



CONCENTRATE MARKETING STUDY

TROILUS GOLD PROJECT

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OCEAN PARTNERS UK LIMITED

Ocean Partners UK Limited offers a complete range of trading services for miners, smelters, refiners and metal consumers around the world. Working closely with our global partners we offer customized risk management while linking clients to unique market opportunities.

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EXECUTIVE SUMMARY

Based on the specifications provided, the Troilus Cu-Au flotation concentrate would be regarded as a very clean material with a slightly lower than average copper grade but a significant gold content. It can be assumed with some confidence that a market will readily be found for the proposed 70kdm/a of production.

Glencore's Horne smelter may be a 'natural' home for a significant proportion of the Troilus flotation concentrate. It is understood that Troilus Gold is in direct contact with Glencore in this regard. This report is focused on potential alternative off-take arrangements.

The range of commercial terms for four potential options for selling the Troilus concentrate in the international market are detailed in this report. Realised terms for the material described containing 14.9% Cu, 111g/t Au and 303g/t Ag are summarised in the table below:

Commercial terms (LOM average)

	Direct sales to Aurubis	Direct sales to Boliden	Direct sales to PPC (Japan)	Sales to Ocean Partners
Delivery	CIF FO Brunsbuttel, Germany	CIF FO Skelleftea, Sweden	CIF FO Saganoseki, Japan	DAP Montreal warehouse.
Inland truck freight	\$72.5/wmt	\$72.5/wmt	\$72.5/wmt	\$72.5/wmt
Port handling costs	\$20/wmt	\$20/wmt	\$20/wmt	Quarterly freight credit to be agreed equivalent to CIF FO Taiwan basis 5,000 wmt shipments for Seller's account. (\$110/wmt based on assumed freight rates to Asia).
Ocean Freight	\$65/wmt	\$80/wmt	\$90/wmt	
Freight adjustment	-	-	-	
Treatment charge	Benchmark + 10%. Assume \$77/dmt	\$85/dmt	Benchmark. Assume LT Average \$70/dmt	Benchmark -10% Assume LT Average \$63/dmt
Copper payment	96.6% MD 1.1 units	96.6% MD 1.1 units	96.5% MD 1.1 units	96.6% MD 1.1 units
Copper refining charge	\$0.077/lb	\$0.85/lb	\$0.07.lb	\$0.063/lb.
Gold payment	98% MD 2g/t	97% MD 2g/t	98.15%	97.5% MD 2g/t.
Gold refining charge	\$5.0/oz	\$5.0/oz	\$4.0/oz	\$5.0/oz
Silver payment	97% MD 20g/t	97% MD 20g/t	90%	90%
Silver Refining charge	\$0.50/oz	\$0.50/oz	\$0.40/oz	\$0.50/oz
Penalties	Assumed to be a clean concentrate attracting no penalties.			
Estimated Ocean Transit Time	30	45	75	75
QP	2 MAMA	2 MAMA	2 MAMA	M+1 or 2 MAMA with option to price at any point before onset of QP.
Payment	30 days after arrival	10 days after arrival	30 days after arrival	End of Month after month of delivery to warehouse. Earlier financing available at 3M LIBOR + 5.5%.

The treatment and copper refining charges and freight costs presented above are long-term averages intended for financial modelling purposes. As described in the discussion of the global copper concentrate market included in this report, TCRCs are likely to be declining to levels below long-term averages in the years immediately following the proposed project start date in the second half of this decade.

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The benchmark-based terms proposed can be regarded as conservative assumptions reflecting the desire of financing banks to see calculations based on direct sales to smelters under long-term contracts. It is probable that at least a portion of the project's output could be sold to traders under either long-term or spot contracts. Currently, Ocean Partners is willing to offer purchase terms at Benchmark -10%.

It will be important for Troilus Gold Corporation to ensure that the overall commercial terms attached to sales remain competitive throughout the entire life of the project. This report proposes several marketing strategies intended to mitigate this risk.

It is likely that international smelters will require minimum lot sizes of at least 5kdmt in bulk. If Troilus Gold does opt for any of the available options for direct smelter sales, then Ocean Partners could step in between the contract and finance from holding certificate to contractual payment terms at 3M LIBOR +5.5%. Ocean Partners can also assist with pricing services before the onset of the direct smelter quotational period (QP).

INTRODUCTION

Troilus Gold Corporation is evaluating a project to re-start the former Troilus mine located northeast of the Val-d'Or district of Quebec, Canada. Mining at the site, which was formerly owned by Inmet Mining Corporation, ended in April 2009 and the process plant at the site stopped operation in June 2010.

