STRICTLY CONFIDENTIAL – NOT FOR DISTRIBUTION TO RETAIL CLIENTS

Sheffield Resources Ltd (SFX AU, $0.75. Market cap A$170m)

The planets are aligning for Thunderbird

- **A$32m equity raise completed to fund early works at Thunderbird**
- **Attractive US$200m debt facility in place (subject to due diligence)**
- **A sustainably strong commodity price environment with several binding offtake agreements in place**

- SFX has successfully raised A$32m (including a fully underwritten SPP to raise $2m) at A$0.70 to fund initial work for the world class Thunderbird mineral sands project in the Kimberley region of Western Australia.
- This establishes a strong cash position for SFX ($35-40m), allowing the development of access roads, a construction camp and the bore field. It will also allow the company to enter into the purchase of long lead items in readiness for the start of full scale construction in 1H18.
- This equity raise follows the appointment of Taurus Mining Finance Fund to arrange and underwrite a US$200m project debt facility.
- Still outstanding are the resolution of a second appeal to the successful Native Title determination, and final State and Federal Government environmental approvals. We believe these are little more than formalities.
- These are all major achievements for CEO Bruce McFadzean and his management team. There is now little standing in the way of the commencement of construction of the Thunderbird project perhaps as early as 1Q18.

Thunderbird timetable	Status
Bankable feasibility study	Complete
Appointment of EPC contractor	Complete
Native Title determination	Complete
WA environmental approvals	Complete
Debt funding (subject to dd)	Complete
Interim equity funding	Complete
Offtake agreements	Part complete
Federal environmental approvals	4Q17
Commencement of 'early works'	4Q17
Judgement on Native Title second appeal	1Q18
Grant of mining lease	1Q18
Decision on final funding (selldown/equity)	1Q18
Commencement of construction	1Q-2Q18
Start of commissioning	3Q19
Full production	4Q19

- With the completion of the interim equity funding, our unrisked valuation has moved up to A$1.92/share (previously $1.71), driven by lower than forecast dilution by the recent (and a future) equity raise.

Disclosure: Pulse Markets acted as joint lead manager in the October 2017 placement and received fees for that service

The Taurus debt package – made to measure

On 18 October Sheffield announced the finalisation (subject to due diligence) of a US$200m debt package, arranged and underwritten by Taurus Mining Finance Fund. This is a critical step in the advancement of the Thunderbird project. This, together with a positive Native Title determination (now the subject of appeal) and the go-ahead from WA's Environmental Protection Authority has seen a positive rerating of the share price.

We consider the Taurus debt package to be attractive. Key terms of the facility include:

- A US$175m (ca.A$230m) facility with a US$25m overrun contingency. (Tranche A is US$100m).
- Of this US$75m is priced at USD Libor plus 4.5% (around 5.8%) with US$100m priced at 8.5% (Tranche B)
- Overriding royalties of 0.5% for years 1-4 and 0.75% for years 5 to 22.5).
- The loan facility will be interest only for the first 3.5 years. Tranche A is repayable between years 3.5 and 7 and Tranche B is repayable in year 7.
- Conditions precedent don't look onerous, and appear limited to the usual issues, such as permitting, offtake agreements and an agreed equity spend before debt drawdown.
- There is a provision for a cash sweep "in certain circumstances". We would assume this to be the case during periods of very high commodity prices.
- Note that there is no hedging of commodity prices (which would have been very difficult as mineral sand commodities do not offer a forward market – see comments below) nor of currency.

The overriding royalty, based on our commodity price estimates adds to the cost of debt capital. Assuming no repayment of the debt until 2023, a total interest bill of approximately $108m (discounted into the future at 10%) is inflated by around $20m (PV).

