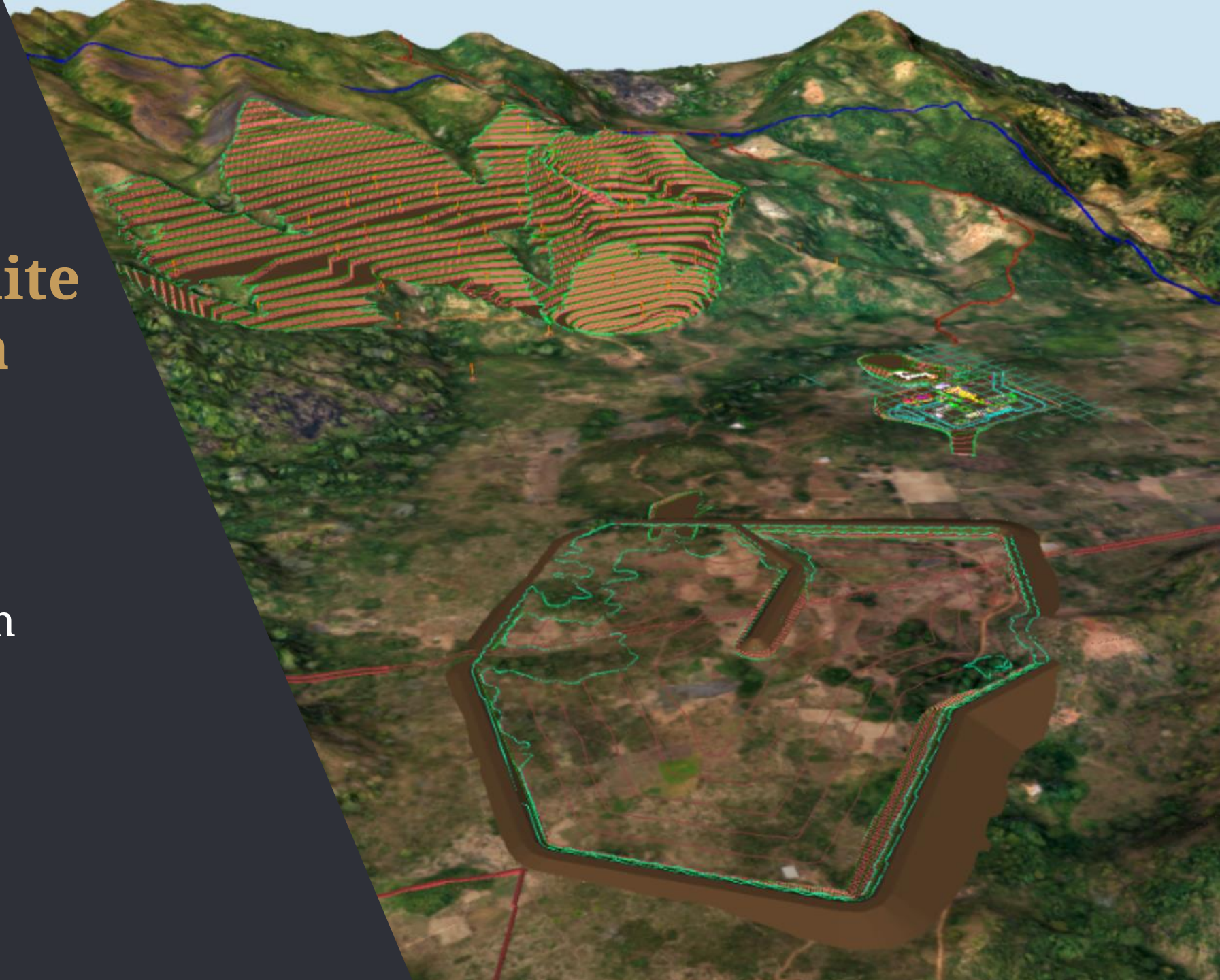


# Leading Graphite Developer on a Pathway to Production

Investor Presentation  
July 2020

 **ARMADALE**  
CAPITAL PLC





# Corporate Information

## Key Data

Ticker LSE	ACP
Shares in Issue	459,519,667
Share Price (15 June 2020)	3.5p
52 week high/low)	0.95p / 4.39p
Market Cap.	£15m

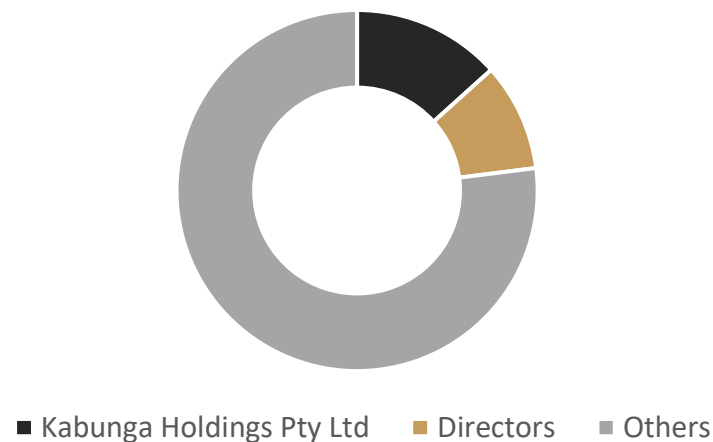
## Substantial Shareholders

Kabunga Holdings Pty Ltd	11.8%
Matt Bull (Director)	7.22%
Other Directors	2.62%
Others	78.21%

