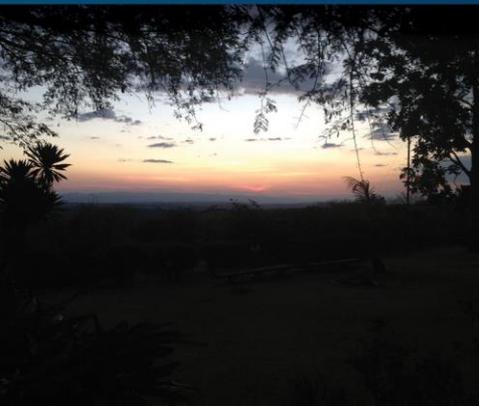




**Cradle Definitive Feasibility Study – Panda Hill**  
**Investor Update April 2016**



## Panda Hill Overview

**Cradle owns 50% of the Panda Hill Project**

**Single Open Pit Operation**

**Mining 72Mt at 0.54% Nb over 30 years**

**Producing 1.3Mtpa ramping up to 2.6Mtpa after 4<sup>th</sup> year of production**

**Mining Licence and Environmental Licences are in place**

**Panda Hill is located in Mbeya region in South Western Tanzania**

- 680km west of capital Dar es Salaam
- Tanzania has a well-established mining industry and culture
- Panda Hill deposit is covered by three Mining Licenses
- Title of these licenses extended to 16 Nov 2026

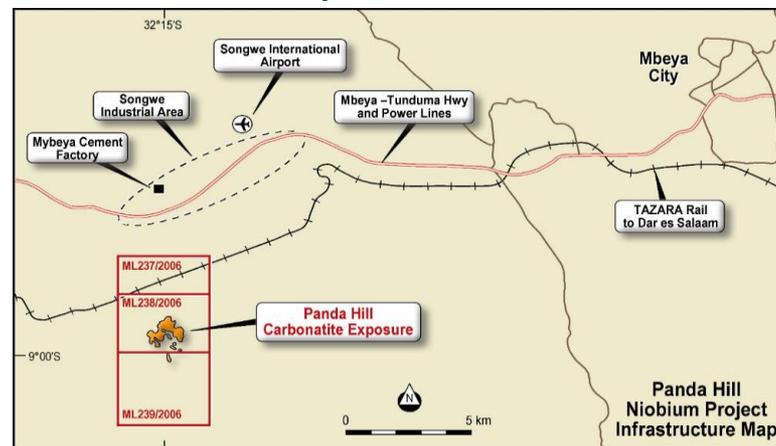
### Excellent local infrastructure

- TAZARA Rail line (2km away)
- Dar es Salaam – Tunduma Highway (5km away)
- Songwe Airport (8km away)
- Major power infrastructure in Mbeya (26km away)
- 26km from industrial city Mbeya

### Panda Hill Niobium Deposit



### Panda Hill Proximity to Infrastructure



# Panda Hill Project DFS Results

## Panda Hill will be the worlds next Niobium mine due to robust economics

### DFS Overview

- NPV<sub>8</sub> US\$542M (post tax)
- LOM average EBITDA of US\$112Mpa
- 4.75 year pay back
- Initial capital expenditure of US\$196M (expansion US\$93m in year 4 to increase capacity from 1.3Mtpa to 2.6Mtpa)
- LOM of 30+ years
- LOM Average Niobium price of US\$41.89/kg

### DFS results demonstrated

- NPV<sub>8</sub> US\$542M (post tax)
- NPV<sub>10</sub> US\$404M (post tax)
- IRR 27% (post tax)
- LOM C1 US\$18.30/kg
- LOM Total Opex US\$21.34/kg