It is intended that a new process plant at the mine site will produce a gravity gold concentrate together with approximately 70kdmt/a of a copper/gold flotation concentrate. The flotation concentrate will be sold to third-party smelters for recovery of the contained copper, gold and silver.

The specification of a copper concentrate produced from metallurgical testwork on ore from an area of the mine known as J-Zone is summarised in the table below: -

Element	Unit	Value	Element	Unit	Value		
Silver	Ag	g/t	303	Manganese	Mn	ppm	89
Arsenic	As	ppm	86	Molybdenum	Mo	ppm	1680
Gold	Au	g/t	111	Nickel	Ni	ppm	600
Barium	Ba	ppm	31	Lead	Pb	ppm	719
Bismuth	Bi	ppm	96	Palladium	Pd	g/t	0.07
Calcium	Ca	%	2.0	Platinum	Pt	g/t	0.07
Cadmium	Cd	ppm	64	Sulphur	S	%	38.3
Cobalt	Co	ppm	462	Antimony	Sb	ppm	13
Chrome	Cr	ppm	220	Selenium	Se	ppm	45
Copper	Cu	%	14.9	Silicon	Si	%	1.49
Fluorine	F	%	0.01	Strontium	Sr	ppm	103
Iron	Fe	%	31.5	Uranium	U	ppm	1.4
Mercury	Hg	ppm	3	Zinc	Zn	ppm	9120
Magnesium	Mg	%	1.38				

It is understood that Troilus Gold is in direct contact with Glencore regarding supplying concentrate to the Horne smelter which is also located in Quebec.

The purpose of this report is to provide a review of alternative options for marketing the Troilus flotation concentrate including: -

- Current market demand with comments on specific aspects impacting marketability.
- 5 to 10-year outlook on market demand with comments on specific aspects impacting marketability.
- Detailed current commercial terms available and locations of potential buyers, and 5 to 10-year outlook on commercial terms available and locations of potential buyers
- Inland and ocean freight analysis.

COPPER CONCENTRATE QUALITY

Copper concentrate quality – general overview

The quality of an individual copper concentrate is usually defined by its copper grade, precious metal content and the presence of otherwise of any deleterious elements.

Copper grade

The most common copper bearing mineral recovered in sulphide concentrates is Chalcopyrite (CuFeS_2) which contains 35% copper. Higher grade sulphide concentrates may contain some Bornite (Cu_5FeS_4) which contains 63% copper. Incomplete liberation of the copper bearing minerals at the grinding stage means that the overall copper grade of the final concentrate will be diluted by the presence of gangue minerals which are usually present in the form of oxides of silicon, calcium, aluminium and magnesium.

For concentrates containing below 28.57% Cu and above 20% Cu the proportion of copper in concentrate is usually calculated by a 'one-unit deduction'. Hence the proportion of copper paid for in a lower grade concentrate is less than would be received for higher grade material. For example: -

- For a concentrate containing 25% copper $(25\% - 1\%)/25\% = 96.0\%$ payable.
- For a concentrate containing 28.5% copper $(28.5\% - 1\%)/28.5\% = 96.49\%$ payable.

For concentrates containing below 20% Cu and above 10% Cu the proportion of copper in concentrate is usually calculated by a '1.1 unit deduction'. For grades below 10% the deduction can be anywhere from 1.2 units to 1.5 units.

The net value of a copper concentrate is derived by deducting treatment and refining charges together with any penalties for deleterious elements from the value of the paid metal. Since the treatment charge for a copper concentrate is expressed in \$/dmt of concentrate it is proportionally higher relative to the copper content for lower grade concentrates.

Precious metals

Precious metals contained in copper concentrates are recovered at the electro-refining stage in the form of an insoluble 'anode sludge'. Most copper concentrate purchase contracts will include terms for the payment of contained silver and gold above certain minimum thresholds.

As noted elsewhere in this report, Chinese smelters have come to dominate the market for custom copper concentrates in recent years. However, it should be noted that many Chinese copper smelters have not yet established a consistent supply of gold bearing copper concentrates. As a consequence, they have not had the opportunity to optimise their operations for the recovery of gold and the payment scales they can offer are lower than can be found elsewhere. It should also be noted that TCRCs offered by Chinese smelters for material with a significant silver content will reflect a non-refundable, 13% VAT attached to the silver content in copper concentrates imports.

Smelters elsewhere in Asia and in Europe are therefore currently the preferred destinations for copper concentrates with a significant precious metal content.

