

SHEFFIELD RESOURCES LIMITED (SFX)

PFS update shows stronger economics

Sheffield Resources Ltd (SFX) has released the much anticipated PFS update for the Thunderbird mineral sands deposit in WA. This updated PFS makes significant improvements to the preliminary PFS released in May '15.

The mine life has been extended to 40 years (from 32 years). However, the most significant improvements have been the practical economics at the front end of the project. The capex has shrunk (moved to 12mtpa Phase 1, from 18Mtpa), and combined with a strong early year grade profile and very low strip ratio, the project has a low payback period (based on first six years production, on our estimates, payback is 2.6 years base case, 3.4 years on spot prices and we estimate ~2.0 years using the prices assumed in the PFS).

Total startup capex has reduced to \$295m (includes contingencies) from \$409m with sustaining capex in the order of \$4-6m pa (deferred for several years). In year 8, ~\$64m of capex is required to increase throughput to 18mtpa. This boosts output despite the lower grades in remaining years.

The first 6 year's grade profile is remarkably high (68Mt @15.7% H or 1.12% Zircon, ~0.63% HiTi/Leucoxene, 4.18% ilmenite). This means the project expects to produce ~89ktpa zircon, 21ktpa HiTi and ~369ktpa ilmenite even at 12mtpa. The global mining inventory is 685Mt @11.3% HM or 0.87% Zircon, ~0.55% HiTi/Leucoxene, 3.13% ilmenite.

Low temperature roast improves ilmenite selling prices

SFX has previously announced that that using low temperature roasting (LTR) the ilmenite product can be upgraded to a premium product (56.1%) that should sell at least at benchmark prices. This is a big change from the preliminary PFS, which had assumed the ilmenite would sell at a substantial (~20%) quality discount to benchmark. The Company now believes that the ilmenite could sell at a 5-10% premium to benchmark prices and will easily displace inferior products. This means that the project is likely to provide significant volumes of premium zircon and ilmenite (5-10% of global supply) for a long (>40 years) mine life.

Hartleys expects early year's EBITDA ~\$115m pa

We have lowered our production estimates to be on the conservative side of today's PFS update. Using the Company price assumptions, the project delivers \$135m pa of EBITDA over the LOM, and more in the early years. In our model (we use higher fx and lower benchmark prices than the Company), our LOM EBITDA is ~\$94m pa, but in the first six years it is ~\$115m pa. On spot prices, we estimate LOM EBITDA ~\$70m pa (first 6 years ~\$90m pa).

Hartleys price target increased to \$1.21

SFX plans to complete a DFS in 2016 (we estimate a ~\$10m cost), with full production in CY19. The strong economics and large volumes (5-10% of global supply of premium zircon and ilmenite) means the project is strategically attractive and premium products mean it is less risky in terms of adding that supply to the market. Our base valuation is 74cps, but using the selling prices in the PFS (which are very realistic), our valuation would be \$1.33. If we used a lower discount rate, our valuations would be even higher (see Fig 10). We have increased our price target to \$1.21. We maintain our Buy recommendation.

Share Price	\$0.49
Valuation	\$0.74
Price Target (12 month)	\$1.21

Brief Business Description:

Significant mineral sands developer (Thunderbird project in WA), plus a multi-commodity exploration portfolio (eg Fraser Range Ni).

Hartleys Brief Investment Conclusion

The Thunderbird project is large (could add 5-10% pa of global zircon supply) and PFS study economics to develop are robust.

Chairman & MD

Will Burbury (Exec-Chairman)
Bruce McQuitty (MD)

Top Shareholders

Will Burbury - The Burbury Family A/C	5.9%
Bruce McQuitty	5.8%
David Archer Family Super Fund	5.8%

Company Address

Level 1, 57 Havelock Street
West Perth, WA 6005

Issued Capital	134.4m
- fully diluted (itm)	142.1m

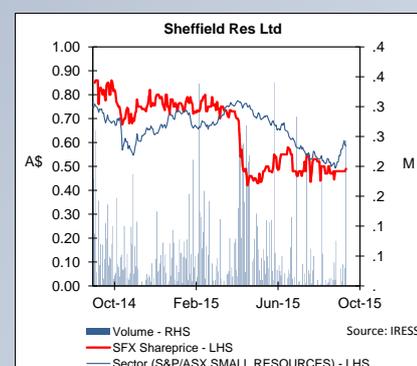
Market Cap	A\$65.9m
- fully diluted	A\$69.6m

Cash (30 Sep 15e)	A\$4.5m
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Debt (30 Sep 15e)	A\$0.0m
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EV	A\$61.4m
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	FY18e	FY19e	FY20e
EBITDA	-8.8	1.5	103.5
Op Cash Flw	-20.8	-15.5	69.6
Norm NPAT	-25.3	-27.5	65.0
CF/Share (cps)	-7.9	-5.9	26.5
EPS (cps)	-9.6	-10.5	24.8
P/E	-5.1	-4.7	2.0



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Hartleys has assisted in the completion of a capital raising for Sheffield Resources Limited ("Sheffield") in the last 12 months for which it has earned fees. Hartleys has also provided corporate advice within the past 12 months and continues to provide corporate advice to Sheffield, for which it has fees and continues to earn fees. Analyst has a beneficial interest in SFX shares.

