MINERA RAFAELA S.A.

RAFAELA MINE 5.5KTPD EXPANSION PROJECT

10 YEARS BUSINESS PLAN

Santiago of Chile
July, 2011

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This is a business plan. It does not imply an offering of securities.

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Minera Rafaela S.A. is seeking a project financing facility (the "Loan") for its wholly owned Rafaela Copper Mine to fund the growth of its copper mining business.

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1. EXECUTIVE SUMMARY

1.1. Introduction

This business plan seeks to generate a significant increase in Minera Rafaela S.A. sales and profits from the execution of a US$ 175,0M mining investment at its Rafaela Underground Copper mine to expand current production to an annual average of 20,0K tonnes per year (KTPY) in fine equivalent copper contained in concentrates, over a ten years period, commencing in the second half of year 4. Scheduling references in the business plan refer to Year 1, Year 2, etc.; rather than calendar years. The start of Year 1 is assumed to be the date of withdrawal of the project funds.

The plan has evaluated the development of Rafaela Mine's indicated sulfide copper resources with facilities for ore concentration up to 5,500 tonnes per day (TPD) capacity, storage of tailings, maintenance shops, offices and change house in the mine area. Project execution and expanded copper production targets are seen as attainable through a proactive approach, by teaming up with a project financing provider and outsourcing -through a competitive bidding scheme- of local and international reputable engineering, construction and supplier firms to increase competition, and improving project costs and schedule while reducing risks.

Based on the company's cash flow, previous profits and significance of the project capital costs, it is highly recommended to negotiate an off-take agreement, prior to the construction of the facilities, in order to facilitate the financing of the project and secure a market for the future increased mineral output (Cu and Ag).

1.2. The Company

Minera Rafaela S.A. is a closely held company (sociedad anónima cerrada) duly organized and validly existing under the laws of the Republic of Chile since 2005. Its business purpose is to provide complete underground and surface mining services -including drilling and blasting, loading and hauling, processing, infrastructure management, maintenance and other related services- to small-medium size companies of the Chilean copper mining sector as well as the exploration, development, exploitation and beneficiation of its own mineral resources; In the year 2008, the company acquired -from Blue Ice S.A. who purchased the claims in 2005, from Disputada Ltda. (a former Exxon Coal & Minerals Subsidiary)- the copper and silver minerals exploration claims named "Rafaela Uno a Rafaela Cinco", comprising a total area of 25 hectares situated in the hill that form the east slope of El Cobre Ravine in the Peña Blanca ranch, at Cabildo commune in the Petorca province in the Chilean Region V (Valparaíso).

In the near future, Minera Rafaela will team up with a reputable project financing provider who has the experience and capability in structuring this type of loans and in securing the necessary off-take agreement mechanism to govern the price and volume of produced copper which will make up the project long term revenue.

1.3. The Market

At the moment there is a real opportunity to considerable increase Minera Rafaela's copper mining business. Global mineral commodities demand from developing countries currently exceeds expectation and it is anticipated that world consumption of iron ore, copper and aluminum will double in next 15-20 years. China is key but India and other developing countries are set to follow, especially those where their growth has successfully been fuelled by economic stimulus policies applied during the global economic downturn of 2008. Minera Rafaela is poised to capture the global economic growth associated with higher standard of living being pursued by many developing countries which have not yet reached the inflection point of the Saturation Level (point at which consumption per capita does not increase with increments in income level) of their demand for copper and other mineral commodities.

It has been estimated that copper will not reach its inflection point until the year 2030, which is consistent with the strong increase in fine copper demand in the world markets since mid 2010, this market condition could last until 2016, if the current demand-production of copper imbalance is not eliminated by an increase of copper scrap processing and refining, given the fact that any new large copper project that could come now on stream is not likely to commence production until late 2014 or early 2015.

1.4. Objectives

The financial and commercial objectives of Minera Rafaela S.A. follow.

Financial Objectives

- Copper concentrate sales starting at US$ 76,6M (net of realization costs) in year 4, and growing on the coming year to reach an annual average of US$ 149,0M for ten years of mine life.
- High average gross margin percent of net revenue (over 40%) for Cu produced concentrate. When the expansion project has been financed and completed in year four, it will also produce excellent IRR for 10 years, which will allow paying back the project financing loan and investing in further Rafaela mine development.
- Net average after tax profit of more than 10% of net revenue during the life of mine (10 years).

Commercial Objectives

- Achieve targeted net sales annual average revenue of US$ 130,0M by contracting off-take agreements with Germans smelters.
- Expand potential German customer awareness over the planning period and increase fine Cu sales to the German industrial market.
- Reduce competition, reduce risks, and lower concentrate realization cost levels by establishing an off-take agreement with a reputable German company who has the need to secure long term copper concentrate supply.
- Leverage the commercial relationship with the German off-taker to be established, in order to increase the level of Cu concentrate sales to the German industrial sector.

1.5. Mission

The mission of Minera Rafaela expanded operations is to establish a strong presence in the German supplier concentrate and refine copper markets, with the specific mission of becoming the preferred mid size copper concentrate supplier in Germany.

1.6. Key to Success

- Commercialization power. Minera Rafaela needs to produce high-quality, cost effective copper concentrates as well as provide reliable concentrate dispatching and shipment schedules over time.
- Excellence in fulfilling the promise of supplying copper concentrate at a given quality and on scheduled delivery volumes.
- Quality service and customer satisfaction. All copper concentrate we sell meet smelter specific standards and have a high by-product contain (silver).
- The right management team, with strong foundations in copper mining, base metal commercialization, finance and project development.

1.7. Project Financing Requirement

A project financing facility of US$ 175 million it is being requested through this Business Plan, to implement the Minera Rafaela Expansion Project to produce 20 KPTY of fine Cu contained in concentrates at Rafaela underground copper mine, situated in the V Region of Chile. The project includes pre-production underground mine works, mining equipment to exploit 5,5 KTPD of copper ore, design and construction of a grinding plant, flotation plant, and tailings disposal area, as well as, a new maintenance shop and necessary on-site support infrastructure. Pre-production activities, considers the environmental impact assessment, right of ways and land purchasing negotiations, basic engineering study and construction permits approval.

2. THE COMPANY

Minera Rafaela S.A. is a closely held company (sociedad anónima cerrada) duly organized and validly existing under the laws of the Republic of Chile since 2005. Its business purpose is to provide complete underground and surface mining service -including drilling and blasting, loading and hauling, processing, infrastructure management, maintenance and other related services- to small-medium size companies of the Chilean copper mining sector as well as the exploration, development, exploitation and beneficiation of its own mineral resources; In the year 2008, the company acquired -from Blue Ice S.A. who purchased the claims in 2005, from Disputada Ltda. (a former Exxon Coal & Minerals Subsidiary)- the copper and silver minerals exploitation claims named "Rafaela Uno a Rafaela Cinco", comprising a total area of 25 hectares situated in the hill that form the east slope of El Cobre Ravine in the Peña Blanca ranch, at Cabildo commune in the Petorca province of the Fifth Region (Valparaíso) of Chile.

2.1. Company Ownership

Mr. Fernando Silva, Civil Mining Engineer, is the President and controller shareholder of the entity Minera Rafaela S.A. with 99,00% of its shares, being this corporation the registered owner of "the registered records of domain of the five claims that composed the Rafaela mining concessions". Mr. Silva is also the controller shareholder of Blue Ice S.A., the company that acquired the Rafaela mining concessions from Disputada Ltda. in 2005.

2.2. Mine History

The project evaluated in this business plan involves the expansion of the historic Rafaela underground copper mine, which has operated spasmodically since the early 1950. The mine was initially developed by D'azaita, French Company that reached a production level of 3,000 tons per month (3 KTPM) with grades of over 3% copper.

Since mine acquisition by the current owner, different exploration works have been performed, such as a 250 m. long access tunnel, 480 m. long ramp, 298 m. long on several ore passes, 180 m. long ventilation raise, 150 m. long blind raises and 1.855 m. on various tunnels, among other drifts along with the exploitation of two main levels, L 779 and L 756. On surface a detailed recognition was done, including topography, geology, sampling, 1,600 m. roads, among other works.

2.3. Mine Location and Current Operation

The city of Cabildo is located (coordinates: 32°25′39″S 71°03′59″W) approximately 170 kms north-northeast of Santiago City and 130 kms north-northeast of the City Port of Valparaiso situated in the Chilean Pacific Coast. The Rafaela Underground Copper Mine is located on the east slope of El Cobre Ravine in the Peña Blanca ranch, 10 kms south of Cabildo city, through the gravel road that runs north-south in the Peña Blanca Valley.

Current mine development and recognition, is done in levels 779 and 756 at rate of 12,000 tons of copper ore a year, which is sold run of mine (ROM) to Enami's (the Chilean state owned mining processing company that process, smelt, refine and commercialized the copper ore extracted by medium–small size miners) established purchasing power in Cabildo City. Enami's has set a limit to the ore ROM tonnage to be purchase monthly from nearby miners, which imposed a big restriction to increase current mine production and to establish a mineral beneficiation facility to increment the value added of the copper contained, producing concentrates of 25% copper grade.

2.4. Regional Climate and Flora

In general, the climate of the area has been classified as warm temperate. Rainfall is seasonal with averages do not exceed 400 mm per year and annual average temperatures ranging around 14 º C.

The rainiest period is between the months of May and August, with little variation and no major influence on mineral production from the area. The vegetation is scrub tree-preferably of the type characteristic of the area.

2.5. Land Tenure

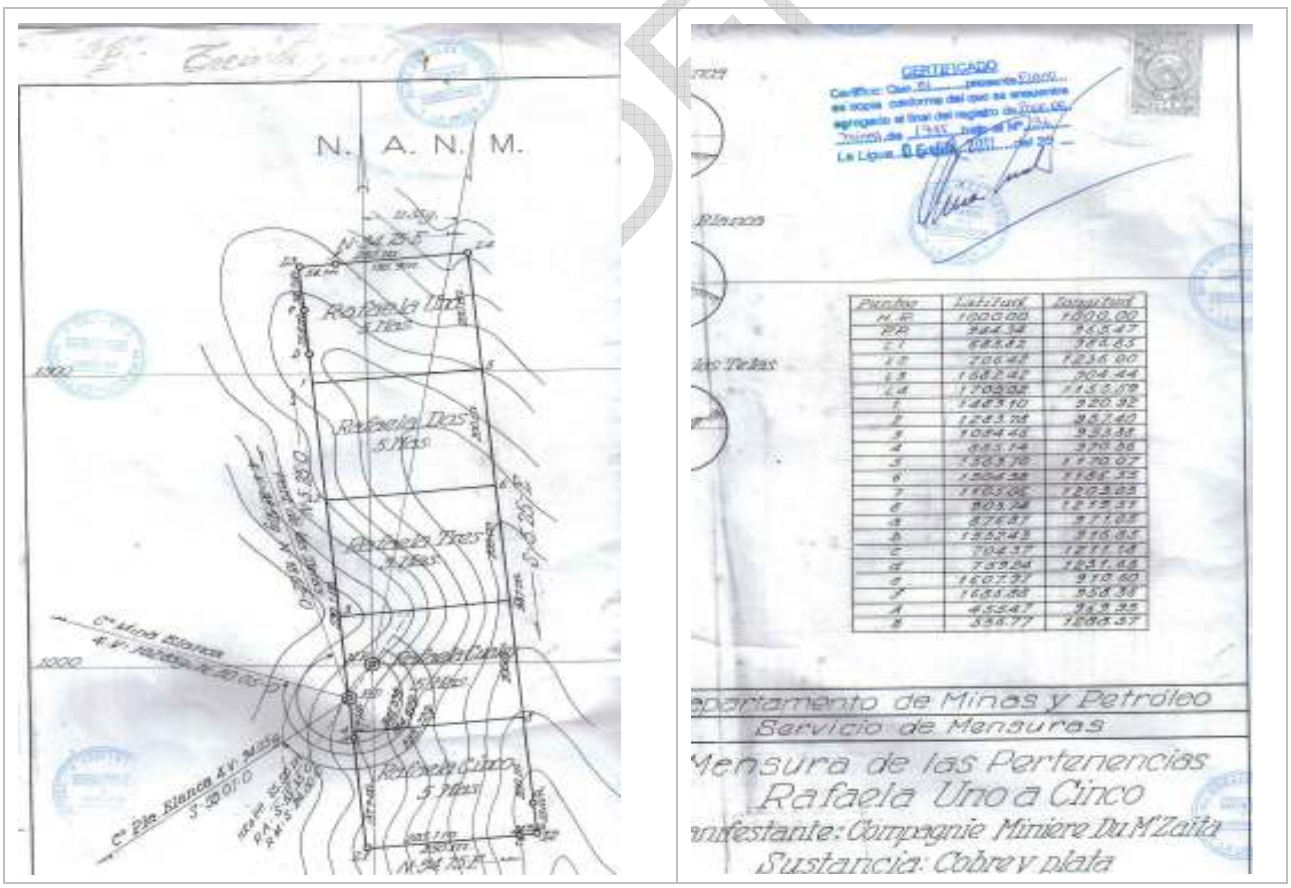
The land area where the expansion project will be located is a combination of patented mine claims and third parties privately owned land that will be acquire or lease once financial resources are obtained to implement the expansion project. Taken together the land area position is sufficient to allow mining of the underground copper mine, ore processing, storage of tailings and operation of milling equipment. The required land is accessible under the provision of the Mining Law of 1983, subject to obtaining approval of the Chilean Agricultural and Forest Service after completion of an Environmental Impact Assessment (EIS) process according to Law 19.300 and is addendum Law 20.417. The EIS process interagency consultation on endangered species and cultural resources. The use of the project surface rights will require obtaining a number of national, regional and local permits and approvals, which will be initiated at the moment of project funds financing withdrawal.