Share Price



Shareholders



# Board & Management



## **Nicholas Johansen**

*BEcon GDLP LLB  
(Hons)*

Chairman

Experienced legal practitioner based in Northern Territory, Australia

Extensive involvement in junior mining exploration and production companies across many different commodities

Expert in environmental regulation

Law degree with Honours from Charles Darwin University, NT and Bachelor of Economics from the University of Adelaide

## **Steve Mahede**

*BEng MBA*

Non-Executive Director

Qualified engineer with more than 35 years' in mining related project management

Experienced CEO in Australia and Africa

BSc (Eng) from the University of Western Australia and MBA from Murdoch University

Patron of the Tanzanian Community in Western Australia Inc

## **Matt Bull**

*BSc (Hons)*

Non-Executive Director

A geologist with experience in graphite, gold and iron ore across Australia and Africa

Worked greenfield exploration & resource development programs for Rio Tinto, Golden West, Volt & Linden Resources

Former director of Volt Resources (ASX: VRC) and currently on the Board of Lindian Resources (ASX: LIM)

Bachelor of Science with honours in geology and geophysics from the University of Adelaide

## **Amne Suedi**

*LL.M*

Non-Executive Director

Highly experienced legal professional who specialises in Africa based investment and business law.

Founder and CEO of Shikana Law Group, a law firm in Kenya, Zanzibar and Tanzania and headquartered in Dar es Salaam, which provides legal and investment advice to foreign investors operating in Africa.

LLM in international trade and finance law along with a Licence in Law from University College London and the University of Geneva, respectively.

## **Jenny Lee**

*China Representative*

*Graphite Marketing*

Experienced marketing executive with 24 years in the mining sector focused on raw material procurement

Headed large China-based shipping & logistics group importing into the Chinese market

Highly experienced at obtaining and managing off-take agreements and prod

# Group Overview



- Armadale Capital (ACP) is an AIM-listed diversified investment company focused on natural resource projects in Africa
- Current focus on advancing the Mahenge Liandu Graphite Project in Tanzania to production
  - Low technical risk project - a large, high-grade open cut resource
  - Located in East Africa - the world's largest graphite province
  - Robust DFS \$430m NPV10, low Capex \$39.7m with an IRR of 91%
  - Strong market dynamics - accelerating demand for spherical graphite driven by new energy sector, EV and expandable graphite



# Project Economics

■ **NPV10: \$430m**

■ **LOM EBITDA: \$1.085B**

■ **Capex: \$39.7m**

■ **IRR: 91%**

<b>Production</b> 53kt rising to 120ktpa in year 4	<b>Financial</b> <b>Revenue</b> 1,823 US\$ Real
<b>Initial Capex</b> \$US39.7m	<b>Low Capital Intensity</b> \$US750 for stage 1 \$US475 for stage 2
<b>NPV/IRR</b> US\$430m pre-tax 91% IRR	<b>Low Cash Cost</b> \$US369 for LOM
<b>Payback Period</b> 1.6 Years	<b>High Mine Grade</b> of 12.5% <b>Low Strip Ratio</b> of 2:1 <b>15 year Mine Life</b>

- Mahenge will be a significant low cost supplier to the graphite industry
- Potential to create pre tax cashflow of US\$985m over an initial 15 year mine-life
- Scope for further improvement as this utilises just 25% of the current resource

# Project Overview



- **100% owned**, near surface, high grade deposit
- **Focus on commencing production in early 2022**
- **One of the largest graphite projects in Tanzania**
- **Proven potential as a commercially viable deposit**
- Robust **DFS delivered June 2020** confirming Mahenge as a low cost, high grade and high purity (97%+) project

## 2020 Milestones

- Environmental and social permitting
  - Conversion of off-take MOU's to binding agreements
  - Commence FEED to construction
  - Close project development funding
- 
- **Considerable offtake interest**
    - Four MOUs signed and advanced discussions underway with other potential customers
  - **Project development funding progressing well**
    - Two NDA's and advanced discussions with a number of Asian parties

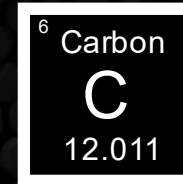


GRAPHITE MARKET

# Graphite Market



- Graphite is a grey crystalline allotropic form of carbon and is known for its electrical conductivity, lubrication and resistance to corrosion and high temperatures.
- Graphite ore is mined and processed through crushing, grinding and flotation before being dried and classified into high grade concentrate for sale to end users.
- Graphite concentrate varies by the concentrate grade and the flake sizes of the graphite. Larger flake size graphite concentrate receives a premium and a higher price per tonne. Similarly a higher-grade concentrate also receives a higher price.
- Graphite is utilised in traditional industries including refractory and foundry, expandable graphite, carburisation, graphite shapes and lubricants. Graphite is also utilised in the anode for batteries which is a larger driver of forecast demand given the developments in the electric vehicle market.





