

Alphamin Resources

Q421/FY21 results

Mpama South continues the charge

Excluding an (exceptional) warrant charge, a superprofit tax and deferred tax, post-tax profits in Q421 were within US\$0.6m (or 1.3%) of our prior quarterly net profit forecast (US\$44.2m) and resulted in a maiden dividend of C\$0.03/share for the year. Contained tin production and sales guidance for FY22 remains unchanged at 12,000 tonnes, which is in line with the company's operational performance in Q122. In addition, Alphamin has also announced the start of development of the Mpama South project.

Year end	Revenue (US\$m)	PBT* (US\$m)	EPS* (US\$)	DPS (US\$)	P/E (x)	Yield (%)
12/20	187	(1)	(0.01)	0.00	N/A	N/A
12/21	353	132	0.04	0.02	22.6	2.6
12/22e	520	315	0.12	0.05	7.7	5.1
12/23e	542	328	0.15	0.05	6.0	6.0

Note: *PBT and EPS (fully diluted) are as reported.

Mpama South maiden resource and PEA

In addition to its financial results, Alphamin has announced (1) a maiden (and updated) resource at its adjacent Mpama South prospect, (2) the initial outcomes of a preliminary economic assessment (PEA) and (3) that it has decided to start development of the project this year. The Mpama South resource amounts to 4.27Mt of ore at a grade of 2.47% tin containing 105.5kt of tin, which Alphamin estimates it can put into production at a rate of 468ktpa to produce 7,232t tin per annum (cf Mpama North c 12,000t tin per annum). According to the International Tin Association's Tin Industry Review 2020, this makes the Mpama South resource the second highest grade and one of the largest publicly reported CRIRSCO tin mineral resources globally. Assuming that commercial production starts in FY24, we estimate that Mpama South could add 8c/share to Alphamin's earnings, 9c/share to its (maximum potential) dividends and that it is worth an immediate US\$0.299 per share to the company on an attributable basis.

Forecast net cash sufficient to fund Mpama South

Barring the exceptional and the extraordinary, with reported net cash on its balance sheet of US\$129.5m as at end-Q222, Alphamin has sufficient cash on its balance sheet to both develop Mpama South and pay a materially increased dividend in FY22 (currently the basis of our financial forecasts, above).

Valuation: Exploration opens way to C\$2.49/share

Taking Mpama North and Mpama South together and assuming that the current three-month price of tin (US\$42,793/t cf US\$38,432/t in Q421) prevails for the remainder of Bisie's life (ie adopting the current tin price as our long-term price), we calculate a value for Alphamin (excluding blue-sky exploration potential) of 125.1 US cents, or 158.1 Canadian cents, per share. However, with further ongoing exploration success, we estimate that this valuation could rise to potentially as high as US\$1.98/share (C\$2.49/share).

Metals & mining

13 April 2022

Price **C\$1.15**

Market cap **C\$1,463m**

C\$1.2640/US\$

Net cash (US\$m) at end-December 2021, including US\$4.2m in lease liabilities and US\$1.2m in unamortised fees 68.2

Shares in issue 1,271.9m

Free float 42%

Code AFM

Primary exchange TSX-V

Secondary exchange JSE AltX

Share price performance



% 1m 3m 12m

Abs (3.4) 18.6 105.4

Rel (local) (4.5) 16.8 81.6

52-week high/low C\$1.20 C\$0.56

Business description

Alphamin Resources owns (84.14%) and operates the Bisie tin mine at Mpama North in the North Kivu province of the Democratic Republic of the Congo with a grade of c 4.5% tin (the world's highest). Accounting for c 4% of global mined supply, it is the second largest tin mine in the world outside China and Indonesia.

Next events

Q122 results 11 May 2022

Q222 results August 2022

Q322 results November 2022

Q422/FY22 results March 2023

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Q421/FY21 and Q122 results

Alphamin's Q421 financial results were released in the context of known operating results, which were announced on 11 January. Subsequently, on 4 April, Alphamin announced its operational performance for Q122. Both are summarised in the table below relative to prior quarters.

Exhibit 1: Alphamin operating results, Q320–Q122

	Q320	Q420	Q121	Q221	Q321	Q421e	Q421a	*Change (%)	**Variance (%)	Q122a	***Change (%)
Tonnes processed	96,086	93,560	93,997	105,294	108,901	108,000	107,981	-0.8	0.0	105,565	-2.2
Tin grade (%)	3.8	4.2	3.8	3.2	3.5	3.4	3.9	+11.4	+14.7	3.7	-5.1
Contained tin (t)	3,651	3,930	3,572	3,369	3,812	3,638	4,211	+10.5	+15.8	3,924	-6.8
Overall plant recovery (%)	71	74	74	72	75.2	78	75	-0.3	-3.8	78	+4.0
Actual payable tin produced (t)	2,563	2,898	2,611	2,412	2,832	2,850	3,114	+10.0	+9.3	3,061	-1.7
Payable tin sold (t)	2,695	2,306	3,351	2,404	2,710	2,850	3,056	+12.8	+7.2	3,336	+9.2
Tin price achieved (US\$/t)	17,436	18,497	23,083	28,308	33,704	36,916	38,084	+13.0	+3.2	43,813	+15.0

Source: Alphamin Resources. As reported. Note: *Q421 cf Q321; **Q321a cf Q421e; ***Q122 cf Q421.

Alphamin's underlying financial results for Q421/FY21 are provided in Exhibit 2, below. A number of features of both its operational and financial performance are noteworthy:

