

Central Asia Metals plc

Dividend-paying, low cost copper producer

CAML recorded a profit in its first year of operation, 2012, and has remained profitable ever since. It has paid a dividend each year from cash earnings, something of a novelty for a junior mining company and has returned to shareholders all the funds it raised (US\$60 million) in its 2010 IPO.

CAML's main asset is its Kounrad copper dump treatment operation, in Kazakhstan, which produces copper through an SX-EW plant with some of the lowest costs in the industry.

In 2015, Kounrad completed an expansion of its plant that has increased copper production capacity by 50% from the original 10 kt/y. The company funded the expansion internally. Recent approval to work dumps in the western part of the Kounrad property will allow operations to continue through to 2034.

The company is currently debt-free and had cash of US\$42 million on its balance sheet at the end of 2015.

Year	Cu Prod (kt)	Cash Costs (US\$/lb)	Rev. (U\$m)	EBITDA (U\$m)	EBITDA margin (%)	EPS (USc)
2015f	12.1	0.68	63.6	32.6	51	19.5
2016f	13.7	0.68	65.3	32.1	49	14.6
2017f	14.0	0.74	73.9	38.0	51	16.2

Source: Marten & Co

The company has a 75% interest in Copper Bay Ltd, which is conducting a feasibility study on a beach copper tailings retreatment project, in Chile.

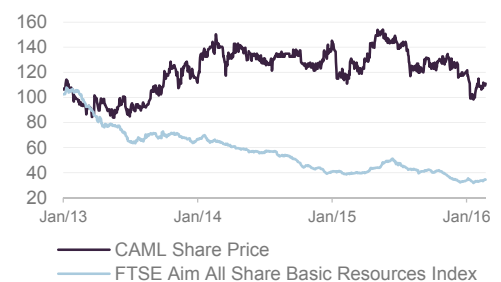
Valuation summary

Our sum-of-the-parts NAV valuation of CAML is 225 pence per share, implying that the company is currently trading at 61% of NAV.

Ticker	CAML
Base Currency	GBP
Price	140.0
Ave daily trading Volume	133,000
1 year High	194.0
1 year low	124.0
1 month perf (%)	9.8
3 month perf (%)	-15.2
1 year perf (%)	-14.6

Perf. vs Aim Basic Res. rebased

Time period: Jan 2013 to Feb 2016



Source: Bloomberg

Net cash (US\$M)	42.0
NAV ^{8%} /share	225p
P/NAV	60%
Market Cap (£M)	156.4
Shares outstanding (M)	111.7

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Further information on CAML can be found at the company's website: www.centralasiametals.com

Introduction

Central Asia Metals plc's (CAML) primary focus is a low cost, copper dump treatment operation associated with the Kounrad copper mine, in Kazakhstan.

The company also holds a 75% interest in Copper Bay Ltd, a private company that is evaluating a copper tailings treatment project, in Chile.

CAML was incorporated in the UK in 2005 and in 2007 successfully tendered for a 60% interest in the Subsoil Use Contract (SUC) at Kounrad, which allowed it to explore and process the mineralised dumps.

In 2010, the company completed an IPO on AIM, raising gross proceeds of US\$60 million (net proceeds of £35 million).

CAML's corporate headquarters are in London, with operational management in Balkhash, Kazakhstan.

Investment case

Low cost production

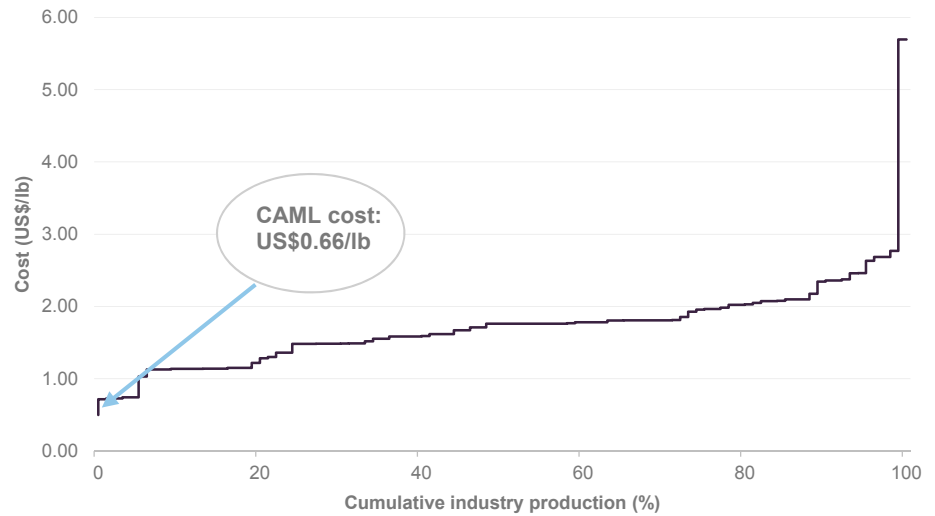
CAML recorded a profit in its first year of operation, 2012, and has remained profitable ever since.

The key to this profitability is the great advantage that CAML has at its Kounrad operation, in that it treats, through a solvent extraction-electrowinning (SX-EW) process, copper-bearing material that has already been mined and dumped in heaps by a third party. As there is no mining involved, unit costs of production are very low.

With 2014 cash costs of just US\$0.66/lb (using the Brook Hunt standard, see Appendix 1 for explanation), the company is one of the lowest copper producers in the industry. Figure 1 shows, on a cumulative basis, how the cost of producing one pound of copper varies throughout the industry, with CAML firmly located at the lower end of the cost curve.

Cash costs in the lowest 1% of the industry.

Figure 1: Copper industry cost curve 2014 (C1 US\$/lb*)



Source: Thomson Reuters GFMS/Marten & Co * C1 as per Brook Hunt standard

Cost control measures have been helped by a significant depreciation of the Kazakh Tenge over the past year as 50% of operational costs are denominated in Tenge (while revenues are in US dollars).

We believe that because of its low cost of production, the company will remain profitable throughout the commodity downcycle, even if prices remain at the currently low level of less than US\$4,500/t (US\$2.04/lb).

Historically a consistent dividend payer with high yield

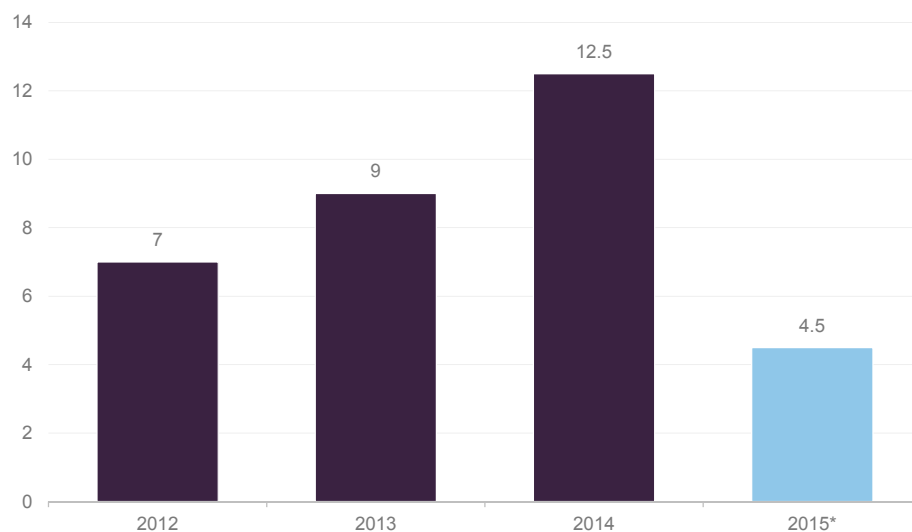
The company has a policy of paying an annual dividend of a minimum of 20% of revenue from Kounrad (subject to the company’s cash reserves providing a dividend cover of three times or greater).

Since commencing operations at Kounrad, the company has paid dividends each year at a rate substantially higher than the minimum, leading to an impressive stream of dividends (as shown in Figure 2); something of a novelty for a junior mining company.

Furthermore, and equally noteworthy, with the interim 2015 dividend, CAML has returned to shareholders all the funds it raised (US\$60 million) in the 2010 IPO.

However, we caution that with lower metal prices in 2015 and into 2016, we do not expect the company to be able to maintain such a level of dividend payments.

After paying a dividend each year, CAML has paid back all money raised at IPO (US\$60 million).

Figure 2: Dividends paid (pence per share)

Source: Central Asia Metals' reports. * Interim

Technical success

In 2012, CAML brought its SX-EW project into production substantially under budget. In each succeeding year, management has successfully increased copper production, notwithstanding the complexities of managing flow rates and solution grades in what are severe winter climatic conditions (temperatures down to -40°C).

In 2015, Kounrad completed an increase in SX-EW plant production capacity by 50%, from the original capacity of 10,000 tonnes per year (10 kt/y).

There is a related project to construct infrastructure needed to access dumps to the west of the mine, since resources in the original, eastern dumps are diminishing. This infrastructure, including pipelines, will supply the feedstock for the additional SX-EW capacity and is due to be commissioned mid-2017.

Despite a short disruption to operations in 2015 – which was due to one piece of equipment failing, and led to a production shortfall of around 1kt – the company produced a record 12.1kt of copper in 2015.

Profitable and financially disciplined

The company has reported a profit since commencement of operations, although record earnings per share (EPS) in 2014 benefitted from a one-off, extraordinary item (the acquisition of the remaining 40% of Kounrad, which led to a re-measurement to fair value of the existing interests on acquisition of control and a gain of US\$33 million in the income statement).

