Thunderbird

The Emerging Force in Mineral Sands

TZMI & Investor Presentation

November 2016

ASX : SFX

sheffieldresources.com.au

DISCLAIMER

PREVIOUSLY REPORTED INFORMATION

This presentation includes information that relates to Exploration Results, Exploration Targets, Mineral Resources, Ore Reserves, a Pre-feasibility Study and Technical Studies which were prepared and first disclosed under the JORC Code 2012. The information was extracted from the Company's previous ASX announcements as follows:

"OUTSTANDING IMPROVEMENTS IN RECOVERIES AND PRODUCT SPECIFICATIONS FROM THUNDERBIRD BFS" 12 October 2016
"SHEFFIELD DOUBLES MEASURED MINERAL RESOURCE AT THUNDERBIRD" 5 July, 2016
"THUNDERBIRD MINERAL SANDS PROJECT - BFS UPDATE" 29 June, 2016
"PREMIUM ZIRCON AT NIGHT TRAIN", 14 April 2016
"SHEFFIELD APPOINTS HATCH TO DELIVER BFS FOR THUNDERBIRD PROJECT", 2 March 2016
"MAIDEN ORE RESERVE – THUNDERBIRD PROJECT", 22 January, 2016
"PRE-FEASIBILITY STUDY UPDATE CONFIRMS THUNDERBIRD AS THE WORLD'S BEST UNDEVELOPED MINERAL SANDS PROJECT", 14 October 2015
"NEW MINERAL SANDS DISCOVERY AT NIGHT TRAIN", 22 September 2015
"OUTSTANDING RESULTS FROM ILMENITE UPGRADE TESTWORK", 9 September 2015
"CONVENTIAL DOZER TRAP MINING CONFIRMED AS PREFERRED MINING METHOD AT THUNDERBIRD", 17 September 2015
"THUNDERBIRD HIGH GRADE RESOURCE UPDATE", 31 July 2015
"QUARTERLY REPORT FOR PERIOD ENDING 30 JUNE 2015", 27 July 2015
"PRE-FEASIBILITY STUDY CONFIRMS THUNDERBIRD AS NEXT MAJOR MINERAL SANDS PROJECT IN GLOBAL DEVELOPMENT PIPELINE", 14 May 2015
"THREE NEW MINERAL SANDS DISCOVERIES IN CANNING BASIN", 25 February 2015

These announcements are available to view on Sheffield Resources Ltd's website: www.sheffieldresources.com.au

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, Ore Reserves, Pre-feasibility Study and Technical Study results, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement

FORWARD LOOKING STATEMENTS

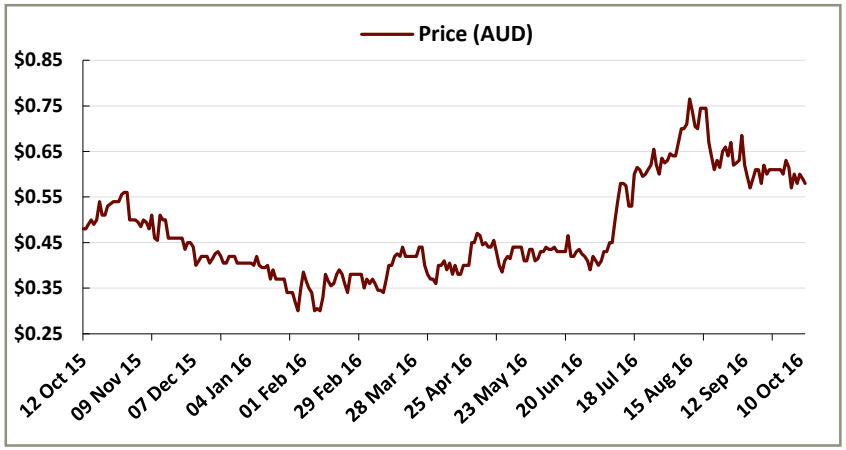
Some statements in this report regarding estimates or future events are forward-looking statements. They include indications of, and guidance on, future earnings, cash flow, costs and financial performance. Forward-looking statements include, but are not limited to, statements preceded by words such as "planned", "expected", "projected" "estimated" "may", "scheduled", "intends", "potential", "could" "nominal" "conceptual" and similar expressions. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. Forward looking statements may be affected by a range of variables that could cause actual results to differ from estimated results.

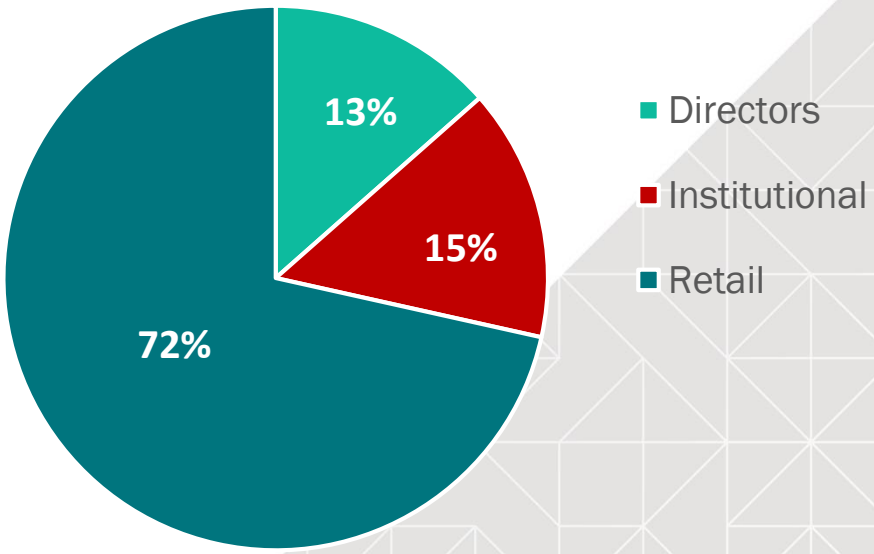
MINERAL RESOURCES RELATED TO PFS RESULTS

In this report that part of the Thunderbird Measured and Indicated Mineral Resource, considering the results of pit optimisations, preliminary mine designs and economic factors, that has been evaluated in the October 2015 Pre-feasibility Study is 685Mt at 11.3% HM. These considerations for the PFS are not sufficient to meet the requirements of an Ore Reserve as defined under the 2012 edition of the JORC Code and therefore should not be considered as such. Subsequent to the PFS, on 22 January 2016, Sheffield announced a maiden Ore Reserve for Thunderbird meeting the requirements of the JORC Code 2012, totalling 682.7Mt @ 11.3% HM (Proved and Probable), based on that portion of the July, 2015 Thunderbird deposit Measured and Indicated Mineral Resources within mine designs that may be economically extracted with appropriate consideration of modifying factors, costs, mineral assemblage, process recoveries and product pricing. See Appendix 1 for further details.

CORPORATE SNAPSHOT

ASX CODE	ISSUED SHARES	SHARE OPTIONS	SHARE PRICE (3 Nov 2016)	MARKET CAP	CASH (UNAUDITED)[1]	ENTERPRISE VALUE	TOP TWENTY SHAREHOLDERS[2]
SFX	180.7M	12.5M[2]	A$0.55	A$99M	A$16M	A$83M	~49%





Major Shareholders

BlackRock	9%
Walter Yovich	6%
Australian Institutions	4%
Other Overseas Institutions	2%

[1]unaudited as at 30 September 2016
[2]average exercise price A$0.55c

OUR TEAM – EXPERIENCED & SKILLED

BOARD

Will Burbury
Non-executive Chairman

Bruce McFadzean
Managing Director

David Archer
Technical Director

Bruce McQuitty
Non-executive Director

MANAGEMENT

Bruce McFadzean
Managing Director

Mining Engineer with over 35 years experience leading the financing, development and operation of mines in Australia and overseas, including roles with BHP Billiton and Rio Tinto. Previously Managing Director of Catalpa Resources (ASX: CAH) prior to its merger with Evolution Mining and Mawson West (TSX:MWE).