- Plant throughput held steady at higher levels and was very close to our prior expectations for Q4. This performance continued into Q122, albeit at a slightly lower grade (as expected).
- Metallurgical recovery of 78% in Q122 represented a new record for the plant.
- There was a noticeable sale of material out of inventory in Q122 – that is to say sales exceeded production by 9.0% (or 275t) during the quarter. However, this is a relatively common feature of Bisie's operational performance in the first quarter of the year, as inventories that are conventionally built up in the fourth quarter as a result of the disruptions on account of the rains in North Kivu are unwound in the following three-month period.
- All-in sustaining costs (AISC) in Q421 increased 2.4% quarter-on-quarter to US\$15,117/t, driven by a 10.7% increase in unit off-mine costs (note that off-mine costs are inextricably linked to the tin price in the form of royalties, export duties, marketing fees and smelter deductions etc) and unit sustaining capex, but largely offset by a 7.5% reduction in unit on-mine costs (per tonne of tin sold). Note that the AISC in Q122 is anticipated to have been 'in line' with Q421.
- Alphamin's operational performance was achieved by significantly improved underground mining practices since mid-July 2021, relating to stope planning, delineation and blasting. This resulted in the average tin grade in Q421 increasing from both the 3.5% of the previous quarter and the 3.8% recorded in August and September.
- EBITDA of US\$74.3m in Q421 fractionally exceeded prior guidance of US\$74.0m, which itself represented a 37.8% increase relative to Q321. EBITDA guidance of US\$98.0m for Q122 nevertheless represents a new quarterly record.
- Excluding a US\$6.9m warrant charge (which we habitually decline to attempt to forecast on a quarterly basis), pre-tax profits in Q421 were US\$4.3m (or 7.2%) ahead of our prior expectations; however, this outperformance at the operational and pre-tax level was reversed by a relatively large current tax charge, which was US\$19.8m in excess of our prior forecast – albeit augmented by a US\$14.8m DRC 'superprofit' tax levied in the final quarter. Superprofit taxes are triggered when the average sales price for the year exceeds the tin price used in the DRC feasibility study by more than 25%. For these purposes, in instances in which excédent brut d'exploitation (an OHADA, or Francophone Africa, accounting concept that is analogous to EBITDA) for the year is more than 25% higher than that stipulated in the feasibility study, then a superprofit tax of an additional 20% applies, taking the effective tax rate on that incremental

portion of profit from 30% to 50%. As a result of the imposition of the superprofit tax, Alphamin's effective tax rate in Q4 amounted to 55.1% excluding the warrant charge, or 61.7% including the warrant charge. However, this, in part, reflected the fact that the superprofit tax charged in Q421 relates to the full year, but was only levied in Q4. Overall, excluding the warrant charge (but including the superprofit tax), the effective rate of tax for Alphamin in FY21 was 43.1%. In the absence of the warrant charge, the superprofit tax and deferred tax, post-tax profits would otherwise have been within US\$0.6m (or 1.3%) or our prior quarterly net profit forecast of US\$44.8m (see Exhibit 2, below). Note that, in the medium term, the company expects, subject to sufficient exploration success, to submit further DRC feasibility studies that should mitigate the impact of future superprofit taxes. In the meantime, however, we have attempted to forecast the effect of near-term superprofits taxes on both earnings and cash flows in Exhibits 3 and 11, below.

- Alphamin's net cash position (including lease liabilities) in Q421 improved by US\$67.2m from US\$1.0m to US\$68.2m (before a positive adjustment of US\$1.2m for unamortised fees). This performance followed an increase in net cash (or a decline of net debt) on the same basis of US\$30.5m in Q321, US\$17.0m in Q221 and US\$11.0m in Q121. As a consequence, after the year end, the board resolved to declare an FY21 dividend of C\$0.03 per share (approximately US\$30m in aggregate), which was paid to shareholders on 11 February 2022. Net cash was then reported to have improved by a further US\$61m to US\$129.5m in Q122 (post dividend).

Exhibit 2, below, provides an analysis of Alphamin's underlying financial results for Q421 relative to both Q321 and our prior expectations:

Exhibit 2: Edison forecast of Alphamin income statement, Q121–Q421 (US\$ unless otherwise indicated)

	Q121	Q221	Q321	Q421e	Q421a	Change (%)	Variance (%)	FY21
Revenue	76,032,045	68,053,576	91,350,482	105,209,384	117,447,117	28.6	11.6	352,883,220
Cost of goods sold	(37,256,106)	(29,780,333)	(32,384,856)	(33,651,013)	(38,796,112)	19.8	15.3	(138,217,407)
Depreciation	6,380,606	6,423,261	6,790,732	6,897,328	7,037,866	3.6	2.0	26,632,465
Gross profit	32,395,333	31,849,982	52,174,894	64,661,044	71,613,139	37.3	10.8	188,033,348
General and administrative	(4,549,884)	(4,729,496)	(5,280,772)	(5,280,772)	(5,193,778)	-1.6	-1.6	(19,753,930)
Operating profit/(loss)	27,845,449	27,120,486	46,894,122	59,380,272	66,419,361	41.6	11.9	168,279,418
Other								
Warrants	Excl*	Excl*	Excl*	Excl*	Excl*			Excl*
Profit on foreign exchange	16,595	(45,653)	(123,440)		(721,162)	484.2	N/A	(873,660)
Loss on write off of assets	0	0	0		0	N/A	N/A	0
Interest expense	(2,648,401)	(2,280,673)	(1,782,310)		(1,647,775)	-7.5	N/A	(8,359,159)
Interest income	11	298	422		652	54.5	N/A	1,383
Net interest	(2,648,390)	(2,280,375)	(1,781,888)	345,445	(1,647,123)	-7.6	-576.8	(8,357,776)
Profit before taxes	25,213,654	24,794,458	44,988,794	59,725,716	64,051,076	42.4	7.2	159,047,982
Current income tax expense	(11,113)	(11,499)	(9,907,336)	(14,931,429)	(34,696,810)	250.2	132.4	(44,626,758)
Deferred tax movement	(8,713,199)	(9,588,773)	(5,051,594)		(577,662)	-88.6	N/A	(23,931,228)
Total tax	(8,724,312)	(9,600,272)	(14,958,930)	(14,931,429)	(35,274,472)	135.8	136.2	(68,557,986)
Effective tax rate (%)	34.6	38.7	33.3	25.0	55.1	65.5	120.4	43.1
Net profit/(loss)	16,489,342	15,194,186	30,029,864	44,794,287	28,776,604	-4.2	-35.8	90,489,996
Net profit/(loss) attributable to:								
Shareholders	13,639,017	15,194,186	25,031,864	37,689,913	21,262,438	-15.1	-43.6	75,127,505
Non-controlling interests	2,850,325	0	4,998,000	7,104,374	7,514,166	50.3	5.8	15,362,491
Minority (%)	17.29	0.00	16.64	15.86	26.1	56.9	64.6	17.0
Total	16,489,342	15,194,186	30,029,864	44,794,287	28,776,604	-4.2	-35.8	90,489,996
Weighted average no. shares	1,182,251,580	1,188,156,191	1,188,156,191	1,193,945,424	1,228,300,697	3.4	2.9	1,195,135,996
Derivatives	119,536,582	95,621,651	99,333,451	95,502,832	26,694,586	-73.1	-72.0	90,280,313
Fully diluted weighted average no. shares	1,301,788,162	1,283,777,842	1,287,489,642	1,289,448,256	1,254,995,283	-2.5	-2.7	1,285,416,309
Headline earnings	8,002,190	4,900,644	20,911,936	37,689,913	14,390,320	1.7	-43.6	48,205,090
Headline earnings (excl. warrant charge)	13,639,017	15,194,186	25,031,864	37,689,913	21,262,438	-15.1	-43.6	75,127,505
EPS (US\$/share)	0.0115	0.0128	0.0211	0.0316	0.0173	-18.0	-45.3	0.0629
Diluted EPS (US\$/share)	0.0105	0.0118	0.0194	0.0292	0.0169	-12.9	-42.1	0.0584
HEPS** (US\$/share)	0.0115	0.0128	0.0211	0.0316	0.0173	-18.0	-45.3	0.0629
Diluted HEPS** (US\$/share)	0.0105	0.0118	0.0194	0.0292	0.0169	-12.9	-42.1	0.0584