We expect EPS in 2015 to decline to US\$0.20, with lower revenue, owing to a fall in the copper price, and despite a foreign exchange gain of US\$8 million as a result of the depreciation of the Tenge against the US dollar during the year.

We see EPS recovering thereafter but remaining constrained while copper prices are relatively low. With expected higher prices in 2018 we see EPS rising to US\$0.24 and then with the advent of production at Copper Bay in 2019, EPS rises further to US\$0.30.

50% expansion in copper capacity funded from cashflow.

CAML's financial discipline is evidenced by the fact that it has funded the 50% expansion of the SX-EW plant capacity using internally-generated cashflow without any recourse to the equity or capital markets and all the time continuing to pay a dividend. The company managed to complete the first phase of the expansion some US\$2.5 million under the budget estimate of US\$15.5 million.

The company is currently debt-free, holding cash of US\$42 million on the balance sheet.

Strategic investment in Copper Bay adds value

The investment that CAML has made in Copper Bay, to a level of 75% giving it control, makes good business sense on a number of levels.

Firstly, having successfully developed and operated a dump treatment plant, CAML can now confidently export its technical expertise and pursue similar projects, as well as primary copper projects, in other geographic areas to grow the company.

Secondly, we believe that the Copper Bay acquisition makes good investment sense as we estimate that it is worth 7 pence per share (equity interest, after tax with 50% leverage) to the company's NAV and it provides an opportunity to enhance the earnings of the company.

We have considered only one of the three mineralised zones that exist at Copper Bay in our evaluation and therefore recognise that there is potential to extend the life of the operation.

Thirdly, and perhaps most importantly, the Copper Bay investment is strategically sound as it secures the company a foothold in Chile, the world's largest copper producer.

The Copper Bay project stands to be a social and environmental winner as well. Not only will the project clean up an on-the-ground environmental hazard in the form of a contaminated beach, but it will also remove a dust problem, which afflicts residents of the town of Chafaral.

Copper Bay investment adds value and provides a foothold in Chile...

...as well as cleaning up an environmental hazard.

Valuation

We value CAML on a sum-of-the-parts basis taking into account the NPV of the Kounrad operation and that of the potential tailings retreatment project at Copper Bay, based on its recent PFS.

Figure 3: Valuation model for CAML

	US\$M	£M	Pence per share
Kounrad NPV ^{8%*}	329	215	193
Copper Bay (75%) NPV ^{10%*}	12	8	7
Investments	0	0	0
Cash	42	28	25
NAV	383	250	225

Source: Marten & Co * net present value discounted at 8% or 10%

NAV of 225 pence per share.

Our NPV for Kounrad assumes that the company successfully brings the Western dumps into operation in 2018 as activities at the Eastern dumps wind down.

We model copper production increasing in 2016, 2017 and 2018 before settling back to a steady state rate of just under 13 kt/y until the licence expires in 2034.

We use a copper price of US\$5,000/t (US\$2.04/lb) in 2016 and US\$5,500/t (US\$2.50/lb) in 2017, and thereafter a long term price of US\$6,600/t (US\$3.00/lb).

At Copper Bay, we assume that after commencing operations in 2019, the treatment rate ramps up to 5 Mt/y and stays at that rate for seven years before existing resources are exhausted. Average annual copper production is 8.2 kt. We assume that the initial capital investment for the retreatment operation at Copper Bay is US\$88 million, as estimated in a 2015 pre-feasibility study.

We estimate that the NPV^{10%}, after tax of CAML's 75% interest in the project is US\$12 million (7 pence per share). Our valuation assumes that the company raises 50% of its share of the capital needed through project debt and funds the remainder from cashflow.

Copper Bay adds 7 pence per share to valuation.

As CAML is an operating company there is an argument for using a metric such as EV/EBITDA to gain a relative valuation for the company. However, it is very difficult to identify a suitable peer group for comparison. Most copper producers are much larger in market value terms (Antofagasta and First Quantum, for example, in London) and much copper production derives from multi-commodity, diversified miners such as Rio Tinto and Glencore.

There is one TSX-listed copper producer with a similar profile that offers some comparables. Amerigo Resources (TSX:ARG) produces copper and molybdenum concentrates by treating fresh and historic tailings from the El Teniente mine, in Chile.

CAML far outperforms a similar operation in Chile.

Figure 4: Comparison of Central Asia Metals and Amerigo Resources

	CAML	ARG
2014 Cu production (Mlb)	24.6	41.0
Cash cost (US\$/lb)	0.66	2.08
Revenue (US\$M)	76.6	119.6
EBITDA (US\$ million)	47.1	7.2
EBITDA margin (%)	61.5	6.1
EPS (US\$)	0.56	(0.06)
EV (US\$ million)	180.7	67.4
EV/EBITDA	4.5	9.4
Shares outstanding (million)	111.7	173.6
Market cap (US\$ million)	215.5	14.2

Source: Company reports, Bloomberg

As the metrics in the table illustrate, CAML compares very favourably with arguably its closest competitor.

Sensitivity analysis

We have analysed the sensitivity of our NAV estimate for CAML in accordance with changes in the key variables: the price of copper and the discount rate.

Because of its low cost of production, the company should continue to generate free cashflow even at prices 30% below our Base Case price of US\$6,600/t (long term) as shown in our sensitivity analysis in Figure 5.

The company's NAV is relatively insensitive to downside risk in copper prices.

Were spot prices of around US\$4,500/t to remain indefinitely, CAML's NAV would fall to 119 pence per share.

Figure 5: NAV sensitivity analysis (pence per share)

Discount rate	Copper price (US\$/lb)						
	-30%	-20%	-10%	Base	+10%	+20%	+30%
5%	143	189	234	280	325	371	417
8%	117	155	192	229	266	304	341
10%	104	137	170	203	235	268	301
12%	93	122	151	181	210	239	268

Source: Marten & Co Assumptions: US\$1.53/£; shares outstanding 111.7 million

Note that because we have used different discount rates for Kounrad and Copper Bay, our Base Case NAV of 225 pence per share does not appear in the table.

Assets - Kounrad

Location

The Kounrad mine and surrounding dumps are located in the Balkhash area of south-central Kazakhstan, 15 km north of the town of Balkhash and 600 km northwest of the largest city, Almaty. Balkhash is on the northern bank of the Balkhash Lake, which stretches 600 km in an east-west direction.

The region is characterised by a semi-arid climate and typically flat topography, or Steppe.

Ownership

After consolidating ownership in 2014, CAML owns 100% of the project through two wholly-owned subsidiaries - Kounrad Copper Company LLP (KCC), which is the holding company for CAML's 100% interest in the project's SX-EW facility; and Sary Kazna LLP (SK), which is the holding company for CAML's 100% interest in the SUC. The SUC covers 22.5 km² and expires in 2034.

The SUC was operated as a 60:40 joint venture between SK and government organisation, SEC Saryarka (SA) from 2007. The SX-EW plant was built and operated by KCC, a 60:40 joint venture between CAML Kazakhstan BV (CAML BV) and SA, from 2008. Subsequently, SA sold its 40% stake to Kazakh businessman, Kenges Rakishev, via his company SAT & Co (SAT).

CAML obtained 100% ownership in 2014.

CAML completed the consolidation of Kounrad in two parts: the transfer of the 40% interest in KCC from SAT to Mr Rakishev and subsequently to CAML BV, which was completed in October 2013; followed by the transfer of the 40% interest in the SUC to Mr Rakishev and subsequently to SK in May 2014.

CAML appointed Mr Rakishev as a non-executive director in November 2013 following the KCC consolidation. Consideration for the remaining 40% of the Kounrad operation was paid to Mr Rakishev in the form of 21.2 million ordinary CAML shares and £848,470 *in lieu* of dividends once the transfer was complete.

History

The Kounrad open pit copper mine was State operated from 1936 to 1992, and managed by Kazakhmys until 2006. Despite mining both oxide and sulphide material, the operation only treated the sulphide ore, which was amenable to its flotation technology, while discarding and stockpiling the oxide material (in the Eastern dumps) and the below cut-off grade sulphide material to the west of the open pit.

Ore, meanwhile, was transported by rail 18 km to a flotation concentrator and smelter at Balkhash.

The mine struggled over 2006-2007 with depleting grades and was consequently closed in late 2008, although Kazakhmys attempted limited mining again in 2011.

In October 2014, Kazakhmys was restructured with key and growth assets retained in the listed entity and rebranded KAZ Minerals plc. At this time Kounrad was transferred into private firm Cuprum Holdings along with several other mature assets, which were collectively rebranded as Kazakhmys Corporation.

In the 1960s, the Ural Research & Project Institute of Copper Industry (Unipromed Plc) identified the opportunity to process the low grade sulphide and oxidised dumps using SX-EW technology. Unipromed completed pilot plant scale tests over 1969-1970, which led to limited copper production between 1975 and 1992.

A joint venture in 1993 was established to build a commercial SX-EW plant but, having started building in 1995, work was terminated a year later and ownership of the dumps passed back into State hands. Jalyn Mining then tendered successfully for the rights over the Eastern dumps and designed an SX-EW plant but pulled financing of the project in 2005, triggering the cancellation of the SUC and allowing CAML to tender for the licence.

Geology and mineralisation

The Kounrad copper deposit is located within the North Balkhash metallogenic belt, part of the much larger Central Asian Orogenic Belt that extends 7,000 km from west to east and from the Siberian Craton in the north to the Tarim Craton in the south. It is a prolific host of major porphyry copper deposits.

The primary Kounrad deposit is a typical copper porphyry associated with calc-alkaline magmas, formed in a Carboniferous age (327–312 Ma) subduction-related setting.