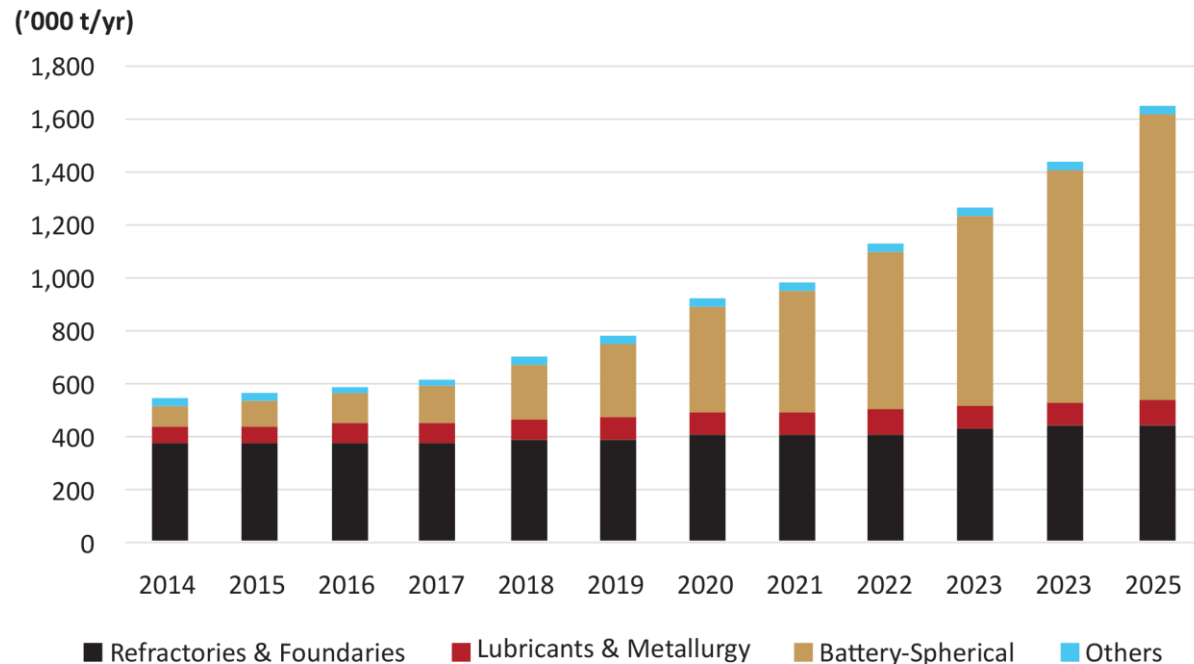


## Graphite Market

# Demand Drivers

- Natural flake graphite demand linked to major industrial sectors forecast to grow broadly in line with GDP growth.
- Expandable graphite fire-retardants market forecast to exceed industrial and GDP growth due to increased fire safety regulations.
- Growing demand for low carbon technologies will mandate a higher & of world's mineral production including Graphite

Industrial Minerals estimates natural flake graphite could reach 1.6Mtpa by 2025E which is up circa 180% on 2014's level



