talga

ASX Release
31 May 2024

ASX:TLG

Vittangi Anode Project Expansion: Interim Scoping Study paves way to scale

Battery materials and technology company Talga Group Ltd ("**Talga**" or "**the Company**") (**ASX:TLG**) is pleased to report on a completed mining study into expansion options for the Company's Vittangi Graphite Project in Sweden ("Interim Report").

The mining study forms part of a wider integrated Scoping Study aimed at expanding Talga's existing initial 19,500 tonnes anode per annum ("tpa") production of low-emission graphite anode products for lithium-ion battery markets.

The scoping of expansion options arises from the growing demand profiles of the Company's battery and EV customers, and the strong global market outlook for new and secure sources of lithium-ion battery materials. Highlights of the Interim Report include:

- Optimised underground mining method developed with circularity design principles to minimise project footprint and lower environmental and social impacts
- Mine plans supporting 0.6Mtpa, 1.0Mtpa and 2.0Mtpa Run of Mine ("RoM") ore production from existing Indicated and Inferred* JORC resources of 35.0Mt at 23.8%Cg

  ** There is a low level of geological confidence associated with Inferred mineral resources and there is no certainty that further exploration work will result in the determination of Indicated mineral resources or that the production target itself will be realised.*
- Anode precursor concentrate output up to ~425,000tpa at a mining rate of 2Mtpa
- Transition to underground mining and optimised development plan negates need for multiple open pits, with potential to increase life of mine beyond 40 years at lower 0.6Mtpa mining rate
- Development leverages the region's large-scale underground mining fleets, technologies, ancillary industries and skilled workforce
- Transport, water and power studies show technical viability. Preferred options to be determined by further downstream processing, permitting and social licence considerations
- Talga will conduct further environmental and social studies through 2024, including a dialogue process with the Vittangi community, indigenous peoples, neighbouring landowners and local municipality
- Scoping Study completion, encompassing downstream anode refinery expansions and incorporation of Talga's proprietary graphite recycling technology, targeting Q4 2024
- Exploration activities planned with aim to move existing exploration target of 240-350Mt at 20-30% graphite to mineral resource estimates to support future studies with a view to extend mine life

Talga Group CEO, Martin Phillips, commented: *"Our large-scale Swedish graphite project is a key alternative source of strategic raw materials to support the EU's ambitions and the demand from key export markets. The completed mining study underpins the Scoping Study underway to outline expansion options to supply the global battery anode market beyond our initial 19,500tpa project."*

Talga Group Ltd
ABN 32 138 405 419
ASX: TLG

Suite 3.03, Level 3,
46 Colin Street
West Perth 6005
Australia

info@talgagroup.com
+61 8 9481 6667

www.talgagroup.com
Talga Group
@Talga_Ltd

For personal use only

For personal use only

Cautionary Statements – Interim Report to Scoping Study

The mining study referred to in this Interim Report is a preliminary technical and economic study of the potential viability of developing an underground mining strategy for the Nunasvaara and Niska graphite deposits as part of a Scoping Study into constructing an integrated mining and refining operation to produce Talga's anode products for lithium-ion batteries. The mining study was completed to an overall ± 50% accuracy consistent with best practise and is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves or to provide assurance of an economic development case.

Completion of the Scoping Study, further evaluation work and more detailed studies are required before the Company will be in a position to estimate any ore reserves or to provide any assurance of an economic development case or certainty that the conclusions of the mining study will be realised.

The mining study is based on the material assumptions outlined below. These include assumptions about the availability of funding. While the Company considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Interim Report will be achieved. To achieve the range of outcomes indicated in the Interim Report, capital funding in the order of €520 - €1,100 million plus contingencies may be required. Investors should note that there is no certainty that the Company will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce the Company's proportionate ownership of the deposits covered by the mining study. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Interim Report.

More than 76% of the production target referred to in this announcement is based on Indicated Mineral Resources and less than 24% is based on Inferred Mineral Resources at a 12.5%Cg cut-off-grade. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

Study Team and Contributors

The 2024 Scoping Study ("the Study") is being compiled in-house with the support of independent mining and processing consultants.

The Study is underpinned by the already completed Vittangi Anode Project Detailed Feasibility Study ("DFS") and front-end engineering and design ("FEED") (ASX:TLG 1 July 2021 and 15 April 2024) where reputable contributors participated towards the reported outcomes. A selection of the Vittangi Anode Project DFS and FEED contributors include: Golder Associates, Worley, ABB, Sweco, Centre Terre et Pierre (CTP), SLR Consulting, GTK and Core Resources.

This Interim Report is not a complete Scoping Study and therefore does not include detailed financial modelling. These will be provided in the final Scoping Study report, following integration of outcomes developed through anode refinery studies. Talga is considering a range of refinery options and locations to optimise its anode material production.