Kounrad is made up of unconsolidated sediments and granitic bedrock units. Weathering and supergene enrichment have produced a general zonation of mineralisation:

- Oxidised cap: characterised by hematite, limonite, manganese oxyhydroxide, malachite, azurite, cuprite, native copper, and chrysocolla mineralisation
- Leached zone: characterised by moderate oxidation in the upper part and destabilisation of sulphide minerals under acidic conditions in the lower parts
- Supergene blanket: characterised by chalcocite and covellite mineralisation
- Primary sulphide zone: characterised by disseminated and stockwork ore with pyrite, chalcopyrite, enargite and chalcocite mineralisation.

Resources

The dump resources are contained within Eastern and Western waste dumps that have accumulated over some 70 years of open pit mining and processing from the primary Kounrad porphyry.

CAML completed several phases of exploration work between 2007 and 2012 to validate historic resource estimates.

Estimated 230 kt of recoverable copper (2013).

In 2013, consultant Wardell Armstrong International (WAI) estimated total resources (Indicated and Inferred) containing 614 kt of copper, suggesting a potential mine life of well over 20 years from some 230 kt of recoverable copper.

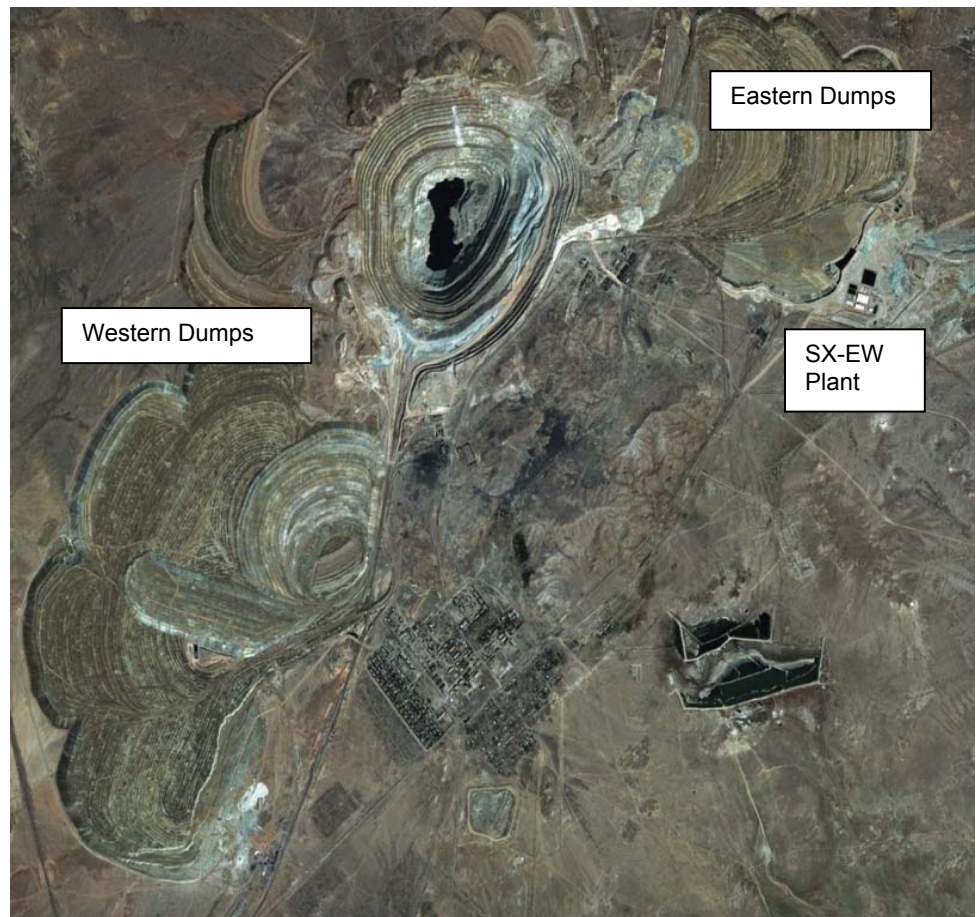
The following table summarises the 2013 resource estimate.

Figure 6: 2013 Resource estimate

	Tonnes (Mt)	Grade (% Cu)	Contained Copper (kt)
Eastern Dumps (oxide)			
Indicated	89.7	0.10	85.8
Inferred	79.6	0.10	81.7
Western Dumps (sulphide)			
Indicated	275.4	0.10	276.2
Inferred	169.4	0.09	160.3
Western Dumps (mixed)			
Indicated	20.9	0.03	6.2
Inferred	12.1	0.03	4.0

Source: Wardell Armstrong International

Note: Although the material in the West was originally classified as low grade sulphide material, exposure to the atmosphere as well as natural chemical and bacterial activity has broken down some of these minerals converting them to acid leaching amenable species. Thus the material in the Western dumps is now more accurately identified as 'mineralised waste' as it is characterised by acid soluble contents in the range 30% to 40%.

Figure 7: Aerial view of the dumps

Source: Central Asia Metals

Feasibility study

CAML completed a technical evaluation of a dump leach project in 2006 before winning the SUC in 2007 as a private company and then forming a joint venture to operate the project.

The company commissioned a pilot scale SX-EW plant near Dump 6 in August 2008, with an initial design output of 200 kg/d of copper. The pilot plant was subsequently expanded to 600 kg/d in May 2009.

In November 2009, CAML commissioned the Beijing General Research Institute of Mining and Metallurgy (BGRIMM) to complete a feasibility study on a 10 kt/y commercial copper SX-EW plant.

The study estimated that it would cost approximately US\$47 million to bring the plant into production and furthermore indicated acceptable returns for CAML. The company therefore stopped pilot plant production at the end of 2010 in preparation for its IPO and the ramp up to commercial operations.

SX-EW plant constructed well below budget.

Processing

CAML began constructing a 10 kt/y SX-EW plant, plus the infrastructure required to irrigate the dumps and transport pregnant solution to the plant, in 2011, and completed it in April 2012, at a cost of US\$39 million, some US\$8 million under budget.

The Kounrad operation is essentially a processing operation with no mining necessary. The existing dumps are leached *in-situ* and the resultant copper-containing solution is treated through an SX-EW process, which is an established route for dump leach projects around the world.

Details of the processes and of how CAML manages to control flow rates and pregnant leach solution (PLS) grade to achieve its target copper output, can be found in Appendix 2.

Off-take agreement with Traxys ensures sales.

Product sales

CAML has an off-take agreement with international commercial services group, Traxys, which is in force until the end of 2018, for the bulk (90%) of the copper cathodes produced. Pricing, on an ex-plant basis, is linked to the LME copper price, less set selling costs.

CAML also makes minor sales to local customers.

Expansion

The company is currently undertaking in a two-phase expansion programme to increase copper production capacity by 50%. The total capital cost for the expansion is estimated at US\$35 million, all of which is being funded internally from cashflow.

Stage 1, which was completed and commissioned in May 2015, entailed the expansion of the SX-EW plant to a PLS throughput capacity of 1,200 m³/hr at a capital cost of US\$13.0 million (US\$2.5 million under budget).

Part of the expansion project involved the addition of two new coal fired boiler units at a budgeted cost of US\$2.1 million (upgrading the heating system from 8.4 MW to 14 MW), which were commissioned at the end of September 2014. The additional heating capability allowed a higher volume of solution to be processed during the 2014/15 winter, resulting in an increase in 2014 production to 11.1 kt.

Stage 1 expansion completed taking PLS capacity to 1,200 m³/hr.

The Stage 2 expansion, which is planned to be operational by mid-2017, involves constructing the infrastructure to exploit material from the Western dumps, located some 12 km from the plant, to replace the diminishing resources in the Eastern dumps.

The plan will require the installation of two 12 km pipelines to allow for the PLS and raffinate solution flows to be cross-transferred to the expanded SX-EW plant. In addition, the exploitation of the Western dumps will require the construction of a three-unit, coal-fired boiler house for solution heating, a pond collection system and approximately 3 km of collector trenches.

US\$20 million capex for Western dumps will be funded from cashflow.

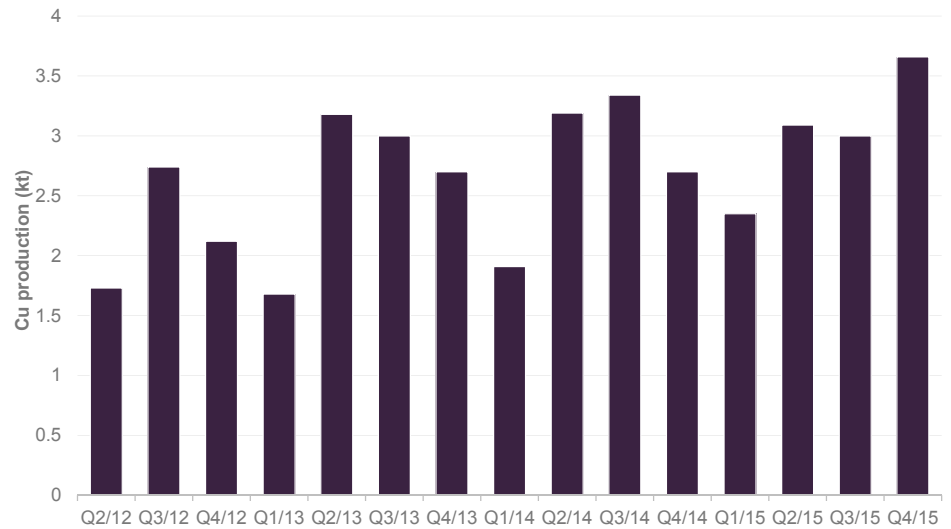
The capital cost of the Stage 2 expansion is currently estimated at US\$19.5 million and will be largely committed during 2016 and sourced from cashflow.