David Archer
Technical Director

Geologist with over 27 years experience Australian resources sector. Has held senior positions with major Australian mining companies, including RGC Ltd, and as consultant to Atlas Iron Limited and Warwick Resources Limited, was responsible for significant iron ore discoveries.

Mark Di Silvio
CFO/Company Secretary

CPA with over 25 years experience in the resources sector working across Africa and Australia. Has led financing and restructuring initiatives, holding senior finance and executive positions with RGC/Goldfields Limited, Woodside Energy, Centamin Plc and Mawson West Limited.

Jim Netterfield
BFS Project Manager

Mechanical engineer with a proven track record in successfully managing mineral development projects through to production. Professional career includes roles with BHP Billiton and Rio Tinto, and most recently four years as acting CEO and Operations Director at Oakajee Port & Rail Pty Ltd.

Neil Patten-Williams
Marketing Manager

Experienced marketing and operations manager with over 18 years experience in the mineral sands industry, having held a number of management roles with Doral. Solid background in marketing and logistics of both zircon and titanium mineral products.

Mark Teakle
Development Manager

With a career spanning more than 33 years, a geologist with extensive experience in the mineral sands sector, holding senior management positions with Aberfoyle Resources Ltd, Australian Zircon NL. Involved in the discovery and evaluation of several Australian mineral sands deposits.

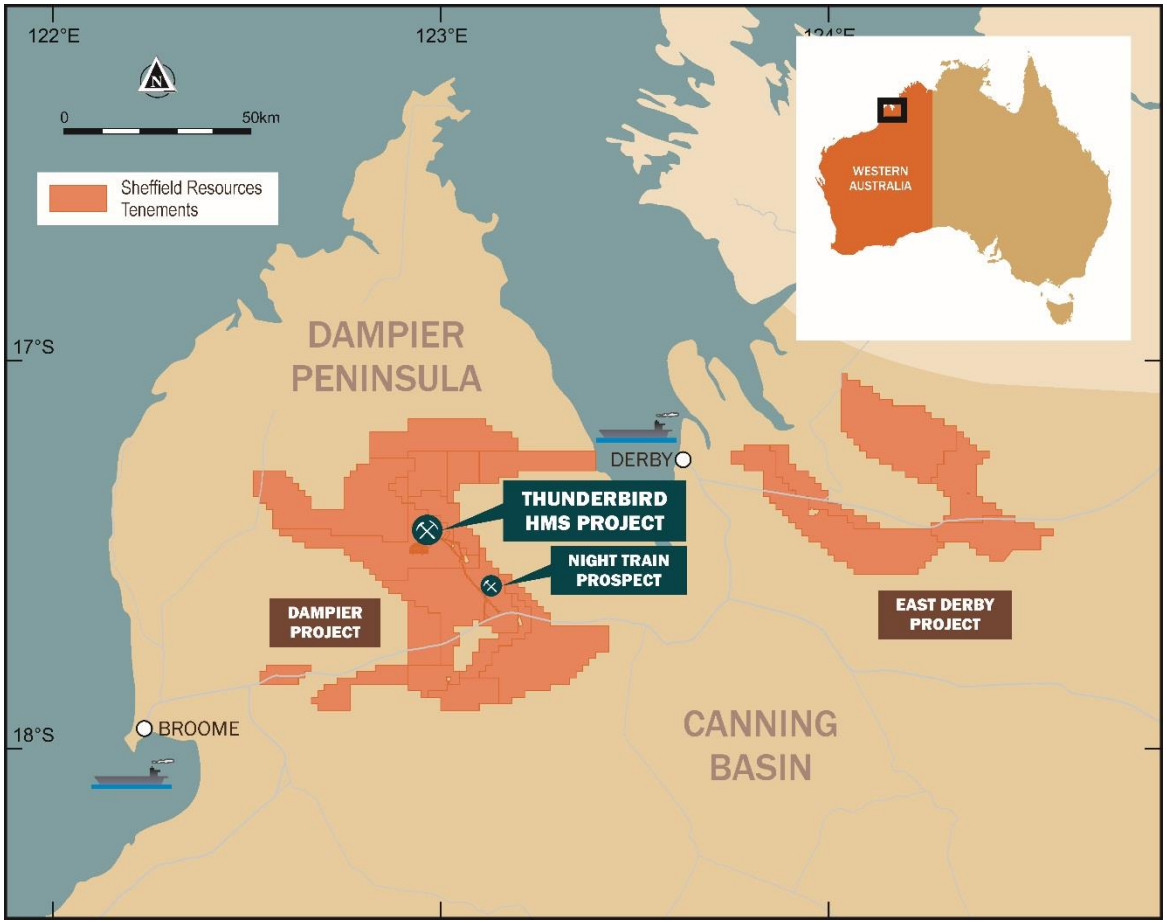
David Boyd
Exploration Manager

Previously General Manager of Geology at Consolidated Minerals where he managed exploration and resource development across that company's manganese, chromite and iron ore projects. Career includes senior positions with RGC/Goldfields Limited, Placer Dome Limited and Barrick.

Wayne Groeneveld
Sustainability Manager

Over 30 years' experience in the mining industry, having led negotiation of land access and native title agreements. Experience includes senior positions with RGC/Goldfields Limited, Placer Dome Australia Ltd, St Barbara Ltd and Xstrata Nickel.

