# Annual General Meeting

ASX:TLG 25 November 2021, Perth, Australia

talga

## Battery anode & advanced materials

Talga is building a European supply chain of advanced materials critical to our customers' innovation and the shift towards a more sustainable world

Vertical integration with 100% ownership of mineral resources, processing and product provides security of supply for customers and creates long-lasting value for stakeholders

Our strong in-house expertise spans mineral exploration and development, processing technology, product R&D and marketing







#### Global Operations

Group head office

Perth, Australia

Anode production & integrated graphite mine

Luleå & Kiruna, Sweden

Battery anode product & technology center

Cambridge, UK

Metallurgical process pilot facility & EU customer network

Rudolstadt, Germany

Commercial office & product development

Osaka, Japan



# Developing future technology

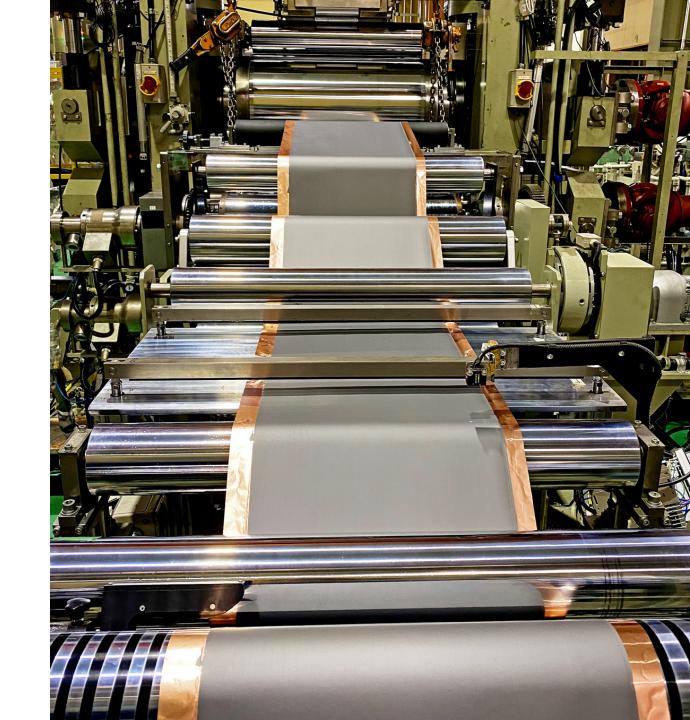
Market focused R&D and development of next generation battery and advanced materials for future commercialisation

- Fast-tracked decision for mass-producible Talnode®-Si silicon anode
- Continued development of solid state Talnode®-E battery anode technology
- CALIBRE cathode additive program
- ✓ Talphene® graphene product development across numerous commercial customer programs and in co-funded research projects



## Silicon Anode: Talnode®-Si

- For higher energy density sought by customers battery roadmaps
- Particle design enables a range of loadings
   in existing commercial anode blends
- Graphene silicon composite electrode additive focused on high volume production processes
- EV and 3C customer testing and scale-ups underway
- Intellectual Property applications lodged



## Solid State: Talnode®-E

- Solid state batteries suffer a range of technical and commercial issues, particularly for larger applications (EVs)
- Talga is developing a graphitic-metal composite for easier processability, safer handling, scalable industrial manufacturing and lower costs



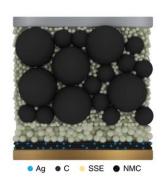
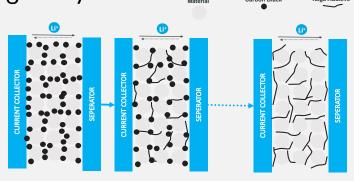


Illustration not Talga specific approach. Source: 2020 Lee et al (Samsung) High-energy long-cycling all-solid-state lithium metal batteries enabled by silver–carbon composite anodes)

## Conductive Cathode Additive

- 12-month ATF-Innovate UK funded feasibility program to evaluate Talga materials as conductive Li-ion battery cathode additives
- ▶ Includes technical feasibility /performance testing along with commercial feasibility, market and pricing analysis
  Active
  Carbon Black
  Talon Add

