

Kibaran Resources (KNL)

COMPANY REPORT – INITIATION OF COVERAGE

RECOMMENDATIONS

Rating	BUY ▲
Risk	Speculative
Price Target	\$0.23
Share Price	\$0.13

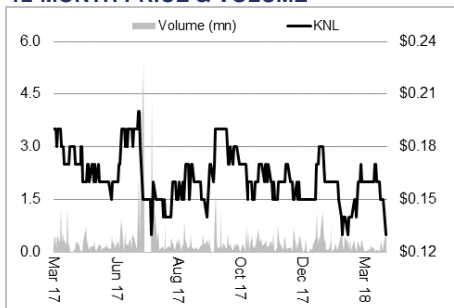
SNAPSHOT

Monthly Turnover	\$0.4mn
Market Cap	\$32mn
Shares Issued	244.4mn
52-Week High	\$0.21
52-Week Low	\$0.11
Sector	Materials

BUSINESS DESCRIPTION

Kibaran is proposing to develop a graphite mine and processing facility in Tanzania, it has completed a Bankable Feasibility Study which highlights the economics of the project. To proceed with the development, it requires the government to establish the regulatory framework and KNL finalising debt and equity financing. Once the mine is up and running the company plans to convert a portion of mine production into Battery Grade Graphite.

12-MONTH PRICE & VOLUME



RESEARCH ANALYST

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Disclosure

The author owns no shares in KNL.

Graphite for many end markets

- Overview:** We initiate coverage of KNL with a BUY rating and price target of 23cps, which is less than our valuation of 45cps due to the uncertainty about fiscal regime and funding of projects. KNL plans to mine and process the Epanko graphite resource and build a spherical graphite plant in Tanzania. The company has a banking syndicate willing to provide the debt finance for 60% of the project. The syndicate has been involved for some time and has had SRK review all aspects of the project. KNL has also received confirmation that the project conforms to IFC performance standards and World Bank Environmental health and safety guidelines.
- Key drivers:** 1) completion of all government approvals, permitting and fiscal agreements; 2) financing of Epanko project; 3) construction of a demonstration Spherical Graphite (SpG) pilot plant in Germany; 4) construction of a mine and processing plant at Epanko; 5) the implementation of a more environmentally friendly SpG plant to deliver a point of difference from a marketing perspective; 6) completed feasibility for a commercial in country SpG plant; and 7) pilot plant in Germany which is accessing other graphite production sources using a proprietary 'green' purification method.
- Outlook:** With the Epanko funding documents completed, KNL now requires the Tanzanian government to appoint the mining commission to oversee the new mine regulations. Of the 60ktpa of planned mine production, KNL has 44ktpa with binding sales and offtake agreements and 16ktpa under negotiation with an existing partner. Mine production will need to grow by 40ktpa to feed the proposed 20ktpa SpG plant. We think it is quite a proactive approach to build a value-add SpG in Tanzania as it will demonstrate to the government it has a long-term commitment.
- Investment view:** Sales are focussed on the traditional steel market but concentrate could also be sold into the expandable market, while a pilot plant to produce spherical graphite is in the planning. The operating costs and capital expenditure look on the high side relative to other companies, however at this stage of development we view this as more of a positive and a reflection of the independent expert (SRK) appointed by the banks. SRK's role was to find what was wrong or needed to be rectified in the studies, and it adds a degree of reliability which may be lacking in other estimates and should mitigate a lot of risk. We like the conservatism and the potential to deliver positive surprises rather than disappointment.

INVESTMENT SUMMARY

Year End: 30 June		2016 (A)	2017 (A)	2018 (E)	2019 (E)	2020 (E)
Revenue	\$mn	1	0	0	3	40
EBITDA	\$mn	-4.5	-4.2	-3.9	-3.1	15.9
EBIT	\$mn	-4.5	-4.2	-4.0	-3.6	7.6
Reported Profit	\$mn	-4.3	-4.1	-3.9	-3.8	-1.6
Adjusted Profit	\$mn	-4.3	-4.1	-3.9	-3.8	-1.6
EPS (Reported)	¢	-2.3	-1.7	-0.7	-0.7	-0.3
EPS (Adjusted)	¢	-2.3	-1.7	-0.7	-0.7	-0.3
EPS Growth	%		N/A	N/A	N/A	N/A
PER (Reported)	x	N/A	N/A	N/A	N/A	N/A
PER (Adjusted)	x	N/A	N/A	N/A	N/A	N/A
Dividend	¢	0.0	0.0	0.0	0.0	0.0
Yield	%	0.0	0.0	0.0	0.0	0.0
Franking	%	0	0	0	0	0

Financial summary

KIBARAN RESOURCES

Analyst:	Warren Edney
Date:	26-Mar-18
Share Price (\$A):	\$0.13
Market Cap (A\$m):	\$32
EV (A\$m)	\$30
Year End:	30 June

Rating:	BUY
Price Target:	\$0.23
Upside/(Downside):	73%
Valuation:	\$0.45
Risk:	Speculative

KEY RATIOS	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
NPAT - Reported	-4.3	-4.1	-3.9	-3.8	-1.6	15.2
NPAT - Attributable	-4.3	-4.1	-3.9	-3.8	-1.6	15.2
EPS	-2.3	-1.7	-0.7	-0.7	-0.3	2.8
EPS Growth (%)		n/m	n/m	n/m	n/m	n/m
P/E (x)	n/m	n/m	n/m	n/m	n/m	4.7
CFPS (A Cents)	-1.4	-1.6	-7.1	-16.8	-3.4	-2.2
P/CF (x)	n/m	n/m	n/m	n/m	n/m	n/m
DPS (A Cents)	0.0	0.0	0.0	0.0	0.0	0.0
Franking (%)	0%	0%	0%	0%	0%	0%
Dividend Yield (%)	0%	0%	0%	0%	0%	0%
Payout Ratio (%)	0%	0%	0%	0%	0%	0%
FCF Yield (%)	n/m	n/m	n/m	n/m	n/m	n/m
EV/EBIT (x)	(6.6)	(7.0)	(7.5)	(8.3)	3.9	0.8
EV/EBITDA (x)	(6.6)	(7.1)	(7.6)	(9.7)	1.9	0.7

ASSUMPTIONS	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
Australian Dollar (AUD/USD)	0.728	0.755	0.772	0.745	0.750	0.750
Graphite basket price (US\$/t)	0	0	0	1,169	1,169	1,169
Spherical graphite (US\$/t)	0	0	0	3,250	3,250	3,250
Unpurified fines	0	0	0	600	600	600

