

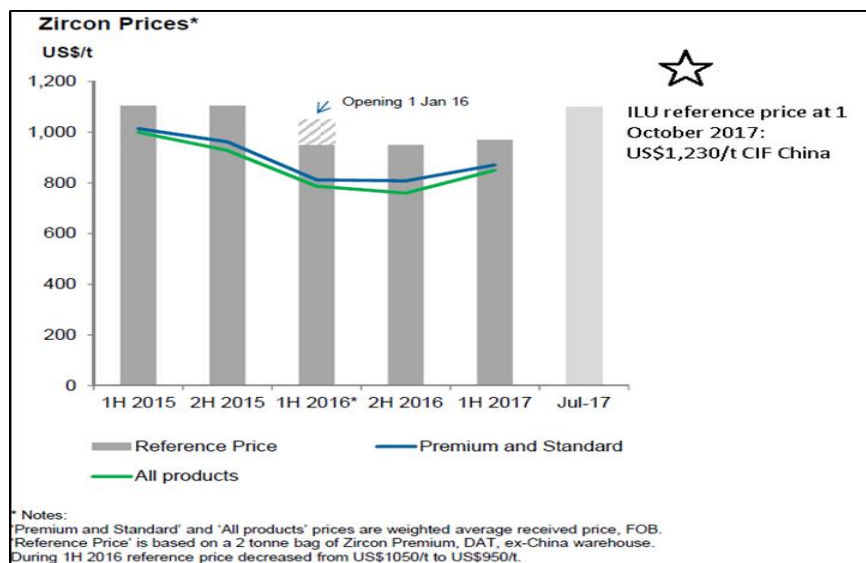
Sheffield Resources Ltd (SFX AU, \$0.56)

Zircon moves into supply deficit. Price up 11%. Forecasts up 12%

Further upside likely as Rio Tinto’s Zulti South mine delayed by >5 years

Thunderbird receives Native Title clearance. Valuation up 10%

- The mineral sands sector has been strong. The share price for market leader, Iluka is up 26% year to date, Base Resources is up 47% and Mineral Deposits is up 71%.
- This performance has been driven by strong price moves by sulphate ilmenite and zircon, now over US\$1200/t. Ilmenite prices been driven by strong Chinese pigment numbers (exports up 20% YOY) and production disruption in Sichuan and Tamil Nadu.
- Zircon prices have started to move, as global reserves dwindle. We estimate a supply deficit of over 10% of demand developing in 2018. A re-start of a single Iluka mine is scheduled for early 2018.
- Our “stronger for longer” thesis for zircon (and likely sulphate ilmenite) has been reinforced with Rio Tinto’s recent statement that Richards Bay will be mined with a “value over volume” strategy. This we think will keep Zulti South out of the market for several years.
- This presents an encouraging environment for developer Sheffield Resources. The company has had no difficulty securing MOUs for much of its future supply from Thunderbird.
- The Tier 1 Thunderbird project (SFX 100%) moved one step closer to full permitting with the finalisation of Native Title clearance, which should see grant of an ML shortly. Expect ‘early works’ environmental approvals within a month.
- We see the finalisation of permitting, disclosure of the debt package for the project in a month or so, and the spin out of non-core assets as re-rating events for SFX.
- We have edged up our long-term zircon price from US\$1250 to \$1400. Our valuation for SFX has moved from A\$1.56/share to \$1.71/share (fully funded at the project level).



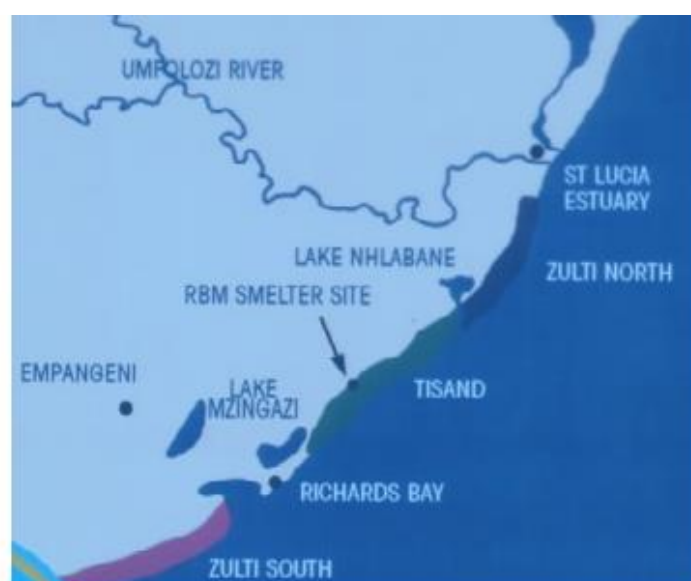
Source: Iluka half year results presentation, 15 August 2017

