BRIDGE STREET
CAPITAL PARTNERS

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1 August 2019

SHEFFIELD RESOURCES LTD (SFX AU, $0.65)

BFS Upgrade delivers better returns at lower capex from a high margin, Tier 1 project. Our project valuation increases 16%.

- SFX's 100%-owned Thunderbird project is unquestionably the best fully permitted, undeveloped mineral sand opportunity globally. The project's Bankable Feasibility Study Upgrade (BFSU) was expected to be positive: but the recent release was significantly better than we had expected. A focus on increased zircon production (by ca. 38%) at the expense of premium ilmenite (by deferring the roast circuit), has seen capital costs drop by 18% and operating costs down by around 35% (for Stage 1 on a per tonne of VHM basis). Our estimate of the project's IRR has increased to 29% (post-tax) with our project NPV_{10} (post-tax) increasing 16% to A$845m.
- Thunderbird can be classified as a true Tier 1 project, assessed on the following criteria.
  - ✓ It is one of the largest deposits found in the last 40 years.
  - ✓ The project offers a long mine life (30-40 years) with established exploration upside.
  - ✓ It offers the opportunity for multiple expansions over a multi-year timeframe.
  - ✓ It is significantly higher grade than most of its peers.
  - ✓ The BFSU has placed the project firmly within the top quartile of the margin curve for the global mineral sands sector.
  - ✓ It is located in Western Australia, the world's most attractive mining jurisdiction. Much of the world's mineral sand ore reserves are now in geopolitically risky areas. Thunderbird is fully permitted and shovel-ready.
  - ✓ The project has good access to existing transport infrastructure, technical services and labour. It has access to abundant water. Energy costs are 'mid-curve'.
- Thunderbird remains zircon dominated, delivering around 68% of revenue (life-of-mine). Increasing supply deficit for TiO_2 feedstock has seen the company contract unroasted ilmenite at attractive prices. This had not been expected, and comes as a real bonus. Additional zircon production has been fully contracted to existing offtake partners.
- From a project finance perspective, the project's Loan Life Cover Ratio looks more than comfortable and therefore the existing banking syndicate (Taurus for US$175m and NAIF for A$95m) should remain with the project. That Taurus was prepared to advance a A$10m working capital facility suggests they remain committed.
- With a reduction in capital cost, the funding gap has contracted materially. What had been a requirement for over A$250m in equity, has reduced to around $143m. This might still be too large for SFX to go it alone, even with the recent share price recovery. A search for an equity partner is well advanced and is expected to be concluded within 2-4 months.
- We have examined two possible sell-down options, the first a sale to a strategic partner at project level, the second full funding of the equity gap by an incoming party in exchange for significant equity in the project. These generate conceptual valuations of A$1.88 and $1.84/share respectively. The latter option might require little new equity by SFX.
- We see continued recovery in the SFX share price as the BFSU becomes better understood by the market and as the economics of a strategic partnership becomes clearer.
- The supply/demand equation for key commodities, zircon and TiO_2 feedstock appears attractive for the medium to long term, and should be supportive for realised prices. Thunderbird will be a key contributor to zircon supply from a 2022 start-up.

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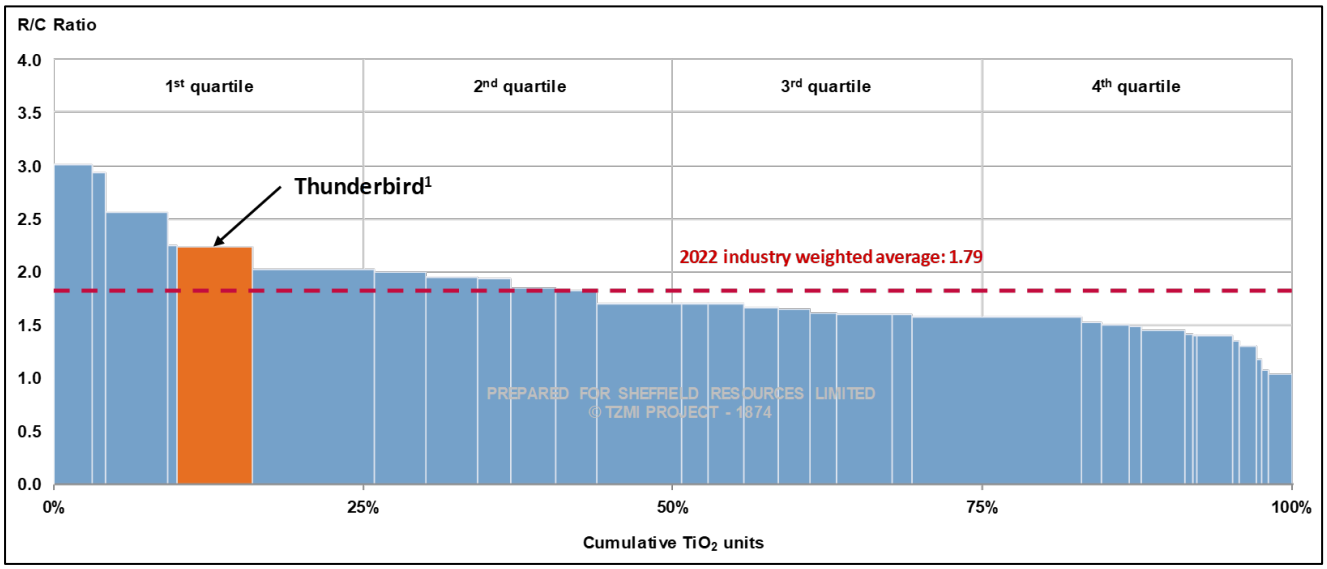
Overview

Sheffield Resources has released the results of its Bankable Feasibility Study Upgrade (BFSU) for the world class Thunderbird mineral sands project. This study has delivered impressive numbers with a headline NPV_{10} (pre-tax) of A$1.13bn, 69% higher than the 2017 Bankable Study (BFS) and better than estimates presented in our July report ("Significantly improved economics expected from BFS update", BSCP, July 2019).

As adherents to the view that "grade is king", we think that one of the strongest headline outcomes from the BFSU is the positioning of the high grade Thunderbird zircon/TiO2 feedstock on the mineral sands cost curve. The chart below, prepared by industry consultants TZMI, has moved the Thunderbird costs firmly towards the top of the global mineral sands margin curve*. This will enable the mine to withstand virtually any suite of commodity prices thrown at it over its 37 year life.



(*The mineral sands industry uses a margin curve rather than a cost curve, to rank relative competitiveness. Projects' margins are defined by revenue (at the TZMI long term commodity price assumption divided by costs including royalties: the R/C ratio. Source: SFX release 31/7/19)

The Thunderbird project, as now proposed, is in many ways similar to the earlier bankable feasibility study (BFS). The front end of the project is largely unchanged, however mining rates have increased by some 22% , with feed to the wet concentrator increasing by 38% from 788 to 1085 dry tonnes per hour. As flagged in previous announcements by SFX, the focus is now very much on the high-grade portion of the world class Thunderbird orebody, and on the production of zircon. Such is the grade of the so-called T2 portion of the orebody, we believe that the project could stand alone on zircon revenues.

This has allowed the engineers to strip some $71m (or 15%) in capex from the project. The bulk of the capital saving has been driven by the removal of the low temperature roasting (LTR) circuit designed to upgrade the ilmenite by-product to a premium grade feedstock. When we first looked at SFX in and the Thunderbird project in 2015/16 commodity prices were such that revenue from ilmenite was essential to support revenues to deliver investment returns. This is no longer the case.

At the time the LTR circuit was a key breakthrough in the metallurgy of the Thunderbird project. In 2015 zircon prices were bottom of cycle (sub US$1000/t) and could not carry the project alone. Ilmenite was perceived to be of poor quality containing unacceptable proportions of iron oxide trash, rendering it virtually unsellable to the sulphate market. (At that time there wasn't a market for chloride ilmenite in China. This has now changed). The 2017 BFS delivered an elegant metallurgical solution: low temperature roasting and magnetic separation of the ilmenite and trash. A coincidental benefit was to produce very high quality, attractively priced ilmenite (+55% TiO2) which was suitable for use by sulphate and chloride process pigment producers (utilising chloride slag).

Roll on 4 years and the feedstock industry has tightened up significantly, with little sign of easing. Unroasted Thunderbird ilmenite is now attracting a great deal of interest, to the extent that full production has been locked into a binding sales agreement with a large emerging chloride producer in China (Bengbu, a subsidiary of China National Building Materials).

As we discuss later in this report, we see long-lived supply deficit in both zircon and TiO_2 feedstock. We doubt that past commodity price lows will be seen for some time, if ever. Higher prices are needed to incentivise new production.

In an unfortunate series of circumstances, SFX was unable to fund the project in 2018. This was despite support from two quality debt providers, Taurus and the Federal Government agency, the Northern Australian Infrastructure Fund (NAIF). Equity required to fully fund the project was simply too large. The equity market voted with its feet, and the SFX share price collapsed, forcing management back to the drawing board. As it now emerges, the upgraded BFS looks like it will deliver much stronger returns to shareholders with a lesser equity requirement from SFX.

How is this possible? The Thunderbird deposit is remarkable. As it stands it is a very large, world class orebody, larger and more valuable than most mineral sand deposits found in the last 30 years. It is blessed with a high grade core, the so-called T2 zone, which can alone deliver rapid capital payback.

In the following report, we review the outcome of the BFSU, the economic returns of the project as it now stands and how we see the project is to be financed from here. We will also revisit the exploration success outside the main Thunderbird orebody itself. Finally, we will present a commodity update, focussed mainly on the key revenue generator, zircon, and also the outlook for the by-product, titanium dioxide feedstock.

The BFSU has been an extraordinary result for the company: headline NPV_8 of over A$1bn, a pre-tax IRR of over 30% based on independently determined commodity price assumptions. The project appears to have retained support from its bankers, and constructors. The funding gap is now much more manageable at under A$150m (previously over $250m).