Sheffield Res Ltd		Share Price				14 Oct 2015					
SFX		\$0.490				Buy					
Key Market Information											
Share Price		\$0.490									
Market Capitalisation - ordinary		A\$66m									
Net Debt (cash)		-\$5m									
Market Capitalisation - fully diluted		A\$70m									
EV		A\$60m									
EV inc. assumed new capital		A\$356m									
Issued Capital		134.4m									
Options		7.6									
Issued Capital (fully diluted inc. all options)		142.1m									
Issued Capital (fully diluted inc. all options and new capital)		270.8m									
Valuation		\$0.74									
12month price target		\$1.21									
P&L	Unit	30 Jun 18	30 Jun 19	30 Jun 20	30 Jun 21						
Net Revenue	A\$m	0.0	21.8	216.2	252.5						
Total Costs	A\$m	-8.8	-20.3	-112.7	-132.6						
EBITDA	A\$m	-8.8	1.5	103.5	119.8						
- margin		-	7%	48%	47%						
Depreciation/Amort	A\$m	-4.4	-13.7	-21.4	-21.8						
EBIT	A\$m	-13.2	-12.2	82.1	98.1						
Net Interest	A\$m	-12.1	-15.3	-17.1	-15.7						
Pre-Tax Profit	A\$m	-25.3	-27.5	65.0	82.4						
Tax Expense	A\$m	0.0	0.0	0.0	-20.0						
Normalised NPAT	A\$m	-25.3	-27.5	65.0	62.3						
Abnormal Items	A\$m	0.0	0.0	0.0	0.0						
Reported Profit	A\$m	-25.3	-27.5	65.0	62.3						
Minority	A\$m	0.0	0.0	0.0	0.0						
Profit Attrib	A\$m	-25.3	-27.5	65.0	62.3						
Balance Sheet	Unit	30 Jun 18	30 Jun 19	30 Jun 20	30 Jun 21						
Cash	A\$m	182.8	-56.7	4.8	83.5						
Other Current Assets	A\$m	0.7	5.3	44.8	52.4						
Total Current Assets	A\$m	183.6	-51.4	49.6	135.9						
Property, Plant & Equip.	A\$m	68.3	274.6	258.2	236.4						
Exploration	A\$m	38.3	42.3	45.4	48.2						
Investments/other	A\$m	0.0	0.0	0.0	0.0						
Tot Non-Curr. Assets	A\$m	106.6	317.0	303.6	284.6						
Total Assets	A\$m	290.2	265.5	353.3	420.5						
Short Term Borrowings	A\$m	-	-	-	-						
Other	A\$m	2.3	5.1	27.9	32.8						
Total Curr. Liabilities	A\$m	2.3	5.1	27.9	32.8						
Long Term Borrowings	A\$m	207.2	207.2	207.2	207.2						
Other	A\$m	-	-	-	-						
Total Non-Curr. Liabil.	A\$m	207.2	207.2	207.2	207.2						
Total Liabilities	A\$m	209.5	212.3	235.1	240.0						
Net Assets	A\$m	80.7	53.2	118.2	180.5						
Net Debt	A\$m	24.4	263.9	202.4	123.7						
Cashflow	Unit	30 Jun 18	30 Jun 19	30 Jun 20	30 Jun 21						
Operating Cashflow	A\$m	-8.8	-0.2	86.7	117.2						
Income Tax Paid	A\$m	0.0	0.0	0.0	-20.0						
Interest & Other	A\$m	-12.1	-15.3	-17.1	-15.7						
Operating Activities	A\$m	-20.8	-15.5	69.6	81.4						
Property, Plant & Equip.	A\$m	-60.0	-220.0	-5.0	0.0						
Exploration and Devel.	A\$m	-4.0	-4.0	-3.1	-2.8						
Other	A\$m	0.0	0.0	0.0	0.0						
Investment Activities	A\$m	-64.0	-224.0	-8.1	-2.8						
Borrowings	A\$m	0.0	0.0	0.0	0.0						
Equity or "tbc capital"	A\$m	0.0	0.0	0.0	0.0						
Dividends Paid	A\$m	0.0	0.0	0.0	0.0						
Financing Activities	A\$m	0.0	0.0	0.0	0.0						
Net Cashflow	A\$m	-84.8	-239.5	61.5	78.6						
Shares	Unit	30 Jun 18	30 Jun 19	30 Jun 20	30 Jun 21						
Ordinary Shares - End	m	262.2	262.2	262.2	262.2						
Ordinary Shares - W'ted	m	262.2	262.2	262.2	262.2						
Diluted Shares - W'ted	m	262.2	262.2	262.2	262.2						
Ratio Analysis	Unit	30 Jun 18	30 Jun 19	30 Jun 20	30 Jun 21						
Cashflow Per Share	A\$ cps	-7.9	-5.9	26.5	31.1						
Cashflow Multiple	x	-6.2x	-8.3x	1.8	1.6						
EV (+ cap.)/EBIT	x	-26.9x	-29.1x	4.3x	3.6x						
EV (+ cap.)/EBITDA	x	-40.3x	239.7x	3.4x	3.0x						
Earnings Per Share	A\$ cps	-9.6	-10.5	24.8	23.8						
Price to Earnings Ratio	x	-5.1x	-4.7x	2.0	2.1						
Dividends Per Share	AUD	-	-	-	-						
Dividend Yield	%	0.0%	0.0%	0.0%	0.0%						
Net Debt / Net Debt + Equity		23%	83%	63%	41%						
Interest Cover	X	na	na	4.8	6.2						
Return on Equity	%	na	na	55%	35%						
Directors											
Will Burbury (Exec-Chairman)											
Bruce McQuitty (MD)											
David Archer (Technical Director)											
Company Information											
Level 2, 41-47 Colin Street											
West Perth, WA 6005											
+61 8 6424 8440											
www.sheffieldresources.com											
Top Shareholders											
m shares %											
Will Burbury - The Burbury Family A/C											
8.0 5.9%											
Bruce McQuitty											
7.8 5.8%											
David Archer Family Super Fund											
7.7 5.8%											