Source: Alphamin, Edison Investment Research. Note: Company presented basis. *Excluded; actual Q421 charge US\$6,872,118; **Headline earnings per share.

Outlook

At the time of its Q221 results, Alphamin updated its guidance for the remainder of FY21 and H122. In the light of the lower grades encountered in Q221, it expected to mine lower tin grades averaging 3.2–3.5% in H221 and into Q122, which, at higher plant recoveries of 78% (including the fine tin recovery plant) and monthly throughput of 36,000t, suggested contained tin production of 900–1,000t per month. The grade of ore mined was then expected to increase to an average of 4.0% from Q222 onwards. As per Alphamin's Q421/FY21 production update of 11 January, contained tin production and sales guidance for the financial year ending December 2022 remains 12,000 tonnes (cf Edison's prior forecast of 11,711t).

Quarterly estimates for Alphamin in FY22 in the light of Q421 financial results and Q122 operational results are provided in the table below, with the caveat that the quarterly results of junior mining companies can be prone to material volatility relative to both historical results and analysts' forecasts. At the time of writing, the current three-month price of tin is US\$42,793/t and, for the purposes of forecasting, we have assumed this price will prevail for the remainder of the year. As noted previously, in this case, Edison has also attempted to forecast the likely effects of the application of ongoing superprofits tax assessments on Alphamin's financial performance for the remainder of the year.

Exhibit 3: Edison forecast of Alphamin income statement, Q122e–Q422e (US\$ unless otherwise indicated)

	Q122e	Q222e	Q322e	Q422e	FY22e (current)	FY22e (prior)
Tons processed (t)	105,565	100,275	100,275	100,275	406,390	401,100
Tin grade (%)	3.7	3.7	3.8	3.8	3.76	3.71
Contained tin (t)	3,924	3,660	3,846	3,846	15,276	14,871
Overall plant recovery (%)	78	79	79	79	78.6	78.7
Actual payable tin produced (t)	3,061	2,882	3,028	3,028	12,000	11,711
Payable tin sold (t)	3,336	2,882	3,028	3,028	12,275	11,607
Tin price achieved (US\$/t)	43,813	42,298	42,338	42,338	42,331	38,084
Revenue	146,160,168	120,481,514	126,483,614	126,483,614	519,608,909	442,031,699
Cost of goods sold	(42,966,390)	(34,701,694)	(35,489,571)	(35,501,448)	(148,659,103)	(141,806,539)
Depreciation	7,531,245	8,024,625	8,518,004	9,011,383	33,085,257	28,023,104
Gross profit	95,662,533	77,755,196	82,476,038	81,970,783	337,864,550	272,202,056
General and administrative	(5,193,778)	(5,193,778)	(5,193,778)	(5,193,778)	(20,775,112)	(21,123,088)
Operating profit/(loss)	90,468,755	72,561,418	77,282,260	76,777,005	317,089,438	251,078,968
Other	98,000,000					
Warrants	0	0	0	0	0	0
Profit on foreign exchange					0	0
Loss on write off of assets					0	0
Interest expense					0	0
Interest income					0	0
Net interest	(500,000)	(500,000)	(500,000)	(500,000)	(2,000,000)	209,469
Profit before taxes	89,968,755	72,061,418	76,782,260	76,277,005	315,089,438	251,288,438
Current income tax expense	(38,686,565)	(30,986,410)	(33,016,372)	(32,799,112)	(135,488,458)	(62,822,109)
Deferred tax movement					0	0
Total tax	(38,686,565)	(30,986,410)	(33,016,372)	(32,799,112)	(135,488,458)	(62,822,109)
Effective tax rate (%)	43.0	43.0	43.0	43.0	43.0	25.0
Net profit/(loss)	51,282,190	41,075,008	43,765,888	43,477,893	179,600,979	188,466,328
Attributable to						
Shareholders	43,148,835	34,560,512	36,824,618	36,582,299	151,116,264	158,575,569
Non-controlling interests	8,133,355	6,514,496	6,941,270	6,895,594	28,484,715	29,890,760
Minority (%)	15.86	15.86	15.86	15.86	15.86	15.86
Total	51,282,190	41,075,008	43,765,888	43,477,893	179,600,979	188,466,328
Weighted average number of shares in period	1,267,257,770	1,271,859,570	1,271,859,570	1,271,859,570	1,270,709,120	1,193,945,424
Derivatives	17,490,986	17,490,986	17,490,986	17,490,986	17,490,986	95,502,832
Fully diluted weighted average number of shares in issue	1,284,748,756	1,289,350,556	1,289,350,556	1,289,350,556	1,288,200,106	1,289,448,256
Headline earnings	43,148,835	34,560,512	36,824,618	36,582,299	151,116,264	158,575,569
Headline earnings (excl. warrant charge)	43,148,835	34,560,512	36,824,618	36,582,299	151,116,264	158,575,569
EPS (US\$/share)	0.0340	0.0272	0.0290	0.0288	0.1189	0.1328
Diluted EPS (US\$/share)	0.0336	0.0268	0.0286	0.0284	0.1173	0.1230
HEPS (US\$/share)	0.0340	0.0272	0.0290	0.0288	0.1189	0.1328
Diluted HEPS (US\$/share)	0.0336	0.0268	0.0286	0.0284	0.1173	0.1230
Headline EPS excl. warrant charge (US\$/share)	0.0340	0.0272	0.0290	0.0288	0.1189	0.1328

Source: Alphamin, Edison Investment Research. Note: Company presented basis.

