 and Namangale South previously Nam 2 & 3 |              |             |                         |

**\*\* As described in ASX Announcement "Pre-Feasibility Study Completed dated 15 December 2016**

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.

# Blended basket price based on two products

- Volt will produce two natural flake graphite concentrates, with Namangale South producing a premium quality larger flake product (as >60% flake distribution in large to super jumbo category)
- The blended basket price has been calculated at US\$1,684/t based on the weighted average of Namangale North and South

| Size  |             | Namangale 1 (North) |            | Namangale 2 (South) |        | Namangale 3 (South) |            |
|-------|-------------|---------------------|------------|---------------------|--------|---------------------|------------|
|       |             | Weight              | Price      | Weight              | Price  | Weight              | Price      |
| (µm)  | Label       | (%)                 | US\$/tonne | %                   | US\$/t | (%)                 | US\$/tonne |
| +500  | Super Jumbo | 1                   | 3,968      | 9                   | 3,968  | 5                   | 3,968      |
| 300   | Jumbo       | 13                  | 3,220      | 29                  | 3,220  | 26                  | 3,220      |
| 180   | Large       | 29                  | 2,070      | 29                  | 2,070  | 30                  | 2,070      |
| 150   | Medium      | 12                  | 1,389      | 8                   | 1,389  | 10                  | 1,389      |
| 75    | Small       | 27                  | 1077       | 16                  | 1077   | 19                  | 1077       |
| -75   | Fine        | 18                  | 403        | 9                   | 403    | 11                  | 403        |
| Total |             |                     | 1,594      |                     | 2,205  |                     | 2,032      |

*\*\* As described in ASX Announcement "Pre-Feasibility Study Completed" dated 15 December 2016*

# Attractive margins based on relatively low CAPEX and OPEX

## OPEX

- Annual OPEX US\$93M (US\$536/t FOB Mtwara) which delivers US\$195M EBITDA

## CAPEX

- Initial CAPEX US\$173M to build a fully integrated processing plant – this is relatively low due to Namangale's close proximity to existing infrastructure
- Sustaining CAPEX circa US\$4-5M/y

### Operating cost estimate summary

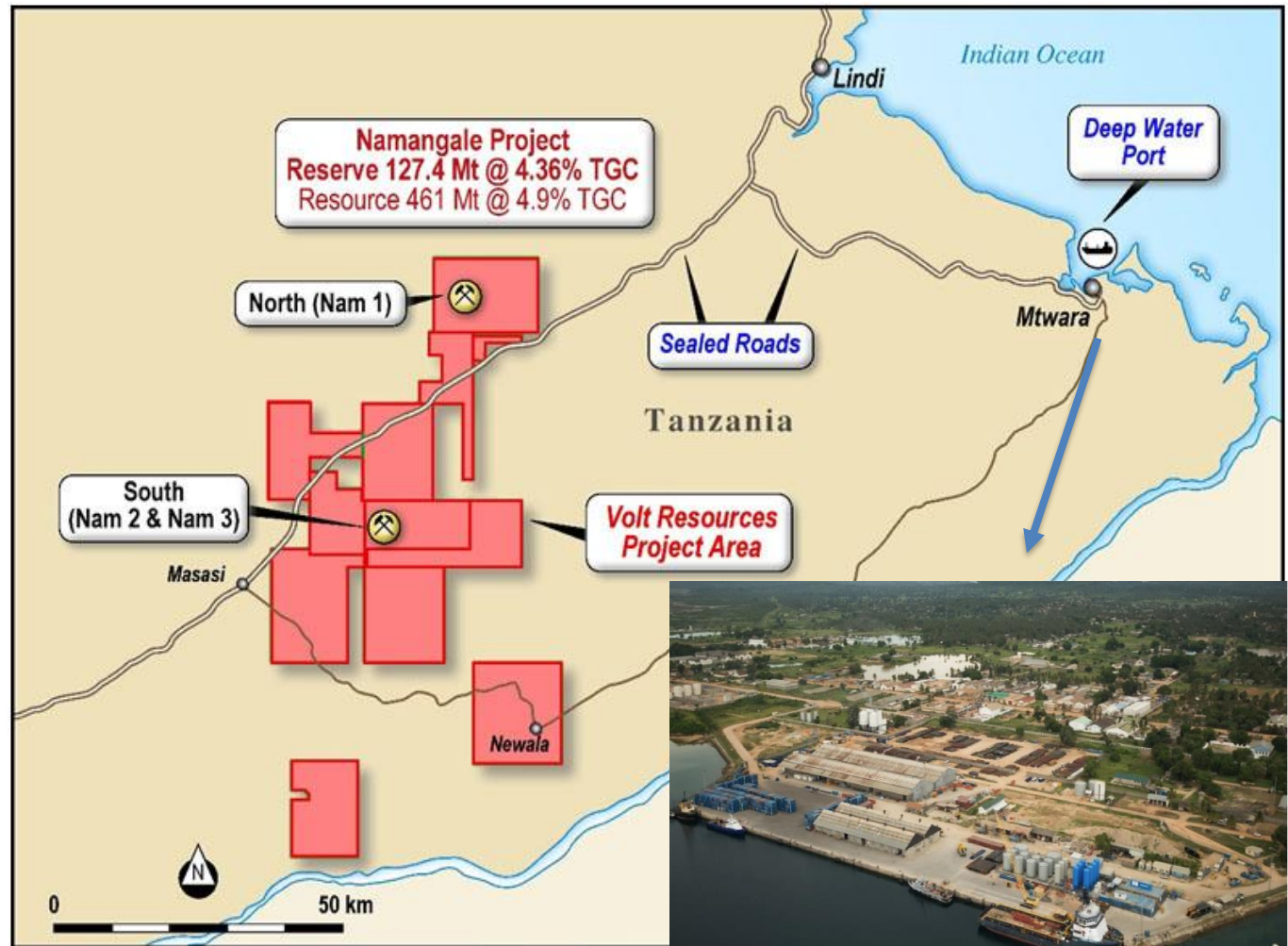
| Annual Operating Costs         | Total       | Product    |
|--------------------------------|-------------|------------|
|                                | (US\$M/y)   | (US\$/t)   |
| Technical Services and Mining  | 42.1        | 243        |
| Processing                     | 31.5        | 182        |
| Total General & Administration | 6.0         | 34         |
| Product Logistics              | 13.3        | 77         |
| <b>Total</b>                   | <b>92.9</b> | <b>536</b> |