Reserves & Resources											
Bt Grade Metal (Mt) Attr.											
Dampier											
3.24 6.9% 223.6 100.0%											
- high grade											
1.09 11.9% 129.7 100.0%											
Eneabba											
0.30 2.2% 6.6 100.0%											
- high grade											
0.17 3.0% 5.2 100.0%											
McCalls											
4.43 1.2% 53.2 100.0%											
Production Summary											
Unit Jun 18 Jun 19 Jun 20 Jun 21											
Mill Throughput											
Mt 0.00 1.00 12.00 12.00											
Strip Ratio											
x 0.20 0.20 0.20 0.2											
HM grade											
% 15.7% 15.7% 15.7%											
Zircon Recovery											
% 66.5% 66.5% 66.5%											
Total VHM production											
kt 412.2 494.6											
Zr production											
kt 73.1 87.7											
Leuc. / Hi-Ti production											
kt 18.8 22.6											
Sulph. Ilmenite production											
kt 320.3 384.3											
Revenue to Cost ratio											
yr 2.2 2.2											
Mine Life											
Mt 39.0 38.0											
Ilmenite											
% rev. 36.2% 36.3%											
Zircon											
% rev. 56.8% 56.7%											
Leuc. / Hi-Ti production											
% rev. 7.1% 6.9%											
Costs											
Unit Jun 18 Jun 19 Jun 20 Jun 21											
Rev milled tonne											
\$A/t 18.0 21.0											
Cost per milled tonne											
\$A/t 9.2 9.2											
EBITDA / tonne milled ore											
\$A/t 8.6 10.0											
C1: Operating Cash Cost = (a)											
\$A/t final product 235 233											
(a) + Royalty = (b)											
\$A/t final product 250 247											
C2: (a) + depreciation & amortisation = (c)											
\$A/t final product 287 277											
(a) + actual cash for development = (d)											
\$A/t final product 235 233											
C3: (c) + Royalty											
\$A/t final product 302 292											
(d) + Royalty											
\$A/t final product 250 247											
Price Assumptions											
Unit Jun 18 Jun 19 Jun 20 Jun 21											
AUDUSD											
A\$/US\$ 0.75 0.76 0.78 0.80											
Ilmenite											
US\$/t 187 190 192 190											
Zircon											
US\$/t 1260 1322 1320 1301											
Rutile											
US\$/t 1054 1090 1065 1027											
Leucoxene											
US\$/t 632 654 639 616											
Avg selling price / VHM produced											
A\$/t 525 510											
Sensitivity Analysis											
Valuation FY20 NPAT											
Base Case 0.74 65.0											
Spot Prices 0.20 (-73.4%) 25.1 (-61.4%)											
Spot USD/AUD 0.72, Ilmenite \$110/t, Zircon \$1100/t, Rutile \$840/t.											
AUDUSD +/-10%											
0.32 / 1.22 (-56.7% / 65.6%) 45.7 / 85.4 (-29.7% / 31.5%)											
Ilmenite +/-10%											
0.89 / 0.58 (21.3% / -21.7%) 72.9 / 57.1 (12.2% / -12.2%)											
Zircon +/-10%											
0.98 / 0.48 (33.8% / -34.7%) 76.7 / 53.2 (18.1% / -18.1%)											
Rutile +/-10%											
0.74 / 0.74 (0.0% / 0.0%) 65.0 / 65.0 (0.0% / 0.0%)											
Leucoxene +/-10%											
0.70 / 0.77 (-4.4% / 4.4%) 63.4 / 66.5 (-2.4% / 2.4%)											
Operating Costs +/-10%											
0.48 / 0.98 (-34.5% / 33.6%) 55.2 / 74.7 (-15.1% / 15.1%)											
Unpaid Capital											
Year Expires No. (m) \$m Avg price % ord											
30-Jun-16 1.9 0.4 0.21 1%											
30-Jun-17 1.7 0.2 0.14 1%											
30-Jun-18 0.5 1.3 2.55 0%											
30-Jun-19 1.9 1.5 0.81 1%											
30-Jun-20 0.0 0.0 0.00 0%											
30-Jun-21 1.6 1.9 1.16 1%											
TOTAL 7.6 5.3 0.70 6%											
Valuation											
\$m /shr											
100% Eneabba (pre-tax NAV at disc. rate of 12%) 0 0.00											
100% Dampier (pre-tax NAV at disc. rate of 12%) 323 1.19											
100% McCalls (pre-tax NAV at disc. rate of 14%) 0 0.00											
Other Assets/Exploration 5 0.02											
Forwards 0 0.00											
Corporate Overheads -70 -0.26											
Net Cash (Debt) 5 0.02											
Tax (NPV future liability) -70 -0.26											
Options & Other Equity 2 0.01											
Total 199 0.74											
Analyst: Trent Barnett											
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tbc capital could be equity or debt. Our valuation is risk-adjusted for how this may be obtained.											
Sources: IRESS, Company Information, Hartleys Research											
Last Updated: 14/10/2015											