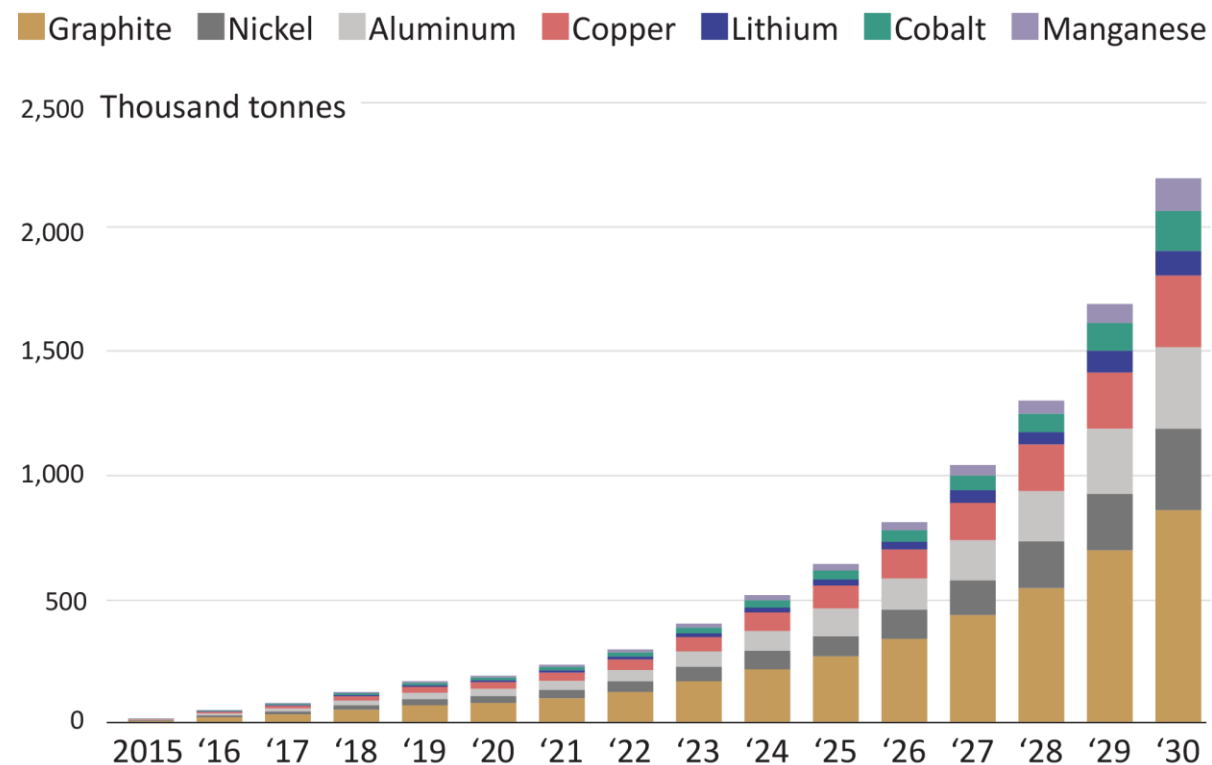
Source: Industrial Minerals



## Graphite Market

# EV Revolution

- Consumption of metals in EV Li-ion batteries dominated by graphite (2015-2030). Battery demand will become the main driver influencing the graphite market



Spherical graphite for lithium-ion battery manufacturers, which are rapidly expanding capacity via new mega-giga factories, reflecting growing end user demand for

- Electric Vehicles
- Electronic Equipment
- Power storage equipment to enable off-peak use of power

# Global Supply



## CHINA DRIVING GLOBAL GROWTH:

- China slowly moving to net-natural graphite importer, which will lead to severe supply deficits moving into the 2020s (BMI)
- Growing opportunities for east African producers to fill an expanding void
- More pertinently, suppliers that produce battery grade natural graphite should be able to command premium pricing
- However, securing premium pricing is a bilateral process that depends on purity, flake-size, product consistency, supply reliability and suitability for downstream applications
- Notably, test-work from the Mahenge Liandu region has shown suitability for a wide range of high-value applications, especially for the rapidly growing lithium-ion battery market



MAHENGE LIANDU  
GRAPHITE PROJECT



# Project Location

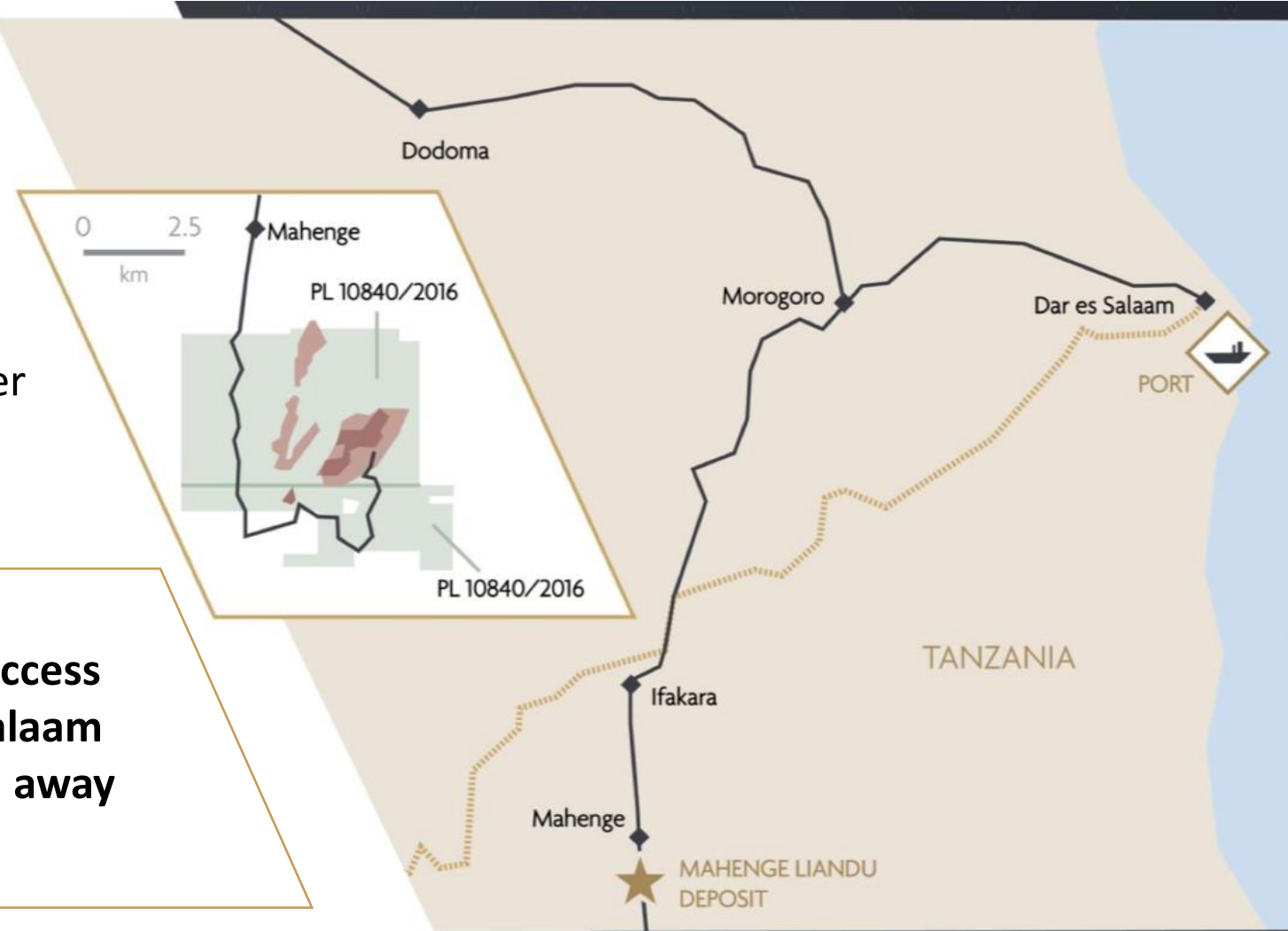
Located close to established infrastructure

