

Magnis Resources

Nachu BFS and Corporate Update

Exceptionally high purity natural flake graphite

March 2016

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Magnis and the Nachu Project



Right team, project and place

- 100% owned Nachu graphite project in democratic and politically stable Tanzania
- BFS completed in March 2016; currently arranging project financing
- A highly experienced management team
- Strong commitment to best practice HSEC processes

Development ready

- All requisite environmental and mining permits secured; fiscal agreement (MDA) in place
- Readily available infrastructure and logistics chains
- Two major offtake agreements in place
- BFS completed by Sedgman and EPC proposal pending

Premium product purity and flake size

- Exceptionally high purity concentrate with no chemical purification processes
- +40% of product basket is high value Super Jumbo (+500 microns) and Jumbo flake (+300 microns)
- Extensive metwork = robust parameters
- Outstanding Li-ion battery anode test results

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Outstanding project economics

- BFS delivers strong forecast returns: 98% post-tax IRR, US\$1.69b post-tax NPV_{10%}
- 15+ year mine life at 220ktpa average production
- High value product specification drives outstanding operating margins (+US\$1,791/t)
- Upfront capital cost of US\$269m

Corporate Overview



Capital Structure

356.4 M
186.2 M
A\$0.36
A\$128M
A\$2.4M
A\$0M
0.93 M

* Expiry 31 May 2017

MNS Share Price



Major Shareholders

Shareholder	Shares (M)	Ownership
Mazzdel Pty Ltd	27.2	7.8%
Directors	14.2	4.1%

Analyst Coverage





Board and Management



	Frank Poullas Non-Executive Chairman MAICD	 15 years in investment banking and engineering sectors Partner in a successful IT firm Private investor specialising in resources
	Johann Jacobs Non-Executive Director B.Acc, MBL, FCA, FAICD	 30+ years experience in the resources sector Managed established companies and acquisitions, including project expansions and start-up mining operations in Australia, South Africa and Indonesia Currently Chairman of King Island Scheelite, Non-Executive Director of Australian Zircon NL
2018	Peter Tsegas Non-Executive Director	 15+ years experience in Tanzania engaging both private and public sectors on projects; Tanzanian resident for past 10 years Founder, shareholder and MD of Tancoal Energy Ltd; growth from an exploration company through to joint venture with the Tanzanian government and into production Previous consulting roles to the Tanzanian government and to a number of mining companies including Rio Tinto
	Dr Frank Houllis Chief Executive Officer BSc (USyd BEng) (Chem 1 st Class, USyd), PhD (USyd)	 20 years practical experience in development and engineering of metallurgical process Deep process experience across a wide range of commodities; led process development teams at ANSTO (process manager, 2008-2014), BHP Billiton (principal engineer, 2005-2008) and Intec Ltd (1995-2005)
	Rod Chittenden Head of Operations	 30 years experience in the resources industry encompassing a range of companies and commodities Technical background in metallurgy with a strong track record in project development; has worked in Australia, Europe, South America and Africa Detailed involvement in metallurgical testing, feasibility studies, process design and commissioning for projects with Newcrest Mining, Barrick Gold, Paladin Energy and Mantra Resources

Deep technical expertise and relevant experience



- Located west of the coastal city of Lindi and 200km by road from the port city of Mtwara in south east Tanzania
- JORC-compliant resource of 174mt at 5.4% Total Graphitic Carbon (TGC) for 9.3mt contained graphite
- Bankable Feasibility Study (BFS) completed March 2016
- Project financing progressing in parallel with advanced North American, European and Asian offtake discussions





6

Compelling BFS Results

- BFS confirms Nachu as a robust, high returning graphite project with premium product quality
- Average 220ktpa graphite concentrate produced over an initial reserve-backed 15 year mine life
 - 240ktpa over first 12 years
 - 160ktpa for remaining 3 years via processing of lower grade stockpiled material
- Strong further high grade resource conversion potential
- Post-tax NPV $_{\rm 10\%}$ of US\$1.69b and project IRR of 98%
- Outstanding forecast operating margin of US\$1,791/t
- Projected basket price of US\$2,350/t reflects high value product streams exceptional purity and flake size
- Increased pre-production capex relative to PFS estimate driven by larger plant capacity (3.6mtpa PFS)