For personal use only

Geology and Mineral Resources

The geology of the Vittangi Graphite Project area, which hosts the Nunasvaara and Niska deposits, is dominated by greenstones (basalts to andesites), metasediments (quartzite, schist, marble) and metadolerites which form part of the Vittangi Greenstone Group.

The formation of the Vittangi Greenstone Group is restrained to the Paleoproterozoic era, with the graphite mineralisation potentially 1.8-2.0 billion years of age. Stratiform to stratabound graphite mineralisation occurs at Nunasvaara and Niska as two individual, sub-vertical 5-70m wide lithologically continuous units of very fine-grained grey to black graphite rock units containing up to 50% graphitic carbon as highly-crystalline, ultra-fine flakes.

The mining study is based on Talga's Vittangi Mineral Resource Estimate (ASX: TLG 6 October 2023) which comprises 35 million tonnes ("Mt") Indicated and Inferred JORC resources at 23.8% graphite ("Cg") and is reported in Table 1 below.

Table 1 *Total Vittangi Project Graphite Mineral Resources.*

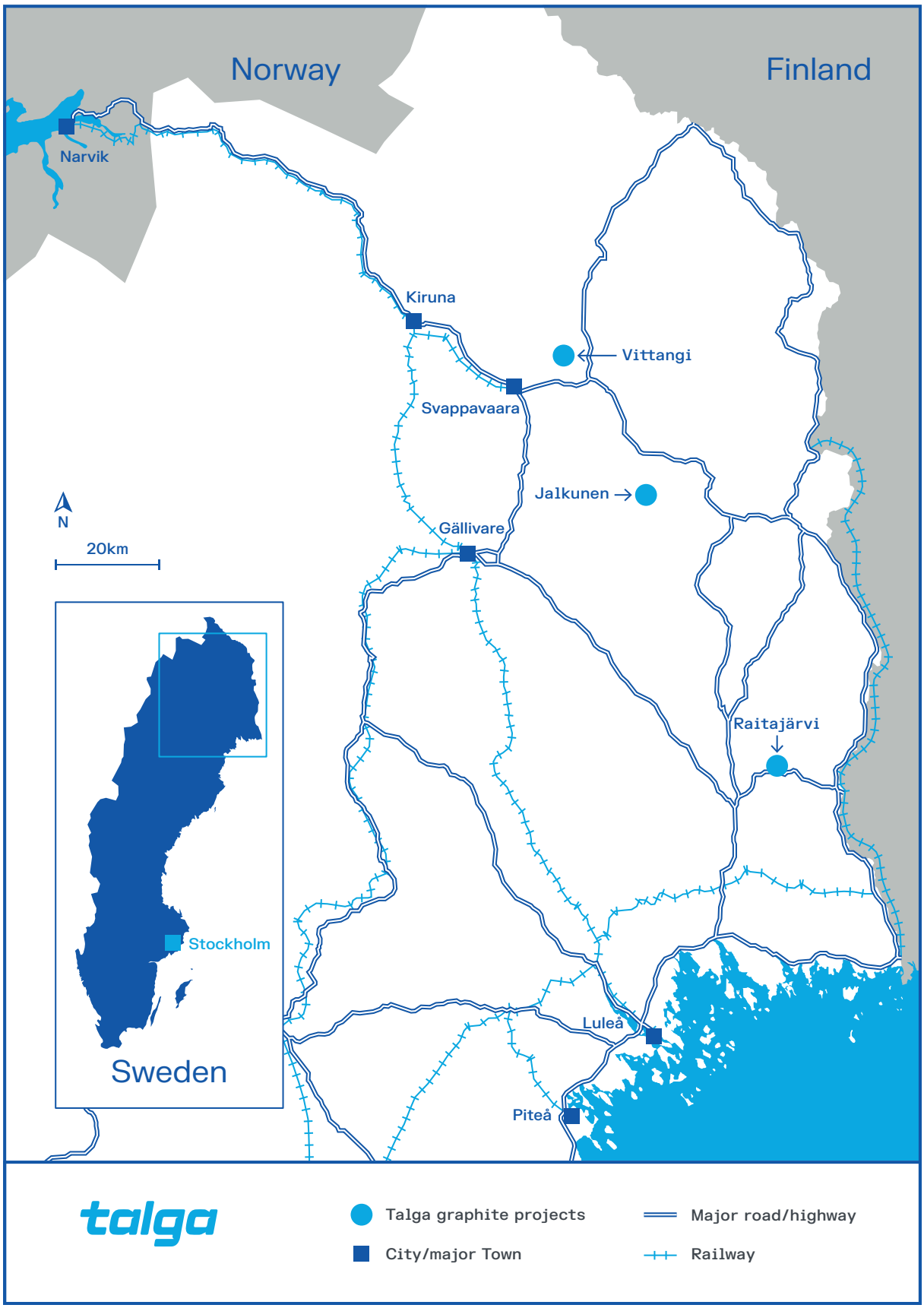
Deposit	Resource Category	Tonnage (t)	Graphite (%Cg)	Contained Graphite (t)
Nunasvaara South	Indicated	8,406,000	25.0	2,101,000
	Inferred	2,737,000	24.5	671,000
Nunasvaara North	Indicated	4,138,000	27.6	1,142,000
	Inferred	1,464,000	17.2	252,000
Nunasvaara East	Indicated	2,942,000	23.5	692,000
	Inferred	1,466,000	23.0	338,000
Niska North	Indicated	7,503,000	23.3	1,745,000
	Inferred	1,621,000	23.0	373,000
Niska Link	Indicated	974,000	17.5	171,000
	Inferred	815,000	20.3	165,000
Niska South	Indicated	2,728,000	23.1	631,000
	Inferred	225,000	19.7	44,000
Total	**Indicated**	**26,691,000**	**24.3**	**6,482,000**
	Inferred	**8,329,000**	**22.1**	**1,844,000**
Total	**Indicated & Inferred**	**35,020,000**	**23.8**	**8,326,000**

