HUNTER CAPITAL ADVISORS

ASX: XAM

XANADU MINES LIMITED

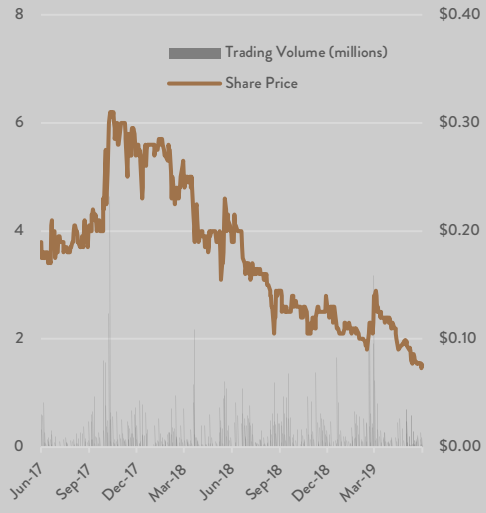
Equity Research

3rd June 2019

SPECULATIVE BUY

Price Target	$0.45
Share Price	$0.076

52-Week Range	$0.073 - $0.22
Market Capitalisation	$49.3m
Shares Outstanding	648.0m
Options (25¢, 26 June 2020)	29.4m
Performance Rights (60¢, Jul & Oct 2019)	3.0m
Cash (30th Mar 2019)	$3.1m
Enterprise Value	$46.2m
Major Shareholders:	
CAAF Ltd/ Copper Plate Success	23.9%
Noble Group Ltd	8.0%
1832 Asset Management	5.7%
Fast Lane Australia Pty Ltd	4.7%
Sakari Energy Trading	3.8%
Board & Management	4.2%
Total	50.3%



Xanadu Mines Ltd (ASX: XAM, TSX: XAM) is a copper and gold exploration company with several advanced exploration projects in Mongolia's highly mineralised and vastly underexplored south Gobi region. Xanadu controls one of the most promising porphyry copper-gold projects in Asia with Kharmagtai, and has an expanding portfolio of exploration projects.

Research Analyst: J-François Bertincourt

Initiation of Coverage: Tier 1 Copper Asset with a Gold Bonus

Tier 1 Copper-Gold Project: In terms of copper deposits, majors like them big. Kharmagtai contains an open-pit indicated and inferred resource of 598 million tonnes containing 1.9Mt copper and 4.3 million ounces gold. Kharmagtai has also enviable characteristics: now an established copper/gold mining jurisdiction (Oyu Tolgoi, Erdenet and Tsagaan Suvarga), benign topography and environmental impediments, higher grade portion close to surface amenable to open pit mining and long mine life. Finally, Kharmagtai is ideally located on the doorstep of the world's largest copper consumer.

Gold Bonus: The Kharmagtai porphyry deposit and other porphyry targets lie under a highly significant gold oxide zone. We estimate that this gold mineralisation could easily contain in excess of 1.5 million ounces. Such resource could be quickly developed and generate the cash flow to progress the underlying copper-gold deposit.

Low initial capital and low capital intensity: while large porphyry deposits typically require development capital in the order of a few billion US$, Kharmagtai initial capital for developing the open pit resource is estimated at US$484 million. The capital intensity for the project is also highly competitive at US$8,100/tpa Cu Eq., compared to the average of 60 projects at US$13,300/tpa Cu Eq.

Copper Fundamentals: We believe the lack of a meaningful pipeline of future supply could set the stage for sustainably higher prices for copper as restrained capex and a low level of official inventories could cause supply shortages.

Share Register Tightly Held: The top five shareholders combined with the Board of Directors and management represent more than 50% of the share register.

Economics: Various metal price scenarios have been run with the metal prices and key results detailed below.

Valuation: Considering the competitive advantages of its flagship project and the excellent prospectivity of its project portfolio, we consider that XAM should reach a value (market value or transaction value) in the order of A$375 million or $0.45 per share. This price target is inclusive of an assumed capital raising of A$15 million for the on-going development of the Kharmagtai project.

Kharmagtai Starter Pit project returns using different metal prices scenarios

Scenario	Base Case	High Cycle
Initial Capex	$484m	$484m
Copper Price	$3.0/lb	$3.55/lb
Copper Price	$6,614/t	$7,606/t
NPV @ 8% pre tax	$687m	$1,001m
IRR pre tax	25%	32%
NPV @ 8% post tax	$526m	$777
IRR post tax	22%	27%
NPV post tax	A$751m	A$1,110m
Initial Capex	A$691m	A$691m
Starter Pit value/share	A$0.90	A$1.33

Peer Comparison / Transaction: Peer comparison and recent transactions support a valuation in the order of US1.5¢/lb to US2¢/lb of copper metal equivalent in mineral resource versus US0.6¢/lb currently based on an interim mineral resource, due to grow.

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1. XAM Valuation

Asset Summary

The table below summarises the assets own by Xanadu Mines Ltd.

XAM Portfolio of Mineral Assets

Asset	Ownership	Stage	Notes
Kharmagtai project, Mongolia	76.5% attributable	Scoping Study on mineralisation amenable to open pit mining completed	The Kharmagtai project is key to Xanadu's short-term growth. Exploration and development has focused on the three outcropping porphyry deposits (Stockwork Hill, White Hill and Copper Hill) in the central part of Mining Licence 17387A.
Red Mountain porphyry copper-gold project, Southern Mongolia	Xanadu 90%	Exploration	Exploration at Red Mountain has defined broad zones of strong quartz stockwork veining and associated high-grade gold mineralisation (typically around 0.5 to >5 g/t gold and 0.3 to 1.5% copper). The geology, strength of alteration and style of mineralisation also suggest that the mineralisation will extend at depth.
Yellow Mountain porphyry copper project, Northern Mongolia	Xanadu 100%	Exploration	Yellow Mountain is an early stage project focused on what is an extensive advanced argillic (high-sulphidation porphyry lithocap) alteration above a deeper porphyry centre. Limited drilling to date has intersected broad zones of porphyry alteration. Xanadu has outlined two main target areas that are yet to be tested.

Source: Terra Studio.

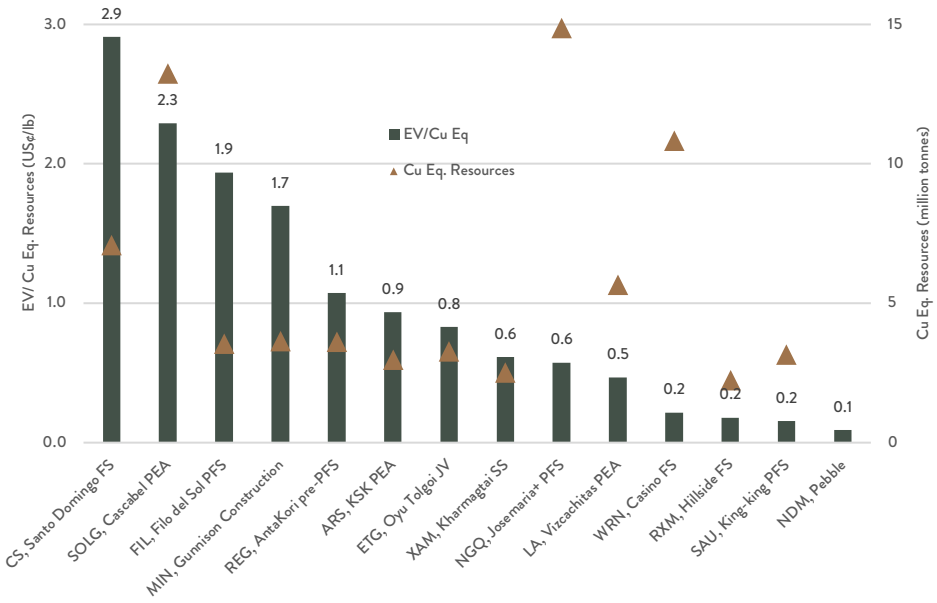
This report is solely focused on Xanadu Mines' flagship project, the Kharmagtai copper-gold project.

Peer Comparison

Figure 1.1 displays the ratio of Enterprise Value / Mineral Resource of Xanadu Mines Ltd against some listed peers.

XAM appears undervalued on the basis of the Kharmagtai mineral resource, especially considering the competitive advantages of the project such as location and capital intensity

Figure 1.1 – Enterprise Value / Mineral Resource multiple



Source: S&P, Terra Studio. FS = Feasibility Study, PEA = Preliminary Economic Assessment, PFS = Pre-feasibility Study, SS = Scoping Study. Copper equivalent have been calculated using the following metal prices: Cu $6,300/t, Co $15,000/t, Mo $16,455, Au $1,250/oz and Ag $15/oz.

We acknowledge that this multiple is quite imperfect and should viewed with other benchmarking charts included in this report. In calculating the copper metal equivalent content, cobalt, molybdenum, nickel, gold and silver have been considered. The label for each bar indicates the company code (companies are listed on ASX, LSE or TSX), the flagship project name and the stage of development.

Considering the resource size, the stage of development and the competitive advantages discussed further below of the Kharmagtai project, XAM appears undervalued compared to Filo Mining Corp. (TVX: FIL), Regulus Resources (TVX: REG) and Asiamet Resources (LSE/AIM: ARS). So a ratio of 0.9 ¢/lb to 1.9 ¢/lb should apply to XAM compared to 0.6 ¢/lb currently.

Transaction Comparison

Recent transaction multiples support a higher valuation of XAM and the Kharmagtai project. A multiple of 1.5 to 2.0¢/lb appears appropriate at the current stage of development of the Kharmagtai project

Despite the relatively depressed equity market for mineral resource developers and explorers, the few transactions listed below illustrate the value that can be achieved, should a major or mid-cap company be willing to acquire Xanadu Mining and /or the Kharmagtai project.

Recent Copper Transactions

Date	Buyer	Target	Stage	Price/Resource
Dec 2018	Sumitomo	30% Quebrada Blanca	Feasibility	US$¢4.1/lb
Sep 2018	Newmont	50% Galore Creek	Scoping Study	US$¢2.0/lb
Jun 2018	Mitsubishi	21.9% Quevalleco	Construction	US$¢6.7/lb
Apr 2018	Empresas Copec	Minsur (Mina Justa)	Feasibility	US$¢5.3/lb

Source: Bloomberg.

Financial

XAM cash balance stands at $3.1m as at 30 March 2019.

XAM capital structure includes some options (total about 4.5% of the current capital structure) which are due to expire on 26 June 2020. The exercise price of those options is $0.25. Those have been excluded in our valuation.

For the on-going development of the Kharmagtai project, we assumed that A$15 million additional equity is raised at $0.08/share resulting in 187.5 million additional shares.

Valuation

As part of a sum of the parts valuation, we first valued the Kharmagtai starter pit project under different price scenarios.

The Global Trade War scenario aims at testing the robustness of the project. Even in this doom scenario, the Kharmagtai project returns a positive NPV with a reasonable internal rate of return.

The Base Case generates healthy NPVs and rates of returns.

The High Cycle scenario shows the leverage to the copper price, should the latter increase by 15% above the 2005-2018 average over the next few years.

The Global Trade War scenario demonstrates the robustness of the Kharmagtai project.

Other scenarios deliver healthy NPVs and rate of returns.