The company received a mining permit from the State authorities in late 2015 and will now procure materials and equipment and complete final detailed engineering plans with an expected commissioning date of Q2 17.

Production profile

Figure 8 shows the quarterly production history demonstrating the seasonal nature of production.

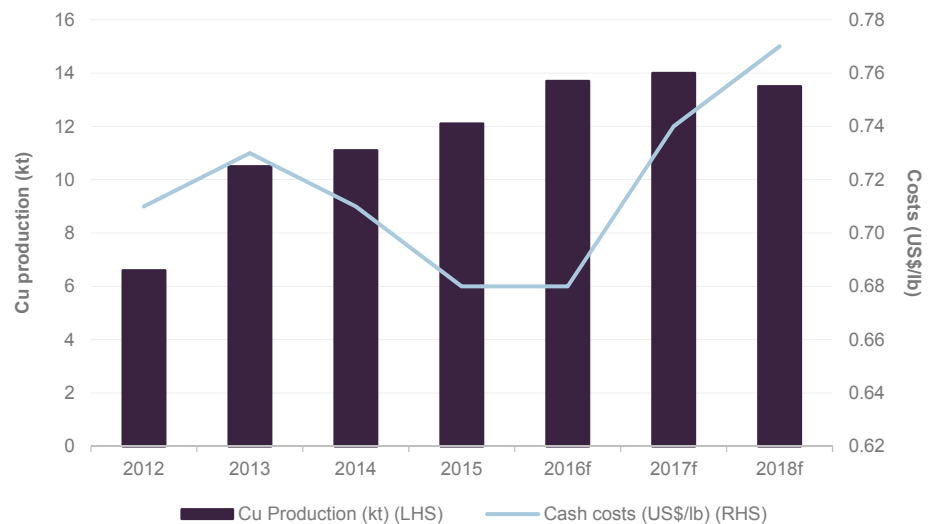
Figure 8: Quarterly copper production at Kounrad



Source: Central Asia Metals

Figure 9 shows the annual production and cost profile (using CAML's cash cost convention) since start up and forecasts (by Marten & Co) through to 2018.

Figure 9: Annual copper production and costs – actual and forecast



Source: Central Asia Metals and Marten & Co

In 2015, Kounrad produced a record 12.1 kt of copper despite a disruption to production after a mechanical failure in the plant at the end of June. As Figure 8 illustrates, production fell accordingly in Q3 15, but recovered strongly in Q4.

Low cost production benefitting from weak currency.

Cash costs in H1 2015, as reported by the company, were US\$0.74/lb, a slight increase on the corresponding period of 2014 when unit costs were US\$0.72/lb. Fully-absorbed costs rose 15%, to US\$1.87/lb, as the company incurred a charge of US\$0.06/lb on impairment of inventory after the incident in June.

The company has guided a decrease in cash costs to US\$0.65-0.70/lb for 2015 as a whole, mainly as a result of a depreciation in the value of the Kazakh Tenge against the US dollar. We estimate cash costs of US\$0.68/lb for 2015 and 2016.

In 2016, with the expansion complete, the plant is capable of processing 1,200 m³/hr of PLS, although in winter conditions the rate is lower than this. Because of the seasonal temperature variations, the company is forecasting an average annualised throughput of approximately 80% of design.

Based on this estimated throughput, and the fact that the long run PLS grade is stabilising at levels lower than previous years, the company is targeting copper production of between 13 kt and 14 kt for 2016. Our production forecast is in the middle of the guidance range.

As operations transition from the Eastern to the Western dumps from 2017 we expect production to fall slightly to 12.7-12.9 kt/y by 2019 as a result of different mineralogy of the Western dumps and longer leach times leading to lower PLS grades. We have assumed an average PLS grade of 2.0 g/l based on CAML's expectations but caution that production will be lower if that grade is not achieved.

Balancing this, however, we believe that recoveries in this area may be higher than we have conservatively assumed because after decades of weathering some of the material classed as 'sulphides' may in fact more amenable to acid leaching than the categorisation suggests.

As well as lower annual production from the Western dumps, we expect costs to rise about 15% because of increased reagent consumption, owing to the different mineralogy, and greater power consumption, as the Western dumps are further from the processing plant than the Eastern dumps.

Assets - Copper Bay

CAML has a 75% interest in Copper Bay.

In June 2015, CAML exercised an option to increase its interest in private company, Copper Bay Limited (Copper Bay), from 50% to 75% by committing US\$3 million to the company.

Copper Bay is evaluating the potential to process beach-deposited copper tailings at Chañaral, in northern Chile.

Location

The project is located at Chañaral Bay, on the Pacific coast in the Atacama Region of Chile, some 1,000 km north of the capital Santiago. The nearby town of Chañaral (pop: 13,500) is well served by a paved road and there is an existing rail link to a port within the Bay. The nearest airport is 120 km away by road.

The project will benefit from grid power in Northern Chile.

Figure 10: Location of the Copper Bay project



Source: Copper Bay

Ownership

Minera Playa Verde Limitada, a 100%-owned subsidiary of Copper Bay, owns the eight licences covering an area of 1,515 ha where the tailings lie.

A small portion of the resource area (and an area to the north of the beach) is owned by Empresa Nacional de Minería (ENAMI). ENAMI (The Chilean National Mining Corporation) processes ores and concentrates from over 2,000 small and medium scale copper producers to produce cathodes and refined copper for international markets.

History

The copper tails originate from the Potrerillos and Salvador copper mines and were transported some 100 km via the Rio Salado river and deposited onto the beach and into the bay at Chañaral between 1938 – 1975.

The French Bureau of Geological and Mining Research (BRGM) first drilled the deposit in 1972 and since that time several companies have conducted exploration (drilling) campaigns.

The previous owners undertook an economic study of the possible exploitation of a non-JORC resource in 2008 but decided not to proceed with the project.

Mineralisation

The deposit comprises a beach and near-shore fine granular deposit of copper tailings material and as such does not possess any recognised geological structure. However, there is some evidence in vertical section that the tailings display a layered structure in terms of fluctuating grade and grain size. The tailings material typically comprises light grey fine beach sand with shell fragments and coarser rounded gravel and pebbles.

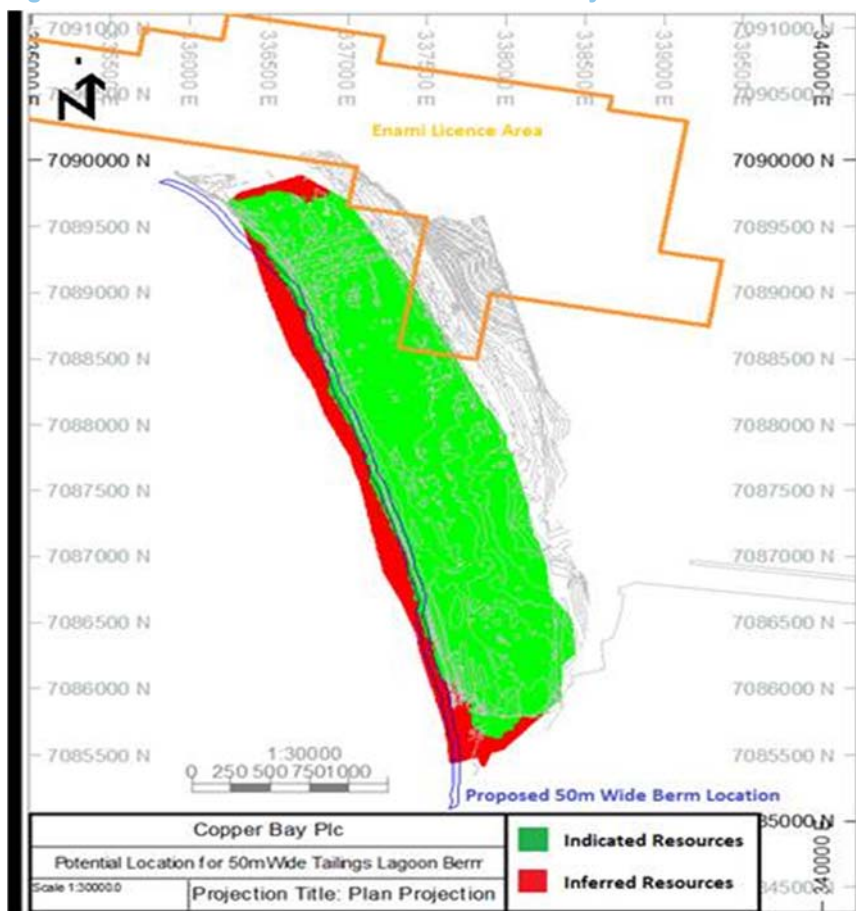
The tailings are the waste products of the flotation process at the Potrerillos and Salvador underground copper mines. The main copper-bearing minerals are chalcopyrite, bornite, covellite, chalcocite, malachite and chrysocolla/brochantite. The gangue minerals present in the sands are quartz with lesser amounts of ilmenite, magnetite and pyrite and molybdenite tails.

At the time of their deposition, the remnant copper in the tailings was predominantly chalcopyrite and almost entirely in sulphide form. In the intervening years, however, the copper sulphides have weathered to a point where approximately 50% of the copper has now been converted into oxides and chlorides.

Resources

The area of tailings deposition can be divided into three zones - Bay Zone (Bahia), Surf Zone (Rompiente) and the Beach Zone (Playa). The total area is approximately 1 km wide by almost 5 km long, and extends into Chañaral Bay a further 2 km.