Notes: *1. All Mineral Resources have been reported in accordance with the 2012 JORC Code reporting guidelines. 2. Mineral Resources are reported within preliminary pit shells and above a cut-off grade of 12.5%Cg. 3. Mineral Resources are estimated using a graphite price of US$5,000/t. 4. Mineral Resources that are not Ore Reserves do not have demonstrated economic viability. 5. Average bulk density is 2.67t/m^3. 6. Numbers may not add due to rounding.*

In parallel Talga has planned exploration activities with the aim to move existing exploration target of 240-350Mt at 20-30%* graphite to mineral resource estimates to support future studies with a view to extend mine life (ASX:TLG 16 May 2024).

** Note that the potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.*

Figure 1 *Location map of Vittangi Graphite Project in northern Sweden.*



For personal use only

For personal use only

Mining Study

The mining study has focused on expansion through underground mining and a Scoping Study aimed at expanding Talga's existing initial 19,500tpa anode refinery production is being completed. Mine design has been completed in-house using DESWIK mine design software and with additional input from mining consultant Neil Hepworth (Chartered Engineer, UK). The mining study has considered that only Pit 4 from the 19,500tpa Vittangi Anode Project is mined with remaining pits unmined.

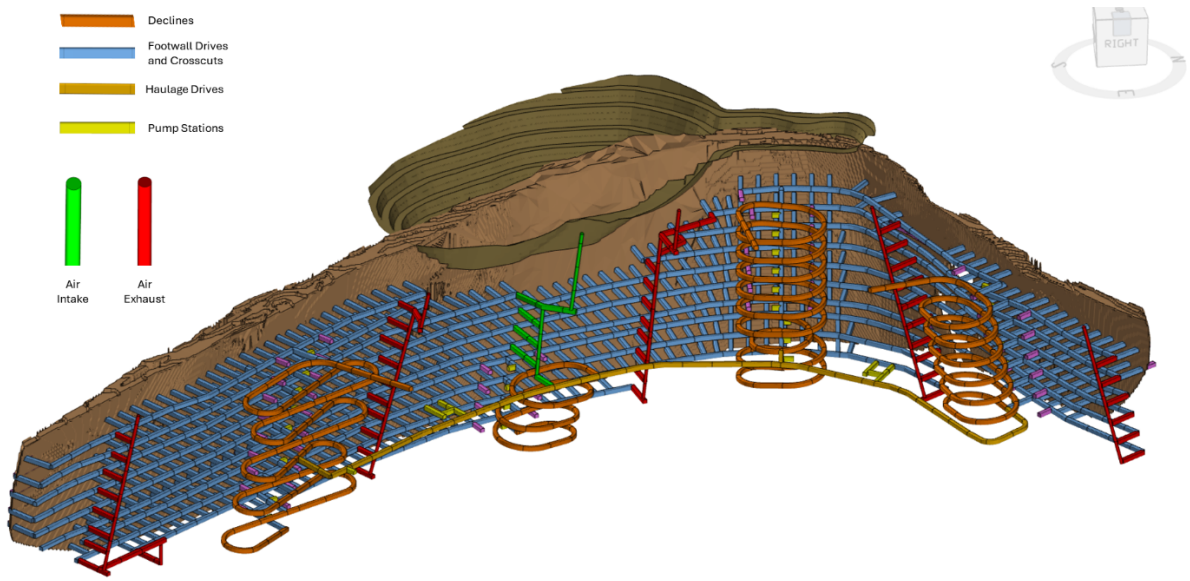
Neil Hepworth acted as the Company's mining technical professional but was not required to act as a Competent Person (CP) under JORC for the Study, as no Mineral Resources or Ore Reserves have been declared.