Mains power within 5km

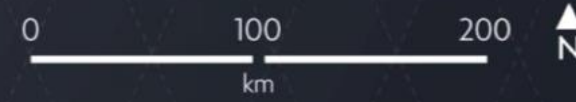
Direct rail access to Dar es Salaam port 320km away

80km by sealed and gravel roads to central rail hub at Ifakara

Labour and materials within 10km at Mahenge town



Tanzania-Zambia Railway



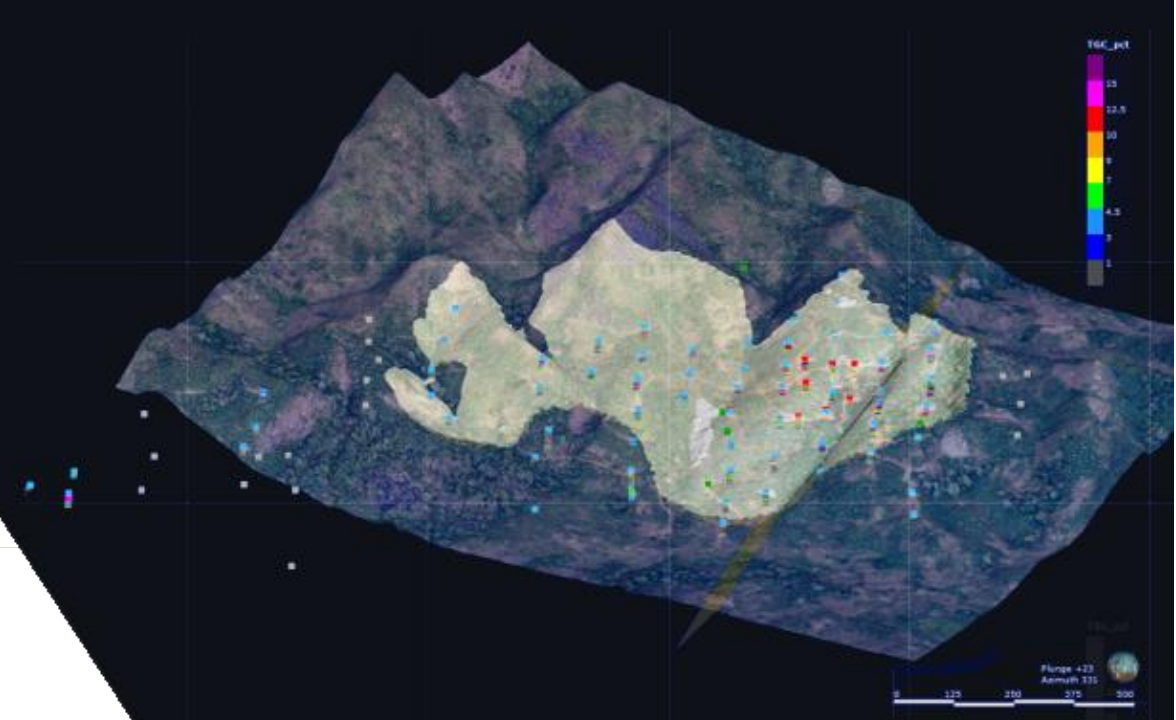
- ..... Railway
- Roads
- Licence Boundary
- Graphite Mineralisation

# Geology

- The geological setting of the Liandu prospect is characterised by complex deformation and metamorphism



- The graphite mineralisation is of Early to Mid-Neoproterozoic age, and form part of the world class East African Graphite Province



- The mineralisation is dipping to the south east and remain open along strike and at depth.
- Limited drilling to the along strike shows continuing high grade mineralisation along scope for future production increases

