Metminco has a portfolio dominated by two South American, development-stage copper projects — The company’s two key assets are the large Los Calatos copper porphyry project in Peru and the smaller Mollacas heap leach copper project in Chile.

A recent Strategic Mining Study on Los Calatos demonstrates the potential for an underground copper concentrate operation — Having been studied as a mega, bulk mining open-pit and block caving operation producing 100,000tpa copper in August 2013, the most recent study suggests that a smaller, higher-grade, lower capex underground operation will provide improved returns in the current copper price environment.

Potential to deliver 50,000tpa of copper for 22 years at AISC of US$1.45/lb, as per the September 2015 mining study — A potentially mineable resource inventory of 134Mt grading 0.89% Cu and 0.036% Mo is planned to support a 6.5Mtpa operation for 22 years. Capex of US$655m, NPV₈ of US$447m and IRR of 17% at copper price of US$3.00/lb — Both Los Calatos’ sustaining costs and the capital intensity of US$13,100/tpa of capacity are competitive relative to other development projects. Assuming a copper price of US$3.00/lb and a molybdenum price of US$11.16/lb, returns of 17% were derived from the scoping study level report, indicating the development potential in a recovering copper price environment.

Pursuing financial and strategic partnership opportunities to advance Los Calatos through to DFS and development — The company has recently stated that an increasing number of parties are carrying out due diligence on Los Calatos, with a view to partnering with Metminco at the project level. The company is aiming to secure a strategic partner to help fund the project through a definitive feasibility study programme and development.

Mollacas has the potential to become a low-cost, 8,000tpa copper heap leach project — An updated scoping study of March 2014 outlined the potential for a very high-return project. An open-pit heap leach operation with SX/EW copper recovery was planned to deliver 8,000tpa of copper at sustaining cash costs of US$1.27/lb for seven years. Pre-production capex was estimated at US$47m, equivalent to a very low capital intensity of US$5,875/tpa of capacity.

However, Mollacas’ development will be subject to resolution of an access dispute — The company’s rights to access the project were withdrawn in March 2014 in a court decision that the company has appealed. The case is to be heard in the Supreme Court and the company expects a final ruling by the end of November 2015.

We maintain our SPECULATIVE BUY rating — We believe that key drivers likely to affect company value over the coming months include the terms under which a partner can be attracted for the Los Calatos Project and the resolution of access-related issues at Mollacas.
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Investment Summary

In this report we provide a full update on Metminco and its activities. As a result of which we are maintaining our SPECULATIVE BUY rating.

Metminco owns rights to two copper development projects: Los Calatos, which is a large copper porphyry-based project in southern Peru; and Mollacas, which is a small heap leach project in central Chile. Scoping study level reports have been completed on both. If supported by future definitive feasibility study work, the scoping results suggest that Los Calatos could be developed once commodity prices recover and that Mollacas has the potential to be developed in the current market conditions.

In the case of Los Calatos, the company is currently seeking to introduce a strategic partner to assist in funding the project through the next development milestones (these are the completion of pre-feasibility and definitive feasibility studies). Encouragingly, the company recently noted that an increasing number of parties are undertaking detailed due diligence on the project. At Mollacas, the company expects a final ruling by the Supreme Court in Chile regarding disputed access rights to be made by the end of November 2015.

We note therefore that the continued advancement of the Los Calatos Project is subject to the introduction of a strategic partner into the project on attractive terms and that access to Mollacas is dependent on a favourable outcome to the ongoing court proceedings in Chile. Consequently, we note the material level of risks associated with the company’s valuation until these issues are resolved. Notwithstanding this, we consider that the current market cap of the company of A$19m (US$14m) represents an attractive entry price given the optionality provided by the company’s assets.

Los Calatos

Los Calatos in southern Peru is a large copper porphyry system on which the company completed a positive independent Strategic Mining Study in September 2015. The company is now pursuing the introduction of a partner at the project level in order to fund the completion of pre-feasibility and definitive feasibility study programmes.

Over the last five years, under Metminco’s ownership, the scope of Los Calatos has evolved from initially being considered as a large-scale open-pit operation, to a large-scale, combined open-pit and underground operation capable of producing 100,000tpa of copper, as evaluated in the RPM study of August 2013. Further re-scoping of the project has since been undertaken to account for the better understanding of the nature of the deposit, lower commodity prices and reduced availability of capital. This was aimed towards defining a smaller-scale operation with a focus on the higher-grade sections of the deposit. This has resulted in a substantially reduced initial capital requirement for the project, providing significantly higher returns.

The Strategic Mining Study of September 2015 evaluated a number of development scenarios, including combined open-pit and underground operations and underground-only scenarios. The most attractive option was determined to be an underground-only option, wherein a sub-level caving operation would produce 50,000tpa of copper in concentrate over a 22-year life.
According to the study, forecast C1 cash costs were US$1.29/lb net of by-product credits, with AISC of US$1.45/lb, placing project operating costs around the average for competing development projects. (We note that the mining study economics assume commodity prices of US$3.00/lb of copper and US$11.16/lb of molybdenum, and at current prices the by-product credit would sit closer to US$0.20/lb.)

With pre-production capex estimated at US$655m, equivalent to US$13,100/tpa of capacity, the project competes very favourably in terms of capital intensity. The resulting published NPV8, discounted to January 2015, was US$447m, and the unlevered IRR was 17%. These factors combine to give the project the potential to be an attractive development in a recovering commodity price environment, once project parameters are confirmed by the planned pre-feasibility and definitive feasibility study programmes.