Key project parameters	BFS (March 2016)
Resources	174mt at 5.4% TGC
Reserves	76mt at 4.8% TGC
Initial life of mine (years)	15.2
Total mined ore (mt)	76.3
Strip ratio (LOM avg)	1.5
Plant throughput (mtpa)	5.0
Feed grade (% TGC, LOM avg)	4.8%
Recovery (LOM avg)	92%
Graphite concentrate production (ktpa, LOM avg)	220
Average concentrate purity (% TGC)	98%
Cash cost (US\$/t conc FOB Mtwara, LOM avg)*	559
Pre-production capital (US\$m)	269
Sustaining capital (US\$m)	71
Weighted average basket price (US\$/t conc FOB)	2,350
Free cash flow (US\$m pa, LOM avg)	255
NPV _{10%} (US\$m, post-tax)	1,686
Project IRR (post-tax)	98%
Payback period (years)	1.2

* Excludes production royalty (3%)



US\$/t conc % TGC Operating margin 2,500 30.0% ▲ Basket price (FOB) 2,250 Operating/C1 cost (FOB) 25.0% 2,000 In-situ resource grade [RH axis] 1,750 20.0% 1,500 1,250 15.0% 1,000 10.0% 750 \mathbf{N} 500 X 5.0% 250 0.0% 0 Nachu Vittangi* Epanko Balama Balama Nth Duwi (Magnis) (Talga) (Kibaran) (Sovereign) (Syrah) (Triton)

ASX-listed graphite project comparative

Source: Various company ASX releases on Scoping Study, PFS and DFS outcomes

* Vittangi development case involves new direct processing technology and its basket price includes an assumed ~1kt super high-value graphene production

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Simple Geology



- Graphitic schist with associated dolomites
- Mineralisation is metamorphic and primarily associated with the schist
- Outcropping and near surface
- Open folded anticlines with an average dip of less than 20 degrees
- Excellent continuity

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- Major deposit is F Block
 - Strike length over 1.4km
 - Defined width over 900m
 - Major horizons are 30-70m thick
 - Open in all directions



Resources and Reserves



- Nachu resource = 174mt at 5.4% Total Graphitic Carbon (TGC) for 9.3mt contained graphite
 - 71% in Measured and Indicated categories
 - Five deposits Blocks B, D, F, FS and J
 - Covers only 2% of project licence area
- Nachu reserve = 76mt at 4.8% TGC for 3.7mt contained graphite
 - Initial mine life of 15 years
 - Two orebodies Blocks F and FS
 - Significant further high grade resource conversion potential

Nachu mineral resource estimate								
Classification	Tonnes (mt)	Grade (% TGC)	Graphite (mt)					
Measured	63	4.7	3.0					
Indicated	61	5.7	3.5					
Inferred	50	5.8	2.9					
Total mineral resources	174	5.4	9.3					

Nachu ore reserve estimate							
Classification	Tonnes (mt)	Grade (% TGC)	Graphite (mt)				
Proved	50.5	4.6	2.3				
Probable	25.7	5.1	1.3				
Total ore reserves	76.3	4.8	3.7				



- In-situ grade is just one of the relevant factors in graphite project analysis
- Graphite project economics predominantly driven by realised basket price
 - Final concentrate purity and flake size distribution are therefore critical and need close evaluation
- Huge price differentials (and forecast to grow) between high and low value product concentrates
 - 98-99% purity / +150 micron product versus 94-97% purity / sub-150 micron concentrate

		In-situ resou	irce grade	(% TGC)				Average	e product o	concentrate	purity a	nd Jumbo-	plus flake	distributi	on
Vittangi* (Talga	a)		i i	I I I			al prod)	45% -					Nachu (N	lagnis) 🔺	
Balama Nth (Tritor	ר)						(% tot	35% -		Duw	/i (Sovere	ign)			
Balama (Syrah	ו)						s) product	30% - 25% -							
Epanko (Kibaran	ר)						micron	20% -				•	Epanko (Kil	baran)	
Duwi (Sovereigr	ו)						ke (>300	15% -		Balama Nth (Triton)					
Nachu (Magnis	s)						ibo fla	5% -		•	• Bal	ama (Syrah))		
McIntosh (Hexagor	n)						Jun	0% 92%	– Vittangi* 93%	* (Talga) 94%	95%	96%	97%	98%	99%
	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%				Product	concentra	te purity (% T	GC)		