Typical payment terms for precious metals contained in copper concentrates

		China	Japan / Korea	Europe
Gold	< 1g/t	None	None	Pay 97 to 98% minimum deduction 0.7 to 1.0g/t
	1 – 3g/t	90%	90%	
	3 – 5g/t	92%	94%	
	5 –10 g/t	93% to 94%	96%	
	10 - 15g/t	95 to 96%	96.5 – 97%	
	15-50 g/t	96 – 97%	97.5%	
	> 50 g/t	97-97.5%	98.00% - 98.20%	
RC	\$5.00/oz.	\$6.00/oz	\$5.00/oz	
Silver	Pay	Pay 90% if the content exceeds 30g/t.	Pay 90% if the content exceeds 30g/t.	Pay 97% minimum deduction 20-30g/t
	RC	\$0.40/oz	\$0.50/oz	\$0.30/oz

Chinese import limits

In 2006 China introduced new legislation named 'Harmful Content of China Imported Copper Concentrates (No. 49/2006)' under the China Import and Export Inspection Act. This imposed import limits on certain deleterious elements contained in copper concentrates. As a consequence, Chinese port authorities became empowered to reject copper concentrate imports containing in excess of 0.5% arsenic, 6% lead, 1000ppm fluorine, 100ppm mercury or 500ppm cadmium.

Certain complex materials with a significant gold content are able to access the Chinese market by obtaining classification as a gold concentrate either directly or as part of a blend. Until recently, to achieve this the gold content of the imported material needed to exceed 20g/t and its value had to exceed that of the contained copper. In addition, the concentrate needed to contain <20% moisture and have a size analysis of at least 50% -200# (74µm). If these conditions were met there was no limit for the arsenic content. However, these regulations will change during the second half of 2021. It is understood that under the new conditions, material containing >15g/t Au will be regarded as a gold concentrate however the maximum permissible arsenic content will be 3.5% As between 15g/t and 60g/t Au and 6.5% As above 60g/t Au.

Deleterious elements

Smelters will charge penalties for treating concentrates in which the level of certain deleterious elements exceeds a given threshold. These penalties reflect the additional costs associated with processing and disposing of such materials together with any additional environmental controls that may be required. Typical penalty limits and deductions are summarised in the table below:-

Typical penalties for deleterious elements in copper concentrates

		Comment	Typical Limit	Typical penalty deduction per tonne of concentrate
Arsenic	As	Reduces conductivity of refined copper. Due to toxicity, the smelter incurs extra costs associated with control of off-gases and dust & slag disposal.	0.20%	\$2 to \$3 per 0.1% up to 0.5% \$5 to \$8 per 0.1% up to 1% \$8 to \$12 per 0.1% above 1%
Alumina	Al ₂ O ₃	Increases melting point and viscosity of slag. Smelter incurs extra heating costs	3%	\$1 to \$2 per 1%.
Antimony	Sb	Reduces conductivity, annealability and drawability of refined copper. Toxicity issues	0.05%	\$1 to \$2 per 0.01%.
Bismuth	Bi	Low concentrations cause rod cracking and poor drawability	0.02%	\$1.5 to \$3.0 per 0.01%
Cadmium	Cd	Due to toxicity. The smelter incurs extra costs associated with control of off-gases and dust & slag disposal.	0.03%	\$1.5 to \$5.0 per 0.01%
Chlorine	Cl	Forms corrosive hydrochloric acid	300ppm	\$1 to \$3 per 100ppm
Fluorine	F	Forms corrosive hydrofluoric acid	300ppm	\$1 to \$2 per 100ppm
Lead	Pb	Toxicity issues. Anode passivity issues in electro-refining.	1%	\$1 to \$5 per 1%
Magnesia	MgO	Similar to alumina.		
Mercury	Hg	Toxicity issues. Can contaminate smelter acid.	5ppm	\$0.1 to \$5 per 1ppm
Molybdenum	Mo	Scaling issues in furnace.		
Nickel Cobalt	+ Ni + Co	Limits on Ni content in LME grade A cathode. Removed from refinery electrolyte as nickel sulphate. Cobalt follows nickel at electrolyte purification stage.	0.50%	\$1 per 0.1%
Selenium	Se	Makes copper cathode prone to cracking. Can cause copper losses to anode slimes.	300ppm	\$1.50 per 100ppm
Silica	SiO ₂	Similar to alumina, but less of a problem since silica is added to furnace as a flux. Excessive silica content will lead to miner incurring extra cost through TC and freight costs.	10%	\$1 per 1%
Tellurium	Te	Similar to Selenium		
Uranium	U ₃ O ₈	Smelters can be reluctant to accept material with an elevated uranium content because radioactive decay products accumulate in smelter flue dust. Limit for acceptance in China is 1 Bq/g (approx. 80ppm) or 10 x background count.		
Zinc	Zn	Reports to slag increasing viscosity and potentially leading to copper losses.	3%	\$1 to \$5 per 1%