PRODUCTION & COSTS	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
Graphite concentrate			0	0	30,000	65,000
Spherical graphite			0	600	600	2,500
Unpurified fines			0	600	600	2,500

PROFIT & LOSS (A\$m)	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
Operating Revenue	0.0	0.0	0.0	3.1	40.3	93.6
Other Revenue	0.5	0.3	0.0	0.0	0.0	0.0
Total Revenue	0.5	0.3	0.0	3.1	40.3	93.6
Operating Expenses	0.0	0.0	0.0	-2.3	-20.5	-44.4
Corporate/Other Expenses	-5.0	-4.3	-3.8	-3.8	-3.8	-3.8
EBITDA	-4.5	-4.2	-3.9	-3.1	15.9	44.4
Depreciation & Amortisation	0.0	-0.1	-0.1	-0.5	-8.4	-9.2
Exploration/write-offs	0.0	-0.2	-0.2	-0.1	-0.1	-1.1
EBIT	-4.5	-4.2	-4.0	-3.6	7.6	35.1
Net Interest / (Expense)	0.1	0.1	0.1	-1.9	-9.9	-13.5
NPBT	-4.4	-4.1	-3.9	-5.5	-2.3	21.7
Income Tax Expense	0.0	0.0	0.0	1.6	0.7	-6.5
NPAT - Adjusted	-4.4	-4.1	-3.9	-3.8	-1.6	15.2
Significant Items	0.0	0.0	0.0	0.0	0.0	0.0
NPAT - Reported	-4.4	-4.1	-3.9	-3.8	-1.6	15.2

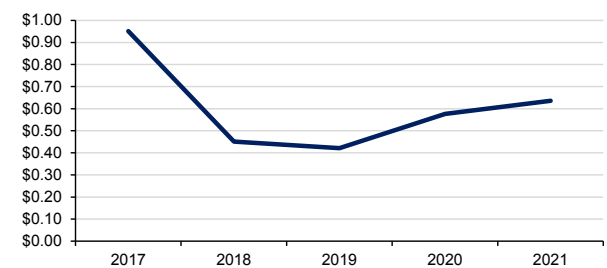
CASH FLOW (A\$m)	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
Cash Flow from Ops	-2.6	-3.4	-3.8	-3.0	16.1	45.4
Capex - Development & Sustaining	0.0	-0.3	-35.3	-89.5	-34.9	-57.6
Cash Flow From Investing	-2.2	-7.8	-42.7	-97.6	-53.7	-81.3
Cash Flow From Financing	2.1	11.1	56.2	107.4	46.7	54.7
Net Cash Flow	-2.6	-0.1	9.8	6.8	9.0	18.8

BALANCE SHEET (A\$m)	FY16A	FY17A	FY18E	FY19E	FY20E	FY21E
Cash	2.1	2.0	11.7	18.5	27.5	46.3
PP&E/Development/Exploration	0.0	0.3	35.5	124.5	151.0	199.4
Assets	12.5	20.5	72.7	173.7	214.3	284.6
Debts	0.0	0.0	10.0	90.5	128.0	169.0
Liabilities	0.8	1.2	11.2	91.7	129.2	170.2
Equity	11.7	19.3	58.7	54.9	53.3	68.4
Net Debt (Cash)	-2.1	-2.0	-1.7	72.0	100.5	122.7
Gearing (%) - ND / (ND + Eq)	-21%	-11%	-3%	57%	65%	64%

VALUATION SUMMARY

	WACC	8.3%	A\$m	A\$ps
Epanko			181	0.33
SG plant			72	0.13
Projects			253	0.46
Corporate			(24)	(0.04)
Exploration			17	0.03
Net Cash / (Debt)			2	0.00
Total Valuation			248	0.45

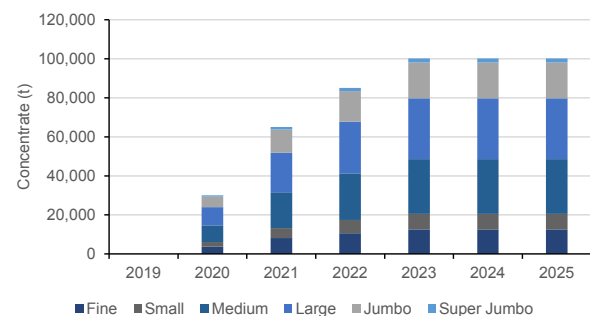
VALUATION OVER TIME (adjusted for equity issue)



EARNINGS SENSITIVITY

AUD/USD	FY18E	FY19E	FY20E	FY21E
Base NPAT A\$m	-3.9	-3.8	-1.6	15.2
plus 10%	0.0	-0.1	-1.4	-3.3
+1c	0.0	0.0	-0.2	-0.4
Graphite	FY18E	FY19E	FY20E	FY21E
Base NPAT A\$m	-3.9	-3.8	-1.6	15.2
plus 10%		0.2	2.8	6.7
+ US\$100/t		0.2	2.4	5.7