Talga recognises that inferred resources are of a lower level of geological confidence and has prepared all three mine scheduling options to ensure that any inferred resources extracted in the early years of each LOM mine plan are minimised. Inferred Mineral Resources, included in the mine schedule stope resource, are predominantly located beneath the sill pillars. This has resulted in the majority of the inferred resources being scheduled in the later years.

Preliminary geotechnical assessment of the host rock concluded that ground conditions are sufficiently stable for large scale underground production. Mining is conducted by using long hole open stoping, a form of sub-level stoping.

Transverse stoping was considered where the orebody width exceeded 12m and longitudinal stoping where the orebody width was less than 12m, but with sufficient grade to allow a minimum mining width of 5m. An extraction of 90% and a dilution of 10% were applied in accordance with the proposed mining method and expected ground conditions.

Figure 2 *Nunasvaara South underground mine infrastructure design including the Pit 4 open pit.*



Mine design figure scale 1:7,500

A maximum design stope size of 15m wide by 20m high and stope length the full orebody width was designed, with uneconomic ore left as natural pillars, and cemented paste tailings backfill used to maximise stope extraction rates. Figure 2 shows the detailed mine design used in the mining study.

The geotechnical assessment indicated that limited ground support will be required, however shotcrete support has been factored into the costs for all main development to provide aerial support.

Figure 6 below shows the mine design of the five orebodies Nunasvaara South, Nunasvaara North, Nunasvaara East, Niska North and Niska South in relation to each other.

For personal use only

The mineable tonnage and grade are estimated by applying an economic cut-off to the resource, based on product price, realisation costs, mining dilution, plant recoveries and total operating costs. Plant recoveries and operating costs were based on the costs for production of Talga's purified graphite product, Talphite®, developed during the recent FEED at a nominal price of US$4,000 per tonne.

The lower economic cut-off is estimated at 15%Cg. The 15%Cg cut-off results in the resources reducing to 31.8Mt and a mine designed stope resource of 21.7Mt at 21.5%Cg, reported in Table 2.

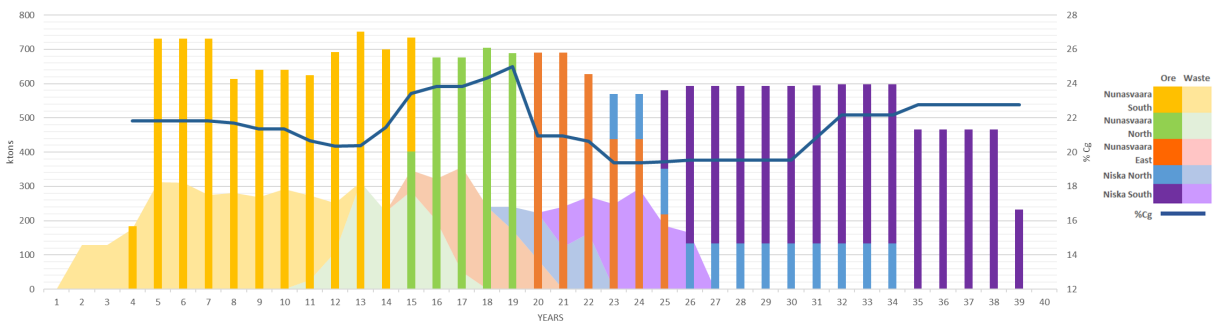
Table 2 *Total underground mine designed stope tonnage and grade for the Vittangi Graphite Project.*

Deposit	Tonnage (t)	Graphite (%Cg)	Contained Graphite (t)
Nunasvaara South	7,373,000	21.4	1,575,047
Nunasvaara North	3,148,000	24.2	761,319
Nunasvaara East	3,101,000	20.3	628,065
Niska North	6,485,000	20.1	320,053
Niska South	1,591,000	21.3	1,381,690
Total	**21,699,000**	**21.5**	**4,666,174**

Notes: *1. Mine design includes Inferred and Indicated Mineral Resources. 2. Mine designed Mineral Resources are reported using a cut-off grade of 15%Cg. 3. 920,000t at 25.1%Cg in Pit 4 Nunasvaara South is not included in the mine design tonnage. 4. Sill pillars at 50% recoverable and crown pillars at 75% recoverable are not included in mine design tonnage. 5. Niska Link Mineral Resources are not included in the mine design tonnage. 6. Mineral Resources above 15%Cg cut-off-grade contained within the low-grade lenses are not included in the mine design tonnage. 7. Average bulk density varies between 2.61 and 2.75 t/m³ depending on the orebody. 8. 90% recovery and 10% dilution at zero-grade are included in the mine design tonnage 9. Numbers may not add due to rounding.*