THUNDERBIRD - DISCOVERY TO PRODUCTION

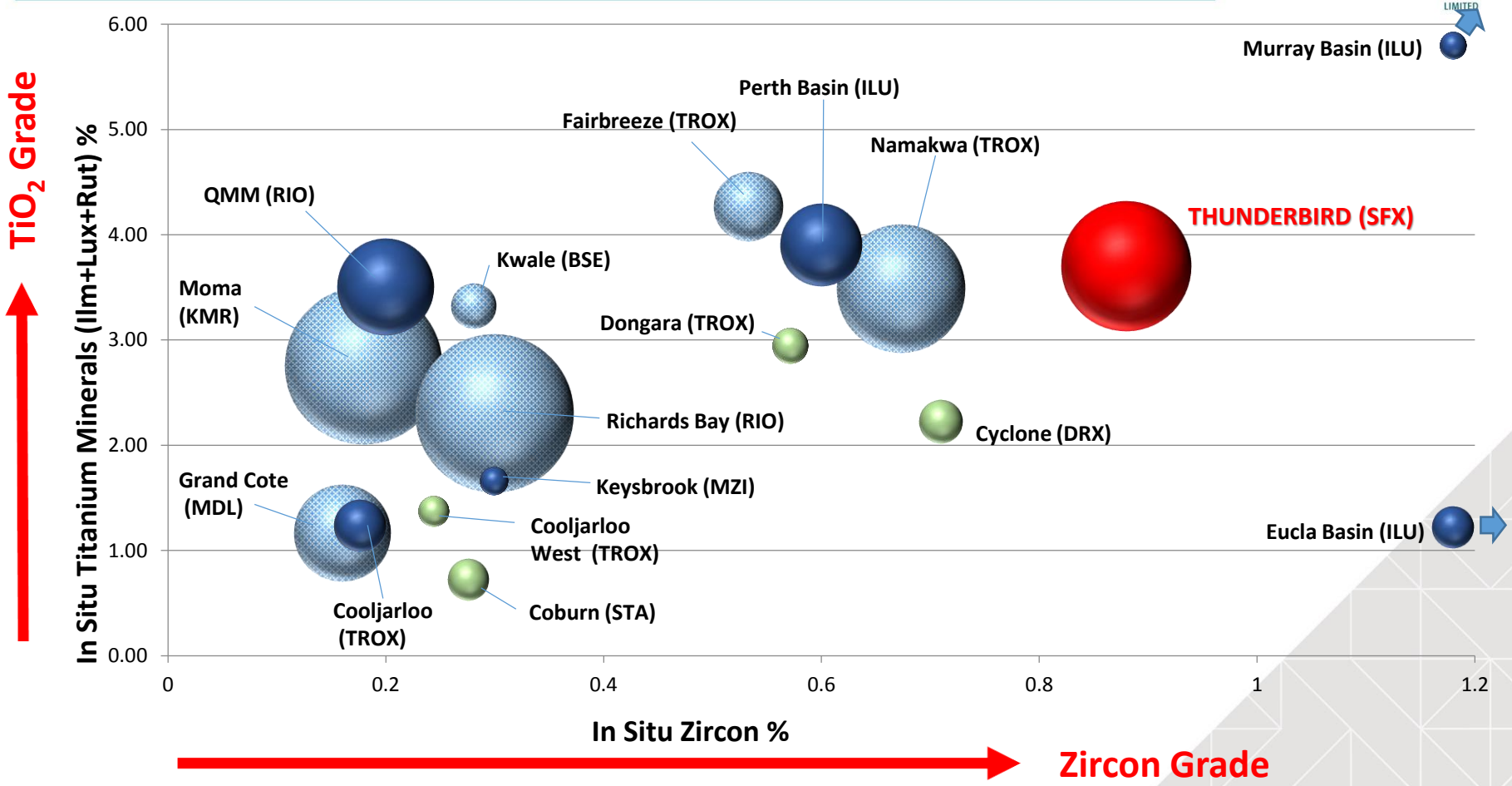


- Sheffield ASX listed December 2010 (ASX:SFX)
- Initial drill hole to BFS in 4 Years
- **Lead Agency** status with Department of Mines and Petroleum
- Targeting first production from Thunderbird early 2019
- Potential multi-decade (+40 year) operation
- First mover status in the Canning Basin mineral sands province
- 2013 Explorer of the year and 2013 Diggers and Dealers Best Emerging Company Award

Australian Mining Prospect Awards WINNER 2013 Explorer of the Year

Diggers & Dealers 2013 Diggers & Dealers Mining Forum Winner of The Best Emerging Company Award

THUNDERBIRD – A WORLD CLASS ORE RESERVE



- Amongst the world's largest and highest grade zircon and ilmenite rich Ore Reserves
- Australia, one of the best mining jurisdictions in the world
- Most of the world's minerals sands Ore Reserves are in high risk jurisdictions

Thunderbird Ore Reserves ranked against Ore Reserves of current mineral sands operations and projects under investigation globally
Blue bubbles are operating mines, green bubbles are Ore Reserves reported but project is not operating. Blue hatch bubbles represent operating African mines' Ore Reserves
Bubble size proportional to tonnes of contained VHM. Only Ore Reserves > 1Mt contained VHM shown.
Data compiled by Sheffield from public sources

TIER 1 ASSET - HIGH GRADES + 40 YEAR LIFE

- **The largest zircon rich deposits to be discovered in the last 30 years**
  - Significantly higher grades than its peers (Richards Bay, Namakwa, Moma, Perth Basin)
  - 3-4 times bigger than Iluka's Jacinth-Ambrosia discovery in 2004[1]
  - Targeted 40 year operation ensures continuity of supply
- **BFS targeting high revenue to cost ratio**
  - Designed to ride global commodity price cycles
- **In Western Australia, the world's most attractive mining jurisdiction[2]**
  - Majority of the world's mineral sand ore reserves are in geopolitically risky areas
- **Easy access to port infrastructure and markets**
  - 140km by road to ports in Derby or Broome
  - Port capacity available in Derby and Broome
  - Close to Asian markets

1 Based on in situ mineral value at equivalent commodity price assumptions.
2 Fraser Institute Annual Survey of Mining Companies, 2015

MARKET CONDITIONS HAVE TURNED

MARKET DYNAMICS

- Improving market in mineral sands industry
- Sulphate and chloride ilmenite feedstock shortage predicted for 2018 and beyond
- Demand growth for ilmenite predicted in China
- Positive market dynamics reported by pigment producers
- Zircon sand pricing stabilised during 2016
- Zircon sand demand expected to improve due to balancing of inventories
- Off-take discussions commenced