CONCENTRATE PRODUCTION



Race to realise potential in Tanzania

- **Waiting for the government:** Kibaran Resources (KNL) is one of five Australian listed explorers hoping to develop a graphite mine and processing plant in Tanzania – the others are Black Rock (BKT), Graphex (GPX), Magnis Resources (MNS), Volt Resources (VRC) and Walkabout (WKT). All are awaiting the appointment of the Mining Commission by the Tanzanian government. The Commission will oversee the implementation of the new mines regulations and the fiscal and operating regime.
- The Epanko project has all documents in place and development ready with a completed 60ktpa Bankable Feasibility study and is the only company with an Independent Engineers report, debt financing and a completed feasibility study to produce Battery graphite.
- **Resource:** Resource of 30.7Mt @ 9.9% and a reserve of 11.7Mt @ 8.32% is sufficient for an 18-year mine life. This does not include processing lower grade ore from a number of exploration targets along strike.
- **Mine production and costs:** Mining will be a traditional open pit with trucks and excavator as well as drill and blast where required. The aim is to produce 60ktpa of graphite concentrate at a cost of US\$500/t (US\$540/t FOB) – costs to reduce with switch from diesel to grid power.
- **Secondary processing:** Not required to sell product but KNL has completed a feasibility study on the production of 6-10ktpa of battery grade spherical graphite in Tanzania, which is likely to be kept separate from Epanko.
- **Indicative funding:** The BFS capex estimate is US\$88.9m. KNL's indicated target is 40% equity and 60% debt. KfW IPEX-Bank and Nedbank CIB have confirmed their intention to progress the debt financing program following the changes in Tanzanian legislation. The German government has offered a loan guarantee for up to US\$40m, with KfW Bank expected to provide the project debt of ~US\$65m. KNL could potentially pre-sell product to assist in equity, working capital or project equity. We have assumed that US\$35m is the equity gap, or ~A\$45m, which is raised through an issue of 307m shares at 15c to fund KNL's share in the project. Based on the proposed timing of the commercial spherical graphite and our modelling of cash flows, KNL's funding of the SpG plant would need to be staged. Options for funding the US\$66m for the SpG plant are increased debt, a sell down of equity in the project in return for funding, a strategic relationship and offtake with consumers. However, if it were to retain 100% of the Epanko mining operations, cash flows would be higher and it may be possible to fund the development with additional pre-sales of concentrate or SpG, debt and a smaller sell-down.
- **Offtake and market:** KNL has binding sales and offtake agreements for >20ktpa of graphite concentrate from Epanko by Thyssen Krupp for refractory use in Europe, >10ktpa to EGT for European distribution and >14ktpa to Sojitz for industrial and battery markets in Japan and Korea. The company is in discussions with various parties for the balance of production. We also assume that it consumes mine production in the SpG plant.
- **Boxes to be ticked off:**
 - ✓ Bankable Feasibility study
 - ✓ Independent engineers report for banks
 - ✓ Resettlement action plan, agreed a compensation schedule ~\$7m
 - ✓ Mining license
 - ☒ Government to establish regulatory framework via appointment of mining commission
 - ☒ Finalise construction arrangements and finalise the materials list (to assist in trade finance options)
 - ☒ Prepare submission for untied loan guarantee from German government
 - ☒ Discussion with potential equity investors – sales partners, industry participants and private equity
 - ☒ Commence financing and partnership options for SpG commercial scale plant

The Government is providing the graphite players with comfort that there is a way forward but little in the way of clarification of the new mine regulations\

We have factored in the potential for the Tanzanian government having a 16% free carried interest in the Epanko mine based on early comments from the government.

- Key strengths** – KNL has the backing of lenders; it has binding sales & offtake agreements for 70% of production; it is engineered to a bankable standard; and all technical aspects checked and reviewed by the banks' independent engineer. KNL has also developed a proprietary purification process for battery graphite without the use of Hydrofluoric acid (HF) which, given the world supply of battery graphite is sourced from China where HF is used, could provide a point of difference from a marketing perspective.

FIG.1: LOCATION PLAN



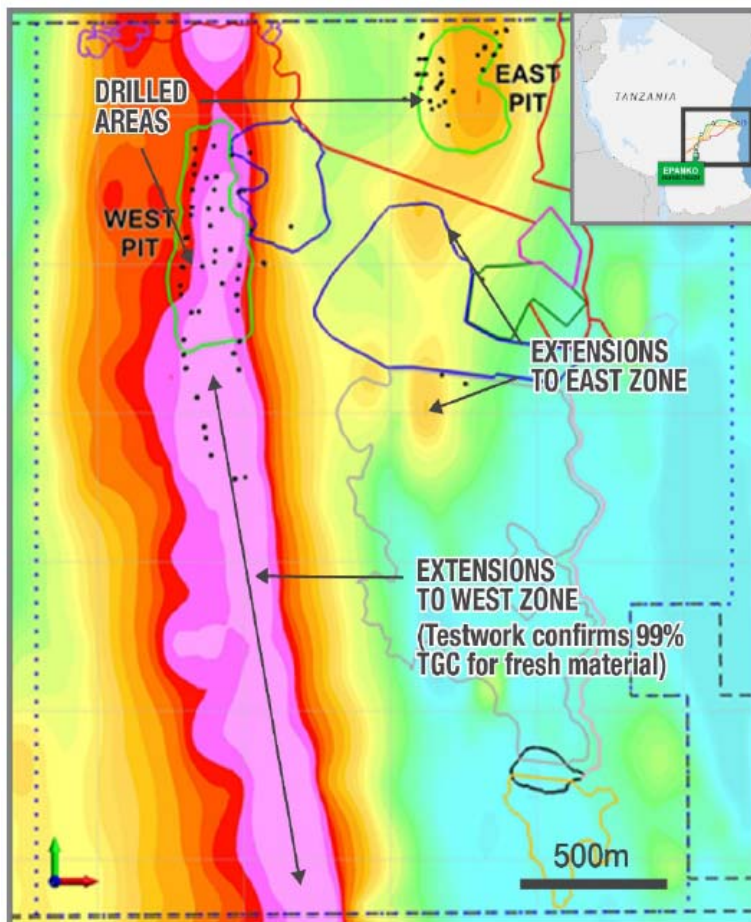
Source: KNL

- The overall timeline:** The timeline is reliant on the Tanzanian government formulating how the new mines regulations are going to work and appointing a commission to administer the regulations. It is hard to see the resolution of the mining regulations until end 1Q18, which leaves a quarter to line up some of the debt and equity. On that basis, we do not see much happening before mid-2018. We have assumed that engineering and design is completed in Dec half 2018, construction of the Epanko mine and processing facility occurs in the 2019 calendar year and that the mine is producing in early 2020. In terms of the battery graphite plant, we have assumed that the 600tpa spherical graphite pilot plant will be constructed in Europe in 2019, followed by the Stage 1 plant of 5,000tpa in early 2021 and the Stage 2 expansion to 20,000tpa in 2022. Mine and processing capacity is assumed to increase to feed SpG plant as it is brought on line capacity.
- Fiscal regime assumptions:** We have assumed that KNL funds 100% of the project development and retains an 84% interest in the Epanko project, which is probably the worst case. Royalties and charges equivalent to 4.3% of the FOB revenue and a tax rate of 35%. For the battery graphite plant, we have assumed KNL buys the concentrate at market price from Epanko and retains 100% equity in the plant, as it appears the government is targeting equity in mining rather than manufacturing in its legislative changes.