### Capital cost estimate summary

| Description         | Capital Cost (US\$M) |
|---------------------|----------------------|
| Process Plant       | 65                   |
| Site Infrastructure | 54                   |
| Indirect Costs      | 53                   |
| <b>TOTAL</b>        | <b>173</b>           |

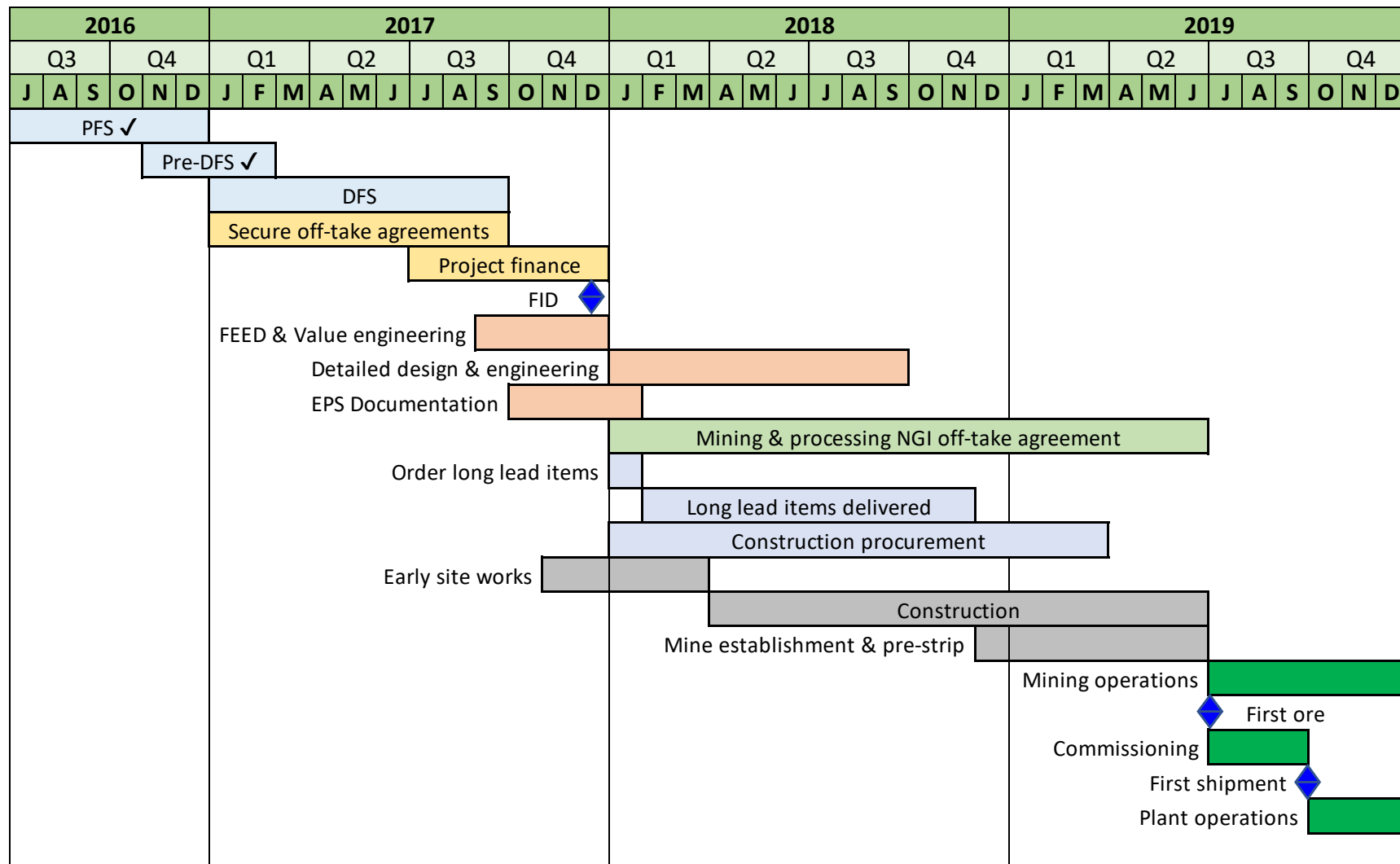
# The project's material comparative advantages