Figure 11: Plan of resource areas at Chañaral Bay



Source: Copper Bay

In 2014, WAI oversaw a drilling programme of 136 vertical holes on a 100 m x 100-150 m grid over the Beach Zone and used the results, along with the results of previous drilling campaigns conducted in 1972 and 2008 (a total of 264 holes), in its determination of resources.

In December 2014, WAI estimated the following resources, based on a 0.10% copper cut-off:

Figure 12: Resources at Chañaral Bay (Dec 14)

	Tonnes (Mt)	Grade (% Cu)	Contained Copper (kt)
Indicated	42.7	0.244	104.3
Inferred	8.5	0.234	19.8

Source: Wardell Armstrong International

Much of the Inferred resource will be utilised as a berm to protect the resource area from sea ingress during proposed dredging operations but the company expects to reclaim this resource on completion of the dredging.

WAI estimated the following resources in the berm (again at a 0.10% cut-off).

Figure 13: Berm resources

	Tonnes (Mt)	Grade (% Cu)	Contained Copper (kt)
Indicated	2.3	0.262	6.0
Inferred	6.4	0.249	16.0

Source: Wardell Armstrong International

Subsequent to the December 2014 resource estimation, freak rains in the Atacama Desert in March 2015 caused the Rio Salado channel to flood and burst its banks leading to a mudslide, or alluvion, which affected the part of the beach that is closest to the town of Chañaral. This has led to the formation of two channels in the beach, one of which has subsequently has become a lagoon.

The overall effect of the flooding was to deposit a layer of mud up to approximately 30 cm thick over approximately 50% of the beach.

Mining resource

Copper Bay has assumed a resource, which can be practically reclaimed (the mining resource) and which forms the basis of operational planning. The mining resource includes adjusted, post-alluvion, Indicated resources (including those in the berm) along with the adjusted Inferred resources to the east of the berm; an allowance for the estimated resources in the Enami concession and an estimate provided by WAI of the quantity of mud that is now sitting on top of the beach following the alluvion (1.2 Mt at 0.060% copper) and then a deduction of 5% for mining losses.

The net mining resource is 43 Mt at a grade of 0.236% copper for contained metal of 101.5 kt.

Additional resource potential

As mentioned earlier, there are two other zones of tailings deposition at Chañaral Bay, which have not been included in any mine plans, but nevertheless represent potential for extending the life of the Copper Bay operation.

Initial (Beach) resource contains 101 kt of copper and there is additional mineralisation in adjacent zones.

The Bay and Surf zones lie adjacent to the Beach zone and although these zones were drilled in the past, the drill spacing was too wide for a JORC-compliant resource estimation. Evaluation work in 2008 suggested a non-compliant resource of 39.1 Mt at a grade of 0.26% copper for the Surf zone and 36.1 Mt at a grade of 0.22% copper in the Bay area.

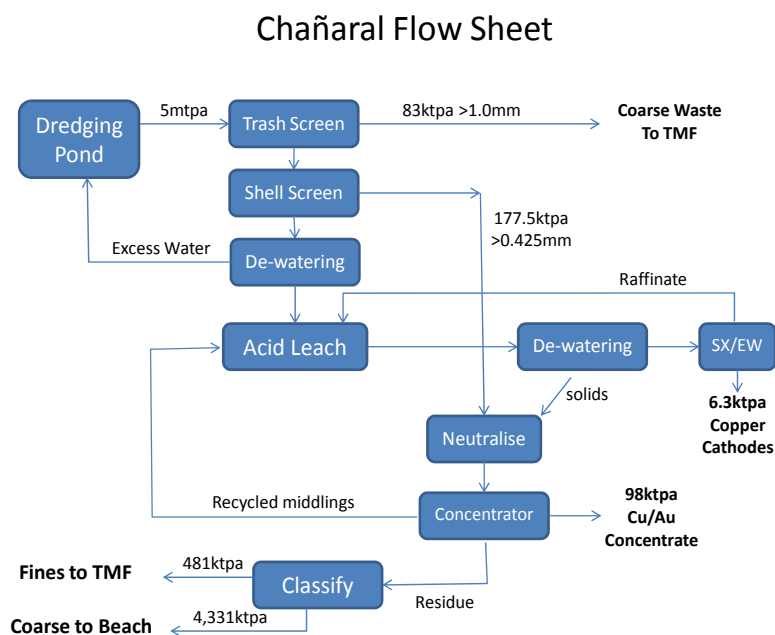
Reclamation and processing

According to a 2015 pre-feasibility study (PFS) (see page 20), Copper Bay plans to reclaim material from the seaward part of the beach using floating dredges with pipe discharges to pump the material to the processing plant. Concurrently, material from the upper beach area will be shifted to the dredging area using high pressure water jets.

The processing route comprises two main circuits – a leaching and solvent-extraction/electrowinning circuit to treat copper oxides and chlorides (to produce copper cathodes), followed by flotation of unleached solids (sulphides), to produce a copper concentrate.

The overall metallurgical recovery, based on testwork conducted by WAI, is expected to be 72.8%.

Figure 14: Copper Bay flowsheet



Source: Copper Bay

The PFS envisages the disposal of fine tailings in a tailings management facility located 3 km from the processing plant, while returning the greater tonnage of coarse material to the beach.

Under the forthcoming feasibility study, the company will investigate alternatives to the construction of the tailings management facility.

Positive PFS in 2015 prompted CAML to increase its interest to 75% by investing a further US\$3 million.

Pre-feasibility study

In June 2015, Copper Bay completed an internal PFS on the project with input from various independent consultants.

Based on the mining resource of 43 Mt, the study examined the economics of a 5 Mt/y operation producing 6.2 kt/y copper cathode and 2.4 kt/y of copper in concentrate for nine years with an estimated capital cost of US\$88 million.

Using a constant copper price of US\$3.00/lb, the study indicated an after-tax IRR of 21% and payback of 3.6 years.

Further work

The injection of US\$3 million from CAML will enable Copper Bay to undertake a full feasibility study, which it plans to complete in late 2016.

Copper Bay valuation

We have modelled the Copper Bay project based on the following project parameters:

Figure 15: Project parameters

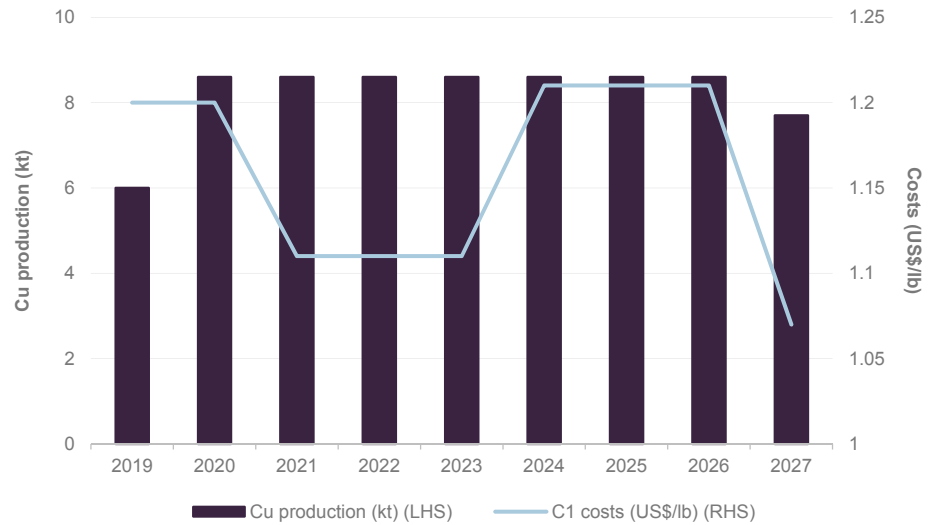
Parameter	Assumption	Source
Mining resource	43 Mt @ 0.236% Cu for 101.5 kt of Cu contained	Wardell Armstrong (as modified by Copper Bay)
Initial production	2019	CAML
Ave treatment rate	4.8 Mt/y	Copper Bay PFS
Max treatment rate	5.0 Mt/y	Copper Bay PFS
LOM average grade	0.24% Cu	Copper Bay PFS
SX-EW plant recovery	52%	Copper Bay PFS
Flotation plant recovery	21%	Copper Bay PFS
LOM copper production	73.9 kt	Copper Bay PFS
Max copper production	8.6 kt/y	Copper Bay PFS
LOM average C1 cash cost*	US\$1.16/lb	Copper Bay PFS/ Marten & Co
LOM	9 years	Copper Bay PFS
Capital investment	US\$88 million	Copper Bay PFS
Long term copper price	US\$6,600/t	Marten & Co

Source: Marten & Co

* C1 as per Brook Hunt standard

We forecast the following production and cost profile for the Copper Bay project.

Figure 16: Forecast copper production and cost profile for Copper Bay



Source: Marten & Co

Our analysis reveals an NPV^{10%} of US\$16 million after tax (CAML’s share US\$12 million). For CAML shareholders this equates to approximately 7 pence per share in its NAV.

The model assumes that CAML funds its 75% share of the initial investment required to construct the Copper Bay facility through a combination of project debt (50%, US\$33 million) and cashflow (50%). The company may, of course, opt to raise a portion through the equity markets.

Our model is based on the JORC-compliant resources as delineated by WAI for the Beach Zone. However, as mentioned earlier, there are mineralised deposits lying in the Surf and Bay zones, although at this stage there has not been enough work done to define a resource in these zones and thus we have not included them in the model but recognise that potential exists to extend the life of the project.