Fig. 2: Updated PFS versus Preliminary PFS versus Scoping Study

Production Assumptions:	PFS Study (14 October 2015)	PFS Study (14 May 2015)	Difference (update v PFS)	Scoping Study (14 April 2014)	Difference (update v scop.)
Mining inventory					
Mining inventory	685.0Mt	580.0Mt	18.1%	669.0Mt	2.4%
Mining inventory grade	11.3%	11.7%	-3.4%	10.2%	10.8%
Zircon in-situ mining inventory grade	0.87%	0.94%	-7.4%	0.83%	4.8%
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	1.12%	n/a	nm	n/a	nm
Leuc / HiTi. in-situ mining inventory grade	0.55%	0.58%	-5.2%	0.27%	103.7%
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	0.63%	n/a	nm	n/a	nm
Ilmenite in-situ mining inventory grade	3.13%	3.32%	-5.7%	2.92%	7.2%
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	4.18%	n/a	nm	n/a	nm
Mined Zircon	149kt pa	170kt pa	-12.1%	n/a	nm
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	n/a	n/a	nm	n/a	nm
Mined Leuc./HiTi	66kt pa	81kt pa	-19.2%	n/a	nm
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	n/a	n/a	nm	n/a	nm
Mined Ilmenite	581kt pa	675kt pa	-14.0%	n/a	nm
- first 10 years	n/a	n/a	nm	n/a	nm
- first 6 years	n/a	n/a	nm	n/a	nm
Mining & processing					
Average Mining Rate	17.1Mt pa	18.0Mt pa	-5.0%	20.8Mt pa	-17.8%
- first 10 years	n/a	nm	nm	nm	nm
- first 6 years	12.2Mt pa	nm	nm	nm	nm
Peak Mining Rate	18.0Mt pa	18.0Mt pa	0.0%	20.8Mt pa	-13.5%
Strip ratio LOM	0.66x	0.68x	-2.9%	0.64x	3.1%
- first 10 years	n/a	0.22x	nm	0.24x	nm
Mine Life	40.0yrs	32.0yrs	25.0%	32.0yrs	25.0%
HMC processed	1935kt pa	2121kt pa	-8.7%	2132kt pa	-9.3%
HMC production	1300kt pa	1419kt pa	-8.4%	1477kt pa	-12.0%
- recovery	67%	67%	0.4%	69%	-3.0%
Recoveries Zircon	67%	67%	0.0%	n/a	nm
Recoveries Leuc./HiTi	40%	37%	8.1%	n/a	nm
Recoveries Ilmenite	68%	65%	4.9%	n/a	nm
Production Zircon	100.2kt pa	114.0kt pa	-12.1%	118.2kt pa	-15.3%
- first 10 years	n/a	126.0kt pa	nm	135.1kt pa	nm
- first 6 years	89.0kt pa	n/a	nm	n/a	nm
Production Leuc./HiTi	26.2kt pa	30.0kt pa	-12.7%	21.7kt pa	20.7%
- first 10 years	n/a	31.0kt pa	nm	n/a	nm
- first 6 years	21.0kt pa	n/a	nm	n/a	nm
Production Ilmenite	396.4kt pa	439.0kt pa	-9.7%	545.0kt pa	-27.3%
- first 10 years	n/a	479.0kt pa	nm	n/a	nm
- first 6 years	369.0kt pa	n/a	nm	n/a	nm
Total production saleable product	522.8kt pa	583.0kt pa	-10.3%	684.9kt pa	-23.7%
Financials					
Zircon selling price	US\$1371/t	US\$1375/t	-0.3%	US\$1475/t	-7.1%
Leuc/HiTi selling price	US\$700/t	US\$580/t	20.7%	US\$870/t	-19.5%
Ilmenite selling price	US\$183/t	US\$155/t	18.2%	US\$185/t	-1.0%
AUD/USD	0.74cents	0.78cents	-5.1%	0.90cents	-17.8%
Zircon contribution to revenue	59%	68%	-8.8% pts	62%	-4.7% pts
Leuc/HiTi contribution to revenue	8%	3%	5.3% pts	2%	254.1% pts
Ilmenite contribution to revenue	33%	29%	3.5% pts	36%	-7.9% pts
LOM revenue	\$11,829m	\$9,479m	24.8%	\$10,010m	18.2%
Unit Revenue	\$565.7/t	\$508.1/t	11.3%	\$456.7/t	23.9%
EBITDA	\$135m pa	\$120m pa	12.5%	\$140m pa	-3.6%
- first 10 years	n/a	\$148m pa	nm	\$187m pa	nm
- first 6 years	n/a	n/a	nm	n/a	nm
Unit cash costs	\$307.5/t	\$302.3/t	1.7%	\$252.3/t	21.9%
Unit cash costs	-\$161m pa	-\$176m pa	-8.8%	-\$173m pa	-7.0%
Unit EBITDA margins	45.7%	40.5%	12.7%	44.8%	2.0%
Rev./Cost Ratio	1.8x	1.7x	9.5%	1.8x	1.6%
Pre-production capex (inc conting. & studies)	\$305.0m	\$409.0m	-25.4%	\$309.2m	-1.4%
Stage 2 Capex	\$64.0m	nm	nm	m	nm
Valuation					
Decision to mine	CY17	CY16	nm	CY16	nm
First production	Q2 2019	CY18	nm	CY17	nm
Discount rate	n/a	n/a	nm	n/a	nm
Capital requirement	n/a	n/a	nm	n/a	nm
pre-tax NPV unfunded, dec. to mine	n/a	n/a	nm	n/a	nm
pre-tax IRR, dec. to mine	n/a	n/a	nm	n/a	nm
Payback - LOM avg EBITDA	n/a	3.4yrs	nm	2.2yrs	54%
Payback - first 6yr avg EBITDA	n/a	n/a	nm	n/a	nm
New shares	n/a	n/a	nm	n/a	nm
- assumed raising price	n/a	n/a	nm	n/a	nm
pre-tax NAV funded, today	n/a	n/a	nm	n/a	nm
per diluted share	n/a	n/a	nm	n/a	nm
corporate o/head, tax	n/a	n/a	nm	n/a	nm
SFX valuation NPV12	n/a	n/a	nm	n/a	nm
SFX valuation NPV8	n/a	n/a	nm	n/a	nm