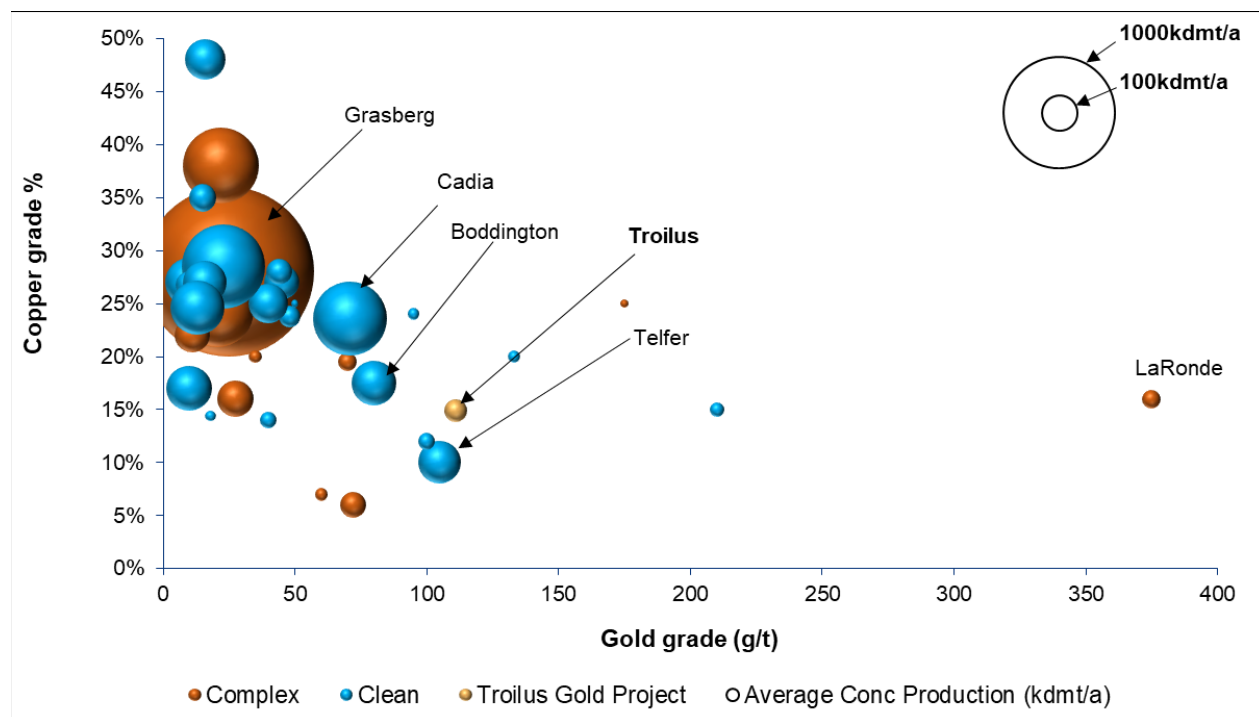
Troilus Gold Project – concentrate quality

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Calcium	Ca	%	2.0	Platinum	Pt	g/t	0.07
Cadmium	Cd	ppm	64	Sulphur	S	%	38.3
Cobalt	Co	ppm	462	Antimony	Sb	ppm	13
Chrome	Cr	ppm	220	Selenium	Se	ppm	45
Copper	Cu	%	14.9	Silicon	Si	%	1.49
Fluorine	F	%	0.01	Strontium	Sr	ppm	103
Iron	Fe	%	31.5	Uranium	U	ppm	1.4
Mercury	Hg	ppm	3	Zinc	Zn	ppm	9120
Magnesium	Mg	%	1.38				

The Cu and Au grades of the proposed Troilus flotation concentrate are compared with a peer group of 40 internationally traded copper-gold concentrates (>10g/t Au & 5% Cu) on the chart below.

Copper and gold concentrates



In terms of copper and gold grades the proposed Troilus flotation concentrate is comparable to material produced at the Telfer and Boddington mines in Australia. Although these qualities are

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not regarded as complex, they do have slightly elevated arsenic and fluorine levels compared to the proposed Troilus product.