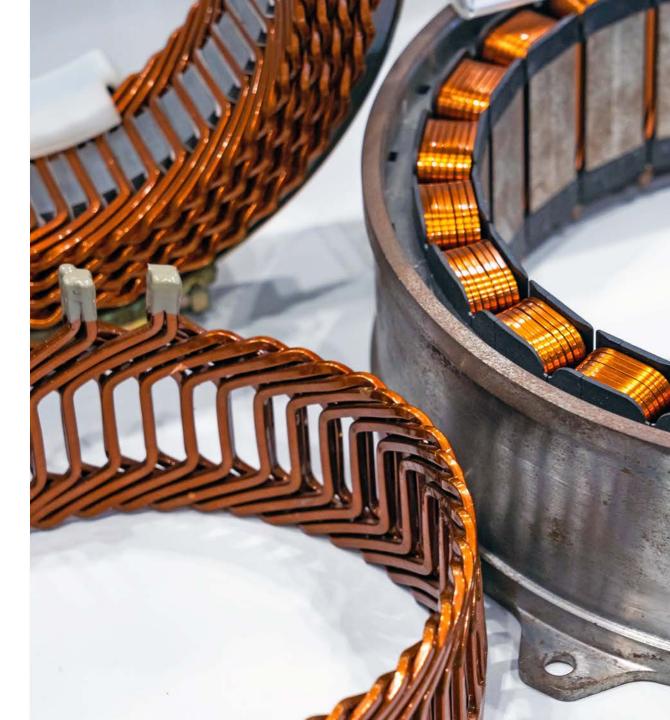


Project Approach: Evaluate Talga product partially and fully replacing incumbent additives



## Graphene Product Development

- Functionalised fit-for-purpose Talphene® additives for global large volume applications with performance and sustainability key drivers
- Applications include:
  - anticorrosion and antibacterial coatings
  - food packaging
  - rubber and plastics
  - batteries
  - metal alloys
  - construction materials
- Approval from the European Chemicals Agency (ECHA), under the EU's REACH regulations to commercially manufacture up to 10 tonnes of graphene per annum





## Production process innovation

Production processes tailored to maximise benefits of unique graphite source

- ✓ US patent for integrated mining method and electrochemical exfoliation process
- ✔ Proprietary Talga anode coating technology developed with feedback from auto OEMs
- ✓ Talga's fully funded Swedish Electric Vehicle Anode qualification on track for Q1 2022 full commissioning
- ✓ Graphene and 3C / ESS battery anode sample production at German pilot facility





#### Electric Vehicle Anode Plant

- First coated anode production plant in Europe (Luleå, Sweden)
- Critical step in progressing automotive OEM procurement processes
- Plant will produce active anode material for EV batteries at large-scale quantities aligned with customer requirements
- Milestone installation of first anode coating equipment achieved
- ▶ Full commissioning on track for Q1 2022







## Rudolstadt Pilot Processing Facility

- Piloting of process technologies and production of customer qualification samples outputting advanced material additives (Talphene®) and battery materials (Talnode®)
- Milling, exfoliation and concentration processing lines with filter and drying stages, mixing, coating and packaging.
- Product quality control laboratory and coating testing facility
- REACH and ISO certified

## Exploring for sustainable growth

Strategic exploration activities to underpin potential future expansions of anode and advanced materials business

- 2021 phase of Niska Trial Mine successfully completed providing feed material for EVA plant
- SkyTEM geophysical survey show Vittangi
  Graphite Project units to be more continuous
- ✓ Extensive drilling program initiated across
   ✓ strategic graphite targets to support resource
   ✓ growth and production expansions plans
- High-grade graphite intercepted across initial 2021 drill holes aiding preparation for mine establishment