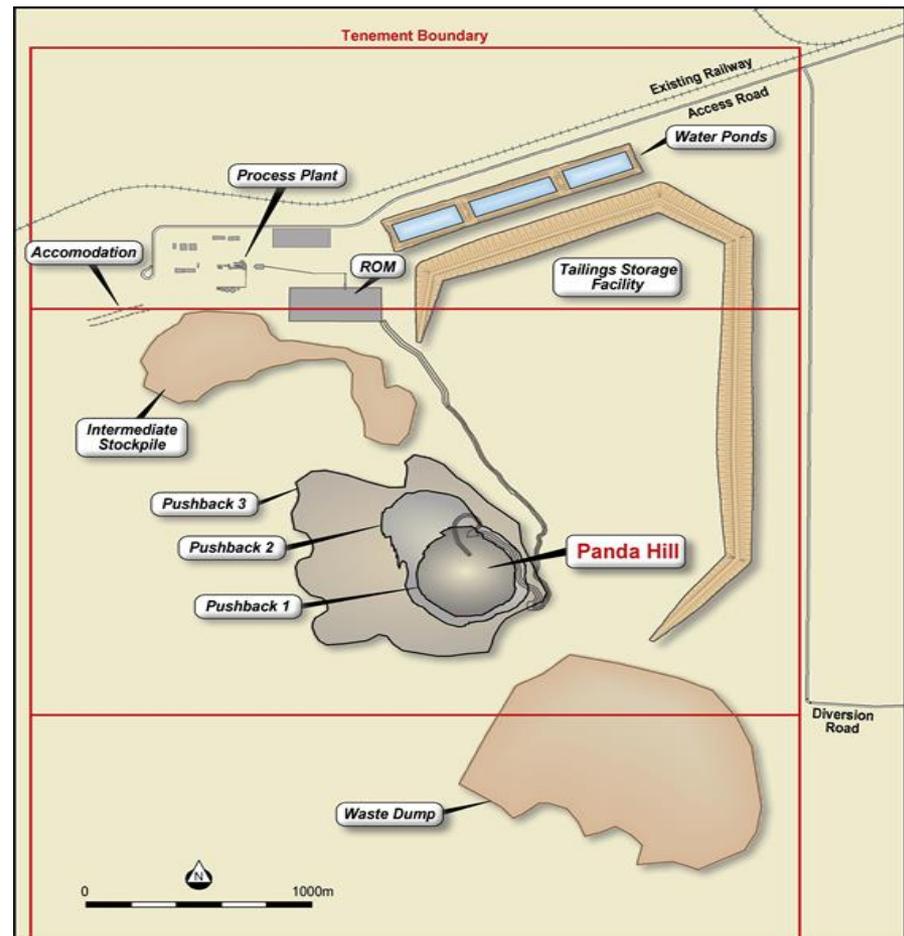
### Panda Hill Resource

Panda Hill 2015 Resource  
Reported Above a 0.3% Nb<sub>2</sub>O<sub>5</sub> Lower Cut-off

Combined Carbonatite

Classification	Million Tonnes	Nb <sub>2</sub> O <sub>5</sub> %	Nb <sub>2</sub> O <sub>5</sub> Content (KT)
Measured	16	0.63	9
Indicated	53	0.50	263
Inferred	109	0.48	528
<b>Total</b>	<b>178</b>	<b>0.50</b>	<b>891</b>

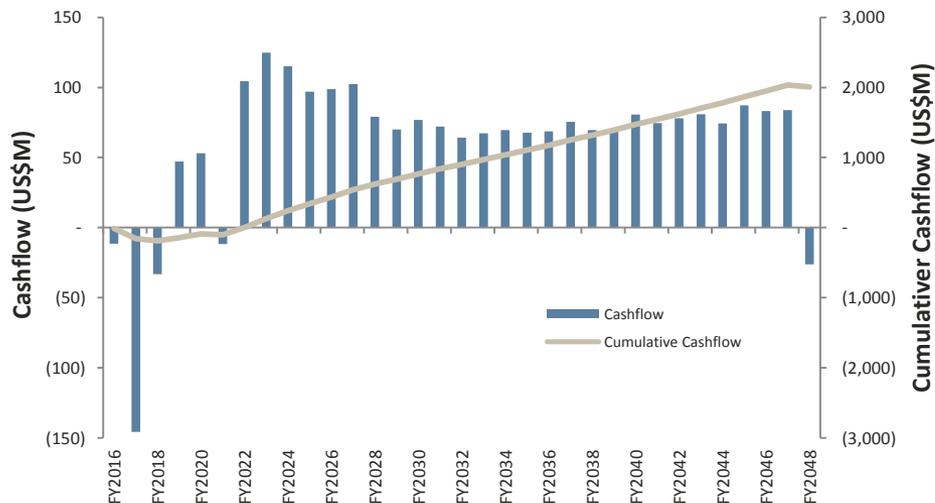
### Panda Hill Operations



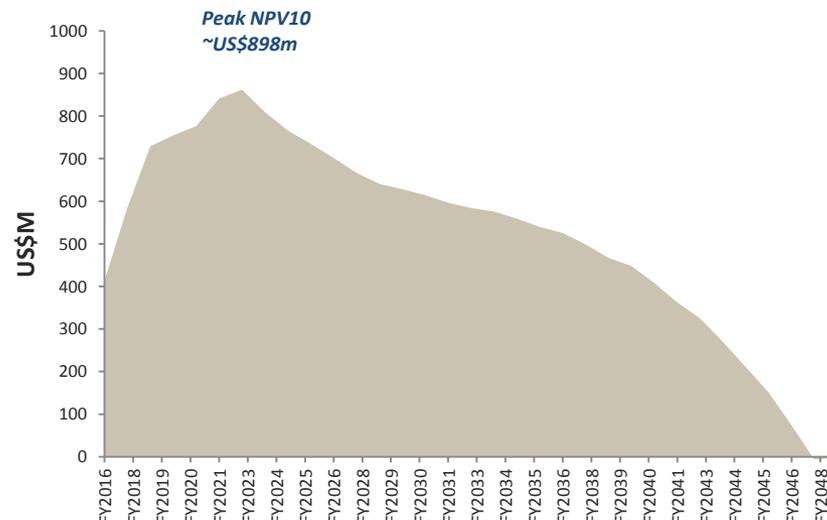
# Compelling Economics

Low Capex, strong margin & long life generates compelling economics and returns with significant leverage to positive niobium outlook