2.6. Mining Tenure

Minera Rafaela S.A. is the sole owner of the exploitation and exploration concessions individualized in the Act of Measurement (Mensura) shown in Figure 1 below; an which are the basis of copper and silver mineral resources considered for exploitation and beneficiation in the proposed expansion project.

In the year 2008, the company acquired -from Blue Ice S.A. who purchased them in 2005, from Disputada Ltda. (a former Exxon Coal & Minerals Subsidiary) - the copper and silver minerals exploitation and exploration claims named “Rafaela Uno a Cinco”, comprising a total area of 25 hectares situated in the hill that form the east slope of El Cobre Ravine in the Peña Blanca ranch, at Cabildo commune in the Petorca province of the Fifth Region (Valparaíso) of Chile.

Figure 1: “Rafaela Uno a Cinco” Copper and Silver Ore Claims Measurement Certificate



2.7. Rafaela Mine Resources

2.7.1. Regional Geology

Rafaela Mina is in a region whose geological and volcanic land belonging to the Mesozoic and Cenozoic sedimentary, deposited during the Andean cycle

The structural commands present in the area are:

- Coastal Command: essentially composed of the Paleozoic basement and Jurassic stratified units, corresponding to the coastal plains and Cordillera de la Costa
- Domain-central Mesozoic Cover: consists of Cretaceous and that it is essentially, as a whole, the median mountain.
- Andean-domain: for the main ridge, formed by mesocenozoicas units, in general, the Upper Jurassic to Miocene.

Mesocenozoic coverage on the coast consists of a sequence of acid to intermediate volcanic character, partly underwater, Triassic (concurring) and into the formations by inward by a formation of continental volcaniclastic (discordant); these units are covered by marine sediments and volcanic of the Lower Jurassic continental Superior.

Along the coast, terraced deposits equivalent recognize the Miocene-Pliocene sea coast, related to the mouths of large rivers, while their continental counterparts are identified at various levels of terraces along the valleys. Quaternary cover deposits up to the beach, river, glacial-fluvial deposits and abundant landslides.

The Quaternary deposits are represented mainly by recent alluvial sediments that fill the valleys of major rivers (Rio Aconcagua) and several valleys and tributaries, usually arranged with a North-South. On the coast are mainly large accumulations of dune, which were generated by coastal currents moving from south to north, dragging the river sand in that direction. In these same areas can be seen the great development of paleodunas in general are deposits of colluviums covering.

2.7.2. Local Geological Setting

The Cabildo mining district is located in the Coastal Range of central Chile, Region V, 70 ° 55'W-32 ° 30'S. In this district, the Lower Cretaceous stratigraphic sequence consists Pachacama Formation, Lo Prado Formation and Veta Negra Formation. This sequence is intruded by plutons sienograníticos diorite. Near the district Rivano et al (1993) age obtained a K / Ar biotite 96 ± 3 Ma. Deformation in the district this consists of a folding homoclinal of NS-N15 ° W with an inclination between 20 ° -40 ° east and NS and NNE numerous faults of varying nature.

Pachamama formation is defined as a continental volcaniclastic sequence, whose lithology consists of breccias, tuffs and andesitic lavas. Lo Prado Formation is a transgressive volcano-sedimentary sequence, with a lithology consisting in intercalations of black calcilutite, gray calcarenites, levels of gaps and/or clusters aphanites andesitic, porphyritic tuffs and levels of red tuffs, this formation has been assigned an age -Valanginiense Berriasiense according to the fossiliferous material. Veta Negra Formation is a series with some andesitic volcanic intercalations volcarenitas, conglomerates and breccias. There have been a 40Ar/39Ar plateau age of 118.7 plagioclase ± 0.6 Ma (Fuentes et al., 2005), interpreted as the emplacement age of these andesites. The geological evolution of the mining district council during the Cretaceous start with a large accumulation volcanic, product of volcanic Unarco formation (Formation Pachacama), posterior subsidence and accumulation of transgressive sedimentary sequence (Lo Prado Formation) and, finally, siltation of the basin with a large volcanic production (Veta Negra Formation). Associated with subsidence of the basin develops a very low grade metamorphism overlain package and, an almost contemporary, there is the location of plutons (Fuentes et al., 2005). This geological history culminates in the formation of mineral deposits, primarily copper. These sites have been classified so far as skarn and manto, focusing mainly on marine sedimentary rocks of the Lo Prado Formation.

2.7.3. Field Geology

Rafaela is in the copper district of Cabildo in the southern part of the Petorca Province, Fifth Region of Chile. The mineralization corresponds to a site hosted stratabound at the base of the formation Lo

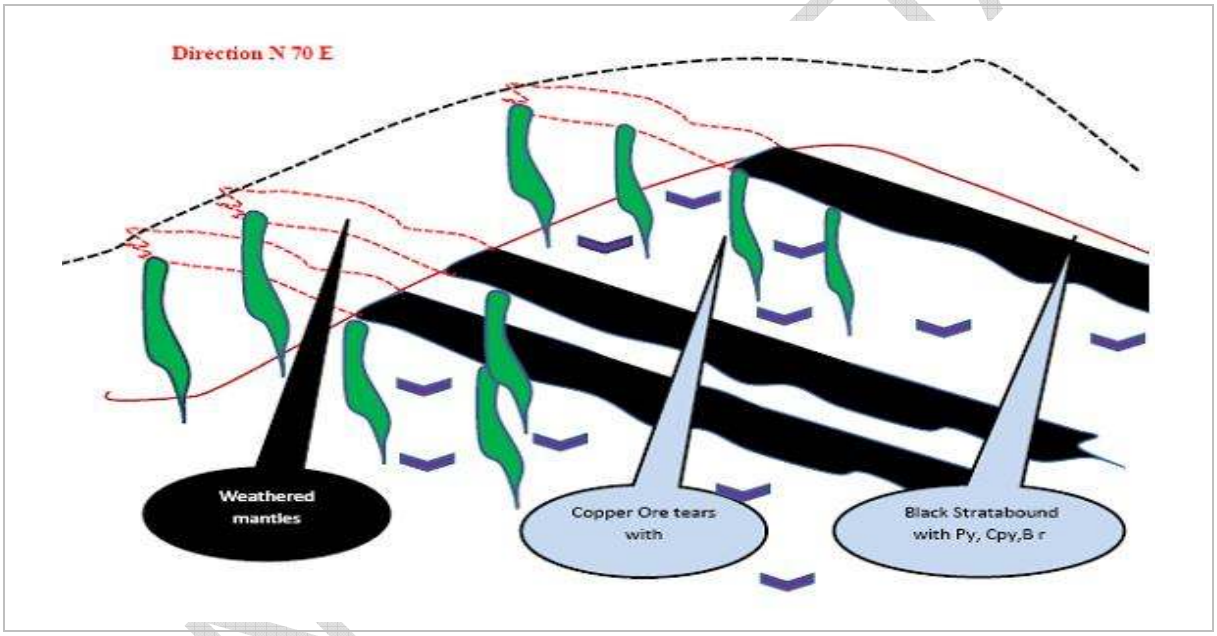
Prado. This formation is characterized by the presence of stratified rocks, volcanic and marine sedimentary belt arranged in a NS direction and monocline dip East Lower Cretaceous age. From inside the mine and surface recognition is possible to recognize a lithology consisting mainly of volcanic rock andesite, tuffs and breccias; sedimentary rocks, mainly fine-grained limestones and dark gray to black, which housed the main sulphide mineralization, sandy limestone, sandstones and conglomerates.

2.7.4. Resource Geology

The mineralization is deposited in Stratum of Limestone, Litotes and Andesites Dip 20°- E, this stratum was feed from an intrusive Andesitic "Ocoitic" (Chilean mining term), beds are recognized at Rafaela from levels 751 to 779. With no limits for now, the feeder is measure from levels 747 to 811 that is almost vertical (80 degrees inclination) and with an extension of 100 meters (Autocad File).

This beds has a width of 3 meters and then another sets of beds, 22 to 80 meters deeper, has 8 meters width, and the third sets, 45 to 140 meters deeper, has 15 meter width, the information of the last two series of veins is according to the geological profile indicated in Figure 2, below.

Figure 2: Rafaela Mine Structural Model



2.7.5. Exploitable Resources

The estimates are based upon and accurately reflect data compiled by Mr. Antonino Moreno Geoligist from GSS Geostart Ltda., under the supervision of Mr. Jaime Silva, Geologist, employed by Minera Rafaela S.A.

The total mineral resources to be extracted in ten years are 20,626,580 tonnes at a 0.89% Cu grade and with 16 grams per tonne of silver contain.

2.7.6. Potential for Additional Resources

There is good potential to add to the Rafaela resource, deepest from the current 350 meters, additional Cu Sulphide mineralization reserves and an estimate of 2M tonnes additions of Cu oxide mineralization. The later potential exists in the vicinity of the surface, where there is a Cu oxide mineralization in the upper part of the deposit, having inferred and measure resource status. From the surface the Cu oxide mineralization is up to 70 to 80 meter deep.