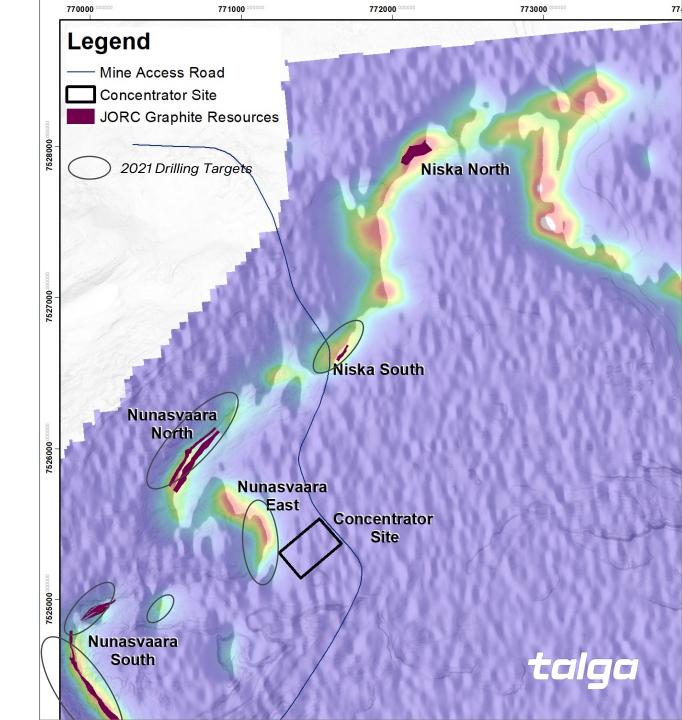
## 2021 Trial Mining: Niska South

- ▶ Permitted 25,000 tonnes of feed ore for subsequent refining into Talnode®-C to be used in large scale production testing for the EV supply chain
- First ~2,500 tonne phase successfully completed with raw material stored for processing and refining
- Exploitation concession applications for the Niska expansion submitted to Swedish authorities earlier this year



# 2021 Exploration and Drilling Campaign

- Market growth for anode drives exploration
   to define more resources and grow reserves
- Completed SkyTEM geophysical survey reveals Vittangi graphite-bearing units more continuous than previously recognised
- Significant new high-grade target identified near planned mill called Nunasvaara east
- Drilling of extensions of resources and new targets completed with first results received
- Initial 6 holes intercept high-grade graphite in DFS starter pit (Pit 4) with results to guide optimisation





## Sustainability is at our core

Supplying green products that have a role in a cleaner future is not enough; we need to do so sustainably

- ✓ Emissions Scope 1-3 LCA on Talnode®-C production completed by Hitachi ABB
- ✓ Environmental and Social Management System under development
- ✓ Inaugural Sustainability and People report published as part of 2021 Annual Report
- ✓ Committed to EU Principals for Sustainable Raw Materials

ASX:TLG 25 OCT 2021, 12 AUG 2021



#### Li-ion Battery Anode: Talnode®-C

Near term production plans focused on Talga's flagship lithium-ion battery anode product Talnode®-C

- Highly engineered graphite anode material with ultra-low CO2 emission profile
- Excellent charging performance at high load and low temperature
- ✓ High rate and excellent capacity retention (>90%)

  during fast charging
- ✓ Effective for applications that require a higher rate(> 10C) such as for PHEVs and HEV



### Talnode®-C Product Offering

- Designed to operate both as a 100% replacement of synthetic anodes and a drop-in performance additive
- Product offering dependent on customer requirements
- ▶ Talga is seeking to partner with the cleanest synthetic graphite anode producers with commercial alignment to serve global customer demand for blends and to maximise market opportunities

## Sales and Distribution

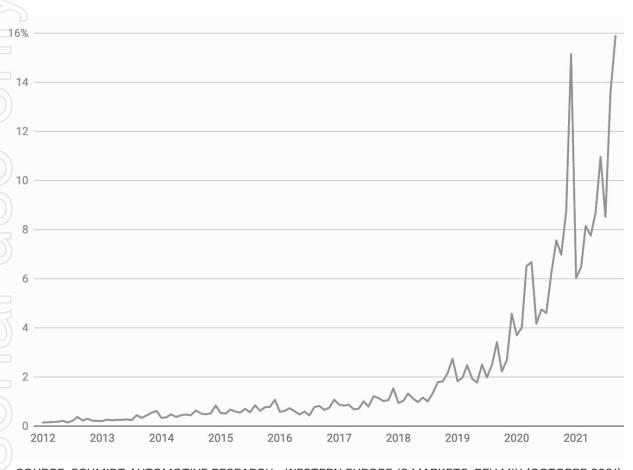
- Sales managers employed across strategic regions including UK and Western Europe, Nordics and Central Europe, Japan and Hong Kong
- Globally recognised ISO 9001:2015 certification awarded for current stage production and distribution of graphite and graphene products
- Recruitment of production quality controllers for the EVA plant underway
- Broader quality assurance program being implemented across Talga's operations in preparation for commercial production



To enable the world's most sustainable batteries and consumer products through innovative graphitic materials