- Sealed roads through project
- Deep water port at Mtwara is 140km by sealed road from the Project and under-utilised
- Port land available for product storage
- Benefits concentrate product exports and imports of supplies, parts and equipment for construction and operations



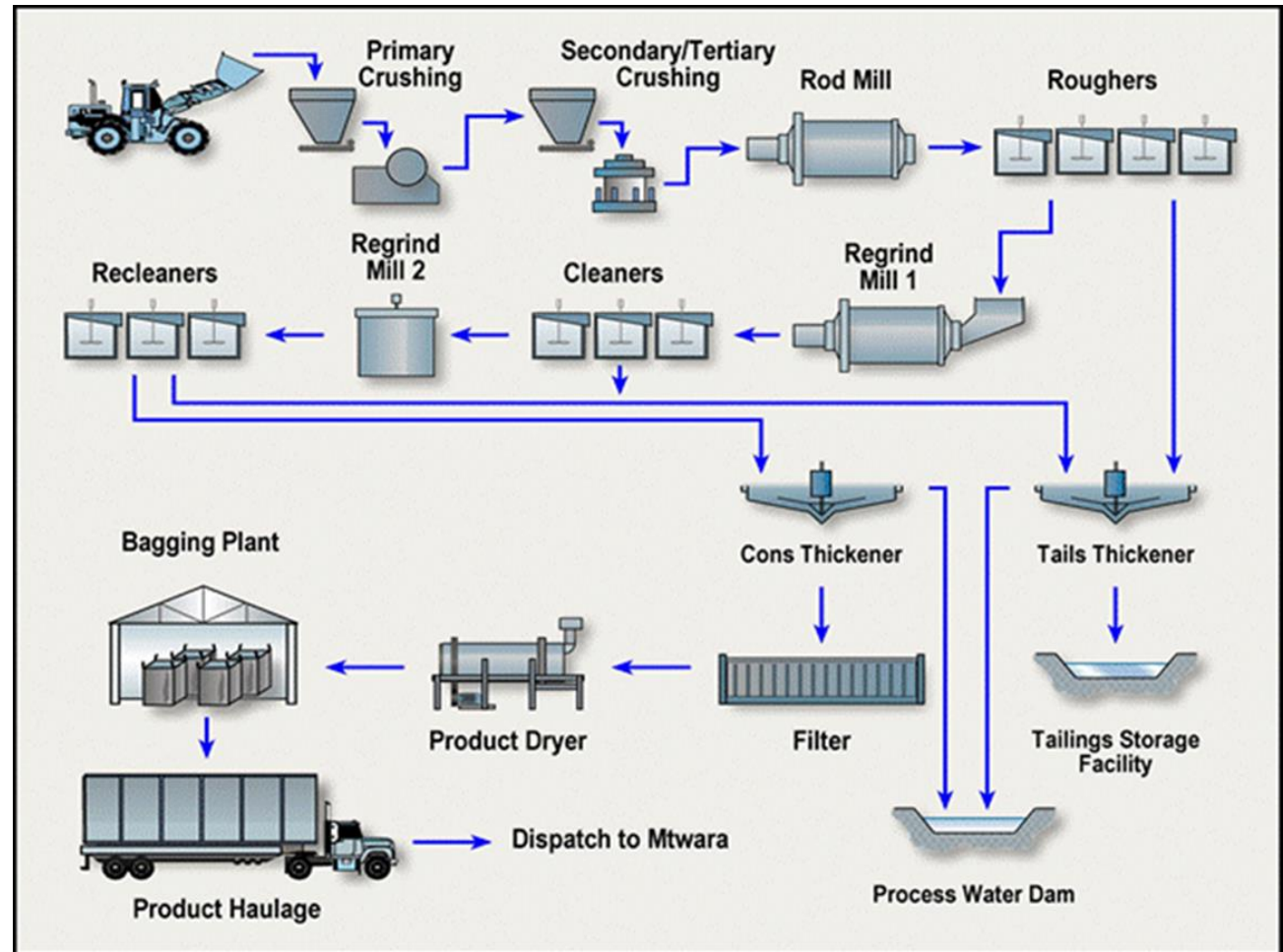
The Company confirms that it is not aware of any new information or data that materially affects the information included in this document and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. (Volt JORC Resource 286Mt Inferred, 155Mt Indicated, 20Mt Measured).