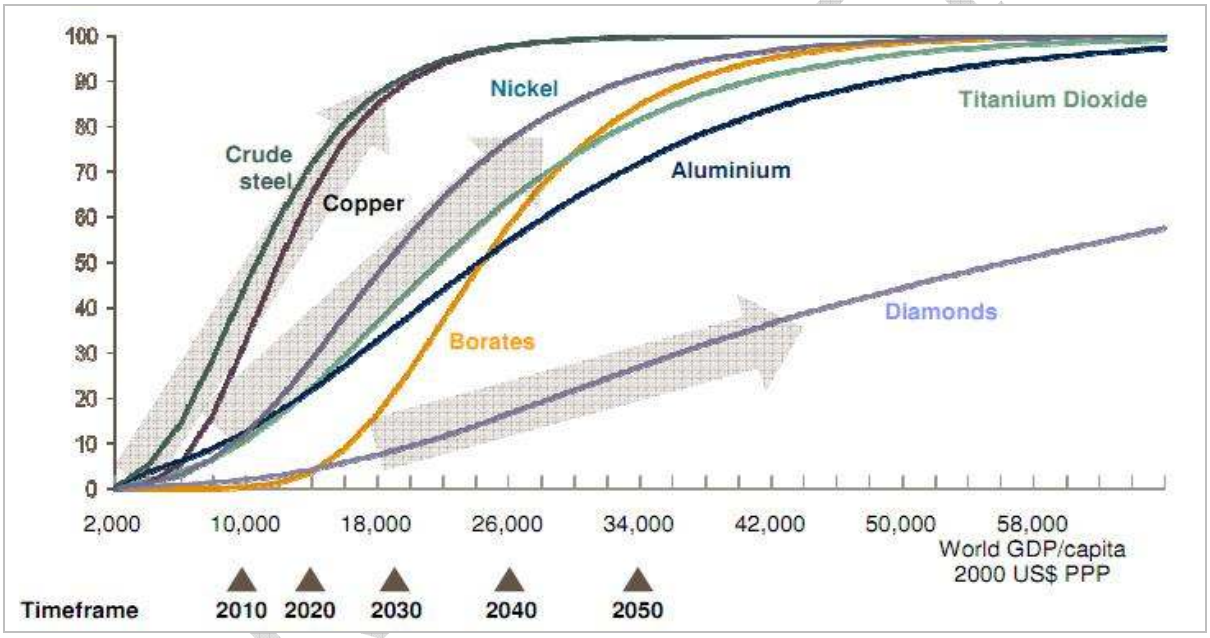
3. COMPETITIVE ANALYSIS – GLOBAL COPPER CONSUMPTION; WORLD AND CHILEAN COPPER PRODUCTION

3.1. Long Term View

There is a positive long term view for commodities, it is a good moment for new copper producers to enter the market and capture the growth of many developing countries with strong economic growth reflected in the sharp increase of their urbanization and industrialization rates associated with the increase in their level of disposable income. For the case of many minerals commodities and according to leading analysts, their saturation levels –point at which consumption per capita does not increase with income level- has not been reach yet, being copper one of this commodities, and which its saturation level is not expected to be reached until 2030.

Figure 3. below, shows the measured saturation level (in %), for six different high demand mineral commodities, where copper inflection point is around $23,000 World GDP/Capita income level, and expected to be reached by 2030.

Figure 3: Measured Saturation Level of Selected Mineral Commodities



In addition, this positive long term scenario is supported by the following facts:

- Intensification of global industrialization and urbanization support positive longer term view.
- Consumption of Iron ore, Copper and Aluminum are expected to double next 15-20 years. China is key but Indian and other non-OECD are set to follow.
- Many developing countries, such as the ’50 plus-group”, are seeing as the source of future demand growth potential.
- China will reach a per capita copper consumption of 15 kg/inhabitants/year by 2018, accruing for about 60% of world’s copper demand
- India’s PGB growth is second only to China’s. India has a current very low per capita copper consumption ratio (about 0,25 kg/inhabitants/year: 2005, compared to China’s 3.7 kg/inhabitants/year and world’s 2,7 kg/inhabitants/year)

Spurring the copper demand growth are some key drivers: Overall urban population increases (by 2025, one billion people are projected to live in urban areas) and 221 Chinese cities will have over 1 million people (Europe has 35 cities with over 1 million people). Along with those massive increases, increased

demand will be seen for buildings (5 million projected to be constructed by 2025) and transit (170 mass transit systems projected to be built- Europe has 70). Ultimately, whether it is more people, more buildings, or more infrastructures, more copper will be needed to facilitate construction.

The raising concerns of a slowdown in the growth of many manufacturing economies could constrain the strength of the global recovery, but it will not significantly affect the positive long term outlook for the mineral commodity market, especially for copper which has been having a strong demand from developing countries since their recovery from the 2008 global economic downturn. This sharp increase in demand has lead to a global imbalance between production and consumption during 2011. It is anticipated this imbalance will persist until the year 2016, if is not eliminated by an increase of copper scrap processing and refining, considering that any new large copper project that could come on stream with fresh copper output in the near term, is not likely to increase world copper mine output until 2015 or early 2016.

Table 1: Forecasted World Copper Production & Consumption Imbalance

	2008	2009	2010	2011	2012	2013	2014	2015	2016
World Refined Cu Production (Mt)	18.361	18.344	18.816	19.433 F	20.465 F	21.833 F	23.133 F	24.021 F	25.219 F
YoY Change (%)	1,70%	-0,09%	2,60%	3,30%	5,30%	6,70%	6,00%	3,80%	5,00%
World Refined Cu Consumption (Mt)	18.097	17.655	18.598	19.746 F	20.912 F	22.067 F	23.245 F	24.256 F	25.329 F
YoY Change (%)	0,70%	-2,40%	5,30%	6,20%	5,90%	5,50%	5,30%	4,30%	4,40%
Global Balance	**264**	**689**	**218**	**-313**	**-447**	**-234**	**-112**	**-235**	**-110**

3.2. Short Term View and Forecasted Prices

In 2011, the copper price is forecast to average US$ 4.33 a pound, an increase of 27 per cent compared with 2010, and to rise by a further 7 per cent in 2012 to average US$ 4.56/lb.

World copper consumption is forecast to exceed copper production in 2011 and 2012, resulting in a draw-down of stocks. In Chile, production is forecast to increase as new mines are commissioned. Earnings from Chilean's copper exports are forecast to increase by 24 per cent to US$ 48.7 billion in 2011 and by 10 per cent to US$ 53.4 billion in 2012.

For 2011 copper consumption growth is forecast to moderate in line with assumed slower world economic growth, production is also expected to slow. Consequently copper stocks at the end of 2011 are forecast to be 2.2 weeks of consumption, down from 2.7 weeks at the end of 2010.

In 2012, the copper price is forecast to increase by 7 per cent to average US$ 4.56 a pound. Copper consumption is forecast to continue to exceed production. This is forecast to result in copper stocks falling to 1.9 weeks of consumption by the end of 2012.

Table 2: Forecasted Copper and Silver LME Cash Prices

Metal (Nominal US$) / year ===>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Copper Price LME cash (c/lb)	342	433 F	456 F	440 F	370 F	425 F	405 F	335 F	335 F	335 F	335 F	325 F	325 F	325 F	325 F
Silver Price LME cash (US$/Oz)	20,2	35,3 F	38,5 F	37,9 F	32,5 F	38,1 F	37,0 F	31,2 F	31,9 F	32,5 F	33,1 F	32,8 F	33,4 F	34,1 F	34,8 F

The forecast growth in production in the reminder of 2011 and 2012 largely depends on new capacity being completed on schedule and existing mines operating without significant disruptions (strikes during July at Chile's large mines such as Collahuasi, Escondida and Codelco have already affected 2011 copper production). With copper stocks to be relatively low over the remainder of 2011 and 2012, any

production disruptions or unexpected surges in demand will result in significantly higher prices than currently forecast.

With respect to copper concentrate production, a prolonged strike at Chile's Escondida copper mine, the world's biggest, could push a global shortfall of copper concentrate deeper into deficit for the remaining of 2011, driving smelting and refining charges lower. The global flow of copper concentrates was only slightly below demand until the wildcat strike halted operations at the giant Escondida mine, majority owned by BHP Billiton. Before the strike, BHP Billiton was expecting to yield about 1.1 million tonnes of copper metal from concentrate and cathode operations this year, almost identical to last year.

Prior to the Escondida stoppage, AME Group was forecasting 2011 global copper concentrate supplies would climb 6 percent to 13.251 million tonnes against demand of 13.395 million.

"There's no doubt that this raises the risk that the deficit will be bigger than the market is expecting," said National Australia Bank commodity economist Ben Westmore, who is looking at a 2011 global copper shortage that might be higher than his current estimate of 300,000 tonnes. "All the big mines are suffering from lower grades and there's not a lot of spare capacity around," Westmore said.

These recent events in the copper supply side are a confirmation of just how tight the concentrates market had become with too many processors chasing too little supply. A short term concentrate supply deficit has been projected and it is shown in Table 2, below.

Table 2: Forecasted World Copper Concentrate Production & Consumption Imbalance

	2008	2009	2010	2011	2012
World concentrate supply (Mt)	12.257	12.464	12.526	13.251 F	14.365 F
YoY Change (%)	-0,80%	1,69%	0,50%	5,79%	8,41%
World concentrate demand	12.584	12.529	12.685	13.395 F	14.740 F
YoY Change (%)	0,42%	-0,44%	1,25%	5,60%	10,04%
Global Balance	**-327**	**-65**	**-159**	**-144**	**-375**

3.3. World Copper Production and Consumption Medium Term Outlook

Chinese demand is not the only major factor to consider in the outlook for copper. The world is also beginning to feel the impact of supply challenges. When it comes down to the production of copper, the industry is experiencing difficulties from various aspects of the production cycle:

- Discoveries of higher grade deposits are becoming less frequent
- More underground mines are producing copper, at a smaller output capacity than open pits
- Greater country risks and Infrastructure Challenges (remote locations of new mines)
- Declining average grades. Companies might react to this factor which diminishes aggregate product output by increasing ore feed to concentrator, but as plants have a more or less fixed processing capacity, this strategy is of minor impact in the short term. They must, therefore, build extra SAG-Balls-Flotation lines, which require additional energy, water and consumables, and produce additional fine waste.
- Highly variable exploration funding
- According to declared ore reserves and mill rates (source Brook Hunt 2008), 20% of copper coming from current mining operations will not be available by 2018.

The Metals Economics Group reported that exploration spending plummeted 42% to $7.7 billion in 2009, but it had a 45% increase in 2010, reaching a total of U$$11.2 billion.

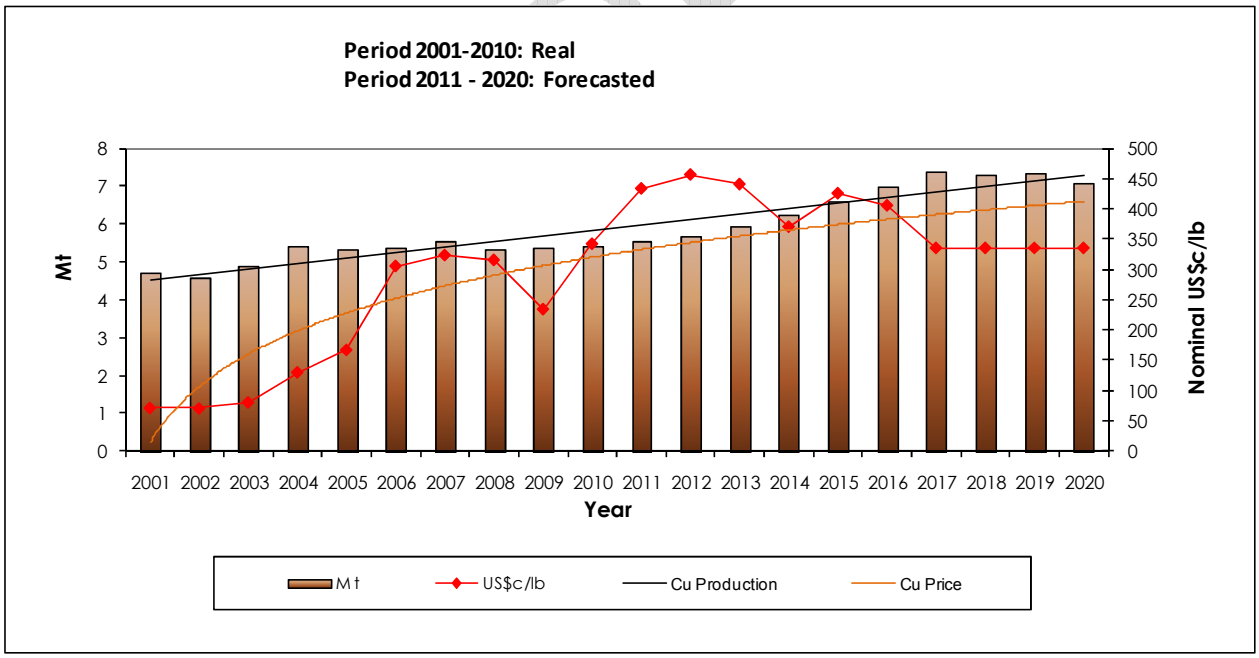
Probably as a response to rising metals prices and more stable markets, most mining companies increased exploration budgets in 2010. The industry restored almost two-thirds of the $5.5 billion that was cut from exploration in 2009 in response to the global financial crisis.