Kharmagtai starter pit project returns using different metal prices scenarios

Scenario	Global Trade War	Base Case	High Cycle
Initial Capex	$484m	$484m	$484m
Copper Price	$2.55/lb	$3.0/lb	$3.55/lb
Copper Price	$6,614/t	$6,614/t	$7,606/t
Gold Price	$1,300/oz	$1,300/oz	$1,300/oz
NPV @ 8% pre tax	$374m	$687m	$1,001m
IRR pre tax	18%	25%	32%
NPV @ 8% post tax	$277m	$526m	$777
IRR post tax	16%	22%	27%
NPV (post tax)	A$396m	A$751m	A$1,110m
Initial Capex	A$691m	A$691m	A$691m
Starter Pit value/share post financing	A$0.47	A$0.90	A$1.33

Source: Terra Studio, in US$ unless otherwise stated.

Note that none of those scenarios include the economics of the oxide gold zone.

Overall, we have derived XAM sum of the parts valuation as follows:

XAM Valuation

Asset	Value Range	Preferred	Risk Factor	Interest	Pre-Financing per share	Post-Financing per share
Kharmagtai Starter Pit	$396-$1,110m	$751m	40%	76.5%	$0.355	$0.275
Kharmagtai additional resources		$98m		76.5%	$0.116	$0.090
Kharmagtai oxide gold project	$15-$55m	$30m	30%	76.5%	$0.011	$0.008
Exploration upside		$60m		76.5%	$0.071	$0.055
Red Mountain		$10m	-	90%	$0.014	$0.011
Yellow Mountain		$3m	-	100%	$0.005	$0.004
Cash (30 Mar 2019)		$3.1m			$0.005	$0.004
Exploration & development spent		($10.0m)			($0.015)	($0.012)
Additional equity		$15.0m				$0.018
Debt		Nil			$0.000	$0.000
Corporate costs		($2.3m)			($0.004)	($0.003)
Total				**$375m ***	$0.55	**$0.45**

*Source: Terra Studio. * post-financing valuation.*

Kharmagtai additional resources represent the mineral resources not included in the starter pit. They have been valued at US¢1.8/lb for copper and US$20/oz for gold.

The potential value of the Kharmagtai oxide gold project is supported by the current market value of two TSX-listed companies operating in Mongolia:

- Erdene Resource Development (TSX:ERD) with an enterprise value of A$34m. ERD is developing the Khundii Gold project, with a measured and indicated resource of 642,000 ounces at 3.7 g/t gold, and an inferred resource of 250,000 oz at 2.3 g/t gold, amenable to open pit mining, capex US$32m and life of mine AISC of US$714/oz;
- Steppe Gold Ltd (TSX: STGO) with an enterprise value of A$32m. STGO is constructing the Altan Tsagaan Ovoo gold and silver heap leach project with 1.26 million ounces of Au Eq.at 1.49 g/t Au in measured and indicated resource, capex is US$20m and life of mine cash costs are US$333/oz.

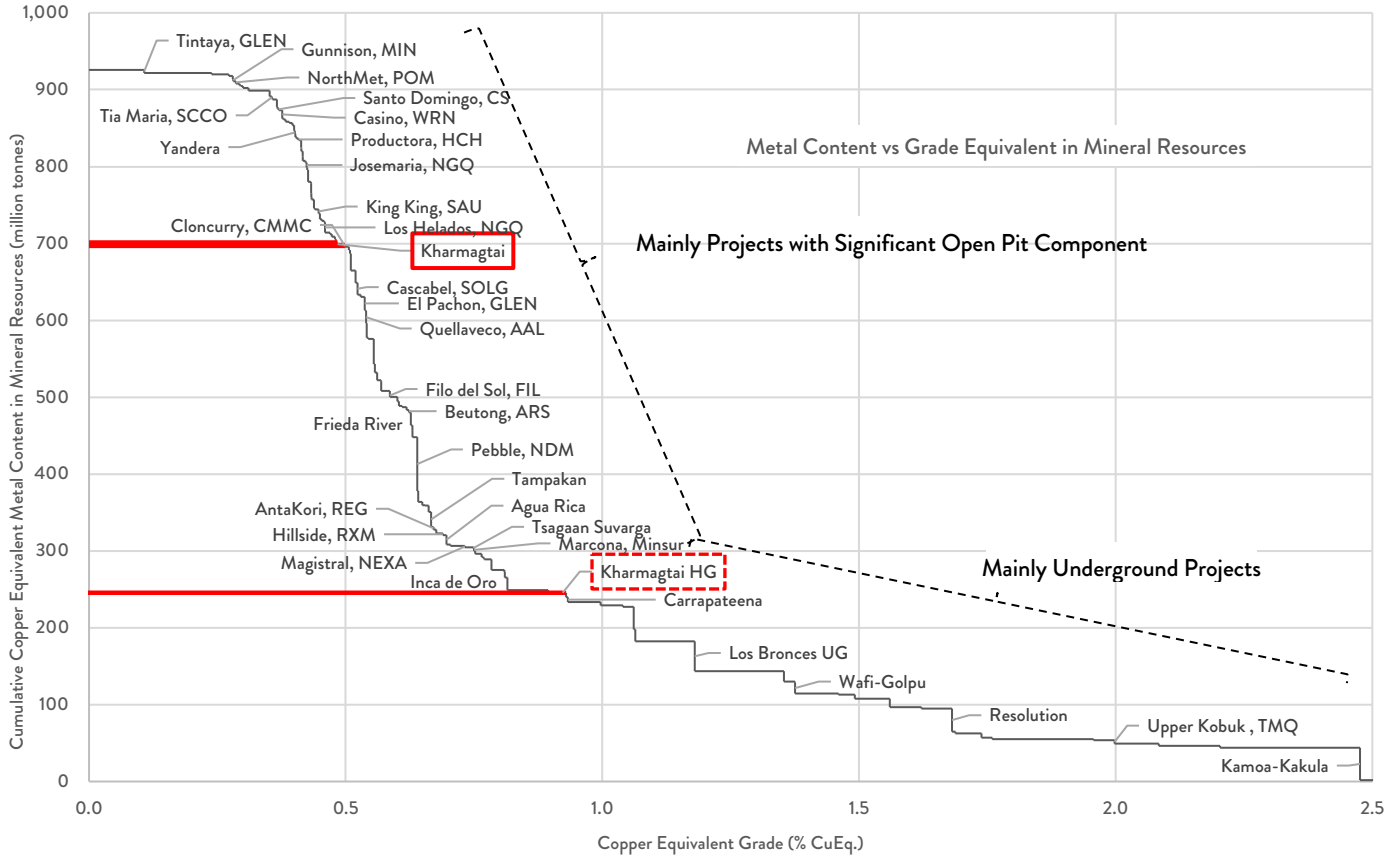
Subject to successful exploration and evaluation of the oxide gold mineralisation as well as further development of the copper-gold porphyry project, XAM should reach a market capitalisation in the order of $375 million or a share price of $0.45 post-financing.

2. Kharmagtai Project Benchmarking

Mineral Resource

Figure 2.1 displays a number of large copper projects, ranked by copper equivalent grade and metal content.

Figure 2.1 – Mineral Resource Metal Content vs Grade Equivalent



Source: Terra Studio

Notes: Projects with a minimum of 300,000 t of copper metal in mineral resources
Chart includes in excess of 100 projects
Copper Equivalent grade and tonnes calculated with the following metal prices: Cu US$6,300/t, Co US$15,000/t, Mo US$26,455/t, Au US$1,250/oz, Ag US$15/oz

The chart tends to separate underground project with higher grades towards to bottom part of the chart, while lower grade projects amenable to open pit mining are placed in the upper part.

The annotations focus on well known projects or projects comparable to Kharmagtai.

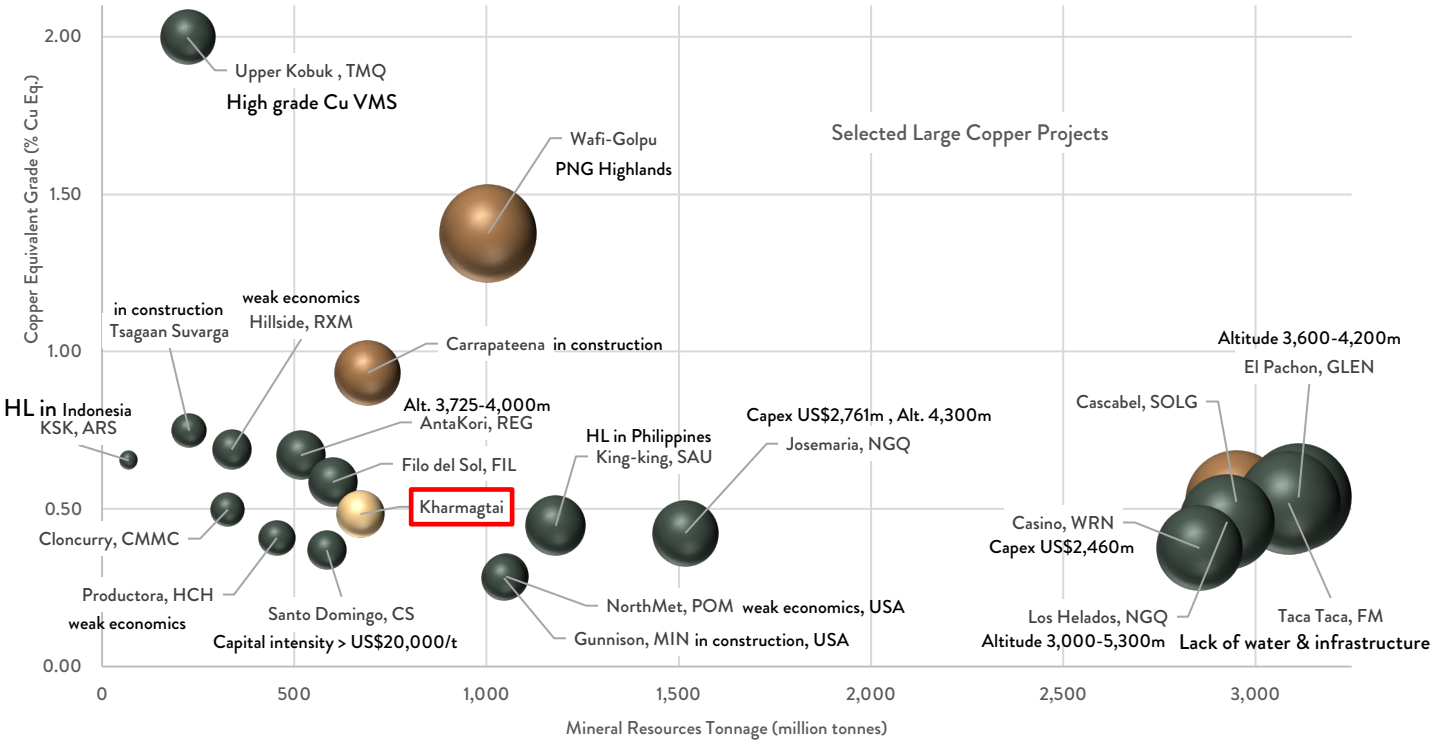
Among the projects typically amenable to open pit mining, copper equivalent grades are similar in the sector 0.40% Cu Eq, to 0.65% Cu Eq. and other characteristics should be examined to segregate between projects. We note that Cascabel (Solgold Plc, LON: SOLG,) presents a similar resource grade to Kharmagtai.