Project Free Cashflow



Running NPV<sub>10</sub> (100% basis ungeared)



NPV & IRR Sensitivity to LT Niobium Price (Management Case)

Niobium Price (US/kg Nb)	38	40	<b>42</b>	44	46
Ungeared NPV <sub>10</sub> (post-tax)	282	343	404	465	526
Project IRR (post-tax)	23%	25%	27%	30%	32%

*Assumed Case*

# Panda Hill Project Capital Cost

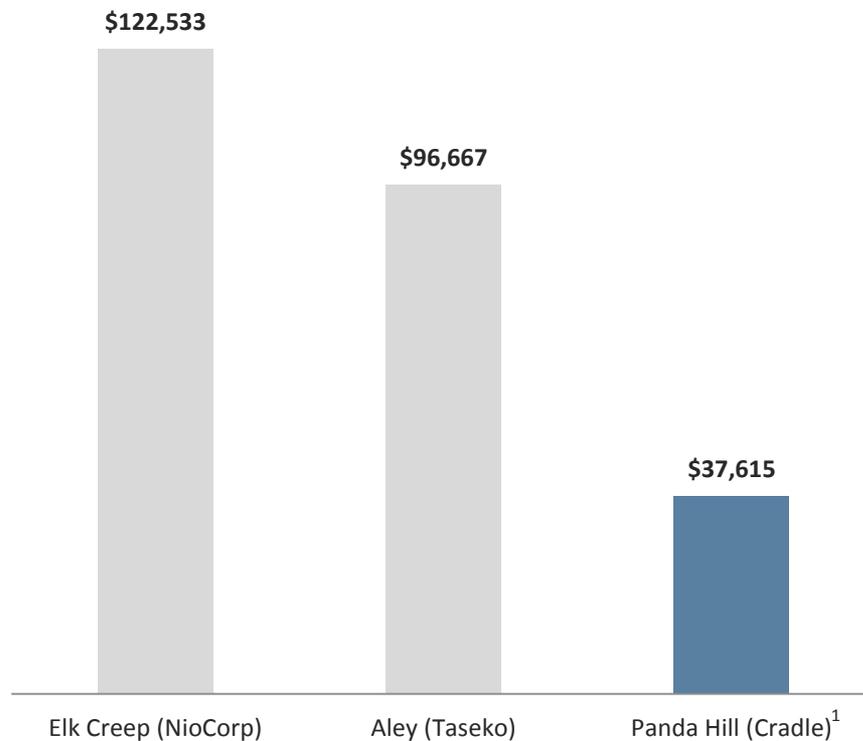
Low capital costs due to favourable metallurgy & existing infrastructure, making Panda Hill extremely capital efficient vs. other undeveloped niobium deposits

## Capital Costs Summary

Item	US\$m	%
<b>Summary</b>		
Project Capital Costs	165.2	84%
Pre Production	30.5	16%
<b>Total</b>	<b>195.6</b>	<b>100%</b>
<b>Project Capital Costs</b>		
Mining	3.1	2%
Plant	75.4	46%
Infrastructure	7.8	5%
TSF & Water	42.5	26%
In-directs	4.2	3%
Management Costs	14.3	9%
Subtotal	147.3	90%
Project Contingency	17.8	10%
Project Escalation	0.0	0%
<b>Total</b>	<b>165.2</b>	<b>100%</b>
<b>Pre-Production</b>		
First Fills	2.7	9%
Spares	1.9	6%
Owners	4.7	15%
Pre Production	15.0	50%
Prison Relocation	6.2	20%
<b>Total</b>	<b>30.5</b>	<b>100%</b>

1. Figures have been rounded
2. Peak Working Capital is estimated at US\$8.7M

## Capital Intensity vs. Other Undeveloped Deposits (US\$/t annual Nb Production)



1. Production based on average LOM

# Panda Hill Project DFS Parameters

## DFS Demonstrates a Highly Economic Project

Initial 10 years mining predominantly in the higher grade Angel Zone of exclusively Measured and Indicated Resources

Key production figures for first 10 years:

- Average grade: 0.68% Nb<sub>2</sub>O<sub>5</sub>
- Average recovery: 61%
- Strip ratio: 2.5 to 1