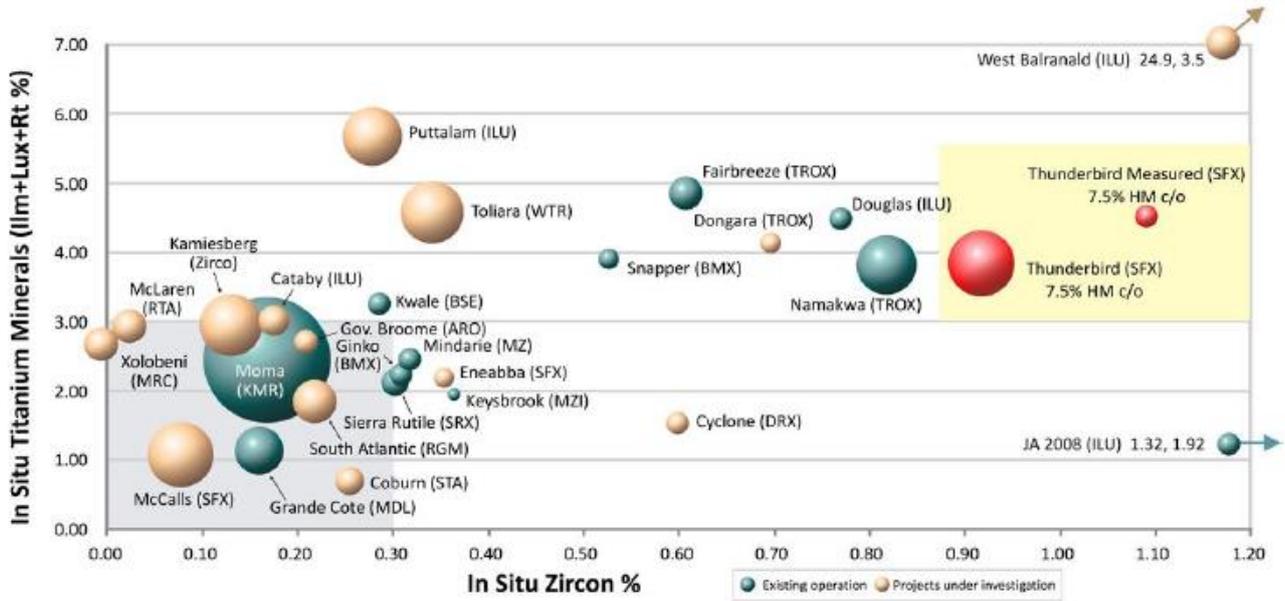
Source: SFX

Fig. 3: Hartleys new estimates versus PFS

Production Assumptions:	PFS Study (14 October 2015)	Hartleys New Base Case	Hartleys Difference v. Updated PFS	Hartleys Old	Hartleys changes	Hartleys using spot prices	Hartleys Spot v. Hartleys Base
Mining inventory							
Mining inventory	685.0Mt	664.4Mt	-3.0%	581.5Mt	14.3%		
Mining inventory grade	11.3%	11.3%	-0.3%	11.7%	-3.4%		
Zircon in-situ mining inventory grade	0.87%	0.87%	-0.3%	0.93%	-7.0%		
- first 10 years	n/a	0.99%	nm	1.08%	-8.2%		
- first 6 years	1.12%	1.10%	-1.9%	nm	nm		
Leuc / HiTi, in-situ mining inventory grade	0.55%	0.37%	-32.4%	0.29%	28.3%		
- first 10 years	n/a	0.42%	nm	0.29%	45.3%		
- first 6 years	0.63%	0.47%	-25.4%	nm	nm		
Ilmenite in-situ mining inventory grade	3.13%	3.40%	8.7%	3.30%	3.0%		
- first 10 years	n/a	3.93%	nm	3.32%	18.4%		
- first 6 years	4.18%	4.71%	12.7%	nm	nm		
Mined Zircon	149kt pa	144.1kt pa	-3.6%	167.9kt pa	-14.1%		
- first 10 years	n/a	122.9kt pa	nm	193.6kt pa	-36.5%		
- first 6 years	n/a	124.6kt pa	nm	nm	nm		
Mined Leuc./HiTi	66kt pa	61.7kt pa	-5.7%	52.1kt pa	18.4%		
- first 10 years	n/a	52.6kt pa	nm	52.4kt pa	0.4%		
- first 6 years	n/a	53.2kt pa	nm	nm	nm		
Mined Ilmenite	581kt pa	564.9kt pa	-2.8%	594.5kt pa	-5.0%		
- first 10 years	n/a	488.4kt pa	nm	596.9kt pa	-18.2%		
- first 6 years	n/a	533.8kt pa	nm	nm	nm		
Mining & processing							
Average Mining Rate	17.1Mt pa	16.6Mt pa	-2.9%	18.0Mt pa	-7.7%		
- first 10 years	n/a	12.4Mt pa	nm	18.0Mt pa	-30.9%		
- first 6 years	12.2Mt pa	11.3Mt pa	-7.1%	nm	nm		
Peak Mining Rate	18.0Mt pa	18.0Mt pa	0.0%	18.0Mt pa	0.0%		
Strip ratio LOM	0.66x	0.63x	-4.7%	0.69x	-8.4%		
- first 10 years	n/a	0.20x	nm	0.22x	-9.1%		
Mine Life	40.0yrs	40.0yrs	0.0%	32.0yrs	25.0%		
HMC processed	1935kt pa	1870kt pa	-3.3%	2119kt pa	-11.7%		
HMC production	1300kt pa	1187kt pa	-8.7%	1381kt pa	-14.0%		
- recovery	67%	63%	-5.5%	65%	-2.6%		
Recoveries Zircon	67%	67%	-0.7%	67%	-0.4%		
Recoveries Leuc./HiTi	40%	40%	0.0%	52%	-23.3%		
Recoveries Ilmenite	68%	68%	-0.3%	75%	-9.7%		
Production Zircon	100.2kt pa	95.8kt pa	-4.3%	112.1kt pa	-14.5%		
- first 10 years	n/a	79.2kt pa	nm	128.8kt pa	-38.5%		
- first 6 years	89.0kt pa	82.8kt pa	-6.9%	n/a	nm		
Production Leuc./HiTi	26.2kt pa	24.7kt pa	-5.7%	27.2kt pa	-9.2%		
- first 10 years	n/a	20.4kt pa	nm	27.5kt pa	-26.0%		
- first 6 years	21.0kt pa	21.3kt pa	1.4%	n/a	nm		
Production Ilmenite	396.4kt pa	384.1kt pa	-3.1%	447.4kt pa	-14.1%		
- first 10 years	n/a	322.0kt pa	nm	452.7kt pa	-28.9%		
- first 6 years	369.0kt pa	363.0kt pa	-1.6%	n/a	nm		
Total production saleable product	522.8kt pa	504.7kt pa	-3.5%	586.8kt pa	-14.0%		
Financials							
Zircon selling price	US\$1371/t	US\$1301/t	-5.1%	US\$1236/t	5.2%	US\$1100/t	-15.4%
Leuc/HiTi selling price	US\$700/t	US\$616/t	-11.9%	US\$636/t	-3.0%	US\$630/t	2.2%
Ilmenite selling price	US\$183/t	US\$190/t	3.8%	US\$152/t	25.1%	US\$110/t	-42.1%
AUD/USD	0.74cents	0.83cents	11.8%	0.83cents	0.2%	0.70cents	-14.9%
Zircon contribution to revenue	59%	59%	-0.4% pts	62%	-3.4% pts	65%	6.0% pts
Leuc/HiTi contribution to revenue	8%	7%	-0.8% pts	8%	-0.6% pts	10%	2.4% pts
Ilmenite contribution to revenue	33%	34%	1.3% pts	30%	3.9% pts	26%	-8.4% pts
LOM revenue	\$11,829m	\$10,291m	-13.0%	\$8,672m	18.7%	\$9,271m	-9.9%
Unit Revenue	\$565.7/t	\$509.8/t	-9.9%	\$461.9/t	10.4%	\$459.3/t	-9.9%
EBITDA	\$135m pa	\$92.8m	-31.3%	\$92.4m	0.4%	\$67.3m	-27.4%
- first 10 years	n/a	\$96.9m	nm	\$132.5m	-26.9%	\$73.2m	-24.5%
- first 6 years	n/a	\$118.1m	nm	n/a	nm	\$89.5m	-24.2%
Unit cash costs	\$307.5/t	\$326.0/t	6.0%	\$304.3/t	7.1%	\$325.9/t	0.0%
Unit cash costs	-\$161m pa	-\$165m pa	2.4%	-\$179m pa	-7.9%	-\$164.5/t	-24.2%
Unit EBITDA margins	45.7%	36.1%	-21.0%	34.1%	5.7%	29.0%	-19.5%
Rev./Cost Ratio	1.8x	1.6x	-15.0%	1.5x	3.1%	1.4x	-9.9%
Pre-production capex (inc conting. & studies)	\$305.0m	\$331.2m	8.6%	\$448.2m	-26.1%	\$331.2m	0.0%
Stage 2 Capex	\$64.0m	\$72.0m	12.5%	nm	nm	\$72.0m	
Valuation							
Decision to mine	CY17	CY17		CY16	nm	CY17	
First production	Q2 2019	Q2 2019		Dec qtr 2018	nm	Q2 2019	
Discount rate	n/a	12%		12%	0%		
Capital requirement	n/a	\$296m		\$470m	-37%	\$296m	
pre-tax NPV unfunded, dec. to mine	n/a	\$347m		\$421m	-18%	\$172m	-50.3%
pre-tax IRR, dec. to mine	n/a	31.2%		29.0%	8%	21.7%	
Payback - LOM avg EBITDA	n/a	3.2yrs				4.4yrs	
Payback - first 6yr avg EBITDA	n/a	2.5yrs				3.3yrs	
New shares	n/a	128.8m		211.2m	-39%	305.6m	137.3%
- assumed raising price	n/a	\$0.84/shr		\$0.50/shr	68%	\$0.31/shr	
pre-tax NAV funded, today	n/a	\$323m		\$329m	-2%	\$177m	-45.3%
per diluted share	n/a	\$1.19/shr		\$0.93/shr	28%	\$0.39/shr	-66.9%
corporate o/head, tax	n/a	-\$0.46/shr		-\$0.45/shr		-\$0.19/shr	-57.9%
SFX valuation NPV12	n/a	\$0.74/shr		\$0.48/shr	53%	\$0.20/shr	-72.5%
SFX valuation NPV8	n/a	\$1.52/shr		\$1.07/shr	42%	\$0.71/shr	-53.0%