In Figure 2.2, the focus is on projects with similar size and grade to Kharmagtai, with a bubble chart of copper equivalent grade vs. mineral

resource tonnage. The additional annotations bring more light on some key characteristic or challenge for the projects displayed. In this context, Kharmagtai is in a country with existing mines. It lies at low elevation, with no challenges in terms of topography (flat), vegetation (no trees), rainfall (arid climate). Water is readily available and other infrastructure is close by.

The mineralisation is close to surface and a significant portion of the mineral resource is amenable to open pit mining. The capital expenditure (US$484m) is modest compared to projects in the high Andes and the capital intensity is highly competitive at US$8,100/t, see next section.

Figure 2.2 – Mineral Resource Copper Grade vs Tonnage



Source: Terra Studio. Bubble size relates to copper metal equivalent content in mineral resources. Alt. = Altitude, HL - Heap Leaching, VMS = Volcanic Massive Sulphide.

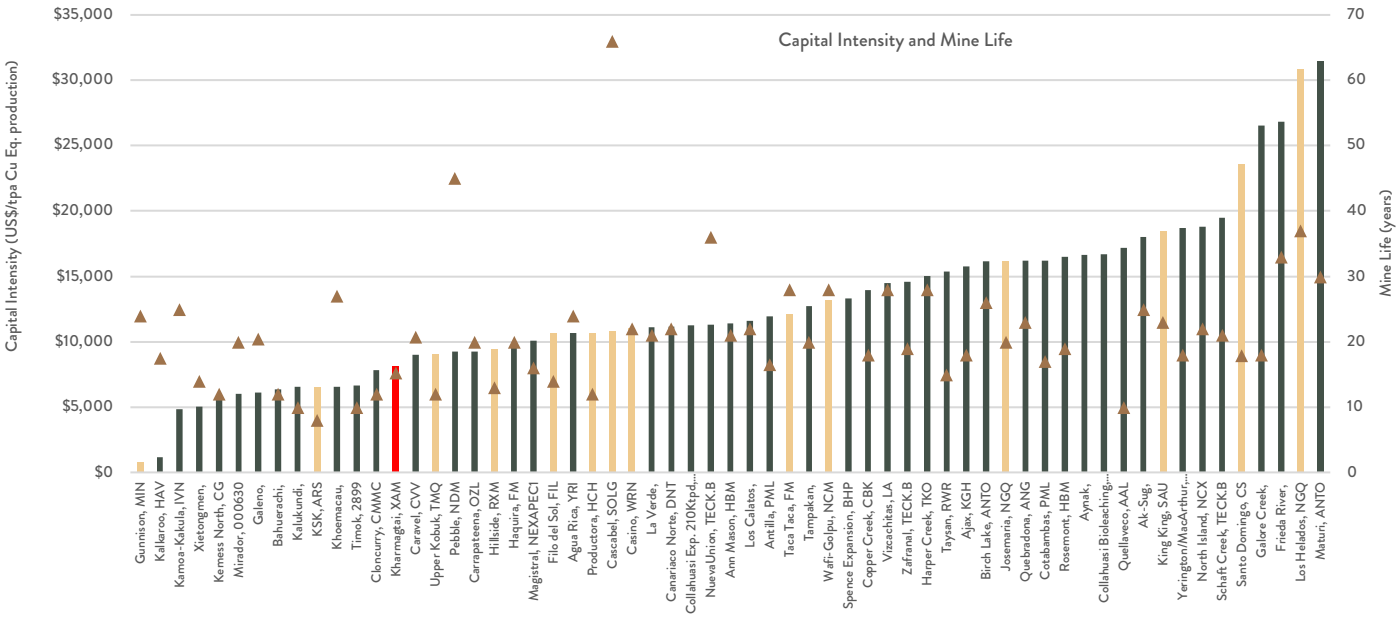
Capital Intensity

Figure 2.3 displays the capital intensity of the Kharmagtai project compared to some of its peers.

The relatively low capital expenditure (US$484 million) for the Kharmagtai starter pit and the associated low capital intensity are the lowest among the global peers including some expansion of existing projects by majors. This derives from a combination of factors including the project location, access to infrastructure and access to competitive Chinese processing equipment.

The projects (of similar size and grade) included in the bubble chart above have been highlighted in the capital intensity chart.

Figure 2.3 – Capital Intensity



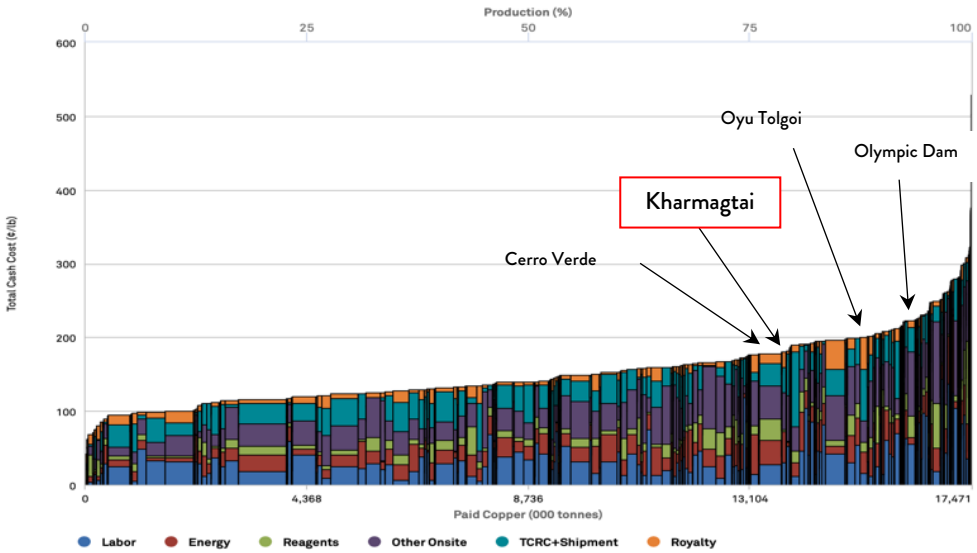
Source: Terra Studio

Position on Cost Curve

Figure 2.4 displays the 2018 copper total cost curve on a by-product basis.

Our financial evaluation derived a total cost of US$1.82/lb on a by-product basis for the Kharmagtai start pit project, placing the project well with the 80% of the curve representing the bulk of the world copper production (after omitting 10% at each end of the cost curve).

Figure 2.4 –2018 Copper Production Total Cost Curve (by-product basis)



Source: S&P, Mine Economics covering 87% of 2018 copper mine production

We expect the curve to move higher in the coming years, as head grades are decreasing. The development of the oxide gold mineralisation at Kharmagtai should decrease the operating costs, due to a reduction of pre-stripping and waste.

3. XAM Corporate Overview

Strategy

XAM shares are listed on both ASX and TSX

Xanadu is an Australian and Canadian listed public company with its shares traded on the Australian Securities Exchange ("ASX") and Toronto Stock Exchange ("TSX) under the code "XAM". The principal activity of the Company (and its subsidiaries) is copper-gold exploration in Mongolia. The Company holds interests in three tenements: the Kharmagtai copper-gold project, the Red Mountain copper-gold project and Yellow Mounting copper project.

The Kharmagtai project is key to Xanadu's short-term growth. In particular, the oxide gold mineralisation offers an opportunity to add significant value at low cost to the company.

Capital Structure

XAM capital structure is made of 648.0 million shares on issue. The total number of options is about 29 million or 4.5% of the total number of shares.

XAM Capital Structure

Security	Exercise Price	Expiry	Number
Shares	-	-	648,044,131
Options	$0.25	26 Jun 2020	29,411,759
Performance Rights	$0.60 hurdle + tenure	26 Jul 2019	2,000,000
Performance Rights	$0.60 hurdle + tenure	11 Oct 2019	1,000,000
Total options			**12,274,230**

Source: XAM Appendix 3B 27 Jun 2018

Share Register

XAM shares are also tightly held, with the top five shareholders representing 46% of the share register. When combined with the Board and management, the total is in excess of 50% of the share register.

XAM Share Register

Entity	Shares	% Interest
CAAF Ltd / Copper Plate Success Ltd	154.7m	23.87%
Noble Group Ltd	51.8m	7.99%
Bank of Nova Scotia/1832 Asset Management LP	37.0m	5.70%
Fast Lane Australia Pty Ltd	30.6m	4.72%
Sakari Energy Trading	24.6m	3.80%
Top five shareholders	**298.7m**	**46.1%**
Board and Management	27.3m	4.2%
Total	**326.0m**	**50.3%**

Source: XAM

XAM shares are tightly held

The presence of institutional shareholders comforts the view of the prospectivity of XAM assets, supported by a positive long term outlook for copper.

4. Mongolia Country Overview

Economy, Government and Sovereign Rating

Mongolia is currently a fast developing economy with GDP growth of 6.1% in 2017 and 6.9% in 2018, vs 1.2% in 2016.

The mining sector is tightly link to Mongolia economic growth.

In 2016, a new majority government came into power, the Mongolian People's Party, which is expected to improve political stability when compared to the previous fractious coalition government. The new government supports foreign investment.

Mongolia's credit rating: Moody's has a B3 rating with stable outlook and Fitch/S&P have a B rating with stable outlook.

Sovereign Credit Rating: Mongolia & Ecuador

Agency	Country	Rating	Outlook	Date
Moody's	Mongolia	B3	Stable	18 Jan 2018
	Ecuador	B3	Negative	12 Dec 2018
Fitch	Mongolia	B	Stable	9 Jul 2018
	Ecuador	B–	Negative	10 Jan 2019
S&P	Mongolia	B	Stable	9 Nov 2018
	Ecuador	B–	Stable	29 Jun 2017

Source: Trading Economics.

Mongolia is comparable to Ecuador in terms of risk, and is expected to improve further when Oyu Tolgoi, Mongolia largest mine, reaches full production.

Mining Code

Rights and obligations for mineral tenure are governed by the Minerals Law of Mongolia introduced in 2006. Several amendments to the Law have been subsequently enacted, including some key changes in 2014.

Mining licences are granted for a period of 30 years, extendable twice, for 20 years each time. A mining license holder has the right to conduct mining activities throughout the licence area and to construct structures within the licence area that are related to its mining activities.

Royalties

Mongolia's mining ministry imposes a 5% royalty on all minerals other than coal that are sold, shipped for sale, or used. In 2010, the Mongolian parliament introduced a new surtax royalty, effective from 1 January 2011. Under the new two-tier system, an incremental surtax royalty is imposed on the total sales value of 23 minerals in addition to the standard flat rate. The royalty amount varies depending on the mineral, its market price and the degree of processing. Surtax rates for copper and gold are shown in the Table below. It should be noted that that several companies operating mines in Mongolia and shipping concentrates have been able to renegotiate these terms to lower levels.