Among other things, readers should note that we are forecasting a sharp decline in interest expenses as debt (all of which is due within 12 months) is paid off. In addition, all outstanding warrants as at end-December 2021 are now reported to have been exercised in January 2022 with

the result that the customary quarterly warrant charge incurred by Alphamin should also now disappear from Q222.

Valuation: Mpama North

Assuming the current three-month price of tin (US\$42,793/t cf US\$39,020/t previously) prevails for the remainder of Bisie's life (ie adopting the current tin price as our long-term price), we calculate a valuation for Alphamin (based on Mpama North only and excluding any blue-sky exploration potential) of 95.19 US cents (cf 86.1c previously), or 120.3 Canadian cents (cf 109.7c previously) per share. Note that this valuation assumes the execution of the Bisie life of mine schedule according to plan and applies a 10% discount rate to forecast dividends.

Mpama North valuation sensitivities

Exploration and mine life extensions

A key sensitivity for Alphamin is its exposure to exploration success. Alphamin's processing schedule follows its mining schedule closely. As this drops away towards the end of the life of the mine, so too do production, earnings and cash flow. To the extent that Alphamin is successful in its exploration at Mpama North and Mpama South in keeping its plant in full production at FY27 levels into the future (see Alphamin's latest announcements: [Alphamin announces maiden mineral resource estimate and positive preliminary economic assessment for Mpama South](#), released on 8 March 2022, and [Alphamin reports high grade exploration assay results at Mpama North mine and Mpama South development project](#), released on 22 March, and below), our valuation of the company (calculated at the prevailing tin price) would increase as follows:

Exhibit 4: Alphamin valuation sensitivity to exploration success (Mpama North only)				
Additional years at full capacity	To year	Valuation (US\$/share)	Valuation (C\$/share)	Incremental change (C\$/share)
		0.9519	1.2031	
0	2027	0.9298	1.1753	-0.0278
+1	2028	0.9742	1.2313	+0.0560
+2	2029	1.0274	1.2986	+0.0673
+3	2030	1.0661	1.3476	+0.0490
+4	2031	1.1021	1.3931	+0.0455
+5	2032	1.1548	1.4597	+0.0666

Source: Edison Investment Research

For the purposes of this valuation, we have assumed an ongoing exploration commitment at Alphamin of c US\$20m initially, dropping back to US\$2.7m per year to achieve the replenishment of reserves and resources required to keep the mine operating at full capacity.

On average, therefore, each additional year by which the plant is maintained at full capacity (in the short term) adds an average of 5.69 Canadian cents per share to our valuation of Alphamin (at the prevailing tin price). In the limiting case in which exploration success is sufficient to maintain production at FY27 levels indefinitely (which, for these purposes may be taken to mean c 52 years), our valuation of Alphamin rises to US\$1.98/share (cf US\$1.92/share previously), or C\$2.487/share (cf C\$2.408/share previously).

Mpama South maiden and updated resource

Coincident with its Q421/FY21 results, Alphamin announced both a maiden resource estimate at Mpama South and the results of a simultaneous PEA for the project. Mpama South's maiden

resource was then updated (and upgraded) once again, on 29 March. At the same time, the company also announced a decision to start the development of the project in order to capitalise on the current favourable tin market fundamentals and its ability to self-fund the project.

A summary of the (updated and upgraded) resource at Mpama South within the context of the existing resource at Mpama North is as follows:

Exhibit 5: Mpama South maiden resource cf existing Mpama North resources and reserves

	Resources			Category	Reserves			Ownership (%)	Attributable	
	Tonnage (Mt)	Grade (% Sn)	Contained tin (kt)		Tonnage (Mt)	Grade (% Sn)	Contained tin (kt)		Resources (kt Sn)	Reserves (kt Sn)
Bisie Mpama North										
Measured	0.33	4.75	15.60	Proven	0.05	3.77	1.89	84.14	13.13	1.59
Indicated	3.99	4.59	183.40	Probable	3.28	4.01	131.49	84.14	154.31	110.64
Inferred	0.48	4.57	21.80	Possible				84.14	18.34	0.00
Total	4.80	4.60	220.80	Total	3.33	4.01	133.38	84.14	185.78	112.23
Bisie Mpama South										
Measured	0.00	0.00	0.00					84.14	0.00	0.00
Indicated	0.85	2.55	21.68					84.14	18.24	0.00
Inferred	3.42	2.45	83.79					84.14	70.50	0.00
Total	4.27	2.47	105.47					84.14	88.74	0.00
Bisie total										
Measured	0.33	4.75	15.60	Proven	0.05	3.77	1.89	84.14	13.13	1.59
Indicated	4.84	4.24	205.08	Probable	3.28	4.01	131.49	84.14	172.55	110.64
Inferred	3.90	2.71	105.59	Possible				84.14	88.84	0.00
Total	9.07	3.60	326.26	Total	3.33	4.01	133.38	84.14	274.52	112.23
Change (%)										
Measured	0.00	0.00	0.00							
Indicated	21.30	-7.69	11.82							
Inferred	712.50	-40.76	384.43							
Total	88.96	-21.80	47.76							

Source: Alphamin Resources, Edison Investment Research. Note: Estimated using Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Best Practice Guidelines (2019) and is reported in accordance with the 2014 CIM Definition Standards.

The initial maiden mineral resource was estimated from 79 drillholes totalling 23,109m (average 293m per hole) and was reported at a base case tin grade of 1.0%, which satisfied the requirement for reasonable prospects for economic extraction. However, it excluded the substantial quantity of subsequent drilling completed since September 2021 in Phases 4 and 5 of Alphamin's exploration campaign, which yielded similarly positive results (see below) with characteristic high-grade visual cassiterite in many of the drillholes. Over 40 drillholes and over 10,000m were subsequently drilled beyond the limits of the maiden mineral resource in Phase 3 of Alphamin's campaign and further updates will be released throughout the year as the drilling phases progress and assays are received. Compared with the original maiden resource however, which was delineated from 79 drill holes (at a rate of c 35kt resource tonnage per hole), the subsequent update on 29 March (of 1.48Mt) was delineated from a further 21 additional holes (at a rate of c 70kt per hole). Pro rata therefore, the remaining 26 holes for which assays have yet to be received could add a further 1.8Mt to resources at Mpama South when Alphamin's next update is released. Either way however, it is notable that, in terms of tonnage, the resource at Mpama South is now comparable to that at Mpama North and it therefore might be supposed would support a mine life of comparable duration.

According to the International Tin Association's Tin Industry Review 2020, Mpama South's maiden resource (prior to its upgrade) ranked it as the second highest grade publicly reported CRIRSCO tin mineral resource globally and one of the largest in terms of contained tin.