Source: SFX

Fig. 4: World Class Mineral Sands Project



Source: SFX

Fig. 5: Low strip ratio, especially in early years

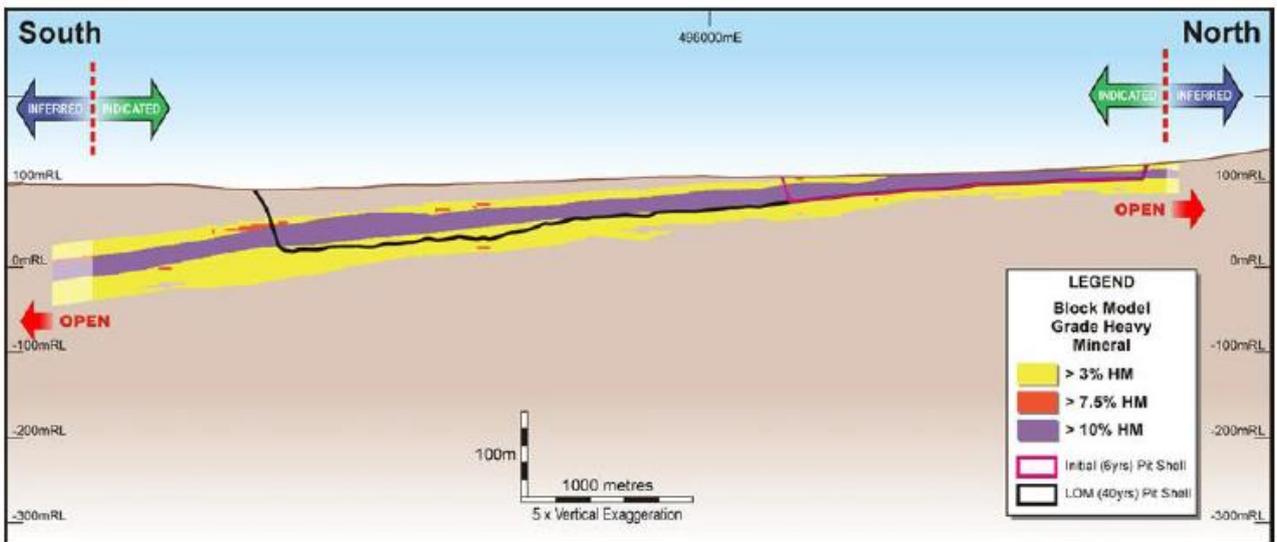


Figure 9: Cross-Section F-F' Through the Thunderbird Resource Block Model Showing the Current Resource HM Grade and PFS Pit Shell Outlines

Source: SFX

Fig. 6: Free dig (dozer trap) reduces mining costs



Figure 11: Sequence (from L-R) of Shallow Mineralisation Being Lifted from Bauer Hole THBA005, August 2015.