This is our interpretation of the cost of Taurus debt for the duration of the 7 year facility, assuming Thunderbird is geared at 50%:

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Debt	A$m	$ 175.00	$ 175.00	$ 175.00	$ 175.00	$ 175.00	$ 175.00	$ 175.00
Tranche A	A$m	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
Libor	%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%
Tranche A, Libor plus	%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Tranche A interest	A$m	$ 5.80	$ 5.80	$ 5.80	$ 5.80	$ 5.80	$ 5.80	$ 5.80
Tranche B		$ 75.00	$ 75.00	$ 75.00	$ 75.00	$ 75.00	$ 75.00	$ 75.00
Tranche B rate	%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%
Tranche B interest	A$m	6.38	6.38	6.38	6.38	6.38	6.38	6.38
Total interest	A$m	$ 12.18	$ 12.18	$ 12.18	$ 12.18	$ 12.18	$ 12.18	$ 12.18
Taurus royalty rate	%	0.5%	0.5%	0.5%	0.5%	0.8%	0.8%	0.8%
Royalties to Taurus	A$m	$ 0.21	$ 1.10	$ 1.27	$ 1.32	$ 2.45	$ 3.62	$ 3.76
Effective interest rate, ex royalties	%	6.96%	6.96%	6.96%	6.96%	6.96%	6.96%	6.96%
Effective interest rate, incl. royalties	%	7.08%	7.58%	7.68%	7.71%	8.36%	9.03%	9.11%
EBIT/interest	x	- 0.90	6.04	7.68	9.62	11.42	15.68	16.68

Under this scenario, effective interest rates peak at a little over 9%, which is when we have revenues peaking (driven by the coincidence of high grades and the Stage 2 upgrade). However, during the early years, where cashflow is critical the effective rate, including royalties is 7 to 8%. Over the duration of the 7 year facility the EBIT/interest ratio is very comfortable.

In the event that the debt is refinanced to another debt provider in year 7, we assume Taurus will continue to enjoy the royalty stream into year 23, with its present value of $20m amortised over a much lower interest payment (PV of around $65m). No question that this is attractive for Taurus, but the package is highly attractive to Sheffield for in the following ways:

- The debt + royalty carries quite a low headline interest rate, especially over the early years where cashflow risk is high.
- There will be no principle repayment for 3.5 years to allow the accumulation of capital to assist with the funding of Stage 2 from 2022. We estimate surplus cashflows of over A$100m to be available to SFX in the first 3.5 years of the project. On our numbers we see no need for further equity to fund Stage 2.

On balance we consider the Taurus package to be attractive for a small company such as Sheffield.

The absence of hedging means shareholders are exposed to the full upside (and downside of course) of commodity prices and currency.

Off-take agreements – 44% of premium zircon now under binding agreement

Marketing of industrial minerals such as zircon and ilmenite is not like many other commodities, such as the base metals or even the bulks, such as iron ore and coal. For these commodities there is a futures market, and future deliveries can be used to hedge volumes and prices.

Mineral sands are much more end-user facing, and there are (to our knowledge) no futures market with any depth. It is therefore critical that projects of this type are secured with binding offtake agreements.

Until September, SFX's marketing effort had secured around 39% of zircon and z-i-c and 13% of ilmenite as non-binding memoranda of understanding. Since then, the company has secured binding offtake agreements for the supply of premium zircon with 3 parties:

1. Ruby Ceramics Pvt Ltd (India) for a minimum of 6,000tpa.
2. Sukaso Ceracolors Ceramics Pvt Ltd (India) for a minimum 12,000tpa.
3. CFM Minerales s.a. (Spain) for 4,000tpa, with an option for a further 2,000tpa.

This takes total offtake under binding agreement for premium zircon to 44%. We expect further binding agreements to be signed within forthcoming months.

Valuation of Thunderbird – now at $1.92/share

The following table summarises our assumptions against those in the SFX feasibility study.