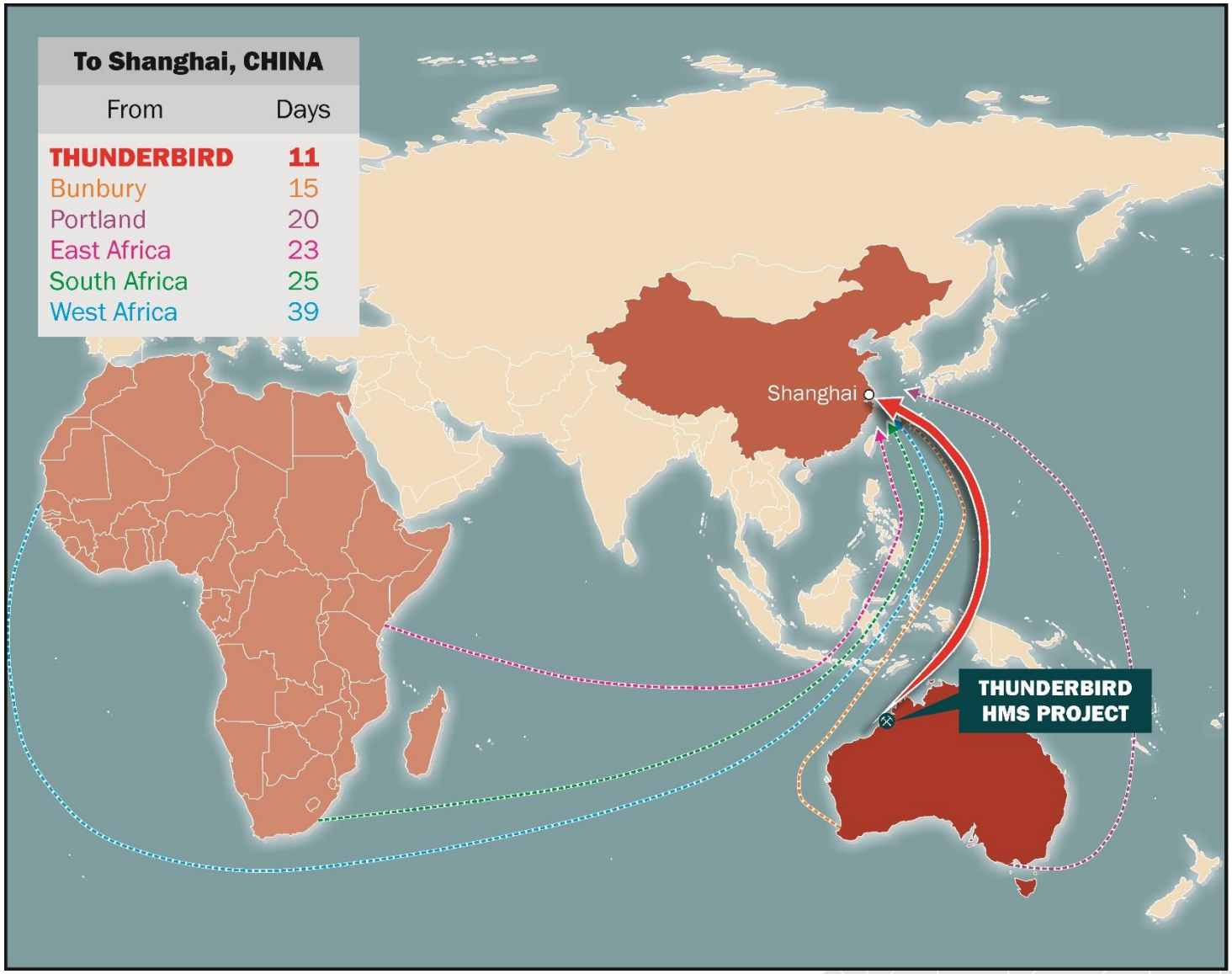
SPECIFICATIONS & SAMPLES

- Final product specifications complete for all products
- Samples dispatched to potential off-take partners for review
- Confirmed high grade premium zircon (>66.3%)
- Confirmed high grade sulphate ilmenite (>56% TiO_2)
- High acid solubility (>95%) and excellent reactivity
- LTR process has capability to upgrade ilmenite (57-59%) - potential blended feedstock for chloride processing
- Suitable for production of chloride and sulphate grade slag - 88% TiO2
- Confirmed high grade Hi-Ti Leucoxene (>87%)

PRICE FORECAST

- Sulphate Ilmenite prices predicted to increase further
- Chloride slag market prices have strengthened and are expected to increase by 2017
- Zircon sand prices increased marginally during Q3 2016
- Zircon sand market expecting on-going incremental price recovery
- Positive sentiment generally in the mineral sands industry
- Pigment price increases in 2016 support growing ilmenite pricing

TRANSPORT ADVANTAGE TO ASIAN MARKETS



BFS STATUS – 80% COMPLETE

KEY DELIVERABLES

- BFS Completion early Q1 2017
- 7.5-10.0 Mt phase 1 capacity with doubling of capacity in phase 2
- ~750t/hr constant feed rate at rougher spiral
- Metallurgical test work complete
- Confirmation of flow sheet utilising full scale and scalable equipment
- Increased recoveries for zircon and ilmenite
- Outstanding gains for LTR ilmenite in grade, FeO:Fe_2O_3 ratio and acid solubility
- Simplification of product process flow sheet
- Capital efficient design

TIER 1 STUDY

Study Manager — HATCH

Mineral Sands Processing Specialist — IHC ROBBINS

MG12 Cleaner Spiral

Pilot Scale RERMS

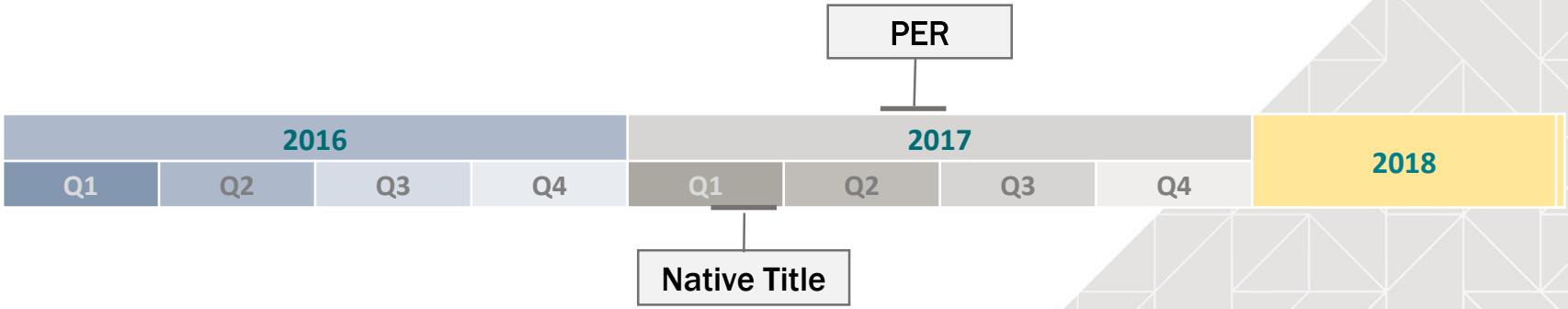
COMMUNITY, ENVIRONMENTAL & MINING LICENCE

COMMUNITY/EMPLOYMENT

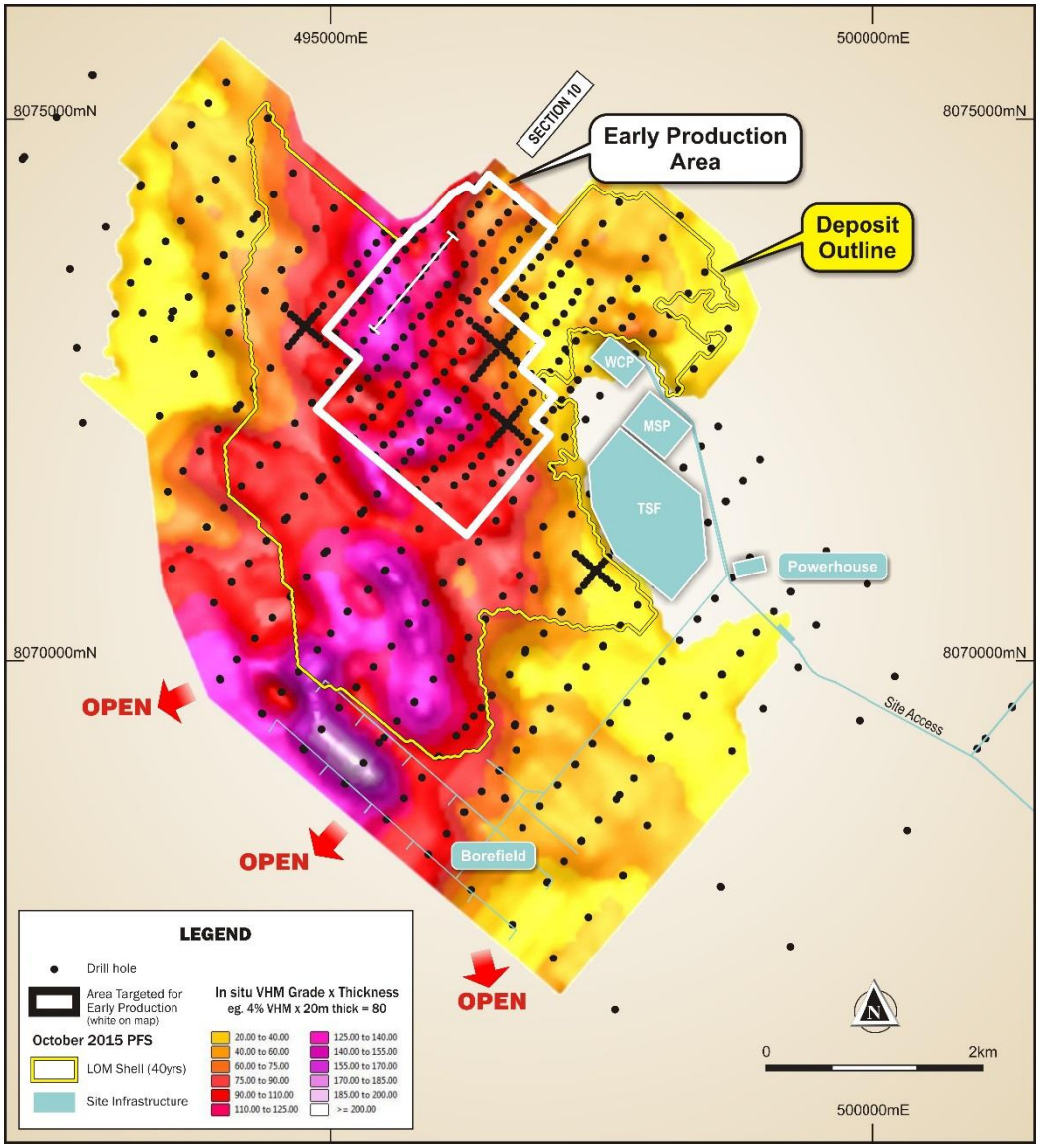
- Local workforce, no FIFO, salaries stay in local community
- Significant Aboriginal employment and business opportunities
- Enthusiastic community support
- Motivated local business participation
- Long mine life opportunity for local communities