# 2017-19 action plan



# Processing and logistics plans taking shape

- Further work on optimising the mine schedule based on the Project's large reserve and resource base
- Review of mining methods to take advantage of the relatively shallow and continuous ore body
- Processing flow sheet design and equipment selection will be further developed during the DFS
- Optimise already strong logistics chain



# Process for securing environmental certificate progressing

- The first phase is completing the Environmental and Social Impact Assessment (ESIA) process which Volt's team and consultant in Tanzania are progressing

## Terms of reference

- Volt has advised the National Environmental Management Council (NEMC) of its plans and produced a scoping report
- NEMC has agreed terms of reference for a Environmental Impact Assessment

## Finalising submission

- Volt preparing draft Environmental Impact Statement (EIS) for lodgment with NEMC (includes stakeholder meetings)
- Upon receipt, NEMC will meet all stakeholders (government agencies, Volt's consultants, etc.) to prepare final EIS

## Approval

- Finalised EIS is lodged with Minister of Environment
- If approved, the Minister issues an environmental certificate

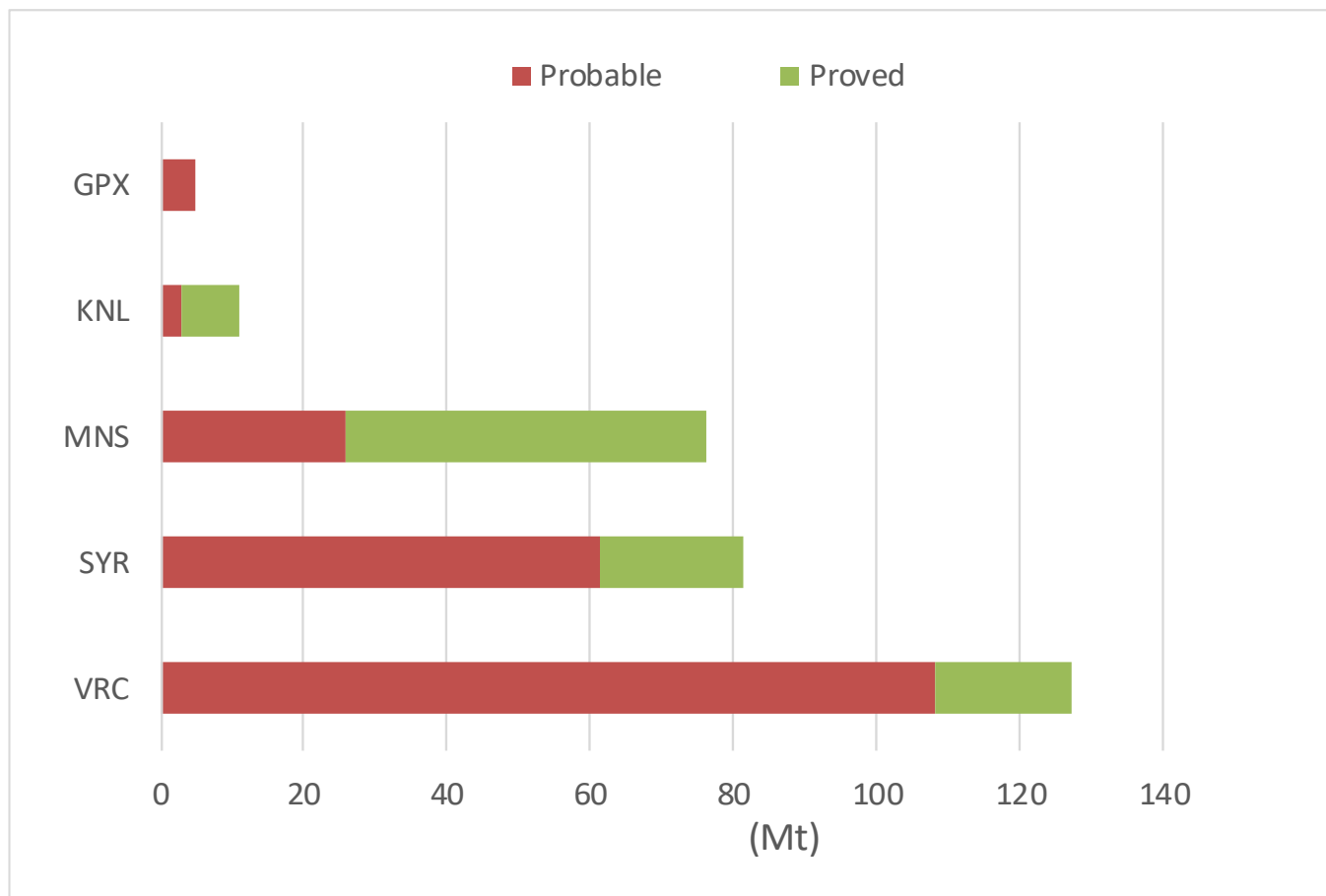
# Successful stakeholder meetings – integral part of the ESIA process

- Volt's CEO, Trevor Matthews was in Tanzania in late January to meet with officials from three levels of government and promote the Namangale project
- In addition, he participated in a stakeholder workshop and gained support for the project from key participants including villagers and their leadership
- Further meetings underway with regional government, community and landowners to advance the Relocation Action Plan to ensure Project land access



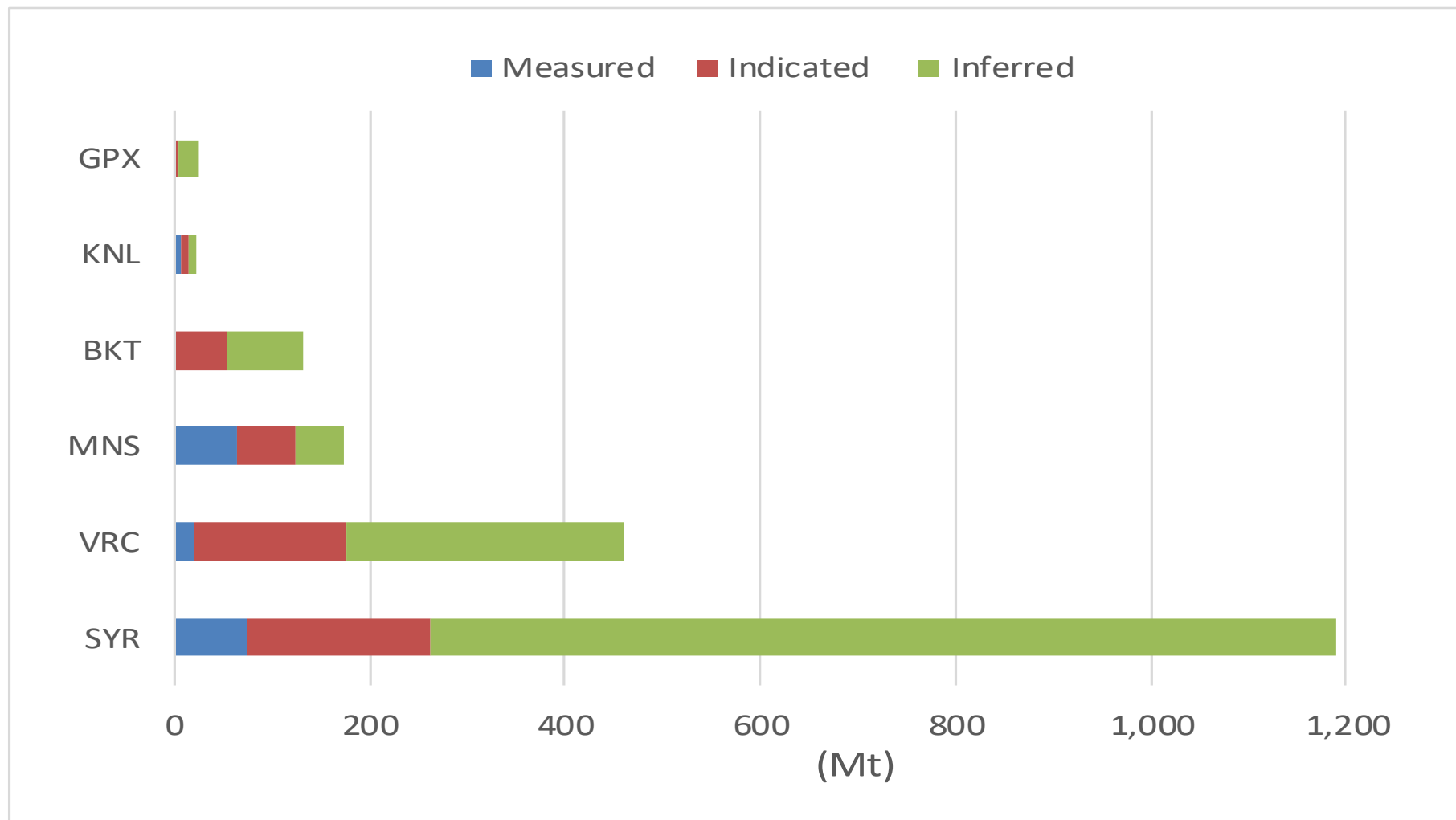
## Compared with peers, VRC has the largest Reserve...