Pricing, long term		**SFX**	**Pulse**
Premium zircon	US$/t	1387	1400
Zircon concentrate	US$/t	677	700
Ilmenite	US$/t	183	220
Hi Ti 88	US$/t	500	600
Titanomagnetite	US$/t	48	48
A$/US$		0.75	0.75
Production (LOM, average)			
Premium zircon	ktpa	76	82
Zircon concentrate	ktpa	69	72
Ilmenite	ktpa	388	393
Hi Ti 88	ktpa	20	19
Titanomagnetite	ktpa	230	248
Mine life	Years	42	42
Pre-production capital	A$m	348	350
LOM capital (excl. sustaining)	A$m	543	545
LOM unit revenue	A$/t	19.9	21.2
LOM site costs (ex G&A)	A$/t	11.4	11.6
LOM cost (zircon equivalent basis)	A$/t zircon	1053	1020
Revenue to cost ratio (years 1-10)		2.0	2.0
NPV/IRR (pre-tax)		A$676m/25%	A$849m/28%

The major differences against the BFS lie with our underlying commodity price assumptions. For some time now, we have taken a more bullish view than consultants TZMI on future prices for premium zircon, zircon-in-concentrate and sulphate grade ilmenite. We refer readers to our September report where we justified an increase in our long term zircon and z-i-c prices assumption.

Our next review of the mineral sands commodity space will follow the TZMI Mineral Sands Conference which takes place in Hong Kong in mid-November.

Our valuation for SFX (on an unrisked basis) has moved to A$1.92/share (previously $1.71/share). This is based on the following assumptions:

- Critical commodity price assumptions of US$1400/t for premium zircon and US$220/t for sulphate ilmenite (against current spot prices of around US$1290-1320/t and 200-220/t respectively. Source Ferroalloynet.com).
- A$/US$ of 0.75 (current spot of 0.767).
- Stage 1 capex of A$350m, with LOM capex of A$545m (excluding sustaining capex).
- Project level gearing of 50%.
- A sell-down of 20% equity at project level at a 50% discount to project NPV. (We had previously used 60%, but have reduced this discount as project risk has declined following conclusion of the Taurus debt package. It is quite an arbitrary but we believe to be conservative assessment as to what an arms-length valuation of a minority stake in Thunderbird might be)

- A total equity raise of A$102m (including the recent raise of A$32m), so a balance of around $70m, to be raised in 1H18. Here we have assumed 100% of the equity raise will be issued at A$0.70/share, in line with the recent raising.

Thunderbird (NPV10), post tax	A$m	$ 565.6	
Add back capex	A$m	$ 350.0	
Less working capital		-$ 20.0	
Thunderbird (NPV10)	A$m	$ 895.6	Unfunded NPV
Mine site exploration	A$m	$ 10.0	Notional
Equity NPV	A$m	$ 905.6	
Project debt	A$m	-$ 175.0	50% debt/equity
NPV less debt	A$m	$ 730.6	
Ownership by SFX	A$m	80%	Sell down equity in project
Implied SFX equity	A$m	$ 584.5	
Cash	A$m	$ 10.0	Current
PV of corporate costs	A$m	-$ 80.0	Estimate
Other exploration	A$m	$ 10.0	Notional
Corporate NAV	A$m	$ 524.5	
Number of shares	m	180.5	
New equity, say	A$m	$ 102.0	Estimate, incl interim raise
Number of new shares	m	145.7	Incl interim raise
Total number of shares	m	326.2	
NAV adding new cash	A$m	$ 626.5	
NAV/share	A$	$ 1.92	

Scenario analysis

Finalisation of the debt package (and we would be surprised if the Taurus due diligence finds any issues with the Hatch-led BFS), together with the recent A$32m equity raise has suddenly given SFX a better degree of flexibility regarding the funding of Thunderbird.

To us there appear to be a number of options now available to Sheffield. These may include the following.

Base case, 50% project gearing, with an 20% sell-down to outside interests at a 50% discount to NAV, with ca. $70m in new equity raised at 70c or perhaps $1/share (share price currently 75c).

Increasing project gearing to 75%, but with a sell-down of 20%. Note that the Taurus debt package is not fully drawn under our financing assumption (A$230m vs $175m).

Gearing at 50% and 75%, no sell-down, with a $70-160m equity raise at $1/share

(Unrisked)	NAV/share (A$)	Equity required (A$m)*
Base case, equity raised at A$0.70/share	$1.92	70
Base case, equity raised at A$1/share	$2.13	70
Project gearing at 75%, selldown to 80%	$2.15	0
Gearing at 50%, equity raise at A$1/share, no selldown	$2.23	160
Gearing at 75%, equity at A$1/share, no selldown	$2.31	70
* In addition to the recent A$32m raise at 70c.		