In-situ valuation considerations

Alphamin's resource multiple immediately prior to its Mpama South maiden resource announcement was US\$5,573 per tonne of attributable in-situ tin. On this basis, the value of Mpama South to Alphamin would be US\$494.6m (or 38.9 US cents per share).

However, US\$5,573/t as an in-situ resource (based on Mpama North) is likely to over-state the value of Mpama South's resources as it is a post-investment valuation. In this case, we calculate from Alphamin's balance sheet that the company was required to make a (fully consolidated) investment of US\$1,093 per tonne of in-situ resource (including exploration) in order to achieve this valuation. Netting this investment off against the original valuation suggests a pre-investment valuation for Mpama North of US\$4,480/t. On this basis, the attributable value of Mpama South to Alphamin would be US\$397.6m (or 31.3 US cents per share). This may be seen within the context of the evolution of valuation of Mpama North's resources as the mine transitioned into production in H219:

Exhibit 6: Mpama North resource valuation evolution, by year

Year end	2019	2020	2021
EV per attributable resource tonne (US\$)	1,051	2,188	5,573
Balance sheet value of investment required to achieve valuation (US\$/t)	1,166	1,097	1,093
Implied pre-investment valuation of resources (US\$/t)	(115)	1,092	4,480
Implied valuation of Mpama South at pre-investment multiple shown (US\$m)	(10.2)	96.9	397.6
Calculated discovery cost per resource tonne (US\$/t)	10.47	13.83	61.41

Source: Edison Investment Research. Note: EV denotes Alphamin's enterprise value.

By this measure, Mpama North's resources were of relatively little pre-investment value to the company before they were put into production (in 2019). That is to say, they were worth approximately what the company had invested historically to both find them and develop them. This may also be seen from the company's share price, which traded around net asset value prior to FY20. However, this value subsequently increased very sharply – to US\$5,573/t – as those same resources were brought to profitable account. This US\$5,573/t value may also therefore be interpreted within the context of the selling price of Alphamin's tin (of US\$30,629/t in FY21) and its all-in sustaining cost of sales of US\$14,173/t in FY21. In the meantime, in Mpama South's favour is the fact that Alphamin's management has already proved that it is capable of building a mine and successfully bringing it into production in North Kivu – thereby lowering risk.

In the immediate aftermath of its Mpama South maiden resource announcement on 7 March, Alphamin's resource multiple fell from US\$5,573/t to US\$4,191/t. It remained at approximately this level until its resource update on 29 March. All other things being equal however (and with no pro rata adjustment in its share price), in the wake of its 29 March update, at Alphamin's current price and forex rates, it will have fallen to US\$3,947/t (or 9.2% of the prevailing price of tin of Alphamin's gross margin of 60.8% in FY21).

Readers should note that Alphamin's calculated discovery cost of US\$61.41/t in FY21 probably overstates the cost for Mpama North resources in that Mpama North resources only would have been delineated at that point, but some of the costs associated with Mpama South would also have been recognised on Alphamin's balance sheet by that time as well. This could be indicative of the fact that, tonne for tonne (of contained tin), Mpama South's resources are more expensive to discover than Mpama North's. Either way however, it should be noted that the cost of resource discovery and delineation is negligible within the context both of the overall development of the deposit and its potential value once put into profitable production.

Preliminary economic assessment (PEA)

At the same time as it announced its maiden resource, Alphamin also announced the results of a PEA of Mpama South. The PEA encompassed a number of mining, metallurgical, environmental and regulatory studies, which together demonstrated the potential to expand production at Bisie by leveraging the infrastructure at Mpama North (eg power, water, site access, underground infrastructure and personnel) to build a second mine and dedicated second lookalike processing plant and mine portal at Mpama South. The main findings of the PEA were as follows:

Exhibit 7: Mpama South PEA outcomes

Item	Value
Total run-of-mine ore processed	2,068kt
Average annual run-of-mine ore mined and processed	468kt
Average annualised run-of-mine grade	2.21%
Processing recovery	70.0%
Average annualised contained tin produced	7,232t
Average annualised AISC per tonne tin sold*	US\$15,188/t
Average annualised EBITDA*	US\$187.31m
Development capital	US\$115.97m
Construction timeline	20 months

Source: Alphamin Resources. Note: *At US\$40,000/t tin price; 100% basis.

The PEA is necessarily preliminary in nature. It included, for example, a portion of the inferred mineral resource that ordinarily would be regarded as too speculative geologically to be considered mineral reserves. In this case however – and in the light of the resource upgrade on 29 March and ongoing drilling – we believe that it might very well prove too conservative and that ultimate resources at Mpama South may well be capable of supporting a mine life in excess of seven years. On this basis, an analysis of Mpama South's (implied) reserve conversion rate relative to that of Mpama North is as follows:

Exhibit 8: Mpama South reserve conversion analysis (cf Mpama North)

Category	Resources			Category	Reserves			Conversion (%)		
	Tonnage (Mt)	Grade (% Sn)	Contained tin (kt)		Tonnage (Mt)	Grade (% Sn)	Contained tin (kt)	Tonnes	Grade	Contained tin
Mpama North										
Measured	0.33	4.75	15.60	Proven	0.05	3.77	1.89	15.2	79.4	12.1
Indicated	3.99	4.59	183.40	Probable	3.28	4.01	131.49	82.2	87.4	71.7
Inferred	0.48	4.57	21.80	Possible*				0.0	0.0	0.0
Total	4.80	4.60	220.80	Total	3.33	4.01	133.38	69.4	87.1	60.4
Mpama South										
Measured	0.00	0.00	0.00	Proven	0.00	0.00	0.00	N/A	N/A	N/A
Indicated	0.85	2.55	21.68	Probable	0.85	2.55	21.68	100.0	100.0	100.0
Inferred	3.42	2.45	83.79	Possible*	2.36	2.09	49.22	68.9	85.2	58.7
Total	4.27	2.47	105.47	Total	3.21	2.21	70.90	75.1	89.5	67.2

Source: Edison Investment Research, Alphamin Resources. Note: *Archaic.