- VRC has ample Reserves to scale up and meet the material projected jump in demand for spherical and expandable graphite over the next decade



Source: Company data (Note: BKT has not released its PFS yet)

## ... second largest Resource

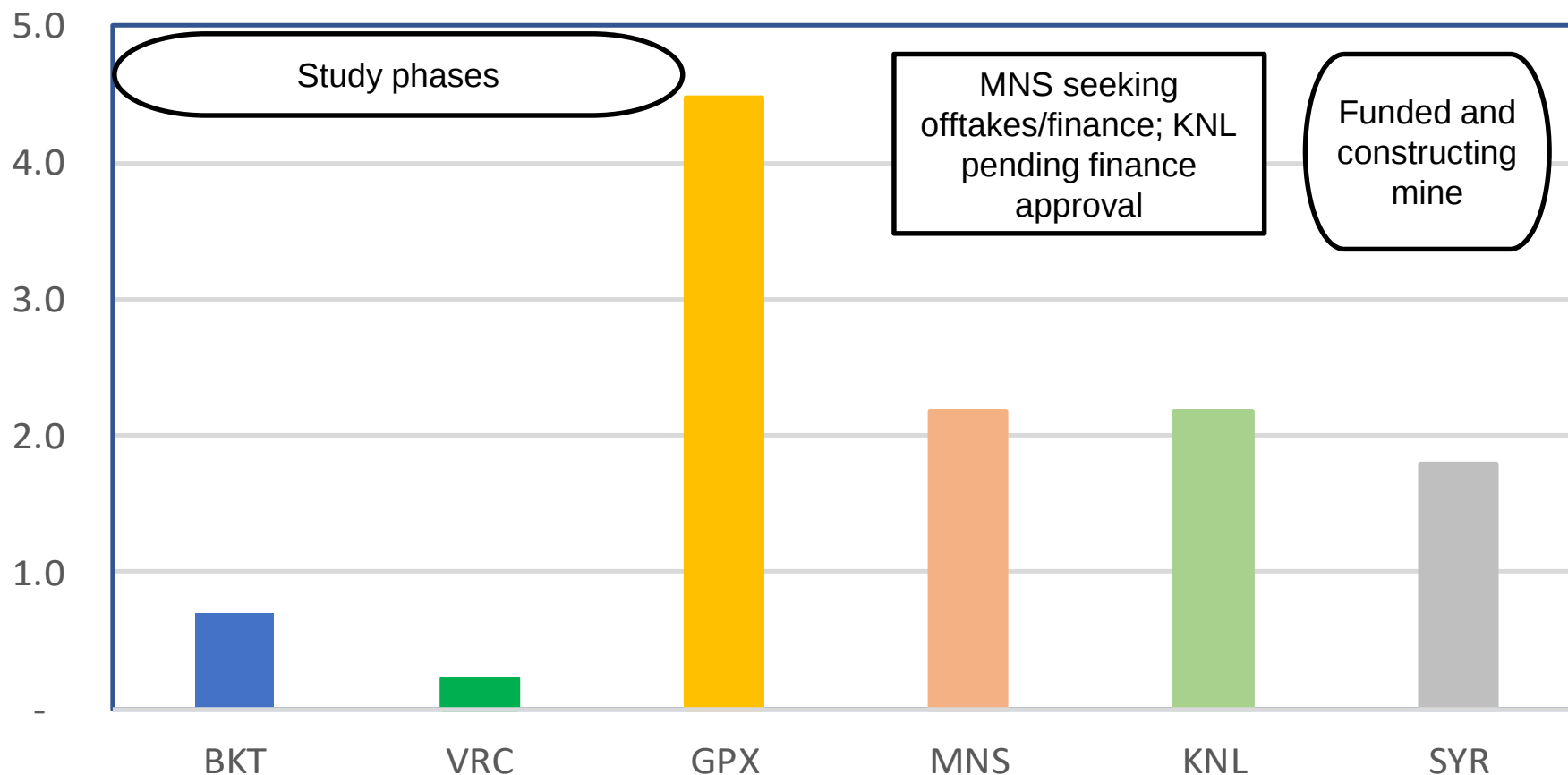