Source: Various company ASX releases on Resource estimates and Scoping Study/PFS/DFS outcomes

use only

* Vittangi development case involves new direct processing technology and includes an assumed ~1kt super high-value graphene production



- Conventional drill and blast, truck and shovel open pit mining techniques
- Two open pits F and FS
- 6m bench heights
- 90t excavators (Cat 390) and 40t articulated trucks (Cat 475)
 - Ramp design allows up to 90t Cat 777 trucks
- Average strip ratio of 1.5:1 LOM
 - 1.4:1 over the first 5 years
- Lower grade ore (3.5% TGC) stockpiled for treatment in latter years of initial mine life



Process and Metallurgical Rigour

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 - Simple and proven process flowsheet crushing and screening, grinding, flotation, filtration, drying
 - Key processing parameters
 - Front end throughput of 5mtpa ore
 - Feed grade: avg 5.2% TGC first 12 years and avg
 3.9% TGC next 3 years (LG stockpiles)
 - TGC processing recovery of 92%
 - Final average concentrate grade of 98.3% TGC
 - No deleterious elements
 - High volume and broad nature of met testing at Nachu delivers robust process and product parameters
 - > 99% TGC and up to 99.6% TGC from basic
 flotation for sub-300 microns concentrate
 - Results repeated throughout Blocks F and FS
 - Core samples tested from every diamond hole





- Exceptional final concentrate grade of +99% TGC for sub-300 micron product from solely flotation = very rare
 - Driven by Nachu graphite being coarse flake with impurities on the surface not within the crystalline structure
 - High value, high appeal as removes/minimises need for expensive downstream chemical purification (HF/HCI treatment) for use in Li-ion battery anodes and expanded graphite material
- Over 40% of Nachu product in high value Super Jumbo (+500 microns) and Jumbo (+300 microns) flake size

Graphite flake size and concentrate grades									
Classification	Concentrate grade (% TGC)	Sieve size (microns)	Sieve size (mesh)	Weight distribution					
Super Jumbo	97.5%	> 500	+35	9%					
Jumbo	97.0%	300 - 500	+50/-35	32%					
Large	99.2%	180 - 300	+80/-50	25%					
Medium	99.1%	150 - 180	+100/-80	10%					
Fine	99.0%	75 - 150	+200/-100	18%					
Amorphous	98.9%	< 75	-200	6%					



Source: Various company ASX releases on Resource estimates and Scoping Study/PFS/DFS outcomes

* Vittangi development case involves new direct processing technology and includes ~1kt graphene production

** Medium/Large size fraction for Epanko is 106-300 microns (ie includes significant Fine product)



		<u> </u>
22ktpa Super Jumbo Flake	77ktpa Jumbo Flake	141ktpa Battery Feedstock
Size: +500 microns, +35 mesh	Size: 300-500 microns, +50/-35 mesh	Size: Sub 300 microns, -50 mesh
Purity: 97.5% TGC	Purity: 97.0% TGC	Purity: 99.1% TGC
Key markets: Aerospace, composites and niche	Key markets: Expandable graphite, composites	Key markets: Spherical graphite for use in Li-io
markets	and electronics	battery anodes
Current pricing: US\$4,000-6,000/t CFR**	Current pricing: US\$2,500-3,000/t CFR**	Value-in-use pricing: +US\$2,100/t FOB**

- Spherical graphite produced from Nachu Battery Feedstock delivers superior performance to leading synthetic graphite
- Downstream margin capture
 - Toll processing (spheronising and coating) to produce spherical graphite
- Strong market outlook for all Nachu product streams
 - In contrast, clear future oversupply risk in fine grain, lower purity products

^{*} Concentrate production rate over first 12 years of initial mine plan

^{**} Current pricing based on industry sources and end user discussions.

Graphite in Li-ion Batteries



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Natural flake graphite concentrate

- Typical pricing: US\$750-1,000/t (94-95%, small to medium flake).
- Significant issues with quality and consistency of predominant Chinese supply.
- Pricing increases with purity and flake size (Nachu Battery Feedstock is +99% and large to medium flake).

GLOBAL NATURAL FLAKE SUPPLY



Synthetic graphite feed

sources

 Carbon material such as petroleum coke, coal tar pitch, etc.

