



SHEFFIELD RESOURCES LTD (SFX AU, \$0.33. Market cap A\$101m)
**Financing outcome secured, delivering 50% equity in Thunderbird for SFX and
with the likelihood of no additional equity requirement**

- Good news from SFX with an announcement that a joint venture funding solution may have been obtained for the world class Thunderbird zircon/ilmenite mineral sands project. The last 18 months has been a trial for shareholders, with hopes of a partnership evaporating in February 2020.
- Perhaps surprisingly the counterparty for the proposed JV is a private Chinese steelmaker, Yansteel. Yansteel, through its parent Tangshan Yanshan Iron and Steel, produces around 10mt of steel with annual revenues of around A\$6bn/year. Yansteel is proposing to develop a smelter to produce Hi-Ti slag to feed into an as-yet-to-be-built pigment plant.
- Yansteel is a private company, so it is not expected that the transaction will encounter any FIRB issues. But this is a very important step. We understand that the Yansteel FIRB application is close to submission and is hoped to be finalised by late October.
- The deal with Yansteel is in 3 parts:
 - A life of mine offtake for 100% of the ilmenite at market prices (take or pay at independent market pricing basis). This deal has been done. The one issue is that if a JV cannot be negotiated (unlikely in SFX's view) this will revert to a 7 year and extendable offtake agreement.
 - A \$12.9m placement of SFX shares to take Yansteel to 9.9% of the company. This has been done at the equivalent of 37.6c per SFX share.
 - Establishment of a 50/50 JV on Thunderbird (at the project level). Yansteel will fund pay a further \$130.1m (for a total deal value of \$143m) to earn its 50% interest. This is subject to a non-binding term sheet, but we do get the sense that both parties are keen to advance this to a successful conclusion. We understand that the term sheet is comprehensive and that Yansteel has already completed exhaustive due diligence.
- It is believed that the \$143m should be sufficient (and potentially more than sufficient) to fully fund the project's 'equity gap' which has been so problematic. \$143m is an important figure as it was the equity requirement quoted as being necessary to fully fund the updated, lower capital BFS (the so-called BFSU), announced in July 2019.
- Today's announcement provides further detail on the revised scope of the project. Details are light as SFX works through a revised flowsheet, but the following are important changes to the BFSU:
 - The new plant will produce a 'non-magnetic concentrate' rich in zircon, to be sold to Asian concentrators. No surprise here.
 - An ilmenite by-product will be upgraded to 'LTR ilmenite' via a low temperature roast process which had been engineered out of the BFSU. This is a surprise.
- Why has SFX gone back to LTR ilmenite? We understand that this largely revolves around the company's requirement that a feedstock product is able to be sold into alternative markets, if required. Earlier work has shown that LTR ilmenite is likely to be a premium product, sought by sulphate pigment producers and chloride slag producers. So, if for any reason Yansteel is delayed in commissioning its slag/pigment project, the LTR ilmenite can be readily sold.
- A decision to simply produce a zircon-rich concentrate is important as well in that it will likely pull forward initial cashflows. We understand first revenues from this material could be available within 14 months from the start of construction.
- It is uncertain what this new plant configuration means for capex. The dry plant will be taken out (which had a headline capex of around \$52m) and its likely that the hot acid leach plant might not be required (\$36m). The capex for the LTR circuit was around \$40m in the original BFS. So it's possible that Thunderbird's capex might come down further.
- Taurus and NAIF seem likely to remain as the debt providers.
- In addition to the completion of the FIRB process, SFX states that where required it will need to seek other applicable regulatory or shareholder approval.

Timing

- It is hoped FIRB approvals can be obtained by 31 October 2020, which is likely to be the rate determining step for the inking of a JV agreement. During this period SFX will work toward finalising its third iteration of the BFS.
- In the meanwhile, the company is now well cashed up to finalise engineering and to update the capex budget.
- SFX has entered an exclusivity period of 6 months or earlier if FIRB approved with Yansteel.
- Should the 31 October deadline be met, pre-construction work could be commenced prior to the start of the wet season. However, it seems likely that the bulk of the work will be conducted during 2021.