Source: Company data

## ...but, trades at lowest EV/(M&I Resource) multiple

- Highlights material upside as Namangale project is continually de-risked

EV/(Measured & Indicated Resource Tonnes) (x)



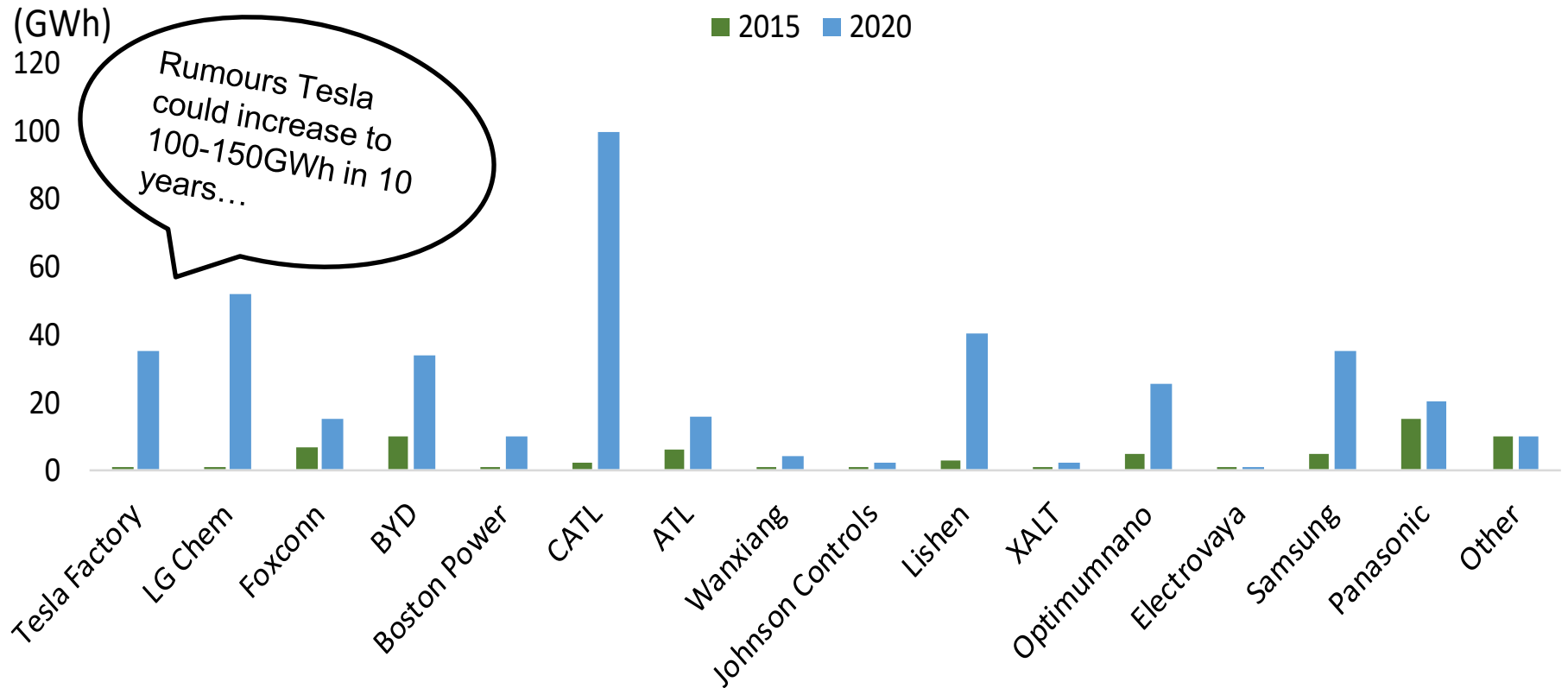
# Competitive advantages facilitate value creation