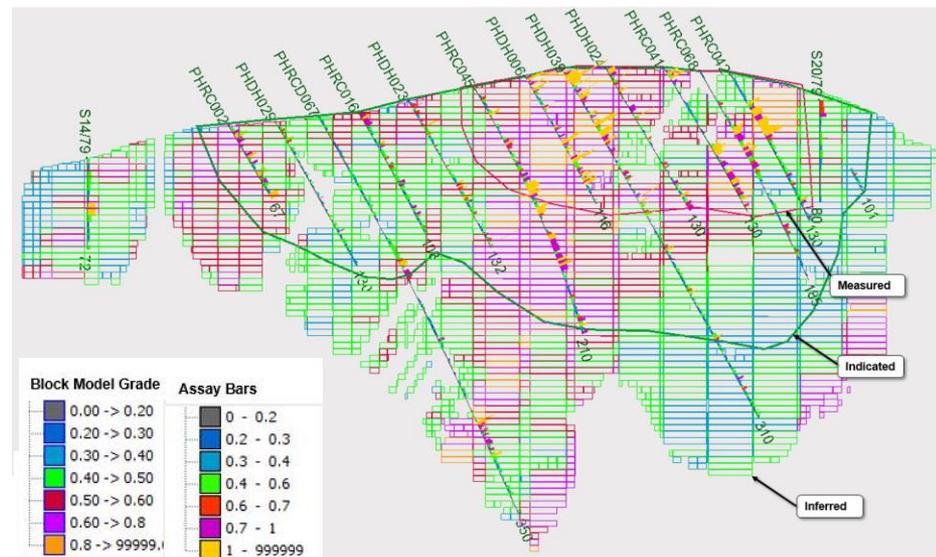
Key production figures for Life Of Mine:

- Average grade: 0.54% Nb<sub>2</sub>O<sub>5</sub>
- Average recovery: 61%
- Strip ratio: 1.5 to 1

Mining Study:

- **SRK performed the pit optimisation using Whittle based on the following parameters**
  - LOM Average Niobium price of US\$44/kg
  - Processing cost US\$22.5 to US\$23.3/tonne (depending on material type)
  - Processing recoveries of 55% to 68% (depending on material type)
  - Average LOM mining cost
    - \$11.35/t ore (\$4.42/t TMM)
  - Pit wall angles of bench-stack pit slope angles of 46° and 49° for weathered domains and 55° for fresh material domains
  - 30 year mine life

## Panda Hill Ore Body

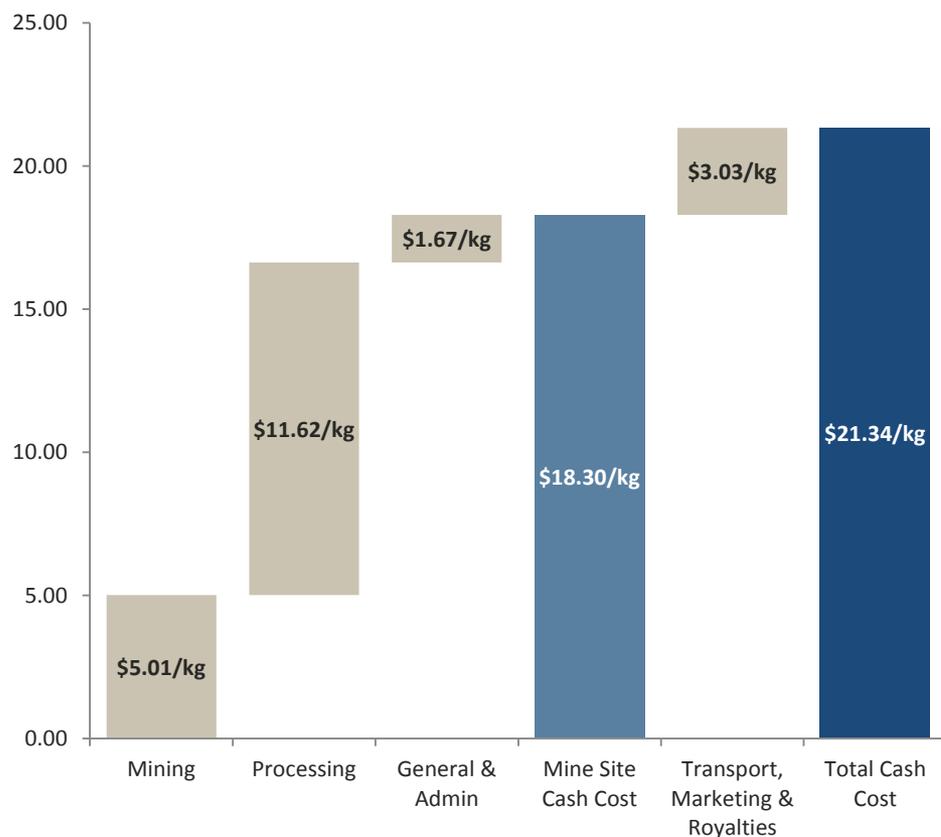


# Robust Operating Costs

Operating costs are predominately mining & processing and provide a robust margin relative to long term niobium price