SPHERONISATION AND PURIFICATION

- Natural flake placed in a circulating terminal that spins the graphite, forcing the flakes to collide and bend. As the flakes bend, they form small spheres with a sub 20 micron diameter (uncoated spherical graphite).
- Typical yield from this spheronising process is 40-60% (ie 40-60% loss from concentrate); Nachu yield is ~75%.
- Uncoated spherical graphite is then purified to 99.95% via acid baths (HCl/HF), cleansed and coated with a single layer of carbon (coated spherical graphite).
- Purification cost ranges widely driven by the extent of chemical (and thermal) treatment processes required; Nachu Battery Feed is already +99% vs typical 94-95%.
- Close to 100% of current uncoated spherical graphite production occurs in China. The coating process occurs mainly in China, Japan, Korea and Taiwan.

HIGH TEMPERATURE TREATMENT

 Aggressive heat treatment (2,300-3,000°C) to recreate the pressure-temperature environment required to form natural graphite. Highly energy intensive.





- Nachu Battery Feedstock possesses leading downstream processing cost and environmental credentials
 - Approximate 75% yield from spheronising versus typical 40-60% for current products
 - Micronised coated spherical graphite purity of 99.8% TGC without any chemical or thermal purification
 - Huge competitive advantage over predominant Chinese fines product and prospective new entrants
- Outstanding battery anode test results
 - First discharge capacity of 374 mAh/g and first charge capacity loss of only 2.9%
 - Superior performance to the major synthetic graphite and Chinese natural graphite sources
 - Clear potential to displace existing sources in high growth battery markets
- Excellent expansion properties of Nachu Super Jumbo and Jumbo product streams
 - Strong focus on expandable graphite market segments

Basket Price and Sensitivity



BFS basket price construction								
Classification	Concentrate grade (% TGC)	Sieve size (microns)	Sieve size (mesh)	Price (US\$/t FOB)	Weight distribution			
Super Jumbo	97.5%	> 500	+35	4,000	9%			
Jumbo	97.0%	300 - 500	+50/-35	2,500	32%			
Battery Feedstock	99.1%	< 300	-50	2,125	59%			
Gross basket price			2,413	100%				
Discounted net basket price 2,350								

Sensitivit	v of BFS outcomes t	to basket	t price assum	ptior

Price scenario	Low (-35%)	BFS base	High (+35%)
Weighted average basket price (US\$/t conc FOB)	1,528	2,350	3,173
Free cash flow (US\$m pa, LOM avg)	125	255	383
NPV _{10%} (US\$m, post-tax)	779	1,686	2,592
Project IRR (post-tax)	54%	98%	139%
Payback period (years)	2.0	1.2	0.6

Offtake



- Signed offtake agreements with Chinese customers
 - China National Materials Industry Import and Export Corporation (SINOMA) (80ktpa) 5 year term, flake graphite concentrate, market pricing
 - Sinosteel Liaoning (100ktpa) 10 year term, flake graphite concentrate, market pricing
- Advanced discussions with potential North American, European and Asian customers on further cornerstone offtake agreements
 - Focus on Li-ion battery and expanded graphite end uses
 - Significant sample provision and product testing processes
 - Seeking floor pricing parameters at defined product specifications
 - Expected to underpin project financing

Infrastructure and Logistics



- In-country transport
 - Bagged concentrate loaded in containers and trucked to port
 - 200km by road; 140km sealed and 60km hard dirt to site
 - Road upgrades incorporated from Ruangwa to site
- Port access
 - Mtwara facility has 400ktpa capacity; 130-140ktpa current utilisation; required Nachu usage approximately 20kt per month
 - Pending expansion to 750ktpa
- Water availability
 - Borehole field on-site; water recovery and re-use
- Power sourcing
 - Nachu process has relatively low power intensity
 - Overhead line construction from TANESCO power grid to site
 - Supplementary on-site diesel gen-sets







- Pre-production capital estimate of US\$269m (includes 11% or US\$28m contingency provision)
 - Increase from PFS estimate predominantly driven by bigger plant size (5mtpa)
 - Sustaining capital of approximately US\$4.7m pa
- Cash operating cost LOM estimate of US\$559/t concentrate FOB Mtwara
 - US\$502/t average across the first five years (240ktpa production rate)
 - Contract mining and product transport
- BFS cost estimates to an accuracy of -10%/+10%