Readers should note that the 'possible' category of reserves no longer exists and has been resurrected in Exhibit 9 merely as an instrument for demonstrating the required conversion of Mpama South's inferred resources into reserves in order to render the mine schedule assumed by Edison achievable. In this case, it may be seen that while the required overall reserves:resources conversion factor for Mpama South is comparable to that for Mpama North, 68.9% of the resource tonnes and 58.7% of the contained tin in the inferred category of Mpama South's resources will also need to be upgraded (probably first into the indicated category of resources and then into the probable category of reserves) in order to allow the execution of the mine schedule according to Edison's assumptions. With this caveat, it is possible to construct a financial model for the project and to derive a valuation for it.

For these purposes, and given the company's decision to start developing the project, we have assumed that the period of construction will run for 20 months, and that the mine will then enter production late in FY23 or early in FY24, which is in line with company's guidance. All other parameters are otherwise adjusted to reflect the tin price of US\$42,793/t used elsewhere in this report, on which basis it is possible to estimate the income statement relating to Mpama South alone for Alphamin from the start of commercial production in FY24 as follows:

Exhibit 9: Forecast life of mine Mpama South income statement

	2024	2025	2026	2027	2028	2029	2030
Revenue (US\$)	258,163,659	302,051,481	302,051,481	302,051,481	302,051,481	302,051,481	302,051,481
Cash costs (US\$)	78,513,559	91,860,864	91,860,864	91,860,864	91,860,864	91,860,864	91,860,864
Royalty (US\$)	13,682,674	16,008,728	16,008,728	16,008,728	16,008,728	16,008,728	16,008,728
Gross profit (US\$)	165,967,426	194,181,888	194,181,888	194,181,888	194,181,888	194,181,888	194,181,888
Depreciation (US\$)	15,909,223	19,000,001	19,529,384	20,191,112	21,073,416	22,396,872	25,043,784
Operating profit (US\$)	150,058,203	175,181,887	174,652,505	173,990,777	173,108,473	171,785,017	169,138,105
Other (US\$)							
EBIT (US\$)	150,058,203	175,181,887	174,652,505	173,990,777	173,108,473	171,785,017	169,138,105
Interest income (US\$)							
Interest expense (US\$)							
Net interest (US\$)	0	0	0	0	0	0	0
PBT (US\$)	150,058,203	175,181,887	174,652,505	173,990,777	173,108,473	171,785,017	169,138,105
Tax (US\$)	45,017,461	52,554,566	52,395,751	52,197,233	51,932,542	51,535,505	50,741,431
Tax rate (%)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
PAT (US\$)	105,040,742	122,627,321	122,256,753	121,793,544	121,175,931	120,249,512	118,396,673
Minority (US\$)	16,659,462	19,448,693	19,389,921	19,316,456	19,218,503	19,071,573	18,777,712
Minority (%)	15.86	15.86	15.86	15.86	15.86	15.86	15.86
Profit attributable to shareholders (US\$)	88,381,280	103,178,628	102,866,832	102,477,088	101,957,428	101,177,939	99,618,961
Dividend (US\$)	0	111,626,903	117,071,744	117,238,777	117,461,488	117,795,555	118,463,689
Retained earnings (US\$)	88,381,280	-8,448,275	-14,204,912	-14,761,689	-15,504,060	-16,617,616	-18,844,728
EPS (US\$ per Alphamin share)	0.0695	0.0811	0.0809	0.0806	0.0802	0.0796	0.0783
Diluted EPS (US\$ per Alphamin share)	0.0685	0.0800	0.0798	0.0795	0.0791	0.0785	0.0773
DPS (US\$ per Alphamin share)	0.0000	0.0878	0.0920	0.0922	0.0924	0.0926	0.0931

Source: Edison Investment Research

While not shown here, predicted balance sheets and cash flow statements for the Mpama South project have also been calculated, albeit with the caveat that, at the current time, no consideration has been paid to fluctuations in working capital, which is a refinement that will be made at a later stage.

On the basis of the above income statement, it is possible to calculate the following valuations for Mpama South to Alphamin (ie after a 15.86% minority has been accounted for) at Edison's customary 10% discount rate:

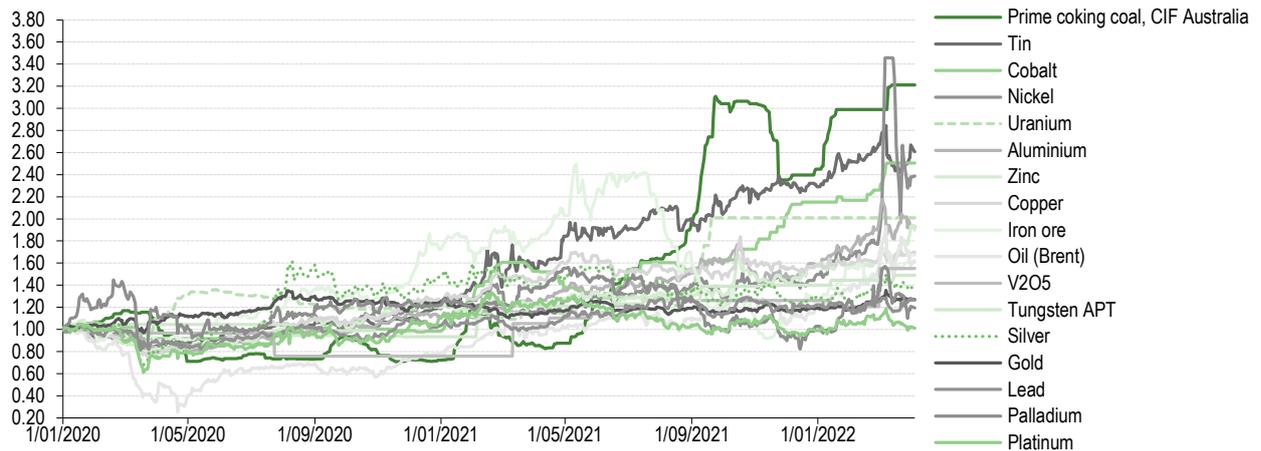
- A discounted dividend valuation of US\$380.6m, or US\$0.299/share or US\$3,609 per tonne of in-situ Mpama South contained tin.
- A discounted cash-flow valuation of US\$363.3m, or US\$0.286/share or US\$3,445 per tonne of in-situ Mpama South contained tin.

For the purposes of the 'per tonne' valuations above, Edison has applied the Mpama South contained tin resource on a 100% (rather than attributable) basis. While this treatment appears irregular, it provides investors with an indication of how much extra value additional tonnes delineated at Mpama South in the future may be worth to Alphamin. Either way, however, it is notable the extent to which the 'per tonne' valuations above reconcile with the in-situ valuations calculated previously.