Mining optimisation for underground was initially based on a mining rate of 600,000tpa as a combined feed to the concentrator from the five orebodies. During the first five years of the production Inferred Resources are included in the schedule for all years, representing less than 20% of the scheduled tonnage. This provided an underground Life of Mine ("LOM") of 39 years based on current resources, with no identified restrictions to increasing the throughput rate. See Figure 3 below.

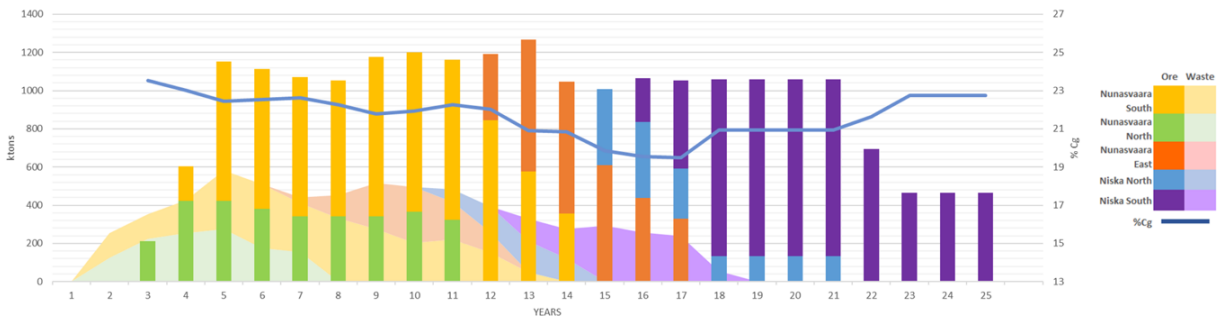
Figure 3 *Vittangi LOM schedule at 600,000tpa mining rate.*



This schedule was achieved by having one development team with critical and non-critical underground mine development progressing sequentially from Nunasvaara South to Nunasvaara North and East and then Niska South and North.

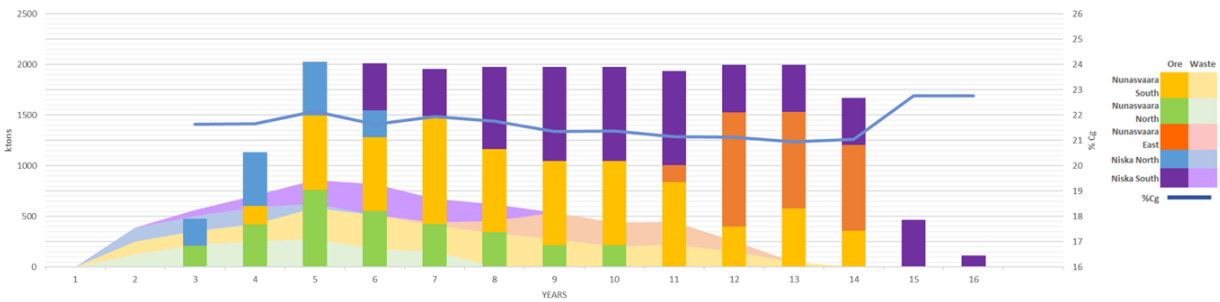
The mining rate of 1Mtpa was achieved by having a second development team for critical and non-critical development starting in parallel to the team at Nunasvaara South at Nunasvaara North and Nunasvaara East. During the first five years of the production, Inferred Resources are included in the schedule for three years, representing less than 10% of the scheduled tonnage. This provided an underground LOM of 25 years based on current resources with no identified restrictions to increasing the throughput rate. See Figure 4 below.

Figure 4 *Vittangi LOM Schedule at 1Mtpa mining rate.*



The 2Mtpa mining rate was achieved by having a third development team starting in parallel to the teams at Nunasvaara South, North and East at Niska South and Niska North. During the first three years of the production, Inferred Resources are included in the schedule for all years, representing less than 15% of the scheduled tonnage. This provided a LOM of 16 years based on current resources and is considered to be the maximum practical throughput rate. See Figure 5 below.

Figure 5 *Vittangi LOM Schedule at 2Mtpa mining rate.*



Hydrogeological studies have been carried out and interim results used to determine pumping requirements for the underground operation for all scenarios.