We have modelled Los Calatos at a consensus-based price deck, also assuming a US$3.00/lb LT copper price, which we have flexed to demonstrate the effects of long-term price movements on project value. Our analysis — presented in the Project Value Sensitivity Analysis section on page 7 — shows the extent to which project returns are geared to the copper price, with a 10% Cu price fluctuation resulting in a roughly 35% change in Los Calatos’ NPV.

Given the +/-50% accuracy of the operating and capital cost estimates used in the Strategic Mining Study, a work programme is planned to increase the level of confidence in the project parameters in order for the PFS and DFS to be completed. An infill drilling programme is intended to convert the first ten years of mineral resources into the Measured and Indicated categories. This programme will include metallurgical sampling and the collection of geotechnical information required for development of the planned underground mining operation. The company also plans to undertake exploration drilling at the TD2 exploration target adjacent to the main Los Calatos deposit, and initiate an environmental baseline study leading towards the longer-term completion of an Environmental Impact Assessment.

The company estimates that the total cost of completing the necessary work required to complete a PFS would be around US$15m and that for the DFS an additional US$25m.

Having begun to consider the funding options for Los Calatos in late 2012, the company began a process to introduce a strategic partner at the project level after the completion of the first mining study by NCL in March 2013. This process has been ongoing since then, and the company recently highlighted that an increasing number of parties have been undertaking due diligence on the project with a view to partnering with Metminco.

In spite of the current market malaise, we note that Los Calatos has a number of attractions as a development project that we expect will aid it in securing a partner on attractive terms. There appear to be number of potential development scenarios for the large porphyry system, ranging from 50,000tpa of copper to over 100,000tpa of copper, which would be suitable in different commodity price environments and dependent on the availability of capital. Further advantages of the project include: it is scoped to use seawater for processing, thereby avoiding exposure to local potable water issues; there is no competing land use; it is well located, just 65km from the local regional town of Moquegua; and it benefits from access to cheap grid power.
Mollacas

The company’s second significant asset is the Las Mollacas copper heap leach project in central Chile. Metminco has completed a number of studies on the project, including a highly positive optimised scoping study in March 2014. The project scope comprised a contract-operated open-pit mining operation feeding oxide and supergene copper mineralisation to a heap leach, with copper recovered in a solvent extraction/electrowinning (SX/EW) circuit. The project benefits from simple access and the availability of hydro and grid power.

The operation was planned to produce an average of 8,000tpa of copper cathode over a mining life of seven years. The economics associated with the project as per the scoping study were very attractive. Sustaining cash costs were estimated to be US$1.27/lb and initial capital costs were US$47.1m (inclusive of DFS and permitting costs of US$6.6m), equivalent to a very low capital intensity of just US$5,875/tpa of capacity. At a copper price of US$3.10/lb, used as a base case in the study, the project NPV8 was US$75m and the IRR a very attractive 37%.

If the scoping study project parameters are confirmed by a definitive feasibility study, the low initial capex and competitive opex suggest that the project has the potential to be developed in the current market conditions. According to our models, we estimate that at the current copper price of US$2.38/lb held flat over the life-of-mine, Mollacas would have an IRR of 20%.

The DFS study programme has been estimated to cost US$6.6m. However, progress at Mollacas is currently stalled, pending the resolution of a dispute regarding the company’s rights to access the project via a third-party’s land. The right to access was initially awarded by a local court in 2012. In March 2014 the right was revoked by a regional court, a decision which the company has appealed. The final judgement will be made in Chile’s Supreme Court, where a final decision is expected by the end of November 2015. If the decision favours Metminco, it is intended that Mollacas will be fast tracked to development. Alongside seeking a legal solution, the company is continuing to attempt to negotiate a settlement with the relevant landholder regarding mining access to the property.

Finances

Cash outgoings before finance during 1H15 were A$3.0m, of which A$1.6m constituted capitalised exploration, A$0.4m evaluation and due diligence expenses and the remaining A$1.0m G&A-related expenses.

In 1H15 net proceeds from the issue of equity totalled A$4.0m. This comprised a placement in February to raise A$1.0m at a price of A$0.006/unit (each unit comprising a share and a three-month warrant exercisable at an issue price of A$0.006/share). In April the company commenced a 1 for 3.25 rights issue process through which a total of A$2.8m was raised at a price of A$0.005/share per unit (comprising a share and a warrant to purchase a share at A$0.005/share for three months); 45% of these shares were taken up in the rights issue and a further 55% through the placement of the shortfall. A small amount of cash was received during 2H15 as the remainder of the shortfall was placed.

As at 30 June 2015, the company had net current assets of A$1.6m, including cash of A$2.0m and net payables and other short-term liabilities of A$0.4m. The company has no long-term debt.

We understand that the completion of further pre-feasibility study work on Los Calatos will be subject to the securing of additional financing.
September Mining Study Valuation Considerations

We reiterate our belief that the Los Calatos Project remains a substantial opportunity with considerable optionality, boosted by the improvement in project economics through the recent optimisation work. While, as per the September Strategic Mining Study, the C1 operating costs are 8% higher than the July figure at US$1.29/lb (net of US$0.40/lb by-product credits), they remain competitive, as shown in Figure 1 below.