Consolidated valuation and tin price sensitivity

Considering Mpama North and Mpama South together, our consolidated valuation of Alphamin is C\$1.5814/share and this valuation changes by approximately $\pm 13.4\%$ for every $\pm 10\%$ that the tin price moves from its current level of US\$42,793/t. Alternatively, we calculate that Alphamin's share price of C\$1.15 discounts a long-term real tin price of US\$34,055/t, which is 20.4% below the current (three-month) price of tin.

Exhibit 10: Tin price (US\$/tonne) cf other metals, January 2020 to present



Source: Refinitiv (6 April 2022). Note: Uranium price data only available until September 2021.

As may be seen from the above graph, tin is the second best performing of 16 metals and minerals since 1 January 2020 (after prime Australian coking coal). Although it cannot be seen in the above graph, it is also the best performing of the same 16 metals and minerals since 1 January 2002.

Exploration success

Drilling at Bisie to date has achieved two important goals:

- To narrow the gap between Mpama South and the currently operating Mpama North mine and deposit; in this respect, Mpama South drilling intercepts are now within 40m of the Mpama North orebody (cf 750m previously) at a similar mining level and the indications are that Mpama South and Mpama North were once one single zone of high-grade tin mineralisation that was subsequently displaced by a late-stage fault.
- To demonstrate high-grade assay results at Mpama South.

Alphamin's success in achieving these two goals creates the potential for synergies between the two deposits and expedited underground access to Mpama South, thereby connecting it to the already existing underground development, infrastructure and services of the Mpama North mine.

Mpama South drilling

Exploration at Mpama South throughout 2021 to the present has encompassed c 33,556m of drilling over 126 drillholes (average 266m per hole). Data from 100 holes have contributed to its updated resource. Data from 26 remain outstanding as at the time of writing with exploration ongoing. Selected significant intercepts encountered at Mpama South to date include:

- 22.7m at a grade of 3.12% Sn from 391.6m, including 7.7m at a grade of 4.73% Sn and 6.1m at a grade of 4.94% Sn in hole BGH095.
- 16.0m at a grade of 2.89% Sn from 297.7m in hole BGH088.

- 12.5m at a grade of 2.48% Sn from 371.9m in hole BGH094.
- 21.2m at a grade of 1.34% Sn from 387.4m, including 6.1m at a grade of 3.18% Sn from 402.7m in hole BGH101.
- 15.6m at a grade of 5.00% Sn from 290.2m down hole depth, including 10.0m at a grade of 6.1% from 291.1m in hole BGH079.
- 9.0m at a grade of 5.63% Sn from 316.9m in hole BGH079.
- 4.8m at a grade of 4.68% Sn from 335.3m and 11.4m at a grade of 2.23% Sn from 318.8m in hole BGH077.
- 26.0m at a grade of 2.71% Sn from 280.3m in hole BGH084.
- 6.1m at a grade of 2.75% Sn from 275.35m in hole BGH086.
- 14.4m at a grade of 3.2% Sn from 115.4m down hole depth in hole BGH075.
- 18.4m at a grade of 2.2% Sn from 278.9m (including 5.0m at a grade of 2.9% Sn and 2.8m at a grade of 7.2% Sn) in hole BGH074.
- 2.6m at a grade of 8.5% Sn from 276.0m in hole BGH066.
- 4.7m at a grade of 3.2% Sn from 295.8m in hole BGH067.
- 5.4m at a grade of 3.0% Sn from 331.0m in hole BGH070.
- 5.1m at a grade of 2.7% Sn from 274.6m and 4.4m at a grade of 3.6% Sn from 290.4m in hole BGH072.

These grades may be directly compared with Alphamin's Mpama South's updated resource grade of 2.47% Sn and Mpama North's reserve grade of 4.01% Sn and its resource grade of 4.60% Sn (itself approximately the equivalent of a gold grade of 1oz/t in terms of the value of contained mineralisation at currently prevailing gold and tin prices). Moreover, visual cassiterite intercepts at Mpama South are now within 40m of the Mpama North mine. A phase 4 drilling campaign at Mpama South remains underway.

Mpama North drilling

Alphamin commenced extensional drilling of the Mpama North orebody in July 2021. By the end of October, approximately 6,167m of drilling had been completed over 12 drillholes (average 514m per hole) and had revealed the existence of a north-east to south-west cross-cutting fault causing a downward and westward offset of the deeper mineralisation. By refocusing drilling closer to the final drill line relative to previous exploration, holes drilled 75m further along strike succeeded in intersecting significant zones of cassiterite mineralisation. Based on its metal content factor (grade x width), for example, drillhole MND019 appears to be one of the two most significant intercept encountered on the property to date:

- 14.4m at a grade of 21.75% Sn from 432.2m, including 11.0m at a grade of 27.81% Sn

In this case, it is approximately matched by drillhole MND011, which earlier recorded:

- 19.6m at a grade for 17.16% Sn, including 14.5m at a grade of 23.0% Sn

Both visual and assayed thick high-grade tin intercepts at the Deeps target provide a significant opportunity for Alphamin. In particular, the process plant has a targeted feed grade of c 4.0% Sn. Hence, the very high-grade mineralisation intercepted in the Deeps area will need to be blended with substantial quantities of lower grade material – holding out the possibility of adding production from previously unmined lower grade blocks to the mining schedule and potentially adding low-grade areas to the resource with the effect, ultimately, of maintaining a steady feed grade at Mpama North and of extending the life of the mine. In addition, five new holes west of the identified fault have also intersected visual cassiterite providing strike extension potential on the western block in the shallower Oso target. Drilling at the Deeps and Oso will continue to refine Alphamin's

understanding of these mineralised areas with the objective of adding significantly to life-of-mine reserves and resources in due course. In addition, drilling will commence on the down dip eastern target of Mpama North in May 2022, which still remains open and untested.

Regional exploration

The Bisie Ridge is 13km long and hosts both the Mpama North and Mpama South deposits. The full length of the ridge was the subject of a follow up geochemical investigation in 2021 confirming tin and other base metal anomalies over the majority of its length. However, only a fraction (c 20%) of the ridge has been intensively drill tested to date. Six high priority drill areas have therefore been identified, with drilling at the first – Marouge – commencing in January 2022.

