RAFAELLA resources

ASX Announcement | 2 December 2020
Rafaella Resources Limited (ASX:RFR)

Santa Comba PFS demonstrates Exceptional Economics with Assignment of Ore Reserves

Announcement Highlights

- Santa Comba detailed PFS sets out a 5-year open pit mine life at 1.3mtpa demonstrating pre-tax NPV8 real of US$28.6M (A$40.3M) and an IRR of 156%
- Project is economically robust with rapid payback of 5 months providing substantial cash flow coverage to secure debt financing.
- Proven and Probable Ore Reserves, in accordance with JORC 2012 code, are estimated to be 4.593 million tonnes at a grade of 0.148% WO3 (cut-off 0.05%).
- The PFS only focuses on the near surface resources with substantial upside available from recommissioning the high-grade underground operation (underway) and through additional drilling of identified mineralisation within the quarry area that is targeted to be converted to indicated or measured resource and be added to the mine plan (scheduled for early 2021).
- Rafaella Resources will now look to move directly to development and commissioning of the Project with first sales targeted for the end of 2021. Recommissioning of the underground operation, the economics of which are not included in this PFS, has already commenced.

Rafaella Resources Limited (ASX:RFR) ('Rafaella' or **'the Company')** is pleased to announce the results of a detailed pre-feasibility study (PFS) conducted in-house with the support of industry leading consultants. The PFS follows the recent drilling campaign that resulted in an upgraded Mineral Resource Estimate announced in July[1] and the results of extensive metallurgical test work on the disseminated near surface mineralisation[2]. The output of the PFS shows the Santa Comba Tungsten and Tin Project (the 'Project') to be economically robust offering near term cash flows and immediate scalability.

Pre-Feasibility Summary

The report is attached to this announcement and sets out in detail the following:

- The Project benefits from an existing approval to construct the process plant and to recommence underground mining operations. Initial open pit material will be sourced through a commercial arrangement with the local aggregate quarry operator as the tungsten mineralisation overlaps the quarry open pit permit boundaries. This arrangement (Stage 1) will allow the Company to fast-track the development of the Project. The Company will also submit a separate open pit permit application to cover additional later mine life resources (Stage 2).
- The open pit design completed for the PFS followed geotechnical recommendations made by Adiuvare Geology and Engineering Ltd (AdiuvareGE).
- Capital cost estimates are based on actual quotes obtained and are expected to be +/- 15% accurate.
- Ore sorter and metallurgical recoveries are based upon 2 stages of testing, including a representative bulk sample. Further test work is ongoing to optimise the recoveries, however this upside is shown in the sensitivities. For every 1% increase in recoveries, the Project generates approximately US$1M in additional NPV.

[1] *See ASX announcement dated 1 July 2020 "RFR announces significant Mineral Resource Estimate upgrade"*
[2] *See ASX announcement dated 26 October 2020 "Sta Comba Metallurgical Test Results Show High Recoveries and ASX announcement dated 2 September 2020 "Exceptional Ore sorting Results for Sta Comba"*

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- The Project implementation plan assumes the start of development commencing on 1 January 2021 with first sales by the end of 2021 as the Project benefits from considerable existing infrastructure, including existing site grid power, tailing storage facility, office building and concentrate shed, and process plant foundations that will be used to construct a simplified modular process plant based on a combination of new and second hand/refurbished units.
- Labour costs are based on present Spanish mining industry norms with staffing phased over the first 12 months to ensure adequate skill sets in place to safely manage the Project development.
- A $240/mtu Management Case has been generated using a flat $240/mtu APT price over the life of mine. Production schedules have then been generated from an optimised pit shell with the Management Case assuming 1.3mtpa of ore and a 765ktpa process plant following ore sorting. The Management Case includes Inferred Resources (19% of total). This inclusion is considered reasonable by the Company as the Inferred Resources largely come into the mine plan at the latter stages and a full budget for conversion of the Inferred Resources to Measured or Indicated has been costed in to the economics.
- Sensitivities have been run against the Management Case on commodity price, Opex and Capex costs, foreign exchange and recoveries.
- Further production cases have been run and the outputs are provided in the attached PFS:
    - Ore Reserves only (US$240/mtu flat and 1mpa production rates)
    - US$300/mtu flat production case assuming 1.3mtpa production rates in order to provide comparative figures against the results of recently published feasibility studies from other tungsten development projects.

Ore Reserves[3]

Ore Reserves have been assigned to the Project as follows.

Summary of Pit Reserves – 25 November 2020			
	Tonnes Mt	WO3 %	Sn ppm
Proven	1.245	0.150	117
Probable	3.348	0,147	94
Total	4.593	0.148	100

1. Cut-off = 0.05% WO3, which corresponds to the break-even cut-off using an assumed price of $240.mtu WO3 APT and an estimating combined processing and G&A cost of $6.23/t or ore
2. Reported reserves are below topography and excluded depleted underground workings
3. Reserves are inside a designed pit, which was developed using operational and geotechnical parameters as described in the Reserves Estimation Report
4. The reserve calculation comes from a regularised block model, which is equivalent to mining factors of 12% dilution and 97% mining recovery
5. The pit design also contains 761Kt of Inferred resources at economic grade

Cautionary Statement

There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

[3] The JORC Table 1 – Section 4 Estimation and Reporting of Ore Reserves is included in the Pre-feasibility Study attached to this announcement. Sections 1 to 3 were included in the Company's previous announcement dated 1 July 2020 "RFR announces significant Mineral Resource upgrade". Rafaella Resources is not aware of any new information or data that materially affects the information included in the previous announcement, and all material assumptions and technical parameters underpinning mineral resource estimates in the previous announcement continue to apply and have not materially changed.

Management Case Economic Analysis

The key assumptions and outputs are summarised in the following tables.

Key Assumptions		Key Project Outputs	
Ore grade	0.149%	Project life	5 years
Mining rate	1,300,000 tpa	Total ore mined	6.3 Mt
Stripping ratio	3.14:1 waste tonne to ore tonne	Total contained WO3	933,719mtu
Ore sorter efficiency	50-55% to product	WO3 sold in concentrate	604,123mtu
Concentrator throughput	765,000 tpa	LOM capex/mtu	US$1/mtu
Concentrator recovery	70%	LOM capex/t processed	US$0.19/t
Concentrate grade	65% WO_3	LOM opex/mtu	US$116/mtu
APT price	US$240/mtu flat over life of mine	LOM opex/t processed	US$20.21/t
Sn price	US$19,000/t flat over life of mine	Inferred as a % of total ore mined	19%
Financial Metrics (US$)			
LOM revenue	$117.3M	LOM cumulative cash flow pre-tax	$37.8M
Pre-tax NPV8 real	$28.6M	LOM cumulative cash flow post-tax	$28.0M
Post-tax NPV8 real	$21.0M	Pre-tax IRR	156%
Total development capex	$7.1M	Post-tax IRR	120%
Maximum negative cash position	$8.0M	Post-tax NPV/devex	3.0x
Payback	5 months		

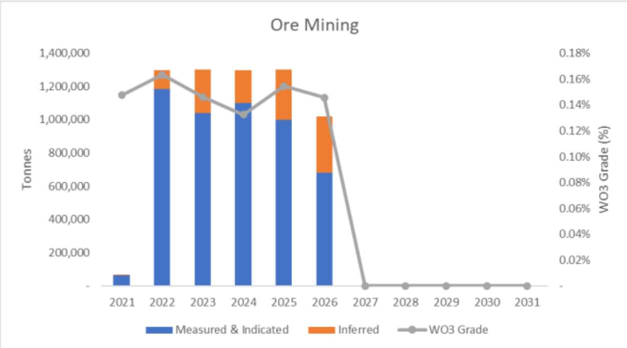
US$300/mtu APT Pricing Case – for comparative purposes

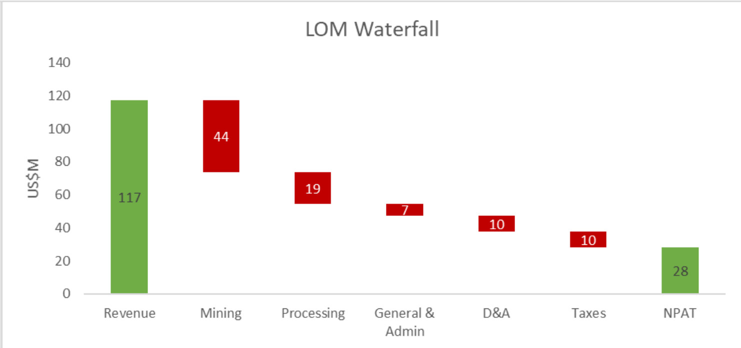
Financial Metrics (US$)			
Total ore mined	8.3 Mt (27% Inferred)	Project life	6.5 years
LOM revenue	$192.1M	LOM cumulative cash flow pre-tax	$80.9M
Pre-tax NPV8 real	$58.6M	LOM cumulative cash flow post-tax	$60.6M
Post-tax NPV8 real	$43.7M	Pre-tax IRR	203%
Maximum negative cash position	$8.0M	Post-tax IRR	163%
Payback	5 months	Post-tax NPV/devex	6.2x

Capital costs have been based upon firm quotes received. An additional 10% contingency has been added to the overall capital cost.

Capital Cost Breakdown		
Capex Items		
Concentrator	*US$ '000*	2,757
Crushing & Sorting	*US$ '000*	3,690
Contingency	*US$ '000*	645
Total	*US$ '000*	7,092

The following Management Case charts depict the production rates split between Measured and Indicated and Inferred (19%) and the breakdown of the net profit after tax over the life of mine in US Dollars.





Study Contributors

- The Revised Mineral Reserves Estimate together with the JORC (2012) Table 1, Section 4 was compiled by Mr. Adam Wheeler, a Mining Engineer (FIMMM) and a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code).
- Geotechnical engineering was managed by Mr Will Pitman (MCIM, PEO) of AdiuvareGE.
- Metallurgical testing has been carried out by TOMRA (Xray ore sorting) at their certified testing laboratory in Wedel, Germany and Impact crushing, gravity concentration, concentrate cleaning and tailings agglomeration by Mr. Nick Wilshaw (FIMMM) and Phil Higson (MIMMM) from Grinding Solutions Ltd.
- Environmental and hydrology has been completed by Francisco Ruiz Allen of Quimico, a member of IMWA (International Mine Water Association), IAGC (International Association of GeoChemistry), with master's degree in Environmental Engineering and Management.
- Legal permitting review was conducted by Antonio J. Garcia, a partner of Vrivm Legal S.L.P.
- Financial modelling was carried out by Mr. John Khoo (BComm) of J.K. Consulting
- The Pre-feasibility Study has been compiled by Mr. John Webster, a Mining engineer (MAusIMM).

Rafaella's Managing Director Steven Turner said: *"The results of this detailed PFS clearly demonstrate that the Santa Comba Project is an exciting development with exceptional economics. The project has been designed from a modest resource base as the Company is focussed on delivering early cash flows from which further expansion can be funded. The open pit as a stand-alone project shows rapid payback of capital and strong operating cash flows. The mining concessions offer a tremendous opportunity to expand both the near surface mineralisation (less than 10% of the near-surface mineralisation has been drilled to date) and the underground high grade resource that may be fed in to the planned modular process plant. The detailed PFS has been designed to allow the Company to move immediately into development. Underground recommissioning is already underway and site preparation work for the plant installation has also commenced."*

This announcement has been authorised by the Board of Directors of the Company.

Ends

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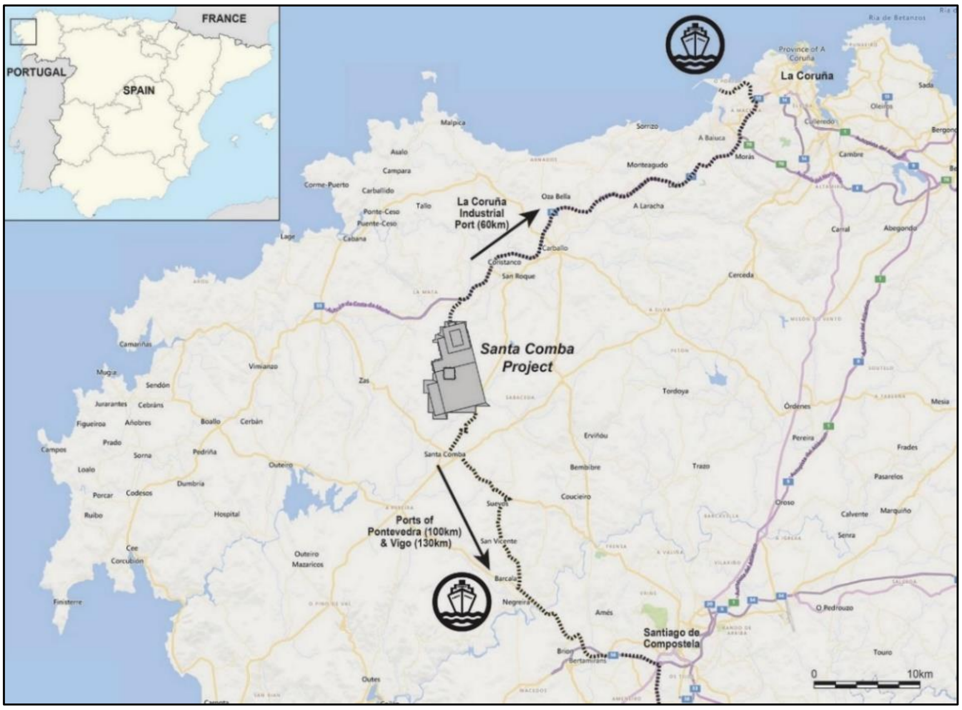
About Rafaella Resources Limited

Rafaella Resources Limited (ASX:RFR) is an explorer and developer of world-class mineral deposits. Rafaella owns the Santa Comba tungsten and tin development project in Spain, as well as the McCleery cobalt and copper project and the Midrim and Laforce high-grade nickel-copper-PGE sulphide projects in Canada. The Santa Comba project is located in a productive tungsten and tin province adjacent to critical infrastructure. The McCleery project was previously under-explored and holds significant potential. The Midrim and Laforce projects have yielded historic high grade drill intersections and offer significant upside for the Company.



Location of the Santa Comba Project, Galicia, Spain.

To learn more please visit: www.rafaellaresources.com.au

Forward Looking Statements Disclaimer

This announcement contains forward-looking statements that involve a number of risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.