An equity partner is still required. A data room has been open since early in the year but the results of the BSFU won't have been digested by potential partners. Given the attractiveness of the Thunderbird project itself, and a positive backdrop to commodity pricing, this should be resolved quite quickly.

(A brief history of the Thunderbird project since its discovery in 2012 is presented in Appendix 1. Readers of this report, and those unfamiliar with SFX's recent history, are urged to read this. It provides important background to the advancement of the Thunderbird project.)

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Thunderbird Bankable Feasibility Study Upgrade

SFX's recent release summarises the results of a major review of the Thunderbird project instigated early this year. It was aimed at reducing capital demands for the project to facilitate full financing. The difference between the 2017 BFS and the 2019 BFSU is best summarised in the following table.

Thunderbird mineral sands project		BFS (2017)	**BFSU (2019)**
Price assumptions			
Zircon, premium	US$/t, FOB	1550	**1550**
Ilmenite, LTR	US$/t, FOB	220	**-**
Ilmenite, unprocessed	US$/t, FOB	-	**100**
AUD/USD		0.75	**0.75**
Capex, project + infrastructure			
Stage 1	A$m	398	**327**
Stage 2	A$m	240	**237**
Production			
Stage 1 (years 1-5, average, incl. ramp up)			
Mining/processing rate	Mtpa	8.5	**10.4**
Zircon, premium	Ktpa	54	**73**
Zircon in concentrate	Ktpa	59	**79**
Ilmenite, LTR	Ktpa	300	**-**
Ilmenite	Ktpa	-	**670**
Stage 2 (year 6 onward, average, incl. ramp up)			
Mining/processing rate	Mtpa	17.0	**20.8**
Zircon, premium	Ktpa	80	**108**
Zircon in concentrate	Ktpa	90	**122**
Ilmenite, LTR	Ktpa	400	**-**
Ilmenite	Ktpa	-	**1260**
Mine life	Years	42	**37**
Revenue			
Stage 1 (2025e)	A$/tonne VHM	463	**268**
Stage 2 (2027e)	A$/tonne VHM	449	**284**
Costs			
Stage 1 (2025e)	A$/tonne VHM	225	**128**
Stage 2 (2027e)	A$/tonne VHM	204	**131**
Revenue/cost ratio			
Stage 1 (2025e)		2.1	**2.1**
Stage 2 (2027e)		2.2	**2.2**
Project economics			
NPV(10), pretax	A$m	917	**1272**
NPV(10), post tax	A$m	615	**845**
IRR, pretax	%	27.8	**35.0**
IRR, post tax	%	23.5	**28.8**
Note: based on BSCP assumptions			

Note that the estimates are from our interpretation of the published figures and might not precisely equate with those presented in SFX's release. A summary of SFX's announcement of key parameters is shown in Appendix 2.

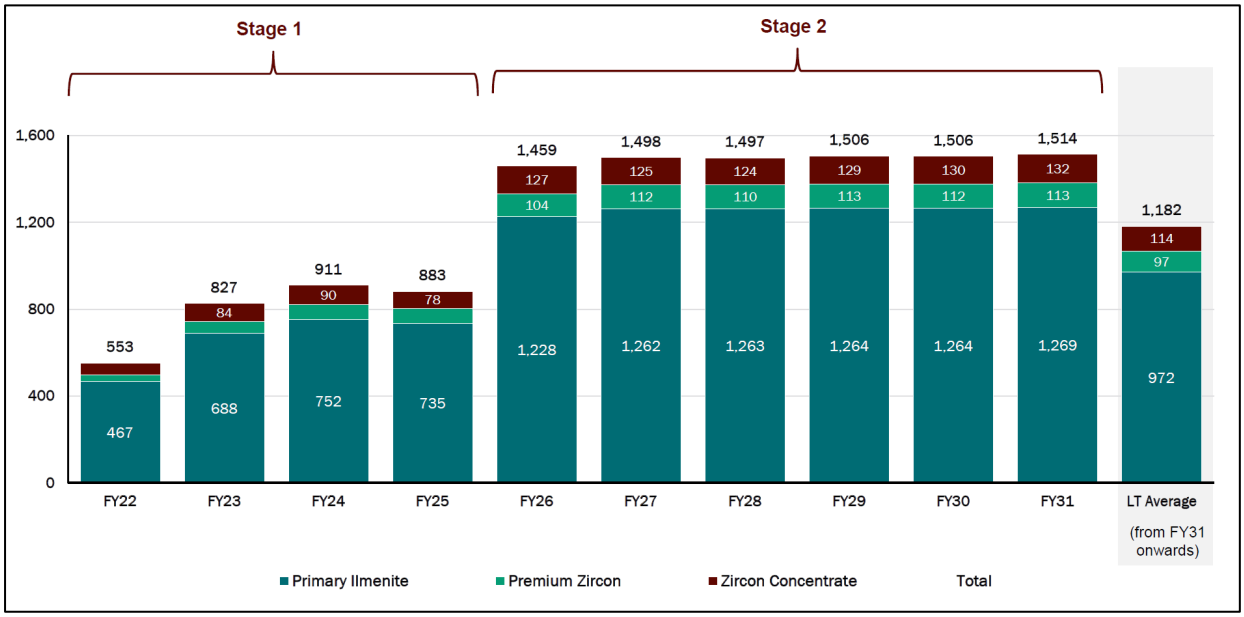
As we describe in a following section our commodity price assumptions are a little higher than those employed by SFX (which were in turn set by consultants TZMI). We have been consistently ahead of TZMI estimates, and are happy to stay with our forecasts.

Key points from this comparison are as follows:

- There has been an increase to the proposed mining and processing rate, still with a staged development, from 10.4Mtpa for Stage 1, expanding to 20.8Mtpa from Year 5. What has changed has been the focus on the high grade and zircon-rich portion of orebody, the so-called T2 section.
- No changes to the mining method, which involves dry mining using a conventional dozer trap process, so little change to the mining cost structure.
- The metallurgical flow sheet is broadly unchanged from the 2017 BFS, except that low temperature roasting (LTR) of the ilmenite is to be deferred (or possibly not undertaken at all).
- The capital savings are significant, around A$71m from the LTR alone. Otherwise, the plant is much as was originally designed. Project capex reduces from $463m to $392m, including infrastructure components such as the power station, gas receival unit, the road and port upgrade and Owners Costs.
- So what of the titanium mineral concentrate? An earlier plan in the BFSU had this placed into separate storage facilities destined for later processing by a retro-fitted LTR circuit. Recent developments in China and changes in pigment feedstock demand has dramatically changed this picture. SFX's marketers have cleverly identified demand for Thunderbird's unroasted ilmenite, so this component of the HM stream can now be monetised. This was an unexpected surprise, and only enhances the economics of the new proposal. On our numbers this adds, we estimate, an incremental A$75m per year in revenue in Stage 1 and over $120m for Stage 2.
- The revenue split has changed, but not by much. In our evaluation of the original BFS, around 63% of Thunderbird's revenue was driven by zircon and zircon-in-concentrate, with the balance mainly from LTR ilmenite, with smaller contributions from lesser value titanium-bearing mineral species. Revenue from the BFSU has, on our numbers, increased to 67% from zircon.
- Deferral of the LTR does de-risk the project. While not a "risky process" in itself, it would have been another component of the flowsheet which needed commissioning. The ramp up might now be more rapid than originally planned.
- There will undoubtedly be minor changes to the plant's configuration, but as far as capital is concerned, these are likely to be swings and roundabouts. The BFS configuration had been priced by GR Engineering, and a fixed price contract had been entered into. We understand that GR are currently completing a detailed study of the BFSU proposal. SFX management are confident the fixed price offered by GR will be little different to the number proposed.
- SFX then retains the option to install the low temperature roasting option down the track to capture some of this value. Given the rapidly changing nature of the pigment industry and likely sources or raw materials, the crystal ball here is pretty fuzzy. It might be that the LTR circuit is never installed.
- Note that as a by-product of the BFSU, the revised economics as seen a slight change in the project's modifying factors (eg slightly higher commodity pricing and lower unit cost), which has delivered a 10% upgrade to the already large Ore Reserve. Further details below.

Stage 2 expansion

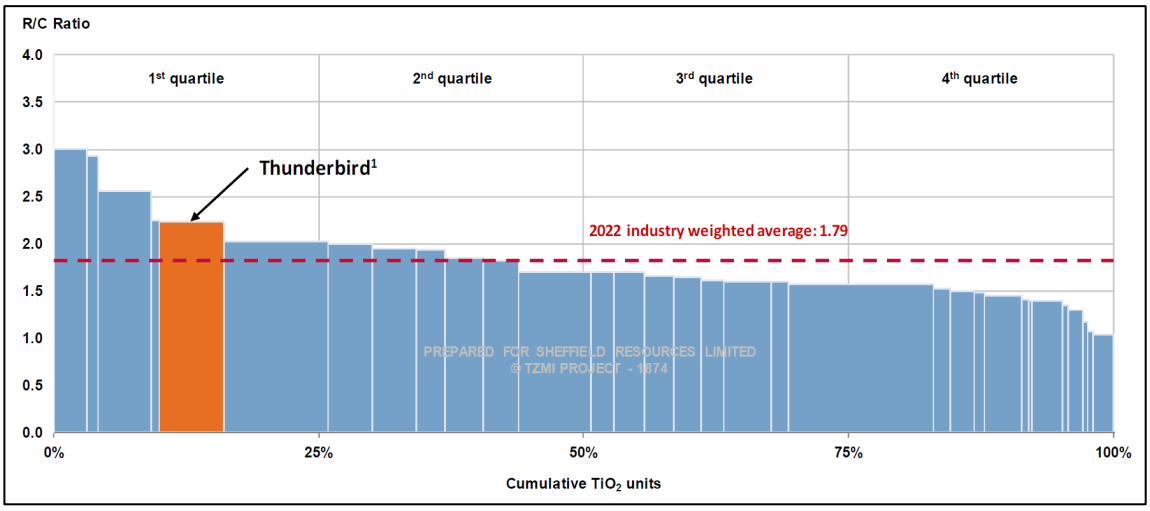
- SFX states that Stage 2 is simply a replication of Stage 1, 10.4Mtpa capacity, doubled in size to 20.8Mtpa. It is Stage 1 which justifies the investment and pays back the debt. Nonetheless, Stage 2 is a core part of the future of Thunderbird, and one which is forecast deliver strong returns for shareholders into the future.
- Stage 2 capital has been estimated at A$237m, a little under the top end of the range announced in 3Q18. This represents around 60% of the capex for Stage One.
- What we do note from the BFSU announcement is a smoothing out of the production profile in the early years of Stage 2 compared with the profile presented in the BFS. This we believe is to more closely match the Stage 2 plant configuration with the grade profile of the remaining deposit.