Another reason why the prices are holding up so very high it could be that there has been only marginal increases in new copper mine development over the past five years

3.4. Chilean Effective and Forecasted Copper Exports, Past and Current Decade (Value & Volume)

	Period	US$ M FOB	Fine Cu K t	LME Price US$/lb
	Nominal Terms (US$ As spent)			
Effective	2001-2010	225.953	51.837	1,977
Forecasted	2011-2020	514.443 F	64.817 F	3,600 F
	Variation	127,7%	25,0%	82,1%
	Real Terms (US$ As of July 2011)			
Effective	2001-2010	188.533	51.837	1,650
Forecasted	2011-2020	449.809 F	64.817 F	3,148 F
	Variation	138,6%	25,0%	90,8%

3.5. Chile's Copper Production and LME Cash Price – Past, Forecasted and Trend



4. EXPANDED MINE

4.1. Mining Areas

Rafaela mine is high grade copper sulfide mineralization with silver credits that is mineable by underground methods and is approximately 15 km distant from Cabildo city and the area in the valley proposed for the Concentrator location.

The Rafaela's Expansion Project entails mining and processing of ore from seven (7) different zones of the mine. The areas will come from 3 different strata-bounds and 4 different veins. A production scheduling analysis was based on a milling rate of 5,500 tonnes per day (tpd), operating 365 days per year, for a total sulfide ore feed of 2.063.000 million tpy. Mine operation will be schedule for continuous coverage, using two 12-hour shifts per day, and seven days per week.

4.2. Mine Design

Rafaela mine design and schedules has been developed by Minera Rafaela S.A., using The Room & Pillar and Sub-Level Stopping Underground Exploitation Report (Dec. 2010), which considered the geological block model as the basis for the mine design. The principle aim of the mine planning study was to develop a stoppe design and extraction plan for the indicated resource sections of the deposit.

The areas under production will be based on Room and Pillar and Sub-Level Stopping FS modify underground mining methods, half of the production will come from each method. Room and Pillar has an average of 8 meter high, the sublevel stopping FS modify method has rooms with dimension of 20m.X20m.X3m.

At the mine, equipments will include, 6 LHD´s of 10 yd´3 capacity, 5 electrohidraulic 2 booms jumbo´s, 8 trucks of 30 ton capacity. Three rotating crews will be use for continuous operation and maintenance coverage. Manpower will be 54 technicians and maintenance personnel, and 158 workers at the mine.

The total stope tonnage within the indicate resources boundaries is 20,626,580 tonnes @ 0.89% Cu and Au 16.0 gr/t.

4.3. Mine Planning and Cost

The underground mine planning remains as detailed in The Room & Pillar and Sub-Level Stoping Underground Exploitation Report (Dec. 2010) prepared by Minera Rafaela S.A.

For the Business Plan, the mining extraction sequence has been scheduled to produce ROM copper ore at the rate of up to 2,062,658 tonnes per annum over a 10 years mine life (LOM). Because the size of the stopping tonnage the capital component of the mine development component is high. Identification of additional stoping tonnes would allow for an extension of mine lie and thereby reducing the unit cost.

A summary of the development and production schedule for Rafaela is provided in the table below:

Table 3: Rafaela Mining Schedule

Development	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Capex	US$ M	17.0	70.0	63.0	25.0	2.0	177.0
Opex	US$ M				23.2	47.8	71.0
Total	US$ M	17.0	70.0	63.0	48.2	49.8	248.0
Tonnes							
Waste	Kt						
Ore	Kt				1,031	2.063	
Total							
Metal							
Contained Cu	t				8.720	17.440	
Contained Ag	Oz				429.831	859.663	

5. PROCESS PLANT AND FLOWSHEET

5.1. Design Criteria

The concentrator has been conceptualized to process 2.1Mtpa of Copper sulfide ore from Rafaela underground.

The basic design criteria are:

- Throughput: 2.1 Mtpa
- Crushing Utilization – 14 shifts per week, 12 hrs. per shift – 310 t/hr;
- Crusher product sizing of 25mm p80
- Milling at 270 t/hr with 90% overall availability
- Flotation of Cu ore to generate a 25% concentrate
- Concentrate dewatering to achieve maximum of 10% moisture levels;

5.2. Process Description

5.2.1. Run of Mine Pad

Ore will be delivered to the Run of Mine pad (ROM) from Rafaela underground. The ore will be delivered to the ROM directly from the mine by dump trucks.

The ore will be pile up and feed to the crusher by bucket loads from the ROM front end loader.

5.2.2. Crushing and Milling

Ore is processed via a hybrid primary/secondary crushing with ball mill grinding to produce a product for flotation.

Ore is transferred from the ROM Pad by front end loader to the primary crusher through a static grizzly. The static grizzly openings will be 800mm x 800mm. The mining area will be responsible for delivering ore suitable sized to the grizzly and will operate a mobile rock breaker as required for secondary breakage.

Ore is then fed by a vibrating grizzly feeder from the ROM bin, with oversize material feeding into a primary jaw crusher. The primary jaw crusher has been selected to minimize the probability of blockages and achieve the required throughput levels. Undersize material from the vibrating grizzly, together with the jaw crusher product, is discharge a onto conveyor belt (CV-01).

A secondary cone crusher, CR-02, also discharges product onto CV-01

Transfer point from CV-01 to the screen feed conveyor CV-02. Conveyor CV-02 feeds material to a vibrating double deck screen SC-01, from which oversize material is direct4ed to conveyor CV-03 and then to a surge bin and vibrating feeder, regulating feed to CR-02.

Undersized material from SC-01 reports to a fine ore bin, which has some surge capacity. Excess material is allowed to overflow from the surge bin and is conveyed on a fixed stacker conveyor CV-02, ot an on ground fine ore stockpile.

Ore is fed and from the fine ore bin to the ball mill feed conveyor CV-01, via a vibrating feeder. Ore from the fine ore stockpile can be fed onto the ball mil feed conveyor using the ROM fron end loader through a fixed reclaim hopper and choked discharge conveyor to regulate feed rate.

Dust suppression is by water sprays suspended from the stacker and above the crushers.

A grate discharge ball mill operates in closed circuit with cyclones, with grinding media added to the mill via a ball kibble and chute.

The cyclone underflow re-circulates by gravity to the Ball Mill Feed. The cyclone overflow reports to the flotation conditioning tank inlet launder. The cyclones are fed by duty and standby cyclone feed pumps.

5.2.3. Flotation

The metallurgical requirement for feed size to the flotation circuit is a P_{80} of 125µm.

Two agitated conditioning tanks, at the front end of the flotation circuit provide a one hour surge capacity, thereby decoupling flotation and milling, whist also smoothing flow rate variations from the ball mill, presenting a continuous feed rate to the flotation cells.

Flotation of copper ores will be carried out in a flotation circuit using conventional tank cells, configured as rougher and scavenger stages.

Two stage cleaning has been incorporated with cleaner tail recycling to scavenger feed and re-cleaner tail cascading to the first cleaner tank cell. Cleaner feed is first passed through a regrind circuit for regrinding.

Rougher and cleaner pH will be adjusted by the addition of lime, with sodium meta-bisulphite added to the regrind mill.

Flotation performance is monitored by a 6 stream online stream analyzer (OSA).

5.2.4. Regrind

The clean/recleaner circuits require a feed size with a P80 of 40µm.

The rougher and scavenger concentrates are reground by a vertical stirred mil to create the required size, operating in an open circuit. Oversized material from the cyclone densifier reports to the regrind mill, with undersize bypassing the mill to the cleaner.

5.2.5. Concentrate Dewatering

Recleaner concentrate is dewatered to 50% solids by weight in a high rate thickener. The thickener underflow is pumped to an agitated stock tank, with overflow draining to the process water pond.

From the stock tank, a variable speed pump feeds concentrates slurry to an Overhead Beam Filter Press. Filtrate collected from the filter is returned to the Concentrate Thickener feed well.

The Overhead Beam Filter Press is positioned on the outer of the concentrate storage shed and stacked once a shift by the concentrate front-end loader.

The continuous solids flow rate of 9.3 tonnes per hour (tph) is to be stored in the stock tank and filtered on day shift to ensure operations availability for clean out and maintenance.

A wheel wash facility is provided for departing concentrate trucks, with the collected wash water returned to the ball mill discharge hopper.

5.2.6. Tailings

The final tailings are dewatered in a high-rate thickener to 55% solids by weight and pumped to a tailings impoundment. The thickener overflow is returned to the process water pond.

The design of the tailings dam has to enable construction in two stages to achieve the required capacity and mine life. The initial operation of the dam will be by spigot discharge along the inside of the walls.

A pump mounted on a pontoon has been provided to return supernatant when available to the process water pond.

5.2.7. Process Reagents

Lime will be delivered as hydrated lime ($Ca(OH)_2$) and metered into a milk of lime tank in preparation for addition to the copper cleaner flotation circuit regrind mill to maintain a pH set point against a measurement in the regrind discharge hopper. The cleaner flotation pH is maintained around 11 – 11.5 to optimize the depression of pyrite.

The flotation collectors A211 and A5415 are added to the flotation feed conditioner tank by a dosing pump at full strength. Stage additions downstream may also be used by the operators.

Depressants CMC and SMBS will be added to the flotation feed conditioner tank by dosing pumps. Stage additions downstream may also be used by the operators.

IF56 frother is added to the first rougher flotation cell feed and points downstream by a dosing pump as required sustaining the optimum froth characteristics.

5.2.8. Process Controls

A weightometer on the primary crushing plant stacking conveyor will account for tonnage crushed.

The stockpile feed conveyor will be fitted with a tilt switch to indicate when the maximum stockpile height has been reached.

Water addition to the mill feed will be manual. The water addition to the mill discharge hoper will be regulated by a flow meter an actuated flow valve, with a set point cascaded froma a density controller on cyclone feed regulated by feedback from a nucleonic density gauge.

Lime addition rate to the cleaner circuit and the regrind mill feed will be varied by the lime pump ring discharge valves opening and closing frequency, and regulated by a pH probe in the second flotation feed conditioner tank to achieve a pH set point.

The speeds of slurry pumps will be regulated by a variable speed drive on the basis of their feed hopper levels, except the thickener underflow pumps. The controls for thickeners are based on measurement of the underflow density and bed level, regulated by the underflow pump speed.

Reagent additions will be controlled by independent microprocessors incorporated into the calibrated dosing pumps.

Flotation cells will be regulated by proprietary level controllers, with manual air rate adjustment. Filtration will be controlled by the vendor proprietary PLC.

5.3. Production Physicals

A summary of the production physicals is provided in the table below. Rafaela increased underground production is flexible, it is schedule to commence as soon as mine preparation works are completed and new mining equipment is delivered on site, to maximize the NPV.