A significant proportion of the other Cu-Au concentrates in the market are also understood to attract penalties for elevated levels of deleterious elements. These are typically for arsenic (e.g. Chelopech, Mount Carlton and Lepanto) or fluorine (Grasberg, Salobo, OK Tedi). Concentrate from the LaRonde mine in Quebec has the highest gold content of the peer group at around 375g/t but is regarded as complex due to elevated bismuth levels.

Based on the specifications provided, the Troilus flotation concentrate would be regarded as a very clean material with a slightly lower than average copper grade but a significant gold content. It can be assumed with some confidence that a market will readily be found for the proposed 70kdmt/a of production.

MARKETING AND COMMERCIAL TERMS

International market – direct sales to smelters

A clean gold bearing material such as the Troilus flotation concentrate is likely to be regarded as an attractive feed material by many smelters. As outlined elsewhere in this report, the highest gold payables for such material are likely to be received from smelters in Japan (PPC / Mitsubishi) and Korea (LS Nikko) or from European buyers such as Aurubis or Boliden, with the Chinese market lagging behind mainly due to decreased gold payments.

Direct sales to smelters can be linked to prevailing benchmark TCRCs which for 2024 are \$80/t & 8.0c/lb. Alternatively, a long-term agreement can be made at fixed TCRCs. As discussed elsewhere in this report, it is expected that future long-term average benchmark TCRCs will average around \$80/t & 8.0c/lb in 2023\$ terms.

Indicative terms from key potential off-takers are presented in the paragraphs below. These are based on recent discussions and business with the relevant smelters.

It is likely that international smelters will require minimum lot sizes of at least 5kdmT in bulk. Likely receivers including Aurubis, Boliden and Pan Pacific tend to reserve limited container handling capacity for higher grade gold concentrates. As such, it is likely that bulk shipments would be required for the Troilus concentrate. If container shipments were accepted, there are likely to be additional handling charges of \$15/wmt for bulk in containers and \$30/wmt for bags in containers.

Pan Pacific Copper in Japan has indicated likely terms for purchase of Troilus concentrates as follows:

Pan Pacific Copper indicative terms

Copper payment	96.5%. Minimum deduction 1.1 units
Silver payment	90% above 30g/t.
Gold payment	90% If over 1g/dmt up to and including 3g/dmt 93% If over 3g/dmt up to and including 3g/dmt 95% If over 5g/dmt up to and including 10g/dmt 96% If over 10g/dmt up to and including 15g/dmt 97% If over 15g/dmt up to and including 20g/dmt 97.5% If over 20g/dmt up to and including 20g/dmt 97.75% If over 30g/dmt up to and including 50g/dmt 98% If over 50g/dmt up to and including 80g/dmt 98.15% above 80g/dmt
Treatment charge	Benchmark. Assume LT Average US\$70/t CIFFO Japan
Copper refining charge	US\$0.07/lb
Silver refining charge	US\$0.4/oz
Gold refining charge	US\$4.0/oz

Aurubis has expressed a firm interest in taking 40kdmT/a of production and would be willing to offer an annual benchmark + premium related TCRC or a fixed TCRC for a long-term agreement. The likely terms that could be negotiated with Aurubis for a long-term offtake agreement are summarised in the table below.

Aurubis indicative terms

Copper payment	96.6%. Minimum deduction 1.1 unit
Silver payment	97%. Minimum deduction 20g/t
Gold payment	98%. Minimum deduction 2g/t
Treatment charge	Benchmark + 10%. Assume LT average US\$77/t CIF Brunsbuttel, Germany
Copper refining charge	US\$0.077/lb
Silver refining charge	US\$0.5/oz
Gold refining charge	US\$5.0/oz

Sales to Boliden smelters are likely to be at similar terms to those offered by Aurubis. However, shipping costs to discharge ports in Sweden or Finland are likely to be around \$15/t higher than for delivery into Germany.

International market – sales via traders

Sales to international smelters via traders are likely to realise lower TCRCs compared to direct sales to smelters recognizing the typical disconnect between spot terms and long-term contracts.

The low levels of deleterious elements in the Troilus flotation concentrate could also make the material attractive to traders for blending with more complex materials. Blending is typically required to meet the overall feed requirements of a particular smelter or to comply with the Chinese import limits.

Traders are also likely to offer significantly earlier payment terms than would be achieved in direct sales to smelters. This could represent an important saving in working capital given the potential need to consolidate cargos at the ports of Montreal or Quebec City.

A trader would also be able to realise any potential synergies from consolidating international shipments with output from other local mines such as the proposed Dore Copper Mining Corp project at Chibougamau or LaRonde. Such savings would likely be reflected in the terms offered for purchases from traders.