Source: SFX release, July 2019

Thunderbird moves into the highest margin quartile.

- The impact of higher zircon production levels for effectively much the same effort is to propel Thunderbird Stage 1 into the top margin quartile for the global industry. Costs have come down dramatically on a 'per tonne of VHM' basis.
- Stage 2 has a higher R/C (revenue to cost ratio) at 2.4 based on SFX estimates. Our estimate of R/C is comparable. If achieved this will be one of the highest margin, lowest cost mineral sand projects globally.



Source: SFX release, July 2019

- As we understand it, this is the TZMI 2018 cost curve. By 2022, it appears that the consultant estimates that median/average costs for the industry will have risen to 1.79 (R/C). Given the maturity of the industry and the paucity of new quality projects, we would be surprised if the average didn't move lower.

Why weren't these options investigated during the PFS and BFS?

The answer is quite simple. During the preparation of the PFS in 2015, commodity prices were low. Premium zircon was under US$1000/t and the A$ was quite strong. The project needed revenue from ilmenite. But at that time there were two new participants in the market, Kenmare at Moma and Base at Kwale, both of whom did battle for market share and drove the sulphate ilmenite price to under US$100/t. At that time, the ilmenite market was oversupplied and there was no market available for Thunderbird's sub-40% TiO2 ilmenite.

For Sheffield, low temperature roasting of the ilmenite provided the answer, and delivered more than expected. The LTR ilmenite was perfect for the sulphate pigment producers and was starting to attract the attention of the chloride producers. In the meantime, the zircon price had moved strongly to around US$1600/t. Major suppliers had learned pricing discipline (the hard way).

Had SFX been able to access equity markets, or had a partner come along at the right time, the LTR circuit might still be part of the circuit. Circumstances conspired otherwise, and a lower capex option needed to be found.

That the un-beneficiated ilmenite stream could be monetised seems to have come as a welcome, last minute surprise. All thanks to an emerging, and seemingly strongly growing Chloride pigment industry in China. See further commentary below.

Impact on Thunderbird's economics

Our re-estimate of Thunderbird's valuation has now incorporated the following assumptions:

- Removal of the LTR ilmenite circuit delivering a capital cost saving of $71m,
- An increase of around 38% to previous zircon production levels,

- Removal of the sale of ca. 240ktpa of LTR ilmenite and titanomagnetite, replaced with the sale of around 670ktpa of ilmenite and ilmenite bearing concentrate for an average of ca.US$100/t (FOB) during Stage 1 and roughly doubling for Stage 2,
- Reduction of mine cash costs by around 35% on a per tonne of VHM basis driven by reduced cost of gas and power for the LTR furnace compounded by increase zircon production).
- A small decrease in mine life, reflecting an increased mining rate and lower recoveries in the early years. A previous mine life of 42 years is now 37 years. However, as we discuss in a section below, the regional resource potential will see the Thunderbird district active mining centre for many decades
- We have left our commodity price and currency assumptions unchanged.

- Below are our assumptions and the results of our analysis, compared with the original BFS. The impact on project economics is impressive. Our estimate of NPV_{10} (post tax) increases by 37% to $845m and a sub-25% IRR moves to 29%.

Thunderbird mineral sands project		BFS (2017)	**BFSU (2019)**	Change
Price assumptions				
Zircon, premium	US$/t, FOB	1550	**1550**	
Ilmenite, LTR	US$/t, FOB	220	**-**	
Ilmenite, unprocessed	US$/t, FOB	-	**100**	
AUD/USD		0.75	**0.75**	
Project economics				
NPV(10), pretax	A$m	917	**1272**	39%
NPV(10), post tax	A$m	615	**845**	37%
IRR, pretax	%	27.8	**35.0**	26%
IRR, post tax	%	23.5	**28.8**	23%
Note: based on BSCP assumptions				

Impact on debt financing

- As we discussed in our July report, the earlier BFS has enabled SFX to attract high quality debt providers, Taurus and NAIF. With the full upfront project capex now at $392m the gearing (on a debt to project capital basis) is high at 84%. Is this a problem for the debt providers?
- One of the key metrics used by the debt providers is the Project Life Cover Ratio (PLCR). This is defined as the discounted cashflow available for debt service divided by the debt outstanding. A number significantly greater than one would be optimal. Our model of Thunderbird Stage 1 incorporating detail from the BFSU, at our commodity/currency forecasts derives a PLCR of 3.7, so very comfortable. Discount commodity prices by 25% and the number remains more than acceptable at 1.8. Take the zircon price down to cyclical lows of US$950/t, and the PLCR we calculate is 1.3.
- A second metric likely to be critical to the bank's decision to proceed is the Loan Life Cover Ratio (LLCR). This is defined as the discounted cashflow over the term of the loan, divided by the debt outstanding. Again, a number over one will make the project bankable. In the case of the Thunderbird project finance, this would be measured over the US$75m tranche A facility, amortised over the first 7 years of the project's life, and repayable in years 3.5 to 7.

- At our commodity price assumptions, the LLCR is a comfortable 4.8. Drop zircon by 25% and it remains at 2.4. The 'break even' (LLCR of 1) zircon price is around US$900-950/t, which represents the price at the bottom of the last cycle. We think this should tick all the banks' boxes.
- We understand the banks are currently undertaking a second phase of due diligence before finally signing of on the facilities. This is expected to be completed within weeks.
- This high level of debt will, of course, flow through to SFX's balance sheet, but it should be remembered that the debt facilities have been tailored to the expected cashflows of the project. The Taurus facility has no requirement payback during the first 3.5 years post start-up. Interest rates are not onerous (although Taurus will enjoy an attractive royalty stream for many years).
- The NAIF facility is even more attractive. This A$95m debt package is made up of two separate tranches with a duration of 15 and 20 year at a starting interest rate of around 3.5%.

Impact on the valuation per share for Sheffield

- At a share price of 60-70c, the cost of SFX equity capital is roughly half what it was in 3Q18. Looking forward SFX is likely to formally evaluate the involvement of another party, at either project or corporate level. SFX changed corporate advisors and appointed investment bank UBS Australia to engage with potential equity partners.
- There appear to be several equity financing options available to Sheffield. We consider two scenarios.

Scenario 1: sell down of equity at the project level

- Our base case remains a 25% investment from another party at project level in Thunderbird. Now that the project is fully permitted, "shovel ready" and has two high quality debt providers, we are of the view that an incoming party could pay 50% (or perhaps more) of NPV for this world class project. Our after tax NPV_{10} of Thunderbird is now A$845m, assuming a US$1550/t (FOB) long term zircon price and A$/US$ of 75c. The sell-down of 25% of the project could provide significant equity to SFX and allow full funding of the project. We assume an additional $50m of new equity would be raised by the company.
- We assume in our valuation, summarised below, that future equity is raised at A$0.60/share.
- On this basis our NAV_{10} for Sheffield is A$1.88/share, a significant premium to the prevailing share price, and higher than our earlier estimates.
- Note that a significant part of the NAV/share estimate is based on the number of shares to be issued to provide this top-up equity. In our July report we had the company raising at 40c/share (a 10% discount to the prevailing price).
- To illustrate this effect further, if SFX are able to raise at A$0.70/share, our valuation per share rises to $1.95. The cost of equity capital for SFX has been highly variable, which has driven similar volatility to our valuation per share.

Thunderbird (NPV10), post tax	A$m	$	845.3	
Add back capex	A$m	$	390.0	
Thunderbird (NPV10)	A$m	$	1,235.3	Unfunded NPV, pre capex
Mine site exploration	A$m	$	40.0	Notional
Equity NPV	A$m	$	1,275.3	
Project debt	A$m	-$	335.0	86% debt/capex
NPV less debt	A$m	$	940.3	
Ownership by SFX			75%	Assumed sell-down
Implied SFX equity	A$m	$	705.2	
Cash	A$m	$	1.0	
PV of corporate costs	A$m	-$	100.0	Estimate
Other exploration	A$m	$	-	
Taurus working capital facility	A$m	-$	10.0	
Corporate NAV	A$m	$	596.2	
Number of shares, current	m		260.6	Post recent raise + SPP
New equity required	A$m	$	50.0	Estimate
Number of new shares	m		83.3	Raised at $0.60/share
Total number of shares	m		343.9	Post final raise
NAV adding new cash	A$m	$	646.2	
NAV/share	A$	**$**	**1.88**	

Scenario 2: Incoming partner to fund 100% of the equity requirement of the project

- Is the following scenario just as likely? Recent work on the lithium sector highlighted the rewarding deal for Kidman Resources (KDR AU) and the deal with lithium giant, SQM.
- Two years ago, a deal was done to allow SQM to take 50% equity in the 100% KDR-owned Mt Holland spodumene project. US$30m was as a cash payment to KDR and $80m was to be used to fund completion of the BFS, construction of the mine and concentrator and to fund a feasibility study into a lithium hydroxide refinery. (As an aside, this has turned out to be a bargain for SQM).
- The KDR share price at the time was ca. $0.55 for a market capitalisation of A$183m. The market took the deal very well, and within a year the share price had moved to over $2.40 (admittedly following a strong rally in lithium prices and the sector in general). 12 months later, KDR is bid for by industry outsider Wesfarmers, valuing the company at over $770m. Investors that stayed in during the rollercoaster ride made returns of over 300%.