There may be opportunities to eliminate the need for a tailings management facility, which will improve project economics.

We assume the US\$88 million project capex can be funded through a combination of debt and internal cashflow.

Risks

Copper prices

The copper price has come under pressure over the past two years as Chinese economic growth has slowed causing a weakness in demand. Figure 17 shows the extent of the decline in the benchmark LME spot copper price over the past two years.

Figure 17: LME spot copper price (US\$/t)



Source: Bloomberg

We expect copper prices to remain soft until 2018 but then demand should outpace supply and lead to an improvement in prices.

The advent of new production has also impacted negatively on the supply-demand balance. In the short term, therefore, we see copper prices remaining soft.

In the longer term, production from existing mines is expected to decline by 17% over the next 10 years, meaning that any shortfall will have to be met by new projects

Although there are a number of projects scheduled to come on stream over the next five years, many analysts believe that projects will be deferred, or at least delayed, because of difficulties in arranging finance (head grades are falling and capital intensity increasing), problems securing adequate water supplies and increasingly stringent permitting conditions, resulting in a shortfall in production targets.

On the demand side, economic growth, which drives copper consumption, is expected to be strong in Asia (particularly China), with the market forecast to grow by over 30% over the next 10 years.

Thus, we believe that the price may be under pressure until 2018 when the supply/demand balance again becomes more favourable and copper prices should recover to our long run price of US\$6,600/t (US\$3.00/lb).

As far as copper sales are concerned, CAML has concluded a new offtake agreement with international commercial services group, Traxys, which extends through until the end of 2018.

Management has the ability to offset downside price risk by hedging up to 30% of annual copper production going forward.

Exchange rate exposure

CAML reports financial results in US dollars but most costs are denominated in Kazakhstan Tenge or British Pounds, so is exposed to variations in the exchange rates between those currencies.

In 2014, the Tenge devalued by 17% and then in August 2015 the government moved to a free floating exchange rate against the US dollar and as a result the currency depreciated by as much as 55%.

The depreciation has had a material and positive effect on operating costs (50% are denominated in the local currency) and has affected the value of assets when expressed in US dollars.

The current US dollar exchange rate with the British Pound is lower than our long-run assumption, which may have a positive impact on profitability in the short term.

Political

The Kazakh government has maintained a strong state-influence since the collapse of the Iron Curtain and its hold over its mineral resources has been enforced through state-owned miners, as well as government-private joint ventures enforced as part of mining right issuances.

More recently, however, the Kazakh government has shown a more liberal attitude to foreign investment and an integral part of this more relaxed policy is a proposal for a completely new mining code based on the Western Australian mining framework. One of the key themes is believed to be a removal of extensive governmental approvals for exploration and mining. If the government accepts the proposals, the new mining code could come into force in 2017.

One of the most authoritative reports on mining investment moods each year is conducted by Canada's Fraser Institute. The Fraser Institute surveys mining companies worldwide and compiles a "Policy Potential Index" (PPI), which, as the Institute explains, serves as a report card to governments on how attractive their policies are from the point of view of an exploration manager.

The PPI is a composite index that measures the effects on exploration of government policies including uncertainty concerning the administration, interpretation, and enforcement of existing regulations; environmental regulations; regulatory duplication and inconsistencies; taxation; uncertainty concerning native land claims and protected areas; infrastructure; socioeconomic agreements; political stability; labour issues; geological database; and security.

In the latest survey, published in 2015, Kazakhstan is ranked 70 (out of the 122 jurisdictions surveyed).

Chile, where the Copper Bay project is located, is one of South America's most stable and prosperous nations. Since July 2013, Chile has been considered by the World Bank as a "high-income economy", and hence as a developed country.

The country has a long history of mining and is considered a 'mining friendly' country, Copper mining makes up 20% of the Chilean GDP and accounts for 60% of exports.

In the latest Fraser Institute survey, Chile is regarded as very attractive for mining investment, with a ranking of 13 out of the 122 jurisdictions.

Fiscal

Kazakh tax legislation is subject to different and changing interpretations, as well as inconsistent enforcement.

The company manages this risk by complying locally with all corporate tax regulations (paying monthly) and ensuring that its local accounting staff are adequately trained and updated regarding any appropriate tax law changes. CAML also receives tax advice on local issues from its tax advisers.

The company also maintains a strong local presence at every level throughout the group including the board.

Technical

The Kounrad operation is now in its fourth full year of production from the dumps on the eastern side of the open pit (Eastern dumps) and has outperformed expectations each year, although the mechanical failure experienced in 2015 did lead to lower than originally planned production for the year.

CAML has a very good understanding of how the Kounrad ore in the dumps behaves in the SX-EW process and has operating expertise in scheduling leaching cycles and managing flow rates to achieve production targets, despite having to operate in extremely low temperatures (down to -40°C) in winter.

The Western dumps have different characteristics, which may affect processing rates.

There is some risk associated with treating the Western dump material from 2017 onwards as it has different characteristics, which may affect processing rates and operational performance. Countering that is the likelihood that recoveries in this area may be higher than we have conservatively assumed because after decades of weathering some of the material classed as 'sulphides' may in fact more amenable to acid leaching than the categorisation suggests.

At Copper Bay, meanwhile, the company has undertaken metallurgical testing as part of the prefeasibility study and work to date suggests a recovery of 72.8% but further work needs to be done to increase the confidence in the suggested processing route and recoveries.

We believe that aside from recovering the copper values, a key challenge will be to remove the environmental hazard that the tailings material presents.

Permitting

CAML received the permit to exploit the Western dumps in November 2015.

In November 2015, the Ministry for Investment and Development approved an amendment to the Kounrad Subsoil Use Contract allowing CAML to exploit the Western dumps.

The Copper Bay project is not yet at the permitting stage as the company is still assessing the viability of the project. However, Copper Bay already is working on social and environmental studies as part of the feasibility study work, which should hold it in good stead when its mining permit application is being assessed.

Capital structure

The company has 111.7 million shares issued, which were trading at 140 pence per share giving the company a market capitalisation of £156.4 million. Collectively, the directors own 26.7 million shares, which include the 21.2 million shares owned by Mr Rakishev (see page 25).

There are 2.3 million options outstanding with expiry dates out to May 2025.

The largest shareholder is prominent Kazakh businessman and CAML non-executive director, Kenges Rakishev, who holds just over 19% of the company

The remainder of the shareholder base is largely institutional (57%), with Hargreave Hale holding 10.1%, Fidelity Worldwide Investment (9.1%), D&A Income (6.8%) and Commonwealth American Partners (6.6%).

Directors and management

The CAML board includes directors with the requisite engineering, metallurgical, and financial experience who have a successful track record of financing, constructing and operating the Kounrad plant.

Nigel Hurst-Brown is non-executive chairman. He is a Fellow of the Institute of Chartered Accountants in England & Wales and was formerly chairman of Lloyds Investment Managers (1986-1990), a director of Mercury Asset Management, and more recently managing director of Merrill Lynch Investment Managers.

He is currently chief executive of Hotchkis and Wiley (UK) Ltd and a non-executive director of Borders & Southern Petroleum Plc.

Nick Clarke is chief executive officer and a director. He is a chartered engineer with 40 years mining industry experience, sixteen of which were spent in senior posts managing production and technical services in Africa and Saudi Arabia.

Nick was formerly managing director of AIM-listed Oriol Resources Plc until it was sold to Mechel OAO of Russia in 2008 for US\$1.5 billion. From 1992-2004, he was the managing director of mineral consultancy Wardell Armstrong International Ltd, where he managed numerous multidisciplinary mining projects in Kazakhstan, Kyrgyzstan, Uzbekistan, Romania, Macedonia, and Tajikistan. Nick is a non-executive director of Wolf Minerals Limited.

Howard Nicholson is technical director of CAML. He is a metallurgist with 33 years of experience in project development and mine operations management.

Of specific relevance is his role as European Minerals Corporation chief operating officer during the development of the Varvarinskoye copper-gold mine, in Kazakhstan. Mr Nicholson has held senior management positions with Ashanti Goldfields, Lonrho, and Anglo American. He is a director of Copper Bay Ltd, CAML's partner at the Chañaral Bay project.

Nigel Robinson is chief financial officer and a director. He is a member of the Institute of Chartered Accountants in England and Wales and a former Royal Navy officer in the Fleet Air Arm.

He qualified with KPMG on exiting the military and spent three years with the firm before leaving to work in commerce. Mr Robinson spent six years in various management roles with British Airways before pursuing smaller enterprise roles in 2002. He joined CAML in 2007 and became CFO in 2009. Mr Robinson is also a director of Copper Bay Ltd.

Kenges Rakishev is the company's largest shareholder (he holds a 19% interest following the ownership consolidation at the Kounrad operation in 2014) and is a non-executive director of the company. He holds a BA from the Kazakh State Law Academy, a BA (International Economics) from the Kazakh Economic University, and an AMP Diploma from Oxford University.

Mr Rakishev serves as board chairman for SAT & Company, which is a diversified industrial holding firm for industrial entities including Jinsheng SAT (Tianjin)

Commercial and Trading Co Ltd, Baicheng Jinsheng Nickel Industry Co Ltd, Taonan City Jinsheng Metallurgical Products Co Ltd, and Ulanhot Jinyuanda Heavy Chemical Industry Co Ltd. Rakishev also serves as chairman of NASDAQ-listed Net Element International Inc. He is a founder of Genesis Angels, a private investment fund dedicated to early stage advanced technology companies.