Commodity overview

- Mineral sand commodities, ilmenite and zircon in particular, have demonstrated strong price performance over the past 12 months. Ilmenite prices into the sulphate pigment producers have more than doubled over the past 12 months – driven by Chinese demand, and supply tightness.
- In mid-September, Iluka, one of the world’s largest suppliers of zircon to the global ceramics industries, announced a US\$130/t (approx. 11%) increase in its so-called reference price to US\$1,230/t (CIF, China). This was followed by price increases out of South Africa by Richards Bay Minerals (RBM, Rio Tinto 74%) and by Tronox.
- Collectively these operators are forecast to produce around 42% of global zircon supply. This is a cosy oligopoly, and these price increases in our view seem likely to stick.
- A supply response is steadily being seen (the restart of ILU’s Jacynth operations), but declining grades and mine lives globally is forecast to keep both commodities in deficit. In the case of zircon, further price rises seem inevitable.
- Sulphate ilmenite prices have settled around the US\$200/t (CIF) mark. Demand from the big pigment groups – which are dominated by sulphate process plants - has been strong. We’ve seen Chinese export numbers of over 20% YOY. Further, there has been significant supply disruptions from the by-product mines in Sichuan and from the beach sand producers in India’s Tamil Nadu.

Rio Tinto’s RBM/Zulti South project: 2020 at the earliest

As we wrote a year ago, the 5 billion Rand question is whether Rio Tinto will fund the Zulti South project at Richards Bay (RBM), where reserve life and grades are dwindling. By our estimates (and they are only estimates as RIO does not disclose zircon production) Rio Tinto controlled operations produce some 16% of global zircon production. RBM itself contributes some 11-12%.



Source: Rio Tinto – Energy and Minerals web site

Rio says little about the future of Richards Bay, but progressively rising costs and depleting reserves are slowly taking their toll on production levels. As in many areas of South Africa there is a good deal of community disquiet. Media reports mentioned temporary closure of the RBM complex earlier in the year in response to community unrest. A year ago the Head of HR was gunned down in a terrorist-style attack. Violent protests around the port of Richards Bay are well documented. To make matters worse, there is a severe water shortage in the Eastern Cape.

We spoke recently with Rio Tinto who confirmed that they have made no specific reference to Zulti South timing. Approval has been deferred a number of years now, given recent market conditions, but they expect it to come up for approval in the next 12-18 months (subject to market conditions). In September, RIO's new Head of Minerals and Energy, spoke about the titanium dioxide strategy (with zircon as a key by-product) which emphasised "value over volume".

The local press (Zululand Observer, 27/6/17) made comments about the project following local government approvals. In a slightly ambiguous article quoting RBM management, it seems unlikely that we will see construction start until 2020.

Clearly there is no urgency to develop Zulti South, and we remain comfortable to keep the project out of our medium-term supply forecasts. We have taken a fresh look at our supply demand estimates for zircon, and reduced supply from a number of the smaller operations. As well we have declining production out of RBM, and remember that Sabelco's North Stradbroke operations will close in 2020. Our deficit has now swollen to over 100kt for 2018, around 11% of projected demand levels.

Zircon forecast supply			2016e	2017e	2018e	2019e	2020e
Country	Location	Company					
S.Africa	Richards Bay	Rio Tinto	105	125	113	101	91
S.Africa	Namakwa	Tronox	120	120	120	120	120
Australia	JA inventory	Iluka	300	120	0	0	0
Mozambique	Mozambique	Kenmare Resources	52	80	80	80	80
Australia	Perth Basin	Iluka	130	75	50	50	50
USA	Florida	Chemours	65	65	65	65	65
Senegal	Grande Cote	TiZir (Eramet/MDM JV)	50	60	70	70	70
Australia	Western/Eastern Aust.	Cristal Mining	60	60	60	60	60
Madagascar	Port Dauphin	QMM	50	50	50	50	50
S.Africa	Fairbreeze	Tronox	30	40	40	50	55
Kenya	Kiwale	Base Resources	30	38	38	30	30
Australia	N. Stradbroke, QLD	Consolidated Rutile Limited	45	35	25	20	0
Total			1,330	1,097	1,003	1,038	1,083
Growth in supply			10.0%	-17.5%	-8.6%	3.6%	4.3%
Growth in demand				3.0%	3.0%	3.0%	3.0%
Surplus/deficit				9	-118	-116	-105

Source: Company reports, Pulse estimates. Ordered by estimated production in 2017. Projects producing >30ktpa in 2017 are tabulated.

SFX's Thunderbird and the Victorian Fingerboards project, where a BFS and permitting are still to be completed, are the only incremental sources of zircon supply we can see in the medium term. New projects are needed to fill the emerging 100ktpa supply deficit.

We can only imagine a strong price response from zircon to incentivise new production. We have therefore taken our long-term forecasts for premium zircon from US\$1250/t to \$1400/t.