Figure 1: C1 Cash Operating Costs — Comparison with 268 Other Copper Projects

![Figure 1](image1.png)

Note: Los Calatos cash costs net of US$0.40/lb by-product credit;
Source: Company data, Wood Mackenzie 2Q15 data

Including the sustaining capex requirement of US$388m over the 22-year life-of-mine, sustaining costs net of by-product credits are also favourable at US$1.45/lb using the company’s price deck (US$3.00/lb Cu; US$11.16/lb Mo; US$1,250 Au; US$19/oz Ag; and US$5,773/kg Re).

The pre-production capex of US$655m includes US$112m of contingencies; meanwhile, the capital intensity of US$13,100/tpa of capacity remains strongly competitive with many other copper development projects.

Figure 2: Capital Intensity (Initial Capital US$/Annual Capacity tpa Cu) — Comparison with 268 Other Copper Projects

![Figure 2](image2.png)

Source: Company data, Wood Mackenzie 2Q15 data
**Project Value Sensitivity Analysis**

**Los Calatos**

We have modelled the Los Calatos Project to demonstrate the impact of varying long-term commodity prices on NPV, discounting to June 2015 and assuming production start-up in 2020. Our models incorporate a government royalty and Special Mining Tax (SMT), which together come to roughly 2% of gross revenue, plus a 2% NSR royalty to Highland Holdings. The Peruvian corporate tax rate is 30%, and we understand the company has US$74.6m of historic losses relating to Los Calatos that can be offset against operating profits. At a consensus-based LT real price deck, shown below, the unlevered project NPV₈ is US$441m, with an IRR of 19%.

**Table 1: Consensus-based LT Real Price Deck for Los Calatos**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Copper</th>
<th>Molybdenum</th>
<th>Gold</th>
<th>Silver</th>
<th>Rhenium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>US$/lb</td>
<td>US$/lb</td>
<td>US$/oz</td>
<td>US$/oz</td>
<td>US$/kg</td>
</tr>
<tr>
<td>Real LT Price</td>
<td>3.00</td>
<td>9.00</td>
<td>1,250</td>
<td>19</td>
<td>3,500</td>
</tr>
</tbody>
</table>

Source: Analyst consensus, RFC Ambrian

The production profile, in terms of copper equivalent tonnage at these prices, is shown below. This shows molybdenum's position as the major by-product in terms of value, with gold secondary.

**Figure 3: Los Calatos Production Profile (000t Cu Eq)**

At consensus-based long-term prices, we calculate the value of the by-product credit to be US$0.33/lb. This brings our C1 cash cost figure (including on-site costs, NSR royalty to Highland Holdings, transport and refining and by-product credits) to US$1.36/lb, which continues to place the company in a competitive position on the cost curve. A breakdown of the estimated Los Calatos operating costs, based on the most recent Strategic Mining Study parameters, is given in Figure 4 overleaf.
Los Calatos’ all-in-sustaining-costs (AISC) would therefore stand at US$1.60/lb net of by-product credits, comprising US$0.17/lb of sustaining capex and estimated government royalty/Special Mining Tax of US$0.07/lb at our price deck.

We calculate Los Calatos’ value to be highly sensitive to fluctuations in the copper price, with a 15% movement in the copper price resulting in an estimated 54% change in the unlevered project NPV. An indication of the relative sensitivity of project value to the price of copper and the two major by-products, molybdenum and gold, is given in Figure 5. We calculate that equivalent 15% movements in the molybdenum and gold prices result in NPV changes of just 4% and 1% respectively, demonstrating the comparatively low impact of by-product pricing on the value of the project.
We have determined an indicative value range for Los Calatos, derived from the September final mining study parameters, at LT copper prices running between US$2.70-3.30/lb. These prices are broadly based on the upper and lower ends of the market consensus spread. The results of our analysis are displayed in Figure 6, which gives a clear demonstration of the value that could be unlocked in the event of a copper price recovery and confirmation of project parameters.

Figure 6: Los Calatos NPV₈ (above) and IRR (below) Sensitivity to LT Real Copper and Molybdenum Prices

<table>
<thead>
<tr>
<th>NPV (US$m)</th>
<th>Cu Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$2.70/lb</td>
</tr>
<tr>
<td></td>
<td>US$5,952/t</td>
</tr>
<tr>
<td>US$7.50/lb</td>
<td>260</td>
</tr>
<tr>
<td>US$9.00/lb</td>
<td>282</td>
</tr>
<tr>
<td>US$10.50/lb</td>
<td>304</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRR (%)</th>
<th>Cu Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$2.70/lb</td>
</tr>
<tr>
<td></td>
<td>US$5,952/t</td>
</tr>
<tr>
<td>US$7.50/lb</td>
<td>15%</td>
</tr>
<tr>
<td>US$9.00/lb</td>
<td>16%</td>
</tr>
<tr>
<td>US$10.50/lb</td>
<td>16%</td>
</tr>
</tbody>
</table>

Source: Company data, RFC Ambrian

We note that operating and capital costs within the Strategic Mining Study have been estimated to a +/-50% accuracy level, and calculate that a 20% movement in on-site opex from the figure provided would have a 30% impact on Los Calatos’ NPV.