As a trading company that is active in this market Ocean Partners can offer terms as follows:

Ocean Partners indicative terms

Copper payment	96.6%. Minimum deduction 1.1 units
Silver payment	90%. Minimum deduction 20g/t
Gold payment	97.5%. Minimum deduction 2g/t
Treatment charge	Benchmark -10% Assume LT Average US\$63/t. Basis DAP Montreal.
Copper refining charge	US\$0.063/lb
Silver refining charge	US\$0.5/oz
Gold refining charge	US\$5.0/oz

Local Market

Sales of Troilus flotation concentrate to Glencore's Horne smelter at Rouyn-Noranda, Quebec are a viable option. It is understood that Troilus Gold is in direct contact with Glencore regarding a potential offtake agreement.

Based on our understanding of the terms received by other mines for sales to the Horne the TCRCs would be at or around benchmark levels and the gold payment offered would be 1.0 to 2.0% lower depending on grade than what would be attainable in the international market. Typically, the Horne, is only willing to contract on a multi-year basis of 3-5 years for the entire mine's production.

Headline TCRCs and gold payables achieved in sales to the Horne are likely to be less competitive than those available on the international market. However, delivery would be on the basis of DAP Horne and a freight differential would be negotiated, whereby the buyer and seller share the saving in freight costs compared to delivery CIFFO Main European Port. The Horne tends to have long dated payment terms (typically three or four months after the month of delivery) especially for precious metal bearing copper concentrates. This factor will need to be carefully analysed as part of any decision-making process.

Delivery would be on the basis of DAP Horne and a freight differential would be negotiated, whereby the buyer and seller share the saving in freight costs compared to delivery CIFFO Main European Port. Whether or not the freight saving would be adequate to compensate for the higher TCRCs and lower gold payments compared to international sales via traders would depend on the actual terms negotiated. Through our understanding of other direct shipments to the Horne, the freight saving would be shared anywhere from 25:75 to 50:50 basis (miner: smelter) and usually fixed upfront.

Marketing strategy

Given its geographical location, the Horne smelter would seem to be the 'natural' home for a significant proportion of the Troilus flotation concentrate. Whether or not the purchase terms and more importantly the payment terms offered by Glencore are competitive will depend on how well the specification offered fits into the Horne's overall smelter feed requirements at the time concentrate production starts at Troilus. It is known that similar local concentrates, such as that produced at Aginco Eagle's LaRonde complex are treated successfully at the Horne and it is likely that the same will be true for the Troilus material. It is understood that the Horne's typical payment terms are 3 to 4 months after the month of delivery to the Horne so selling 100% of material there would likely require significant working capital.

It would be possible for Troilus Gold Corporation to sell material directly to Glencore for processing at the Horne smelter. Such sales are likely to be through a long-term 'frame' contract under which matters such as metal payments and delivery schedules would be fixed, but commercial terms including TCRCs and any freight differential would be subject to periodic re-negotiation. In these circumstances, it would be necessary to ensure that the purchase terms offered by Glencore remain market competitive. Annual renegotiation of the contract terms, tonnage ranges at the Seller's option and engaging a consultant or agent to manage the sales may present ways of mitigating this risk. It is highly suggested that if Troilus wants to commence negotiations with Glencore that it engage an agent or market advisor that is active in international markets for Au/Cu concentrates (rather than a consultant who does not actively trade) as the Au/Cu markets are small and dynamics change very quickly.

Troilus Gold Corporation could also consider reserving a portion or range of the planned annual production for annual or spot sales to traders or other smelters. This strategy would allow for some flexibility around production schedules. Spot sales to traders or other smelters would provide a reliable comparison between the terms received under any long-term contract with Glencore and prevailing rates on the international market. In addition, when negotiating with Glencore for the commercial terms associated with sales to the Horne smelter it would be advantageous to be able to demonstrate that there are other realistic off-takers for the Troilus concentrate.

In addition to likely attracting lower TCRCs and importantly prompt payment terms to reduce working capital, conducting any international business through traders rather than via direct sales to other smelters would likely reduce the additional administration and logistics that Troilus Gold Corp would have to handle. A trader would also be able to realise any potential synergies from consolidating international shipments with output from other local mines such as the proposed Dore Copper Mining Corp project at Chibougamau or LaRonde as examples. Such savings would likely be reflected in the terms offered for purchases from traders.

Finance options

Typically, traders offer earlier payment terms than would be offered in direct sales to smelters. Troilus Gold Corporation will therefore be presented with opportunities to conserve working capital.