EPANKO

- To start operations KNL needs granted mining leases, the terms of the fiscal regime and financing. The resettlement plan has been agreed with the government and KNL will need to compensate and organise the resettlement of six villages (~400 families) prior to the commencement of operations. KNL estimate the cost to complete the resettlement plan is US\$7m.
- **Pilot plant and construction:** We have assumed that the pilot plant work for the design of the main processing plant is completed in the 2018 financial year at a cost of US\$750,000 and the engineering and design is completed in the latter part of 2018. KNL believes it will take 12 months to construct the plant and develop the mine, which could see the mine in operation at the end of 2019 or early in 2020.
- **Mining:** The graphite occurs in two main units, a quartz schist and a scapolite. Ore is oxidised to around 30m. Oxide to fresh material ratio is 7:3. Mining will be done via conventional open pit with drill and blast. The ore is relatively shallow with an average life of mine strip ratio of 0.4:1. Significant evidence supports the company's view that further orebodies will occur along strike as shown by the image below. The mine life should be greater than that assumed, as the graphitic zones do appear to extend along strike and outside the current open pit boundaries (see figure below).

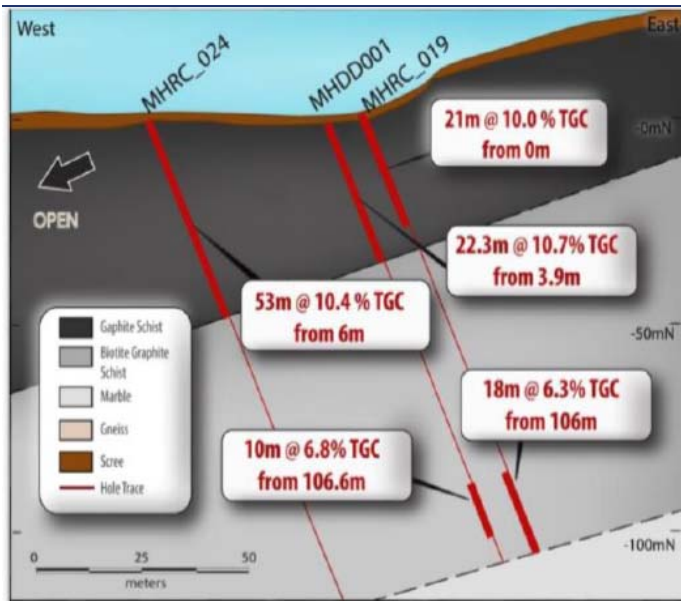
FIG.3: EPANKO OPEN PIT LOCATION



Source: KNL

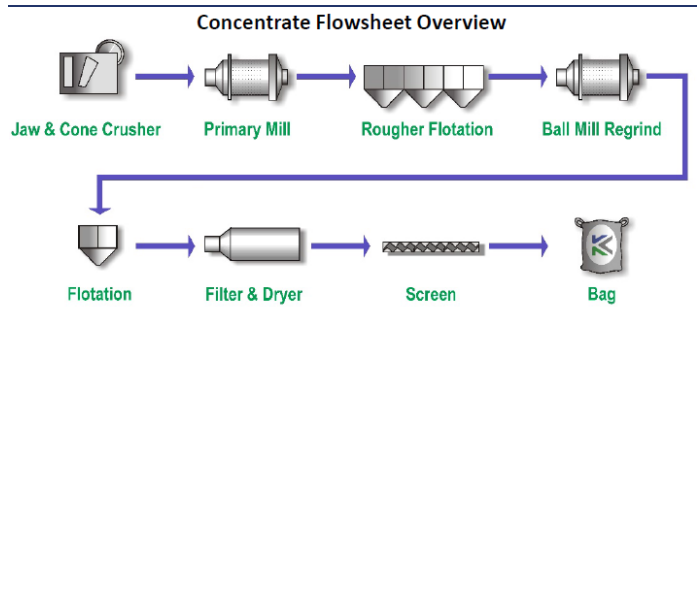
- **Processing:** The mineralogy and physical properties of the graphite bearing rock is such that the graphite is relatively easily liberated. There is a high proportion of medium to large flake size and there are few deleterious elements.

FIG.4: EPANKO CROSS-SECTION



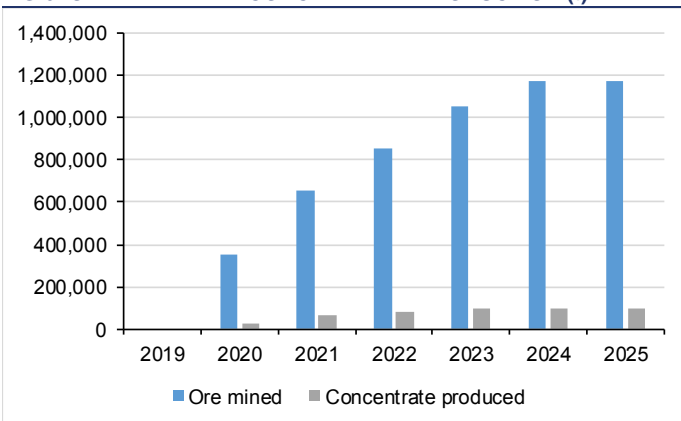
Source: KNL

FIG.5: PROCESS FLOW SHEET



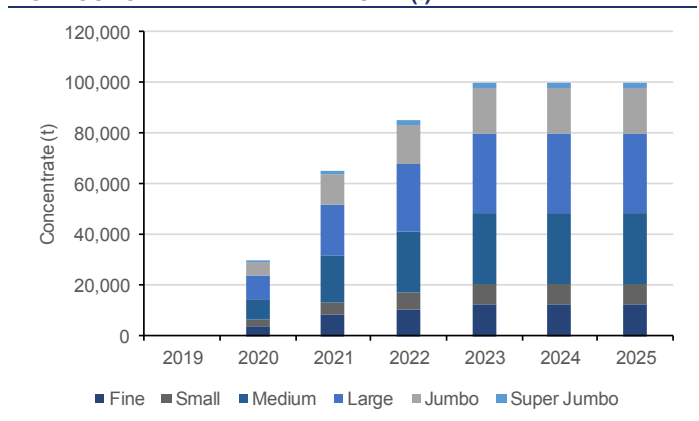
Source: KNL

FIG.6: ORE MINED AND CONCENTRATE PRODUCTION (t)



Source: Baillieu Holst

FIG.7: CONCENTRATE BY FLAKE SIZE (t)



Source: Baillieu Holst

- Operating costs:** We have used the company's assumptions, as outlined in the June 2017 DFS, and adjusted them to take into account regulatory changes such as the 1% inspection fee and the community royalty of 0.3%, which essentially makes the effective government royalty rise from 3% to 4.3%. We believe the work done by SRK, as part of the bank's due diligence, adds a degree of rigour to the estimates done by KNL and its consultants. SRK's role was essentially to find the points of weakness and correct them, which is something generally lacking in other definitive feasibility studies. As a result of the level of scrutiny, we are happy to use the BFS cost forecasts in our modelling. KNL note that costs will fall between year 1 and year 3 when power is sourced from the grid rather than on site diesel generators (ie. grid power US\$0.09/kwhr vs diesel US\$0.30/kwhr).