Mongolian Government Surtax Royalty Rates for Copper and Gold

Mineral	Unit of Measure	Price (US$)	Ore	Concentrate	Metal
Copper	Tonnes	0-5,000	0%	0%	0%
		5,000-6,000	22%	11%	1%
		6,000-7,000	24%	12%	2%
		7,000-8,000	26%	13%	3%
		8,000-9,000	28%	14%	4%
		9,000 and above	30%	15%	5%
Gold *	Ounces	0-900			0
		900-1,000			1%
		1,000-1,100			2%
		1,100-1,200			3%
		1,200-1,300			4%
		1,300 and above			5%

Source: Ernst & Young Mongolia Mining Tax Guide 2012/2013. Gold sold to the Mongol Bank is charged at a flat rate of 2.5%.

For the financial evaluation of the Kharmagtai project, we have assumed royalty rates of 5% for both copper and gold, without any surtax.

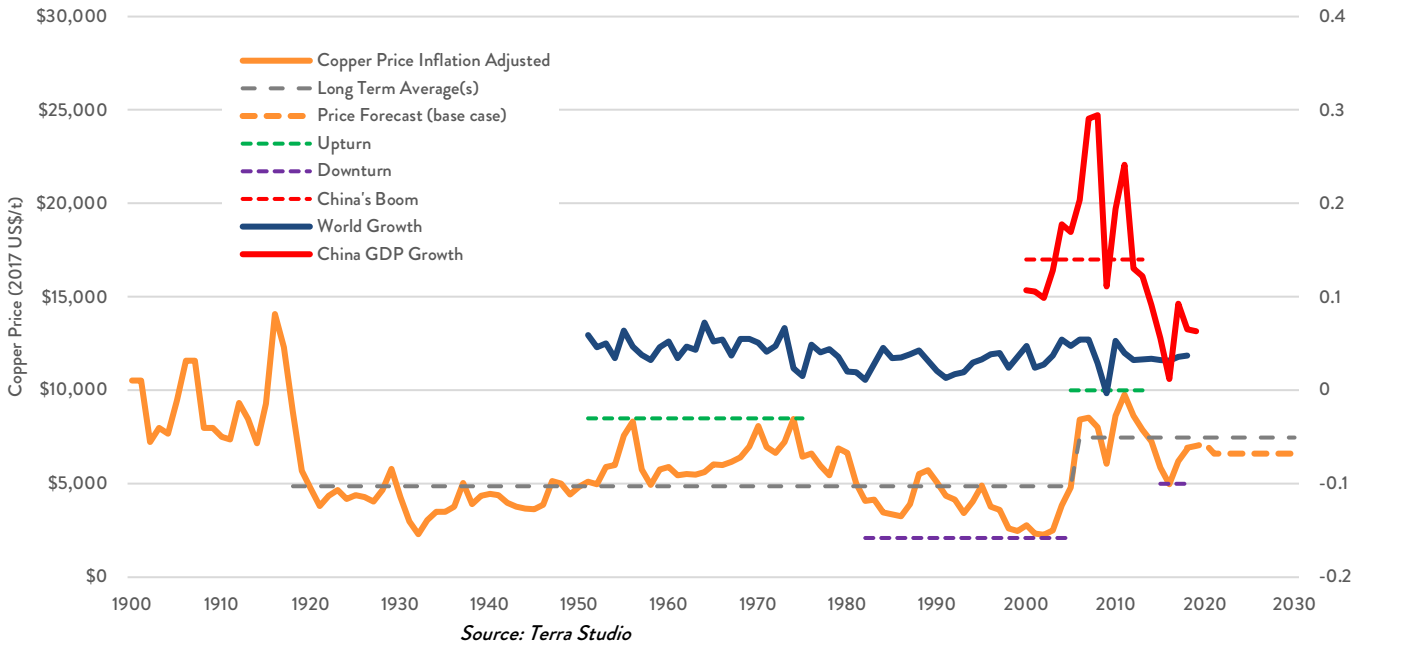
5. Copper Market

As for any other mining development, metal price assumptions have a strong impact on the economics of the project. Furthermore, the development timing in relation to the commodity cycle is critical (Dry M., 2018).

Market fundamentals

Figure 5.1 displays the copper price adjusted for inflation against world economic growth as well as China's economic growth from year 2000. Price cycles have been defined as sustained periods of prices either above the long-term average (upturn) or below the long term average (downturn). Note that the long term average includes a step change in 2005-06 as discussed further below.

Figure 5.1 –Copper Prices, World Economic Growth and China's Growth



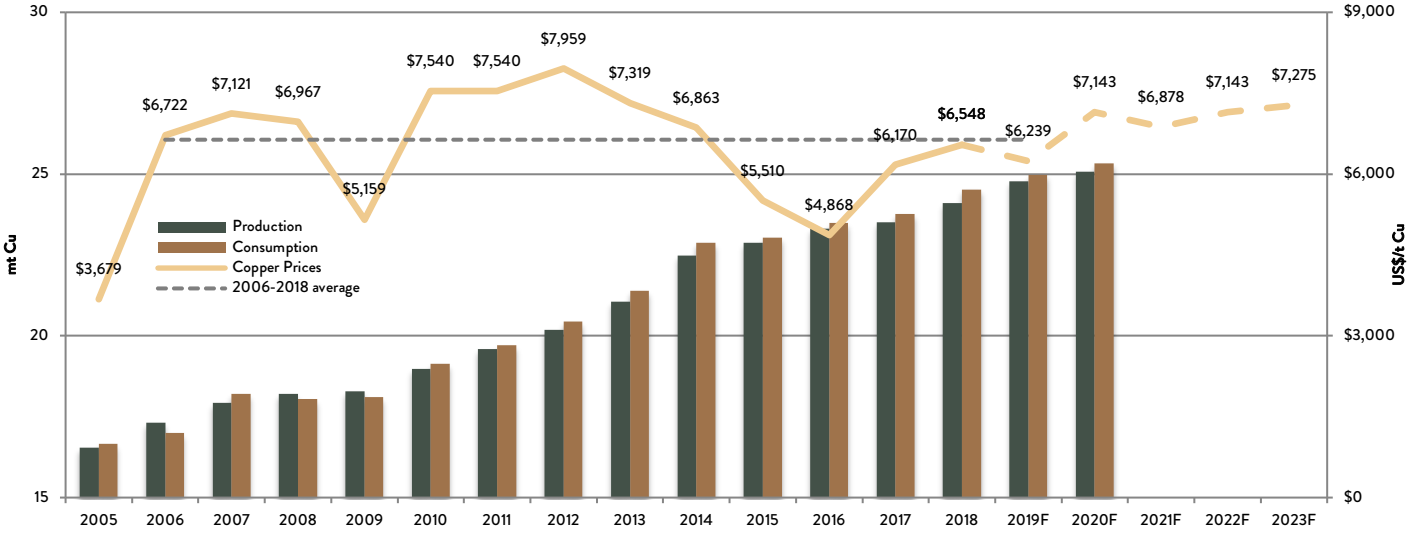
Source: Terra Studio

The first upturn of copper prices, i.e. prices above the long-term average correspond to a period of strong industrialisation (post WWII) in the Western world from the 1950's to mid 1970's, where world economic growth was sustained year on year close to the 5% mark. Following this period, copper prices drifted lower, while world economic growth lost strength. In parallel, supply saw the discovery and development of new large mines such as Escondida and Grasberg.

In 2000, China awakens. From 2000 to 2015, China experienced an unprecedented boom with year-on-year growth between 10% and 30%. Its GDP was multiplied by a factor of 10 in 15 years, with China becoming by far the world largest consumer of copper (around 50%). In parallel, the ore grade of copper mines declined significantly. Overall, this caused a step change in copper prices from 2006 onwards (see new average price level).

Since 2005, the supply and demand and yearly copper prices are summarised in the Figure 5.2.

Figure 5.2 – Historical Copper Supply & Demand and Annual Price Averages



Source: ICSG, Terra Studio. Copper forecast prices by S&P Capital IQ Consensus Estimates

The three years when copper prices fell significantly below the 2006-2018 average are:

- 2009 due to the Global Financial Crisis
- 2015 & 2016 when the Chinese economic stalled at 5.6% and 1.2% respectively

Outside those three years, copper price appear relatively stable in a market finely balanced, i.e. recorded yearly deficits or surpluses are typically estimated at less than 1% of global consumption.

From the second half of 2018, the copper price fell below $3/lb (or $6,614/t) with the start of a trade war between China and the US. Nevertheless, despite those incidents, the copper market continues to grow. The compound annual growth rate (CAGR) of global copper consumption has been 3.0% over the period 2005-2018.

Going forward and beyond the key level of demand from China/Asia, we see the global energy revolution increasing copper demand and supporting copper prices above US$3/lb.

Price Scenarios

For gold, we have selected a flat price of US$1,300/oz irrelevant of the copper scenario.

For copper, we have selected the following three flat price scenarios:

Copper Price Scenarios

Scenario (US$/t)	2018	2019YTD	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	LT
Global Trade War	$6,548	$6,239	n/a	n/a	$5,622 or $2.55/lb									
Base Case	$6,548	$6,239	n/a	n/a	$6,614 or $3.0/lb (2006-2018 average)									
High Cycle	$6,549	$6,239	n/a	n/a	$7,606 or $3.45/lb									

Source: Terra Studio.

Please note that pricing in the next couple of years is not relevant as the Kharmagtai project is still in the evaluation/development phase.

The Global Trade War is a doom scenario whereby copper prices would sink 15% below the 2006-2018 average to US$5,622/t or US$2.55/lb and stay at that level for the entire life of the project.

The Base Case scenario uses the average recorded over the last 12 years including some “incidents” mentioned earlier, i.e. the GFC, the dip in Chinese economic growth in 2015-16 and the current China-US trade war.

The High Cycle scenario considers that copper prices climb to an average of $7,606/t by 2022, supported by the rising demand from the global energy revolution (Electric Vehicles and Energy Storage Systems) and mine supply getting more expensive to produce (lower grades, deeper underground or more isolated mines).