It is understood that payment for deliveries to the Horne will typically be 3MAMD or 4MAMD (three or four months after the month of deliveries). Although truck shipments to the Horne will eventually generate a regular monthly cashflow for Troilus Gold Corporation, there will be a significant working capital portion that would need to be financed upfront and essentially for the life of mine. It is also worth highlighting that if commodity prices rise, then more working capital financing is required and conversely should prices go lower.

Early payment from a trader would be a significant advantage for any international sales given the longer shipping time involved and the potential need to consolidate cargos at the ports of Montreal or Quebec City.

Other international smelters tend to have payment terms based on arrival (20 – 45 days after arrival) so if selling direct to other international smelters would need to factor in the additional ocean voyage and payment terms when comparing the Horne or a trader's payment terms.

Another option that could be explored is the possibility of securing a portion of project finance against a long-term offtake agreement with a major smelter. For example, Aurubis is known to work with the KfW IPEX-Bank to secure feed material (recent examples include Marcobre and Fruta del Norte) which it regards as being favourable for its operations. Korean, Japanese and other European import/export banks also support offtake linked financings although not as prevalently as Aurubis. Glencore in its regular trading business does provide project financings to mining projects, however this is typically something that is not provided to specifically secure feeds for the Horne which tends to rely on its geographic advantages.

Freight costs and logistics

At the time of writing, prevailing rates in the dry bulk freight and container markets have retreated from the multi-year highs reached during 2021 and are now below long-term averages.

We understand the normal trucking rates from the mine site to the ports of Montreal or Quebec City are between \$60 to \$90 per wmt. Over the long-term rates should trend towards this long-term average level. Port costs are typically between \$15 and \$20 per wmt.

It is expected that sea freight rates will remain slightly higher than historic long-term averages reflecting the higher price of fuel and the cost implications of new environmental regulations relating to the shipping industry. In normalized markets bulk sea freight costs to Europe may revert to \$45 to \$65 per wmt and \$65 to \$90 per wmt to Asia.

Typically, container markets in normalized markets trade at slightly cheaper rates than bulk however most international Asian and European smelters have very strict tonnage limits on deliveries they will take in containers and bags, and we don't expect that any single smelter would be willing to receive 70,000 tonnes per annum in bags or bulk in containers. Shipping in containers adds significant amounts of contract administration and logistics work (rather than 8 bulk shipments a year likely 52 weekly shipments per annum).

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Outside of the tonnage limits, given the additional handling requirements for containers international smelters tend to apply a \$15 per wmt per bulk in container surcharge and a \$30 per wmt per bag in container surcharge.

Given the recent volatility in rates, freight must be watched very carefully when making any long-term sales decisions.

Commercial terms

Commercial terms for the options described are summarised in the table below.

Commercial terms (LOM average)

	Direct sales to Aurubis	Direct sales to Boliden	Direct sales to PPC (Japan)	Sales to Ocean Partners
Delivery	CIF FO Brunsbuttel, Germany	CIF FO Skelleftea, Sweden	CIF FO Saganoseki, Japan	DAP Montreal warehouse.
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Freight adjustment	-	-	-	
Treatment charge	Benchmark + 10%. Assume \$77/dmt	\$85/dmt	Benchmark. Assume LT Average \$70/dmt	Benchmark -10% Assume LT Average \$63/dmt
Copper payment	96.6% MD 1.1 units	96.6% MD 1.1 units	96.5% MD 1.1 units	96.6% MD 1.1 units
Copper refining charge	\$0.077/lb	\$0.85/lb	\$0.07.lb	\$0.063/lb.
Gold payment	98% MD 2g/t	97% MD 2g/t	98.15%	97.5% MD 2g/t.
Gold refining charge	\$5.0/oz	\$5.0/oz	\$4.0/oz	\$5.0/oz
Silver payment	97% MD 20g/t	97% MD 20g/t	90%	90%
Silver Refining charge	\$0.50/oz	\$0.50/oz	\$0.40/oz	\$0.50/oz
Penalties	Assumed to be a clean concentrate attracting no penalties.			
Estimated Ocean Transit Time	30	45	75	75
QP	2 MAMA	2 MAMA	2 MAMA	M+1 or 2 MAMA with option to price at any point before onset of QP.
Payment	30 days after arrival	10 days after arrival	30 days after arrival	End of Month after month of delivery to warehouse. Earlier financing available at 3M LIBOR + 5.5%.