Other non-executive directors are former managing director and head of oil and gas at Canaccord Europe, **Robert Cathery** (Chairman of the Remuneration Committee); Kazakh national and executive director of Investment Banking at UBS (Kazakhstan), **Nurlan Zhakupov**; and chartered accountant and experienced resources executive, **David Swan** (Chairman of the Audit Committee). In December 2015, the company appointed mining engineer and company director, **Roger Davey**, as a non-executive director.

The Kazakhstan management team is led by **Pavel Semenchenko** who is general director for Sary Kazna, one of CAML's two Kazakh subsidiaries. He has more than 15 years of experience in managing businesses in Kazakhstan and a proven record in the resources industry.

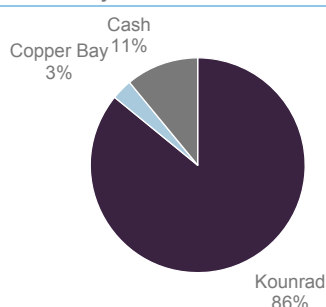
Oleg Telnoi is general director for KCC. Oleg joined CAML in 2007 with over ten years of experience in finance management within the mining industry in Central Asia. He is a qualified engineer and received an MBA in 1997.

Nick Shirley is the CSR Director and the only ex-pat in Kazakhstan. Nick has over 20 years of experience in the fields of environmental sciences, social responsibility and hydrogeology gained predominately in the international overseas mining industry in Central Asia, the Former Soviet Union and West Africa. He has formerly worked for the Environment Agency in the United Kingdom, Avocet Mining, Newmont-BHP's joint venture in Guinea, and Orsu Metals as well as operating his own consultancy practice.

Figure 18: Central Asia Metals summary

Sum of the parts valuation – January 2016	US\$M	Pence per share
Kounrad NPV ^{8%}	329	193
Copper Bay (75%) NPV ^{10%}	12	7
Investments	0	0
Subtotal	341	200
Net cash/(debt)	42	25
NAV	383	225

Asset valuation summary



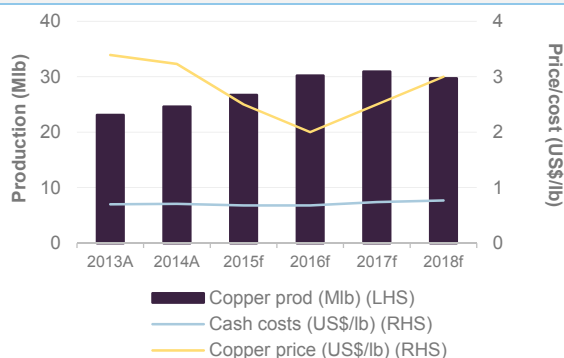
CAML share price



NAV sensitivity analysis (pence per share)

Disc. rate	-30%	-20%	-10%	Base	10%	20%	30%
5%	143	189	234	280	325	371	417
8%	117	155	192	229	266	304	341
10%	104	137	170	203	235	268	301
12%	93	122	151	181	210	239	268

Production summary



Copper resources (2013)	Mt	Cu %	kt
Kounrad			
Indicated	386.0	0.10	368.2
Inferred	261.1	0.09	246.0
Copper Bay			
Indicated	42.6	0.24	101.2
Inferred	5.4	0.23	18.8

Y/E 31 Dec, all figures in US\$M unless otherwise stated

Forecast assumptions	2014	2015	2016f	2017f	2018f
Copper price (US\$/t)	7,114	5,510	5,500	5,500	6,600
Copper price (US\$/lb)	3.23	2.50	2.50	2.50	3.00

Production summary	2014	2015f	2016f	2017f	2018f
Kounrad					
Ave flow rate (1,000/hr)	771	912	960	1,000	1,000
PLS grade (Cu g/l)	2.24	2.05	2.20	2.20	2.10
Recovery (%)	73.5	74.0	74.0	74.0	74.0
Copper production (kt)	11.1	12.1	13.7	14.0	13.5
Cash costs (US\$/lb)	0.71	0.68	0.68	0.74	0.77
Fully absorbed costs (US\$/lb)	1.65	1.67	1.43	1.50	1.52
Copper Bay					
Tonnes treated (kt)	-	-	-	-	-
Grade (Cu%)	-	-	-	-	-
Cathode production (kt)	-	-	-	-	-
Copper in concentrate production (kt)	-	-	-	-	-
C1 cash costs (US\$/lb)	-	-	-	-	-
Fully absorbed costs (US\$/lb)	-	-	-	-	-
Company					
Total copper production (t)	11.1	12.1	13.7	14.0	13.5
Cash costs (US\$/lb)	0.71	0.68	0.68	0.74	0.77
Fully absorbed costs (US\$/lb)	1.65	1.67	1.43	1.50	1.52

Profit & loss summary	2014	2015f	2016f	2017f	2018f
Revenues	76.6	63.6	65.3	73.9	85.5
Cost of production	(9.4)	(10.4)	(12.1)	(13.9)	(12.9)
Mineral extraction tax	(4.4)	(3.8)	(3.9)	(5.1)	(5.1)
Selling costs	(3.9)	(3.2)	(3.1)	(3.5)	(3.5)
G&A	(11.9)	(13.6)	(14.0)	(13.5)	(13.9)
EBITDA	47.1	32.6	32.1	38.0	49.1
D&A	(11.3)	(12.0)	(8.0)	(8.0)	(8.0)
Interest	(0.3)	0.0	0.0	(2.6)	(2.3)
Taxation	(10.5)	(6.3)	(7.2)	(8.9)	(12.2)
Other	33.0	8.0	0.0	0.0	0.0
Net income	59.4	22.3	16.8	18.5	26.8
Ave shares outstanding (million)	106.1	111.7	111.7	111.7	111.7
EPS (US\$)	0.56	0.20	0.15	0.16	0.24
Dividend (pence per share)	10.0	7.0	6.0	5.0	5.0

Abridged balance sheet Y/E	2014	2015f	2016f	2017f	2018f
Cash & equivalents	46.1	42.0	33.8	29.5	24.6
Fixed assets	162.7	160.4	166.0	209.0	228.3
Total assets	216.2	213.8	211.3	250.0	264.4
Current liabilities	4.7	5.0	5.0	5.0	5.0
Long term debt	0	0	0	33.0	29.3
Other LT liabilities	23.7	20.0	20.0	20.0	20.0
Total liabilities	28.4	25.0	25.0	58.0	54.3
Shareholders' equity	187.8	188.8	186.3	192.0	210.1

Cash flow summary	2014	2015f	2016f	2017f	2018f
Cash from operations	30.5	31.8	22.3	21.4	30.0
Cash from investing activities	(10.8)	(8.4)	(20.5)	(46.0)	(22.3)
Cash from financing activities	(15.6)	(12.7)	(10.0)	20.3	(12.7)
Net cash at end	46.2	42.0	33.8	29.5	24.6

Profitability	2014	2015f	2016f	2017f	2018f
EBITDA margin (%)	61.5	51.3	49.1	51.5	57.5

Note that financial tables above are summaries and totals may not always agree

Source: Central Asia Metals and Marten & Co.

Appendix 1 – C1 costs explanation

C1 costs are a standard metric used in copper mining as a reference point to denote the basic cash costs of running a mining operation to allow a comparison across the industry. Although producers are not bound to adhere strictly to any convention, the most widely accepted definition is that from consultants Brook Hunt.

Under the Brook Hunt definition, C1 costs are direct costs, which include costs incurred in mining and processing (labour, power, reagents, materials) plus local G&A, freight and realisation and selling costs. Any by-product revenue is credited against costs at this stage.

Costs are reported in US dollars per pound of copper produced.

CAML reported 2014 cash costs for Kounrad as US\$0.71/lb, but these include Mineral Extraction tax and exclude local G&A. We calculate Kounrad's 2014 C1 costs according to the Brook Hunt definition as US\$0.66/lb by excluding the Mineral Extraction tax (US\$0.18/lb) and adding back in local G&A (US\$0.13/lb)

We bring the Mineral Extraction tax (at 5.7% of revenue) in under fully allocated costs (C3), which include indirect costs and non-cash items, such as depreciation and amortisation.

Appendix 2 - How CAML achieves targeted copper production rate

The leach process at Kounrad involves the irrigation of the dumps with sulphuric acid at a controlled rate through a network of dripper pipes. The acid leaches (dissolves) the copper ions as it percolates through the material and the resultant copper-pregnant leach solution (PLS) is collected in a trench surrounding the dump and then allowed to settle in ponds to release remaining solids before being pumped to the solvent extraction and electrowinning (SX-EW) plant.

In the SX section, the PLS is contacted with an organic solvent which extracts the copper leaving an acidic aqueous solution (raffinate), which is pumped back to the dumps. The copper-bearing aqueous phase is stripped of the copper by strong acid before being sent to the EW stage where the copper is reduced from copper sulphate in solution to a metallic copper cathode.

The key to achieving target copper cathode production is to control the grade of the PLS to the plant, which can be tricky given the variability of grade within each weathered dump. The company has the flexibility to manage the process two ways. Firstly, by working a number of individual dumps within the Eastern dumps at any one time and, secondly, by varying the flow rate of the raffinate.