**Mollacas**

While we accept that the development of Mollacas will be contingent on the successful resolution of the property access issue, in our models we have assumed production start-up in 2018. Ramp-up to the full run-rate of 2.5Mtpa mined would then occur in 2019, according to our estimates. As with Los Calatos, we have assumed a LT real copper price of US$3.00/lb, and applied the Chilean corporate tax rate of 22.5%, while we understand the project is subject to no royalties.

Using operating and capital costs as per the most recent March 2014 model, we calculate an unlevered post-tax NPV₈ for the project of US$59m and a robust IRR of 33%. At today’s copper price of US$5,242/t (US$2.38/lb), Mollacas would have an IRR of 20%, indicating the feasibility of project development even in the currently suppressed market. While less geared to copper price movements than Los Calatos, we nevertheless estimate a 20% movement in the copper price to result in a 55% change in Mollacas’ NPV.
Background/Finance

History and Background

The ASX- and AIM-listed Metminco has a portfolio of exploration and development projects located in Chile and Peru, primarily focused on copper, with additional exposure to molybdenum, gold and zinc.

Metminco was incorporated in Australia in 2006. Having acquired a portfolio of domestic exploration assets the company then listed on the ASX in October 2007.

Between July 2009 and December 2010 the company undertook a number of transactions through which it acquired 100% of Hampton Mining, a private company holding an asset portfolio that included 50% of Mollacas in Chile and an option to acquire 100% of Los Calatos in Peru. In April 2011 the company purchased the outstanding 50% of Mollacas and also a buy-back right over Los Calatos (held by Barrick).

Since its admission to AIM in April 2010, expenditures to bring the Los Calatos and Mollacas projects to the scoping study level have totalled over A$90m.

Figure 7: Location of Metminco Projects

Source: Company data
### Figure 8: Historical and Financial Summary

<table>
<thead>
<tr>
<th>Los Calatos, Peru (100%)</th>
<th>Mollacas Project, Chile (100%)</th>
<th>Finances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FY11</strong></td>
<td>to Dec 11</td>
<td><strong>FY12</strong></td>
</tr>
<tr>
<td>Dec-10</td>
<td>50.00m Phase 3 drilling programme commenced (34,200m drilled in total).</td>
<td>Q421</td>
</tr>
<tr>
<td>Jan-11</td>
<td>Commences 3,000m DD drill programme and 2,000m RC programme.</td>
<td>Nov-11</td>
</tr>
<tr>
<td><strong>FY12</strong></td>
<td>to Dec 12</td>
<td><strong>FY13</strong></td>
</tr>
<tr>
<td>Apr-12</td>
<td>Total resources increased by 150% to 2.3Bt at 0.40% Cu and 0.027% Mo. Had anticipated open-pit mining. Internal mining study initiated.</td>
<td>Jul-12</td>
</tr>
<tr>
<td>Jan-13</td>
<td>Resource: 1.34Bt at 0.47% Cu and 0.023% Mo for O/P and U/G mining.</td>
<td>Mar-13</td>
</tr>
<tr>
<td><strong>FY13</strong></td>
<td>to Dec 13</td>
<td><strong>FY14</strong></td>
</tr>
<tr>
<td>Q421</td>
<td>Metallurgical test-work underway and geotechnical test-work planned.</td>
<td>Q423</td>
</tr>
<tr>
<td>Q424</td>
<td>Discussions that expects final determination of its Right to Access to project during Q1/14.</td>
<td></td>
</tr>
<tr>
<td><strong>FY14</strong></td>
<td>to Dec 14</td>
<td><strong>FY15</strong></td>
</tr>
<tr>
<td>Mar-14</td>
<td>Updated a scoping study from 2008. 8,400ppm Cu at US$1.23/lb for 7 years, pre-production capex of US$47m, NPV US$375m and IRR 37% at copper price of US$3.10/lb.</td>
<td>Apr-13</td>
</tr>
<tr>
<td>Q421</td>
<td>Discussions with potential partners for Los Calatos continued.</td>
<td></td>
</tr>
<tr>
<td>Q424</td>
<td>Re-logging of drl core initiated.</td>
<td></td>
</tr>
<tr>
<td>Sep-15</td>
<td>Improved mining study. Mineable 134Mt at 0.89% Cu and 0.036% Mo. 6,500tpa O/G mine. 50tpa Cu for 22 years. 1% costs of US$1.29/lb. Initial capex of US$547m and IRR of 17%.</td>
<td></td>
</tr>
<tr>
<td>Jul-15</td>
<td>Chilean Constitutional Court ruled that it was not unconstitutional for the Regional Court to demand that permission was granted by the owner of 'planted' land before granting access to the project. Minority opinion commented that land holder must not abuse rights.</td>
<td>Aug-15</td>
</tr>
</tbody>
</table>

Source: Company data, RFC Ambrian estimates
Los Calatos Project, Peru (100%)

Location and Infrastructure

The Los Calatos Project is located in southern Peru, 65km from the regional town of Moquegua, and 50km from the Pan-American Highway. Access is via an unsealed road leading north from the highway to the project. The regional port of Ilo is located roughly 160km by road from the project area. The project is at moderate elevation of 2,900-3,400m above sea level.

Los Calatos is designed to operate using seawater, which would be piped 75km to the project. We expect that this will help to minimise issues relating to the competing demands on the region’s freshwater supplies that have affected many developments in Peru and Chile. It is planned to construct a 32km power line to Moquegua to connect the project to the grid, from which power is available at an indicative cost of US¢6/kWh.