Nachu pre-production capital cost estimate

Capital activity	Capex (US\$m)							
Process plant	117							
Infrastructure	60							
Pre-mining and site preparation	25							
Owner's costs	20							
EPCM	20							
Contingency and escalation	28							
Total pre-production capital cost	269							

Nachu cash operating cost LOM estimate							
Production activity	Opex (US\$/t conc FOB)						
Mining	217						
Processing	51						
Power	66						
Diesel	48						
Product logistics	81						
Maintenance, G&A and other	96						
Total cash operating cost (FOB Mtwara)*	559						

* Excludes production royalty (3%)

Tanzanian Operating Environment

- Tanzania overview
 - Broad stability following independence in 1961
 - Presidential constitutional republic with democratic multi-party elections since 1995; most recent October 2015
 - Reform of mining policy in 1998 has attracted significant capital investment
 - 4th largest gold producing country in Africa
- All requisite environmental and mining permits secured
 - Special Mining Licence (SML) granted to Nachu by the Ministry of Energy and Minerals of Tanzania
- Mineral Development Agreement (MDA) executed for Nachu
 - 30% corporate tax rate
 - 3% production royalty
 - 5% free carried interest in project for Tanzanian Government
 - Environmental conditions, dispute resolution mechanisms

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EPC and Project Funding



- MOU with POSCO
 - Lump sum EPC agreement
 - Senior debt facility arrangement
- Sedgman preparing an EPC proposal post BFS completion
- BFS completed to specific standards requested by several potential financiers
- Project financing arrangements progressing in parallel with advanced North American, European and Asian buyer offtake discussions
- Discussions continuing on US\$150m debt term sheet with China National Materials Industry Import and Export Corporation (SINOMA)

Target Development Timeline



05	Drilling and resource mod
N	Metallurgical testwork
	Pre-feasibility study
T	Cornerstone offtake agree
	Environmental impact stu
\bigcirc	Mining approval and MD/
$\widetilde{\mathbb{O}}$	Detailed design
	Bankable Feasibility Stuc
	Further offtake agreemen
	Project financing
	Detailed engineering
	Construction
	Commissioning and prod

	20	014	2015				2016				2017				
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Drilling and resource modelling															
Netallurgical testwork	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark									
Pre-feasibility study	\checkmark														
Cornerstone offtake agreements															
Environmental impact study	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark										
Mining approval and MDA															
Detailed design				\checkmark											
Bankable Feasibility Study															
Further offtake agreements															
Project financing															
Detailed engineering															
Construction															
Commissioning and production															

Summary



- Nachu is a high quality, long life graphite resource
- Located in Tanzania, a well established mining jurisdiction
- Development ready all environmental and mining permits secured, fiscal stability with signed MDA
- Nachu BFS delivers outstanding forecast returns 98% post-tax IRR, US1.69b post-tax NPV $_{10\%}$
- Key advantages relative to graphite development peers
 - High appeal, high value product given exceptional concentrate purity and coarse flake size
 - High volume and broad nature of metallurgical testing delivers robust processing and product parameters
 - Outstanding realised price and operating margin position expected given premium product composition
 - No downstream chemical purification requirement for Nachu concentrate = strong 'green credentials' for buyers
- Signed offtake agreements with two Chinese downstream graphite groups (total 180ktpa)
- Project financing progressing in parallel with advanced North American, European and Asian buyer offtake discussions

Appendix A: Graphite Markets



- Global graphite market = 2.2mtpa
 - Natural graphite (1.1mtpa); flake and amorphous sources; key producers China, India, Brazil
 - Synthetic graphite (1.1mtpa); high purity but energy intensive and expensive
 - Natural-for-synthetic displacement potential

China currently produces ~70% of total natural supply

- Consistency and quality issues
- Ore value declining and labour costs rising
- Increased focus on environmental impacts
- 20% export duty and 17% VAT levied on exports
- Downstream spherical plants at ~50% capacity
- End users seeking greater diversity of supply

Key graphite end uses

- Battery anodes (high growth)
- Expandable graphite (high growth)
- Composites
- Refractory and foundry
- Gaskets and seals, brake linings, lubricants



Appendix B: Li-ion Battery Demand

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The Lithium-Ion battery megafactories are coming... Production of Lithium-Ion batteries is expected to more than triple by 2020



*Benchmark estimates, not all data disclosed by companies **Instant planned capacity stated for graphical purposes, slower ramp up expected

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