ENVIRONMENTAL & LICENCE

- Government support via “Lead Agency Status” from Department of Mines and Petroleum
- Public Environmental Review (PER) process commenced and public in Jan 2017
- Native Title approvals targeted early 2017
- Local government approval processes commenced

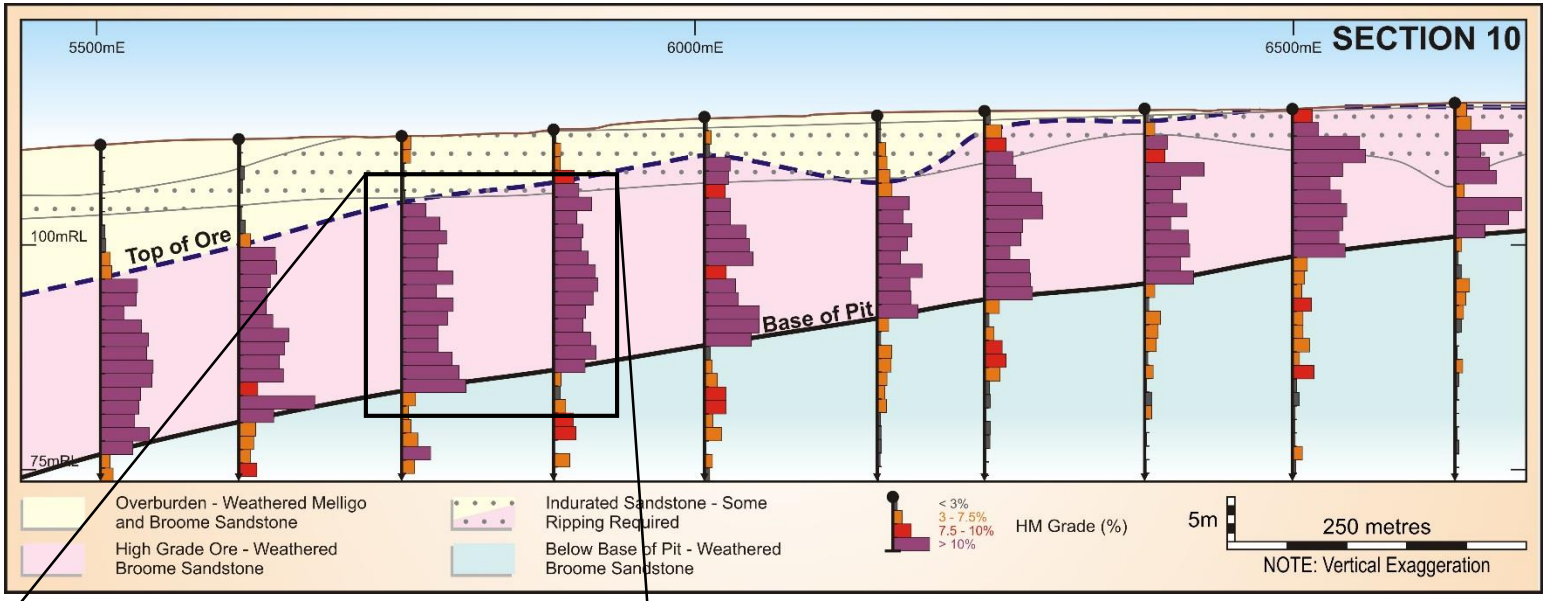


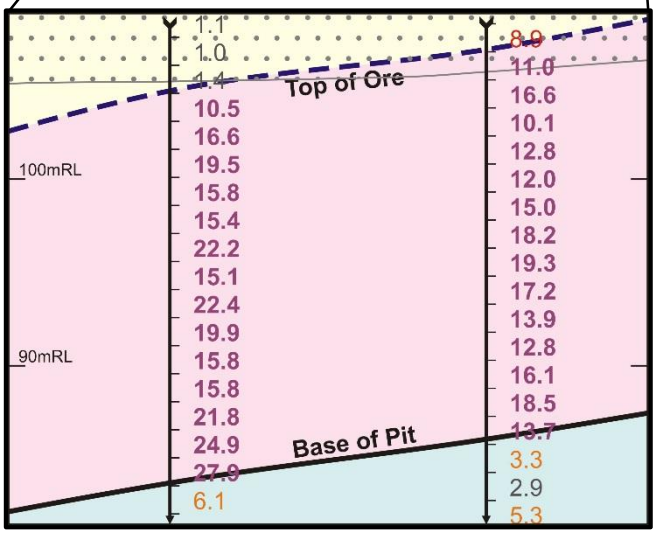
VHM & DEPOSIT THICKNESS = VALUE



- Thunderbird has a continuous High Grade Zone of up to 46m thickness: the “GT Zone”
- Deposit economics are based on GT Zone’s strong continuity and very high Valuable HM grades
- Near-surface, high value areas targeted in early years of production
- GT Zone remains open: ongoing expansion potential
- Every tonne of final product contains approximately 20% zircon, 75% Ilmenite and 5% HiTi88