#### EV sales driving battery boom

Battery and Hybrid EV sales and market penetration rates now rapidly increasing



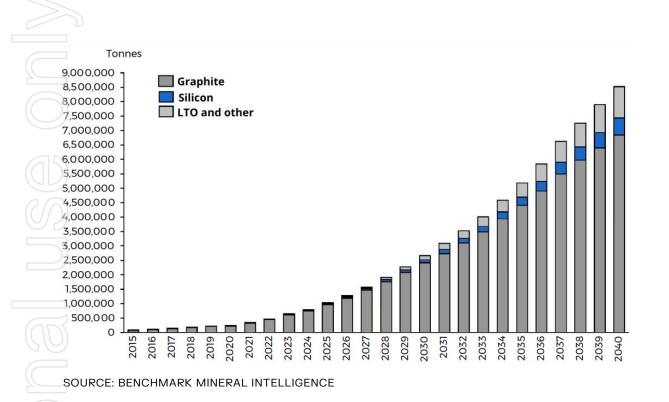


SOURCE: SCHMIDT AUTOMOTIVE RESEARCH - WESTERN EUROPE 18 MARKETS, BEV MIX (OCTOBER 2021).



#### Resulting in immense new anode demand

Battery demand will drive multi-decadal growth for anode and disrupt supply chains



Current EV anodes are predominantly synthetic graphite but natural anode increasing market share due to favourable environmental footprint and rising cost of synthetic feedstock

Silicon will be additive to graphite-dominant blends

New technologies (solid state) expected to take time to commercialise and will see limited mainstream uptake due to cost and manufacturing limitations



## Talga is building a fully integrated battery anode supply chain in Sweden

Initial 19,500tpa of coated anode production from 2024 using clean renewable energy and high grade, responsibly extracted natural graphite from Talga's Vittangi project



# ersona

#### Vertically Integrated Anode Production - Sweden





# Inherent project advantages

- Highest grade graphite JORC resource
- Exceptional anode yield (90%+)
- Located in Tier-1 investment jurisdiction
- → Access to sustainable low-cost power
- Proximal to the European EV supply chain

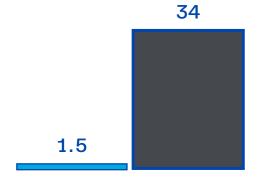


#### Enabling green electrification

Batteries are crucial to reducing greenhouse gas emissions, and green batteries require green anodes



Graphite anode represent up to 40-50% volume of the active materials in Li-ion batteries



LCA<sup>1</sup> results show Talga anode production emits 96% less CO<sub>2</sub>-eq when compared to incumbent EV material



Equaling -2.9 tonnes CO<sub>2</sub> reduction per EV produced<sup>2</sup>



Talnode®-C Life Cycle Assessment results presented in Talga ASX release on 12 August 2021.

Assumes 76.5KwH battery pack being average of VW ID.4 1st and Tesla Model 3 Performance. Note: 1KWh = 1.2Kg anode (Source: Benchmark Mineral Intelligence report).