Figure 9: Los Calatos, Location in Southern Peru

Regional Geological Setting

Los Calatos is located on the Incapuquio trend, a well-known major copper porphyry belt adjacent to the coast in southern Peru. The deposit is a molybdenum-rich copper porphyry deposit, characteristic of those in the belt, all of which are associated with hydrothermal mineralisation. The belt includes the following deposits:

- The Cuajone and Toquepala deposits to the south-east of Los Calatos, both of which have been developed into large existing mines owned by Southern Copper Corporation, which also owns smelting and refining operations at the port of Ilo.

- The Quellaveco Project, to which we understand 82%-owner Anglo-American remains committed despite the multi-billion dollar estimated development cost, following the decision to withdraw from the north-west Peruvian Michiquillay Project in April this year.
- **Cerro Verde** to the north-west, a large existing mine that is currently in the middle of a significant expansion, 54%-owned by Freeport McMoran.

Figure 10: Proposed Services Corridor

![Proposed Services Corridor](source: Company data, Google Earth)

**Project Ownership History**

Phelps Dodge optioned the Los Calatos Project from a local company in 1995, and undertook exploration that included the drilling of 26 RC holes and seven deep DD holes in 1996. Subsequently, in 1997 Barrick purchased the local company and drilled a further eight deep vertical DD holes. In 2007 Hampton became Los Calatos’ new owner through entering into an option agreement to purchase 100% of the project. During 2010 Metminco undertook a number of transactions as a result of which it purchased Hampton and the project, subject to a 2% net smelter royalty.

Figure 11: Los Calatos Project Area

![Los Calatos Project Area](source: RFC Ambrian)
Evolution of Project Scope and Current Resources

At the time of the publication of the resource statement of April 2012, the project was being considered for development as an open-pit operation. However, as this resource was studied further it became apparent that, owing to its geometry, it was better suited to exploitation as a combined open-pit and underground operation.

This scenario was used as the basis for the resource of January 2013, for which copper cut-off grades for open pit and underground were established at 0.15% and 0.35% Cu Eq respectively. Parameters for a combined open-pit and underground operation were evaluated within the scoping study of March 2013 and its subsequent update in August 2013 following optimisation. The optimised model outlined a 34-year mine life development, comprising a 14-year open-pit operation that would transition to a 20-year block caving operation.

Throughput of 24Mtpa at a head grade of 0.48% Cu was planned to deliver LoM average production of 100,000tpa of copper and 4,000tpa of molybdenum in concentrate, at a competitive estimate C1 cash cost of US$1.12/lb (net of by-product credits). Pre-production capital costs were estimated at US$1,320m, with considerable further capital required for the underground development and sustaining capital, although the quantum of these capital items was not disclosed.

Early in 2013 the company began to review potential funding options for the project, including the introduction of a partner. This exercise, together with the impact of the falling copper price on returns and the lower availability of development capital, led the company to undertake re-scoping work during 2014 with a view to delivering a smaller, more capital efficient project. This process included the full re-logging of the 125,000m of core from 108 holes and the refining of the geological model to include lithology, alteration type and structure.

This geological review and remodelling exercise led to a much better understanding of the high-grade zones within the porphyry complex. An updated resource was published in June 2015 that was considerably smaller than the preceding estimate for a number of reasons, including the adoption of a higher cut-off grade of 0.5% Cu and tighter spatial constraints on mineralisation.

The most significant development in the understanding of the deposit was the delineation of a series of hydrothermal breccias, which host the majority of the high-grade component of the mineralisation. Three NW-SE trending sub-vertical zones of high-grade mineralisation were found to be associated with anhydrite breccia systems that were associated with a series of sub-vertical monzonite porphyry dykes.

The estimated limits of these breccias were used to constrain the high-grade mineralisation in the June 2015 resource statement, compared with the 2013 resource model, where a more generalised constraining wireframe was used.

Table 2: Los Calatos Resource Statement (June 2015)

<table>
<thead>
<tr>
<th>Cut-off grade</th>
<th>Tonnage</th>
<th>Grade</th>
<th>Contained metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50%</td>
<td>Mt</td>
<td>% Cu</td>
<td>ppm</td>
</tr>
<tr>
<td>Measured &amp; Indicated</td>
<td>137</td>
<td>0.73%</td>
<td>434</td>
</tr>
<tr>
<td>Inferred</td>
<td>216</td>
<td>0.78%</td>
<td>245</td>
</tr>
<tr>
<td>Total</td>
<td>352</td>
<td>0.76%</td>
<td>318</td>
</tr>
</tbody>
</table>

Source: Company data
At a Cu cut-off of 0.5%, these hydrothermal breccias contain 95% of the copper in the resource. They extend from surface to depths of more than 1,800m. Weathering has led to the presence of a leached zone in the upper 50m, a supergene zone from 50m to 350m in depth, below which the mineralisation is primary sulphide.

**Figure 12: Longitudinal Section, Showing Copper Distribution**

Current Total Resource — 1.5Mt of Copper Grading 0.97% Cu

Although initially presented at a 0.5% cut-off, the cut-off used for the preferred development scenario in the optimised final mining study published in September 2015 was 0.70% Cu, as presented below.