EXCEPTIONAL GRADE, CONTINUITY & LOW STRIP





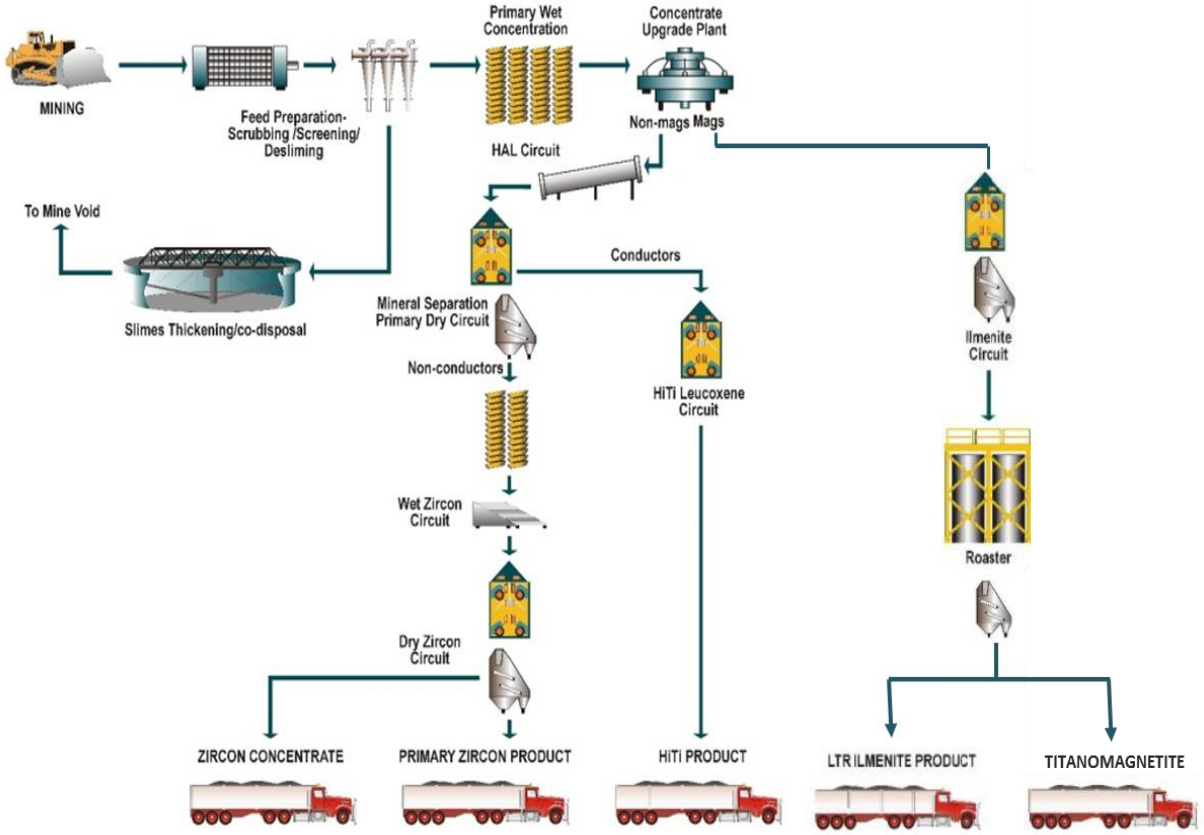
- GT Zone has excellent continuity of:
  - High grades
  - Thickness
  - Sharply defined boundaries
- Consistent high-grade feed to WCP and a flexible mine path
- Very low strip ratio (<0.7:1:0) targeted over LOM

NB - See previous slide for section location and extent, note these are zoomed in to a 1km wide (down-dip) area of the deposit to show detail of HM grade and continuity

TEST PITS SUPPORT DOZER TRAP MINING

- Three trenches excavated in up-dip region of the deposit have confirmed dozer-trap mining as preferred mining method.
- 8-10m deep test pits excavated with a D10 dozer achieving good productivity rates.
- Ore performed well through screening plant test work
- The exposed orebody comprised highly weathered sandstone, compacted sands and minor discontinuous iron cemented bands.
- Distribution of indurated layers throughout the deposit is well understood
- Large oversize material limited to top 6-12m in up-dip region where high grade is exposed at surface
- Processing beneficiation observed in these areas

CONVENTIONAL PROCESSING – PHASE 1



- Conventional heavy mineral sands processing circuit to deliver zircon, ilmenite, and HiTi88 products[1]
- Includes an ilmenite upgrade step using a low temperature roast ("LTR")
- LTR upgrades the primary ilmenite to 56.1% TiO_2 sulphate ilmenite with ability to control to higher grades
- LTR ilmenite is low in chrome and alkalis with market-leading acid solubility
- BFS illustrates premium zircon product and a secondary zircon concentrate

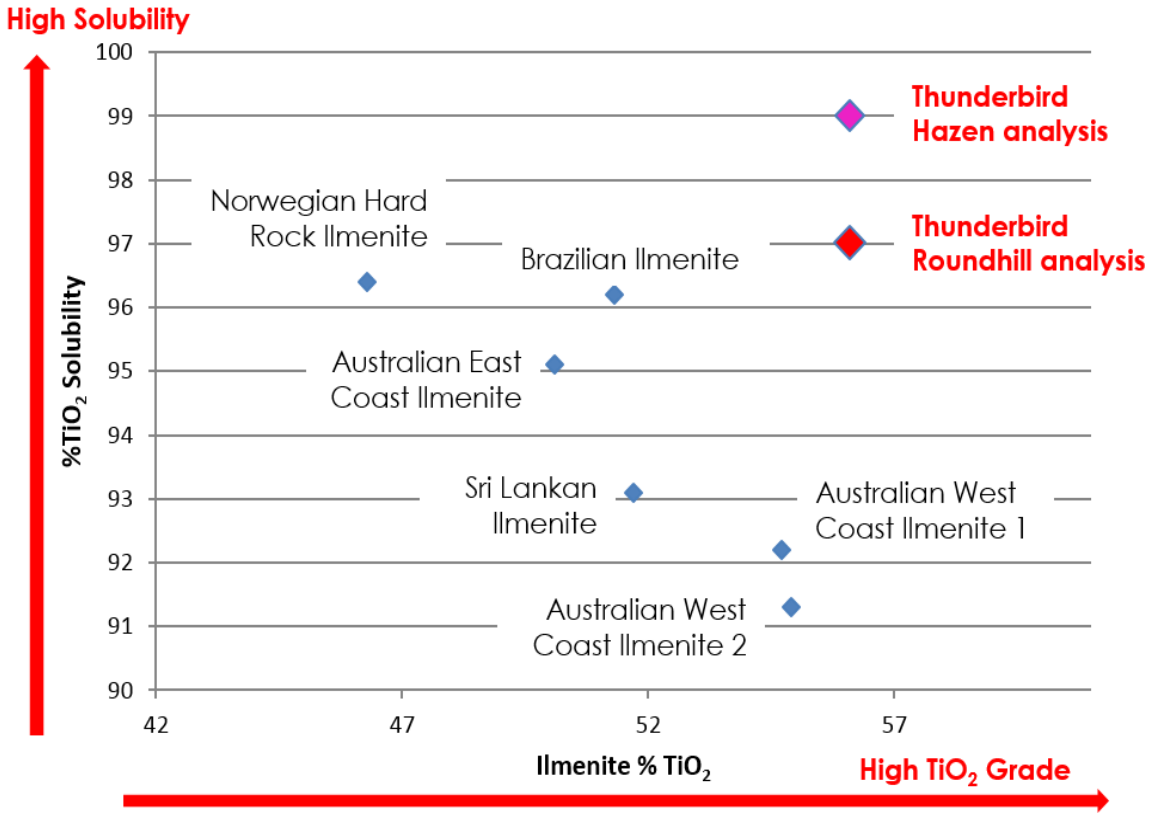
Recoveries[3]	BFS Test work
LTR Ilmenite	71.0%
Zircon Premium	56.1%
Zircon Concentrate	33.0%
HiTi Leucoxene	35.3%

Total recovery to products from BFS metallurgical test work[3].

[1] Process design by Hatch and Robbins Engineering, based on metallurgical testwork carried out on a 40t bulk sample using full scale & scalable equipment
[2] Estimated from preliminary modelling to be finalised at BFS completion in early 2017
[3] Refer ASX announcement 12 October 2016

LTR ILMENITE – PREMIUM PRODUCT

HIGH TITANIUM + HIGH ACID SOLUBILITY = PREMIUM PRICING



- Acid Solubility >95%
- Outstanding $FeO:Fe_2O_3$ ratio at 1.2
- Perfect reactivity rate
- Market Leading quality

NB: graph illustrates $\%TiO_2$ Solubility vs Grade, Sheffield LTR Ilmenite benchmarked against known Sulphate Ilmenites (Blue), Roundhill (red) and Hazen (magenta) solubility results for Sheffield's LTR ilmenite from pilot test work [1].