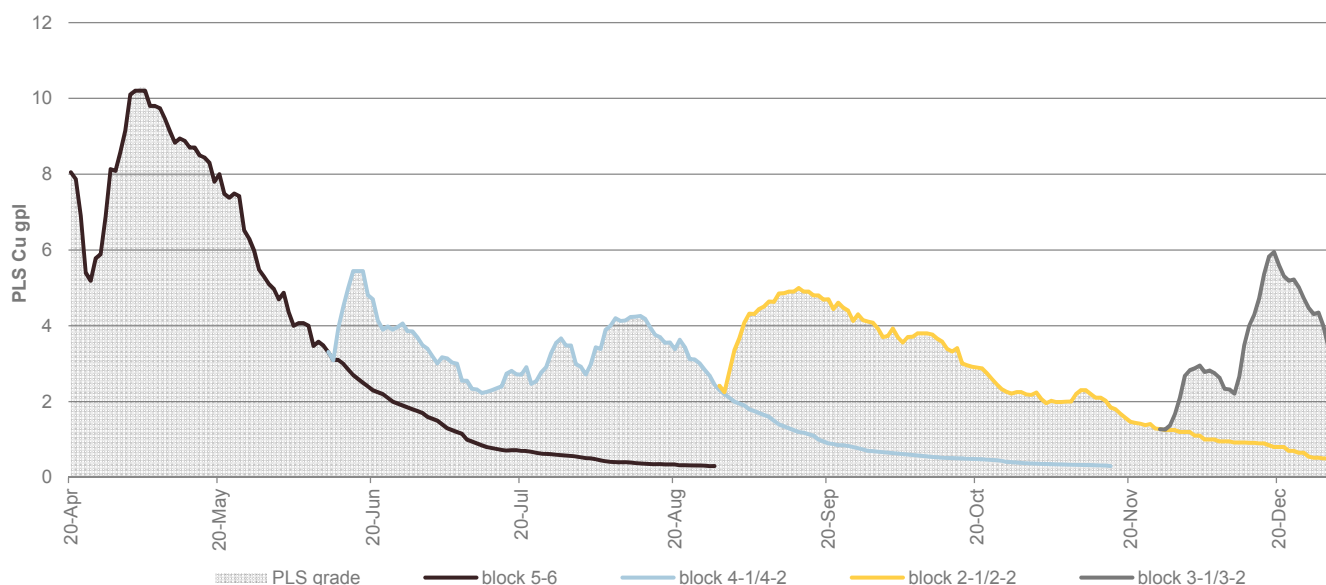
The dumps are divided into blocks. Leaching of any one block is essentially a 3-phase process, with a 'bloom' (high grade) phase, a steady phase and finally a tail recovery phase over a roughly 6-month time period. The first 120 days recover about 40% of the copper with the remaining 10-11% over the final 60 days during which time the blocks are allocated rest periods.

New ore blocks are sequentially started developing a "nest" of contiguous leach curves and thus by having a number of blocks undergoing leaching at any one time

and phasing the commencement of leach, CAML is able to avoid major peaks and troughs in the grade of the PLS and deliver a fairly constant grade to the SX-EW plant.

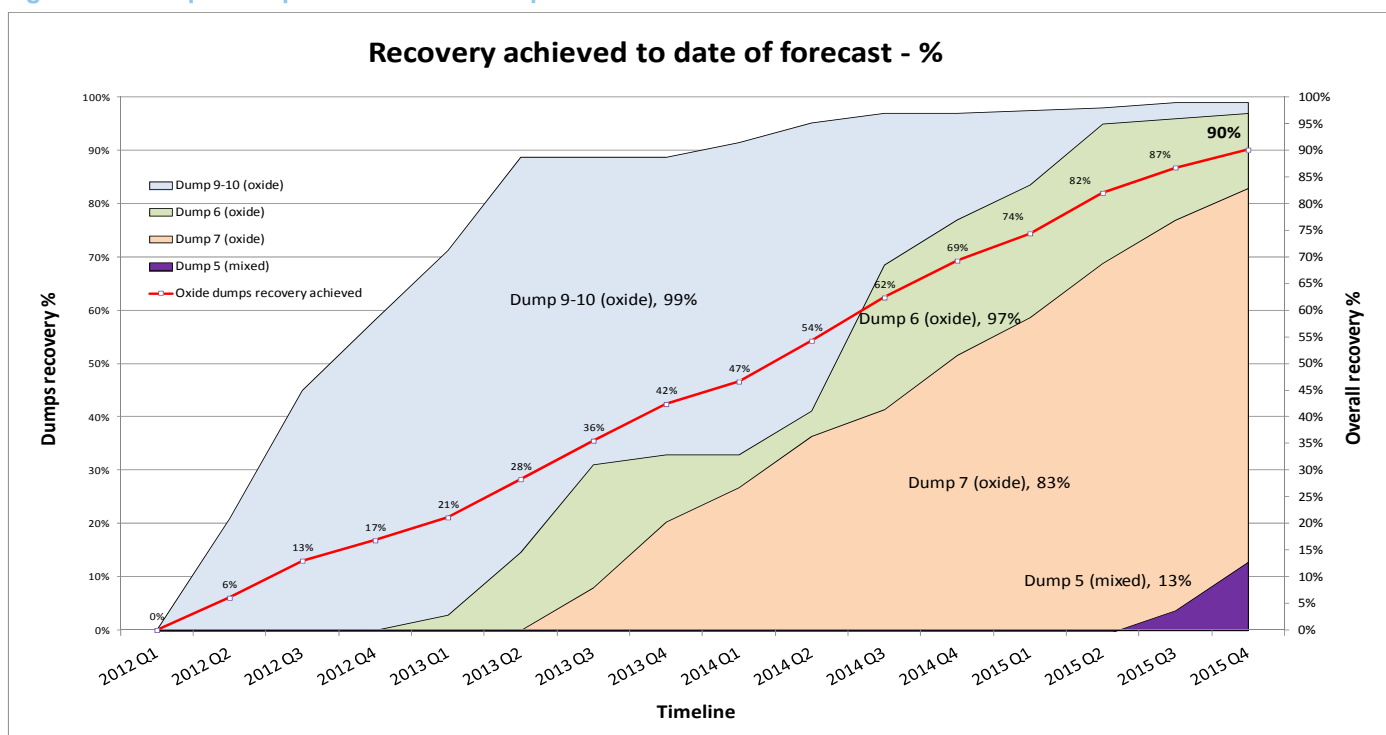
In Figure 19, below, which shows the leach curves for block in 2014, as the PLS grade of block 5-6 falls off, blocks 4-1 and 4-2 come into play and support the PLS average grade until blocks 2-1 and 2-2 commence. Thus, the PLS grade averaged 2.24 g/l in 2014 (which is close to the most efficient grade of 2.00 g/l) despite a wide range between 8 g/l and less than 1 g/l.

Figure 19: Leach curves for blocks



Source: Central Asia Metals

Figure 20: Dump leach profiles since start up

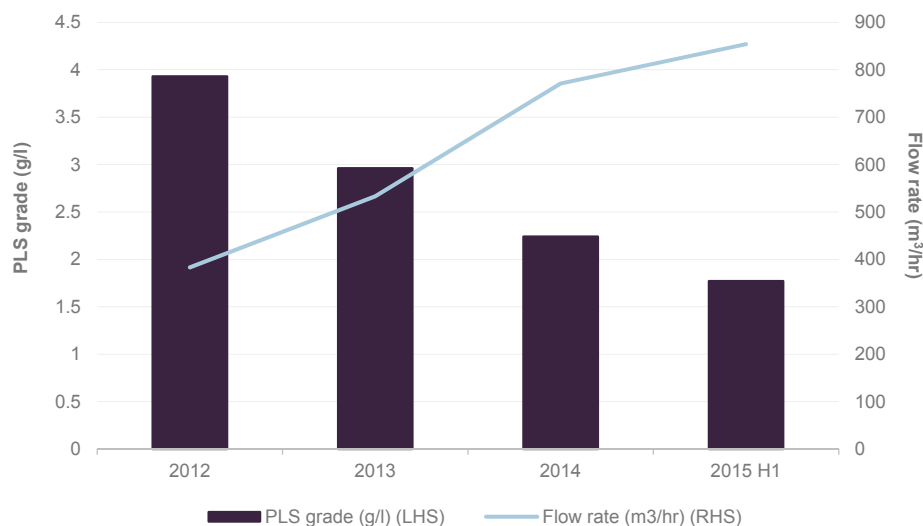


Source: Central Asia Metals

The second main variable that CAML can control is the flow rate of raffinate. Although the average grade of the PLS since the start up has declined year-by-year as planned, and is reaching its long term average of 2.00-2.30 g/l as predicted in the feasibility study, CAML has increased flow rates and with the expansion of the plant now complete can achieve up to 1,200 m³/hr (in summer).

Figure 21 shows the average flow rates since operations began.

Figure 21: Average flow rates and PLS grade



Source: Central Asia Metals

With the plant expansion in 2015, copper cathode deposition rates have improved from 35 t/d to 50 t/d (summer) and from 18 t/d to 25 t/d (winter).

Appendix 3 – Resource definition work

Figure 22: Resource definition work at Kounrad

Year	Work	Location	Remarks
2007	10 drillholes	Dumps 6, 7 and 9-10	Samples throughout the programme were assayed for total copper (Cu _{total}), acid soluble copper (Cu _{acid}) and cyanide soluble copper (Cu _{cyan})
2008-09	85 drillholes plus 10 channel trenches	Dumps 1, 1a, 5, 6, 7, 9-10, 15, 16, 21 and 22	
2010	137 pits, nine surface trenches within dump 21a plus a further 13 pits.		10 kg composite sub-samples used for metallurgical testing
2011	98 RC drill holes to 3 m below the base of the dumps	Western dumps 1, 15 and 16 and Eastern dumps 5, 6, 7, and 9-10	
2012	131 RC drill holes to 3 m below the base of the dumps	Eastern dump 2 plus Western dumps 13, 15, 16, 20, 21 and 22	

Source: Wardell Armstrong International

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