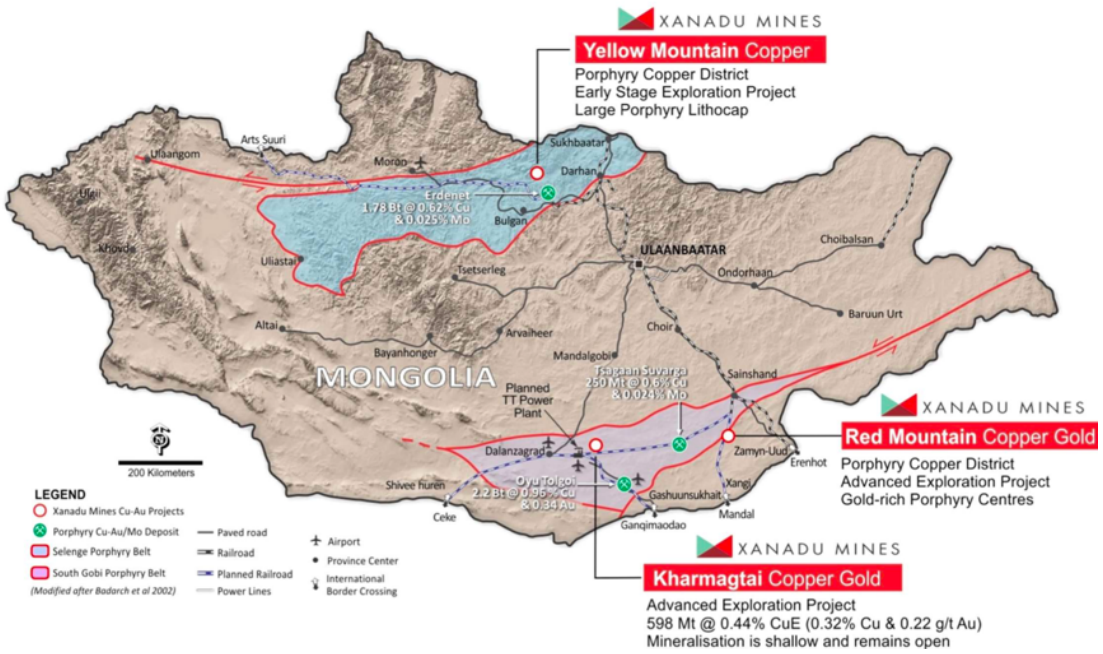
To support this scenario, we note that, over the past couple of years, many producers or developers have not had sufficient incentive to increase supply given the copper price relative weakness and costs associated with developing new mines or new capacity. We believe the lack of meaningful future supply could set the stage for sustainably higher prices for copper as restrained capex and a low level of official inventories (less than one week of consumption) could cause supply shortages.

6. Kharmagtai Copper-Gold Project

Location and infrastructure

The Kharmagtai porphyry copper-gold project is located within the Omnogovi Province of southern Mongolia, approximately 420 km southeast of Ulaanbaatar and 120 km north of Oyu Tolgoi porphyry copper-gold project.

Figure 6.1 – Kharmagtai Copper Gold Project Location



Source: XAM

The property can be accessed via paved road from Ulaanbaatar requiring six hours of travel time, with the last 1.5 hours on approximately 60 km of unsealed roads. The soum (sub-province) centre of Tsogttsetsii is situated approximately 60 km south from the project area and is serviced by daily flights from Ulaanbaatar requiring 45 minutes travel time. The Xanadu exploration camp is located just outside the southwest corner of the Mining Licence.

Kharmagtai is close to good infrastructure, with sealed roads from Ulaanbaatar to Dalanazagad within 70km of the project and an existing powerline from Tsogttsetsii to Manlai within eyesight of the project. A power plant is planned for the coal mine at Tsogttsetsii (70km from Kharmagtai) with rail lines planned from Tsogttsetsii to the Chinese border town of Ganqimaodao.

The project has a registered water resource. The project benefits from its location 10km from the national grid for power and similar distance the national road network. The area is almost uninhabited, and the terrain is gently undulating which makes siting of mining and related infrastructure straightforward.

Topography in the licence area is subdued and characterised by flat gravel covered plains and low undulating hills which range from 1,360 m to 1,250 m above sea level. Vegetation is sparse with low shrubs and grassy plains. The region experiences generally arid continental climatic conditions, varying between +30°C in summer and -30°C in winter.

Land Tenure and Ownership

Xanadu and its joint venture partner, Mongol Metals LLC, announced the acquisition of a 90% interest in the Kharmagtai porphyry copper-gold project from Turquoise Hill Resources in February 2014. Under the Mongol Metals LLC joint venture terms, Xanadu has earned an 85% interest in the Kharmagtai project, equivalent to a 76.5% effective interest, by funding acquisition and exploration costs.

The Kharmagtai Project is covered by a Mining Licence (MV-017387) which is approximately 66.5 km^2, was granted on 27 September 2013 and is valid for 30 years.

Title to the Mining Licence is held by Oyut Ulaan LLC, a Mongolian registered company that is 90% owned by Xanadu's joint venture company, Mongol Metals LLC. The remaining 10% of Oyut Ulaan LLC is owned by QGX Ltd a private company registered in Canada .

Project History

Copper mineralisation was first recognised at Kharmagtai by Russian-Mongolia exploration teams in 1979 and a limited programme of surface trenching and diamond core drilling followed. Exploration by QGX in the late 1990's identified copper-gold mineralisation at three main centres: Altan Tolgoi, Tsagaan Sudal and Zesen Uul. Ivanhoe Mines (IMMI) joint ventured into the project in 2002. Between 2002 and 2006 IMMI carried out extensive surface geochemistry and geophysics, excavated 119 trenches (65,636 m) and drilled 208 RC (27,747 m) and 172 diamond drill holes (54,269 m). This work defined Mineral Resources at Altan Tolgoi, Tsagaan Sudal and Zesen Uul. Between 2007 and 2011 Asia Gold (AGC: a subsidiary of Ivanhoe) assumed control of Kharmagtai exploration and subsequently focused on deep copper mineralisation associated with late stage tourmaline breccias previously recognised near Altan Tolgoi and Tsagaan Sudal.

Since acquiring the Property in 2014, Xanadu has undertaken substantial additional exploration and evaluation work including:

- Geophysics: 1,200 line-km ground magnetics acquisition, acquisition of 2,225 100 m-spaced ground gravity stations and reprocessing of historical datasets
- Trenching: 5,618 m
- Drilling: 71,553 m DDH, 14,220 m RC, 6,662 m RC-DDH, 26,136 m RPD for regional litho-geochemical sampling of basement rocks
- Multielement geochemical analyses and spectral analyses
- Structural studies
- Regional target ranking exercises integrating new data with historical data..

Geology

Kharmagtai is located within the Central Asian Fold Belt (CAFB), in the southern Mongolian fold system (Ruzhentsev and Pospelov, 1992), which comprises a zone of arc-continent collision that was active during several episodes from the Silurian to Early Carboniferous along the southern margin of the Siberian Craton. Kharmagtai lies within the Gurvansaikhan terrane, which forms an arcuate belt 600 km long and up to 200 km wide through southern Mongolia. The Gurvansaikan terrane hosts most of the known porphyry and intrusion-related mineralisation in the South Gobi, including:

- the Oyu Tolgoi copper-gold porphyry (Perello *et al*., 2001; Crane and Kavalieris, 2013)

- and the Tsagaan Suvarga copper-molybdenum porphyry (Watanabe and Stein, 2000).

Mineralisation at Kharmagtai is porphyry copper-gold style, related to a series of co-genetic porphyry centres. Distal gold-base metal-bearing breccia pipes and complex silicified structurally controlled breccia zones and younger tourmaline breccia also occur. Kharmagtai is a large and complex system with a number of targets that still remain to be tested.

Mineral Resources

The Mineral Resource estimate announced in October 2018 has been prepared by independent consultants, CSA Global Pty Ltd and is reported in accordance with the JORC Code (2012 Edition) and National Instrument 43-101 to support the Scoping Study on a shallow, higher grade 'starter project' released in April 2019. This is an interim resource upgrade. A global resource update incorporating results from Xanadu's fourth porphyry discovery at Kharmagtai, Zaraa, and other successful drilling will be incorporated as drilling progresses.

Kharmagtai Open Pit Mineral Resource (October 2018)

			Grades			Metal		
Deposit	Category	Mt	Cu Eq %	Cu %	Au g/t	Cu Eq. kt	Cu kt	Au koz
White Hill		45.2	0.42	0.30	0.23	189	135	340
Stockwork Hill	Indicated	74.4	0.59	0.38	0.41	441	286	972
Copper Hill		9.7	0.76	0.48	0.54	73	47	167
Total Indicated		**129.3**	**0.54**	**0.36**	**0.36**	**703**	**468**	**1,479**
White Hill		412.8	0.40	0.31	0.17	1,653	1,299	2,227
Stockwork Hill	Inferred	55.4	0.47	0.30	0.34	263	167	601
Copper Hill		0.7	0.39	0.31	0.16	3	2	4
Total Inferred		**468.9**	**0.41**	**0.31**	**0.19**	**1,919**	**1,468**	**2,832**

Kharmagtai Underground Mineral Resource (October 2018)

			Grades			Metal		
Deposit	Category	Mt	CuEq %	Cu %	Au g/t	CuEq. kt	Cu kt	Au koz
Stockwork Hill		1.2	0.68	0.45	0.46	8	5	18
Copper Hill	Indicated	0.2	0.63	0.46	0.33	1	1	2
Total Indicated		**1.5**	**0.67**	**0.45**	**0.44**	**10**	**7**	**21**
White Hill		3.5	0.56	0.46	0.19	19	16	21
Stockwork Hill	Inferred	4.8	0.68	0.43	0.49	33	21	77
Total Inferred		**8.3**	**0.63**	**0.44**	**0.37**	**52**	**37**	**98**

Source: XAM. Notes:

1. *A cut-off grade of 0.3% CuEq has been applied for open pit Mineral Resources*
2. *A cut-off grade of 0.5% CuEq has been applied for underground Mineral Resources*
3. *CuEq – copper equivalent was calculated using conversion factor 0.62097 for gold. Metal prices were $3.1/lb for copper and $1,320/oz for gold, recoveries – 70% for gold and 85% for copper (82.35% relative gold to copper recovery), copper equivalent formula applied: CuEq = Cu + Au * 0.62097 * 0.8235.*

Note the Cu Eq is derived from the following calculation:

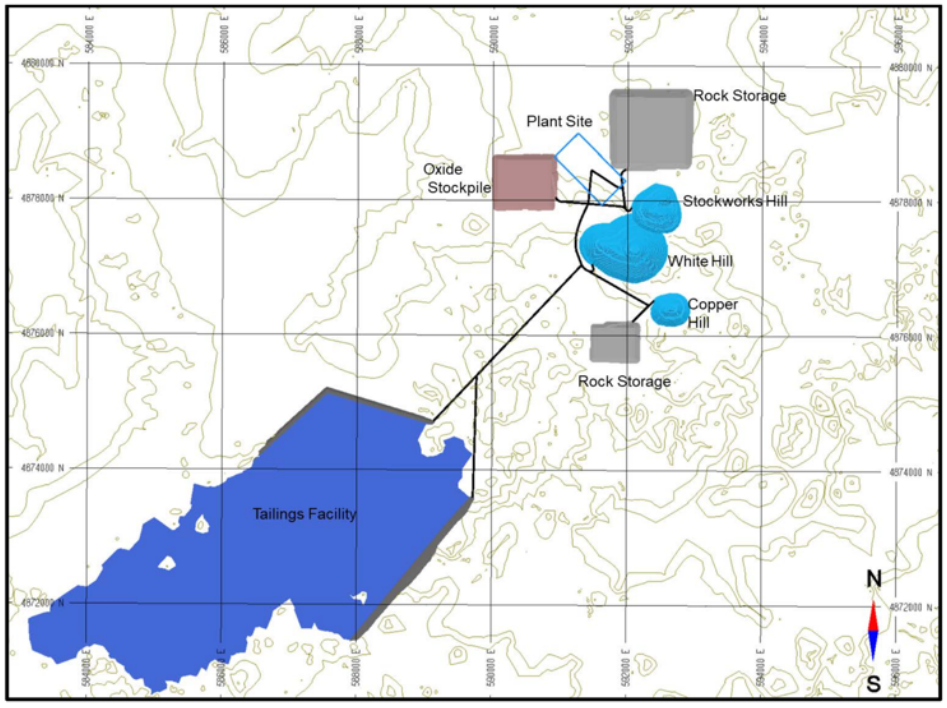
$$Cu\ Eq = Cu + Au\frac{Gold\ Price\ per\ gram}{Copper\ Price\ per\ tonne}x\ Percent\ x\ \frac{Gold\ Recovery}{Copper\ Recovery}$$

$$Cu\ Eq = Cu + Au\frac{\frac{1320}{31.103477}}{3.1\ x\ 2204.6226}x\ 100\ x\ \frac{70\%}{85\%}$$