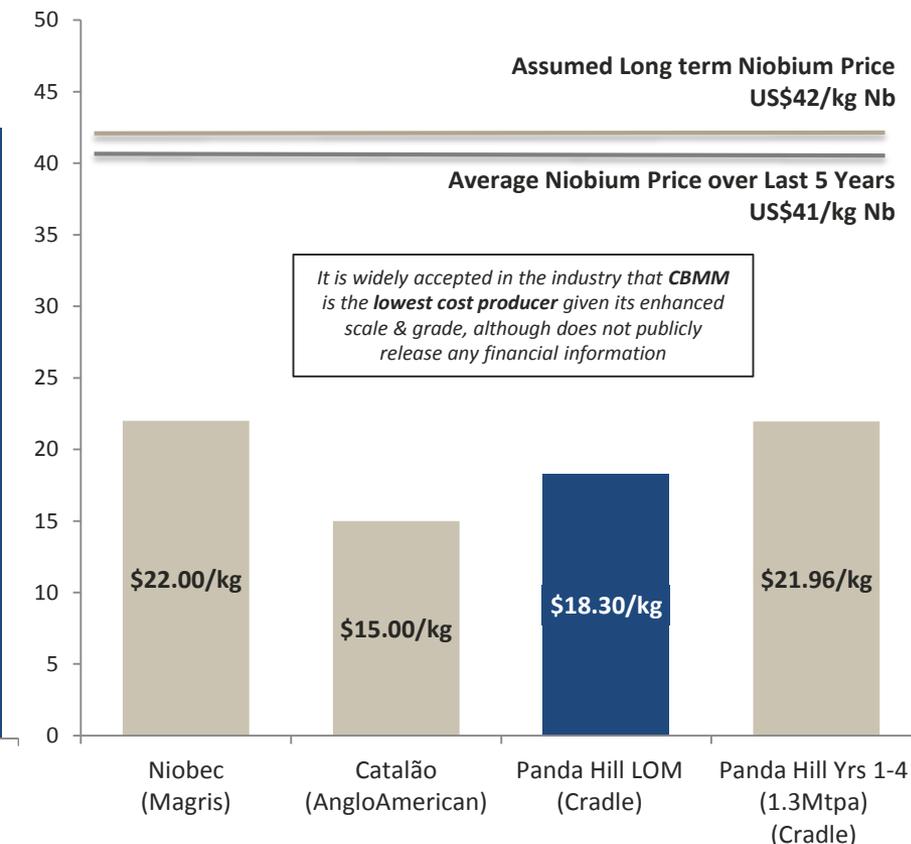
## LOM Production Cost Breakdown

US\$/kg Nb



## Mine Site Cash Costs

US\$/kg Nb



# Processing Development

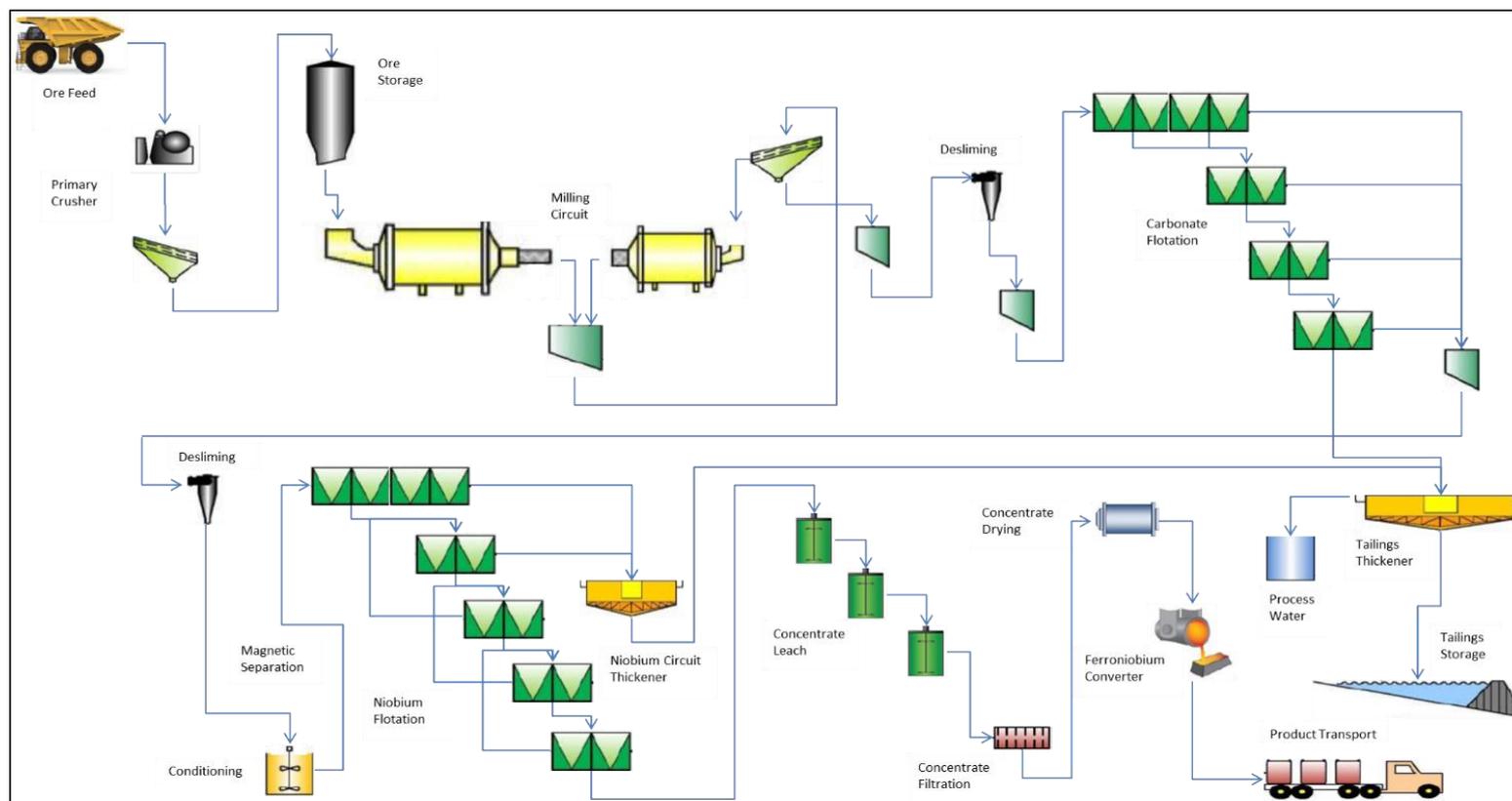
## Design based on successful existing operational Niobium processing facilities