<table>
<thead>
<tr>
<th>Cut-off grade</th>
<th>Tonnage Mt</th>
<th>Grade % Cu</th>
<th>Mo (ppm)</th>
<th>Contained metal 000t Cu</th>
<th>000t Mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured &amp; Indicated</td>
<td>59</td>
<td>0.93%</td>
<td>483</td>
<td>549</td>
<td>28</td>
</tr>
<tr>
<td>Inferred</td>
<td>99</td>
<td>1.00%</td>
<td>261</td>
<td>990</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>0.97%</td>
<td>344</td>
<td>1,539</td>
<td>54</td>
</tr>
</tbody>
</table>

Source: Company data

Interim Mining Study Results, July 2015

On 27 July 2015 the company published the preliminary results of a mining study into the development of a standalone underground operation with a processing rate of 6Mtpa. The study was completed by Runge Pincock Minarco (RPM).

Strategic Mining Study Results, September 2015

On 21 September 2015 the company announced the results of a Strategic Mining Study, which was completed to an accuracy of +/-50%, the same degree of accuracy as RPM states is required for a scoping study under the JORC code. These results showed a considerable improvement compared with those of the interim report published in July.
In the study RPM reviewed three development scenarios:

- **Base Case** — Integrated 6.5Mtpa open-pit and underground operation
- **Alternate Case** — Standalone 6.0Mtpa underground operation
- **Expansion Case** — Standalone expanded 6.5Mtpa underground operation

The Expansion Case demonstrated the most favourable economics and its results were presented in detail in the announcement. It involves the development of a standalone underground mining operation, employing a sub-level caving mining method with 25m sub-level intervals and a minimum waste pillar width of 10m. Mining losses of 10% were assumed along with dilution of 20%.

The study analysed the potential development of the high-grade section of the deposit, which is almost entirely contained within the breccia zone. Using a base resource at a cut-off of 0.7% Cu, the resulting mineable resource was estimated at 134Mt grading 0.89% Cu and 0.036% Mo, containing 1.2Mt of copper and 48,000t of molybdenum. This reflects a high conversion rate from the resource to mineable resources of 87%, while Inferred resources comprised 62% of the mineable resource.

**Figure 13: Conceptual Underground Mine Design**

As per the Expansion Case, mining is planned to commence at a depth of 150m below surface, with the deepest levels at 1,700m. Access to the upper levels is planned to be via two decline systems (east and west declines) to access the two main areas of the high-grade breccia mineralisation to a depth of up to 800m. Access to the deeper levels of the mine would be either via a central shaft or a conveyor system for which a trade-off study is still required.
Following an 18-24 month pre-production period, the mining rate is planned to ramp up to full capacity of 6.5Mtpa over a period of three years, delivering 3Mt, 5Mt and 6.5Mt in each of the first three years of operation.

Recovery to concentrate is expected to average approximately 92.5% for copper and 68% for molybdenum, with a copper concentrate grade of 25% and a molybdenum grade of 50%. Further metallurgical test-work was reported to be required to confirm these parameters and will be undertaken in the planned pre-feasibility study work programme. In addition to molybdenum, by-product credits are expected to include gold, silver and rhenium.

It was assumed that the concentrate would be trucked approximately 200km to the port of Matarani for shipment to customers.

**Key Project Parameters**

Production is planned to average 50,000tpa of copper in concentrate and 1,300tpa of molybdenum in concentrate over a mine-life of 22 years, with copper production peaking in Year 3 at 65,000tpa. C1 cash operating costs are expected to average US$1.29/lb net of by-product credits (of US$0.40/lb Cu), with AISC estimated to be US$1.45/lb.

**Table 4: Key Expansion Case Project Parameters (September 2015)**

<table>
<thead>
<tr>
<th>Key Parameter</th>
<th>September 2015 RPM Expansion Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resource Mt</td>
<td>158</td>
</tr>
<tr>
<td>Cut-off Grade %</td>
<td>0.70% Cu</td>
</tr>
<tr>
<td>Conversion Rate %</td>
<td>85%</td>
</tr>
<tr>
<td>Mineable Tonnage Mt</td>
<td>134 (38% M&amp;I; 62% Inferred)</td>
</tr>
<tr>
<td>Head Grade %</td>
<td>0.89% Cu; 0.036% Mo</td>
</tr>
<tr>
<td>Milling Rate Mtpa</td>
<td>6.5</td>
</tr>
<tr>
<td>Life-of-Mine years</td>
<td>22</td>
</tr>
<tr>
<td>Avg Annual Copper Production 000tpa</td>
<td>50.0</td>
</tr>
<tr>
<td>Avg Annual Molybdenum Production 000tpa</td>
<td>1.3</td>
</tr>
<tr>
<td>LoM Cu Production 000t</td>
<td>1,101</td>
</tr>
<tr>
<td>Payability Factor %</td>
<td>96.5%</td>
</tr>
<tr>
<td>LoM Payable Cu Production 000t</td>
<td>1,062</td>
</tr>
<tr>
<td>LoM Payable Molybdenum Production 000t</td>
<td>28</td>
</tr>
<tr>
<td>Pre-production Capex US$m</td>
<td>655</td>
</tr>
<tr>
<td>Total Capex US$m</td>
<td>1,043</td>
</tr>
<tr>
<td>C1 Cash Costs (post by-product credits) US$/lb</td>
<td>1.29 ¹</td>
</tr>
<tr>
<td>EBITDA US$m</td>
<td>3,820</td>
</tr>
<tr>
<td>NPV₆ (post-tax) US$m</td>
<td>447</td>
</tr>
<tr>
<td>IRR (unlevered) %</td>
<td>17%</td>
</tr>
<tr>
<td>Payback Period Years</td>
<td>4.85</td>
</tr>
</tbody>
</table>