Competent Persons Statement

The information in this report, that relates to Ore Reserves defined at Santa Comba, is based on information compiled by Mr Adam Wheeler. Mr Wheeler is a professional fellow (FIMMM), Institute of Materials, Minerals and Mining, and is an independent Mining Consultant. Mr Wheeler has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as Competent Persons, as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Wheelers consent to the inclusion of this information in the form and context in which it appears in this report.

The information in this report that relates to the Pre-Feasibility Study is based on information compiled by Mr John Webster who is a professional AusIMM member. Mr Webster is a mining engineer and a consultant to Rafaella Resources Ltd. Mr Webster has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Webster consents to the inclusion of this information in the form and context in which it appears in this report.

The information in this announcement that relates to Exploration Results and Historical Estimates is based on, and fairly represents, information and supporting documentation compiled under the supervision of Lluis Boixet Martí, a consultant to the Company. Lluis Boixet Martí holds the title of European Geologist (EurGeol), a professional title awarded by the European Federation of Geologists (EFG). EFG is a 'Recognised Professional Organisations' (ROPO) by the ASX, an accredited organisation to which Competent Persons must belong for the purpose of preparing reports on Exploration Results, Mineral Resources and Ore Reserves under the JORC (2012) Code. Lluis Boixet Martí consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

PRE-FEASIBILITY REPORT

SANTA COMBA

tungsten and tin project

RAFAELLA
resources

2 December 2020

SANTA COMBA PRE-FEASIBILITY
STUDY CONTRIBUTORS

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– Chief Executive Officer

Project Management – Spain

Oscar Amigo GarcÍa
– Project Manager

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European Geologist (EurGeol).

Lachlan Rutherford
– Geological advisor MAIMM

Bruno Nunez Casarino
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Will Pitman
– Adiuvere GE
– Geotechnical slope angle study & training

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Adam Wheeler
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– metallurgical testing, tailings treatment and training
www.grindingsolutions.com

Peter Crymble
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– Crushing design, equipment supply, costing and training
www.oresizer.com

Jens-Michael Bergmann
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– TOMRA mining
www.tomra.com/en/sorting/mining

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Environmental & Hydrology

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Graphics and presentation

Kathy Patterson
– Katabatic Illustration and Design

ADDITIONAL NOTES

Forward Looking Statements

Some statements in this report regarding estimates or future events are forward looking statements. They include indications of, and guidance on, future earnings, cash flow, costs and financial performance. Forward looking statements include, but are not limited to, statements preceded by words such as "planned", "expected", "projected", "estimated", "may", "scheduled", "intends", "anticipates", "believes", "potential", "could", "nominal", "conceptual" and similar expressions. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. Forward looking statements may be affected by a range of variables that could cause actual results to differ from estimated results, and may cause the Company's actual performance and financial results in future periods to materially differ from any projections of future performance or results expressed or implied by such forward looking statements. These risks and uncertainties include but are not limited to liabilities inherent in mine development and production, geological, mining and processing technical problems, competition for capital, acquisition of skilled personnel, incorrect assessments of the value of acquisitions, changes in commodity prices and exchange rate, currency and interest fluctuations, various events which could disrupt operations and/or the transportation of mineral products, including labour stoppages and severe weather conditions, the demand for and availability of transportation services, the ability to secure adequate financing and management's ability to anticipate and manage the foregoing factors and risks.

There can be no assurance that forward looking statements will prove to be correct. Statements regarding plans with respect to the Company's mineral properties may contain forward looking statements in relation to future matters that can only be made where the Company has a reasonable basis for making those statements. This announcement has been prepared in compliance with the JORC Code (2012) and the current ASX Listing Rules. The Company believes that it has a reasonable basis for making the forward-looking statements in the announcement, including with respect to any production targets and financial estimates, based on the information contained in this and previous ASX announcements

Competent Persons' Declarations

The information in this report that relates to Ore Reserves is based on information compiled by Mr Adam Wheeler who is a professional fellow (FIMMM), Institute of Materials, Minerals and Mining. Mr. Wheeler is an independent Mining Consultant. Mr Wheeler has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as Competent Persons, as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr. Wheeler consents to the inclusion of this information in the form and context in which it appears in this report.

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Mr Webster is a mining engineer and a consultant to Rafaella Resources Ltd. Mr. Webster has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr. Webster consents to the inclusion of this information in the form and context in which it appears in this report.

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Statement of Independence

Adam Wheeler has no material interest or entitlement in the securities or assets of Rafaella Resources Limited or any associated companies.

John Webster and Lluis Boixet Martí are not considered independent.

Cautionary Statement

The Ore Reserve estimate referred to in this announcement is based on a Measured and Indicated Resources. No Inferred Resource material has been included in the estimation of Reserves.

There is approximately 1.2Mt of Inferred Resource material included in the Management Case life of mine plan (~19%). The estimated costs of converting the Inferred Resource to Measured and Indicated have been included in the economics.

There is insufficient geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

Rafaella Resources Limited has concluded it has reasonable basis for providing the forward-looking conclusions included in this study. The detailed reasons for the conclusions are outlined throughout this study and Material Assumptions are disclosed.

Previously Reported Information

This announcement includes information that relates to Mineral Resources, Mineral Reserves and Exploration Results which were prepared under JORC Code (2012). This information was included in the Company's previous announcements.[1] Rafaella Resources Limited is not aware of any new information or data that materially affects the information included in the previous announcement, and all material assumptions and technical parameters underpinning mineral resource estimates in the previous announcement continue to apply and have not materially changed.

[1] *See ASX announcement dated 1 July 2020 "RFR announces significant Mineral Resource Estimate upgrade" and ASX announcement dated 13 June 2019 "RFR Defines Exploration Target – Santa Comba Tungsten Project"*

SANTA COMBA PRE-FEASIBILITY
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DEFINITIONS

Adit	Entrance to an underground mine via a tunnel
ABA	Acid Base Accounting
ANFO	Ammonium nitrate/fuel oil – explosive used for blasting
APT	Ammonium paratungstate – a white crystalline salt that is processed from tungsten concentrate and is the raw material used in tungsten products. Tungsten concentrate is priced against APT
Endogranite	Type of granite found in the Santa Comba project that hosts the disseminated wolframite mineralisation
Exogranite	Type of granite found at the Santa Comba Project. Exogranite does not contain disseminated wolframite ore but may host veins.
GMSC	Grupo Minera Santa Comba – the collection of mining concessions making up the Santa Comba Project
GTT	Galicia Tin and Tungsten SL, the Spanish registered owner of the Santa Comba tungsten and tin project. GTT is 100% owned by Rafaella Resources Ltd.
LOM	Life of Mine
MIW	Mining influenced water
ML	Metal Leaching
NAF	Non-acid forming
NAG	Net Acid Generation
NNP	Net Neutralization Potential = NP – AP (neutralization potential – acid potential)
NPR	Neutralization Potential Ratio (NP/AP)
PAF	Potentially acid forming
PPE	Personal Protective Equipment – special equipment employed to ensure the safety of personnel at a mine site or other hazardous environment
RFR	Rafaella Resources Ltd. The holding company of GTT. Rafaella Resources Ltd is registered in Australia and listed on the Australia Stock Exchange (ASX) under the ticker 'RFR'
ROM	Run of Mine
Slash	Forestry Waste
TMF	Tailings management facility
VSI	Vertical shaft impact crusher
WRSF	Waste rock storage facility

1.0 EXECUTIVE SUMMARY

The Santa Comba tungsten and tin project (the **"Project"**) is a brownfield development located in the municipalities of Santa Comba and Coristanco in the province A Coruña. The project is located ~60km from A Coruña and ~40km from Santiago de Compostela. Container ports are located in A Coruña, Vila Garcia (83km) and Vigo (120km). The main entrance to the mine is located at Varilongo, approximately 7km north of the town of Santa Comba and is accessible along the AC 2904 road.

The Project was previously worked by artisanal mining, mainly during World War II, which was predominantly shallow vein mining, with modern underground operations being carried out between 1980 to 1985 extracting high grade narrow vein wolframite mineralisation with some cassiterite yielding tin credits.

The focus of this pre-feasibility study is development of an open pit operation to extract 0.149% WO3 grade disseminated wolframite ores for which Ore Reserves have been ascribed in accordance to JORC (2012) guidelines *(Table 1.1)* and a Mineral Resource Estimate in accordance with JORC (2012) guidelines was previously issued *(Table 1.2)*[2].

Galicia Tin & Tungsten (the "Company" or "GTT") was formed in June 2014 and owns 100% of the Project. GTT is in turn owned 100% by Rafaella Resources Ltd ("RFR").

The Project comprises 7 mining concessions and 8 extensions as well as the physical assets of the formerly producing Santa Comba mine.

Economic Analysis

The study shows favourable economic results using the Management Case scenario at the optimum processing rate of 1.3 Mt/yr.

The Project is mostly sensitive to metallurgical recovery and APT pricing and main risks are related to these factors. The project has near term resource development that is targeted to extend the planned 5-year life of mine with significant orebody extensions targeted for both open pit and underground development..

Management Case Inputs

- APT pricing of US$ 240 / mtu
- Mining resource of 6.28 Mt at 0.149% WO3
- Mining rate of 1.3 Mt/yr.
- Mine life – 5 years
- Ore sorter product ~765,000 tpy.
- Sorter Recovery 90%
- Metallurgical recovery – 70%
- Capital Cost of US$ 7.1M
- Power costs 4.5 Euro Cents/kWhr

Post Tax Financial Results for the US$240/mtu Management Case

• Cumulative cash flow	A$39.5M
• NPV	A$ 29.6M
• IRR	120%
• Funding requirement	US$8.0M
• NPV/Devex	3.0x
• Payback	5 months
• Mine life	5 years
• Ore Mined	6.28 Mt
• WO_3 sold	604,123mtu

Economics have also been run for a 1.3Mtpa Optimistic Case with APT set at US$300/mtu and tin at US$19,000/t flat throughout the life of mine. This case has been run to allow comparisons against other recently published feasibility studies from various tungsten projects using similar pricing assumptions.

Post Tax Financial Results for the US$300/mtu Optimistic Case

• Cumulative EBITDA	A$85.4M
• NPV	A$$61.5M
• IRR	163%
• Funding requirement	A$11.3M
• NPV/Devex	6.2x
• Payback	5 months
• Mine life	5 years
• Ore Mined	6.28 Mt

[2] *See ASX announcement dated 1 July 2020 "RFR announces significant Mineral Resource Estimate upgrade"*

Ore Reserves have been assigned to the Project as follows:

Summary of Open Pit Reserves -25 November 2020			
	Tonnes Mt	WO_3 %	Sn ppm
Proven	1.245	0.150	117
Probable	3.348	0.147	94
Total	**4.593**	**0.148**	**100**

Table 1.1 Summary of Open Pit Reserves

- Cut-off = 0.05% WO3, which corresponds to the breakeven cut-off using an assumed price of US$240/mtu WO3 APT and an estimating combined processing and G&A cost of $6.23/t of ore.
- Reported reserves are below the topography and exclude depleted underground workings.
- Reserves are inside a designed pit, which was developed using operational and geotechnical parameters as described in the updated Reserve Estimation Report.
- The reserve calculation comes from a regularised block model, which is equivalent to mining factors of 12% dilution and 97% mining recovery.
- The pit design also contains 761Kt of Inferred resources at economic grades.

Cautionary Statement

There is insufficient geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

Rafaella Resources released an updated Mineral Resource Estimate on 1 July 2020[3]:

Mineral Resource Estimate for Santa Comba – 30 June 2020						
Type	**Classification**	**Mt**	**WO_3 %**	**Sn ppm**	***WO_3 t***	***Sn t***
Near-surface	Measured	1.21	0.16	118	*1,916*	*143*
	Indicated	4.93	0.16	90	*7,647*	*445*
Total Measured + Indicated		6.13	0.16	96	*9.563*	*588*
Near-surface	Inferred	4.24	0.16	91	*6,747*	*386*
Underground*	Inferred	0.23	0.95	2,797	*2,221*	*655*
Total Inferred		4.48	0.20	233	*8,968*	*1,041*
Grand Total		**10.61**	**0.17**	**154**	***18,532***	***1,629***

Table 1.2 Santa Comba Project Mineral Resource Estimate
The Mineral Resource Estimate is inclusive of the Ore Reserves

- 0.05% WO_3 cut-off for near-surface resources; 0.53% WO_3 cut-off for underground resources;
- the resources are total in-situ, unconstrained and inclusive of Reserves

[3] *Refer to ASX announcement dated 1 July 2020 "RFR announces significant Mineral Resource Estimate upgrade"*

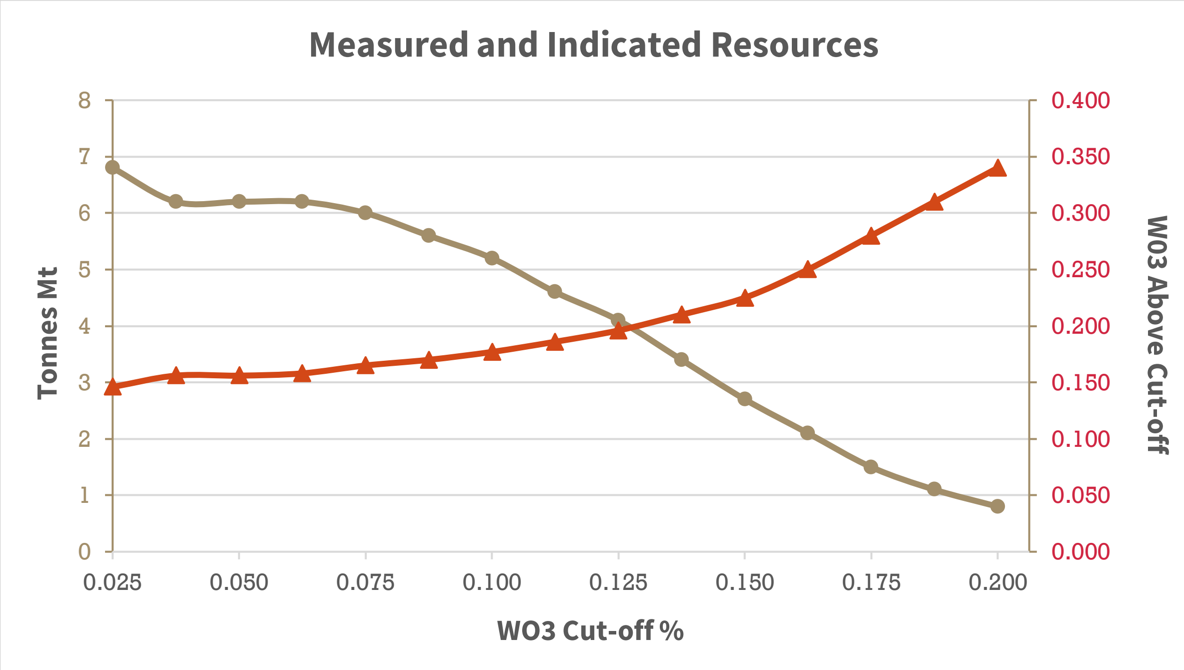


Figure 1.1 Grade tonnage curve for measured and indicated resources

The present mine plan exploits 6.28Mt of ore by open pit while simultaneously expanding shallow resources combined with an underground development to dewater and develop additional resources for supplementing mill feed with high grade ores in 3-4 years. The underground operation is currently commencing recommissioning and is subject to a separate report. The economics of any additional underground feed and associated costs have not been factored into this study

Exploration potential for additional open pittable shallow disseminated ore, hosted in endogranite between high grade quartz veins, immediately south of current pit is significant, where old underground workings exploiting the narrow veins extend for more than 1 Km southwards from the current resource model.