FIG.8: PRE-PRODUCTION CAPEX (US\$m)

Mining	0.7
Process plant	48.8
Infrastructure	13.2
EPC	11.5
Contingency	7.1
Owners cost	7.6
Total	88.9

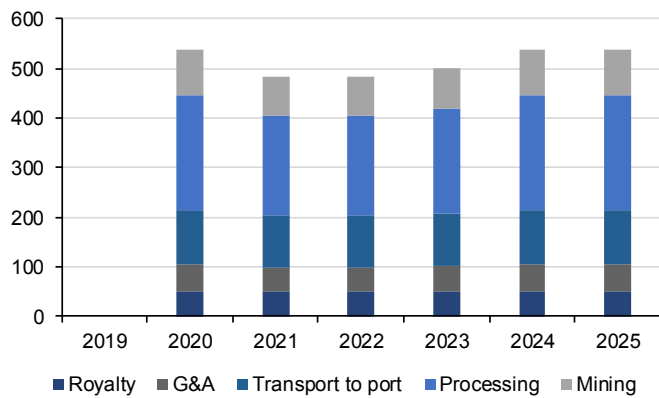
Source: KNL

FIG.9: LOM OPERATING COSTS (US\$/t)

	US\$/t of ore processed	US\$/t of concentrate
Mining	7.97	101
Processing	19.84	251
Transport to port	8.45	107
G&A	4.81	61
Royalty	3.97	50
FOB	45.05	570
Sea freight	4.74	60
CIF	49.79	630

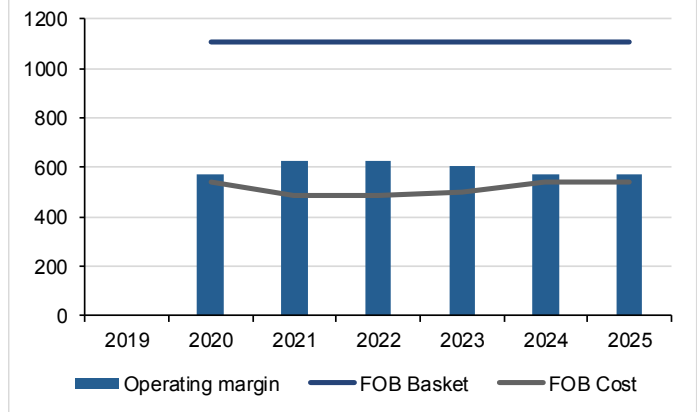
Source: KNL, Baillieu Holst estimates

FIG.10: OPERATING COSTS (US\$/t of conc FOB)



Source: Baillieu Holst

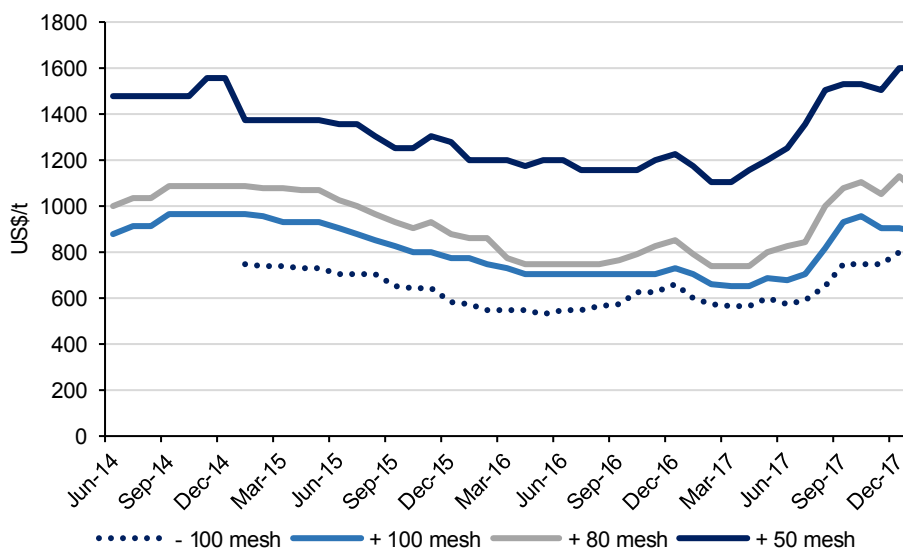
FIG.11: OPERATING COSTS & MARGIN (US\$/t of conc)



Source: Baillieu Holst estimates

- Sales of concentrate:** KNL has sales agreements with Thyssen Krupp (>20ktpa of refractory grade graphite), EGT (>10ktpa in European natural graphite markets), Sojitz (>14ktpa into Japan and Korean industrial and battery graphite markets) and it is in discussions with additional European consumers for the balance of production.

FIG.12: GRAPHITE PRICES FOB CHINA (94-95% C)



Source: BSM, GPX, Benchmark Minerals

- **Pricing up in the air:** Until the company reports the first couple of quarters of sales, the revenue estimates will be educated guesses as it is with most producers selling raw materials into non-terminal markets. We have compiled prices from various industry participants such as Roskill, Benchmark Minerals, and graphite explorers and developers. Pricing assumptions vary greatly and reflect flake size, expandability, carbon content, deleterious element content and loss on ignition.
- **Upside to basket price estimate:** The recent price trend for natural graphite appears to be up, meaning our basket price may be conservative. The figure below shows the difference between our forecast and the one estimated by the company in its DFS in June. It is difficult to assess if the recent rally in prices is demand driven or related to the changes in the mining regulations in Tanzania which put at risk, or at least delayed, 500-650ktpa of graphite concentrate production.