Sheffield's Thunderbird project

- The Thunderbird BFS released in April 2017 confirmed our view that the project is of Tier 1 quality offering strong project economics. The project is dominated by zircon (appr. 54% of total revenues in the first 10 years, 35% sulphate ilmenite and 11% HiTi and titanomagnetite, based on our commodity price assumptions).
- Technical issues have been fully addressed, including mine design and optimising the metallurgical circuit.
- We believe Thunderbird is a Tier 1 asset, on the following grounds:
 - 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 roughly the same in situ value.
 - Long mine life. + 40 years.
 - High grade. Significantly higher grades than most of its peers.
 - Low cash costs driven by a low strip ratio and high grades.
 - Located in Western Australia, the world's most attractive mining jurisdiction.
 - Good access to road and port infrastructure.
- At peak capacity, Thunderbird will produce approximately 7% and 3% respectively of the world's zircon and ilmenite.
- With our recent increase in a long-term zircon price assumption, our valuation of Thunderbird is now A\$954m (pre tax) with an estimated pretax IRR of 29%, with first production likely in 2019.
- This translates to an NPV per share of A\$1.71/share (previously \$1.56) based on our funding assumptions. See our report of 18 April 2017 for our valuation methodology. It is based on the following assumptions:

Zircon (premium, CIF) US\$1400/t
Zircon in concentrate (ZIC) US\$650/t
Ilmenite US\$220/t
HiTi US\$650/t
Titanomagnetite US\$48/t
FX 0.75

- As well, we assume that SFX assists funding the project with the sell-down of 20% of Thunderbird at a 60% discount to project NPV. The balance of the project's funding requirement is satisfied with debt (50% debt to equity at the project level) and new equity from SFX (A\$120m we estimate).

We see an opportunity for the progressive rerating of SFX

We believe a number of factors will see SFX rerate toward our internal valuation of around \$1.70/share. These include:

The macro environment: Chinese economic numbers continue to surprise on the upside. The China property boom does not appear to be waning, and several commentators suggest risk lies to the upside. Demand for ilmenite (pigment) and zircon (ceramics) is greatly assisted by a strong property cycle.

Supply/demand issues: Our work on zircon supply/demand described above suggests an expanding supply deficit. This deficit is only partly satisfied by the restart of ILU's J-A mine. Zircon prices may continue to surprise on the upside. Prices for sulphate ilmenite are forecast to remain high, to satisfy increasing demand from the dominant Chinese pigment producers.

Finalisation of permitting issues: With Native Title issues now resolved we await interim and final environmental approvals (see below for further commentary). We can see no environmental issues, and expect full approvals within 2 months. This process has been delayed, not helped by a mid-year election and a change of WA Government.

Resolution of financing. The company has a number of options, greatly assisted by the quality of the project and its +40 year mine life. These options include:

- Debt. We believe there is a deal of interest from global banks and EPCM/construction groups. Expect details within a few months.
- Offtake financing.
- Partial sale or JV of the project.
- Equity.

Realising value from non-core assets

- Spin-out of Carawine Resources. We see real value emerging from the spin-out of SFX's non-mineral sands exploration projects. The recent acquisition of the Jamieson VMS project has delivered immediate drill targets.
- Perth Basin mineral sands. SFX have a number of small, moderate grade deposits in the Perth Basin, close to Iluka's Eneabba operations. There does seem to be a consolidation opportunity in the northern Perth Basin, which could present SFX with an opportunity to monetise these assets.
- Neither of these assets are reflected in our valuation. We are of the view that the value of SFX's non-core assets will be in the A\$8-10m range.

Update on permitting the Thunderbird Project:

Native Title

- The National Native Title Tribunal (NNTT) has given approval for the Mining Licence to be granted. This was handed down on 14 June 2017 without any submissions or opposition from the Native Title Party (the Traditional Owners).
- An appeal by the legal representative of the Native Title party was dismissed on 21/9/17.
- While there is a possibility another appeal will be lodged, we believe the Mining Licence will be granted.

Environmental permits

- Approval for Minor and Preliminary Works (MPW) is expected shortly. This is supported by approval letters from the State and Federal Governments. It is timeline driven.
- This will allow Sheffield to commence preliminary works on the Miscellaneous Licences for the commencement of works around roads, camp, infrastructure, etc;
- We believe that MPW works approval is a sign that the final environmental approval is imminent.
- Regarding full environmental approval, the final EPA report to the Minister is scheduled to be public for a 10 day appeal process in September. We understand that there are no unusual environmental issues or conditions to the report.
- Following the appeal period the report goes to the Minister for his final approval (around 4 weeks we believe).
- An appeal can be lodged, but it cannot be vexatious (eg “we don’t want mining in the Kimberley”). Any appeal is dealt with by an independent appeal body and will go through an appeal process as for every mining project. In our view there can be no basis for appeal. SFX have dealt with all critical environmental issues.

In summary, we see few risks associated with the permitting of Thunderbird. As ever, delays will happen, but these are unlikely to be show-stoppers. The commercial imperative for new industries in the Kimberley region of WA is very real. This is well understood by State and Federal Governments alike.

This report is authorised by Dr. Christopher Baker and is issued consistent with Pulse Market's General Advice Warning.

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