Source: Modified from ASX

- It in the following table, we speculate that the incoming party acquires 49% of the Thunderbird project (leaving SFX in control) by funding the outstanding equity requirement of A$154m. The valuation outcome is much the same as for our previous case. This method of funding might be appropriate should equity markets prove unwilling.

Thunderbird (NPV10), post tax	A$m	$	845.3	
Add back capex	A$m	$	390.0	
Thunderbird (NPV10)	A$m	$	1,235.3	Unfunded NPV, pre capex
Mine site exploration	A$m	$	40.0	Notional
Equity NPV	A$m	$	1,275.3	
Project debt	A$m	-$	335.0	90% debt/capex
NPV less debt	A$m	$	940.3	
Equity capital required	0	$	171.0	Payment for 49% equity
SFX equity in Thunderbird after selldown			51%	
SFX NAV of Thunderbird		$	479.6	
New equity required by SFX		$	-	No new equity required
Number of shares, current	m		260.6	
NAV/share	A$	$	1.84	

- SFX shareholders would hold 51% equity in what will likely become a world class mineral sands project. But at the current market value for SFX, that might be the price that has to be paid.
- Either way, the project is funded, and SFX can move ahead with construction.

New ore reserves for Thunderbird

A consequence of the new by-product revenue and reduced cost structure has been a reduction in the overall cut off grade (COG) for Thunderbird, and a 500kt increase in contained zircon, an 8.5% increase over previous estimates.

Thunderbird's total Proved and Probable reserves are now total 748mt at a HM grade of 11.2%.

Table 5: Thunderbird Ore Reserve June 2019

Ore Reserve			Valuable HM Grade (In-Situ)[2]					
Reserve Category	Material (Mt)	HM (%)	Zircon (%)	HiTi Leuc (%)	Leucoxene (%)	Ilmenite (%)	Oversize (%)	Slimes (%)
Proved	219	13.7	1.02	0.30	0.28	3.68	14.0	16.1
Probable	529	10.1	0.79	0.26	0.27	2.87	10.5	14.5
Total	**748**	**11.2**	**0.86**	**0.27**	**0.27**	**3.11**	**11.6**	**15.0**

[2]The in-situ grade is determined by multiplying the percentage of HM by the percentage of each valuable heavy mineral within the heavy mineral assemblage at the resource block model scale. Tonnes and grades have been rounded to reflect the relative accuracy and confidence level of the estimate, thus the sum of columns may not equal.

Source: SFX release, July 2019

The potential for additional value in SFX: regional resource potential

In January 2019 SFX released a maiden Mineral Resource for the Night Train deposit, nearby to Thunderbird, which was discovered in 2015 as a part of a regional grassroots exploration programme. Preliminary infill drilling has allowed the determination of a 130Mt @ 3.3% total heavy minerals (THM) inferred resource at a 1.2% THM (total heavy minerals) cut off grade. Within the larger resource is a 50Mt @ 5.9% THM deposit at a 2% cut off grade (COG).

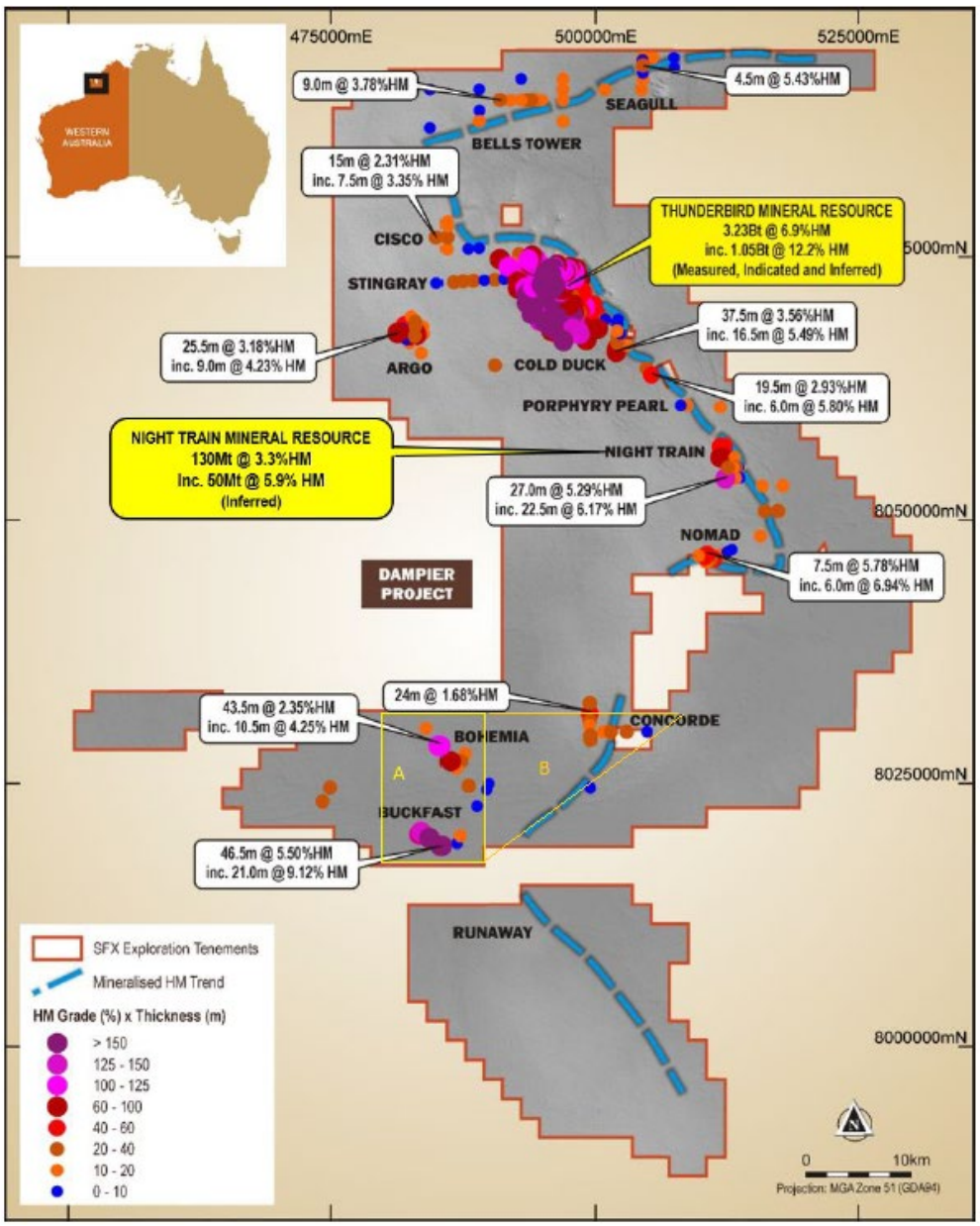
Importantly, as with Thunderbird, the deposit contains a significant proportion of zircon. Night Train's assemblage contains a larger proportion of so-called HiTi minerals (such as rutile and leucoxene). Interestingly, the imputed in situ value per tonne seems to be comparable with the global Thunderbird resource at this early stage. The Night Train resource at the higher COG could be of higher insitu value than the Thunderbird Ore Reserve, as demonstrated in the following table. However this interpretation is dependent on (1) the quality of the zircon itself (initial testwork is positive) and (2) price realisations for the HiTi mineral assemblage.

	Thunderbird, reserve	Thunderbird, resource*	Thunderbird, resource**	Night train (1.2% COG)	Night train (2% COG)
Resource/reserve, tonneage (Mt)	748	3230	1050	130	50
Resource status		M+I+Inf	M+I+Inf	Inf	Inf
VHM content (%)					
Zircon	0.86%	0.57%	0.93%	0.45%	0.82%
HiTi + Leucoxene	0.54%	0.38%	0.54%	1.68%	3.23%
Ilmenite	3.11%	1.90%	3.30%	0.71%	1.06%
Price assumption (US$/t)					
Zircon	1500	1500	1500	1500	1500
HiTi + Leucoxene	400	400	400	400	400
Ilmenite, chloride	200	200	200	200	200
Approximate in situ value (US$/t)					
Zircon	12.90	8.55	13.95	6.75	12.30
HiTi + Leucoxene	2.16	1.52	2.16	6.72	12.92
Ilmenite, chloride	6.22	3.80	6.60	1.42	2.12
	21.28	13.87	22.71	14.89	27.34
Approximate in situ value					
Zircon	61%	62%	61%	45%	45%
HiTi + Leucoxene	10%	11%	10%	45%	47%
Ilmenite, chloride	29%	27%	29%	10%	8%
*Thunderbird resource quoted at a 3% THM cut off grade)					
**Thunderbird resource quoted at a 7.5% THM cut off grade)					
Resource status: M, I, Inf = measured, indicated, inferred					

Note that in this table we have used notional values for the mineral sand products to draw comparisons between the deposits. It is still early days for Night Train and the likely value of the secondary titanium minerals, but we feel that our price assumption of around US$400/t is not unrealistic. Note as well, we have assumed that ilmenite is sold as LTR quality. This is now not the case, but may well be in the future.

Despite this success, the new Night Train Mineral Resource is unlikely to change the current Thunderbird mine plan. With an in situ value of contained mineral sand product at over US$20/t, Thunderbird Reserves represent very valuable ore and will certainly be mined first.

What the Night Train Mineral Resource demonstrates is the potential to substantially increase the mineral sand endowment of the Dampier Project. Additional resource potential can be seen over an astonishing 160km long mineralised trend extending from the Seagull mineralisation to the north to Runaway to the south, as illustrated on the following plan from SFX.