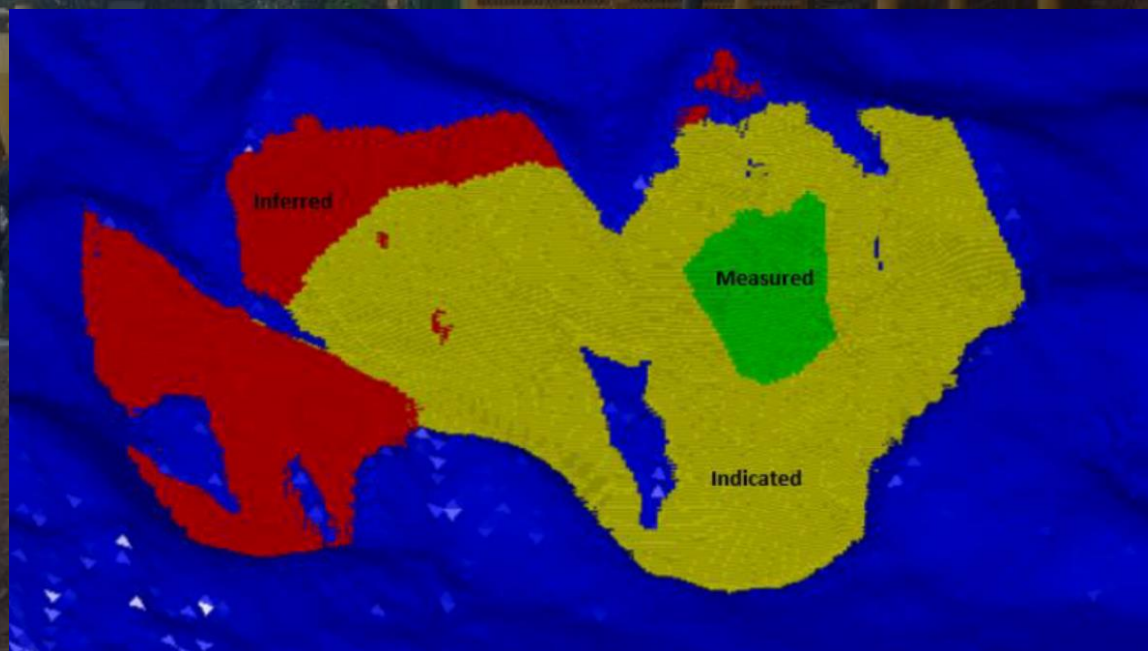


# Resource & Mine

- Multiple High-Grade Zones
- Resource is open in all directions for future development
- Mineralogy well defined
- Optimised resource for mining schedule

## Optimised Resource for mining study showing ore classifications

Apr - 20	7.5% TGC Cut-off	
	Mt	%TGC
Inferred	6.10	12.60
Indicated	12.70	12.90
Measured	1.60	12.30
<b>Total</b>	<b>20.40</b>	<b>12.70</b>



Ore material

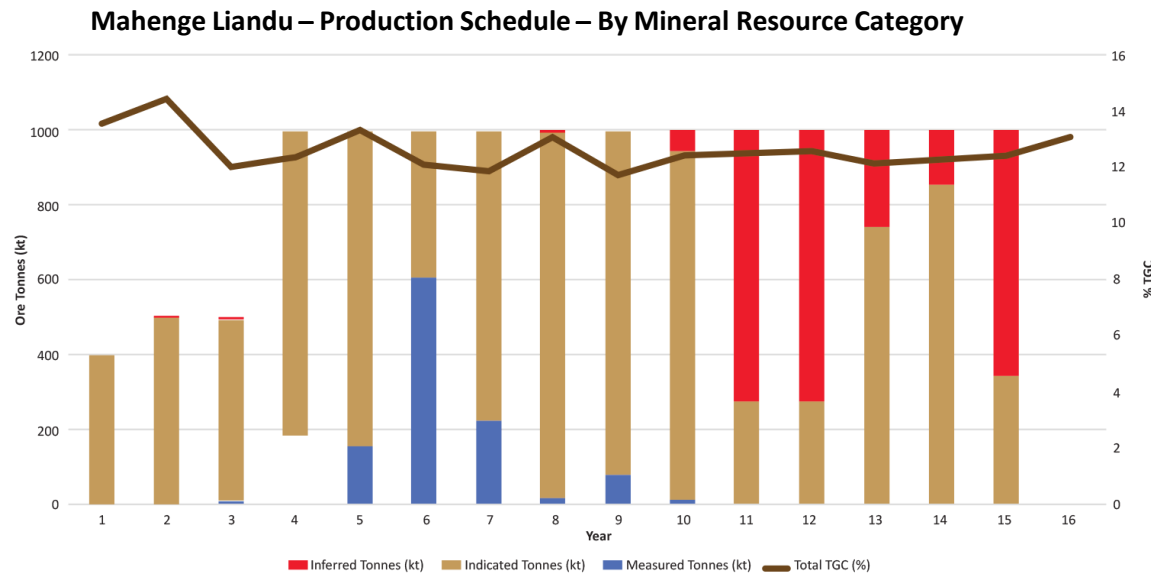
● Measured

● Indicated

● Inferred

# Resource & Mine

- Optimisation of mining schedule has delivered a 15-year life of mine at 12.7% TGC
- First 5 years of operation at 13.2% TGC
- Mining Measured & Indicated for the first 10 years of operations



Resource for Future Mining

25% of Resource utilized for the first 15 years with the resource open in all directions