- The flotation process is similar to Niobec
- The concentrate leach is similar to Catalao
- Final step in the conversion process is similar to CBMM

## Process Plant Design and Flowsheet

- Based on extensive testwork undertaken at SGS Canada, including 3 piloting campaigns
- Expandable plant designed ramping up from 1.3Mtpa to 2.6Mtpa after 4<sup>th</sup> year of production

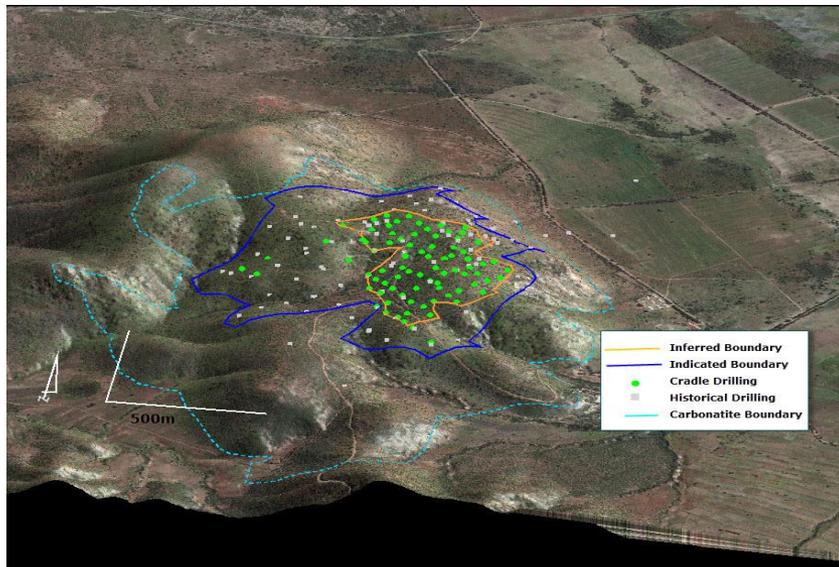
## Panda Hill Flow Sheet



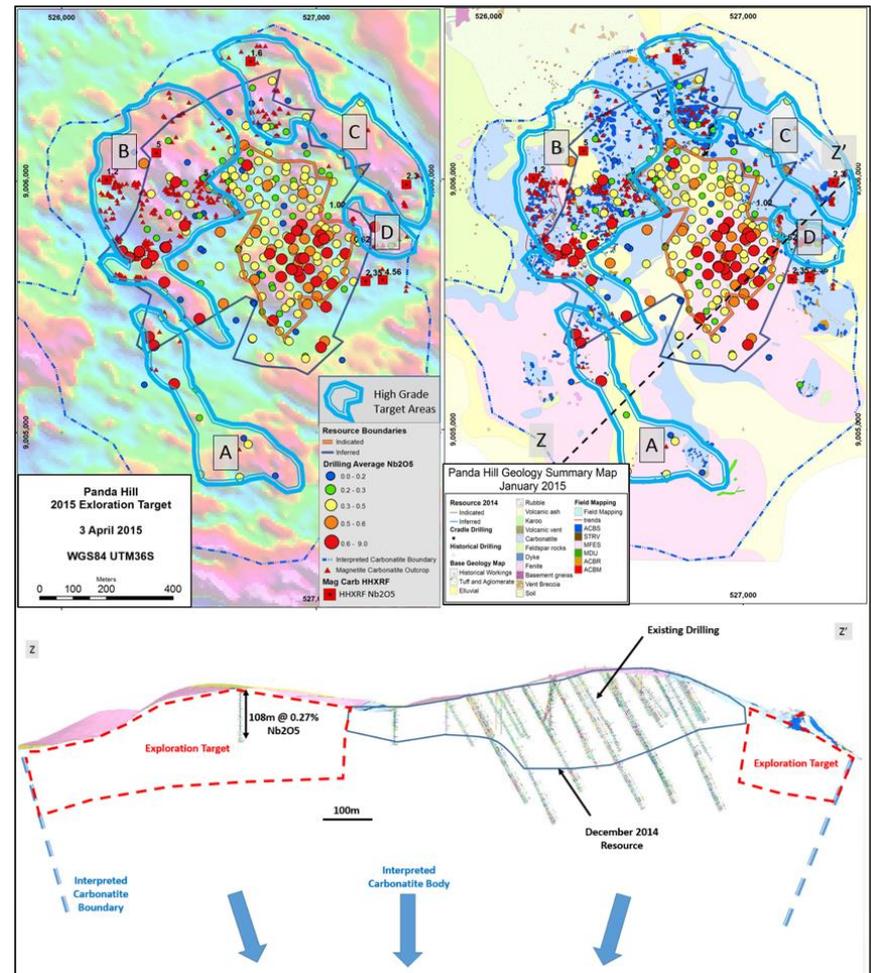
## Significant Resource Upside

- Total Carbonatite Mineral Resource of 178Mt at 0.50% Niobium
- Only ~40% of the area of the carbonatite has been properly drill-tested
- Mineralisation open in all directions
- Exploration upside potential for remaining untested 60% of carbonatite contained with 22.1km<sup>2</sup> of mining licenses
- Represents long asset life in a growing market positioning Panda Hill to become a long term producer of Niobium