Source: SFX release "High grade maiden mineral resource at Night Train", 31 January 2019. Blocks annotated "A" and "B" have been added by BSCP and are referred to below

We believe there is significant additional resource potential within the Dampier Project tenements. SFX's January report discussed the opportunities in some detail. Regarding regional exploration potential, the company comments as follows:

From its limited regional exploration efforts to date, the Company has discovered mineralisation at a variety of stratigraphic levels, including the Argo and Bohemia prospects which occur above the extensively mineralised Thunderbird stratigraphic position. The different mineralised levels are thought to represent potential stacked shoreline facies that accumulated during marine transgressions in the Cretaceous. This opens up the potential for multiple target horizons on which to focus future exploration programs. (Source: SFX release "High grade maiden mineral resource at Night Train", 31 January 2019)

In our view the most obvious exploration targets include:

- **Extensions to the Thunderbird deposit**, down dip and along strike. The current Thunderbird deposit is immense, and already one of the largest (if not the largest) accumulations of zircon (with by-product ilmenite and other minerals) globally. It's possible that mineralisation at the Argo prospect, some 10km to the west of Thunderbird, is a down dip extension.
- **Extensions to Night Train.** Under the JORC code, SFX have been able to flag an exploration target of an additional 80-100Mt at 3 to 4% HM, representing extensions along strike and down dip. The deposit remains open in all directions. It's possible that there is some continuity between Night train and the Nomad mineralisation some 8km to the south. It's not hard to imagine that Night Train could become multiples of its current size.
- **Bohemia/Buckfast/Concorde.** Exploration in 2H18 was very successful in identifying future resource targets. As Iluka moved out of the Canning Basin a couple of years ago, SFX geologists slowly accumulated tenements in the south. New discoveries at Buckfast, Bohemia and Concorde were made with deeper drilling than previous explorers, and have been characterised by broad sheet-like geometries, thick (up to 51m) intersections, and mineral assemblages featuring high proportions of valuable heavy mineral (VHM) dominated by leucoxene, altered ilmenite and zircon. Grades of THM are lower than the deposits to the north (1 to 9% THM) but with low levels of iron oxide trash.

  A limited number of holes completed thus far has the Bohemia and Concorde mineralisation very close to surface, with Concorde inferred to outcrop to the north. Buckfast, to the south, appears to be overlain by around 50 to 70 metres of cover. Is it possible that the three deposits actually link up? We have done some "back of the envelope" estimates of what could be present. It must be stressed that these numbers are our own, and are in no way JORC compliant nor sanctioned by SFX.

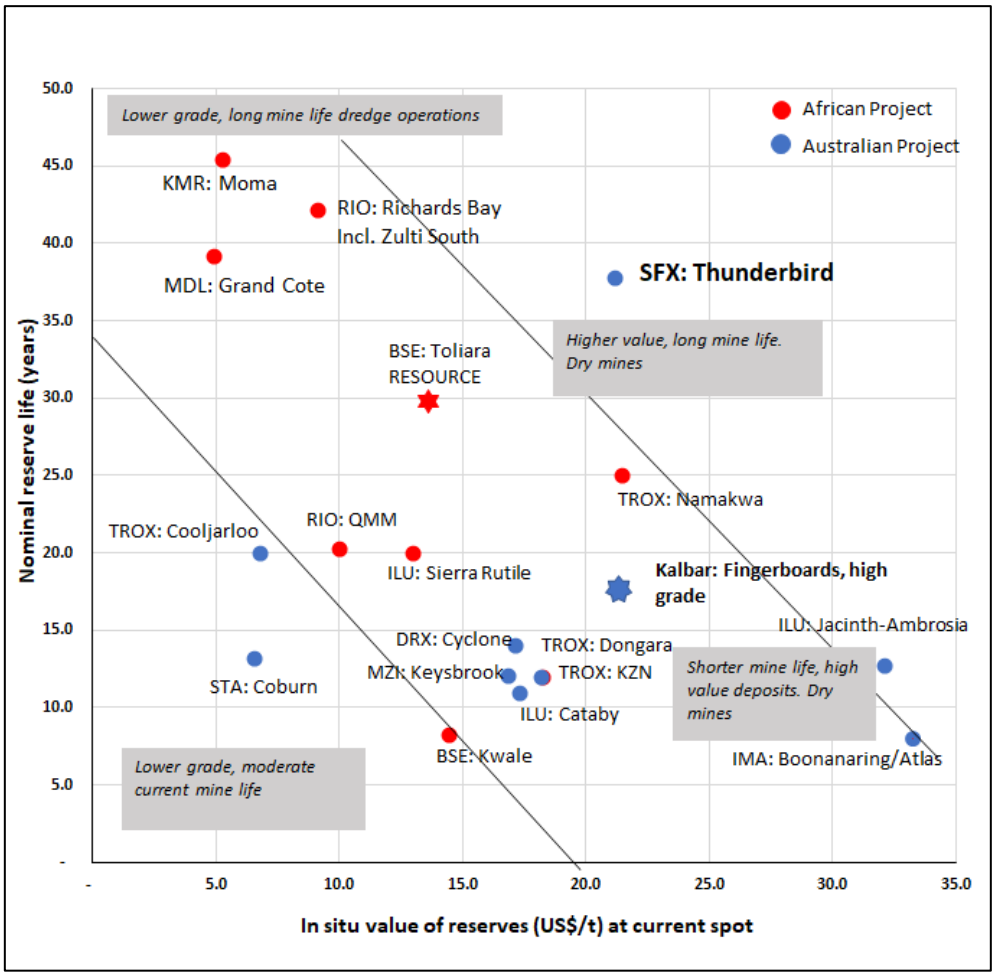
  We have considered 2 scenarios:

  1. Block A in the figure above, effectively projecting resource potential between Buckfast and Bohemia. Assuming say 25% of a block around 15km by 10km mineralised over a thickness of say 30m and a relative density of 1.8, a tonnage of over 2 billion tonnes could be projected.

2. Taking Block A and assuming that the mineralised zone extends to Concorde (Block B), and again assuming a 30m thickness of mineralisation, 25% mineralised, an additional 1.5 billion tonnes could be projected.

These are large numbers and demonstrate that it's entirely possible that another Thunderbird would fit into Blacks A and B. From the initial work it seems clear that the grades are not yet comparable to the high grade zone of Thunderbird; nor is the tenor of zircon as high. Furthermore, the titanium-bearing minerals are dominated by HiTi minerals (leucoxene and rutile) and the economic potential of both are uncertain. But grades above a THM of 2-2.5% with say 50% zircon and minimal trash are likely to be mineable grades, and with an elevated cut off grade perhaps comparable to Thunderbird.

Regional exploration within the Dampier Project's tenements has really just begun, and it is already clear that the ultimate resource could be multiples of the +1 billion tonnes already contained by the Thunderbird deposit. The following chart, based on common commodity price assumptions and notial mine lives, demonstrates how SFX's 100%-owned Thunderbird project stands out from the crowd. It's entirely possible that ongoing exploration will make the province even more attractive.



Source: company data

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Conclusion

- SFX has emerged from a tough 6 months with a significantly stronger project.
- Thunderbird is unquestionably the best fully permitted, undeveloped mineral sand opportunity globally. The project's Bankable Feasibility Study Upgrade (BFSU) was expected to be positive: but the recent release was significantly better than we had expected. A focus on increased zircon production (by ca. 38%) at the expense of premium ilmenite (by deferring the roast circuit), has seen capital costs drop by 18%. Our estimate of the project's IRR has increased to 29% (post-tax) with our project NPV_{10} (post-tax) increasing 16% to A$845m.
- Thunderbird remains zircon dominated, delivering around 68% of revenue life-of-mine. Increasing supply deficit for TiO_2 feedstock has seen the company contract unroasted ilmenite at attractive prices. This had not been expected, and comes as a real bonus.
- With a reduction in the capital cost, the funding gap has contracted materially. What had been a requirement for over A$250m in equity, has reduced to $143m. This might still be too large for SFX to go it alone, even with the recent share price recovery. A search for an equity partner is well advanced and is expected to be concluded within 1-2 months.
- We have long viewed Thunderbird as a Tier 1 mineral sands project, based on the following elements:
    - ✓ It is one of the largest deposits found in the last 30 years, 3-4 times larger than the Jacinth-Ambrosia discovery of Iluka in 2004 for a similar in situ value.
    - ✓ Long mine life (+30 years).
    - ✓ High grade. Significantly higher grades than most of its peers.
    - ✓ Low cash costs helped by a low strip ratio and relatively high grades. The BFS upgrade may now place the project into the highest margin quartile
    - ✓ Located in Western Australia, the world's most attractive mining jurisdiction. Most of the world's mineral sand Ore Reserves are now in geopolitically risky areas.
    - ✓ Good access to existing port infrastructure.
    - ✓ Good access to technical services.
    - ✓ Good access to labour, skilled and unskilled.
- We believe the existing banking consortium will remain with the project and the UBS will be able to secure a suitable strategic partner and minimise dilution to existing SFX shareholders.
- We believe the cynics and competitors will fail to halt the development of Thunderbird. The current share continues to reflect doubts regarding the project's final funding solution. We believe that a suitable equity funding solution will be secured, and the SFX might wind up owning between 51 and 75% equity in the project.

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Capital Structure

Sheffield Resources Ltd (SFX AU)		
Share price	A$	$0.65
Number of shares (fpo)	m	258
Market capitalisation	A$m	$167.7
Share options (av 45c)	m	15.8
Cash (at 3/19)	A$m	$5.30
Debt	A$m	$0.00
Top 50 shareholders, appr.		50%
Insitutional holding, appr.		35%
Directors, management		11%

Sensitivities

		EBIT (2022e)		Project NPV(10), post tax	
Change from base	*Base*	*+10%*	*-10%*	*+10%*	*-10%*
Capital costs (pre prod'n)	A$373m	0%	0%	-4%	4%
Opex	A$132/t	-15%	8%	-11%	11%
Zircon price	US$1550/t	15%	-15%	21%	-21%
Ilmenite conc. price	US$80/t	5%	-5%	6%	-6%
A$/US$	0.75	22%	-18%	30%	-25%

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Update on mineral sand prices and trends

Certainly the biggest story of the last few months as far as mineral sand supply is concerned is the announcement by Rio Tinto of the go-ahead of the Zulti South Project, with the aim of "sustaining Richards Bay Minerals current capacity and extend mine life" as the grades of the North orebody decline. Construction is due to start in 2019, assuming all permits are obtained. First production is expected in late 2021. It is to be fully funded from internal cashflow and RIO quote an IRR of 24% (without specifying commodity price assumptions).