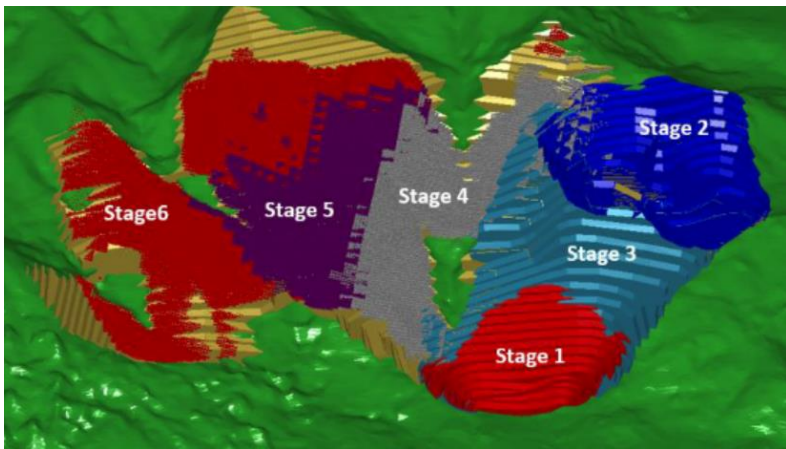




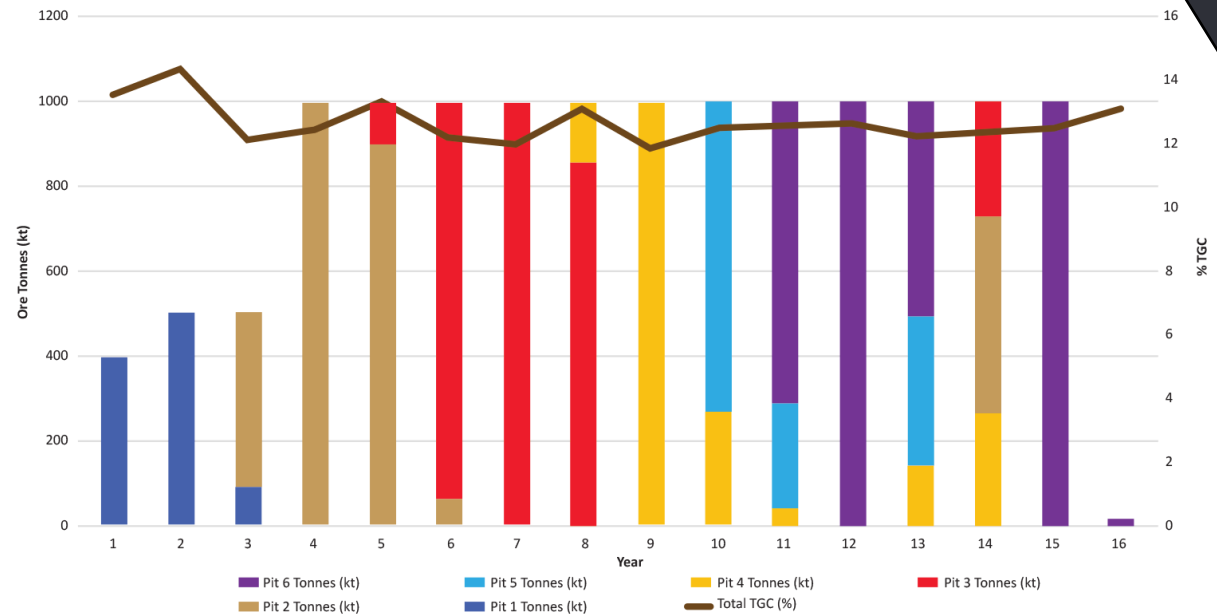
# Resource & Mine



- Mining pit sequence incorporating a two-stage ramp-up
- Stage 1 - 60,000tpa for the first three years
- Stage 2 - moving to a LOM average of 109,000tpa from year four



## Mahenge Liandu – Production Schedule – By Source

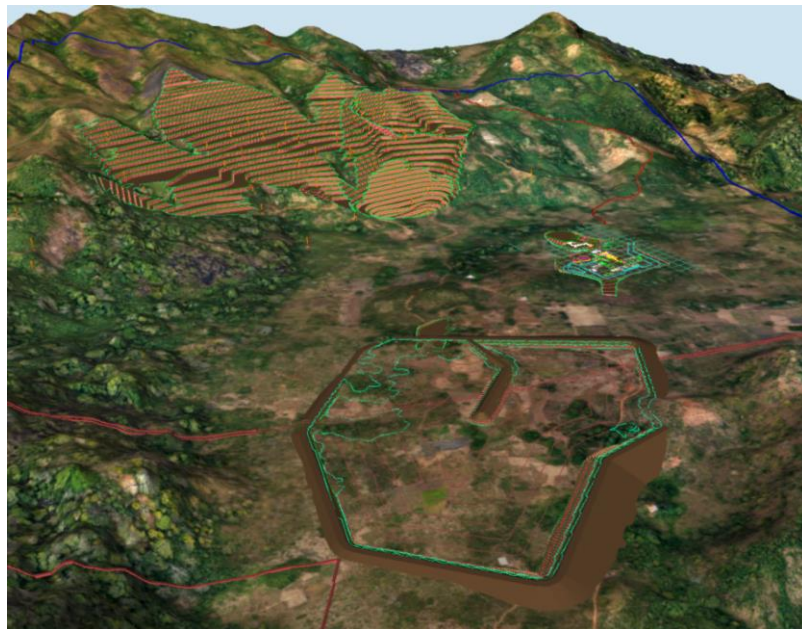


- Optimised resource for mining study showing ore classifications & mining pit sequence
- Final pit design showing the 6 stages of the mine development



# Resource & Mine

- Mining Schedule by Year showing high grade long-life project
- **Doubling of ore processing in year four**
- Plant expansion anticipated to be funded from earlier years cashflow



**Mine Schedule over 15-year initial mine life**

Year	Mill feed Mt	Head Grade TGC%	Concentrate Kt
Y1	0.4	14.50%	53.3
Y2	0.5	12.10%	71
Y3	0.5	12.40%	59.1
<b>Y4</b>	<b>1</b>	<b>13.40%</b>	<b>121.5</b>
Y5	1	12.10%	131.3
Y6	1	11.90%	118.6
Y7	1	13.10%	116.3
Y8	1	11.70%	128.5
Y9	1	12.40%	115.1
Y10	1	12.50%	122
Y11	1	12.60%	122.1
Y12	1	12.20%	123.6
Y13	1	12.30%	119.1
Y14	1	12.50%	120.2
Y15	1	13.10%	121.9

# Graphite Project



## Project Outcomes

Projected timeline to first production is expected to be approximately 10-12 months from the start of construction

The capital cost estimate is US\$39.7m, which includes a contingency of US\$4.1m or 15% of total direct capital cost, with a 1.6 year payback

A 20% favourable price assumption increases the NPV to US\$588m the IRR to 118%

The sensitivity analysis indicates robustness of the project where a 30% reduction in product pricing still results in a US\$192m NPV and IRR of 49%.