Mining

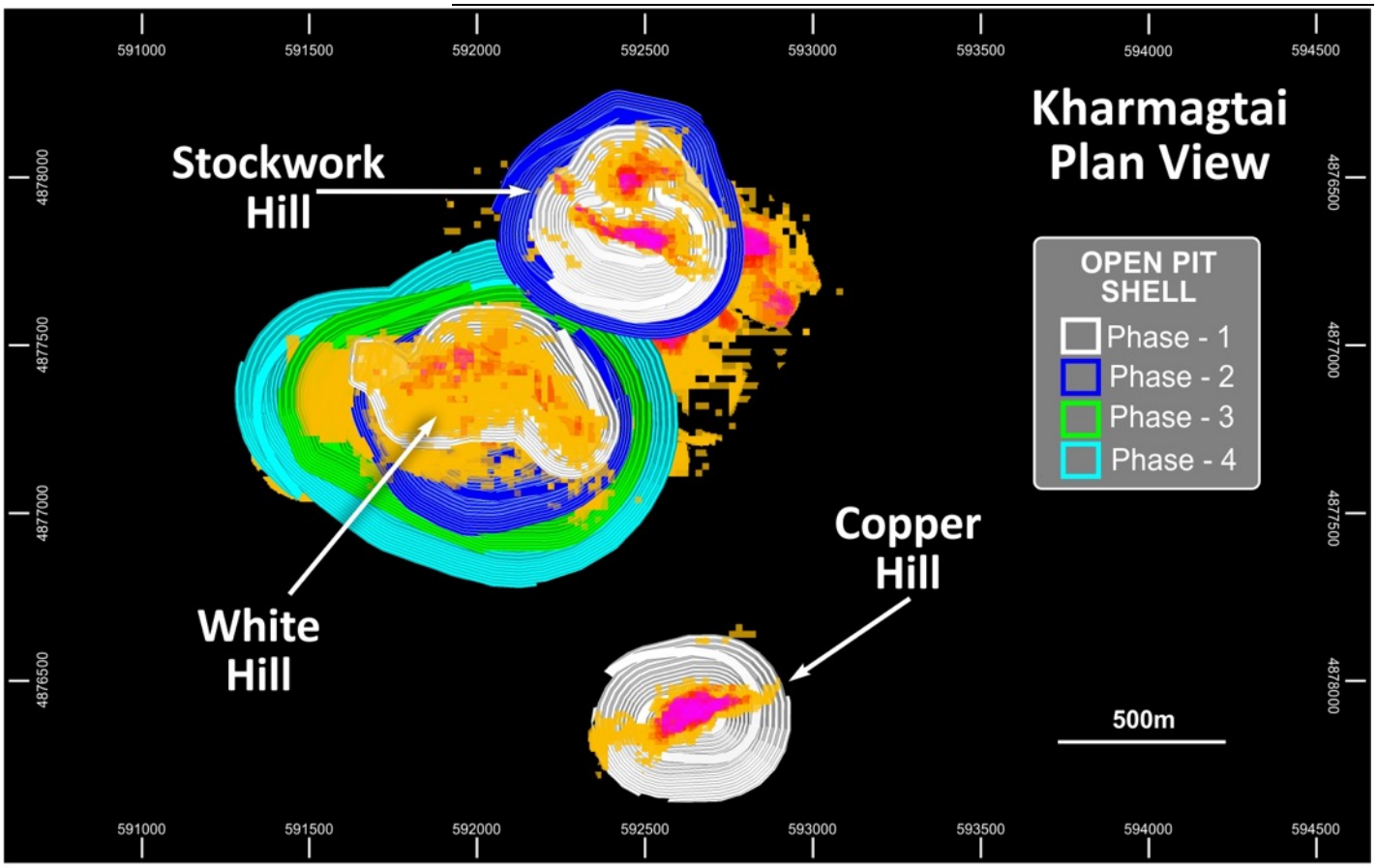
The Scoping Study has focused on mining sulphide mineralisation from three adjacent open pits, giving more flexibility in terms of ore sources. Mining is based on bulk open pit mining techniques using standard drill and blast, load, haul, crusher feed by an owner operator mining fleet. Pits have been designed to a depth of 200m at Stockwork Hill, 380m at White Hill and at 160m for Copper Hill. Mining is planned to be staged with the initial focus on higher-grade material to improve project economics. Waste material is to be stockpiled directly adjacent to the pit and tailings to be stored within a tailing's facility adjacent to the pit. The flat terrain provides several favourable areas for both waste and tailings facilities within proximity to the deposits (Figure 6.2).

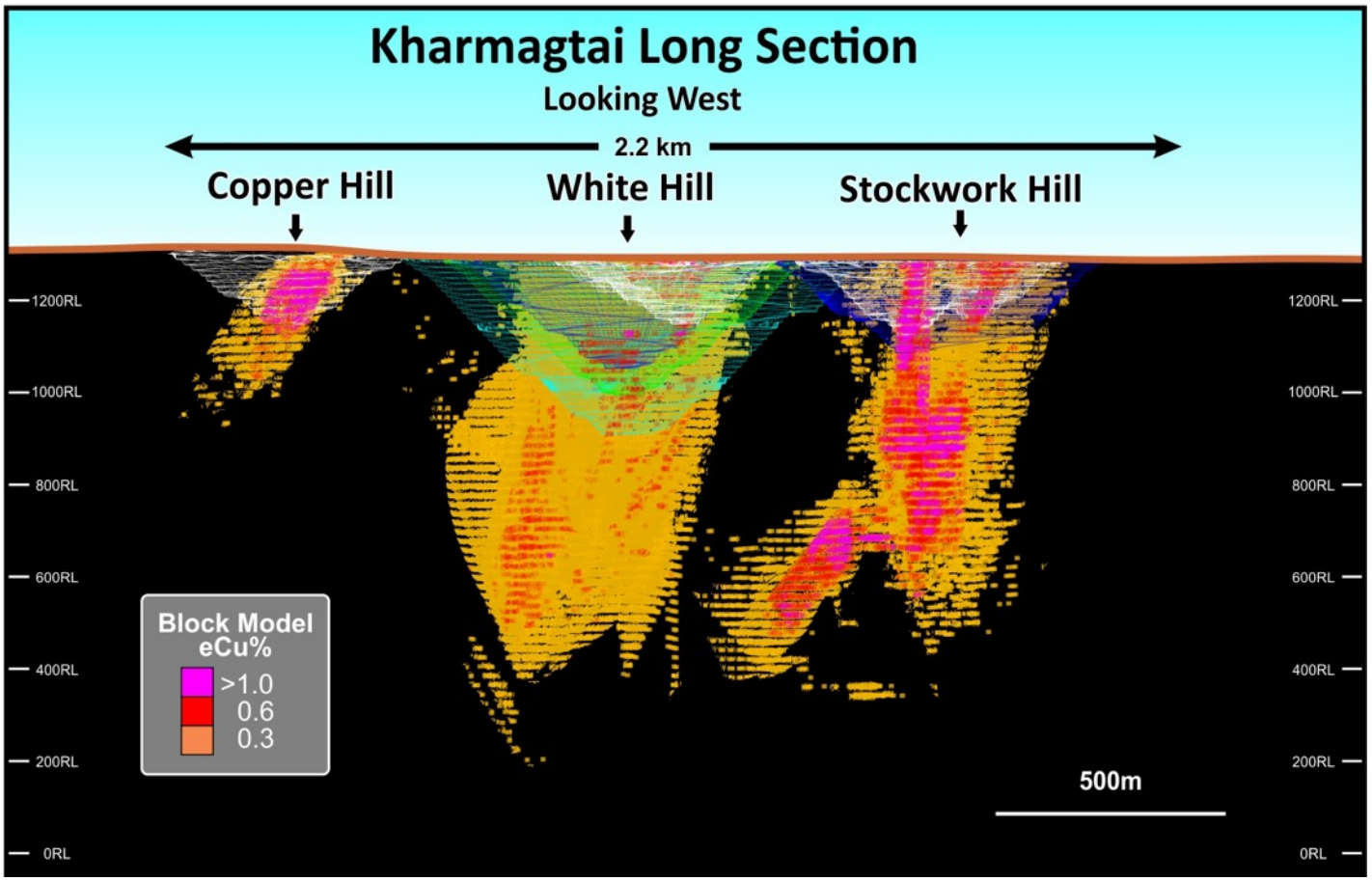
Figure 6.2 – Kharmagtai Sire Layout Plan



Source: XAM

Figure 6.3 – Kharmagtai Pit Design





Source: XAM

Mining Inventory

For the purpose of our financial evaluation, we have considered that all the mineral resource classified as Indicated (a priori close to surface) converts to mining inventory, as well as 40% of the Inferred mineral resource. This is summarised below.

Kharmagtai Assumed Mining Inventory

		Grades			Metal		
Category	Mt	Cu Eq %	Cu %	Au g/t	Cu Eq. kt	Cu kt	Au koz
100% Indicated	129.3	0.54	0.36	0.36	703	468	1,479
40% Inferred Hill	187.6	0.41	0.31	0.19	768	587	1,133
Total Mining Inventory	316.9	0.46	0.33	0.26	1,471	1,055	2,612

Source: Terra Studio

Looking at the pit design above and in particular the long section, we assumed that about 2/3 of the material is made of mining inventory and the remaining 1/3 is waste. This represents a waste to ore strip ratio of 0.5 to 1.

Mining

As detailed in the scoping study announcement, mining is based on bulk open pit mining techniques using standard drill and blast, load, haul, crusher feed by an owner operator mining fleet. Pits have been designed to a depth of 200m at Stockwork Hill, 380m at White Hill and at 160m for Copper Hill. Mining is planned to be staged with the initial focus on higher-grade material to improve project economics.

In terms of mine schedule, we have assumed two years of pre-stripping for a total of 25 Mt, followed by 16 years of mining and milling operations to extract and process 316.9 Mt of mining inventory.

The resource grades have been diluted by 15% resulting in head grades of 0.28% Cu and 0.22 g/t Au.