### Carbonatite Boundary



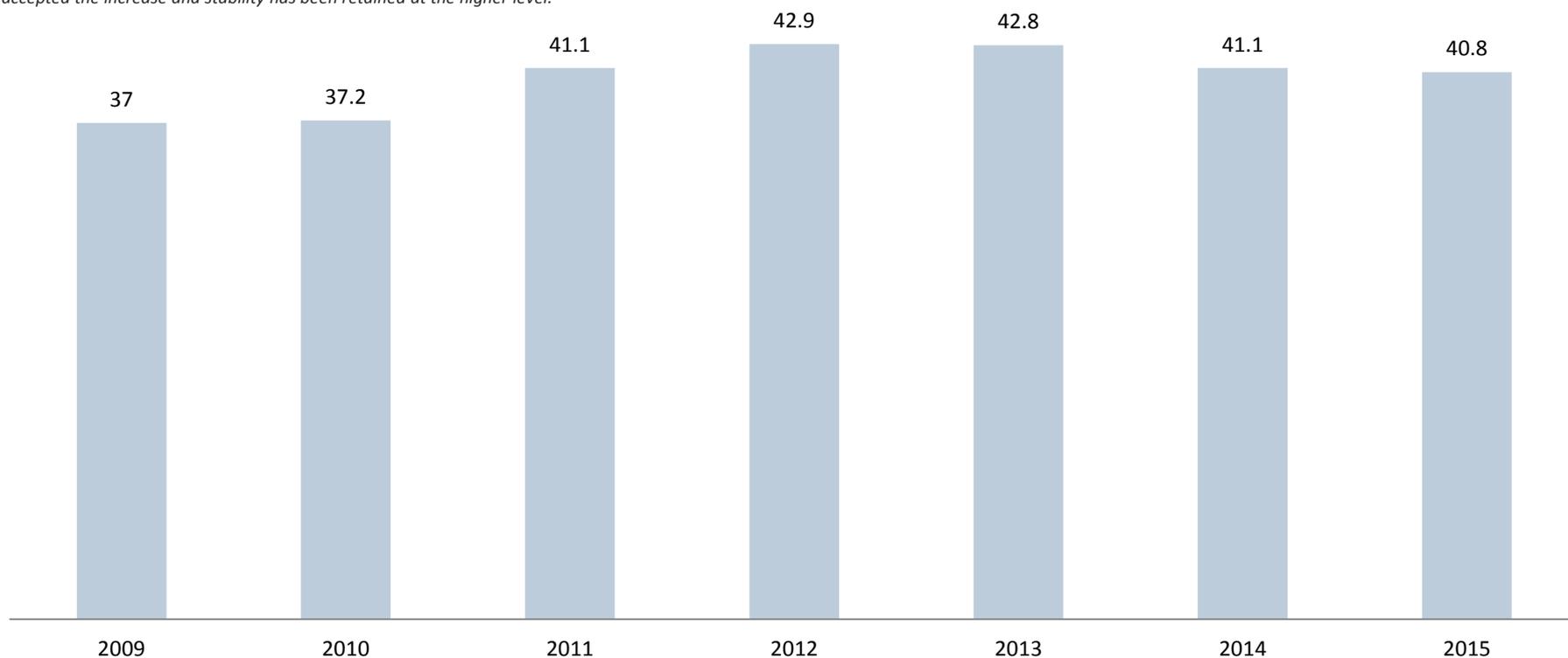
### Carbonatite Boundary



## Niobium has a history of stable prices given increasing underlying demand and supply responsibility

### Niobium Price History (Average annual value of ferroniobium imports, US\$/kg)

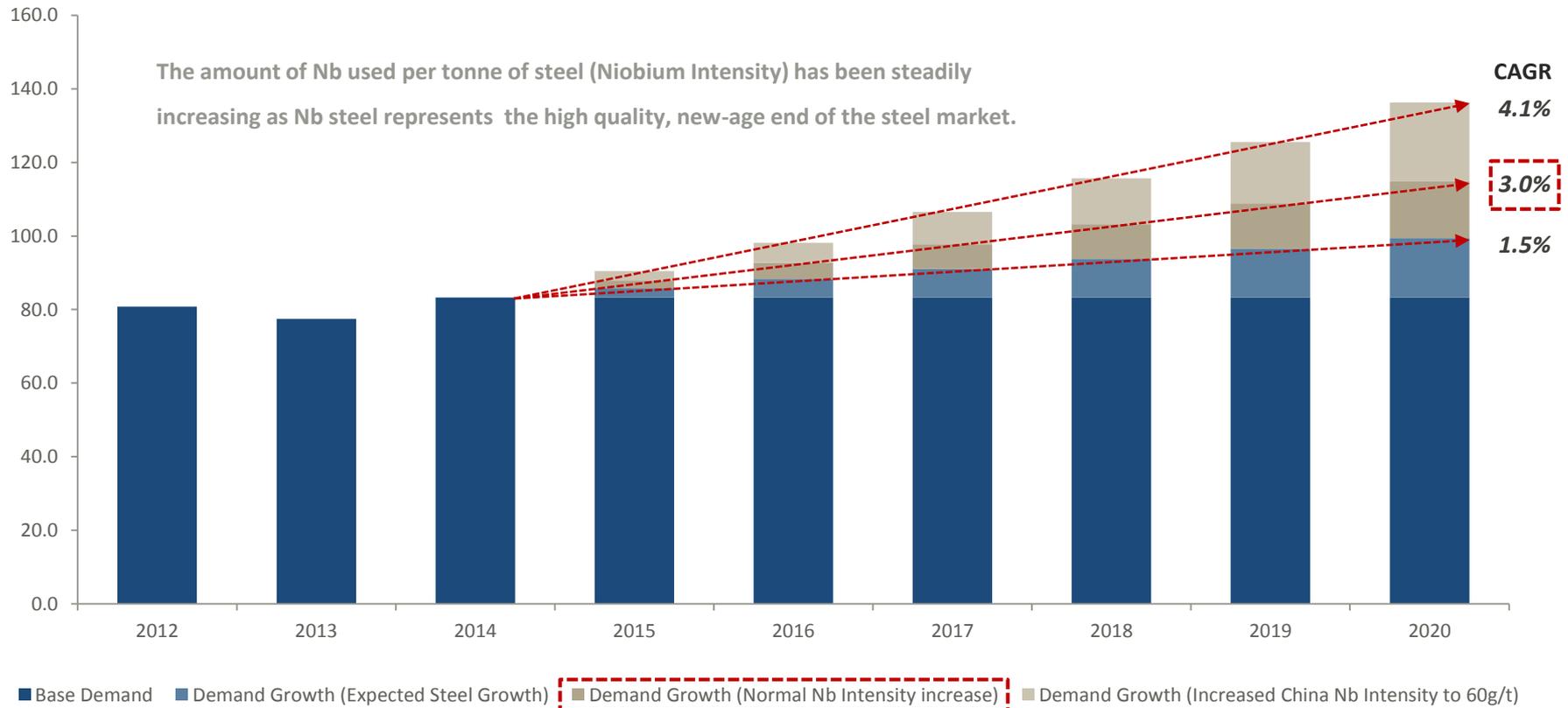
*Between 2006 and 2008 there was a significant increase in prices, instigated by CBMM to address the structural under-valuing of ferroniobium. The market accepted the increase and stability has been retained at the higher level.*



# Global Demand for Niobium

Demand has steadily increased since 2000 and is forecast to grow at ~3.0% p.a.

Global Ferroniobium Demand Forecast (kt FeNb)



## Next Steps

Finalise offtake agreements

Secure debt financing

Value engineering to look at cost reduction opportunities

Front end engineering and design on critical items to reduce the construction period

Construction permitting processes

Procurement of some long lead items

Early site establishment from the main site based contractor

Formal decision to Mine Q4 CY2016