**Previous targets** 

Chart: The Glasgow Declaration on Zero Emission Cars and Vans

by 2030

by **2035** 

SOURCE: Rho motion



by **2030** 

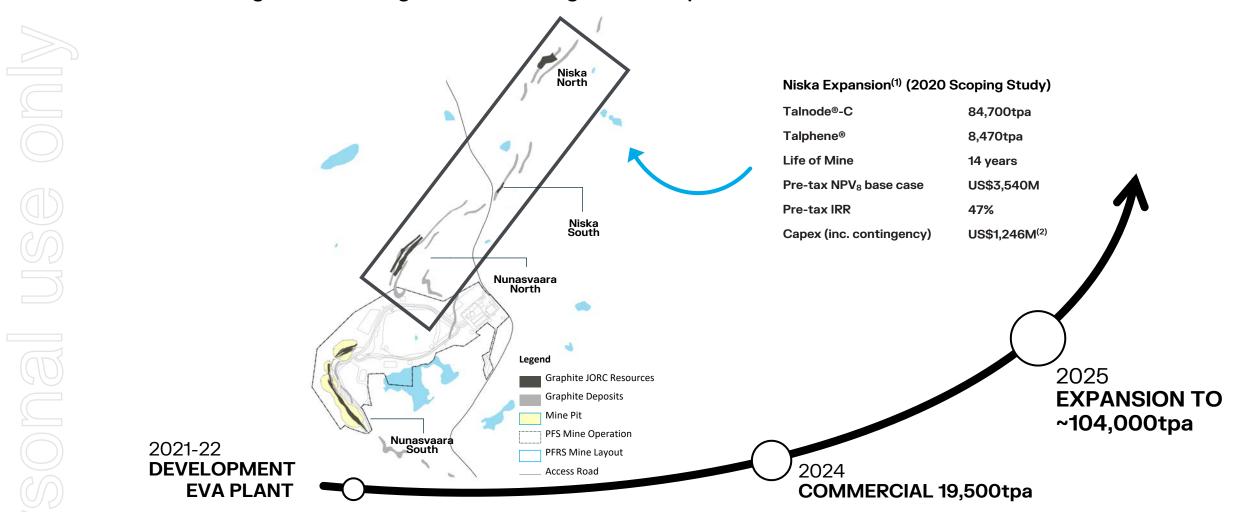
None

by **2030** 

by 2030

#### Path to >100,000tpa anode production

Niska adds to Vittangi to make Talga one of the largest anode producers outside China



## Talga partnerships for a greener future

Working with respected battery customers and technology and development partners





































euro**mines** 







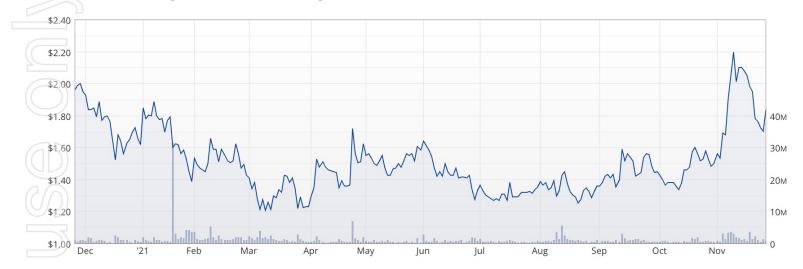




SEE: ASX:TLG 30 OCT 2015 and 5 FEB, 26 MAR, 4 SEP 2018 and 15 JAN, 2 OCT, 8 OCT, 24 OCT 2019 and 31 JAN, 20 MAR, 13 MAY, 27 MAY, 24 JUNE, 2 NOV, 24 NOV 2020 and 22 JUN, 28 JUN 2021.

## Corporate Overview

#### **ASX:TLG (12 MONTHS)**



#### STOCKMARKET CODES/TICKERS

Primary listing in Australia on the ASX (TLG) with OTC trading in Germany (TGX) and US (TLGRF)

#### **CAPITAL STRUCTURE**

ASX Listing Code: TLG
Market Capitalisation: \$519.5M
Listed Shares: 304.7M
Unlisted Options: 13.4M (1)
Cash as at 30 September 2021: \$46.0M

#### MAJOR SHAREHOLDERS

Total number of shareholders	11.168
TOP 20 SHAREHOLDERS	30.0%
Charles Schwab & Co. Inc	1.7%
UBS Securities Australia	2.0%
UBS AG	2.1%
Kinetic Investment Partners	4.4%
Mark Thompson – M. Director	4.7%





## Growing for the Future

#### Upcoming catalysts and milestones

- EVA plant production and completion of customer qualifications
- Permitting of Nunasvaara South graphite mine and advanced Niska expansion permits
- Project financing and JV's
- ✓ Balance of drilling results and subsequent resource and reserve upgrades
- Finalisation of silicon anode production strategy and manufacturing sites
- Customer orders for key graphene products