Note: Economics based on US$3.00/lb Cu and US$11.16/lb Mo; Operating and capital costs have been estimated to a +/- 50% accuracy level; ¹ By-product credits of US$0.40/lb payable copper; Source: Company data

Initial capex to bring the project into production for the Expansion Case was estimated at US$655m, with further anticipated sustaining capex of US$388m over the life-of-mine. Capex estimates include a 25% contingency for the total mine capital, while both opex and capex were estimated to a +/-50% accuracy level.
At long-term prices for copper and molybdenum of US$3.00/lb and US$11.16/lb respectively (compared with current prices of US$2.38/lb and US$4.57/lb), the final mining study indicated Los Calatos would deliver an NPV₈ of US$447m, an unlevered IRR of 17% and payback of 4.85 years.

Potential Areas for Improvement

Given the +/-50% accuracy level of the mining study, considerable further work is planned to confirm the project parameters. Particular emphasis will be given to infill drilling to upgrade the resource, geotechnical work to confirm the applicability of the mining method and metallurgical test-work to confirm the recoveries and concentrate quality.

The company has identified a number of areas in which it believes there is the potential to improve the parameters, including the optimisation of mine and infrastructure, a reduction of assumed dilution, an improvement in the rate of caving and the application of a dynamic cut-off grade.

Figure 14: Schematic Cross Section Showing Position of TD2 Relative to Main Los Calatos Deposit

Source: Company data
Exploration Targets and Potential

The completion of the re-logging and re-interpretation of the Los Calatos drill core in early 2015 led to the update of the structural model for the evolution of the Los Calatos Porphyry Complex and the associated mineralisation. This led to the identification of a mineralised hydrothermal breccia, similar to those in the main deposit, immediately south-west of the Los Calatos deposit (Target TD2). A schematic is shown in Figure 14 on the previous page. Another similar target, TD3, has been reported to the south-east of Los Calatos.

A field inspection of the TD2 target area revealed the presence of outcropping, shallow-level, hydrothermal breccias, containing chrysocolla (a hydrated copper silicate) mineralisation. TD2 therefore represents a significant exploration target given that the hydrothermal breccias host the majority of the copper mineralisation at Los Calatos. The company has planned a provisional drilling programme to test the target.

Next Steps

Subject to financing, the next steps for the project are for the commencement of a pre-feasibility study and a feasibility study. The work programmes are intended to include infill drilling to upgrade the resources necessary to support the first ten years of operation to Measured and Indicated status. Associated with the drill programme, samples would also be collected for additional metallurgical test-work and geotechnical and hydrogeological test-work; these are required for the estimation of ore reserves and for mine planning and further project evaluation. Metallurgical test-work is planned to include the operation of a pilot plant by SGS in Lima.

The total costs of the work programmes to complete the PFS and the DFS are currently estimated to be around US$15m and US$25m respectively, for a total of US$40m.

Testing the TD2 exploration target is also a priority given its prospectivity and potential impact on the overall design of the project. Quotes have been received by the company for two 1,000m drill holes to test the target. The company additionally plans to initiate an environmental baseline study leading towards the longer-term completion of an Environmental Impact Assessment.
**Mollacas Project, Chile (100%)**

**Project Background**

Metminco is the 100%-owner of the Mollacas Project, located approximately 65km east of Ovalle in Region IV in Chile, some 450km north of Santiago. The project is located at a relatively low altitude of 1,500m.

Importantly, the company also owns water rights in the area that are sufficient to cover the planned needs of the project. Mollacas is also located near to a run-of-river hydroelectric plant, and grid power is also available locally.

**Figure 15:** Chilean Assets Located Near to La Serena

Source: Company data

**Summary of Access Dispute**

The Mollacas Project is subject to litigation concerning disputed mining access rights. We highlight that this does not concern the company’s ownership of the mining rights, but solely its right of access for mining purposes.

The general background to the dispute is that in Chile surface rights are owned separately from exploration/mineral rights. In most cases, owners of exploration rights have the right to access the project area for exploration purposes, and can later acquire the surface rights once a mining licence has been awarded. In the event that a negotiated price cannot be agreed, this can be enforced through a process of ‘compulsory acquisition’. However, for land that is cultivated at the time of application, landholder consent is required before access can be granted.

In the case of Mollacas, although the company has acquired surface rights in the area, including over the planned heap leach and processing plant sites, these do not extend over the proposed open-pit site. At the time of the acquisition of the licence the project included the First Easement (Servidumbre in Spanish).
This right to use third party-owned land for access was originally granted as a transport corridor from a road to the south-east of the project area to a historical small-scale mine on the project area. Although a number of challenges relating to this original Servidumbre have been made by the landowner, dating back as far as to 2004, this right has been upheld.