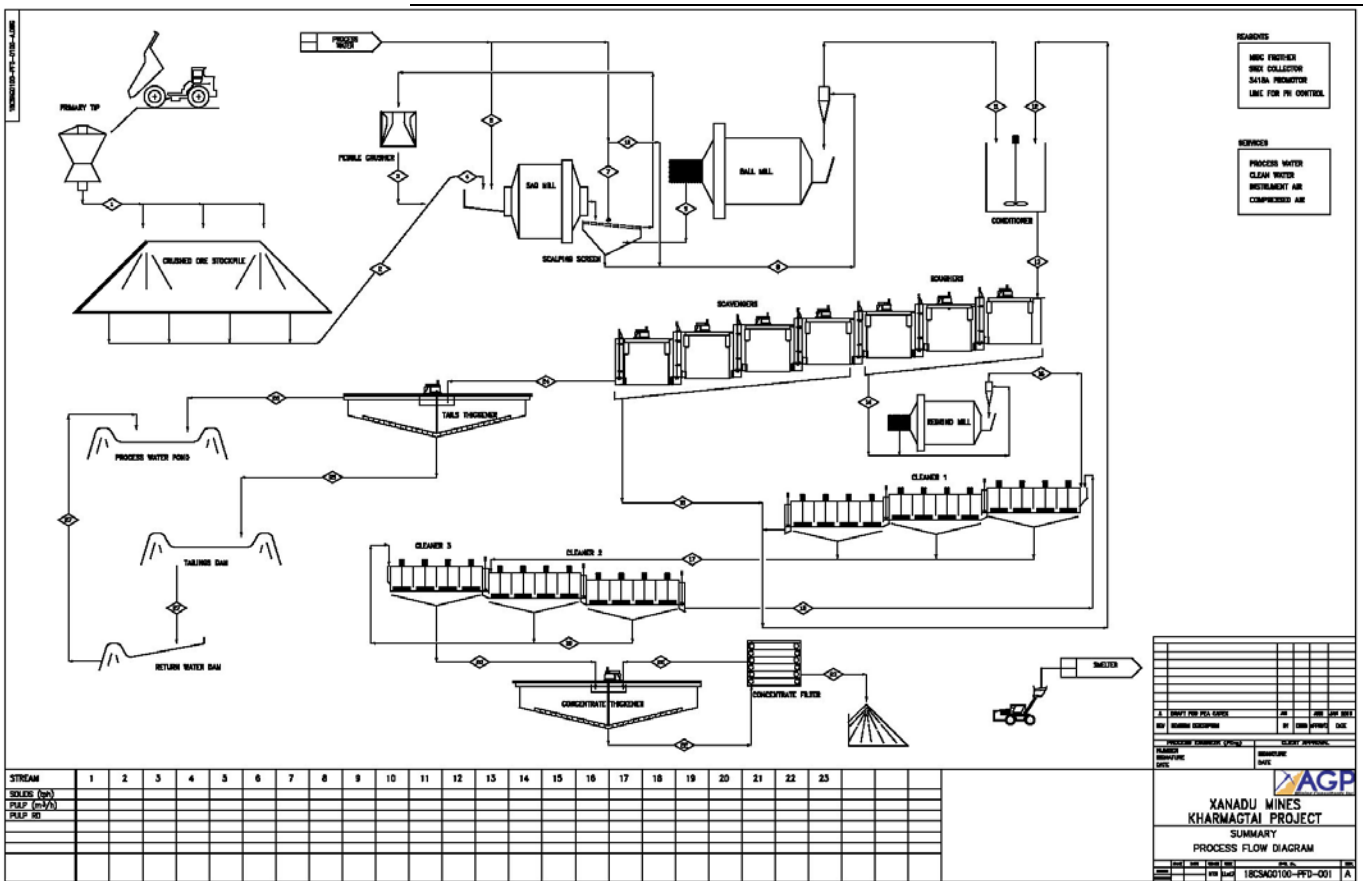
Ore and waste mining cost was assumed as per the open pit optimisation parameters at US$2.49/t mined.

Processing

The process flow chart envisaged for this project is illustrated in Figure 6.4. The flowsheet is very straightforward and uses proven technology for all process steps, including gyratory crushing, SAG & ball milling, rougher, scavenger and cleaner flotation, tailing and concentrate dewatering, plus tailing pumping and storage. The mineralization is judged to be of relatively low abrasion index and medium to high hardness. Reagent usage is straightforward.

Laboratory scale metallurgical work has been conducted on samples of mineralization likely to be processed at Kharmagtai, and this work indicates that copper recoveries of 90.9% and 85.7% plus gold recoveries of 76% and 69.1% for Copper Hill and White Hill respectively are suitable for this Scoping Study.

Figure 6.4 – Kharmagtai Process Flow Chart



Source: XAM

Process Plant Recoveries

Category	Proportion	Copper	Gold
Copper Hill	20%	90.9%	76.0%
White Hill / Stockwork Hill	80%	85.7%	69.1%
Result assumption		**87%**	**70%**

Source: Terra Studio, XAM

In terms of recovery we have assumed a weighted average (by ore mass) of the recoveries tested so far for Copper Hill and White Hill, resulting in recoveries of 87% and 70% for copper and gold respectively.

The processing costs was assumed as per the scoping study at US$5.03/t milled.

Capital Costs

The capital costs for the project have been developed based on indicative quotes for major mechanical equipment, benchmarking against similar projects globally and from CSA Global's database of recent project work. The estimates have been built up using industry standard methods and is valid as at Q1 2019.

The key capital items include the processing plant at US$209m, Mining and pre-stripping capital US$115m, Surface Infrastructure (power, water, roads, camp, workshop and tailings) US$61m and overall contingency of US$55m for a total of US$484 million.

Preproduction Capital Cost Estimates

Item	Amount
Open pit mining capital (mining fleet, pre-strip)	US$115m
Surface infrastructure (camp, workshop, power, water, tailings	US$61m
Processing	US$209m
Indirect Costs (owner's costs, EPCM)	US$44m
Contingency	US$55m
Total Initial Capital	**US$484m**
Sustaining Capital	US$194m
Environmental	US$5m

Source: XAM Scoping Study ASX announcement 11 Apr 2019.

Benchmarking and discussion about the low capital cost of the Kharmagtai Starter Pit project have been covered in Sections 1 and 2.

Operating Costs

Benchmarking and discussion of the operating costs of the Kharmagtai project have been covered in Sections 1 and 2.

Immediate Upside

Significant new zone of bornite gold-rich porphyry mineralisation at Stockwork Hill.

Drill hole KHDDH488 discovered a significant new zone of high-grade mineralisation outside the current open pit resource returning

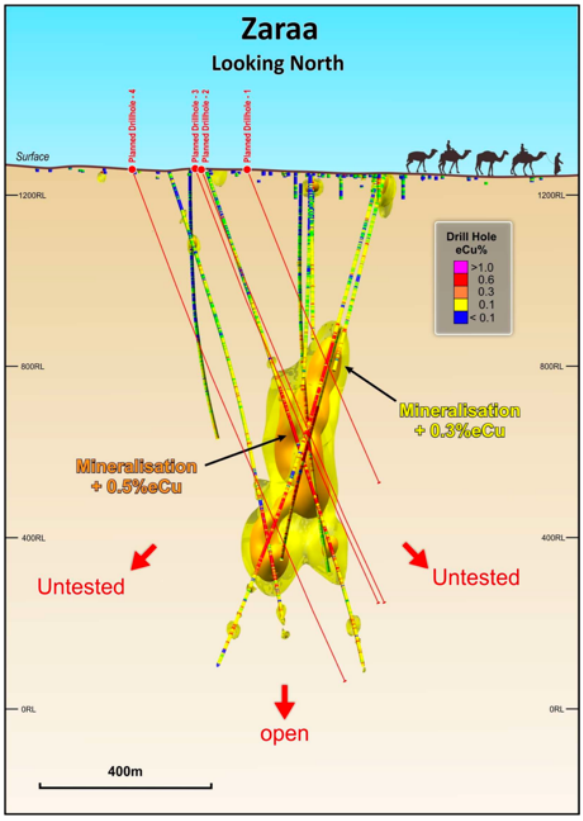
- KHDDH488 returns 126m @ 0.88% Cu & 1.39g/t Au (1.77% eCu or 2.77g/t eAu) from 550m; including 78m @ 1.14% Cu & 2.06g/t Au (2.45% eCu or 3.85g/t eAu) from 594m;
- KHDDH488a returns 102m @ 0.55% Cu & 0.72g/t Au (1.01% eCu or 1.58g/t eAu) from 260.5m; and
- KHDDH488b returns 127m @ 0.6% Cu & 0.81g/t Au (1.12% eCu or 1.75g/t eAu) from 243.1m.

Exploration

In April 2018, Xanadu discovered a new, large-scale porphyry deposit called Zaraa within the Kharmagtai lease with KHDDH462 returning 928.4m @ 0.3% Cu and 0.25g/t Au (0.47% eCu or 0.73g/t eAu) including 622m @ 0.37% Cu and 0.32g/t Au (0.57%e eCu or 0.9 g/t eAu).

A further six diamond drill holes have been drilled into Zaraa defining a body of mineralisation approximately 700m vertically, 400m long and 200m wide (Figure 6.5). Mineralisation is open at depth and along strike. Five diamond drill holes are planned to bring the drill spacing close enough to generate a maiden inferred mineral resource for Zaraa and planning is underway to drill at greater depths where Xanadu's geologists believe mineralisation broadens and a higher-grade bornite zone may occur.

Figure 6.5 – Cross section through the new Zaraa discovery



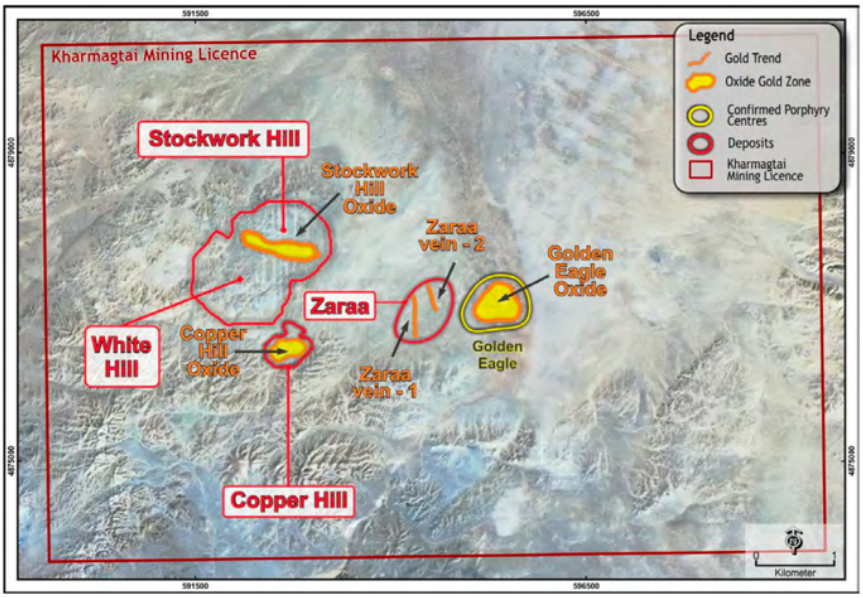
Source: XAM

Exploration at Kharmagtai during 2019 will focus on continuing to expand the current resources and advancing the highest priority exploration targets to provide additional high-grade resources.

Kharmagtai Oxide Gold Project

A number of oxide gold zones overlay the existing or prospective copper-gold porphyry mineralisation.

Figure 6.6 – Shallow oxide gold mineralisation prospects



Source: XAM

At Golden Eagle, KHDDH395 intersected 26m grading 2.27 g/t Au from a depth of only 42m.

Figure 6.6 – Core Photos of KHDDH395

Source: XAM

At Copper Hill, a number of drill holes delivered long economic intercepts indicating that the mineralisation is well spread and very close to surface.