The treatment and copper refining charges and freight costs presented above are long-term averages intended for financial modelling purposes. As described in the discussion of the global copper concentrate market included in this report, TCRCs are likely to be declining to levels below long-term averages in the years immediately following the proposed project start date in 2024. Likewise, freight costs may not have fully corrected from current elevated levels by that time.

GLOBAL COPPER CONCENTRATE MARKET

After a two-year period during which TCRCs had been relatively high, reflecting the ready availability of material, the dynamics of the global copper concentrate market changed during the second half of 2023. Demand for copper concentrate from new smelting projects started to outpace global mine production resulting in a decline in spot terms and the annual benchmark for 2024 being established at \$80/t & 8.0c/lb, compared to \$88/t & 8.8c/lb in 2023.

Downward momentum in spot terms accelerated during the early months of 2024 following the unexpected closure of the Cobre Panama mine. Spot TCRCs fell to multi-year lows, close to or below \$0/t & 0.0c/lb. This dramatic fall reflected a growing realisation that the global copper concentrate market had entered an extended period of tightness combined with a significant contango in the refined copper price that enabled traders to bid sharp terms for material. Spot terms this low clearly put severe pressure on smelter economics and are lower than would appear to be justified by the relatively modest deficit that is forecast for H1 2024. Some correction is likely as smelters scale back utilisation rates, but TCRCs are expected to remain lower than long-term averages for an extended period during the second half of this decade.

The catalyst for this change in market dynamics has been the construction of several new smelters outside China. In Indonesia the 1.7Mdm/a Manyar smelter and 900Mdm/a PTMANT project are both expected to be commissioned in 2024 and ramp up towards full capacity in 2025. The Kamoakakula smelter (500kt/a of anode) in DRC is reportedly on target for completion by late 2024 and reports in India now suggest that Phase 1 (500kt/a) of a new smelter being constructed by Adani may also fire up towards the end of 2024.

Increases in Chinese demand which have been the dominant force in the global copper concentrate market for the last 20-years are also likely to continue. Five new Chinese smelter projects are currently scheduled to come online during 2024. These are South-West Copper's 350kt/a side-blown furnace at Yunnan, Fubang's new 50kt/a side-blown furnace in Inner Mongolia, an 85kt/a side-blown furnace being constructed by Weihai Humon Chemical in Shandong province and two 350kt/a projects being built by Jinchuan Group. A shortage of feed materials could potentially lead to one or more of these projects being delayed. However, it should be noted that despite the rapid growth in Chinese copper smelting capacity over the past decade, the country continues to import over 3Mt/a of refined copper. Under these circumstances the incentive for further growth in the countries smelting capacity remains, as regional and national governments seek to maximize local 'value-added'.

The commissioning during 2023 of Teck Resources Quebrada Blanca project in Chile marks the end of the recent wave of large greenfield copper mine construction projects. The gradual ramp up of projects such as Oyu Tolgoi underground and Chuquicamata underground and brownfield expansions such as those at Mantos Copper will add some incremental capacity in the coming years. However, output of copper in concentrate from existing copper mines is expected to peak by around the middle of this decade due to declining grades and depletion of ore reserves

Mining companies have been generally reluctant to commit to new copper mine construction projects over recent years. Even in the current market with the copper price around \$10,000/t, the major miners seem more focused on merger and acquisition activity than organic growth.

New copper mining projects tend to require a large throughput to realise the necessary economies of scale required to profitably process lower grade ore bodies. Additionally, projects frequently require significant investment in infrastructure such as port facilities or seawater desalination plants. As such, even if new projects are approved promptly, the extended construction period required to bring them online probably mean that they will have little impact on the expected tightness on the global copper concentrate market during the second half of this decade.

Miners need smelters to remain profitable so that they have a market for their production. A baseload of smelter feed secured at reasonable terms under long-term contracts is therefore necessary for the health of the industry. After allowing for inflation, benchmark TCRCs have averaged around \$97/t and 9.7c/lb in 2024\$ over the past decade.

Given the expected structural tightness of the copper concentrate market outlined in the preceding paragraphs and the fact that benchmark terms peaked below \$90/t & 9.0c/lb in the most recent cycle, the long-term average benchmark TCRC is likely to be lower than the inflation adjusted figure quoted above. On this basis, a long-term benchmark TCRC of \$70/t & 7.0c/lb is thought to be a reasonable assumption for financial modelling purposes. This can be regarded as a conservative assumption reflecting the desire of financing banks to see calculations based on direct sales to smelters under long-term contracts. It is probable that at least a portion of the project's output will be sold to traders under either long-term or spot contracts with realized TCRCs at least 10% lower than benchmark.