**Figure 16: Location of Exploration and Surface Rights and Easement Access**

![Map showing exploration and surface rights and easement access](source: Company data)

The right for the company to use this Servidumbre to gain access to conduct exploration over the project area has also been upheld on a number of occasions. Notwithstanding this, the company applied for, and was granted, the Servidumbre First Extension; this was intended to give it rights of access over the whole deposit and surrounding area (not just the transport corridor), as shown in the Figure 16 above. This right was awarded by a court in the local town of Ovalle in 2012.

In March 2014 the regional court in La Serena ruled that the local court in Ovalle had no right to award the First Extension. The company has appealed against this decision and the case was escalated to the Supreme Court in Santiago, although as part of this process, a ruling on certain aspects of the law was required from the Constitutional Court.

In July 2015 the Constitutional Court ruled that it was reasonable for the regional court to demand that permission was granted by the owner of the ‘planted’ land before granting access to the project.

At the risk of over-simplification, the dispute centres on the company’s contention that the landowner’s permission for the First Extension should not have been required as the land was not cultivated at the time that the application for the extension was made. However, for an application to be accepted, it must be signed by both parties — the company and the landowner. In this case, the acceptance was delayed for four months pending the landowner’s signature, during which time the company contends that the previously uncultivated land was being planted with walnuts.
In August 2015 the company was granted leave to appeal, meaning that a final decision regarding the case will now be made in the Supreme Court, which the company expects by the end of November 2015.

Concurrent with seeking a legal solution, the company will continue to attempt to negotiate a settlement with the relevant landholder regarding mining access to the Mollacas exploitation concessions.

**Project Resources**

The Mollacas Project is located on a north-south trending volcanic sequence, which has subsequently been intruded by sub-volcanic porphyritic rocks. The deposit occurs within an alteration zone approximately 800m by 600m in size.

The project is based around a porphyry copper deposit with a typical leached cap weathering profile, overlying a zone of secondary enrichment, below which mineralisation comprises primary sulphides.
The deposit has a relatively small footprint and has been drilled on 25m centres, as a result of which the nature of the resource is well understood and the entirety lies in the Measured and Indicated categories.

**Table 5: Mollacas Resources, SRK (July 2012)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Mt</th>
<th>% CuT</th>
<th>% CuS</th>
<th>g/t Au</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>11.2</td>
<td>0.55</td>
<td>0.44</td>
<td>0.12</td>
</tr>
<tr>
<td>Indicated</td>
<td>4.3</td>
<td>0.41</td>
<td>0.29</td>
<td>0.14</td>
</tr>
<tr>
<td>M&amp;I</td>
<td>15.5</td>
<td>0.51</td>
<td>0.42</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Note: Reported at a 0.2% Cu cut-off; CuT represents total leachable copper; CuS represents total soluble copper; Source: Company data

**Development Studies**

Access rights permitting, Mollacas is being considered for development as an open-pit operation focused on the oxide- and secondary-enriched copper mineralisation, followed by heap leach extraction and SX/EW copper recovery to produce copper cathode.

SRK completed a positive scoping study on the project in April 2008. The study indicated the potential of Mollacas to be developed as open-pit mine with a strip ratio of 1.3:1, producing at a rate of 13,500tpa of copper cathode. Estimated cash costs were just US$0.91/lb over a six-year life, while capital costs were estimated at US$56m. Assuming a copper price of US$2.50/lb, the project returned an NPV8 of US$103m and had an IRR of 70%.

The results of the most recent evaluation of the project were announced in March 2014. These included the results of a pit optimisation study completed by the company in 2013 and metallurgical work completed in 2014. Mining and processing costs were updated and capital costs were based on the scoping study of 2008 and adjusted for the revised production profile.

Revised project parameters were based on a well-defined mineable resource of 14.5Mt grading 0.52% total copper, or 0.42% acid soluble copper, containing 75,000t of total copper, or 64,000t of acid soluble copper.

**Figure 19: Section Showing Location of High-grade Secondary Sulphide Zone**

Source: Company data

**Study Results, March 2014**

As per the March 2014 model, the proposed project comprises contract-operated open-pit mining of the oxide and supergene mineralised zone at a rate of 2.1Mtpa. The planned pit has a waste-to-ore ratio of 1.3:1.
Metminco has completed three stages of metallurgical column test-work over a period of four years. A particular focus was given to ensuring the correct conditions to enable ferric leaching of the chalcocite ore and to minimise acid consumption. Following three-staged crushing, acid is planned to be added to the ore during the agglomeration stage, before being stacked on 6m heaps. The plan proposed a two-stage leach process, of 150 days each, with recoveries of 80-85% of the acid soluble copper expected to be achievable. Assuming strict controls, acid consumption was expected to average 12kg/t to 14kg/t stacked.

Mine production as per the March 2014 model was planned to average 8,000tpa of copper cathode over a mine life of almost seven years, for total recovered copper of 52,000t.

As currently scoped, the project economics are attractive, with average cash costs projected to be US$9.68/t crushed, or US$1.23/lb of copper cathode produced, with initial capex of US$47m and sustaining capex of US$5m. As presented at the time of the study in March 2014, at a copper price of US$3.10/lb, the project returned a post-tax NPV of US$75m and an unlevered IRR of 37%.

Further work on the project is pending the resolution of access rights and funding. The DFS work programme would include additional geotechnical, metallurgical and costing work to define the operating and capital cost estimates currently employed. The budget for the DFS programme and permitting has previously been estimated at US$6.6m.
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