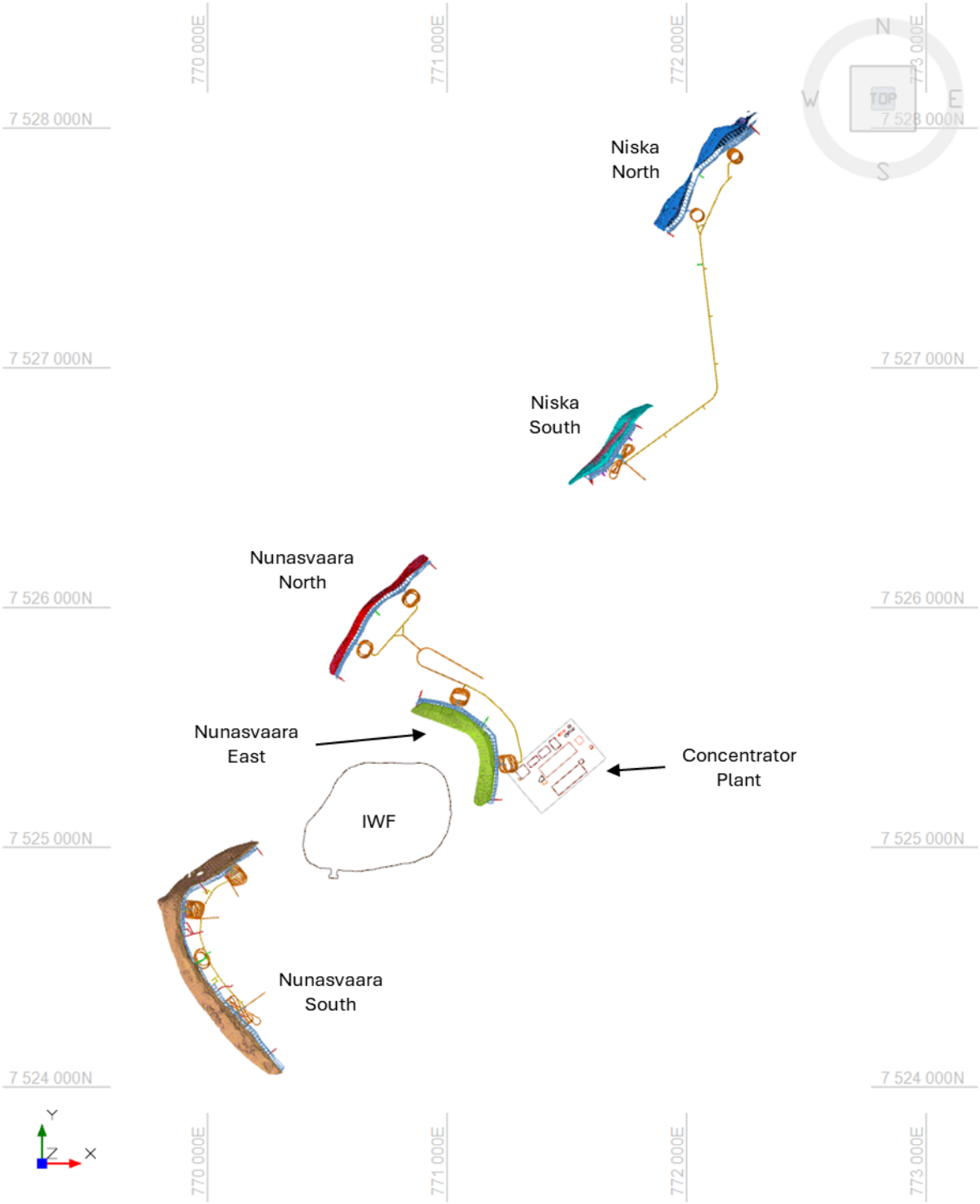
The expansion of the site infrastructure is assumed to be located adjacent to the existing industrial area and integrated waste facility ("IWF"), taking advantage of the planned infrastructure and location of the processing plant, the pit, ROM and the IWF, as well as the road network that will be built for the 19,500tpa Vittangi Anode Project (see Figure 6).

Talga is committed to international best practices in closure planning and achieving closure outcomes. This includes undertaking consistent and transparent engagement with stakeholders towards a shared post-closure vision via an integrated mine closure process that considers environmental, social and economic aspects.

Community engagement on closure vision and post-mining land uses will commence in 2024. The preliminary closure plan to be prepared during the permitting phase of the mining operation.

For personal use only

Figure 6 *Site layout including planned industrial area, concentrator and IWF outlines from the 19,500tpa Vittangi Anode Project.*



Permitting

The mineral resources are located within the Nunasvaara nr2 and Vittangi nr2 exploration concessions and are 100% owned by Talga's Swedish subsidiary Talga AB. The concessions were issued by the Mining Inspectorate in accordance with Swedish Minerals Act (1991:45) and provides the holder rights to explore for minerals and apply for an exploitation concession to mine identified mineral resources.