Summary of funding

- This is how we see the sources and uses of funds for the project. Note that the assumed pre-production capex and working capital, overheads, etc, are derived from the BFS upgrade study from July 2019.
- The Yansteel deal together with the Taurus and NAIF facilities allow full funding of the project.
- Should the project's capital be less (we guess 10% here), the gearing of the project (not the company) could drop from 72% to around 60%.
- Any additional equity required (above the \$143m) will be jointly funded by both parties.

Uses of funds	
\$ 391.7	Pre-production capex, BFSU
\$ 85.7	Other funding requirements (working cap, etc)
\$ 477.4	Total funding requirement
Sources of funds	
\$ 143.0	Equity capital available
\$ 250.0	Taurus debt
\$ 95.0	NAIF debt
\$ 488.0	Total capital available
\$ 10.6	Balance, based on BFSU capex
\$ 47.7	Assume 10% capex saving
\$ 58.3	Balance assuming capex saving

Source: SFX ASX releases and BSCP estimates

Impact on SFX's valuation

- Our NPV for Thunderbird is now well out of date, and we feel uncomfortable making estimates of capex and opex given significant changes to the process design and the saleable product specification and pricing.
- SFX refers to its NPV8 in the BFSU at A\$980m, and for this analysis we have used this number. (Details of the BFSU are included in Appendix 1). This was based on premium zircon pricing of US\$1469/t, low grade ilmenite of under US\$100/t and FX of 0.75. Changes to this NPV will likely emerge from the following issues (amongst others):
 - Lower capex, as discussed above (positive impact to NPV).
 - Lower revenues per tonne for zircon-in concentrate, but lower operating costs (uncertain impact on NPV).
 - Significantly higher revenues per tonne for LTR ilmenite (higher opex, but likely positive impact to NPV).
- The following analysis assumes that SFX will fully draw down both debt facilities and require no further equity funding.

Thunderbird (NPV8), post tax	A\$m	\$ 980.0	SFX BFSU estimate (July 2019)
Add back capex	A\$m	\$ 391.7	
Thunderbird (NPV8)	A\$m	\$ 1,371.7	Unfunded NPV, pre capex
Mine site exploration	A\$m	\$ 40.0	Notional
Equity NPV, 100% basis	A\$m	\$ 1,411.7	
Yanshan equity contribution		\$ 130.1	
Total equity value		\$ 1,541.8	
Project debt	A\$m	-\$ 345.0	Assumes full drawdown of debt
NPV less debt	A\$m	\$ 1,196.8	
Ownership by SFX		50%	
Implied SFX equity	A\$m	\$ 598.4	
Cash, current	A\$m	\$ 7.0	
Cash from Yanshan equity (9.9%)		\$ 13.1	
PV of corporate costs	A\$m	-\$ 100.0	
Other exploration	A\$m	\$ 10.0	Perth Basin tenements
Corporate NAV	A\$m	\$ 528.5	
Number of shares, current	m	311.8	
New equity required	A\$m	\$ -	
Number of new shares	m	34.8	Yanshan investment, 9.9% of SFX
Total number of shares	m	346.6	
NAV, from above	A\$m	\$ 528.5	
NAV/share	A\$	\$ 1.52	

BSCP view

- This deal represents a very positive outcome for SFX. The past 18 months has been a very difficult period, but one which finally seems to have culminated with a successful financing.
- We have long held the view that Thunderbird is a Tier 1 zircon-rich mineral sand project and one which must be developed to ensure future zircon supply is stabilised. The world is now past 'peak zircon' as existing projects mature.
- Clearly there remains some risk that the Yansteel JV does not proceed, but we understand that negotiations have been very cooperative. FIRB approval, however, is critical. That Yansteel is not a Chinese SOE is a significant positive.
- Our \$1.52/share valuation represents a huge premium to the current share price and we would expect progressive rerating of SFX as critical milestones are achieved. It should be stressed that this is an indicative valuation only as the project's NPV is certain to change. Its entirely possible that the NPV could rise, as discussed above, but we must await details of the final BFS.

Appendix 1 Summary of the BFSU

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 - FOB (TZMI)	US\$1,469	US\$1,387 ²	▲ US\$82 (6%)

Source SFX presentation, July 2019

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Appendix 1

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