Additional underground resource potential is expected at depth in zones where the narrow high-grade veins are within endogranite hosting high grade of disseminated ore. The operation is scheduled to produce ~765kt/yr. of sorted “pre-concentrate” which will require contract mining and processing 1.3Mt of ore.

The annual production is set out in the following table.

Year	Tonne WO_3	Equiv T APT
Yr 1	1398	1581
Yr 2	1199	1697
Yr 3	1085	1509
Yr 4	1265	1488
Yr 5	934	1371
TOTAL	**5,882**	**7,482**

Table 1.3   Annual mining production summary

The production years 1 to 3 are constrained by the requirement to operate within the existing open pit permit held by Canteira da Minas ("CdM"). Years 1 to 3, whilst operating under the CdM open pit permit have been termed Phase 1. Phase 1 is designed to ensure that the Project can be fast tracked for early cash flows, providing sufficient time for GTT to then apply for its own open pit permits to then access the rest of the mineable resource (Phase 2). The feasibility study assumes that the agreement with CdM will allow GTT to deliver against the mine plan and that further permits will be in place as required for Phase 2, such that the annual production summary can be delivered without any permitting constraints.

Contract mining including drilling and blasting will be outsourced for which detailed quotes have been obtained. Mining will be truck and shovel conducted using standard medium size earthmoving equipment.

X-Ray Ore sorting can be successfully implemented with both vein and disseminated ore type. Tests have indicated that the ore may be beneficiated by a factor of 45% to 55% at a recovery of >90%. The Project will utilise 2-3 ore sorting machines, sorting material from +8mm to –25mm and +25 to -75mm.

Sorting will take place after secondary crushing and screening prior to feeding the upgraded product grading (~0.25% WO_3) into the fine crushing section and onto the processing section. Sorted pre-concentrate will be fine crushed to P80 –8mm prior to primary gravity concentration and grinding. The use of ore sorting will deliver significant operating and capital cost savings, by reducing process plant size by ~50%, energy consumption, tailings disposal volumes and staff employed.

The process plant will be designed for 765,000 tpa throughput assuming 97% availability operating 24/7 roster 360 days per year with the plant operating 8,000 – 8,500hrs per year.

Extensive test work conducted by Grinding Solution in the UK has determined that at least a 70% recovery may be achieved, producing a wolframite/scheelite concentrate containing 61-68% WO_3 depending upon plant parameters. Concentrates will be cleaned of over 98% of deleterious arsenic and other base metal sulphides that would lead to smelter penalties. Further metallurgical test work is being carried out on larger bulk samples to "pilot" the proposed process, targeting increases in recoveries and enhancing the quality of the concentrates by removing any minerals that can incur smelter penalties. Concentrates will be collected and bagged in bulk bags and loaded into containers at site until collection.

Collection will be self-loading trucks for transport to a local rail siding or to A Coruña deep-water port. The logistics and offtake will be managed by Transamine Trading for the initial 3 years from commencement of production.

2.0 MARKET ANALYSIS AND PROJECT STRATEGY

Present prices of the benchmark trading tungsten commodity is Ammonium Para Tungstate (APT) which is sold in 10kg lots known as an “mtu” has been relatively stable for some time and Rafaella has developed a range of economic parameters from pessimistic to optimistic to develop sensitivity parameters for selection of mining and processing rates and cut-off grades.

The prices for APT has been in the US$200-250 /mtu for some time in 2020 and in this Pre-feasibility study Rafaella has generated 3 production scenarios based upon.

- Optimistic pricing – US$300/mtu nominal flat
- MId-range pricing – US$ 240/mtu nominal flat
- Pessimistic pricing – US$ 180/mtu nominal flat

These economic parameters have been used in the development of three resource models, mining cut off grades, open pit designs and stripping ratios. Cut off grades have been developed from “mtu” pricing, quoted mining costs, and modelled process costs and set at 0.05% WO_3.

2.1 Marketing

Marketing of the tungsten and tin concentrates has been agreed with Transamine Trading who will accept containerised concentrate shipments at the mine gate and are responsible for shipping, insurance, and marketing from Santa Comba globally.

Saleable tin concentrates will be limited as tin grades in Santa Comba disseminated ores is of low tenor and mineralogy shows cassiterite is fine to very fine.

Tungsten, which is a hard, refractory, and rare metal, is important in many commercial and industrial applications. For example, key alloys of tungsten are widely used in the production of incandescent light bulb filaments, X-ray tubes, electrodes in welding, radiation shielding, and superalloys. Tungsten’s high strength, hardness, and density make it ideal for military applications in penetrating projectiles.

Tungsten naturally occurs in the earth crust exclusively combined with other elements in chemical compounds as minerals and is usually extracted from those minerals. Wolframite ($(Fe,Mn)WO_4$) and scheelite ($CaWO_4$) are the main ore minerals of tungsten deposits that occur in sufficient abundance to be of economic significance.

Those tungsten ores are generally subjected to physical beneficiation techniques such as gravity, flotation, magnetic and electrostatic separation.

The tungsten market is linked to global industrial output and consumption of tungsten products is closely linked to these global factors, especially production of motor vehicles and consumption in China.

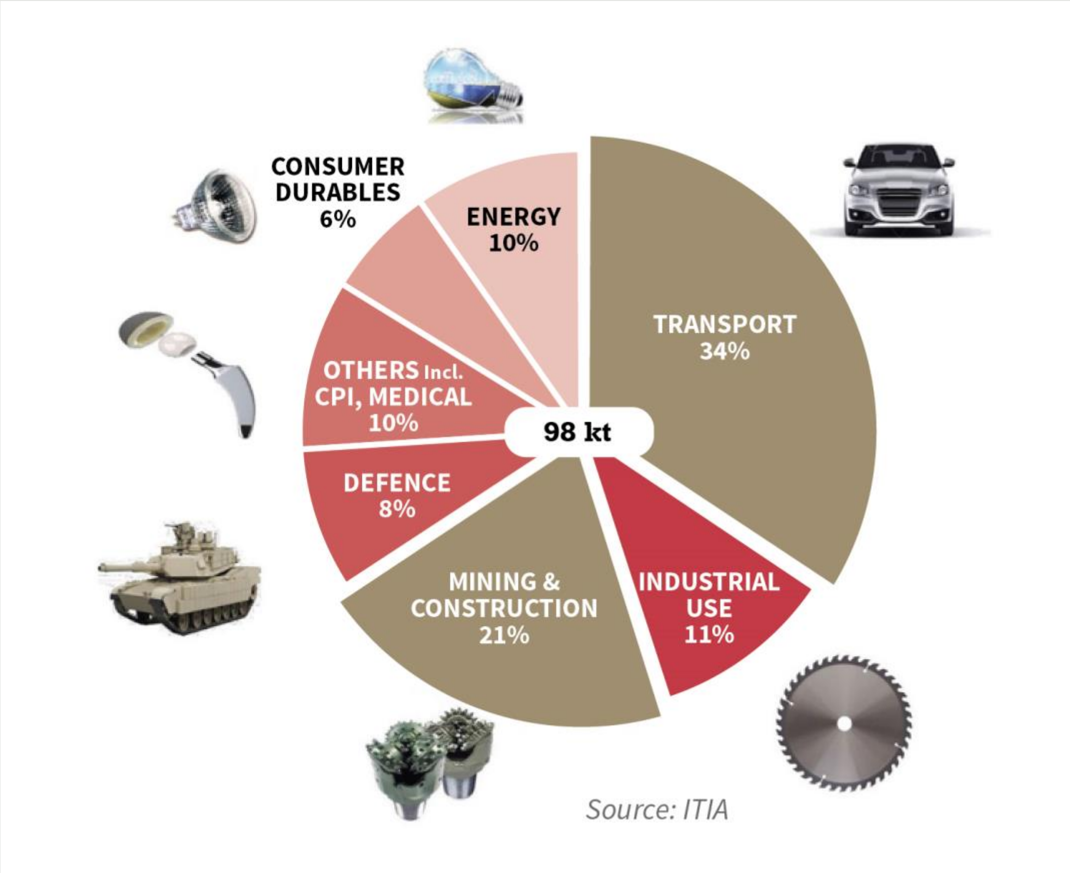


Figure 2.1 Market analysis

Pricing of tungsten concentrate is benchmarked against ammonium paratungstate (APT), a white crystalline salt that is the raw material beneficiated from tungsten concentrate and the base for all tungsten products.

Metal Bulletin provides prices for APT traded and sold in China and also in Europe (Rotterdam). Market standard for tungsten concentrates are 65% contained tungsten trioxide (WO_3)with units based on metric tonne units (mtu) which equate to 10kg.

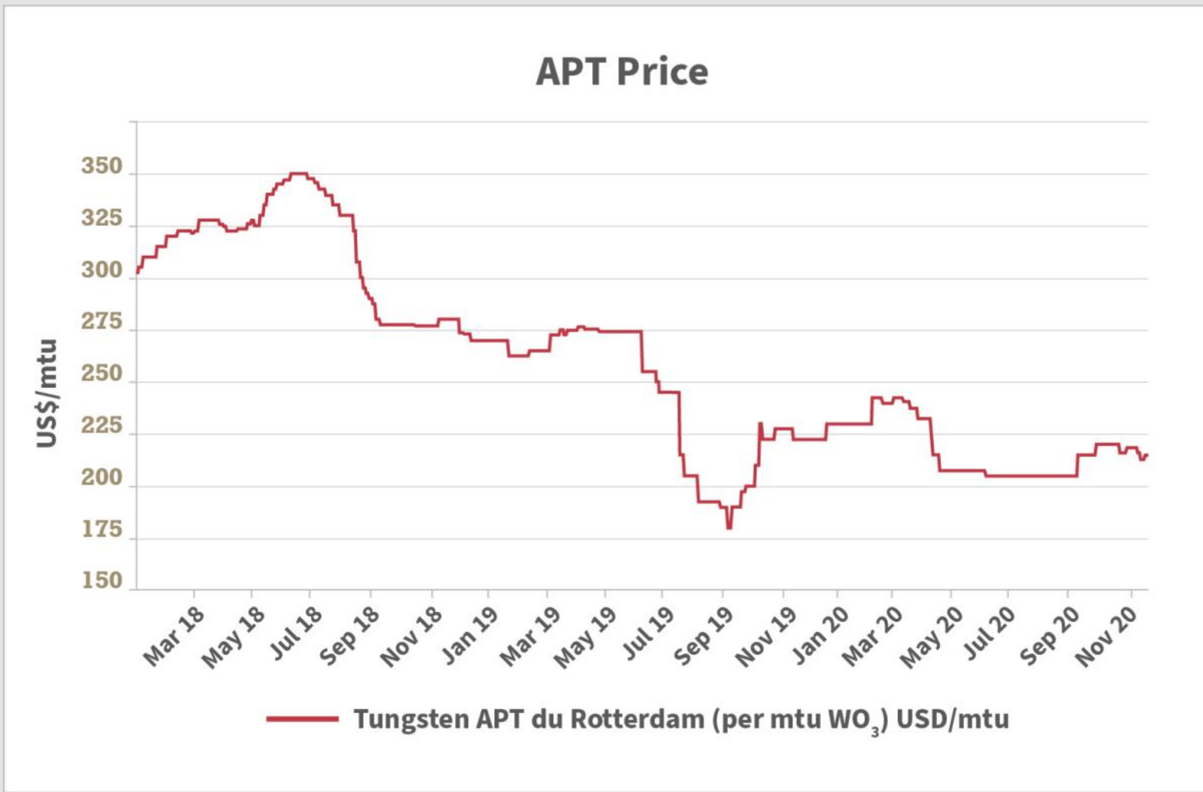


Figure 2.2 APT price graph (22 Nov 2020)
** Source: Argus Media*

Rafaella Resources has then run several pricing sensitivities against the production scenarios to stress test the economics. The output of the price sensitivities on the Management Case are shown in section 15.8.

Due to the potential for market volatility in pricing, the Santa Comba project has been designed with significant production flexibility using selective grade control and ore sorters to increase or decrease head grades to the process plant during price fluctuations.

Adjustment of mill feed grade and processing rate to match the market conditions by using modular processing units, enables rapid expansion of plant throughput if markets are advantageous.

3.0 GEOLOGY AND RESOURCES

3.1 Geology

The Santa Comba tungsten and tin deposit is located in the Varilongo Granitic Massif whose dimensions are roughly 8 km in N-S direction and 1.5 km in E-W direction, showing an elongated geometry with N5-10ºE trend, in concordance with main regional structures. This intrusive body is hosted by metamorphic rocks corresponding to Santiago Unit, one of the Basal Units of Órdenes (Ordes) Allochthon Complex, which is part of Galicia-Trás-os-Montes Zone (GTMZ), included itself in the Iberian Massif of the Variscan Orogen (figures 3.1 and 3.2.). This metamorphic suite is comprised of schists, plagioclase schists, paragneisses and felsic orthogneisses.