- Securing the binding agreement with US-based NanoGraphene transitions Volt to producer status much earlier than expected; provides considerable leverage with other prospective customers
- Three MOUs with leading Chinese battery and anode material producers equating to 100kt per year which management are targeting to convert to binding offtakes whilst progressing a diversified global marketing strategy
- PSF confirms high proportion of large to super jumbo flake graphite (>60%), large JORC compliant resource (461Mt @ 4.9%) and 170kt/y production
- Namangale graphite is high-quality with excellent conductivity and expandability, no deleterious elements and meets technical specifications for most applications
- Potential to earn high EBITDA margins given relatively low production costs due to low strip ratio and project's close proximity and access to transport infrastructure and high basket price
- High calibre management team with hands on graphite sector, project funding and development experience

# APPENDICES

# Appendix A: Global lithium-ion battery capacity by group

- Huge ramp up from 66GWh in 2015 and driven by >12 'gigawatt' facilities, costing >US\$20bn, coming on stream to meet projected lithium-ion battery demand



Source: Company reports and Volt Resources estimates

## Appendix B: The opportunity for natural graphite suppliers

- BMI stated China, which is the world's largest supplier at circa 800kt/annum, has hit 'peak natural graphite'...
  - Unlikely to meet internal spherical graphite needs, let alone global
  - Supply bottlenecks apparent for expandable graphite
  - Inadequate reserves of large, super and super jumbo sized flake
  - End users substituting natural graphite for synthetic graphite
- Significant opportunity for high quality natural graphite suppliers to enter the market relatively easily

# Emerging trend: Naturally sourced graphite preferred feedstock

- BMI's analysis suggests most end-users prefer natural graphite over synthetic:
  - Lower impact on the environment and lower cost to produce
  - Higher energy density and power output (applicable for EVs)
  
- Caveats:
  - Graphite product must have high purity
  - Preference for larger flake sizes
  - Supply must be consistent, reliable and scalable



# Appendix C: Tanzania has a well establish mining and service industry

## PESTEL analysis: Political stable and enjoying solid economic performance

|                      |                                                                                                                                                                                               |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Politics</b>      | <ul style="list-style-type: none"><li>➤ Relatively stable democracy since 1960s &amp; English speaking</li><li>➤ Strong and successful purge against corruption (IMF Apr 2016)</li></ul>      |
| <b>Economics</b>     | <ul style="list-style-type: none"><li>➤ Economic performance (GDP +7% 2015) impressive (IMF Apr 2016)</li><li>➤ Top sectors construction, communication, finance and transportation</li></ul> |
| <b>Social</b>        | <ul style="list-style-type: none"><li>➤ Harmonious and respectful society with strong cultural traditions</li></ul>                                                                           |
| <b>Technological</b> | <ul style="list-style-type: none"><li>➤ Undergoing a rapid change due to rise in GDP</li></ul>                                                                                                |
| <b>Environmental</b> | <ul style="list-style-type: none"><li>➤ Framework in place for environmental laws</li></ul>                                                                                                   |
| <b>Legal</b>         | <ul style="list-style-type: none"><li>➤ Common law system</li></ul>                                                                                                                           |



# **VOLT**

## RESOURCES

Volt Resources Limited ACN 106 353 253  
Level 5, London House, 216 St. Georges Terrace  
Perth WA 6000 Australia  
Phone: +61 (8) 9486 7788 Email: [info@voltresources.com](mailto:info@voltresources.com)  
Web: [www.voltresources.com](http://www.voltresources.com)