We have always been doubtful as to whether RIO would commit capital to RBM. South Africa is hardly a favoured investment destination, social unrest has been on the increase and power costs – an important input into RBMs slag furnaces – have been on the rise. It is hardly surprising the Zulti South decision is nearly 5 years late.

But without Zulti South, RBM would have continued its downward value decline, until closure in around 15 years.

The stated capital cost of US$463M is much lower than we had thought, which suggests this is unlikely to build RBM back to is former glory. At its peak, RBM produced around 250ktpa of zircon. We think current production is around half this level (RIO do not disclose production levels for zircon). We are forecasting that production will move back toward 200ktpa from 2022.

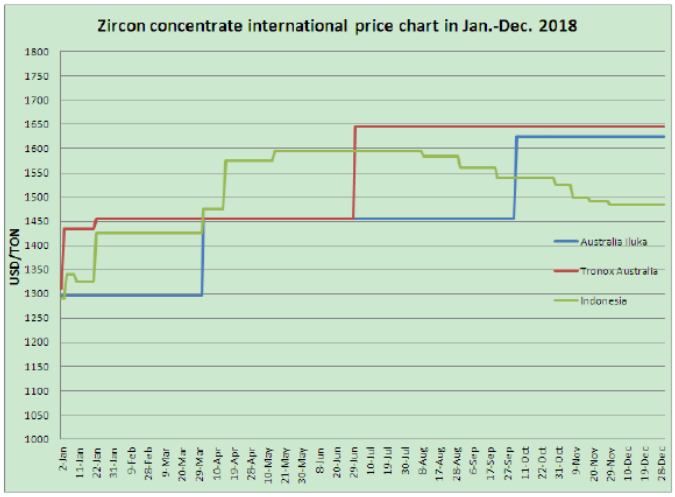
As we describe in the following sections, despite a subdued Chinese economy, zircon producers have been able to maintain ca. US$1600/t reference pricing. Titanium feedstock prices have recovered from a post Chinese New Year dip.

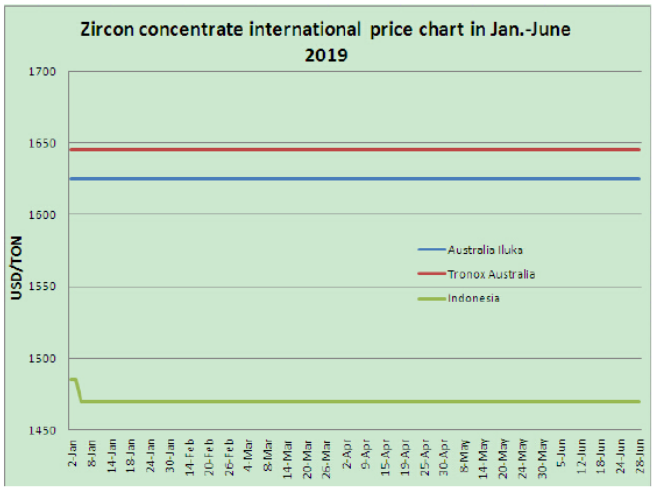
Zircon

Despite a slowing of Asian economies, Australian producers are maintaining their reference prices. Demand we are told remains subdued, with the US/China trade war impacting consumer sentiment.

Prices remain unchanged in the range US$1600-1640/t for premium zircon (CIF basis).

Zircon pricing, January 2018 to June 2019. (Note units expressed are US$/tonne, CIF)





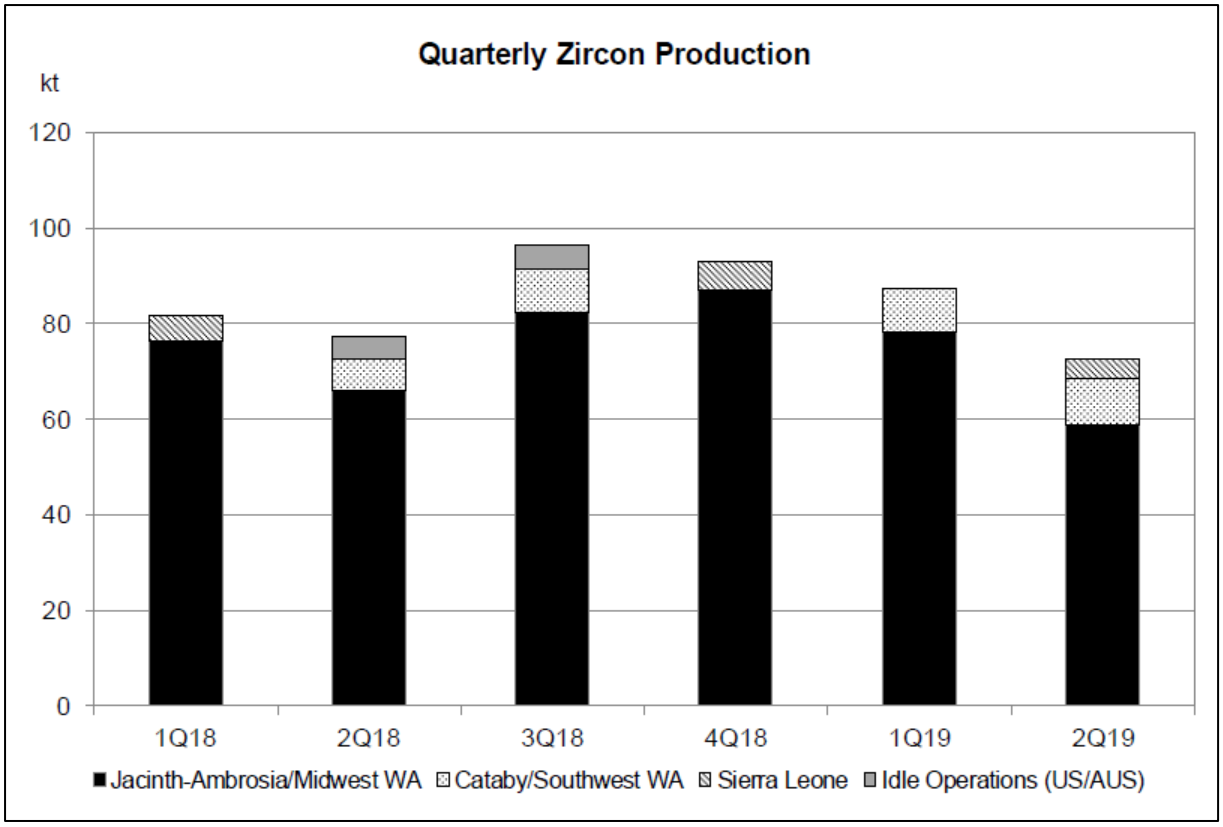
Source: Ferroalloynet.com

Negative sentiment associated with zircon pricing and volumes seems to have flowed through to equity markets. The Iluka share price was hit hard following disappointing zircon production and sales in the June quarter. We think the market was more disappointed with the bearish commentary on their new Sierra Leone expansion project, Sierra Rutile has proved to have been a poor investment for ILU.

While we acknowledge a weak demand environment for zircon – and its been that way for at least 12 months – we urge investors to look through short term volume and price risk, if any emerges.

Zircon markets are opaque (appropriately perhaps). One of the largest producers, Richards Bay and QMM, operated by mining giant Rio Tinto, simply do not disclose production levels. However, it is quite clear that production from the existing operations have been in steady decline for several years.

The largest single producer of zircon is the world is Iluka's Jacinth-Ambrosia (JA) operation in the Eucla Basin of South Australia. JA's high grades are dwindling, but the company has stated that it can maintain current production levels for the next 2 years.



Source: Iluka June 2019 quarterly report

There are a number of new projects on the drawing board, but few more important than Thunderbird. We now have Thunderbird ramping up from 2022, reaching full Stage 1 production in 2023. As shown in our supply/demand table below, a market likely to be in deficit over the next 2-3 years will be made worse should Thunderbird not proceed for any reason.

Historically, Victoria has been an important source of mineral sands in general, zircon in particular. And there are several projects on the drawing board, including Kalbar's Fingerboards project in East Gippsland and two projects in the Wimmera, Avonbank and Donald. We are familiar with Kalbar, which

is 4-6 months delayed in submitting its environmental effects statement. We have delayed start-up of this project into 2022. We suspect that all Victorian projects will be delayed by permitting issues.

With the go-ahead of RBM's Zulti South project, we have revisited our zircon supply/demand model, below. Note that is table includes only +20ktpa producers in 2023.