For personal use only

For personal use only

Following further feasibility studies and impact assessments, Talga will determine a plan for applying for exploitation concessions and environmental permits to mine and process graphite at the deposits.

The mining operation is on freehold property held by Talga AB and private individuals that Talga has agreements with, with surface rights held by the owners of the property. The area is utilised by landowners for a range of land uses. Within the area there are established indigenous rights to practice reindeer herding during winter with reindeer herding cooperatives (Sameby) operating in the area.

Talga is committed to being a responsible operator and neighbour who creates value for local communities and stakeholders, while maintaining environmental integrity. The Company has been working proactively with stakeholders since exploration commenced in 2011 and has adopted a structured approach to stakeholder engagement, under a stakeholder engagement plan consistent with international best practice.

The mine parameters outlined in the Study focus on an underground operation to minimise the operation's environmental and social footprint and it is intended that operations be designed and operated in such a way that the nearby Natura 2000 area will not be affected.

The environmental and social studies to date, along with upcoming studies and the completion of the Environmental and Social Impact Assessments, intends to ensure that environmental and social concerns are integrated into the proposed development, focusing on preventing, minimising, mitigating and/or compensating for possible adverse environmental and social impacts which may arise due to the proposed development.

Talga conducts impact assessments in accordance with internal standards and any expansion will meet both Talga's and Sweden's permitting requirements for the mining operation.

Talga will commence further environmental and social studies in 2024 including a community dialogue process with the Vittangi community, indigenous peoples, neighbouring landowners and the local municipality.

Processing

Composite samples prepared from drill core from the Nunasvaara North and Niska South graphite deposits were selected to achieve a reasonable representation for metallurgical testing. The metallurgical response was found to be consistent with that of Nunasvaara South and the purity and physical properties of the graphite concentrates are equal, or possibly superior, to the graphite concentrate produced in Nunasvaara South piloting and testwork programs.

The concentrator processing route selected for the Study has therefore been based on the flowsheet for treating Nunasvaara South ore developed during the recent Vittangi Anode Project FEED that has been piloted at bulk scale. Additional modelling and testwork has been recommended to better define mineralisation variability models and enable appropriate design allowances for future engineering.

The concentrator will operate year-round, with three stage crushing and two stage milling (currently rod and tower mill) of the underground ore to produce an 80% passing 45um feed to the flotation circuit. The rougher flotation circuit uses selective reagents to collect a rougher concentrate in the froth and the gangue mineralisation is collected in the tailings, which is sent to dewatering. The rougher concentrator is fed to regrinding mills and then to further froth flotation to reduce the gangue minerals and produce a concentrate material.

For personal use only

The cleaner tailings are combined with the rougher tailings in the thickener before being pumped to a filter for dewatering. A theoretical maximum of 73% of the dry tailings produced will be deposited underground as paste fill, with the remaining tailings trucked and deposited to an expanded IWF or backfilled into Pit 4 once fully excavated from the initial Nunasvaara South open pit operation.

Infrastructure

The mining operation is located 6km along an existing local unsealed road, which will be upgraded during the initial Nunasvaara South open pit operation and connects to the sealed state road network.

The mine will be connected to the regional grid power, requiring a new 135kV power line to the mine substation for all scenarios considered. The permitting and installation of the new powerline is one of the major items on the critical path to development.

Raw water supply to the concentrator will comprise recovery from groundwater inflow, pit seepage and recycling. Stope and development dewatering will be maintained with pumping to a clearing dam before being used in the process plant for make-up water. All excess water from the mine operation will be treated to remove metals and particulates to meet environmental standards prior to any necessary discharge to the recipient.

Capital Costs

Capital costs (excluding contingency and owners' costs) have been estimated as detailed in Table 3. These have been prepared to a ± 50% accuracy.

Table 3 *Mining study and ore processing capital cost estimate.*

Capital Cost (€M)		Unit	0.6Mtpa	1Mtpa	2Mtpa
Mine & Ore Processing	Mining	€M	62.0	94.4	139.5
	Concentrator	€M	396.3	526.9	791.3
Indirect Costs	Concentrator	€M	58.1	77.2	115.9
Sub-total		**€M**	**516.4**	**698.5**	**1,046.6**
Infrastructure		€M	11.3	18.7	20.5
TOTAL		**€M**	**527.7**	**717.3**	**1,067.1**

Operating Costs

Operating costs have been prepared to a ± 50% accuracy and are summarised in Table 4 below.