[1] Refer ASX announcement 12 October 2016

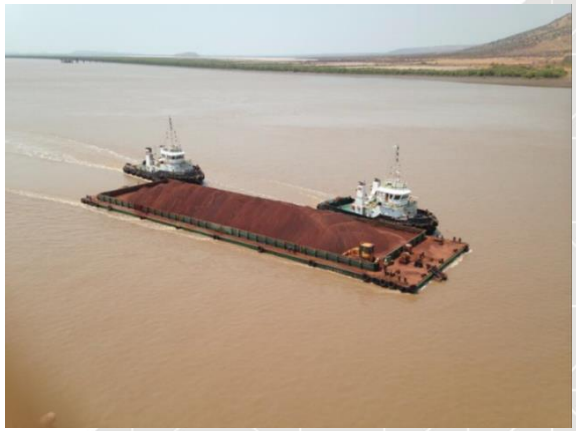
FINANCIAL OPTIMISATION

- BFS optimisation and planning by Whittle Consulting Pty Ltd and Entech Mining Consultants
- Phase 1 - 7.5 - 10Mt/yr with throughput fixed at ~750tph at the rougher spirals
- Phase 2 - double throughput to ~1,500tph at the rougher spirals.
- Phase 2 timing to be determined upon completion of financial analysis

WCP design by Hatch

LOGISTICS – SIMPLE & CLOSE TO MARKET

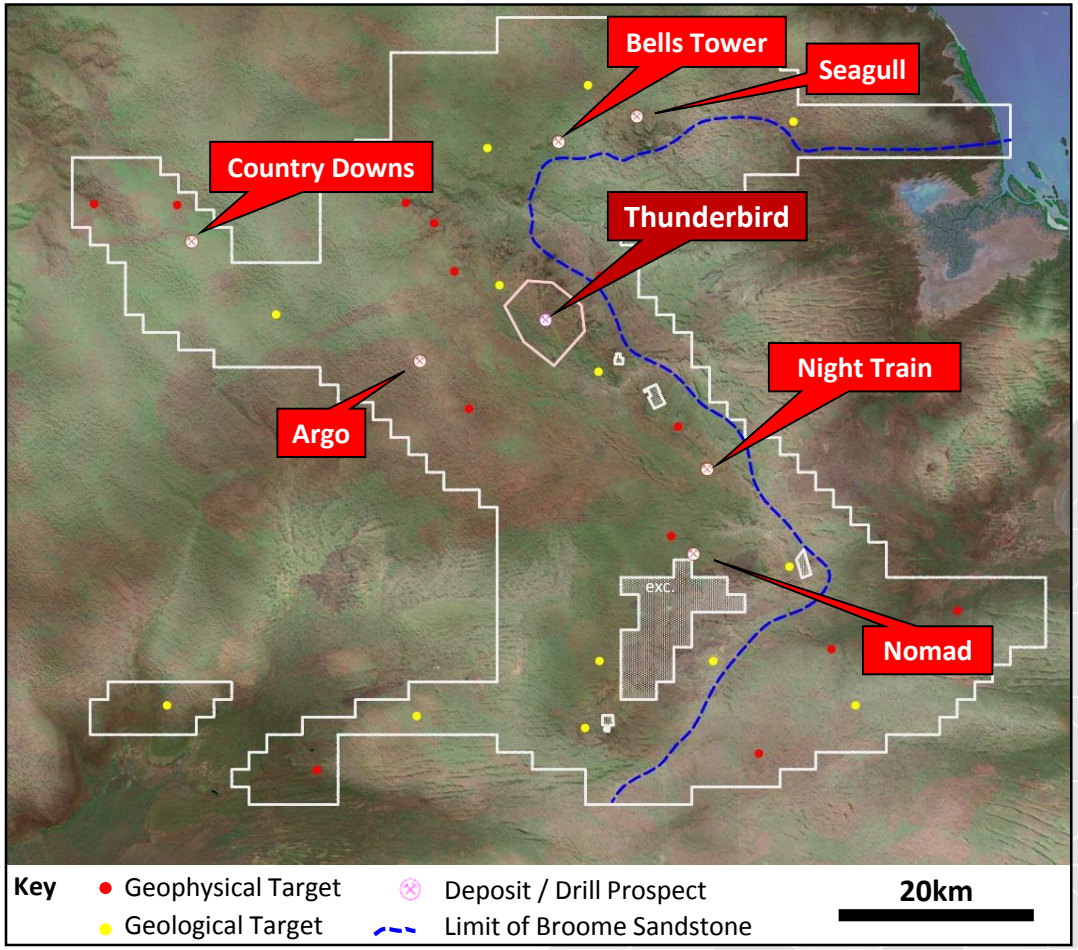
- Products trucked 140km from mine to ports at Derby and Broome, including 110km on major National Highway
- Road haulage fleet and marine barging based in Derby
- Access agreement in place for port storage, wharf and bulk handling facility at Derby
- Option for packaged products through Port of Broome
- Barging & transhipment of bulk products
- Close proximity to potential markets



REGIONAL EXPLORATION POTENTIAL

NEW PROVINCE – MULTIPLE DISCOVERIES

- Limited scout drilling has lead to new discoveries including the zircon-rich Night Train prospect, e.g. 7.5m @ 8.23% HM[1]
- Night Train has a high value mineral assemblage: 92% VHM, including 15% zircon, 61% leucoxene + HiTi
- High quality zircon produced from metallurgical test sample[2]
- Large number of prospects and geophysical targets identified and yet to be drilled
- First mover has enabled a large, strategic tenement holding over the most prospective formations
- New fertile province = high rate of discovery
- Further drilling planned during 2017



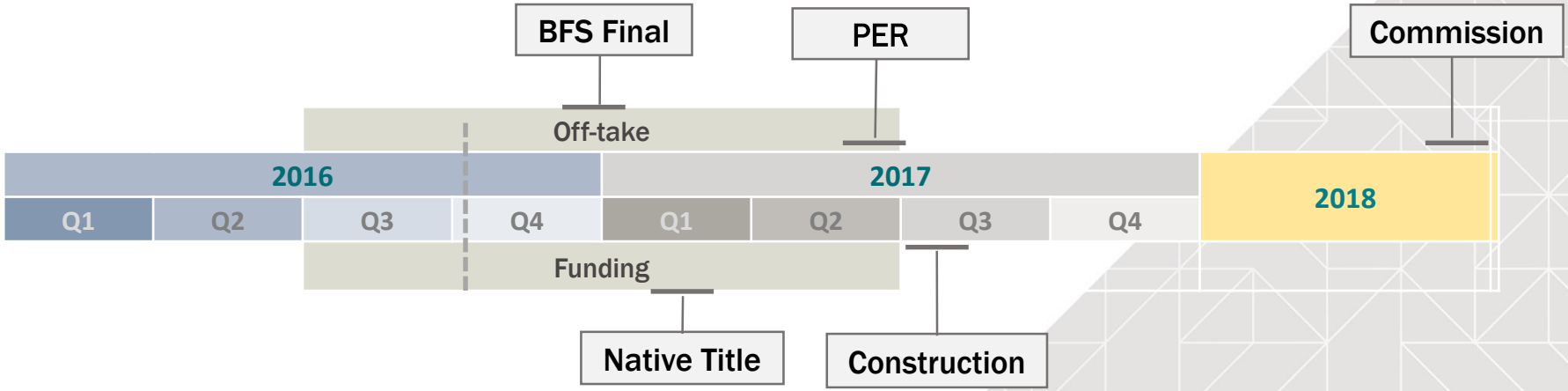
1 refer ASX:SFX announcements of 22 September 2015 and 25 February 2015
2 refer ASX:SFX announcements of 14 April 2016