FIG.13: CONCENTRATE FLAKE SIZE DISTRIBUTION

	Mesh	micron	Proportion
Super Jumbo		>500	2.1%
Jumbo	>48	300+	18.3%
Large	>80	300-180	31.2%
Medium	>150	180-106	28.0%
Small	>200	>75	8.0%
Fine	<200	<75	12.5%

Source: KNL

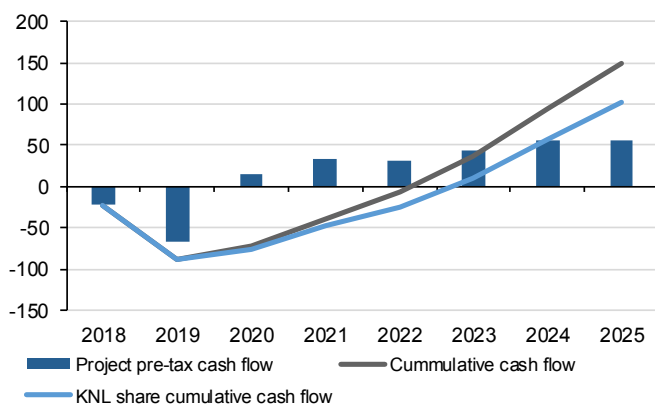
FIG.14: BASKET PRICING US\$/t

Mesh	micron	Pricing	
		KNL	BH
>500	>500		2200
>48	300+	2,800	1665
>80	300-180	1,400	964
>150	180-106	950	853
>200	>75	840	733
<200	<75	580	600
Basket	CIF	1355	1024
	FOB		

Source: KNL, Baillieu Holst

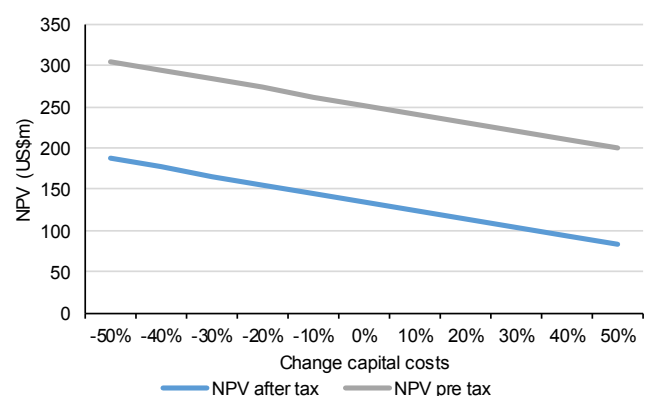
- **Some clarification on project valuation:** Our base valuation for 100% of the 60,000tpa project on a pre-tax basis is US\$191m, which compares with the company's feasibility study number of US\$211m. However, this is not the valuation we include in our analysis. We have included an increase in production to feed the SpG plant, while our production rates rise to 100,000tpa and the cost of additional capacity is US\$1,000/t versus the start-up capital intensity of US\$1,481/t. Using an 84% equity assumption and funding 100% of the capital expenditure on a free carried basis, and on the expanded capacity, our pre-tax NPV is US\$252m, or US\$135m after tax.

FIG.15: PROJECT CASH FLOW (US\$m)



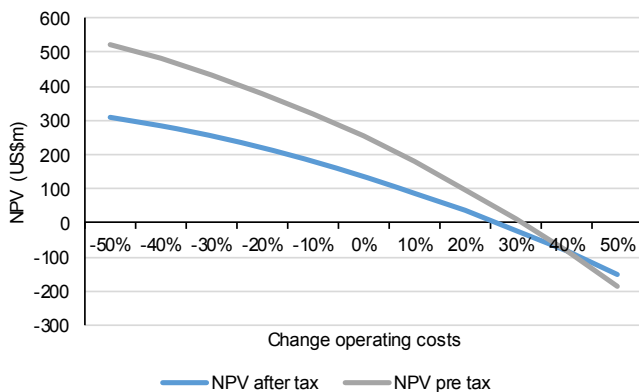
Source: Baillieu Holst estimates

FIG.16: EPANKO PROJECT VALUATION SENSITIVITY



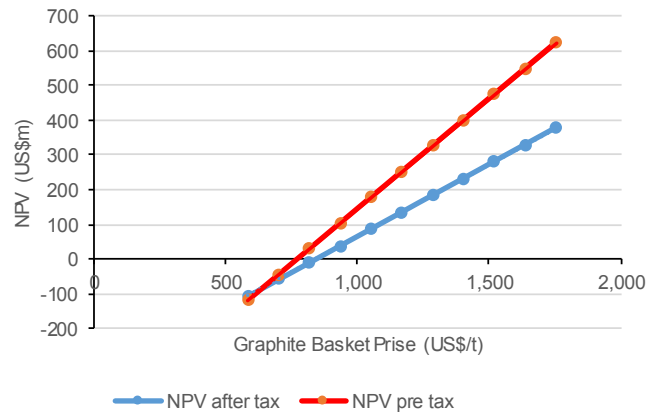
Source: Baillieu Holst estimates

FIG.17: EPANKO PROJECT VALUATION SENSITIVITY



Source: Baillieu Holst estimates

FIG.18: EPANKO PROJECT VALUATION SENSITIVITY



Source: Baillieu Holst estimates

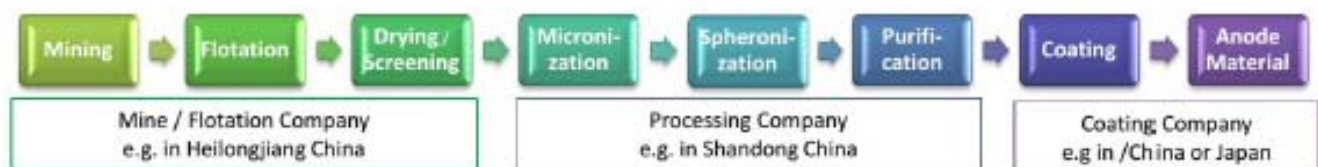
Spherical Graphite Plant

- KNL is planning to develop a spherical graphite production facility. To optimise the processing and meet expected market demand, the company will build a 50t/mth pilot plant in Germany. Following completion of all the test work this plant could be retained for testwork or pulled apart and used as part of a larger commercial plant.
- **Environmentally friendly process route chosen:** KNL and its partner ProGraphite were able to identify and refine a breakthrough in purification technology capable of producing premium quality battery product at a cost competitive with less environmentally acceptable production techniques adopted by the majority of existing anode material manufacturers. The process removes the use of hydrofluoric acid in the purification phase
- **Processing:** We are always cautious when companies mention “proprietary technology”. Kibaran has developed a purification process using readily available chemicals rather than the common industry practice of using hydrofluoric acid. If commercial this process would add to the marketing appeal of the KNL graphite as the product would be environmentally friendly. Once ramped-up KNL plan for 20,000tpa of product – purified, unpurified and fines.
- **In country value add:** It is probable that the construction of a modular commercial scale spherical graphite processing plant would be constructed in Tanzania as part of value adding in the country and therefore allow KNL to retain 100% of the downstream processing. It seems likely that KNL would form a JV with Sojitz and enter into a technology sharing arrangement as part of funding the development.