		2019e	2020e	2021e	2022e	2023e
Location	Company					
Eucla Basin	Iluka	270	270	270	240	220
Richards Bay	Rio Tinto	144	130	123	150	175
Namakwa	Tronox	121	121	121	121	121
Thunderbird	Sheffield	0	0	0	80	100
Moma	Kenmare Resources	70	70	70	70	70
Grande Cote	TiZir (Eramet/MDM JV)	70	70	70	70	70
Boonanaring	Image Resources	50	70	70	70	70
Florida	Chemours	65	65	65	65	65
Western/Eastern Aust.	Cristal Mining	60	60	60	60	60
Fairbreeze	Tronox	50	55	55	55	55
Narngulu tailings	Iluka		50	50	50	50
Indonesia	Various	50	50	50	50	50
Perth Basin	Iluka	30	60	60	60	40
Fingerboards	Kalbar	0	0	0	20	40
Western Australia	Tronox	30	30	30	30	30
Kwale	Base Resources	32	25	25	25	25
Tormin	Mineral Commodities Ltd	25	25	25	25	25
Mataraca, Paraiba	Millennium Inorganic Chemicals	25	25	25	25	25
Murray Basin,NSW	Cristal Mining	25	25	25	25	25
Port Dauphin	QMM	20	20	20	20	20
	Total	**1,267**	**1,240**	**1,233**	**1,330**	**1,355**
	Growth in supply	*2.6%*	*-2.2%*	*-0.5%*	*7.9%*	*1.9%*
	Growth in demand	*2.8%*	*2.8%*	*2.8%*	*2.8%*	*2.8%*
	Surplus/deficit	0	-63	-106	-47	-60
	Surplus/deficit without new projects	0	-113	-156	-197	-250

Source: BSCP data, company data

What was looking like a deficit market in 2019 has been brought back into balance by Iluka with the release of product from inventory. As well we have seen higher prices incentivise additional production out of Indonesia. For the next 2-3 years, a potential deficit should also be balanced by ILU likely delivering zircon-in-concentrate from Narngulu tailings (WA) at a rate of 40-50ktpa. Based on our numbers this will not quite be sufficient to balance the market, which suggests prices will remain strong at least until new supply emerges from 2021-22.

As shown in the last line of the table above, without these new zircon projects, a 20% supply deficit is forecast to develop by 2023.

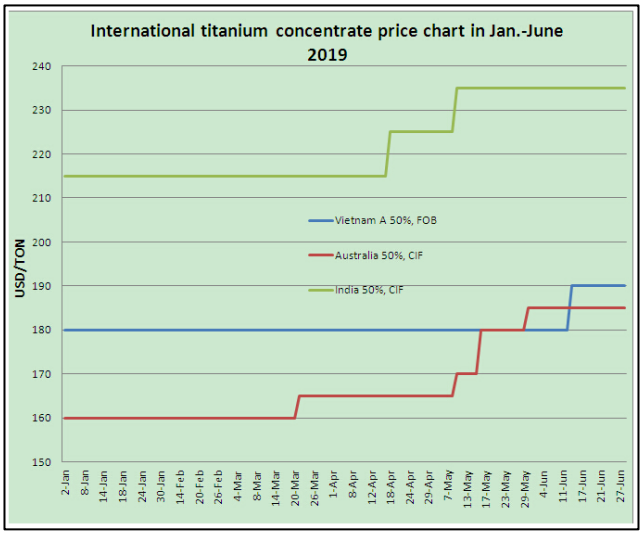
We see no reason to change our long term US$1550/t (FOB) price forecasts, and remain of the view that prices need to remain at this level to incentivise new production to fill an emerging supply gap.

Iluka and Tronox appear to be managing the zircon market well. We sense they are aiming to maintain a stable pricing outlook and avoid demand destruction we saw over the past 5 years.

Titanium dioxide feedstock

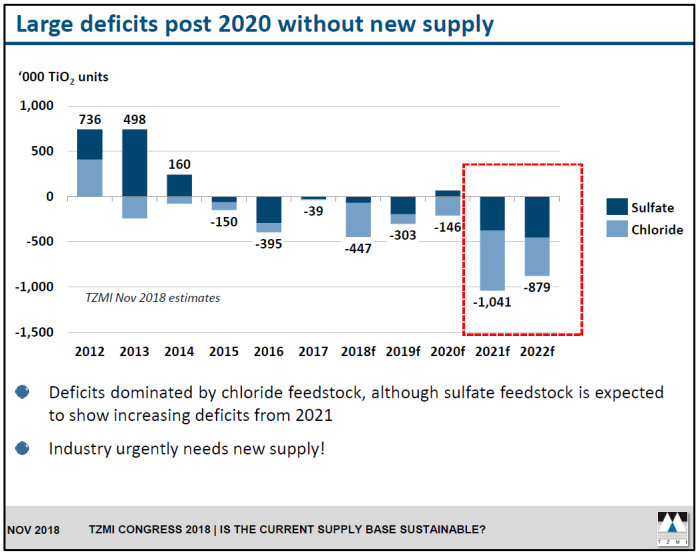
The feedstock market has been tightening as well. On the demand side many pigment plants globally are already running at high operating rates, and previously depleted inventories are being rebuilt. We are seeing increasing growth in chloride pigment capacity (especially in China) and demand for high grade feedstock is increasing.

On the supply side here have been a number of disruptions (especially at ILU's Sierra Rutile operations) and inventory levels are reportedly low.



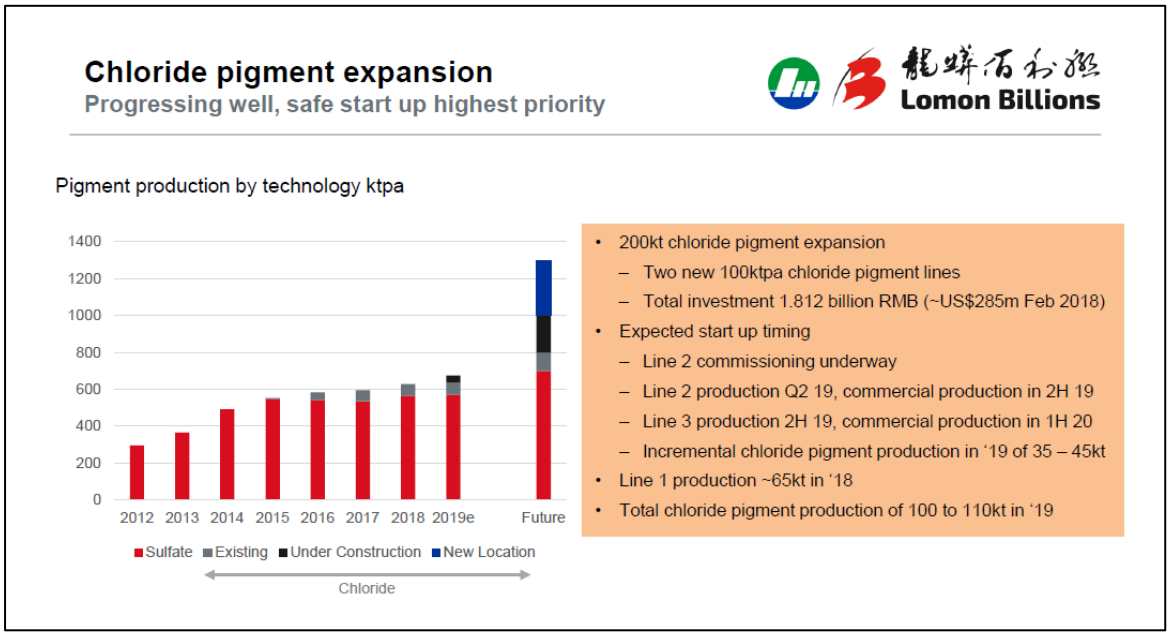
Source: Ferroalloynet.com

Recent presentations from consultants TZMI have pointed to the potential for increased supply constraints for titanium dioxide feedstock, especially of a quality suitable for the chloride pigment process. "Industry urgently needs new supply" are not our words, they come from a well-regarded mineral sand consultant.



Source: TZMI Mineral sands Conference, 2018

As highlighted by leading Chinese pigment producer, Lomon Billions, growth in Chinese pigment production is forecast to be strong over the next decade, and much of this will be chloride.



Source: Lomon Billions presentation to New York TZMI conference, 2018

At a recent conference (May 2019) industry consultants TZMI confirmed a strong growth outlook for pigment capacity in China. They suggest that several expansions and debottlenecking will contribute another 150-200kt of capacity.

So perhaps no surprise that premium Indian ilmenite, itself the subject of supply disruption, has seen prices move toward record levels. And perhaps no surprise that emerging pigment producer Bengbu, have sought to lock in long term supply with Sheffield.

We retain a positive medium-term view on titanium dioxide feedstock, and see further upside for prices.

Who is Bengbu? Sheffield introduced us to Bengbu Zhongheng New Materials S&T Co., Ltd as one of the key offtake partners for the LTR ilmenite. Bengbu is a subsidiary of a listed company, Triumph Science and Technology Co. (600552.SS), which is in turn a subsidiary of China Triumph International Engineering (CITEC), in turn a subsidiary of the huge SOE, China National Building Materials (CNBM). CNBM is China's largest producer of cement, gypsum board and plate glass. It also has extensive engineering capabilities. One of CITEC's subsidiaries is the largest producer of fused zirconia in China (and perhaps globally), consuming some 80-90ktpa of zircon. It is difficult to get details regarding Bengbu's intentions regarding its entry into the pigment space. Clearly it is sensitive commercially as the pigment industry in China is fragmented and highly competitive. We have found a single reference to the company's proposal to build out 200ktpa of chloride pigment capacity (Source: CITEC website). A budget of 5 billion yuan has been allocated. There is no timetable provided, but we understand construction of the first 100ktpa module has begun.