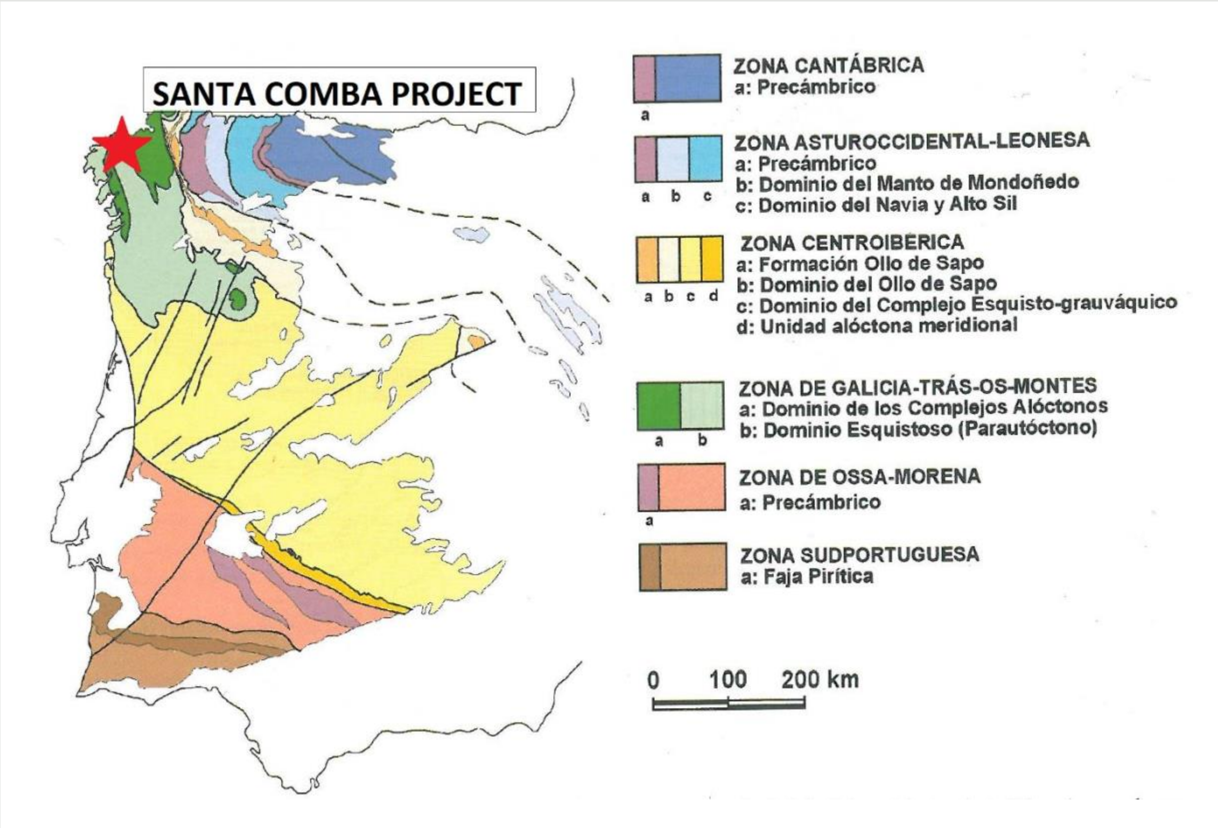


Figure 3.1 Location of the Santa Comba W deposit into the Iberian Massif Zonation map according to Farias et al. (1987)

The recent infill drilling program has been drilled in the southern part of the Varilongo Granitic area), Santa María area, Varilongo area (immediately West of Santa María area) and Eliseo Area, shown in figure 3.2.

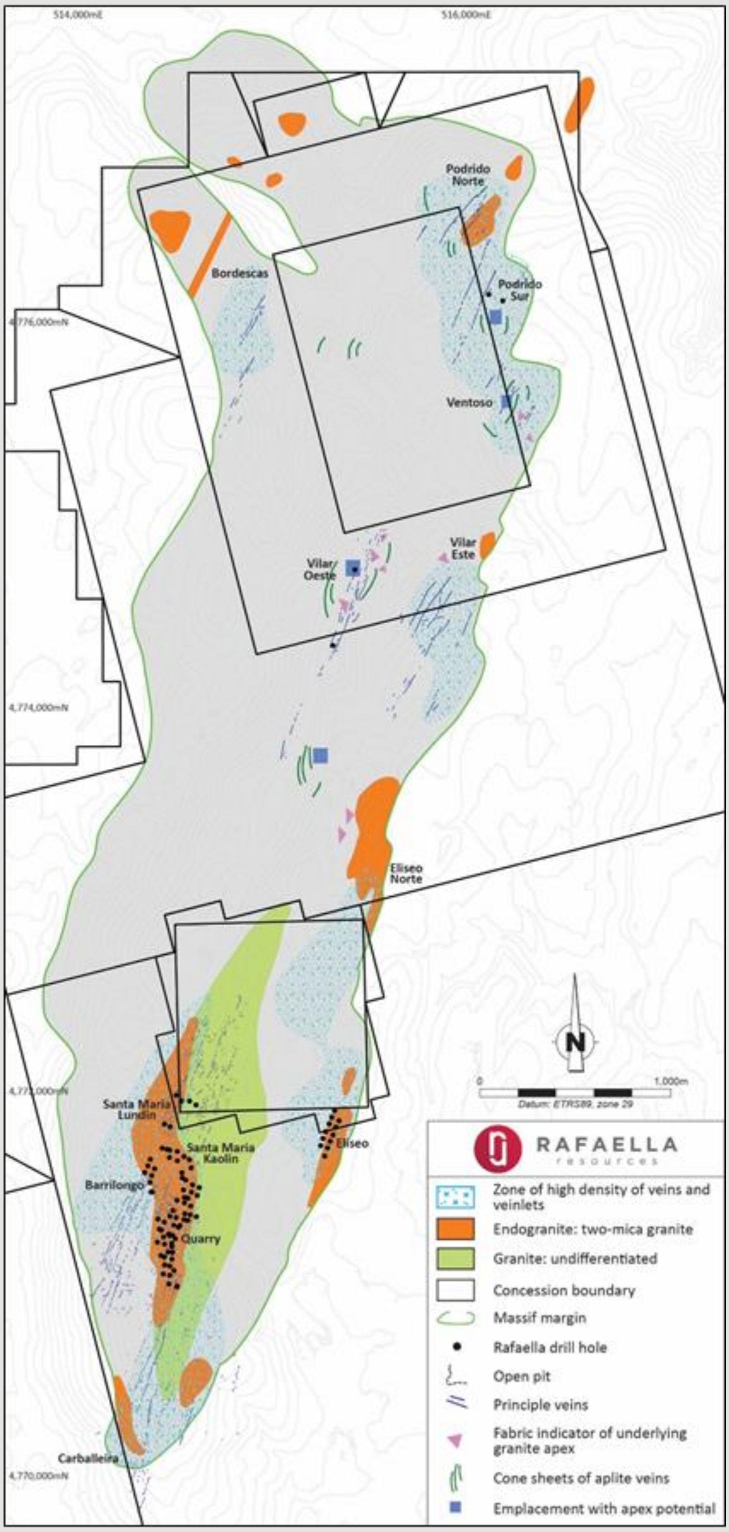


Figure 3.2 General map of the entire Varilongo Granitic Massif highlighting granite facies.

The Varilongo Granitic Massif is not homogeneous and is composed of at least three main, well defined granite types, known as **2mica exogranite (EXG)**, **biotitic exogranite (BEXG)** and **endogranite (ENG)**, keeping the terminology established in previous researches, especially the ones carried out by French geologists in the 1980's. These facies or lithologic types, which are described below, include some internal variations or sub-facies and there are also some granite types showing intermediate features, which can sometimes be difficult to classify.

All of these granites are cut by abundant quartz veins, parallel or subparallel to the regional foliation of the massif, according to its elongation, which usually may contain W – Sn mineralisation. Apart from this conspicuous and condensed mineralisation style, endogranite (ENG) can show fine W disseminated mineralisation.

Both mineralised types, although mostly the vein style, are spread all over the Varilongo Massif, with main concentrations located in the southernmost area, were the mining activity has been more intense and continuous since the 1940's and currently, as an aggregate quarry.

Cutting the massif there is also an important set of fractures and faults. Highlighting among them there are some NW-SE faults which frequently induct variable kaolin alteration, sufficiently strong in some areas so that they could be economically exploited in the past.

1. Lithologies of The Varilongo Granitic Massif

The granite facies of the Varilongo Granitic Massif can be described as follows:

a) 2-Mica exogranite (EXG)

Most of the Massif is formed of this granite type, and all the previous researches interpreted it as the first to intrude. According to observations during geological logging and petrographic studies performed in the eighties (Nesen, 1981; Cuenin; 1987 or Bellido *et al*, 1987), 2 mica exogranite is composed of quartz, potassic feldspar (microcline), plagioclase (albite), muscovite and biotite as main mineral constituents.

Texture is medium to coarse grained, basically equigranular, although some dispersed big (up to ≈ 5 cm) phenocrystals and very local, porphyritic zones can be seen. Apart from its texture, the main characterising feature of this facies is biotite/muscovite proportions. According to observations done during geological logging, they can range from about 1:1 to a granite with little or no biotite at all. In the latter cases it can be difficult to distinguish from endogranite. Frequently it can be noticed that biotite is partially to be totally replaced by a dark greenish mineral, mainly chlorite, but in some cases, it could be also be replaced by muscovite.

Occasionally some accessory minerals as tourmaline or arsenopyrite can appear, making distinction even more difficult, but this is not very common. Contacts with other granites can be met and clearly intrusive or diffuse. In the field, as well as in drill holes, alternating zones of both exogranites can be seen, being possible to interpret them as interdigitations or as EXG enclaves enclosed in BEXG, in which case the latter would be younger.

Regarding economic mineralisation, 2 mica exogranite is completely barren for disseminated ore, although it can host mineralised veins, as it happens with the Varilongo vein system and in most of the other mineralised areas.

b) Biotitic exogranite (BEXG)

Biotitic exogranite appears as an apparently intrusive body, showing a very elongated "S" shape and hosted by 2 mica exogranite. The essential mineralogical composition is the same as EXG: quartz, microcline, albite, biotite, and muscovite. The general appearance of this facies shows a darker greyish hue (even some bluish if wet), in contrast to lighter EXG and ENG. This may be due to a higher biotite proportion and its finer texture.

The main distinguishing feature of BEXG is its clearly porphyritic texture, with fine to medium grain matrix and big feldspar phenocrystals which can reach up to 4-5 cm, although most of them range between 1 and

2 cm. As it happens in EXG, biotite is often replaced by dark green chlorite, sulphides, rutile and by muscovite. Some tourmaline can be found as accessory, but it is not common. Regarding mineralisation, similar to EXG, BEXG is totally barren for W dissemination but can host mineralised quartz veins. Only in some highly altered and tectonised intervals, apparently muscovitised, some scarce sparks and millimetric veinlets of scheelite were found.

c) Endogranite (ENG)

ENG can be described as a muscovitic-albitic granite, with medium-fine to medium-coarse equigranular texture. Only exceptionally, some big feldspar phenocrystals are found, up to 4-5 cm. Main constituents are quartz, albite, microcline, and muscovite, with accessory apatite, arsenopyrite, tourmaline and wolframite, all of them very common in highly variable amounts. Wolframite and tourmaline especially show very strong variations and range from very abundant to completely absent.

Tourmaline can be one of the main mineral constituents, and defined as a sub facies known as *"tourmaline bearing endogranite"* (TENG). In previous studies some very scarce amounts of biotite have been reported in ENG, adding more uncertainty to identification. During the infill drilling campaign some granites were found, especially at depth, showing very scarce biotite presence but also typical ENG texture, arsenopyrite amounts fitting with ENG and, above all, showing a geological position which is very difficult to explain unless we consider them as ENG.

As in the case of BEXG, the main endogranite body is defined as a sigmoidal feature, cutting both EXG and BEXG. There are also some ENG satellite bodies, generally fine grained, located towards the eastern margin of the massif, one of which, located at Os Penedos which is locally known as "Eliseo," hosts some mineralisation, mostly as wolframite bearing quartz veinlets.

d) Pegmatite (PEG), "Stockscheider" texture

Very frequently, in the contact between the endogranite and the exogranite there is a band of pegmatite with coarse crystals of feldspar growing perpendicular to the contact. This rock type has already been described and named as *"Stockscheider"* by the French authors, which could be explained as water enriched magma related to late stages of magma crystallisation.

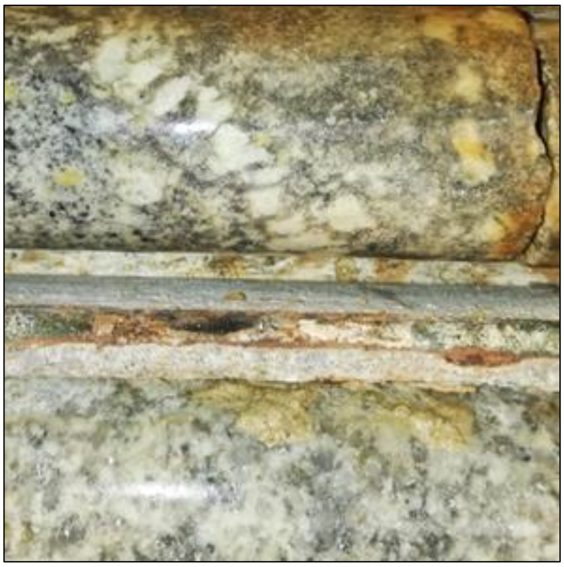


Figure 3.3 Pegmatite (PEG) with typical "Stockscheider" texture in the right side of the upper row, in contact between BEXG (biotitic exogranite) to the left and the endogranite to the bottom.

2. Mineralisation and Alteration

Two mineralisation styles have been described in the Santa Comba deposit: tungsten in quartz veins, and disseminated tungsten in endogranite.

a) Wolframite and Scheelite in Quartz veins

Mineralised quartz veins (figure 3.4.), are trending between N-S to N30E, sub-parallel to the regional foliation, and dipping from sub-vertical to 80ºE. The thickness of the veins is variable from less than a centimetre to one metre, although frequently the veins anastomose and split into several smaller and thinner veins.

These mineralised quartz veins are quite common, and it is the most widespread type of mineralisation in the district, showing higher grades compared to disseminated mineralisation, although, on the other hand, grades are more irregularly distributed.

Figure 3.4 Grey quartz vein with centimetric crystals of wolframite in the core of the vein and coarse arsenopyrite deposited in earlier stage, mainly in the selvages of the vein, at the bottom of the image.