Source: SFX

Fig. 7: Processing flowsheet

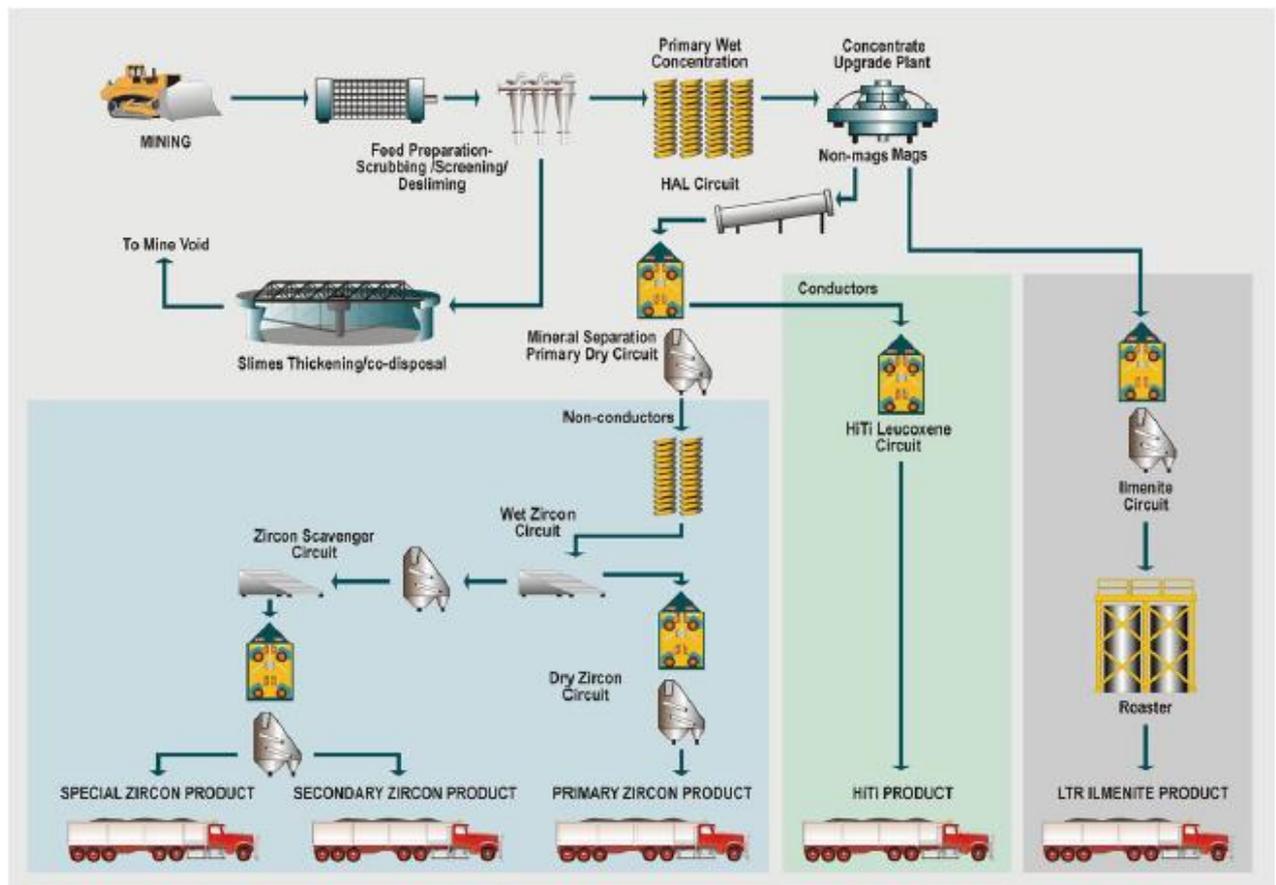
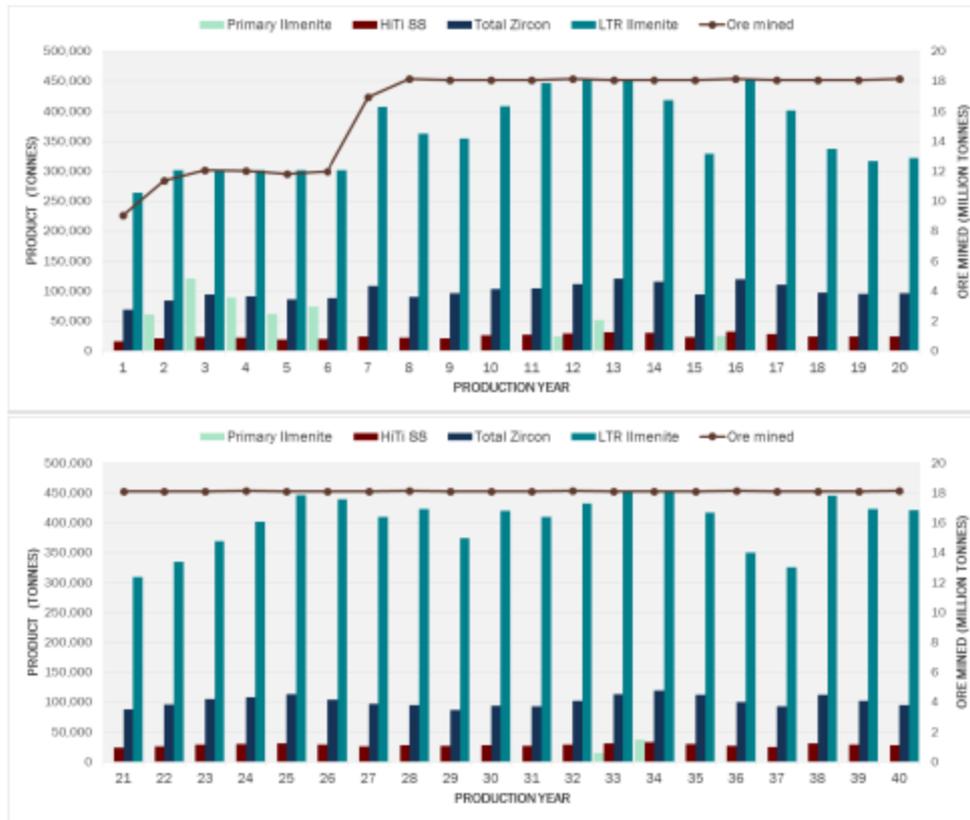


Figure 16: Thunderbird Schematic Process Flow Sheet

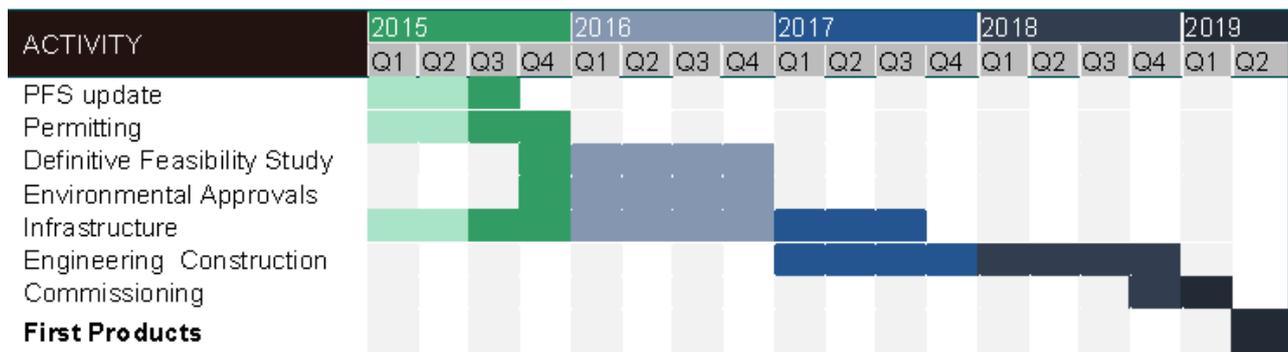
Source: SFX

Fig. 8: Consistent production overt a long mine life (>40 years)



Source: SFX

Fig. 9: Indicative timeline



Source: SFX

PRICE TARGET

We have increased our price target to \$1.21 (from \$0.90).