Table 6: Production Physicals Summary (life of mine – LOM- & annual average)

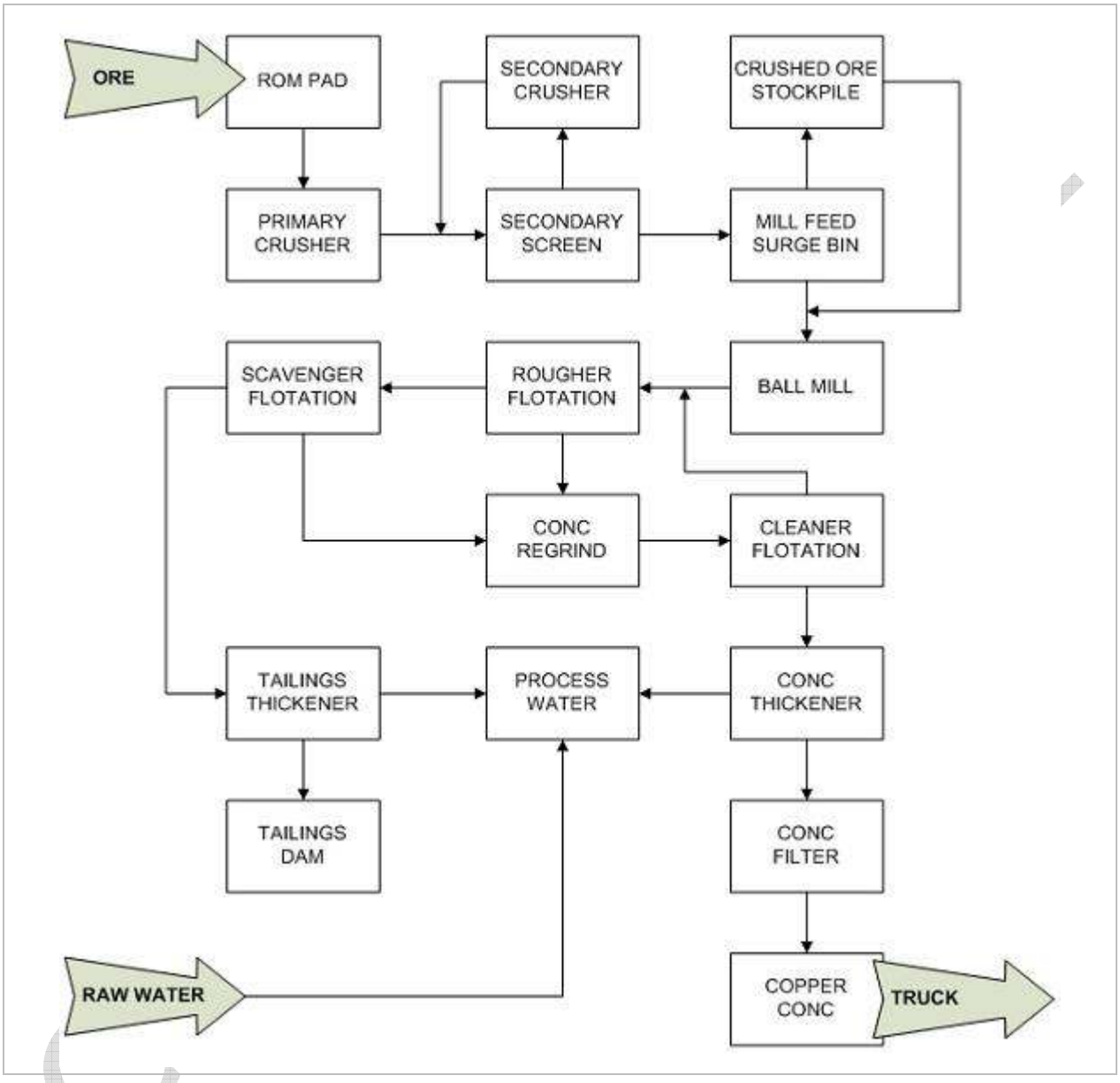
Metal in Concentrate		LOM	Annual Avg.
Cu	*t*	174.398	17.440
	k lbs	384.481	38.448
Ag	*t*	281	28
	k oz	9.049	905

Copper Concentrate		LOM	Annual Avg.
Concentrate Production	*Dry t*	697.591	69.759
Concentrate Production	*Wet t*	760.374	76.037

5.4. Process Plant Flow Sheet

A process plant flow sheet is provided in the figure below

Figure 6: Rafaela Expansion Project Process Flow Schematic



6. PROJECT INFRAESTRUCTURE

6.1. Location

The project considered by this business plan includes the Rafaela mine, which is located 15 km south of the road that goes through the Peña Blanca valley to Cabildo city in the Petorca province.

Cabildo city is connected by approximately 170 km of road to Santiago which is the main highway 5 except for approximately 25 km section between Cabildo and La Ligua cities. Cabildo has a population of approximately 20.400. It has only Hostel type accommodations, in La Ligua city -situated 20 km west of Cabildo in the road to highway five-, there are 5 hotels.

The concentrator alternative locations are in the lower valley that goes from Cabildo to La Ligua adjacent to La Ligua river bed, and will require -as a first option- the haulage of ore from the Rafaela mine.

The La Ligua river valley site characteristics for the concentrator location has been defined on the basis of (the specific location in the valley will be decided during the EIA preparation):

- Having areas of reasonably flat terrain, with suitable tailings dam sites and where medium size and small mining exploitation and beneficiation activities has been carried out for more than 150 years;
- No historical or heritage issues;
- Suitable rock for construction of ROM pads, roads and tailing dams;

La Ligua and Cabildo cities have been chosen as the accommodation places due to the following benefits:

- Close proximity to work areas;
- Availability of qualified mining labor, is an historical mining area within the country;
- Minimizing costs for provision of power, water and other services;
- Existence of excellent road-highway networks to access alternatively two main ports in the pacific cost of Chile, such as Valparaíso and San Antonio to secure an expeditious and continuous copper concentrate transport to port and shipment to international markets.

6.2. Services

The plant services will be located together for simplicity away from the plant.

Two high pressure rotary screw air compressors are used with one air receiver for the plant and a dryer and receiver for instrument air.

Raw water will be pumped from the Raw Water pond to the concentrator ring main and the raw//fire water tank by a duty/stand-by pump set operating with a VSD and pressure control.

Fire water will be supplied from a reserved portion of the raw water tank. A diesel driven fire pump provides fire water through hydrants. The fire system will be centrally located and distributed to the various locations.

Process water is pumped to the crushing circuit and plant ring main by a pump set operating in duty/standby configuration, controlled by VSD drives targeting a system pressure set point.

Process water consists of recovered water from the concentrate and tailings thickeners and tailings return water. Further water demand is then made up from the raw water system. The process pond has been located within the road loop to the concentrate shed, due to the proximity to the thickeners, from where the majority of the process water is recovered for reuse, via gravity draining from the thickeners to the pond. Further process water is recovered from the tailings system and returned to the process water pond.

The low voltage distribution transformers and associated MCCs will be located adjacent to the concentrator.

A six stream, on-line stream analyzer (OSA) has been selected which uses pressure samplers to feed process streams for measurement to the system and with gravity return to the relevant circuit. In using this method, small sample pumps, which often require high maintenance requirements have been avoided.

The control room and offices will be located on top of the MCC building with direct access to the plant, the OSA and provides clear views of the crushing and concentrator.

The electrical design base on a 110kV supply is from an overhead power line from a feeder switching substation on the existing Petorca to Cabildo cities power line.

A transportable skid mounted 110kV/11kV substation will be located at the site to provided 11kV power for distribution at the site.

11kV/415V transformer substation and Motor Control Centres (MCC's) will be located at the Crushing Plant, Process Plant and Services Area.

MCC's for the Crushing and Process Plants will be pre-installed in a transportable air conditioned switch room buildings. The MCC for the Services Area will be an outdoor type housed with a secondary weather enclosure. MCC's will be equipped with motor starters, variable speed drives, soft starters and PLC equipment.

6.3. Water Supply

6.3.1. Sources of Water Supply

Potential sources of water have been investigated and are listed below:

- Bores located around the area in the lower valley and in the general vicinity of La Ligua river.
- Rafaela underground mine dewatering
- Procurement of privately held La Ligua river water rights
- Rainfall catchment, La Ligua and Cabildo have an average annual rainfall of 300 mm.

It has been estimated that site wide (mine and process) raw water make-up requirements are 7 ML per day.

6.3.2. Water Supply Infrastructure

The water supply infrastructure will consist of:

- A header tank, pump station and pipeline pumping (design flow of 122 l/s) from the tank at the water source and pipeline to the concentrator location;
- Dewatering pumps in the Rafaela Mine;
- A tank at the Rafaela Mine site and a water pipeline to conduct water from the mine site to the concentrator and other facilities location.
- A 150 m3 tank located at the mine camp.
- A 120.000 m3 raw water pond lactated adjacent to the concentrator;
- Raw water pumps drawing from the raw water pond;

The raw water pond pumps will deliver water to:

- The process water pond for make-up for the concentrator;
- The concentrator raw water ring main for hose-down, filter wash, cooling water, and reagent mixing concentrate truck wheel wash;
- A 150 m3 clean water tank for potable and fire water supply;

The clean water tank will provide water for:

- The potable water treatment plant which in turns maintains level in a 35 m3 potable water tank. From this tank the domestic areas and safety showers will be fed by separate pumps.
- The clean water tank provides a reservoir of fire water adequate to drive 4 hydrants for 4 hours.
- A truck fill for dust suppression;

6.3.3. Potable Water

Potable water will be stored in a 30 m3 tank which is a two day supply for personnel as determined by the water balance.

6.3.4. Fire Water

The design basis is for a 4 hydrants running each at 10L/sec and each for 4 hours –a demand of 144 m3/hr for the diesel electric pump design rate. This entails a storage volume of 576 m3. This tank will be maintained full on a float valve from the raw water pond pumps.

6.4. Earth Works and Roads

Major anticipated earthworks and roads are:

- Cutting and leveling of the concentrator and mine industrial area;
- Cutting and leveling of the mine offices and shop facilities area;
- ROM pad;
- A new access road and haul roads (15 km) to the concentrator site from the Rafaela Mine;
- Access roads widening on and around the mine sites;
- Tailings dam;
- Water dams;

Contract crushing of suitable locally won material would be used to provide crushed material to be supplied for sheeting of roads and parking areas.

6.5. Tailings Disposal

The project storage requirement of the Tailings Dam is 20.002.420 t. The dam has been calculated to contain all water for a 72 hour rainfall event, with a total storage capacity of 21.100.385t. It is anticipated that the dam will be built in two stages during the mine life.

The Tailings Dam will have a return water arrangement for the recycling of as much water as possible. The tailings will be pumped to the dam to form a beach style arrangement for filling of the dam. This will allow for a floating off-take to be installed at a deeper section of the Tailings Dam. The return water will be used in the normal plant production cycles.

A site mass balance including estimated volumes is provided in the table below.

Table 7: Concentrator Mass Balance LOM

	Quantity	Unit
LOM Mill Feed	20,626,580	t
Feed Grade	0.89%	% Cu
Tailings Grade	0.13%	% Cu
Concentrate Grade	25%	% Cu
LOM Concentrate	624.160	t
LOM Tailings	20,002,420	t
Tailings design volume	11,720,436	m3
Tailings design placed density	1,8	t/m3
Tailings dam design capacity	21,100,385	t
Excess Capacity	**1,097,965**	**t**

6.6. Power Supply

Power will be required for underground mining activities and mineral processing, with the final demand being dependent on the activities undertaken at the site. The approximate peak running demand is not expected to exceed fourteen Megawatts per year.

Energy supply options need to be assess, with the preferred option being the purchase of energy from the local energy supplier, utilizing the electricity grid that supplies La Ligua and Cabildo cities. An alternative would be to combine installation and use of a diesel powered generating plant in the mine area along with the purchase of energy for the concentrator which will be located in the lower valley.

6.7. Communications

The communications system incorporate a connection to the telephone and data network providing 2x2 Mb bandwidth connection to the site allowing transmission of telephone calls and data; Fibre optic cabling from the connection point to the concentrator site and radio/microwave distribution to the Rafaela Mine. The onsite Telephone and data services have been allowed for including:

- Rack and patching equipment,
- Router;
- Data switch;
- Pabx remote switch;
- Handsets;
- Programming;

6.8. Diesel and Oil Storage

Diesel fuel and lubricants will be required to operate the mining equipment and site vehicles. The diesel and lubrication storage infrastructure would consist of:

- Three self-bounded 110 kL diesel storage tanks. One will be complete with pump, valves and piping that would provide fuel for heavy vehicles and equipment and one for light vehicles at Rafaela mine, plus 1 acting only as storage tank; One with complete pump, valves and piping that would provide for heavy and light vehicles at the concentrator.
- Containerized self contained lubrication reticulation equipment including three oil bulk bins complete with oil reticulation air pumps, hoses, reels and fittings:
- A 1x10 kL waste oil storage rank;

6.9. Building and Offices

A total of 7,942 m2 in building and offices has been estimated for the expansion project, space distribution and size of main areas is indicated in Table 8 below.