Quartz veins, particularly at Mina Carmen (Quarry) and Varilongo areas, contain a very diverse mineralogy. Main economic minerals are wolframite, scheelite and cassiterite. Wolframite is the most abundant of them, being present in most of the major veins. It normally appears as divergent clusters of millimetric to centimetric, black coloured crystals, generally showing tabular habit.

Scheelite is not as common as wolframite, and in quartz veins, it is mostly a secondary mineral replacing the latter. Scheelite usually appears as whitish, greyish, or cream coloured anhedral crystals, spots, and veinlets, that are very difficult to identify without using shortwave UV lamp, showing then a typical strong blue fluorescence.

Cassiterite is locally common, especially in several veins, but in general its abundance cannot be compared to wolframite. It forms pinkish-brown subhedral to euhedral crystals, which tend to be located in the fringes of the veins.

In this case, quartz veins normally show muscovite-rich selvages. Sulphide minerals are the predominant group, with arsenopyrite being the most common of them, followed by pyrite and chalcopyrite. Sphalerite, molybdenite or stibnite can also be seen, as well as many other sulphides which have been reported in the past *(i.e. Balli, 1965; Cuenin, 1987).* Other common gangue minerals are apatite, tourmaline, and fluorite.

b) Wolframite and Scheelite disseminated in endogranite

The other mineralisation style is W dissemination in endogranite. Among the economical minerals only wolframite and scheelite are relevant, whilst cassiterite seems to be anecdotal, except for very local occurrences in veins where it can be clearly recognised.

Wolframite is once again the most abundant of the two, appearing as small crystals and grains regularly distributed in the endogranite and most of them ranging between 100 µm (limit resolution of human eye) up to several mm (figure 3.5.) although exceptionally, they may reach up to more than 1 cm.

Very locally, there may appear high grade concentrations of coarse grain disseminated wolframite, usually accompanied by abundant tourmaline, in clusters which can reach several decimetres, commonly with a halo of coarse arsenopyrite around (figure 3.6).

Figure 3.5 Disseminated millimetric crystals of wolframite hosted in endogranite. This sample returned 0.46% W.

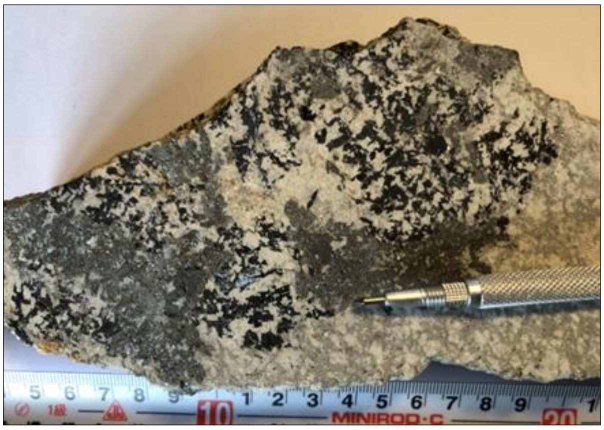


Figure 3.6 Clusters of high grade disseminated coarse wolframite showing haloes of coarse arsenopyrite. This sample returned 16% WO3.

In some cases scheelite seems to be secondary, replacing wolframite, but sometimes as clearly primary crystals disseminated in granite mass. Normally the scheelite proportion is lower than wolframite but, in some areas, especially to the north of the Quarry area and at Varilongo area, it can be the main, or even the only recognisable tungsten mineral in the endogranite (figure 3.7)

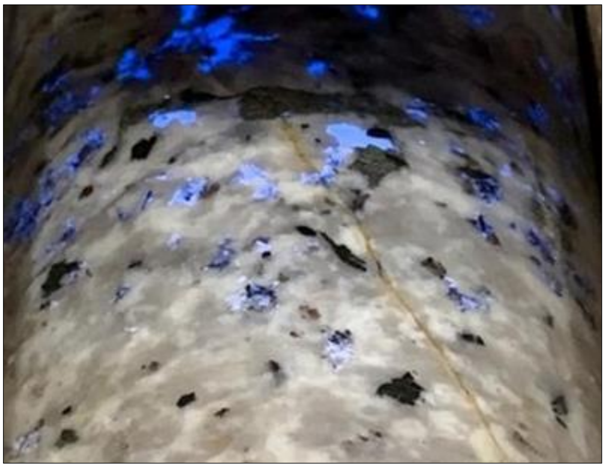


Figure 3.7 Core showing blue UV iridescence identifying coarse grained scheelite. Sample of Core from drill hole BL03, located in the NW corner of Santa Comba deposit, known as Varilongo area. The intense bluish color mineral (under short wave UV lamp) corresponds to coarse grained scheelite. The black crystals are tourmaline, the pale grey mineral is quartz, and the white minerals correspond to albite and microcline.

Tungsten grades in dissemination are not as high as those in vein mineralisation. However, they are much more regularly distributed, making them more suitable and predictable for a high tonnage/low grade operation.

Pervasive sericitic alteration of feldspars is a common feature of the endogranite, although not just constricted to mineralised zones. Sericitic alteration is also well developed associated with highly deformed shear zones, affecting both the endogranite and exogranite. In these highly deformed zones of exogranite, muscovite replacement after biotite is also a common feature.

Tourmaline alteration is very abundant in the endogranite close to the contacts between the endogranite and the exogranite, showing particularly weak tungsten mineralisation in the tourmaline zones (figures 3.8. and 3.9).

Figure 3.8
Strong tourmaline alteration in the endogranite. Close to the contact with the exogranite in the southern part of the Quarry area. It is quite remarkable the ascendant flame shape of the more intense tourmaline core with a halo of weaker disseminated tourmaline around.

Figure 3.9
Contact between biotite exogranite and endogranite. Exogranite is shown in the upper part of the picture and endogranite (ENG), which shows strong tourmalinisation at the first 3 metres, decreasing with depth.

Geometry and Structure of The Deposit

The upper portion of the disseminated W deposit of Santa Comba has been infill drilled for more than 700 m along strike, from the Mina Carmen or Quarry area to the south, up to Santa María and Varilongo areas to the northeast and northwest respectively.

Based on the drill cross-sections and on rock exposure in the Quarry area, the geology, geometry, and structure of the deposit has been accurately defined. Figure 3.10, shows the surface geology of the Santa Comba W deposit and location of cross-section A-A'.

The surface map shows the endogranite (ENG) in orange color, intruding into the biotite bearing porphyritic exogranite (BEXG) in blue. Both intrusions are syn-kinematic late stage, regarding the Variscan Orogeny, and are affected by a deformation episode under a dextral wrench regime causing a quite strong elongated and sigmoidal geometry of the intrusions with longitudinal regional foliation, narrow mylonitic bands and longitudinal mineralized quartz veins, sub-parallel to the foliation.

The upper part of the endogranite intrusion has a multi-cupola elongated shape that merges into one single body at depth. The main cupola (Cupola 1) is located to the East, as seen in surface map and in drill cross-section A-A'. The elongated cupolas are plunging to the south between 10 and 30° and subsequently, the endogranite gets narrower in that direction and eventually sinks underneath the porphyritic biotite exogranite.

On the contrary, to the north at the Santa María and Varilongo areas, the endogranite gets wider with the subsidiary cupolas interfingering into the exogranite, as narrow and elongated sigmoidal digitations are intersected by the topography and are outcropping northwards. In other words, the northern extreme of the map in figure 3.10, represents the roots of the endogranite and the southern extreme represents the apex or the upper part of the cupola.

The disseminated tungsten mineralization, shown in red color, lies always inside the endogranite and particularly the principal and higher-grade ore body is hosted in cupola 1. In the central part of the deposit (Quarry area), the main ore body may reach horizontal thickness of 80m with intersections up to:

- 76.75 m at 0.16% WO3 in DDH 20DD0001 (MC20)
- and 47.4 m at 0.27% WO3 in DDH 16DD0003 (MC07).

To the south in the narrower endogranite, corresponding to the apex or upper part of the cupola, the disseminated mineralization splits into three narrower branches that eventually sinks underneath the exogranite. Mineralized zones may reach high grade in this area such as in drill-hole 20DD0007 (MC41), located in the southern part of the deposit, which intersected 7.5m at 1.31% WO_3.

Therefore, the northern part of the deposit would correspond to a deeper level of the deposit with the ore bodies well defined although showing lower grades compared to the south and central areas.

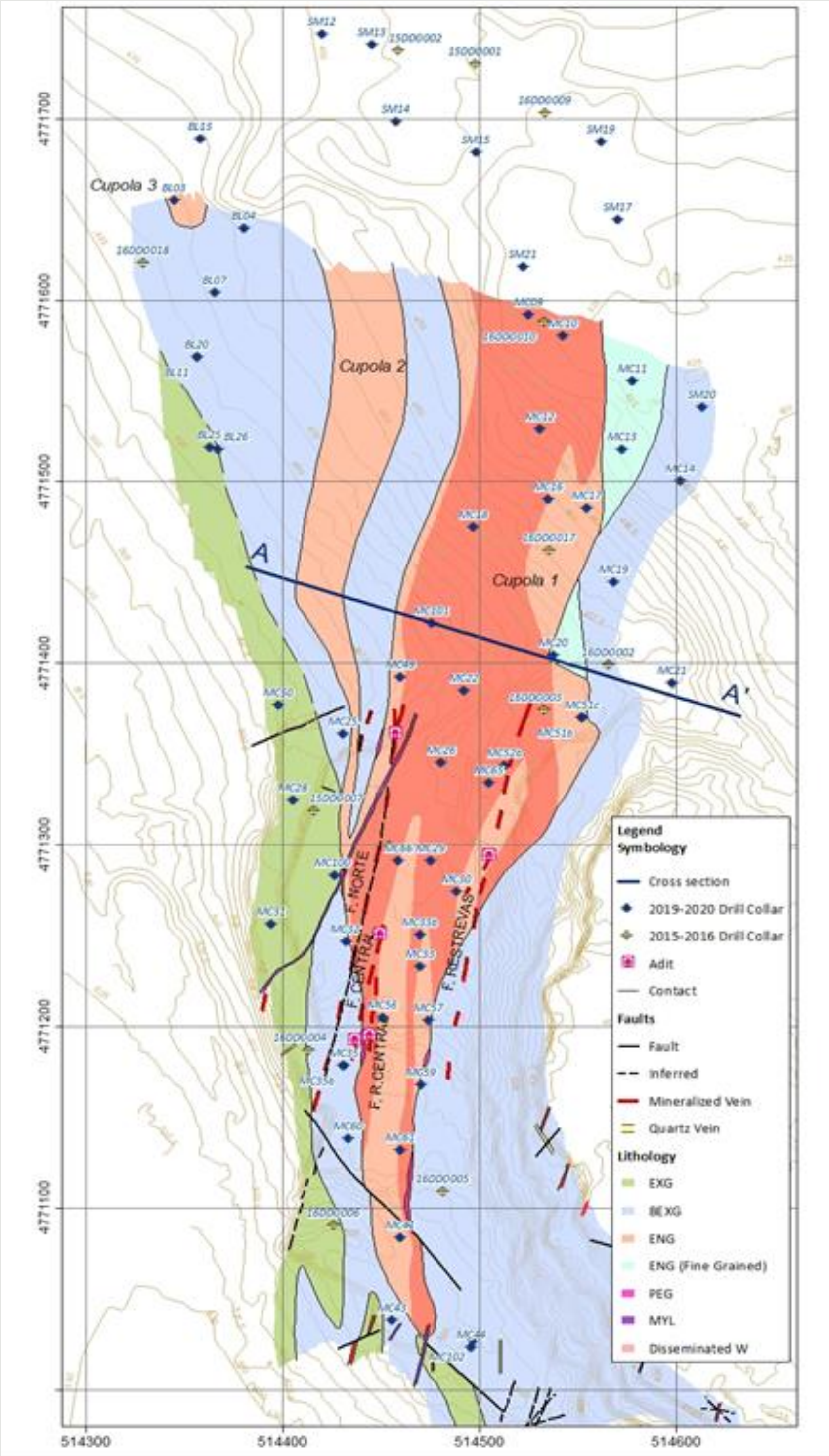


Figure 3.10 Surface geology of the Santa Comba deposit in the quarry and Varilongo area.

The drill cross-section A-A' of figure 3.11, shows the deep structure and geometry of the deposit, with disseminated W mineralization well developed into the main endogranite cupola (cupola 1) as well as in the subsidiary cupola to the west (cupola 2).

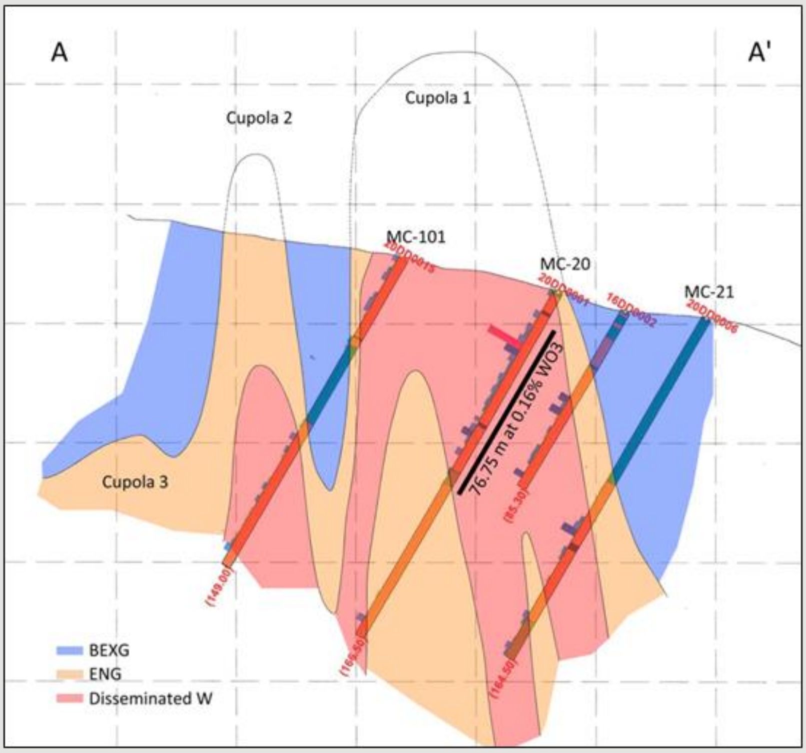


Figure 3.11 Drill cross-section A-A', showing the structure of the endogranite intrusion into the exogranite and the disseminated mineralization hosted by the endogranite.