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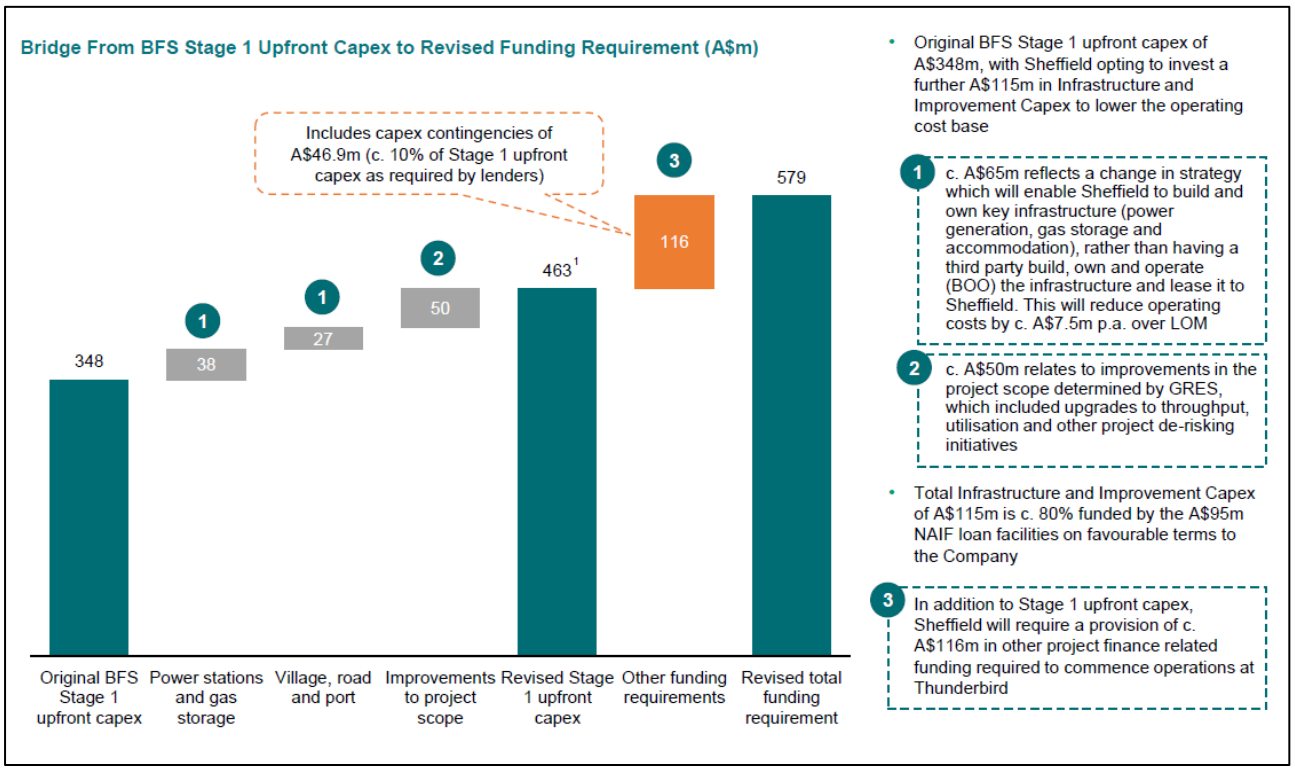
Appendix 1. A Bit of History (from our July report)

While good mines are often the product of grass roots discovery, better mines are delivered by repetitively testing and re-testing development concepts and addressing market conditions for their products. It is therefore relevant to look at the development history of the Thunderbird project.

- The precursor to the Thunderbird project discovered by Rio Tinto Exploration in 2003 following up radiometric anomalies identified by BHP.
- Discovery of the resource potential of Thunderbird in 2012.
- During 2014 the resource rapidly grew to over 1 billion tonnes containing 11.8% heavy minerals.
- In May 2015, a PFS was released and presented a case for an 18Mtpa plant throughput, delivering an average of 114ktpa zircon and 439ktpa ilmenite. Capex was estimated at A$394m with a life-of-mine (LOM) cash cost expressed on a revenue to cost ratio of 1.82:1 based on forecast commodity prices and 1:42:1 based on spot commodity prices.
- It was generally thought at this point that this project was unlikely to be bankable.
- In October 2015 a revised PFS was considered in an attempt to reduce capex and enhance the marketability of the ilmenite. A critical breakthrough was the introduction of a low temperature roasting phase for the magnetic heavy mineral (HM) stream, which enabled the production of a higher grade (>55% TiO2) ilmenite, again aimed at sulphate pigment producers.
- Plant throughput was reduced from 18 to 12Mtpa expanding back to 18mtpa some 8 years after initial production. Capex reduced 26% to A$271m. Zircon production was estimated at 100ktpa LOM with ilmenite at 382ktpa. R/C costs improved to 2.02:1.
- The SFX board considered this to be a potentially bankable proposition and the project was advanced to a bankable feasibility study (BFS).
- In March 2017 SFX released the results of the BFS. A two-stage development path was still envisaged commencing with a plant throughput of 8.5Mtpa expanding to 17Mtpa in year 5 for a 42 year mine life.
- Average zircon production (expressed on a pure zircon basis) was proposed at around 110ktpa, ilmenite at an average of 388ktpa and minor by-product credits. At BFS commodity price assumptions, zircon would make up some 63% of revenue.
- Cash costs (R/C basis) remained around 2:1, placing the project at the top of the 2nd quartile margin curve. Capex had risen to A$348M (including at $24m contingency).
- Importantly the project economics were quite attractive with a project IRR of 24.9% and NPV of A$676m (at a pretax level).
- The investment environment was enhanced by some useful commodity price tailwinds, with tightening zircon and ilmenite markets.
- The board pressed the ‘go’ button, debt advisors were appointed and debt was actively sought for this potentially world scale project.
- Taurus were appointed to provide US$175m in senior debt in 4Q17. Subsequently the Federal Government agency the Northern Australian Infrastructure Fund arrived with a low cost debt facility to assist with the funding of specific elements of infrastructure, together with a modest exposure to the project itself.

- Marketing of the product proceeded particularly well, with 100% of Stage 1 zircon production fully committed to off-takers. Offtake agreements for around 50% of the LTR ilmenite was secured (with Bengbu a key customer).
- Capital costs for the project itself edged up following a detailed review by the debt provider's consultants and EPCM contractor, GR Engineering. In our view there was a "belt and braces" component to this capex upgrade with terms such as "de-risk", "contingency" present in the release. As well there was a $9m escalation (due to the later start date for the project) and a $4m "additional weather allowance".



Source: SFX presentation, June 2019

- On a like-for-like basis capex had moved up from A$348m in the BFS to A$362m, a 4% increase.
- A further $50m capex increase were scope changes, requested by EPCM contractor GR Engineering who were then awarded a fixed price, turnkey contract.
- Capex over and above the full project capex number of A$398m included approximately A$65m for infrastructure which had previously been outsourced. The cost benefit of bringing this infrastructure within SFX was estimated at A$7.5m/year.
- It should be remembered also that there had been significant delays in permitting, with the most severe relating to a resolution of Native Title (finally resolved in November 2018) and the final grant of environmental permits (September 2018). These event alone had created significant frustration amongst investors.

We only need to look at the share price chart for SFX to know that things did not end well into late 2018. In October the share price was $1.20. By the end of the year it had collapsed to 64c. In a wave of what looked to have been irrational pre-June selling, the stock traded as low as A$0.30 which represented a market capitalisation of under A$80m. SFX hadn't seen that market value since the worst of the 2015 bear market.

The share price weakness was driven by a number of issues, including:

- The misguided belief that capex had blown out from $348m to around $600m. As discussed above this was not the case.
- The inability of SFX to raise anything other than modest working capital during the turbulent 4th quarter of 2018.
- Market rumours that Thunderbird was un-fundable. Clearly quality debt providers Taurus and NAIF thought otherwise.
- Further rumours that there were unacceptable technical risks within the project, especially the low temperature roasting stage to optimise the ilmenite circuit. This is despite sign-offs by the BFS engineers, Hatch, consultants IHC Robbins and consultants used by the debt providers. GR Engineering had also provided performance guarantees as part of the EPCM contract.
- A slow start to a search for an equity partner in the project. This search is now well underway under the supervision of UBS, but appears to have been delayed by the recent re-engineering of the project.
- A depletion of SFX's working capital over the ensuing 6 months leading to the belief that SFX would be a forced issuer of equity despite a very weak share price. The working capital issue has been resolved with a recently issued $10m working capital facility provided by Taurus.

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Appendix 2: SFX's disclosure of financial metrics

Table 1: Key Variance to Previous Financial Metrics

Metric	2019 BFSU	Previous Disclosures	Change
Total Funding Requirement	**A$478m**	A$579m[1]	▼ A$101m (17%)
Equity Requirement	**A$143m**	A$251m[1]	▼ A$108m (43%)
Project Capital	**A$392m**	A$463m[1]	▼ A$71m (15%)
Project Revenue	**A$15.1B**	A$13.6B[2]	▲ A$1.57B (11%)
Project Operating Costs	**A$7.21B**	A$7.63B[2]	▼ A$0.42B (6%)
NPV_{10} pre-tax	**A$1.13B**	A$0.67B[2]	▲ A$0.46B (69%)
NPV_{8} post-tax	**A$0.98B**	A$0.62B[2]	▲ A$0.36B (58%)
IRR pre-tax %	**30.1%**	24.9%[2]	▲ 5.2% (21%)
Zircon Production (average '000tpa)	**202**	145[2]	▲ 57 (39%)
Offtake	**~100%**	>75%	Full
LTR & Ilmenite Process Circuit	**Not Required**	Included in Stage 1[2]	▲ Removed
Process Rate (t/hr)	**1,085**	788[2]	▲ 297 (38%)
Mine Life	**37 years**	42 years[2]	▼ 5 years (12%)
Long Term Average FX Rate (A$/US$)	**0.75**	0.75[2]	No change
Long Term Zircon Price (TZMI)	**US$1,469**	US$1,387[2]	▲ US$82 (6%)

Reference:
1. ASX Announcement "Joint Kimberley-Pilbara Regional Forum" 11 June 2019
2. ASX Announcement "Thunderbird BFS Delivers Outstanding Results" 24 March 2017

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Dr Chris Baker, an authorised representative of BCP, certifies that the advice in this report reflects his honest view of the company. He has 29 years investment experience in wholesale capital markets. He worked as a mining analyst for brokers BZW and UBS for 11 years and has a further 16 years' experience as a mining analyst and portfolio manager with Colonial First State and Caledonia Investments. He now provides independent financial advice on a part time basis. He may own securities in companies he recommends, but will declare this when providing advice. He currently owns shares and options in SFX. He is not paid a fee by BSCP for providing this report. BSCP are Corporate Advisors to SFX and have received fees from SFX for services provided. BSCP was co-lead manager in the recent $16m capital raise, and received fees for that.

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Appendix 1

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