## NPV sensitivity analysis (before tax)

Key metric	30% Unfavourable US\$M	20% Unfavourable US\$M	10% Unfavourable US\$M	Base Case US\$M	10% Favourable US\$M	20% Favourable US\$M
CAPEX	407	415	422	430	437	445
OPEX	324	360	395	430	465	500
Grade	224	293	361	430	498	567
Price	192	271	350	430	509	588
LOM Average Sales Price \$/t	778	889	1000	1112	1223	1334

## IRR sensitivity analysis (before tax)

Key metric	30% Unfavourable	20% Unfavourable	10% Unfavourable	Base Case	10% Favourable	20% Favourable
CAPEX	71%	77%	83%	91%	100%	111%
OPEX	71%	78%	84%	91%	97%	104%
Grade	55%	67%	79%	91%	103%	114%
Price	49%	63%	77%	91%	104%	118%

# Legislative Environment

- Tanzania is a stable democracy with a legal system founded on English common law
- The official languages are Swahili and English
- Tanzania has a long mining history and currently the 4th largest gold producer in Africa

30% corporate tax rate

New mining legislation introduced in July 2017 had a moderate impact on the graphite sector

3% royalty levied for industrial minerals

Mining Commission established in April 2018 to facilitate grant, renewal and transfer of mining licences



# Investment Case



- Building a significant high-grade graphite mine at the Mahenge Liandu Graphite Project
- The June 2020 DFS demonstrated potential to support a staged production ramp up over a 15-year initial mine life with an average LOM production of 109,000tpa
- Significant upside – 15-year mine life based on just a quarter of the resource
- DFS shows robust economics with a pre-tax NPV of \$430m and IRR of 91%
- Project potential underpinned by increasing global demand for graphite products – four MOUs signed and significant sales interest
- Armadale entering a transformational stage transitioning from developer to producer
- Experienced team actively reviewing other exciting investment opportunities

# Additional Interests



- Armadale also holds a portfolio of royalty, listed company and unlisted company investments where the Board considers there is an opportunity for material capital appreciation
- The Board continues to review additional investment opportunities in which Armadale may invest, in line with its investing policy, with any material investments notified to the market as appropriate



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Exploration Targets: It is common practice for a company to comment on and discuss its exploration in terms of target size and type. The information in this presentation relating to exploration targets should not be misunderstood or misconstrued as an estimate of Mineral Resources or Ore Reserves. Hence the terms Resource(s) or Reserve(s) have not been used in this context in this presentation. The potential quantity and grade of resource targets are conceptual in nature since there has been insufficient work completed to define them beyond exploration targets and that it is uncertain if further exploration will result in the determination of a Mineral Resource or Ore Reserve.



# Resource & Mine

From the initial discovery in 2016 progressive programs expanded the resource and upgrade to Measured & Indicated from initial maiden resource

Dec-16	Maiden Resource	
	Mt	%TGC
Inferred	40.90	9.41



Feb-18?	3.5% TGC Cut-off	
	Mt	%TGC
Inferred	12.50	9.10
Indicated	38.70	9.30
Measured		
<b>Total</b>	<b>51.10</b>	<b>9.30</b>



Oct-19	7.5% TGC Cut-off	
	Mt	%TGC
Inferred	15.90	9.75
Indicated	32.06	9.58
Measured	11.48	10.54
<b>Total</b>	<b>59.48</b>	<b>9.81</b>

Mahenge Liandu Tanzania



# Project Economics



■ **NPV10: \$430m**

■ **LOM EBITDA: \$1.085B**

■ **Capex: \$39.7m**

■ **IRR: 91%**

- Mahenge will be a significant low cost supplier to the graphite industry
- Potential to create pre tax cashflow of US\$985m over an initial 15 year mine-life
- Scope for further improvement as this utilises just 25% of the current resource

Area	Unit	Result
Mining inventory	(Mt)	13.4
Mine grade	(TGC%)	12.5
Strip ratio		2
Project Life	(years)	15
Total LOM Net Revenue	(US\$ M, real)	1,823
Total LOM EBITDA	(US\$ M, real)	1,085
Total LOM Net Cash Flows Before Tax	(US\$ M, real)	985
NPV @ 10.0% - before tax	(US\$ M, real)	430
IRR - before tax	(%, real)	91%
Project Capital Expenditure	(US\$ M, real)	39.7
Payback Period - after tax	(years)	1.6
Average Sales Price (LOM)	Product (US\$/t)	1,112
Cash Costs (FOB DES)	(US\$/t, real)	369