According to this conceptual geological model for the disseminated W deposit at Santa Comba, there is quite a good prospective zone for disseminated tungsten to the south of the open pit, underneath the exposed exogranite, and this is a priority drilling target.

To the north, there is a NW trending kaolin fault zone that may have fallen and deepened the northern block so that there are drill targets in the area to the north of the open pit. Apart from this, there is good potential for other endogranite cupola centers in the district, suitable for disseminated W, as the one at Eliseo demonstrates.

3.2 Mineral Resource Estimate

A computerised block modelling approach was applied for resource estimation and to provide the basis for subsequent open pit mine planning. The resource model has been used for the estimation of WO_3 and Sn grades. The resource model was built up based on a conceptual geological model developed by GTT geologists, a lithological model of the endogranite/exogranite boundary in main part of the deposit, existing vein and underground data, as well as a mineralised zone model based on a limiting cut-off grade of 0.05% WO_3.

Grade estimation of WO_3 and Sn grades was completed using indicator kriging (IK). Alternative grade values were also estimated using ordinary kriging (OK), inverse-distance weighting (ID) and nearest neighbour estimation (NN) for validation purposes. Directional anisotropy was used to control the orientation of estimation search ellipses.

Resource classification criteria were based on variography results as well as a conditional simulation study.

The evaluation work was carried out and prepared in accordance with the JORC code (2012). The in-situ Mineral Resource estimation is shown in Table 3.1. The main part of this table comes from the near-surface estimation described in this report. The underground potential part comes from the 2016 resource evaluation study.

MINERAL RESOURCE ESTIMATE FOR SANTA COMBA – 30 JUNE 2020

	Class	Tonnes	WO_3	Sn
		Mt	*%*	*ppm*
Near Surface Open Pit Potential *	Measured	1.205	0.159	118
	Indicated	4.927	0.155	90
	Meas + In	6.132	0.156	96
	Inferred	4.241	0.159	91
	Total M = I + I	10.373	0.157	94
Underground Potential #	Inferred	0.234	0.948	2,797
Global Total	Meas + Ind + Inf	10.608	0.175	154
Notes: * WO_3 Cut-off = 0.05% # Cut-off = 10kg/m^2 = 0.53% WO_3				

Table 3.1 Total Mineral Resource Estimate – prepared in accordance with JORC guideline. The Mineral Resource Estimate is inclusive of the Ore Reserves

4.0 RESOURCE EXPANSION AND EXPLORATION POTENTIAL

4.1 Santa Comba Project Area

Previous exploration conducted over major known tungsten occurrences of the Varilongo Granitic Massif has led Rafaella Resources to focus on several drill targets in the Santa Comba Project area to develop known zones of economic grade mineralisation with the intension of increasing the confidence of these resources up to Measured, Indicated and Inferred categories.

The concessions held by GTT are substantial and contain many greenfield and brownfield targets for short and medium term development into mineable resources.

"Brownfield" exploration refers to such exploration conducted inside a mining area and should be differentiated from "greenfield" exploration which is conducted outside of any mining project. At the Santa Comba Project Area, "brownfield" exploration will be carried out at the beginning of the mining operation in order to replace annual mined ore reserves. Targets can be categorized as:

a. **"Short term"** exploration refers to any drill program aiming to upgrade Inferred Resources into Measured and Indicated categories, with preference of the "open pittable" resources located in the lower levels of the deposit, particularly, in the vicinity of exploitation areas. These drilling programs would deliver Measured and Indicated Resources that could be converted into mining reserves.

   As the present "Life of Mine" (LOM) economics of the Mining Project are positive, early drilling is planned to test and target the lateral extensions and deeper Inferred Resources which should expand and deepen the economic mining shell of the open pit.

b. **"Medium term"** exploration is referred to any "step out" drilling program targeting the lateral or depth extensions of any isolated drill intersections. Generally, these drilling programs would deliver Inferred Resources which would require additional drilling to upgrade the category. This is the case of 20DD0007 (MC41), in the southern part of the deposit, which intersected 7.5m of 1.31% WO_3 from 26m with no other drillholes underneath, although continuity of grade should not necessarily be assumed.

c. **"Long term"** exploration refers to any drill program aiming to find new mineralized zones based on the conceptual geological model of the deposit. These programs would require additional drilling in order to deliver Inferred Resources that may eventually justify category upgrade drilling programs.

The southern area of the deposit has been interpreted as to represent the apex zone of the main mineralized endogranite cupola, which is plunging to the south, narrowing and eventually sinking under the barren exogranite. The upside potential is significant and indicated by significant historic underground development and stoping south of the present open pit shell.

The zone south of the open pit which terminates towards the southern boundary of the deposit is underexplored with a lack of drilling data rather than barren holes. The former Coparex Chief Geologist indicated to previous owners that “disseminated mineralisation was observed in the Level 50 transversal workings in this area”.

As a result of completion of “short term” exploration programs, fresh ore reserves could be delivered replacing the ones mined out. However, “medium term” exploration programs are required to take place simultaneously in order to replace the short term Inferred resources already upgraded and converted into new reserves.

Similarly, “long term” exploration would be required to replace the Inferred resources already upgraded into Measured and Indicated categories. This is the reason that the “brownfield” exploration requires a holistic planned drilling program, by including short, medium, and long-term categories to take place at once in order to extend LOM by fully replacing mined ore reserves in a consistent manner.

At Santa Comba an immediate 1,630m resource development drill program is proposed, which is targeting about 951,000 tonnes of near-surface Inferred Resources that could be upgraded into Indicated category.

Hole ID	Depth (m)	Tonnes	WO3 (%)	WO3 (T)
MC106	145	42,777	0.10	42
MC105	120	6,880	0.29	20
MC107	180	117,766	0.13	149
MC108	160	239,597	0.14	336
MC109	200	156,178	0.12	188
MC110	260	227,032	0.14	328
MC111	250	56,687	0.14	79
MC51B	115	61,993	0.12	73
MC112	200	42,619	0.17	73
TOTAL	**1,630**	**951,529**	**0.14**	**1,288**

Table 4.1 Near surface resource development targets

An extensive step-out and exploration drill program targeting near-surface resources will be carried out in order to evaluate the upside potential southwards of the current open-pittable resource boundary. It is proposed 2,000m of exploration drilling comprising at least 3 drill-sections southwards from the current resource model, with spacing of 120m between sections and 2 or 3 drill holes per section. This drill program may deliver new inferred resources that would require further resource upgrade drilling.

Such exploration drilling would be targeting the disseminated ore and vein mineralization hosted in endogranite. The surface geological map clearly shows a plunge of the endogranite apex to the south, eventually sinking underneath the exogranite. A detailed mapping of the upper portion of COPAREX underground workings should be conducted in order to confirm the geometry of the endogranite facies hosting the

.

disseminated ore and subsequently, optimizing the drill campaign design. This drill program should also be checking the upper portion of the current delineated JORC compliant inferred resources from the wolframite-bearing quartz veins amenable for underground mining, which are mostly located southward from the open-pittable resource model.

Figure 4.1 is a photo taken form COPAREX underground workings that confirms the presence of disseminated wolframite hosted in the endogranite facies between high grade quartz veins.

For financial modelling, only the drilling required to convert the Inferred Resource in the mine plan to Measured and Indicated has been included. Step-out and exploration drilling has neither been budgeted nor the benefit factored into the economics.

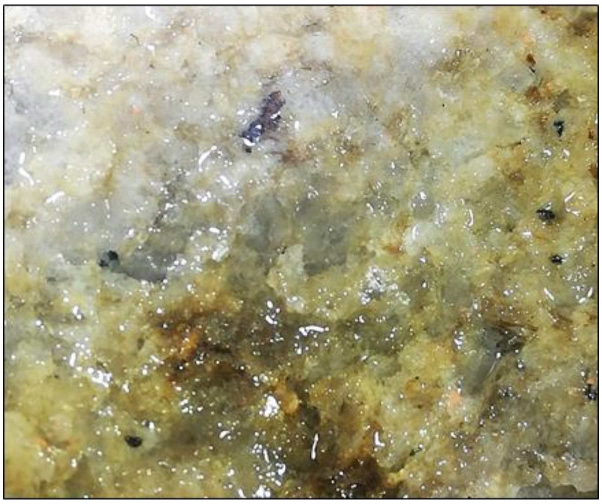


Figure 4.1 Image from COPAREX underground workings at Mina Carmen.
The dark disseminated spots consist of millimetre crystals of wolframite hosted in the endogranite.

4.1.1 Underground Potential and Available Underground Infrastructure

In 2016, based on previous work done by the former operator Coparex, GTT defined an underground JORC Inferred Mineral Resource Estimate of.

- **0.234Mt @ 0.95% WO3 & 0.28% Sn (cut-off 0.53% WO3)**

The Inferred Resource is located within primary wolframite-bearing quartz veins at Mina Carmen. However, the disseminated ore between the high-grade veins has never been evaluated. Therefore, this fact should be incorporated into the exploration drill program discussed in the previous section.

In total, a non-JORC compliant resource has been calculated of.

- 738kt @ 0.81% WO3 and 0.18% Sn delineated in the Mina Carmen area.
- This represents part of a **much larger non-JORC resource of 3.4Mt @ 0.59% WO3 & 0.17% Sn**, which has been defined at numerous underground prospects across the broader project area.

The underground infrastructure of Coparex operation at Mina Carmen is quite significant along strike with longitudinal development of more than 1500 m (figure 4.1) and 130m in vertical extent below the 420m elevation a.s.l. The underground infrastructure was developed in the 1980's by means of 2 principal cross-cutting accesses of 3.5 x 3.0m section, slightly inclined towards the entrance in order to allow natural (adit) dewatering.

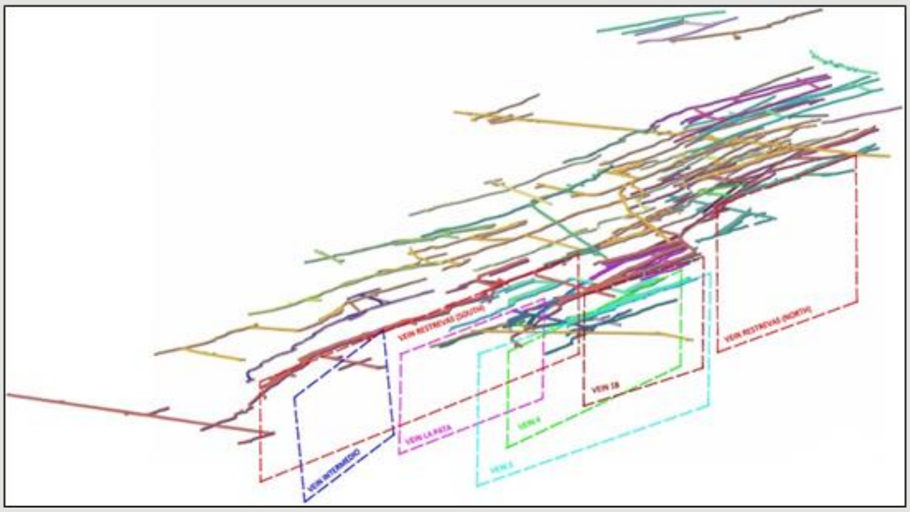


Figure 4.2 Underground infrastructure developed by Coparex in the 1980's.

The main access was used for ore extraction and is located to the east of the deposit (figure 4.3) at 420 m elevation a.s.l. which defines the 0 level of the Coparex mining project, coincident with the bottom of the current aggregate quarry.

Figure 4.3 Entrance of main cross-cutting access to the underground of Mina Carmen

To the west of the deposit, in the opposite side of the hill at 380 m elevation a.s.l., there is the second entrance to the underground of Mina Carmen, named Carballeira (figure 4.4).

Figure 4.4 Carballeira entrance in the west side of the Santa Comba deposit.

The Carballeira entrance level represents the water table and therefore all underground infrastructures below 380m elevation are flooded.

Rock conditions of the non-flooded underground are good and therefore the infrastructure is immediately available to proceed with any mapping, sampling or indeed mining activity.

To the north of Mina Carmen, in the area named Santa María, there is a third portal with 4 x 3 m section, with an inclined ramp (figure 4.5) that was built with the aim to access the mineralized veins of the northern area named Vilar although the mining activity of the company stopped before reaching their target zone.

Figure 4.5 Portal to the ramp of Santa María, northeast of Mina Carmen.

Works are in progress to access and open the previous workings, refurbishment, roof bolting and dewatering prior to sampling and reestablishment of utilities and preparation for resource drilling and trial mining.

The previous mining records indicate several areas that have existing W and Sn resource that can be exploited quickly allowing a wider development following a targeted drilling of the veins and disseminated areas.

4.2 Exploration Projects and Prospects

"Greenfield" exploration refers to any geological exploration program conducted over an area located out of a mining project, in a favourable geological setting for hosting an economic mineral resource.

The Varilongo Granitic Massif, where many old workings over the mineralized NNE trending quartz veins are well known (figure 4.6), represents a high priority target for exploration. Very little historical and recent exploration activities have been conducted in these areas in the last two decades.

COPAREX did extensive exploration work over many of the artisanal workings hosted in the Varilongo granitic massif and eventually COPAREX came up with a list of potential resources (Non-JORC Compliant) amenable for underground mining, from the surrounding satellite prospects as follows:

Prospect	Tonnes*	WO3 %	Sn %	WO3 t	Sn t
Santa María	102,060	0.65	0.18	667	184
Vilar	1,868,738	0.53	0.21	11,865	3,955
Northern Zone (ex-Vilar)	693,630	0.53	0.21	1,782	594

Table 4.2 Non-JORC satellite deposits estimates.
COPAREX' non JORC compliant resources from the satellite deposits surrounding Mina Carmen.
**** tonnage calculated on 0.7m resuing mining width***

"Greenfield" exploration over the Varilongo Granitic Massif would require different techniques at the regional scale in order to define trenching and subsequent drilling targets. In the NW of Spain and, particularly in the Santa Comba district, soil geochemistry has proven to be an excellent tool to discover metal anomalies in areas where rocks are hidden under the topsoil and the vegetation covering outcrop.

A regional soil geochemistry survey will be planned, with lines covering the whole width of whole width of the Varilongo Granite Massif inside the mining rights, with a grid of 500 m spacing between lines and 50 m spacing between samples, using backhoe excavators.