Further drilling is required to delineate a mineral resource. But at this time there is enough drilling results to support an Exploration Target as follows:

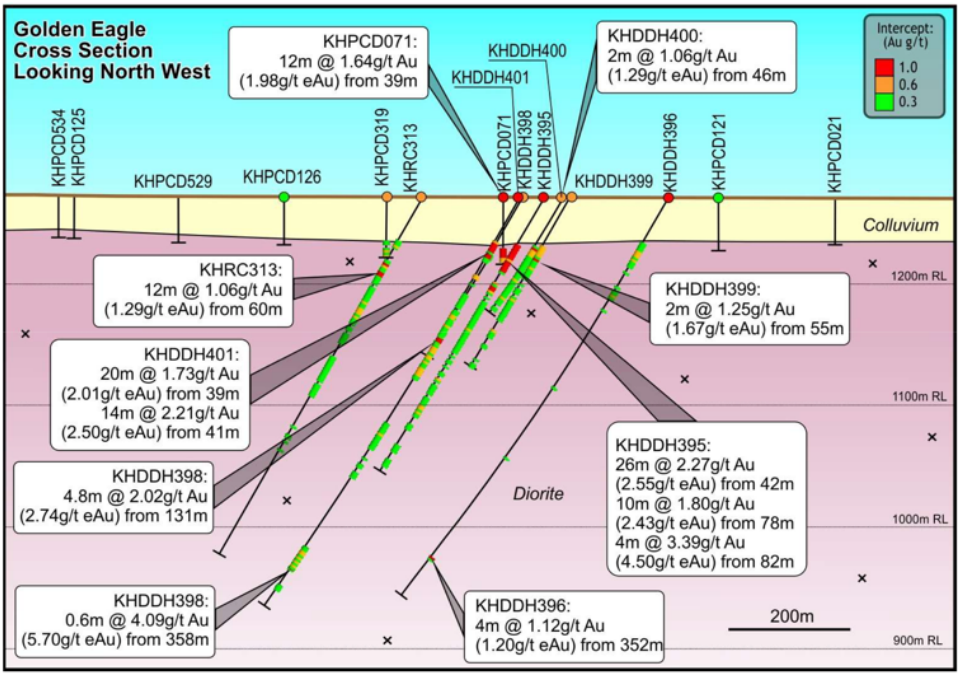
Oxide Gold Exploration Target and Valuation

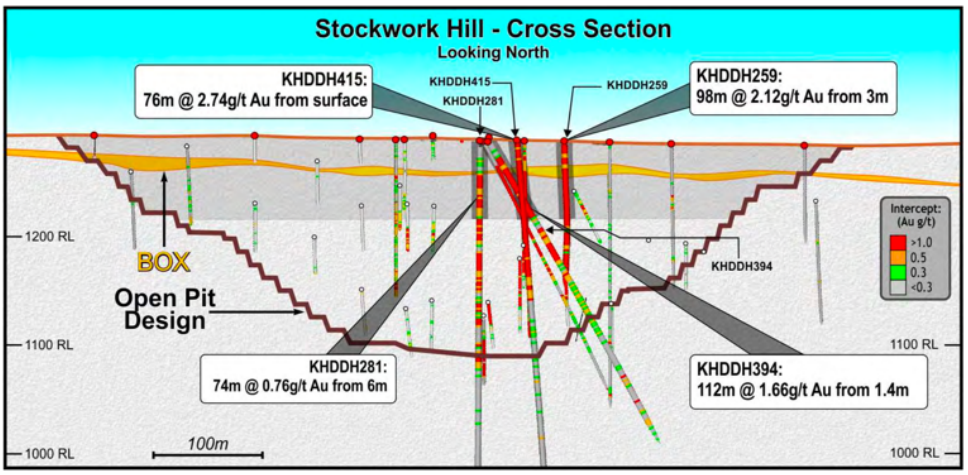
Target Name	Tonnage Range	Grade Range	Metal Min	Metal Max
Golden Eagle LG	66 to 103 Mt	0.3-0.6 g/t	636,585	1,986,916
Golden Eagle MG	6.2 to 14.5 Mt	0.6 to 1 g/t	119,601	466,186
Copper Hill Oxide Gold	0.62 to 1.65 Mt	1 to 2 g/t	19,933	106,097
Stockwork Hill Oxide Gold	1.4 to 3.3 Mt	1 to 2 g/t	45,011	212,195
Zaraan Vein I	49.75 to 97.5 kt	2.5 to 18 g/t	3,999	56,425
Zaraan Vein II	49.75 to 97.5 kt	1 to 3 g/t	1,599	9,404
Wolf Vein I & II	148 to 248 kt	2 to 4.5 g/t	9,517	35,880
Badger Vein	52 to 124 kt	2.8 to 5.7 g/t	4,681	22,724
Seventeen I & II	128 to 248 kt	1 to 1.5 g/t	4,115	11,960
Target Two	100 to 185 kt	1 to 3 g/t	3,215	17,844
Total (< 0.6 g/t Au)	66 to 103 Mt	0.3-0.6 g/t	636,585	1,986,916
Total (> 0.6 g/t Au)	8.7 to 20.4 Mt	0.75-1.43 g/t	211,672	938,715
Value (< 0.6 g/t Au)		*At US$10/oz*	US$6.4m	US$19.9m
Value (> 0.6 g/t Au)		*At US$20/oz*	US$4.2m	US$18.8m
Total Value Range			US$10.6m	US$38.6m
Total Value Range			A$15.1m	A$55.2m

Source: Terra Studio, XAM

We valued the potential mineralisation below 0.6 g/t Au at US$10/oz and above 0.6 g/t Au at US$20/oz, resulting in a value range of US$10.6 to US$38.6 million or A$15 to A$55 million.

Figure 6.6 – Golden Eagle and Stockwork Hill Cross Sections





Source: XAM

7. Directors & Management Team

The Directors have strong backgrounds in mineral exploration, project development, finance and accounting, with considerable international experience.

Dr Darryl Clark, Executive Chairman

BSc, PhD, FAusIMM

Darryl is an exploration geologist whose career has taken him throughout Australia, Central Asia and South East Asia for over 23 years. His responsibilities over the last 14 years have involved him in a diverse range of technological, political and cultural environments with unique challenges. During previous corporate roles with both Vale and BHP Billiton, and in consulting roles including SRK, he has been responsible for business development strategies, designing multi-commodity exploration programs and the co-ordination of exploration teams to deliver discovery events. Darryl is a member of the Audit and Risk Committee.

Dr Andrew Stewart, Executive Director & CEO

BSc, PhD, MAIG & MSEG

Dr Andrew is an exploration geologist with over 15 years' experience in mineral exploration; primarily focused on project generation, project evaluation and exploration strategy development throughout Asia and Eastern Europe. Andrew has particular expertise in porphyry copper-gold and epithermal gold deposits, but has worked across a diverse range of commodities. He holds a BSc (Hons) from Macquarie University and a PhD from the Centre of Ore Deposits and Exploration Studies at the University of Tasmania. During his time at Ivanhoe Mines and Vale, Andrew held various technical and management positions in Mongolia and Indonesia and has been involved in several green fields discoveries. After providing technical and program management for Vale in Indonesia and Mongolia, Andrew joined Xanadu Mines as Chief Geologist leading the gold and base metals project generation and evaluation team in Mongolia. Andrew had been Managing Director and Chief Executive Officer of Xanadu Mines. Andrew is the Chairman of the Safety, Health and Environment Committee.

Ganbayar Lkhagvasuren, Executive Director

Ganbayar is a co-founder of Xanadu and has been a Director since 2006. He is the joint venture partner in Mongol Metals LLC and brings a vital Mongolian perspective to the Board of Directors. He works closely with the Managing Director in corporate development and managing the day-to-day operations in Mongolia. Ganbayar is a member of the Safety, Health and Environment Committee.

Hannah Badenach, Non-Executive Director

Hannah is Director Mongolia at Noble Resources International Pte Ltd and a lawyer having practiced for several years, including 2 years in Mongolia with Lynch & Mahoney. Hannah has extensive Mongolian, commercial and business development experience, having managed QGX LLC until the company was sold in 2008 and now developing and running Noble's business in Mongolia. Hannah is a member of the Nomination and Remuneration, and Audit and Risk committees.

Michele Muscillo, Independent Non-Executive Director

Michele is a Partner with Hopgood Ganim Lawyers in Brisbane. He has practised exclusively in corporate law for the duration of his legal career and has extensive experience in mergers and acquisitions and capital markets transactions, including the negotiation of significant commercial contracts and agreements. His key areas of practice include Corporate Advisory and Governance, Mergers and Acquisitions, Capital Markets and Resources and Energy. Michele is also currently a Non-Executive Director with ASX-Listed Aeris Resources Limited (ASX: AIS) and a Non-Executive Director with ASX/TSX listed Cardinal Resources Limited (ASX/TSX: CDV). Formerly, Michele was also Non-Executive Director of Orbis Gold Limited from the time of its ASX listing, through the discovery of its flagship Natougou project and ultimately to the sale of the company to TSX-Listed SEMAFO Inc. (TSX: SMF) in 2015. Michele is the Chairman of the Nomination and Remuneration, and Audit and Risk committees.

8. Investment Risks

XAM is exposed to a number of risks including:

- **Geological risk**: the actual characteristics of an ore deposit may differ significantly from initial interpretations.
- **Resource risk:** all resource estimates are expressions of judgment based on knowledge, experience and industry practice. Estimates, which were valid when originally calculated may alter significantly when new information or techniques become available. In addition, by their very nature, resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate.

- **Feasibility risk**: once mineral deposits are discovered, it take a number of years from the initial phases of drilling until production is possible, during which the economic feasibility of production may change. Substantial time and expenditures are required to:
    - establish mineral reserves through drilling;
    - determine appropriate mining and metallurgical processes for optimizing the recovery of metal contained in ore;
    - obtain environmental and other licenses;
    - construct mining, processing facilities and infrastructure required for greenfield properties; and
    - obtain the ore or extract the minerals from the ore.
- **Commodity price risk:** the revenues XAM will derive through the sale of copper and cobalt concentrate expose the potential income to copper and cobalt price risks. The copper and cobalt prices fluctuate and are affected by many factors beyond the control of XAM. Such factors include supply and demand fluctuations, technological advancements and macro-economic factors.
- **Exchange Rate risk:** The revenue XAM derives from the sale of metal concentrates products exposes the potential income to exchange rate risk. International prices of various commodities are denominated in United States dollars, whereas the costs base is in Mongolian Tugriks and USD and the financial reporting currency of XAM is the Australian dollar, exposing the company to the fluctuations and volatility of the rate of exchange between the MNT, USD and AUD as determined by international markets.
- **Mining risk:** A reduction in mine production would result in reduced revenue.
- **Processing risks:** A reduction in plant throughput would result in reduced revenue. In all processing plants, some metal is lost rather than reporting to the valuable product. If the recovery of metal is less than forecast, then revenue will be reduced.
- **Operational cost risk:** an increase in operating costs will reduce the profitability and free cash generation of the project.
- **Management and labour risk**: an experienced and skilled management team is essential to the successful development and operation of mining projects.

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