TALGA GROUP LTD

ASX Code: TLG

**Group Head Office:** 

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**Phone Number:** 

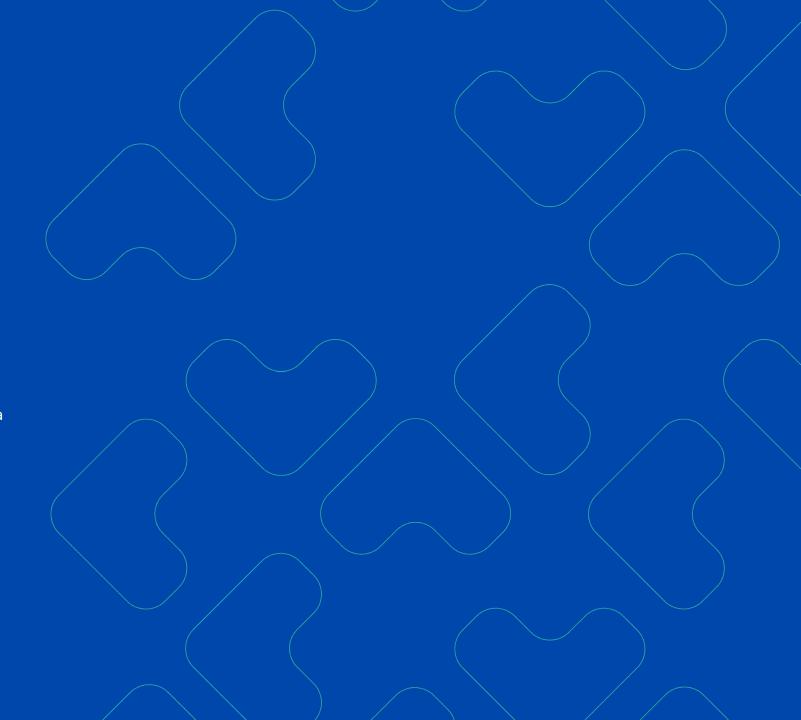
+61 8 9481 6667

**Email Address:** 

info@talgagroup.com

Website:

www.talgagroup.com



#### JORC Graphite Reserve and Resources

Ore Reserves	Tonnes	Graphite (% Cg)
Nunasvaara (JORC 2012)	2,260,140	24.1
Probable	2,260,140	24.1

Mineral Resources 1,2,4,5,7,8,9	Tonnes	Graphite (% Cg)
Vittangi Nunasvaara (JORC 2012)	14,900,000	23.4
Indicated	10,400,000	25.6
Inferred	4,500,000	18.3
Vittangi Niska (JORC 2012)	4,600,000	25.8
Indicated	4,600,000	25.8
Jalkunen (JORC 2012)	31,500,000	14.9
Inferred	31,500,000	14.9
Raitajärvi (JORC 2004)	4,300,000	7.1
Indicated	3,400,000	7.3
Inferred	900,000	6.4
Total Mineral Resources	55,300,000	17.5

NOTE:

- 1. MINERAL RESOURCES ARE INCLUSIVE OF ORE RESERVES.
- 2. MINERAL RESOURCES ARE REPORTED AT VARIOUS CUT OFF GRADES: NUNASVAARA AND NISKA 10%Cg, JALKUNEN 5%Cg AND RAITAJÄRVI 5%Cg.
- 3. ORE RESERVE IS REPORTED AT A CUT OFF GRADE OF 12%Cg.
- 4. ERRORS MAY EXIST DUE TO ROUNDING.



### Competent Person Statements

The Niska Mineral Resource estimate was first reported in the Company's announcement dated 15 October 2019 titled 'Talga boosts Swedish graphite project with maiden Niska resource'. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the Resource estimate in the previous market announcement continue to apply and have not materially changed.

The Nunasvaara Mineral Resource estimate was first reported in the Company's announcement dated 17 September 2020 titled 'Talga Boosts European Natural Graphite Resources'. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the Resource estimate in the previous market announcement continue to apply and have not materially changed.

The Nunasvaara Ore Reserve statement was reported in the Company's announcement dated 1 July 2021 titled 'Robust Vittangi Anode Project DFS'. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the Reserve estimate in the previous market announcement continue to apply and have not materially changed.

The Jalkunen Mineral Resource estimate was first reported in the Company's announcement dated 27 August 2015 titled 'Talga Trebles Total Graphite Resource to Global Scale'. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the Resource estimate in the previous market announcement continue to apply and have not materially changed.

The Raitajärvi Mineral Resource estimate was first reported in the Company's announcement dated 26 August 2013 titled '500% Increase to 307,300 Tonnes Contained Graphite in New Resource Upgrade for Talga's Swedish Project'. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the Resource estimate in the previous market announcement continue to apply and have not materially changed.

The Company first reported the production targets and forecast financial information referred to in this presentation in accordance with Listing Rules 5.16 and 5.17 in its announcement titled 'Robust Vittangi Anode Project DFS' dated 1 July 2021. The Company confirms that all material assumptions underpinning those production targets and forecast financial information derived from those production targets continue to apply and have not materially changed.

The Information in this announcement that relates to prior exploration results for the Vittangi graphite project is extracted from ASX announcements available to view on the Company's website at www.talgagroup.com. The Company confirms that it is not aware of any new information or data that materially affects the exploration results included in the relevant original market announcements. The Company confirms that the form and context in which the Competent Person and Qualified Person's findings are presented have not been materially modified from the relevant original market announcements.