Trenching over soil geochemistry anomalies should be carried out to confirm mineralization and favourable host rock geology. Finally, a drilling program using diamond core and reverse circulation should be conducted by prioritizing those anomalies hosted in endogranite.

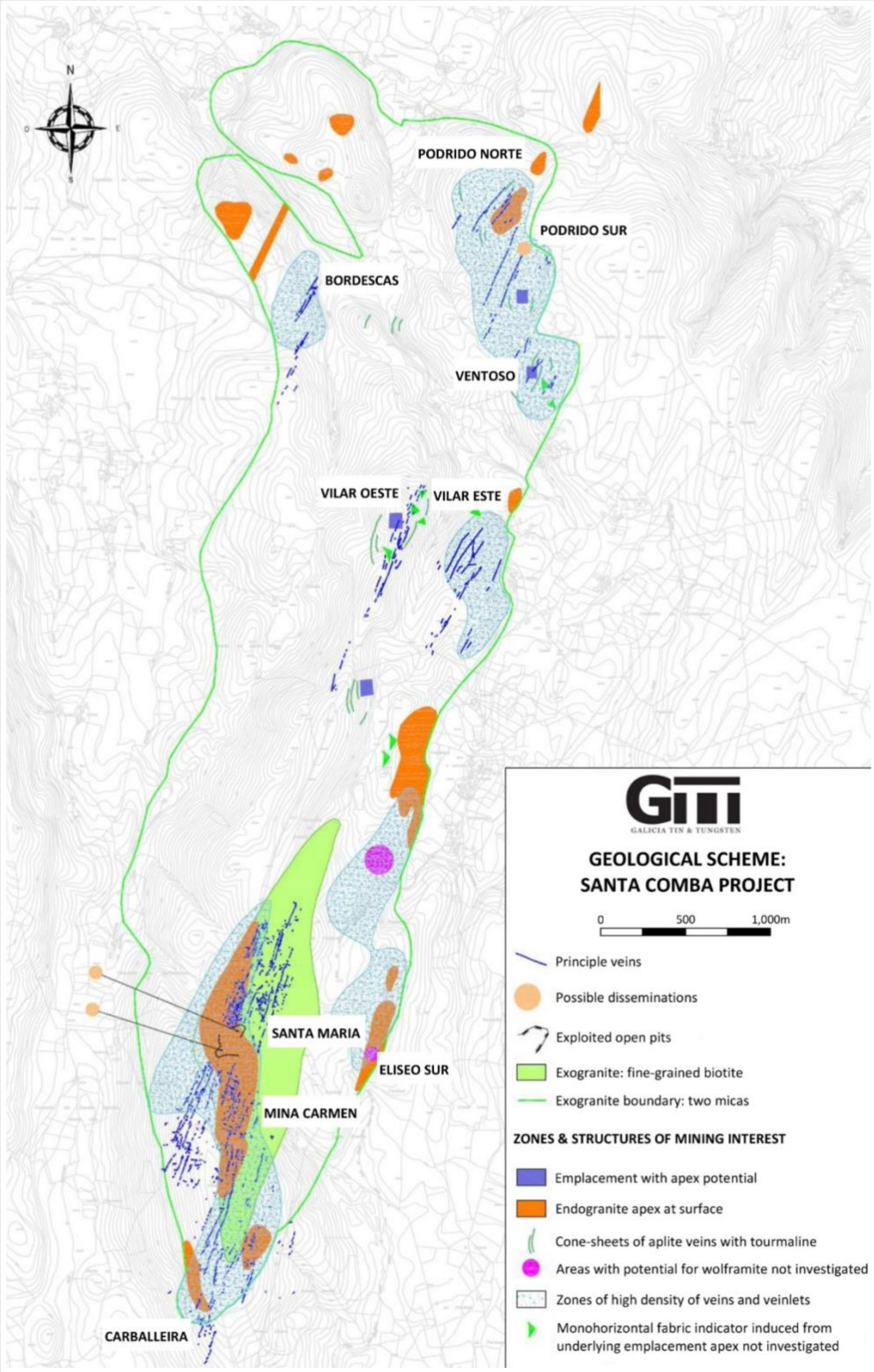


Figure 4.6 General map of the entire Varilongo Granitic Massif highlighting granite facies

4.3 Other Resources (local, regional, other metals)

The Varilongo Granitic Massif is located inside the Schistose Domain of the Galicia Tras os Montes Zone which lies in the most internal part of the Variscan orogenic belt of the Iberian Massif, where multiple intrusions derived from partial melting of continental may typically contain Sn-W-Li-REE mineralization and, very frequently, nearby Au occurrences and deposits.

The Santa Comba tungsten district, forms part of a long belt with other relevant tungsten deposits such as the Monte Neme tungsten deposit located 33km to the north, and the San Finx deposit, located 55km to the south with many minor tungsten occurrences in between (figure 4.6.).

Some 2 kilometres immediately south of the village of Santa Comba there is evidence of historical mining known as the Susana Project which were exploiting strata bound mineralisation of scheelite-ferberite up to 2.5m thick @1.3% WO_3, with minor pyrite, pyrrhotite, chalcopyrite and magnetite hosted in amphibolite.

This is a different mineralisation style compared to Santa Comba deposit and has been interpreted by the Spanish company Adaro as the result of metasomatic fluids replacement after metamorphism and migmatisation processes.

Additionally, some 50 kilometres east of San Finx, there is the Fontao tungsten deposit, which was mined out historically during the 19th century.

A few kilometres to the west of the Santa Comba tungsten deposit there is a gold belt known as the Malpica-Tuy gold belt which is related to a dextra shear zone where several mesothermal gold deposits are developed such as the Corcoesto gold deposit with more than 1 Moz of Au (Measured and Indicated categories).

A few kilometres to the east of the Santa Comba tungsten deposit there is a large rounded ultramafic complex (Ordenes Complex) with significant Ni and Cu anomalies and relevant deposits such as the high tonnage-low grade Arinteiro-Touro Cu deposit, immediately east of Santiago de Compostela Village.

At Corcel, a small village located just a few kilometres east of the Santa Comba tungsten deposit, a recent drilling program has demonstrated potential for hosting a high tonnage-low grade Ni deposit.

Apart from the metals, there is significant mining activity related to the aggregate industry such as the quarry located in the Santa Comba Project Area with annual production between 200,000 and 300,000 tonnes per annum.

One of the industrial minerals that is also of interest in the area is kaolin which is derived from weathered granites. Inside the current mining rights of Santa Comba W deposit, there are a few abandoned small kaolin mines that were active in the 19th century such as the Grixoa kaolin mine.

High quality quartz from mesothermal veins have been and still are being mined in northwest Galicia for silicon metal. This quartz is treated in the large plant of Cee, some 40 km southwest of Santa Comba.

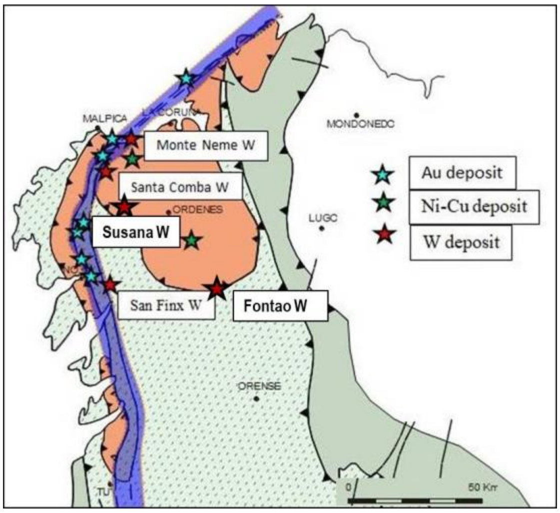


Figure 4.7 Tungsten and base/precious metal deposits in the Santa Comba district. These are the Major W deposits of the Santa Comba district. Malpica-Tuy gold belt in purple and Ni-Cu deposits of the ultramafic Ordenes Complex.

5.0 HYDROLOGY

5.1 Surface Water

The project area is located at the head of the boundary between two drainage basins, in such a way that the watercourses that run to the northwest flow into the Rio Grande basin, while those that run to the south belong to the Rio Xallas basin. Both rivers discharge to the Atlantic Ocean, through two different estuaries.

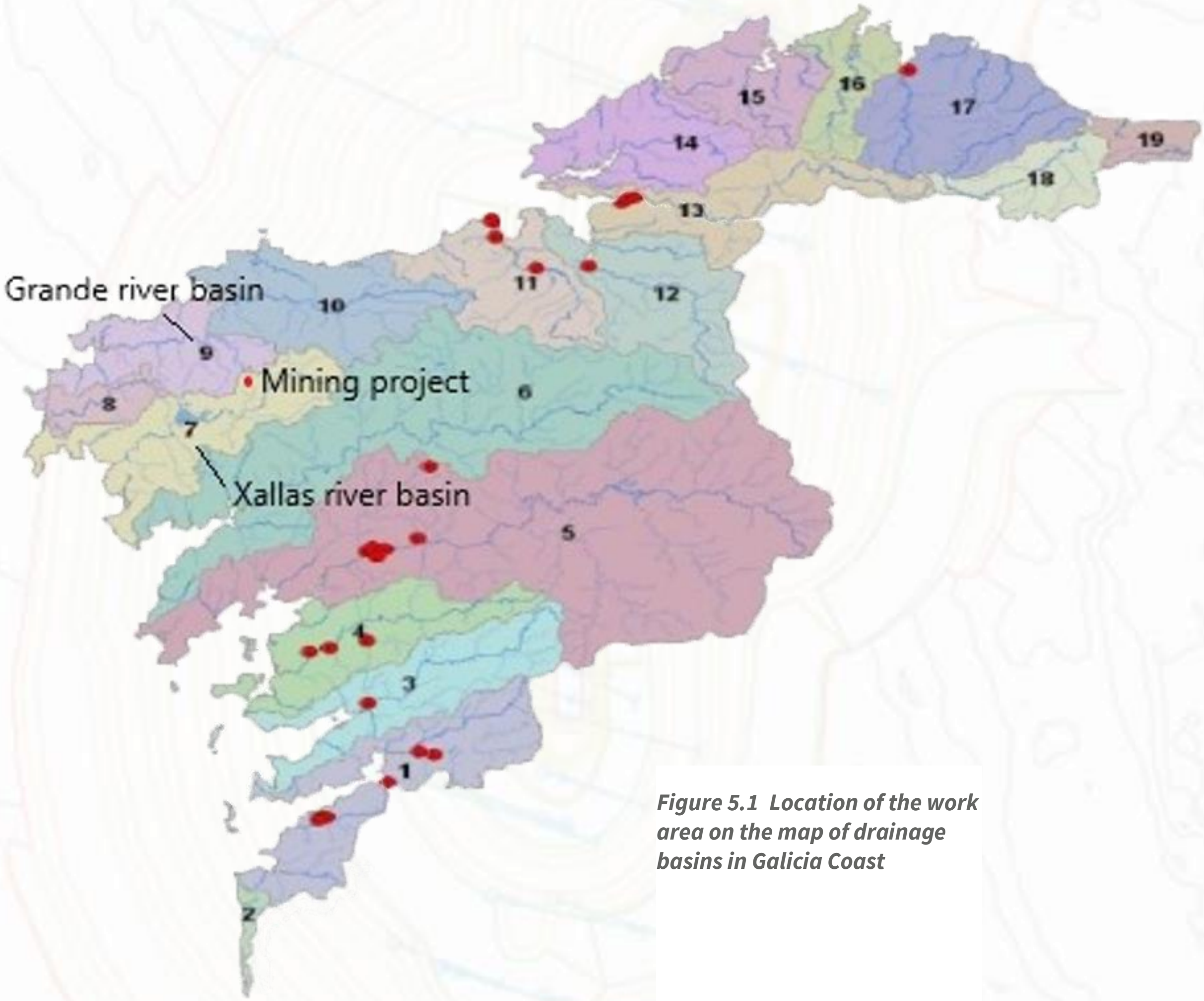


Figure 5.1 Location of the work area on the map of drainage basins in Galicia Coast

The Rio Grande, whose flow is constituted by the confluence of several tributaries, discharges into the Ría de Camariñas, on the West, after draining a total basin area of 283 km^2.

The Xallas River, which is born in the municipality of Santa Comba, also owes its flow to the confluence of several small streams and its channel and flow increase until it flows, in the form of a waterfall, into the Atlantic, in the Ézaro estuary.

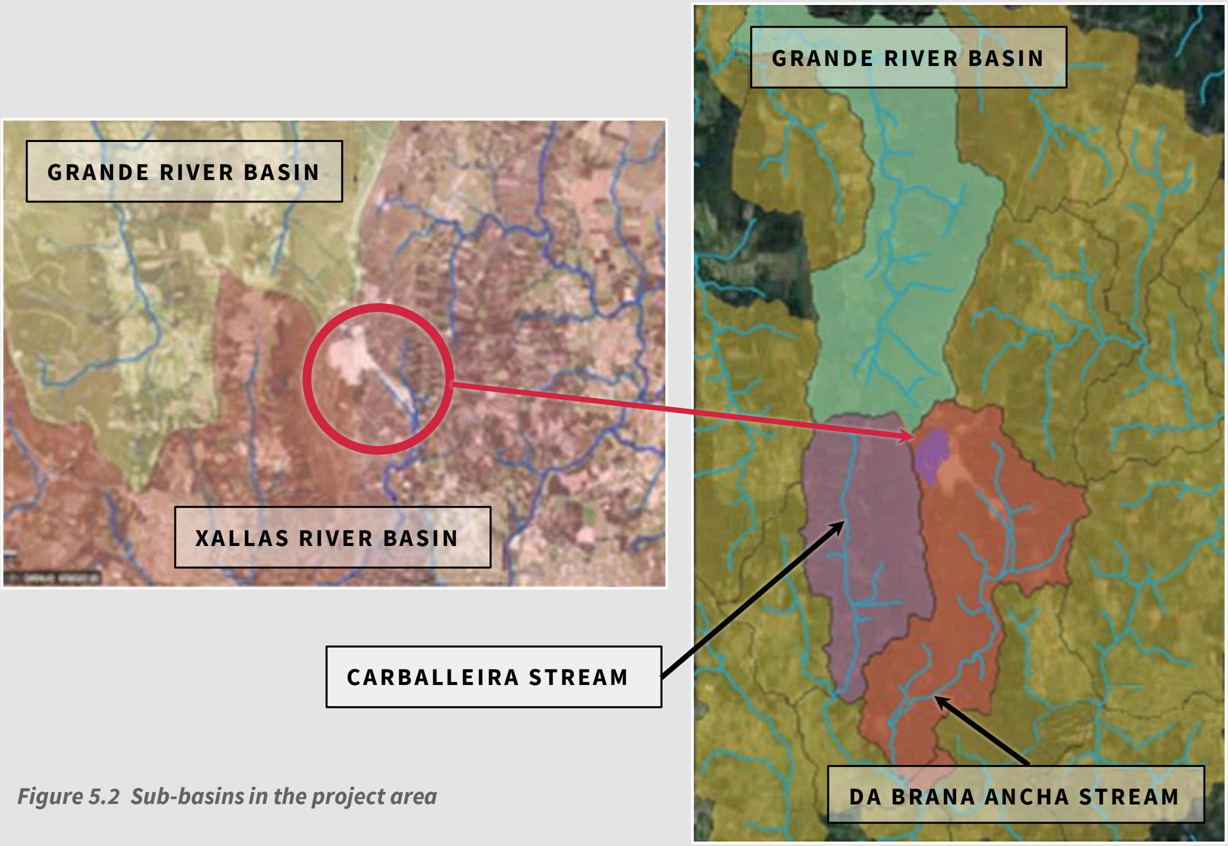


Figure 5.2 Sub-basins in the project area

Most of the streams present in the project area drain into the Xallas river basin. They are generally small streams (between 1-10 L/s in the proximity of the project in July 2020), with low slope channels and with significant seasonal behaviour.