Not surprisingly the largest increase in value to shareholders sits with a highly geared project and equity raised at a higher than current share price.

What is interesting is that under a scenario of a 20% sell-down and 75% project gearing – potentially a risky scenario – SFX would need no more equity to complete Stage 1 of Thunderbird. No doubt the board will be evaluating all options.

We continue to see the progressive rerating of SFX

We believe a number of factors will see SFX progressively rerate toward our internal valuation of around $1.92/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: There are now only two outstanding issues. The market appears concerned regarding the second appeal regarding the Native Title determination. Remember that two highly qualified members of the judiciary have ruled favourably regarding the Native Title position at Thunderbird, both the original determination itself, and its subsequent appeal. We see little risk that the full bench of the Federal Court doesn't rule in SFX's favour. As well, the company is awaiting sign-off from the Federal Government which, ordinarily, should be a formality.

Commencement of construction. While final permits are awaited, SFX has the ability to start on an early works programme (roads, camp, bore field, upgrade to the port infrastructure) and can now pre-order of long lead items. This will allow an immediate start to construction in 1H18. To that end SFX has appointed well-known engineering group, GR Engineering as the preferred tenderer for the processing plant and associated facilities.

Finalisation of financing. The debt package provides a very important funding base for Thunderbird, and it allowed an interim equity funding at a 35% premium to the previous raise. The wild card is now whether SFX will look to sell down equity at the project level – which has been flagged as an option, and what level of debt the board is prepared to apply to the project. Additional equity is likely to be required, and raised over the course of 1H18, but the quantum required might well be less than many in the market expect. SFX's cost of capital is coming down as the project and the funding options are progressively derisked.

Realising value from non-core assets

- Spin-out of Carawine Resources. We see real value emerging from the potential spin-out of SFX's non-mineral sands exploration projects. The recent acquisition of the Jamieson VMS project has delivered immediate drill targets. This is likely to occur in December 2017, and is subject to shareholder approval (likely to be given at this year's AGM scheduled for 22 November 2017.
- 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.

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

General Advice Warning

Being general advice, this report does not take account of your objectives, financial situation or needs. Before acting on this general advice you should therefore consider the appropriateness of the advice having regard to your situation. We recommend you obtain financial, legal and taxation advice before making any financial investment decision.

Disclaimer

This report has been prepared on behalf of and issued by Pulse Markets Pty Ltd (ACN 081 505 268, AFSL 220383, hereafter "Pulse Markets").

Pulse Markets is engaged by SFX to provide corporate services for which it has earned fees and continues to do. Services include, but are not limited to, research, marketing roadshows, and capital markets advisory. Pulse advised SFX on a recent capital raising for which it earned fees. Employees or contractors of Pulse markets own shares or options in SFX. SFX funded a site visit for Dr Baker in September 2016.

Limitations

While the information and statements contained in this report have been prepared with all reasonable care, based on information believed to be accurate at the time of publication. No responsibility or liability is accepted by Pulse Markets for any errors or omissions or misstatements, however caused or arising. References in this publication to data may rely on third parties over which Pulse Markets does not have any control or accepts no responsibility. Any opinions, forecasts or recommendations reflect the judgment and assumptions of Pulse Markets on the basis of information as at the date of publication and may later change without notice. Subsequent changes in circumstances may occur at any time and may impact the accuracy of the information. Pulse Markets is under no obligation to update you with any subsequent changes.
This report is published solely for informational purposes and is not to be construed as a solicitation or an offer to buy any securities or financial instruments.

Each member of Pulse Markets excludes to the full extent permitted by law all liability of whatever kind, whether in negligence, tort, contract or under fiduciary duties strict liability or otherwise, for any loss or damage of any kind (including without limitation indirect, incidental or consequential loss or damage, whether reasonably foreseeable or not) however arising in relation to the publication of this document, including any reliance on it or making any transaction in respect of any financial products or strategy mentioned in it.