Table 8: Facilities Included in the Investment Estimates

Office Buildings	L	W	Area (m2)
Nurse/rescue	17,0	8,0	136,0
Administration	34,0	25,0	850,0
Administration Crib	17,0	4,0	68,0
Administration Toilet	17,0	4,0	68,0
Mining Offices & toilet	24,0	18,0	432,0
Mining Crib room and ablutions	17,0	5,0	85,0
Mining change house	17,0	6,0	102,0
Met/Maintenance	17,0	17,0	289,0
Lab	17,0	4,0	68,0
Process/Maintenance Crib	17,0	4,0	68,0
Maintenance/Process toilet & shower	17,0	4,0	68,0
Process toilet	8,0	4,0	32,0
Stores	8,0	4,0	32,0
Maintenance	8,0	4,0	32,0
Canteen & Cooking - 200 pers. capacity	20,0	20,0	400,0
Walkways	780,0	2,0	1.560,0
Metals Sheds	**L**	**W**	**Area (m2)**
Store	34,0	22,0	748,0
Workshop	34,0	22,0	748,0
Mining Workshop & Store	60,0	25,0	1.500,0
Lab	28,0	17,0	476,0
Dangerous goods	17,0	8,0	136,0
Building Maintenance	8,0	8,0	64,0

6.10. Mobile Plant Equipment

The Following plant is provided for in the capital estimate:

- Forklift for loading and unloading trucks and general warehouse use;
- Backhoe for general site works;
- Concentrate loading FEL provided with forks and boom for completing minor maintenance activities;
- Primary and backup ROM FELs;
- Light vehicles;

6.11. Other Facilities

Package Sewerage treatment plants would be installed adjacent to the offices and at the mine site and these would discharge to seepage trenches in accordance with local authority requirements.

Stock fencing will be provided around the perimeter of the Concentrator and is provided for in the capital estimate.

7. OPERATING COST ESTIMATE

Operating costs are split up into 3 areas: Mining, Processing and G&A (Site Support and Corporate Overhead).

Table 9: Unit and Total Operating Costs (LOM, Nominal US$)

Subtotal Cost	US$/t	US$
Mining	13,02	268.547.758
Processing	10,47	215.890.162
G&A	2,68	55.289.054
Total	**26,17**	**539.726.975**

7.1. Mining Costs

For the economic evaluation model, an owner operator costing has been assumed as the base case. The owner operator model represents a 21% reduction in direct mining costs as compared to contract mining but requires the purchase/lease of the mining equipment.

A summary of the underground mining operating costs is provided in the table below.

Table 9: Underground Mining Unit and Total Operating Costs (LOM, Nominal US$)

Subtotal Cost	US$/t	US$
Mining General	0,06	1.245.845
Mining Personnel	2,93	60.530.762
Engineering, Survey & Geology	0,06	1.245.845
Production	9,96	205.525.306
Total	**13,02**	**268.547.758**

7.2. Processing Costs

Processing operating costs have been build up by cost centres. A summary of the processing costs is provided in the table below.

Table 10: Processing Unit and Total Operating Costs (LOM, Nominal US$)

Subtotal Cost	US$/t	US$
Process & Maint General	0,19	4.007.744
Process & Maint Personnel	2,75	56.735.471
Crushing	1,44	29.760.030
Grinding	2,62	53.942.632
Flotation	2,78	57.391.396
Filtration	0,08	1.648.064
Laboratory	0,11	2.297.801
Tailings	0,13	2.650.516
Infraestructure	0,36	7.456.509
Total	**10,47**	**215.890.162**

7.3. General and Administrative Costs (G&A)

General and Administrative Cost includes all costs nor already provided for under Mining and Process above. These include:

- Administration, Human Resources, Safety, Environmental, Finance and Accounting, Warehousing, Management staff including travel accommodation and meals and Corporate Expenses;
- Site general costs including stationary, office consumables, telecommunications costs, freight, light vehicles rental and training;

Table 11: G&A Unit and Total Costs (LOM Nominal US$)

Subtotal Cost	US$/t	US$
Admin & Commercial General	0,90	18.642.303
Admin & Commercial Personnel	1,05	21.606.343
Building Opx&Mant Expenses	0,24	4.871.998
HSE	0,27	5.507.297
Corporate Expenses	0,23	4.661.113
Total	**2,68**	**55.289.054**

8. CAPITAL COST ESTIMATE

A summary of the total Rafaela expansion project capital estimated expenditure is provided in the table below.

Table 12: Rafaela Expansion Project Capital Costs (Nominal US$)

Subtotal Capital Costs	US$/t	US$
Pre-Production	1,24	25.530.368
UG Mine	2,66	54.932.193
Process & Maintenance	3,65	77.077.311
Site & General	0,93	17.460.129
Total	**8,48**	**175.000.000**

A breakdown of each area is provided in the sections below.

8.1. Pre-Production

An allowance has been made for the owner project team, land purchase/leasing and various consultant studies to bring the project up to a bankable level of detail, develop its basic engineering and its environmental impact assessment; as well as its EPCM service cost. A summary of these items is provided in the table below.

Table 13: Pre-Production Capital Costs (Nominal US$)

Subtotal Capital Costs	Source	US$/t	Value
Personnel (Owner Project Team)	RM DT	0,17	3.541.667
Land Purchasing / Long Term Lease	RM DT	0,17	3.500.000
Basic Engineering & BFS	Consultans	0,06	1.339.800
Environmental Impact Assessement	Consultans	0,05	1.098.901
EPCM Service	Consultans	0,46	9.550.000
Other	Consultans & RM DT	0,32	6.500.000
Total		**1,24**	**25.530.368**

8.2. Mining

The mining capital estimate is based on Rafaela Mining's development team (RM DT) and specialized external consultants. The majority of the Rafaela mine capital expenditure are mine equipment and development. A summary of capital expenditure is provided in the table below.

Table 14: Underground Mine Capital Costs (Nominal US$)

Subtotal Capital Costs	Source	US$/t	Value
Earthworks	Consultans	0,19	3.986.877
Offices & Buildings		0,00	0
Light Vehicles	RM DT	0,03	603.691
Power Supply Mine	RM DT	0,17	3.577.787
Fuel tank and dispenser	RM DT	0,01	137.607
Water	Consultans	0,01	129.513
Equipment	Consultans & RM DT	1,20	24.739.085
Development	RM DT	0,73	14.989.107
Vent & Travel ways	RM DT	0,16	3.346.500
Mine Construction Contractor	RM DT	0,17	3.422.026
Total		**2,66**	**54.932.193**

8.3. Process and Maintenance

The main capital expense for the entire project is the supply and installation of the process plant. Other significant items are power supply and earthworks. The major items of power supply are the construction of the power lines and substations; the major item of earthworks is the construction of the tailings facilities.

Table 15: Process and Maintenance Capital Costs (Nominal US$)

Subtotal Capital Costs	Source	US$/t	Value
Earthworks	Consultans	0,33	8.410.464
Offices & Buildings		0,00	0
Fitout	Consultans	0,03	691.080
Plant	Consultans	2,78	57.340.338
Power Supply Process	Consultans	0,50	10.366.000
Vehicles	Consultans	0,01	269.429
Total		**3,74**	**77.077.311**

8.4. Site and General

This section contains the capital expense estimates for all other items that were not included in the previous sections. Major items include office buildings construction at the mine and process plant, water supply, office and safety equipment, fuel storage and first fill. A summary of capital expenditure is provided in the table below.

Table 16: Site & General Capital Costs (Nominal US$)

Subtotal Capital Costs	Source	US$/t	Value
Earthworks	Consultans	0,03	609.495
Power Supply		0,00	0
Office Buildings and Change House	Consultans	0,47	9.618.097
Fences	Consultans	0,01	147.264
Offices Equipment	RM DT	0,05	968.820
Safety Equipment	RM DT	0,03	593.595
Vehicles (G&A + HSE)	RM DT	0,01	233.100
Water Supply	Consultans	0,10	2.071.048
Fuel Storage	RM DT	0,03	525.600
First Fills	Consultans	0,13	2.693.110
Total		**0,85**	**17.460.129**

9. PROJECT IMPLEMENTATION

A Project Implementation Schedule (PIS) has been prepared and indicated a completion time for commissioning of approximately 30-34 moths from project approval.

Some of the PIS' activities that are on the critical path and have the potential to delay project completion, are listed below:

- Project approvals including EIA, Land purchase/leasing;
- Provision of electrical power to the mine and plant site.
- Provision of a permanent water supply;
- Supply of long lead time mechanical plant;
- Development of company procedures and operation readiness activities

9.1. Project Execution Plan

The project execution plan (PEP) will be driven by the PIS. Key components of the PIP will be:

- Project coordination by the General Manager – Mining Operations to ensure ownership and accountability;
- Use of specialized project management personnel (Project Team) and software to track progress and manage threats;
- Initiate communication protocols for all participants to ensure efficient and timely flow of information;
- Development of a specific management plan for each capital cost item including meetings with government regulators and local municipality;
- Use of Engineering Procurement and Construction Management (EPCM) contracts for major technical items such as the process plant and electrical supply;
- Tendering specific consultant contracts to complete detailed technical works such as Environmental and Geotechnical;
- Identification of work best performed by construction support staff, time required and early hiring to complete these activities in-house;
- Early purchase and mobilization of part of the mining equipment fleet to carry out early site works;

9.2. Key Personnel

Most department heads, some key staff members and a few contracted specialists will be selected and hired during the procurement and construction stages (pre-production) to participate in the project implementation. The selection of the key personnel is a critical task, as in the conversion from prospector to miner, these people will be vital in developing the company systems and establishing the culture that will be required by the expanded operation.

9.3. Key Contracts

The following key contracts have been identified:

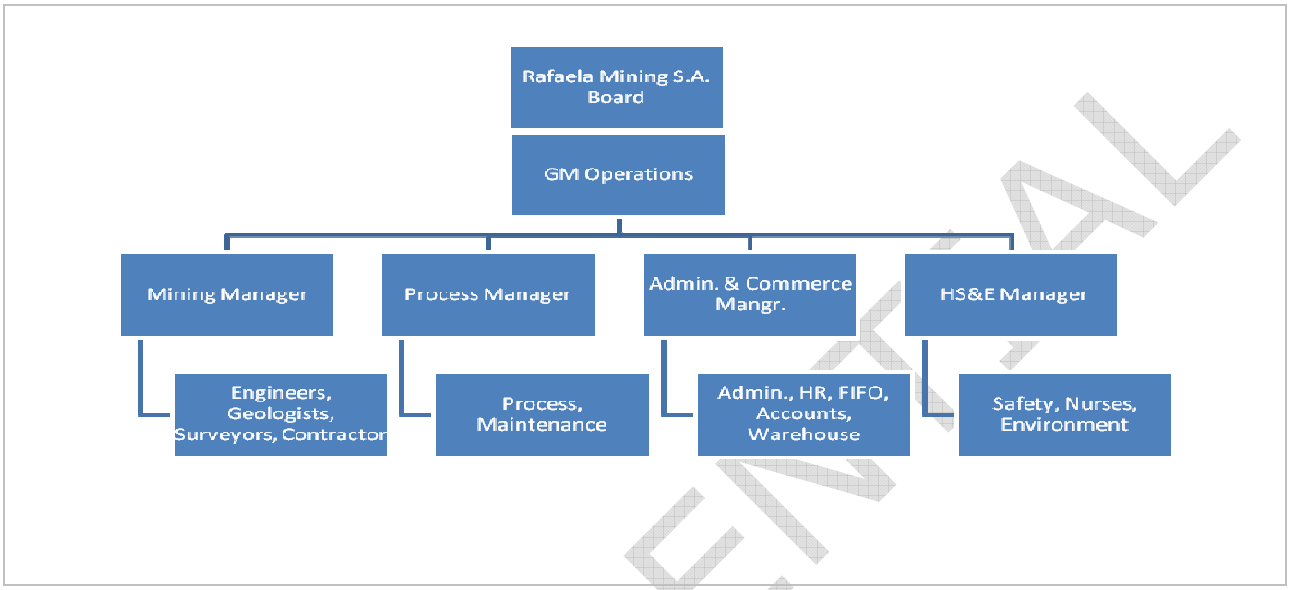
- EPCM for Copper concentrator;
- EPCM for electrical system (power distribution lines and substations)
- Supply and installation of water pipeline;
- Supply of site buildings including offices;
- Supply of Underground mine preparation works;

10. OPERATIONS

10.1. Key Organisation Structure

The organization chart shown in the figure below sets out the management structure for the expanded operation.