Table 4 *Mining study and ore processing operating cost estimate.*

Cash Costs (€)	Unit	0.6Mpa	1Mtpa	2Mtpa
Mining, Paste Backfill and Waste Handling	€ / tonne of ore	67	67	66
Mineral Processing and IWF	€ / tonne of ore	50	47	45
Overhead	€ / tonne of ore	17	13	8
TOTAL	**€ / tonne of ore**	**134**	**127**	**119**

For personal use only

Funding

The shift towards local, sustainable battery supply chains has resulted in various partnership, strategic and commercial models between value chain actors which continue to evolve and provides a range of funding opportunities. Funding options include conventional equity, debt and grant funding, as well as joint venture partnerships.

The proposed expansion mining developments are to occur several years after production is planned to have commenced at the Vittangi Anode Project (ASX:TLG 1 July 2021) where revenue from steady state production is expected to provide part of the funding solution for any expansion development.

The ultimate funding strategy will be based on the negotiations with potential partners and financiers, and the conditions of the equity capital markets and relative debt financing opportunities, at the time of a final investment decision. Whilst pursuing funding initiatives, Talga will look to optimise and reduce the estimated capital and operating costs during future study phases.

Based on the above, the Company has formed the view that there are reasonable grounds to assume the likelihood of successfully raising finance, sufficient to cover the estimated capital and working capital costs for the mining development as and when required.

Scoping Study Completion

Completion of the expanded anode production Scoping Study is expected in Q4 2024 following completion of downstream anode refinery expansion studies.

Anode refinery expansion options will consider expanded Talnode®-C production and incorporation of Talga's proprietary anode graphite recycling technology, to capture economies of scale whilst supporting customer demand and global energy transitions.

Authorised for release by the Board of Directors of Talga Group Ltd.

For further information please contact:

Mark Thompson
Managing Director
Talga Group Ltd
+61 (0) 8 9481 6667

Nikki Löf
Group Communications Manager
Talga Group Ltd
+61 (0) 8 9481 6667

For personal use only

Competent Persons Statement

The Vittangi Mineral Resource estimate was first reported in the Company's announcement dated 6 October 2023 titled 'Talga boosts Swedish battery graphite'. 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 19,500tpa production target referred to in this announcement in accordance with Listing Rules 5.16 in its announcement titled 'Robust Vittangi Anode Project DFS' dated 1 July 2021. The Company confirms that all material assumptions underpinning that production target 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.

About Talga

Talga Group Ltd (ASX:TLG) is a leader in the development of sustainable battery materials. Via innovative technology and vertical integration of our 100% owned Swedish graphite resources, Talga offers a secure supply of products critical to the green transition.

Talga's flagship product, Talnode®-C, is a natural graphite anode material made using renewable energy for a low emissions footprint. Battery materials under development include an advanced silicon anode product and conductive additives for cathodes. Website: www.talgagroup.com

Forward-Looking Statements & Disclaimer

Statements in this document regarding the Company's business or proposed business, which are not historical facts, are forward-looking statements that involve risks and uncertainties, such as estimates and statements that describe the Company's future plans, objectives or goals, including words to the effect that the Company or management expects a stated condition or result to occur. Since forward-looking statements address future events and conditions, by their very nature, they involve inherent risks and uncertainties. Actual results in each case could differ materially from those currently anticipated in such statements. Investors are cautioned not to place undue reliance on forward-looking statements.

This announcement may not be distributed in any jurisdiction except in accordance with the legal requirements applicable in such jurisdiction. Recipients should inform themselves of the restrictions that apply in their own jurisdiction. A failure to do so may result in a violation of securities laws in such jurisdiction. This document does not constitute investment advice and has been prepared without taking into account the recipient's investment objectives, financial circumstances or particular needs and the opinions and recommendations in this representation are not intended to represent recommendations of particular investments to particular persons.

Annex

Table 5 *Mining study Material Assumptions.*

Parameter	0.6Mtpa	1.0Mtpa	2.0Mtpa
Processing rate	600,000tpa	1,000,000tpa	2,000,000Mtpa
Mining dilution	10%	10%	10%
Mining recovery	90%	90%	90%
LOM production target (RoM)	21,699,000t	21,699,000t	21,699,000t
Mine optimisation product price (Talphite®)	US$4,000/t	US$4,000/t	US$4,000/t
Diluted average ore grade	21.5%Cg	21.5%Cg	21.5%Cg
Stope Size (Avg. Length x Width x Height)	23m x 15m x 20m	23m x 15m x 20m	23m x 15m x 20m
Lower cut-off grade	15%Cg	15%Cg	15%Cg
Life of Mine (LOM)	39 years	25 years	16 years
Total royalties (mine gate)	3.2%	3.2%	3.2%

For personal use only