A PROJECT FOR THE COMMUNITY

- In excess of 140 direct full time jobs from the regional community. Substantially more employment via indirect support for the operations
- Significant business opportunities with a key focus on Aboriginal participation
- Minimal environmental impact
- Extensive stakeholder engagement has been undertaken generating overwhelming community support
- Intergenerational job and training opportunities from a mine with a very long life

THUNDERBIRD KEY TARGETS & NEXT STEPS[1]

- BFS – announce early Q1 2017
- Native Title Agreement 2017
- Environmental permitting 2017
- Off-take discussions 2016/17
- Funding options assessed 2016/17
- Exploration drilling 2017
- Partner discussions 2016/17
- Construction commences 2017
- Commissioning 2018
- First export 2019



1 There is no guarantee that these targets and steps will be achieved.

KEY INVESTMENT HIGHLIGHTS

- Tier 1, high grade, large scale mineral sands project
- Stable mining jurisdiction
- High grades and quality products
- Zircon and ilmenite rich
- Well advanced asset – BFS nearing completion
- Utilises conventional mining and processing methods
- Technically straightforward
- Strong cash flows over multi-decade (+40 year) mine life
- Existing logistics and export infrastructure
- Close to markets
- Favourable mineral sands market dynamics

APPENDIX 1

THUNDERBIRD DEPOSIT ORE RESERVES[1,2]

Valuable Heavy Mineral (VHM) in-situ grade

Ore Reserve Category	Ore Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Valuable HM Grade (In-situ)[2]				Slimes (%)	Osize (%)
				Zircon %	HiTi Leuc %	Leuc %	Ilmenite %		
Proved	115.1	15.8	13.7	1.01	0.29	0.28	3.67	17.3	12.7
Probable	567.6	61.9	10.9	0.85	0.27	0.29	3.03	16.1	10.2
Total	**682.7**	77.1	**11.3**	**0.88**	**0.27**	**0.29**	**3.14**	**16.3**	**10.6**

Mineral assemblage as percentage of HM grade

Ore Reserve Category	Ore Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[3]				Slimes (%)	Osize (%)
				Zircon (%)	HiTi Leuc (%)	Leuc (%)	Ilmenite (%)		
Proved	115.1	15.8	13.7	7.4	2.1	2.1	26.8	17.3	12.7
Probable	567.6	61.9	10.9	7.8	2.5	2.6	27.9	16.1	10.2
Total	**682.7**	77.1	**11.3**	**7.7**	**2.4**	**2.5**	**27.7**	**16.3**	**10.6**

[1] Calculations have been rounded to the nearest 100,000 t, 0.1 % grade. Differences may occur due to rounding. Ore Reserves are based upon the published July 2015 Mineral Resource, reported by economic cut-off with appropriate consideration of modifying factors, costs, mineral assemblage, process recoveries and product pricing.
[2] The in-situ grade is determined by multiplying the HM Grade by the percentage of each valuable heavy mineral within the heavy mineral assemblage.
[3] Mineral Assemblage is reported as a percentage of HM Grade, it is derived by dividing the in-situ grade for each mineral by the HM grade.

APPENDIX 1

THUNDERBIRD DEPOSIT MINERAL RESOURCE[1,2]

Cut-off (HM%)	Mineral Resource Category	Material Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Valuable HM Grade (In-situ)[3]				Slimes (%)	Osize (%)
					Zircon (%)	HiTi Leuc (%)	Leuc (%)	Ilmenite (%)		
> 3% HM	Measured	510	45	8.9	0.71	0.20	0.19	2.4	18	12
	Indicated	2,120	140	6.6	0.55	0.18	0.20	1.8	16	9
	Inferred	600	38	6.3	0.53	0.17	0.20	1.7	15	8
	Total	**3,230**	**223**	**6.9**	**0.57**	**0.18**	**0.20**	**1.9**	**16**	**9**
>7.5% HM	Measured	220	32	14.5	1.07	0.31	0.27	3.9	16	15
	Indicated	640	76	11.8	0.90	0.28	0.25	3.3	14	11
	Inferred	180	20	10.8	0.87	0.27	0.26	3.0	13	9
	Total	**1,050**	**127**	**12.2**	**0.93**	**0.28**	**0.26**	**3.3**	**15**	**11**

Cut-off (HM%)	Mineral Resource Category	Material Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[4]				Slimes (%)	Osize (%)
					Zircon (%)	HiTi Leuc (%)	Leuc (%)	Ilmenite (%)		
> 3% HM	Measured	510	45	8.9	8.0	2.3	2.2	27	18	12
	Indicated	2,120	140	6.6	8.4	2.7	3.1	28	16	9
	Inferred	600	38	6.3	8.4	2.6	3.2	28	15	8
	Total	**3,230**	**223**	**6.9**	**8.3**	**2.6**	**2.9**	**28**	**16**	**9**
>7.5% HM	Measured	220	32	14.5	7.4	2.1	1.9	27	16	15
	Indicated	640	76	11.8	7.6	2.4	2.1	28	14	11
	Inferred	180	20	10.8	8.0	2.5	2.4	28	13	9
	Total	**1,050**	**127**	**12.2**	**7.6**	**2.3**	**2.1**	**27**	**15**	**11**

THUNDERBIRD DEPOSIT CONTAINED VALUABLE HM (VHM) IN MINERAL RESOURCES[1,2,5]

Cut-off (HM%)	Mineral Resource Category	Zircon Tonnes (thousands)	HiTi Leucoxene Tonnes (thousands)	Leucoxene Tonnes (thousands)	Ilmenite Tonnes (thousands)	**Total VHM Tonnes (thousands)**
>3% HM	Measured	3,600	1,000	1,000	12,000	17,700
	Indicated	11,800	3,800	4,300	39,100	59,000
	Inferred	3,200	1,000	1,200	10,500	15,900
	Total	**18,600**	**5,900**	**6,500**	**61,700**	**92,600**
>7.5% HM	Measured	2,300	700	600	8,400	12,000
	Indicated	5,800	1,800	1,600	21,000	30,200
	Inferred	1,600	500	500	5,600	8,200
	Total	**9,700**	**3,000**	**2,700**	**35,000**	**50,400**

[1]The Thunderbird Mineral Resources are reported inclusive of (not additional to) Ore Reserves. The Mineral Resource reported above 3% HM cut-off is inclusive of (not additional to) the Mineral Resource reported above 7.5% HM cut-off. Mineral Resources for the Dampier Project were prepared and first disclosed under the JORC Code 2012. [2]All tonnages and grades have been rounded to reflect the relative accuracy and confidence level of each estimate and to maintain consistency throughout the table, therefore the sum of columns may not equal. [3]The in-situ grade is determined by multiplying the HM Grade by the percentage of each valuable heavy mineral within the heavy mineral assemblage. [4]The Mineral Assemblage is represented as the percentage of HM grade. For Dampier the mineral assemblage was determined by screening and magnetic separation. Magnetic fractions were analysed by QEMSCAN for mineral determination as follows: >90% liberation and; Ilmenite 40-70% TiO_2; Leucoxene 70-94% TiO_2; High Titanium Leucoxene (HiTi Leucoxene) >94% TiO_2 and Zircon 66.7% ZrO_2+HfO_2. The non-magnetic fraction was analysed by XRF and minerals determined as follows: Zircon ZrO_2+HfO_2/0.667 and HiTi Leucoxene TiO_2/0.94. [5]The VHM resource inventory is derived from information in the Mineral Resource table.