Figure 7: Rafaela Mining's Expanded Operation Organisation Chart



10.2. Manning Levels

A total of 357 persons as direct employees have been estimated for Rafaela Mining's expanded operation. Table 17 in next page shows a detailed breakdown of the estimated manning levels.

10.3. Recruitment

Where possible, local people will be recruited. It is anticipated that most of the new hire will come from the area, given the fact that La Ligua and Cabildo locations are both small-medium scale traditional copper mining districts.

10.4. Concentrate Shipment

It is anticipated that concentrates will be hauled to Valparaíso or San Antonio ports for export. The on site concentrate storage area is designed to hold 14 days production to deal with rain season transportation interruptions.

The truck wet weights will be recorded by a load cell on the FEL. Moisture and assay samples will enable calculation of the dry tonnes and copper contained for reference with the port storage received and ship-loading weights and assays. This data will be also used to back calculate plant performance using the flotation shift sample assays and the mill feed weightometer.

10.5. Personnel Transport

Personnel bus transportation from La Ligua and Cabildo cities to the concentrator and mine areas will be provided by the company on a daily basis, according scheduled operating shifts. For personnel mobilization and demobilization from/to the area, there are regular daily bus services in both local cities, connecting with main large cities of Central Chile (Santiago, Valparaíso, Viña del Mar, Rancagua, Quillota, Los Andes, San Felipe, San Antonio, La Serena, Curicó, Talca, Chillán y Concepción).

Table 17: Minera Rafaela Manning Levels

Area/Department	Roster Cycle	Manning Level
Mining		**158**
Mining Manager	4x3	1
Mine Superintendent	7x7	2
Drill&Blast Engineer	7x7	4
Database and CAD Administrator	7x8	2
Survey		
Senior Mine Surveyor	7x7	2
Mine Surveyor	7x7	2
Geology		
Chief Mine Geologist	4x3	1
Senior Mine Geologist	7x7	2
Mine Geologist	7x7	4
Mine Technician	7x7	8
Miners	7x7	130
Administration & Commercial		**52**
General Manger	5x2	1
Finance & Adm. Manager	5x2	1
Corporate Counsel	5x2	1
Public Affairs & Sustainability Mngr.	5x2	1
Adm. & Commercial Assistants	5x2	3
Senior HR Officer	5x2	1
HR Specialist	7x7	6
Finace & Accounting	5x2	6
Planning & Reporting	5x2	3
Treasury	5x2	3
Purchasing	5x2	3
Contracting	5x2	2
Warehouse Officer	7x7	2
Materials Analyst	7x7	4
HSE Manager	5x2	1
Safety Officer	7x7	6
Environmental Officer	7x7	2
Nurse	7x7	6

Area/Department	Roster Cycle	Manning Level
Process & Maintenance		**147**
Processing Manager	4x3	1
Production Superitendent	7x7	4
Senior Plant Metallurgical Eng.	7x7	2
Process Metallurgical Eng.	7x7	2
Metallurgical Technicians	7x7	6
Shift Supervisor	7x7	8
ROM Loader	7x7	8
Mill Operator	7x7	8
Float Operator	7x7	8
Filter Operator	7x7	6
Plant Operators	7x7	8
Process Service crew (tailings)	7x7	10
Laboratory		
Laboratory Supervisor	4x3	1
Senior Laboratory Technician	7x7	2
Laboratory Technician	7x7	6
Maintenance		
Maintenance Superintendent	4x3	1
Maintenance Clerk	7x7	4
Mechanical Supervisor	7x7	4
Maintenance Planner	7x7	4
Boilermaker	7x7	4
Fitter	7x7	12
Electrical Supervisor	7x7	4
Electrician	7x7	16
LV Mechanic	7x7	4
Electromechanical Technician	7x7	6
Handyman	7x7	8

Total - Rafaela Mining Direct Employees	**357**

11. BP FINANCIALS

The business economic evaluation presented hereinafter has been developed considering as the base case for the project economics the minable copper and silver resources estimated by Rafaela Mining S.A. for is Rafaela mine and referred in section 2.7.5 of this document.

The economic model used for the Business Plan Analysis has been developed similar to mine budget model. Al relevant direct physicals and cost inputs are contained and viewable in the mode with no hidden inputs. Therefore changes to metal prices and cash-costs by areas can be directly edited for impact analysis. For simplicity and a more demanding project return, a plant write off value equal to zero was assumed in year 11 after completion of mine life. As with all mining projects, Rafaela's Expansion Project is sensitive to metal price assumptions. All input values in the model are marked with a cell in light yellow color background, to clearly indicate that it is an input cell.

11.1. Assumptions and Comments

Table 18: Key Assumptions used in the Economic Model

Metal Prices (LOM Nominal US$)		**LOM Avg.**
LME Cu Price	Us$/lb	3,45
LME Ag Price	Us$/oz	33,61
Ore Feed Grade		**LOM Avg.**
Cu Head Grade	%	0,89%
Ag Head Grade	gr/t	16,0
Milling Parameters		**LOM Avg.**
Daily Milling Rate	tpd	5.651
Months per year	months	12,00
Daily Nominal Troughput	tpd	5.651
Ore Treated	ktpy	2.062,7
Metallurgical Recovery		**LOM Avg.**
Cu Global Recovery	%	95,00%
Ag Global Recovery	%	85,00%
Concentrate Grade		**LOM Avg.**
Copper	%	25,00%
Ag	gr/t	402,1
Ag	oz/t	13,0
Concentrat Realisation Costs (LOM Nominal US$)		**LOM Avg.**
Concentrate Freight	US$/t ore treated	0,54
Smelting	US$/t ore treated	2,59
Refining - Ocean Freight & Marketing	US$/t ore treated	2,75
Unit Cash-Costs by Areas (LOM Nominal US$)		**LOM Avg.**
Mining	US$/t ore treated	13,02
Milling	US$/t ore treated	10,47
G&A	US$/t ore treated	2,68
Total	**US$/t ore treated**	**26,17**

The model is in USA dollars, for Chilean Peso (CL$) denominated cost or price a CL$ 463.3 @ 1 US$ exchange rate was used.

Metal price projections, as well as operating costs where estimated in real dollars (as of July 2011) and escalated with the projected world inflation over the duration of the project and the operation.

Table 19: Prices and Costs Projected Inflation and Escalator

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14
World Inflation Annual Variation	%	4,50%	3,40%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%	3,00%
Prices & Costs Escalator - (US$)		1,0000	1,0340	1,0650	1,0970	1,1299	1,1638	1,1987	1,2347	1,2717	1,3098	1,3491	1,3896	1,4313	1,4742

Pricing: Metals contain in concentrate (copper & silver) where valued according with the projected LME long term spot prices for Cu and Ag -made by Rafaela Mining Development Team (RM DT), and shown in chapter 4 of this Business Plan- and the standard commercial conditions used in the global trade of copper concentrates.

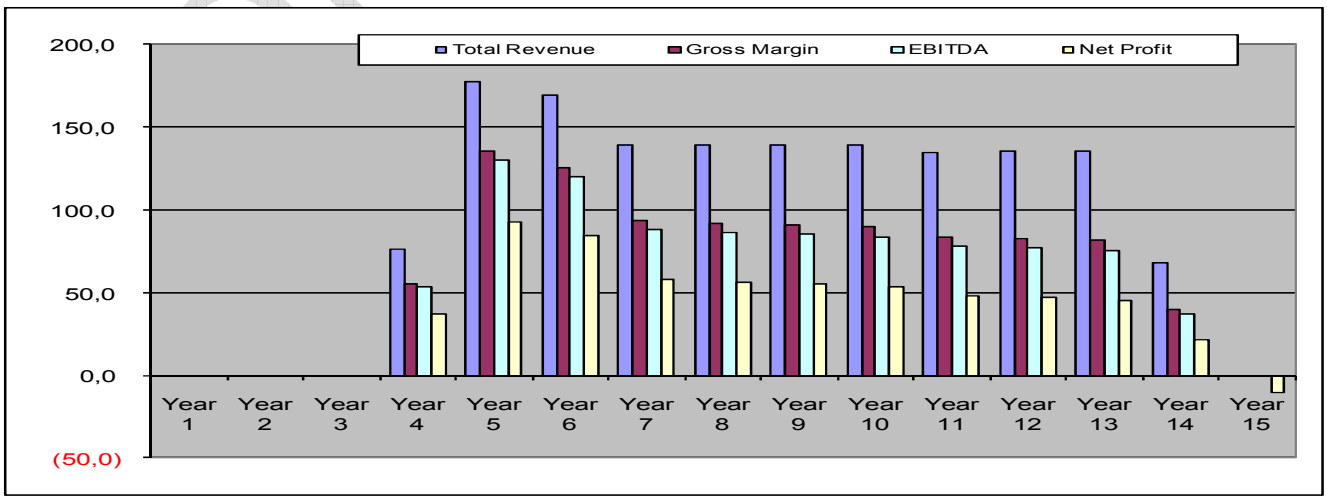
Financing Sources: The Company will use a project financing facility which will secure the $175,0M requested loan by an off-take agreement for 100% of the copper equivalent production of the 10 years life of mine to a German off-taker.

11.2. Starting Balance Sheet

In order to show and stress the economic attractive of proposed expansion project, Financial Statements projections were made without including current book value of Rafaela Mine mineral resources, nor the long term $175,0M debt and its corresponding accrued interests. The Starting Balance Sheet only considered the project executed works during year 1.