Fig. 10: SFX price target

Price Target Methodology	Weighting	Spot	12 mth out
NPV ₁₂ consensus prices	45%	\$0.74	\$0.89
NPV ₈ consensus prices	25%	\$1.52	\$1.71
NPV ₁₂ at spot commodity and fx prices	4%	\$0.20	\$0.25
NPV ₈ at spot commodity and fx prices	4%	\$0.71	\$0.82
NPV ₁₂ at Company PFS assumed commodity and fx prices	6%	\$1.33	\$1.59
NPV ₈ at Company PFS assumed commodity and fx prices	6%	\$2.56	\$2.87
8.0x FY20 (EV + capital) / EBIT	4%	\$1.45	\$1.45
4.0x FY20 (EV + capital) / EBIT	4%	\$0.24	\$0.24
Net cash backing	2%	\$0.03	\$0.03
Risk weighted composite		\$1.05	
12 Months Price Target		\$1.21	
Shareprice - Last		\$0.490	
12 mth total return		147%	

Source: Hartleys Estimates

Fig. 11: Key assumptions and risks for valuation

Assumption	Risk of not realising assumption	Downside risk to valuation if assumption is incorrect	Comment
First production in mid CY19 for Thunderbird	High	Moderate	The construction period for any future mine is expected to be long with significant approval and construction timeframes.
Mineral sands prices in line with sell-side consensus	Moderate	Significant	The consensus is for modestly improving prices
40 year mine life	Moderate to high	More likely to be upside	Our model assumes only the high grade resource is mined and none of the low grade resource. It's possible that mine life is too conservative.
Capex for Thunderbird is 70:30 debt/equity	Moderate	upside/downside risk is equal as we are conservative on our assumption for equity dilution.	Capital requirements are large for a company of this size and there is risk that SFX will not be able to raise sufficient funds
Operating costs	Moderate	Moderate	We are happy with our operating cost assumptions
Minimal value for other projects	High	Upside	Our valuation is based only on the Thunderbird project. Although it seems difficult to see the equity market attributing much value for the other projects in the near term, it should be remembered that potentially asset sales could fund a large proportion of the development studies.

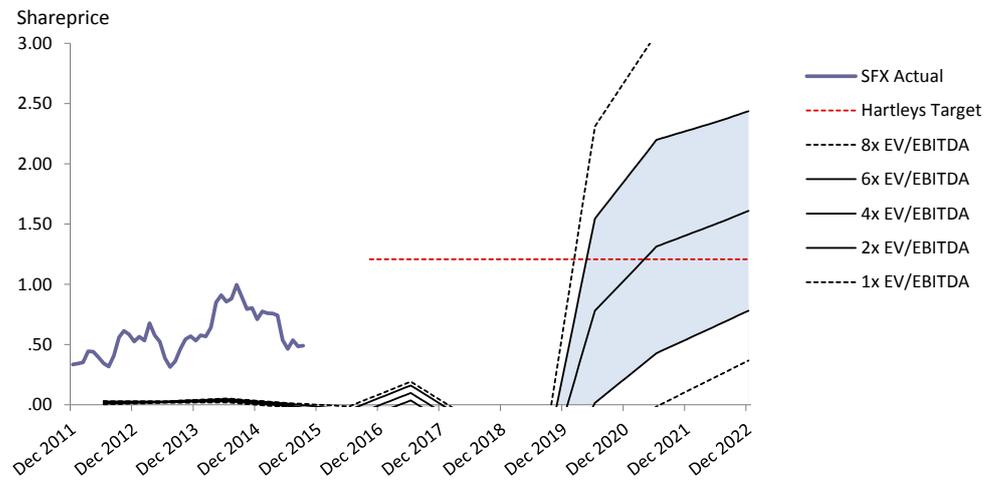
Conclusion

While the assumptions we have used are reasonable, we consider some assumptions as moderate to high risk and the consequential reduction to our valuation would be significant if they were not achieved.

Source: Hartleys

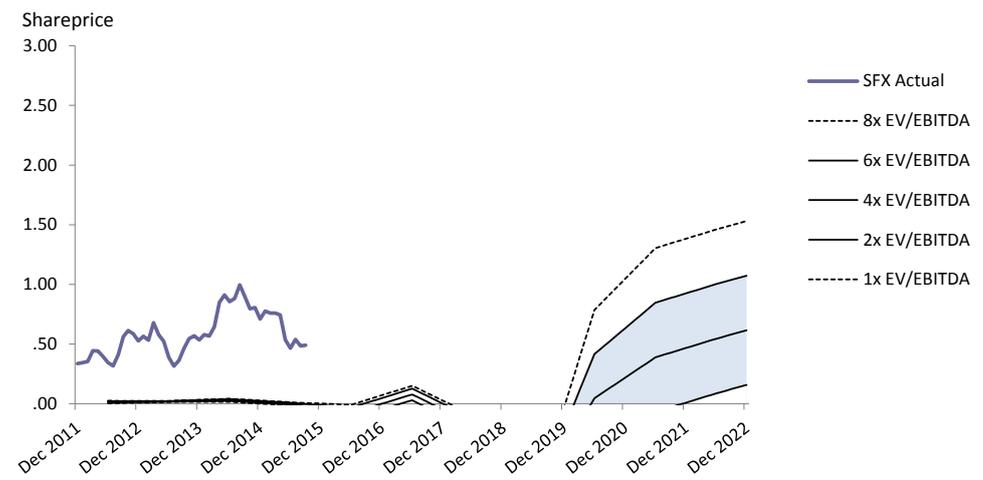
EV/EBITDA BANDS

Fig. 12: Using Hartleys base case commodity forecasts



Source: Hartleys Estimates, IRESS

Fig. 13: Using spot commodity prices



Source: Hartleys Estimates, IRESS

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Buy	Share price appreciation anticipated.
Accumulate	Share price appreciation anticipated but the risk/reward is not as attractive as a "Buy". Alternatively, for the share price to rise it may be contingent on the outcome of an uncertain or distant event. Analyst will often indicate a price level at which it may become a "Buy".
Neutral	Take no action. Upside & downside risk/reward is evenly balanced.
Reduce / Take profits	It is anticipated to be unlikely that there will be gains over the investment time horizon but there is a possibility of some price weakness over that period.
Sell	Significant price depreciation anticipated.
No Rating	No recommendation.
Speculative Buy	Share price could be volatile. While it is anticipated that, on a risk/reward basis, an investment is attractive, there is at least one identifiable risk that has a meaningful possibility of occurring, which, if it did occur, could lead to significant share price reduction. Consequently, the investment is considered high risk.

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