600tpa plant’s cost of US\$3m likely to be funded through a JV and a small amount of equity

20ktpa commercial plant at cost of US\$66m would be built in 5,000tpa increments – we assume the cost of the first module is US\$25m

FIG.19: SPHERICAL GRAPHITE PRODUCT CHAIN



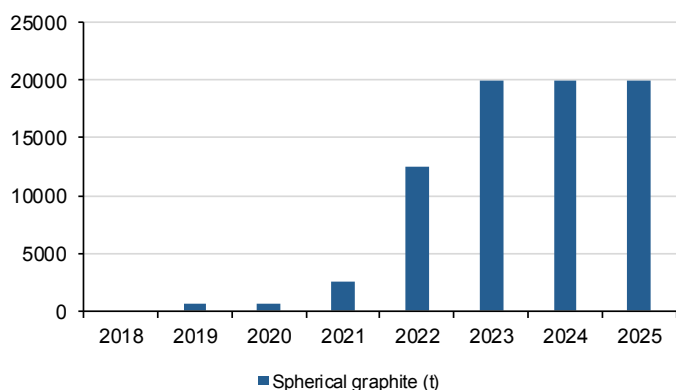
Source:

- **KNL studies have thrown up a number of options:** A 2015 scoping study indicated that a plant capable of producing 6,000tpa of spherical graphite, 5,000t of expandable graphite, and 4,000t of purified graphite at a capital cost of US\$35m, generates a pre-tax NPV of US\$115m. The latest feasibility study in 2017 proposes a 20,000tpa production rate of spherical graphite at a cost of US\$66m to generate a pre-tax NPV of US\$145m. The process route has been simplified to produce on two products, a spherical graphite and an unpurified fines product.

Our assumptions

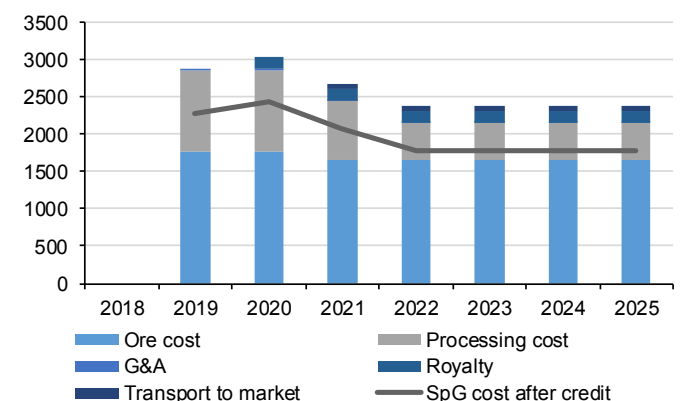
- **BPG production ramp-up:** In our modelling we have assumed the commercial plant is built in a 5,000tpa module and a 15,000t module, and that production ramps up over a 3-year period starting in early 2020. KNL, on the other hand, assume the spherical graphite production capacity reaches 20,000tpa by 2020 rather than our 2021 estimate.
- **Epanko Production ramp-up:** We assume there are changes in production capacity from the mine to supply the pilot plant. However, mine capacity will need to be increased to feed the commercial plant. One tonne of mine concentrate (small or 150-200 mesh flake) will produce 0.5t of spherical purified graphite and 0.5t of unpurified fines. To produce 20,000tpa of spherical purified graphite the mine will need to be expanded from 60ktpa to 80-100ktpa (subject to the amount of contracted capacity of graphite concentrate). We assume this is done incrementally to match demand and at a cost of US\$1,000/t of capacity.
- **Operating costs:** Based on revenue and EBITDA guidance provided in KNL’s releases, the implied operating costs per tonne of spherical graphite is US\$1,725/t where costs are: the cost of concentrate from the mine plus transport; the cost of processing; and transport/logistics plus the co-product credit. Based on discussion with KNL management, we have used the sub-200 micron graphite from Epanko as the feedstock, which translates to a cost of feedstock of US\$1,766/t of spherical graphite. Partially offsetting this cost is the credit received for the sale of unpurified fines which we estimate amounts to US\$600/t of spherical graphite.
- **Market value:** Studies by KNL are based on achieving a price of US\$3,250/t in 2018, versus the current price of between \$3,000 and \$4,000/t. The company will also sell unpurified fines, which we assume achieve a price of US\$600/t and are sold to traditional markets with the current price between \$750 and \$900/t. We estimate the project should generate an EBITDA of US\$28m pa when operating at 20,000tpa of SpG. Our valuation of 100% of the Battery Graphite Plant is US\$139m pre-tax or US\$107m after tax. The final attributable value will, however, depend on how KNL finances the development. On our analysis KNL cannot fund the development of the mine and the spherical graphite plant at the same time and will need to either get funding from consumers or sell down equity in the SpG plant, or take on more debt (our analysis assumes more debt at this point in time).

FIG.20: BGP OUTPUT (t)



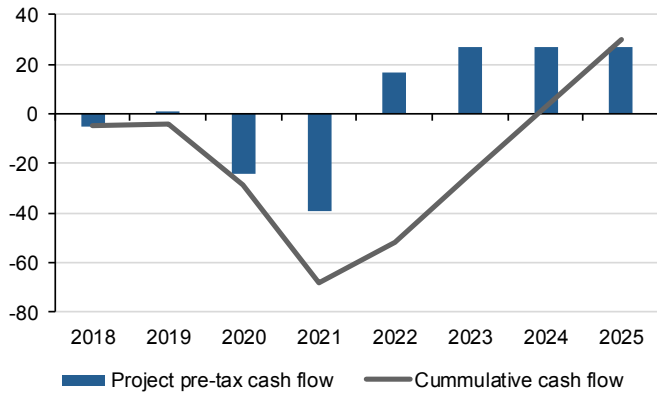
Source: Baillieu Holst

FIG.21: BGP OPERATING COSTS (US\$/t of SpG)