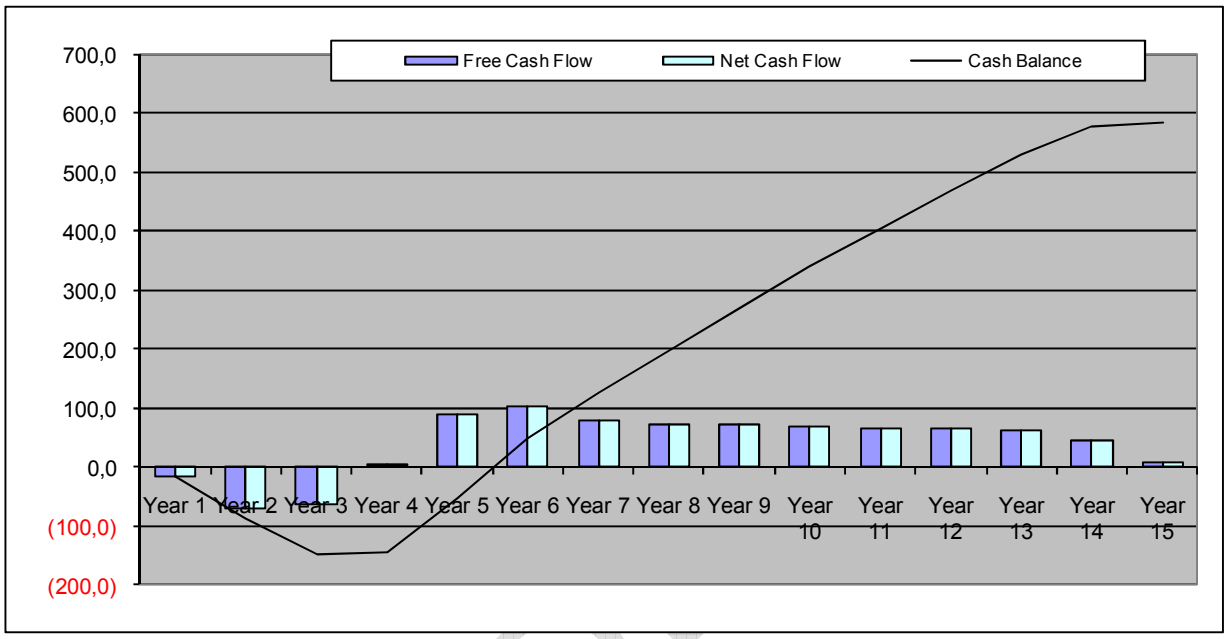
11.3. Profit and Loss Projection

US$M, as spent	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	LOM
Total Revenue	0,0	0,0	0,0	76,6	178,1	169,5	138,9	138,9	139,3	139,3	134,8	135,8	135,7	68,0	0,0	1.454,9
Total COGS	0,0	0,0	0,0	(20,8)	(42,9)	(44,2)	(45,5)	(46,9)	(48,3)	(49,7)	(51,2)	(52,7)	(54,3)	(28,0)	0,0	(484,4)
Gross Margin	0,0	0,0	0,0	55,8	135,2	125,4	93,4	92,1	91,1	89,6	83,6	83,0	81,4	40,0	0,0	970,5
Total SG&A	0,0	0,0	0,0	(2,4)	(4,9)	(5,0)	(5,2)	(5,3)	(5,5)	(5,7)	(5,8)	(6,0)	(6,2)	(3,2)	0,0	(55,3)
EBITDA	0,0	0,0	0,0	53,4	130,3	120,3	88,2	86,7	85,6	84,0	77,8	77,0	75,2	36,8	0,0	915,2
% Sales	0%	0%	0%	70%	73%	71%	64%	62%	61%	60%	58%	57%	55%	54%	0%	63%
Depreciation	0	0	0	(8,8)	(17,7)	(17,9)	(18,1)	(18,4)	(18,7)	(19,0)	(19,3)	(19,6)	(19,9)	(11,2)	(2,2)	(190,7)
Non Operating Result (net)	0	0	0	0,0	(0,4)	(0,4)	(0,3)	(0,3)	(0,3)	(0,3)	(0,2)	(0,2)	(0,2)	0,0	(8,3)	(10,9)
Income Tax	0	0	0	(7,6)	(19,1)	(17,3)	(11,9)	(11,6)	(11,3)	(11,0)	(9,9)	(9,7)	(9,4)	(4,4)	0,0	(123,1)
Net Profit	0,0	0,0	0,0	37,0	93,1	84,7	58,0	56,5	55,3	53,7	48,3	47,4	45,7	21,3	(10,5)	590,5
% Sales	0%	0%	0%	48%	52%	50%	42%	41%	40%	39%	36%	35%	34%	31%	0%	41%



11.4. Cash Flow Projection

US$M, As Spent	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Free Cash Flow	(17,0)	(70,0)	(63,0)	5,9	89,6	101,9	79,0	71,7	70,7	69,5	65,2	63,7	62,4	46,5	6,0
Net Cash Flow	(17,0)	(70,0)	(63,0)	5,9	89,6	101,9	79,0	71,7	70,7	69,5	65,2	63,7	62,4	46,5	6,0
Cash Balance	(17,0)	(87,0)	(150,0)	(144,1)	(54,6)	47,3	126,3	198,1	268,8	338,4	403,6	467,3	529,7	576,2	582,2



11.5. Balance Sheet Projection

US$M, As Spent	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Current Assets	(17,0)	(87,0)	(150,0)	(127,9)	(17,7)	82,9	157,1	229,0	300,1	369,9	434,6	498,7	561,4	592,2	582,2
Fixed Assets	17,0	87,0	150,0	166,3	150,6	134,7	118,6	103,2	87,5	71,5	55,2	38,6	21,7	10,5	8,3
Total Assets	0,0	0,0	0,0	38,3	132,8	217,6	275,6	332,2	387,5	441,3	489,7	537,3	583,1	602,7	590,5
Current Liabilities	0,0	0,0	0,0	1,3	2,7	2,7	2,8	2,9	3,0	3,1	3,2	3,3	3,4	1,7	0,0
Long Term Liabilities	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Equity	0,0	0,0	0,0	37,0	130,2	214,8	272,8	329,3	384,5	438,2	486,6	534,0	579,7	601,0	590,5
Total Liabilities and Equity	0,0	0,0	0,0	38,3	132,8	217,6	275,6	332,2	387,5	441,3	489,7	537,3	583,1	602,7	590,5

11.6. Break Even Point Analysis

US$M, As Spent		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	LOM
Fixed Cost	US$ M	0	0	0	(12,5)	(25,7)	(26,5)	(27,3)	(28,1)	(29,0)	(29,8)	(30,7)	(31,6)	(32,6)	(16,8)	0	(290,6)
Variable Cost	US$ M	0	0	0	(10,7)	(22,1)	(22,7)	(23,4)	(24,1)	(24,8)	(25,6)	(26,3)	(27,1)	(27,9)	(14,4)	0	(249,1)
Sales For Break Even Point	US$ M	0	0	0	14,5	29,4	30,6	32,8	34,0	35,2	36,5	38,2	39,5	41,0	21,3	0	350,6
Sales / Break Even Point	Times	0	0	0	5,3	6,1	5,5	4,2	4,1	4,0	3,8	3,5	3,4	3,3	3,2	0	4,1
Equivalent Cu	t	0	0	0	1.990	3.472	3.814	5.011	5.211	5.401	5.619	6.093	6.290	6.555	3.410	0	51.493

11.7. Normal Costing Analysis

11.7.1. Main Drivers

		LOM
Cu Price	USc/lb	347,0
Cu Payable	klbs	371.024
Cu % Gross Revenue	%	82%
Cu % Net Revenue	%	82%

11.7.2. Normal Unit Costing – Payable Cu lb

Nominal US$		
		LOM
Cost to Concentrate	USc/lb	(145,5)
Conc Freight	USc/lb	(3,0)
Smelting	USc/lb	(14,4)
Ref/Freight/Mkt	USc/lb	(15,3)
By-Product Credits		
Ag	USc/lb	77,8
Other	USc/lb	0,0
Total By-Product Credits	USc/lb	77,8
Net Cash Cost (C1)	**USc/lb**	**(100,4)**
Depreciation & Amortization	USc/lb	(50,8)
Operating Cost (C2)	**USc/lb**	**(151,2)**
Royalty/Front-end Tax	USc/lb	(0,7)
Other Indirects	USc/lb	(2,2)
Total Cost - excl Interest	USc/lb	(151,9)
Net Interest	USc/lb	0,0
Total Cost (C3)	**USc/lb**	**(151,9)**

11.7.3. Normal Unit Costing – Ore Treated Tonne

Nominal US$		
		LOM
Cost to Concentrate	US$/t	(26,2)
Conc Freight	US$/t	(0,5)
Smelting	US$/t	(2,6)
Ref/Freight/Mkt	US$/t	(2,7)
By-Product Credits		
Ag	US$/t	14,0
Other	US$/t	0,0
Total By-Product Credits	US$/t	14,0
Net Cash Cost (C1)	**US$/t**	**(18,1)**
Depreciation & Amortization	US$/t	(9,1)
Operating Cost (C2)	**US$/t**	**(27,2)**
Royalty/Front-end Tax	US$/t	(0,1)
Other Indirects	US$/t	(0,4)
Total Cost - excl Interest	US$/t	(27,3)
Net Interest	US$/t	0,0
Total Cost (C3)	**US$/t**	**(27,3)**

11.8. Business Valuation & Sensitivities

11.8.1. Base Case

Cash-Flow (As Spent US$)			LOM
	Capital Expenses - Expansion	US$ M	(175,0)
	Capital Expenses - Sustaining	US$ M	(24,0)
	Net Profit	US$ M	590,5
	Depreciation & Amortization	US$ M	190,7
	Cash Flow	US$ M	582,2
Economic Evaluation (As Spent US$)			US$M, As Spent
	NPV @	8,0%	282,3
		10,0%	235,6
	IRR	%	35,1%
	Payback	*Years*	4,2

11.8.2. Sensitivity Analysis

Scenario	Cost US$/t	Price US$/lb Cu	Capex US$M
Base Case	**(18,1)**	**3,45**	**(199,0)**
Increase/Decrease in Capex			20%
Increase/Decrease in Cash Cost	20%		
Flat Cu Nominal Price of US$ 2,0/lb & Ag Nominal Price of US$ 23,35/oz		2,00	

	NPV@	
Scenario	**8%**	**10%**
Base Case	**282,3**	**235,6**
Increase/Decrease in Capex	252,8	206,7
Increase/Decrease in Cash Cost	233,8	193,3
Flat Cu Nominal Price of US$ 2,0/lb & Ag Nominal Price of US$ 23,35/oz	(34,9)	(46,1)

Scenario	IRR	Payback
Base Case	**35%**	**4,2**
Increase/Decrease in Capex	29%	4,5
Increase/Decrease in Cash Cost	32%	4,3
Flat Cu Nominal Price of US$ 2,0/lb & Ag Nominal Price of US$ 23,35/oz	4%	10,5

12. OPPORTUNITIES AND RISKS

12.1. Opportunities

The following opportunities have been identified which have the potential to provide beneficial outcomes of the expansion project:

- Purchasing –in the nearby area of project location- a currently operating concentrator plant that has the full or partial required treatment capacity and tailings facilities capable to be expanded to required project tonnages. This will shorten project permits and EIA approvals time and will reduce time to market of the concentrate products in at least 8-12 months, increasing projects NPV @8% in US$ 73M to US$ 355M, IRR to 49% and Payback to 3,6 years.
- Invest in further exploration of oxide identified Cu resources to quantified the mineral contained and evaluate the convenience of developing a bio leach process to produce copper cathodes.

12.2. Risks

The following risks have been identified which have the potential to negatively impact on the project, excluding the usual metal price, exchange rate and treatment cost factors:

- Anticipated increased demand in Chile for mining project construction contractors due to the high level of anticipated capital expenditures being developed and/or programmed to develop by Chilean Cu large miners in the next five years (estimated total Capex of apprx. US$ 40,0B);
- Delay of government approvals such as EIA (no application has been made to the Chilean Environmental authority), water extraction licence or construction permits. With private third parties could be delays in property/lease and right of ways negotiations;
- Delays to the connection to grid power

13. CONCLUSSIONS

The level of technical and financial accuracy in the Business Plan is high. The scope has included sufficient detail to ensure no significant items have been omitted. All investment estimates have an accuracy class level IV, meaning that total estimate project Capex could increase/decrease in 21 to 30% after basic engineering is performed.

It is necessary to initiate the pre-production works, as soon as possible, in order to review and adjust capital cost with firm quotations for equipment, components and bulk materials and to secure convenient fabrication and delivery time to main mine and plant equipment.

There are no apparent project killers associate with the Rafaela Mine Expansion Project. Significant negotiation remains with government regulatory agencies, land owners/lease holders, local communities and the local power supplier; but sufficient work planning has been done to ensure that a path to completion is available.

The results of the base case economic model are of adecuate expected return for an investment in this type of base metal project and associated risks:

- After tax NPV@ 8% of US$ 282 million.
- IRR of 35%
- Payback of 4,2 years, counted from the project execution commencement date.

The cost items that require further work to bring the Business Plan up to a detailed level have been included in the Economic Model and the project estimated overall schedule, in terms of the time and costs to complete the work.