Financials

Between Q419 and Q421, Alphamin paid down financial net debt (ie excluding leases and unamortised fees) by US\$161.0m, from US\$88.6m at end-December 2019 to a net cash position of US\$72.4m at end-December 2021 (equivalent to 5.6 US cents per share). As such, post year end, the company announced a C\$0.03/share dividend (aggregate US\$29.7m – Edison calculation), which was paid to shareholders on 11 February, as part of its newly devised strategy to balance capital allocations between ongoing exploration drilling, the fast-track development of the Mpama South deposit and shareholder distributions. Net cash was then reported to have improved by a further US\$61m to US\$129.5m in Q122 (post dividend).

Mpama South financing

It is not Edison's practice to forecast net debt or net cash positions on a quarterly basis. However, we note that (excluding leases and unamortised fees) Alphamin increased its net cash position by US\$67.9m in Q421 to US\$72.4m and then by a further US\$61m to US\$129.5m in Q122, which is more than sufficient to fully fund Mpama South (which is in line with the company's announcement to self-fund the development of the project) and pay an increased dividend for the year. Indeed, according to our calculations, an increased dividend of C\$0.06/share for the year (Edison assumption) would only become compromised in the event that the tin price were to fall below US\$10,000/t in the near future or if the long-term price of tin were to fall to below US\$11,750/t – both of which are, to all intents and purposes, impossible.

Exhibit 11: Financial summary

Accounts: IFRS, Yr end: December, USD: Thousands	2018A	2019A	2020A	2021A	2022E	2023E
Income statement						
Total revenues	0	27,221	187,445	352,883	519,609	541,747
Cost of sales	0	(7,915)	(119,554)	(138,217)	(148,659)	(151,281)
Gross profit	0	19,306	67,892	214,666	370,950	390,466
SG&A (expenses)	(9,440)	(14,526)	(17,238)	(19,754)	(20,775)	(20,775)
Exceptionals and adjustments	Exceptionals	0	(3,673)	(7,649)	0	0
Depreciation and amortisation	(20)	(7,927)	(25,471)	(26,632)	(33,085)	(41,560)
Reported EBIT	(9,460)	(3,147)	25,182	168,279	317,089	328,131
Finance income/(expense)	3	(6,330)	(15,614)	(8,358)	(2,000)	0
Other income/(expense)	7	(4)	(1,518)	(874)	0	0
Exceptionals and adjustments	Exceptionals	6,272	6,850	(8,776)	(26,922)	0
Reported PBT	(3,178)	(2,632)	(725)	132,126	315,089	328,131
Income tax expense (includes exceptionals)	0	7,755	(7,141)	(68,558)	(135,488)	(98,439)
Reported net income	(3,178)	5,123	(7,866)	63,568	179,601	229,691
Basic average number of shares, m	733	845	1,066	1,195	1,271	1,272
Basic EPS (US\$/sh)	(0.00)	0.01	(0.01)	0.04	0.12	0.15
Adjusted EBITDA	(9,440)	8,453	58,302	194,912	350,175	369,691
Adjusted EBIT	(9,460)	526	32,831	168,279	317,089	328,131
Adjusted PBT	(9,450)	(5,809)	15,699	159,048	315,089	328,131
Adjusted EPS (C\$/sh)	(0.00)	0.01	(0.01)	0.05	0.15	0.19
Adjusted diluted EPS (US\$/sh)	(0.00)	0.00	(0.01)	0.04	0.12	0.15
Balance sheet						
Property, plant and equipment	230,626	255,125	239,103	227,720	243,973	287,161
Other non-current assets	2,467	10,632	15,882	27,088	47,088	49,798
Total non-current assets	233,093	265,757	254,985	254,808	291,061	336,958
Cash and equivalents	17,105	5,941	6,559	90,640	228,892	269,369
Inventories	3,235	27,755	21,866	20,674	28,472	29,685
Trade and other receivables	0	1,486	7,601	47,626	51,961	54,175
Other current assets	3,738	17,633	6,710	7,402	7,402	7,402
Total current assets	24,078	52,815	42,736	166,342	316,726	360,630
Non-current loans and borrowings	80,896	78,229	34,821	0	0	0
Other non-current liabilities	6,699	9,641	8,872	31,258	119,746	79,522
Total non-current liabilities	87,595	87,870	43,693	31,258	119,746	79,522
Trade and other payables	7,030	23,487	17,037	55,381	59,056	41,447
Current loans and borrowings	0	16,339	25,810	17,035	0	0
Other current liabilities	5,711	16,290	13,250	6,742	6,742	6,742
Total current liabilities	12,742	56,116	56,098	79,158	65,798	48,189
Equity attributable to company	131,914	145,215	171,735	274,727	368,901	493,121
Non-controlling interest	24,921	29,371	26,196	36,007	53,342	76,756
Cashflow statement						
Profit before tax	(3,178)	(2,632)	(725)	132,126	315,089	328,131
Net finance expenses	0	5,456	15,616	8,359	0	0
Depreciation and amortisation	20	7,927	26,504	26,634	33,085	41,560
Share based payments	300	403	471	681	0	0
Other adjustments	(6,272)	(6,851)	8,842	26,985	0	0
Movements in working capital	3,942	(6,710)	(20,281)	(43,636)	(8,458)	(21,036)
Interest paid / received	0	(3,092)	(11,378)	(6,758)	0	0
Income taxes paid	0	0	(843)	(2,196)	(47,000)	(138,663)
Cash from operations (CFO)	(5,188)	(5,498)	18,205	142,194	292,717	209,991
Capex	(116,094)	(22,720)	(7,448)	(22,516)	(69,338)	(87,457)
Acquisitions & disposals net	0	0	0	0	0	0
Other investing activities	151	(46)	(96)	(3,014)	0	0
Cash used in investing activities (CFIA)	(115,943)	(22,766)	(7,544)	(25,531)	(69,338)	(87,457)
Net proceeds from issue of shares	55,235	11,936	10,010	19,852	2,209	0
Movements in debt	69,448	0	(18,735)	(45,198)	(17,035)	0
Dividends paid	0	0	0	(5,552)	(70,301)	(82,057)
Other financing activities	6,317	5,165	(1,319)	(1,685)	0	0
Cash from financing activities (CFF)	131,000	17,100	(10,044)	(32,582)	(85,127)	(82,057)
Increase/(decrease) in cash and equivalents	9,869	(11,164)	617	84,081	138,252	40,477
Cash and equivalents at end of period	17,105	5,941	6,559	90,640	228,892	269,369
Net (debt) cash	(63,791)	(88,627)	(54,073)	73,605	228,892	269,369
Movement in net (debt) cash over period	(63,791)	(24,836)	34,554	127,678	155,287	40,477

Source: company sources, Edison Investment Research

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