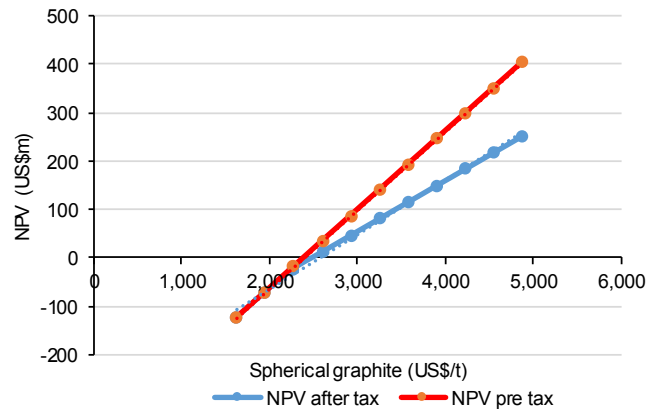
Source: Baillieu Holst

FIG.22: BGP PROJECT CASH FLOW (US\$m)



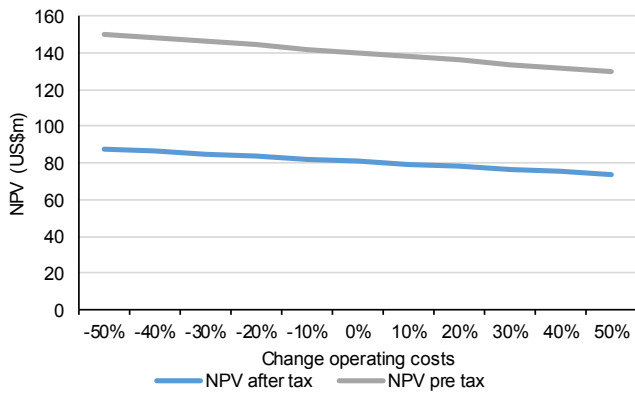
Source: Baillieu Holst estimates

FIG.23: BGP PROJECT VALUATION SENSITIVITY



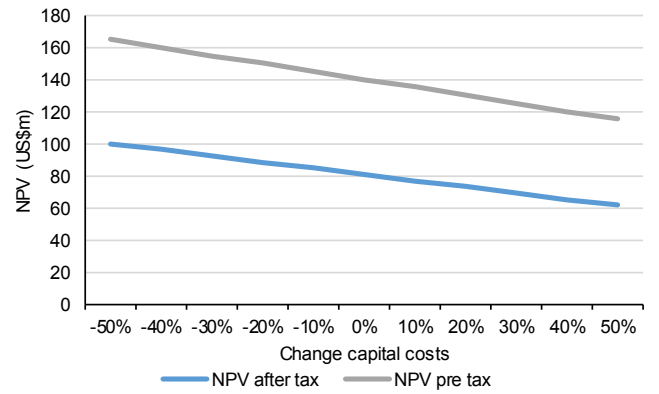
Source: Baillieu Holst estimates

FIG.24: SPG PROJECT VALUATION OPEX SENSITIVITY



Source: Baillieu Holst estimates

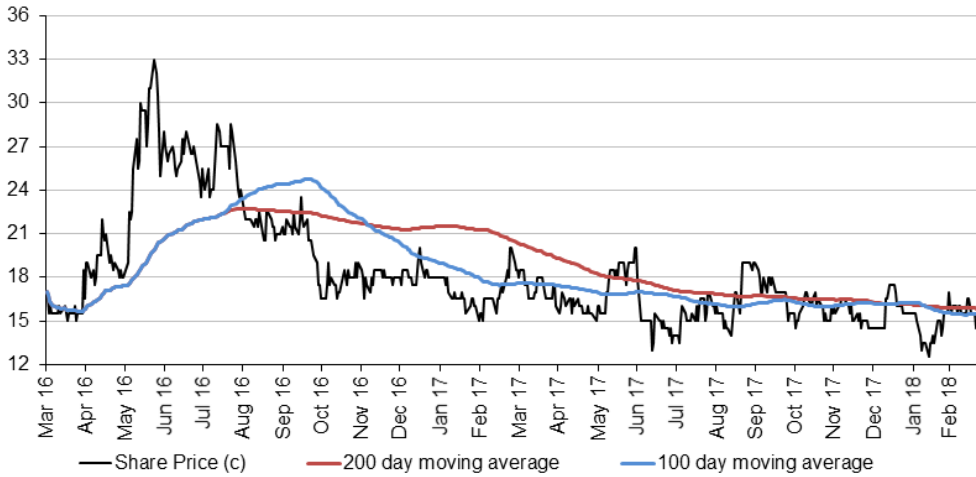
FIG.25: SPG PROJECT VALUATION CAPEX SENSITIVITY



Source: Baillieu Holst estimates

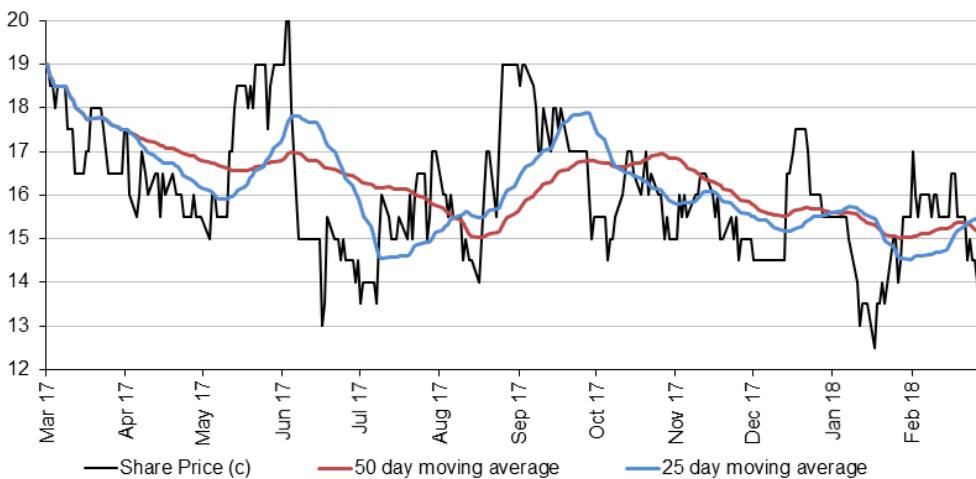
Appendix

FIG.26: LONG TERM MOMENTUM INDICATORS



Source: Iress

FIG.27: SHORT TERM MOMENTUM INDICATORS



Source: Iress

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