The small streams that go southwards, converge in the immediate surroundings of the project area in the Rego da Braña Ancha, before reaching the Xallas river.

5.2 Hydrogeology

5.2.1 Hydrogeological Context

In the general context, granitic rocks are not characterized as good aquifers since their primary porosity is practically nil, but their permeability increases as their degree of alteration and/or fracture increases. Therefore, if there is groundwater in the area, it will be limited to the granite alteration areas and/or the presence of fractures, which allow a connection with the surface.

The granitoids that appear in the project area show a low degree of alteration and fracture. In the shallow horizons, the appreciable alteration in the rock only affects textural characteristics of colouring due to its exposure to the weather, but not to its mechanical competition and its fracturing. Therefore, it is not possible to identify and define aquifer systems in a strict sense in the working area.

5.2.2 Hydrogeological Functioning

The geological and hydrogeological context of the area marks the groundwater system performance. Considering the low permeability of the materials, the input to the system will be the rainwater fallen on the surface and intercepted by the fractures and mine works with surface connection, which will allow the access of the rainfall into the massif rock.

Inputs from surface water bodies, such as nearby streams, are unlikely to occur. The only groundwater circulation to be expected is through the fracture system, if any. A preferential flow direction cannot be indicated, precisely because of the above. The flow of water will be conditioned by the presence and characteristics of the fractures present.

The rainfall that infiltrates into the underground rocky mass and that is stored in the fractures or alteration areas, will discharge through the mine portals, since no springs have been observed in the area.

5.3 Water Balance and Mine Drainage

The Water and Environment Engineering Group of the University of La Coruña was commissioned by GTT to carry out a preliminary water balance for the current drainage through the Carballeira adit.

The study considers the existence of mine shafts and trenches on the surface of the Couso and Varilongo mountains (montes de Santa Bárbara), where the historical mining took place. Mine shafts and trenches facilitate the infiltration and retention of water during rainfalls.

The network of underground adits acts as a concentration zone for infiltrated water and as preferential sub-horizontal flow pathways, which facilitate the drainage and discharge through the existing portal of Carballeira. As there are no data on drainage flows, it is a first estimation of the water balance within the existing mine.

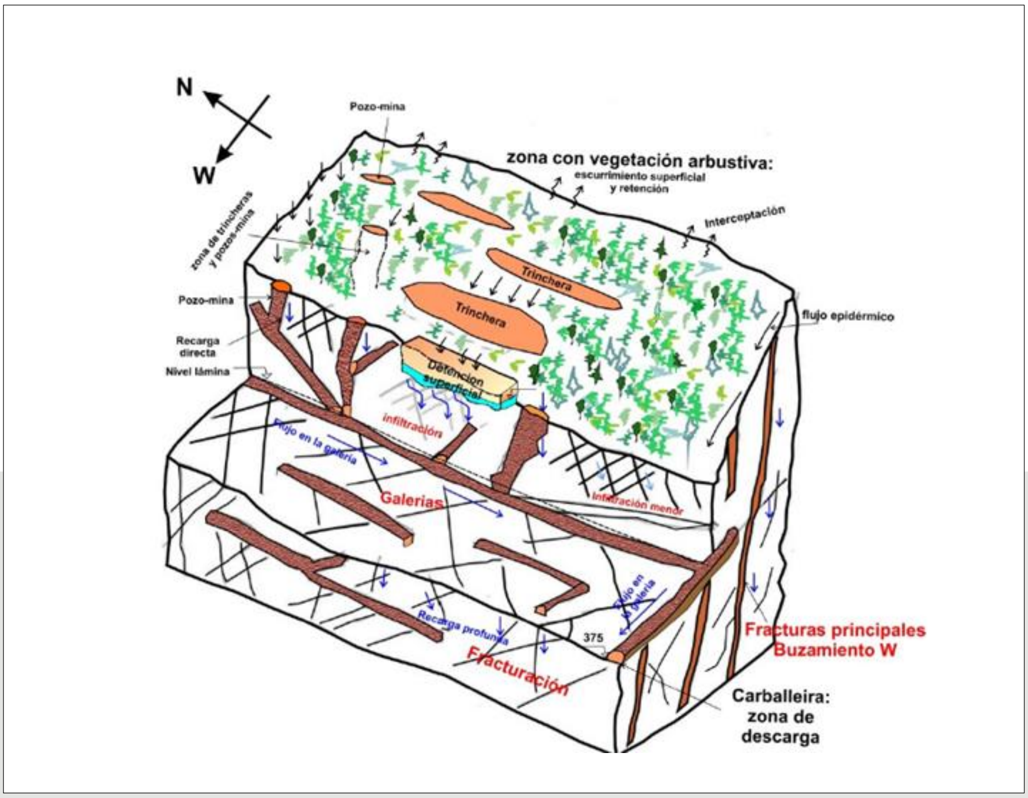


Figure 5.3 Conceptual hydrogeologic model of the underground works

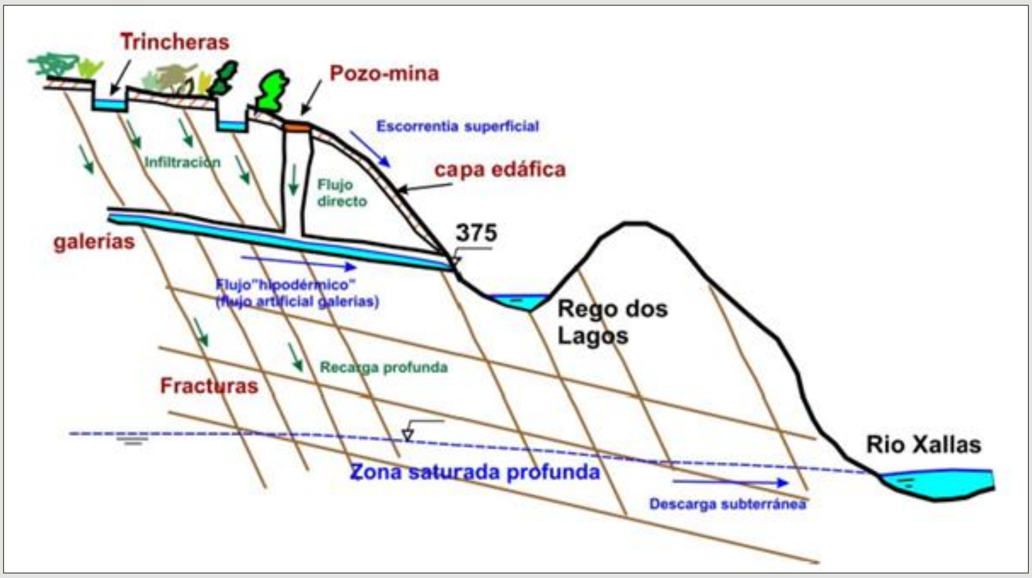


Figure 5.4 Vertical section outline of the model
The model shows that the hydrodynamic system responds fast to rainfall variations (low transit time towards the adits).

Month	Precipitatión (mm)	Escorrentia Superficial (l/s)	Flujo “Hipodérmico” (caudal galerías) (l/s)
October	262.57	4.53	2.16
November	268.72	4.49	2.58
December	332.49	7.96	2.99
January	321.45	7.60	2.83
February	263.57	5.73	2.36
March	213.09	3.36	2.30
April	176.02	2.36	1.51
May	162.35	1.52	1.35
June	99.57	0.44	0.58
July	48.83	0.10	0.08
August	72.35	0.19	0.28
September	129.00	0.86	0.87

Table 5.1 Monthly averages for precipitation, surface run-off (towards Carballeira stream) and Carballeira adit flow

An annual average adits discharge of 1.6 l/s is predicted, which is 13.9% of the annual rainfall. Applying the Gumbel distribution, maximum flows are 16.2 l/s and 30.4 l/s for return periods of 1 and 2 years.

The model did not take into account the possible modulating effect of the storage in the underground works.

5.4 Project Water Supply

The plant will operate in close circuit with three auxiliary water collecting ponds ('balsa de cabeza', 'balsa 1' and 'balsa 2'). The ponds can be fed by the run-off from the area above the process plant and facilities, calculated 10.53 ha.

Due to the annual and monthly variations of rainfall and the existence of a dry period (2-3 months in summer), the main supply will be water from the underground mine. This option is also preferred as it reduces the discharge of Mining-Influenced Waters (MIW) to the environment.

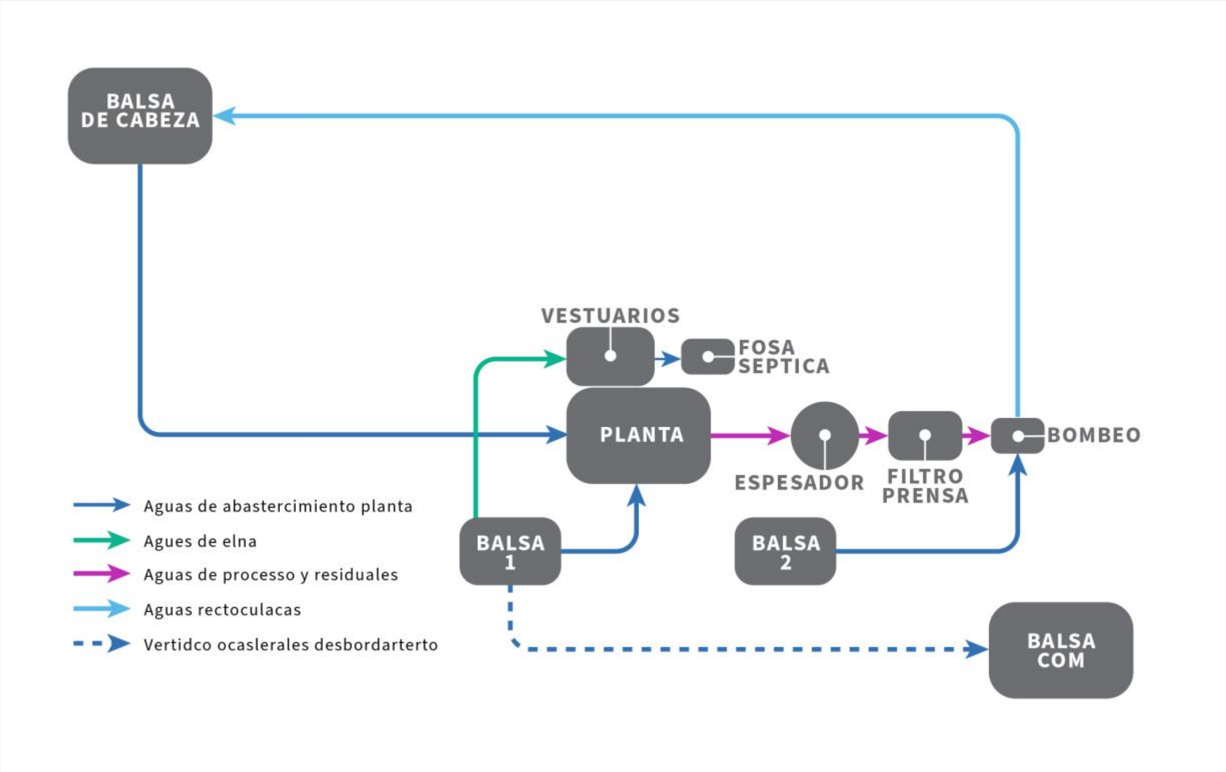


Figure 5.5 Process water flowsheet
According to the calculations, an average water supply of 5.33 m³/h (1.48 l/s) is needed.

5.5 Surface Water Management

The streams in the project area are small and have low buffering capacity. So, they are very sensitive to any discharge of mining-influenced waters (MIW) that may differ in hydro chemical characteristics and may impact the water quality.

A robust Integrated Water Management Plan (IWMP) will be prepared to handle the MIW. The general objective of the IWMP is to minimize the water use and its pollution. It will include an updated water monitoring program with monitoring points in surface and groundwaters.

Specific objectives are:

- Control surface water in order to prevent pollution of on-site and off-site water resources.
- Divert excess run-off that may otherwise flood or interfere with mine workings.
- Limit infiltration to mine waste disposal facilities to control potential pollution of surface and ground waters.
- Control erosion of the site to limit sediment run-off that may negatively affect receiving waters.
- Control erosion that may otherwise cause excessive damage to mine closure works.

The IMWP will be reviewed and updated regularly.

Water Flows

The following flows have been identified so far for the project:

		Phase 1	Phase 1	Commentaries
1	Run-off from natural vegetated areas	X	X	Non-contact. Prevent ingress in the mine site by using swales, berms, or perimeter ditches.
2	Run-off from mine slopes and tracks	X	X	Channel to discharge point. Phase 1 only tracks.
3	Run-off from open pit bottom		X	No perimeter wells are planned at present as the underground works drain below.
4	Adits discharges	X	X	In the Exploitation Project of 2009 and in the supplementary documents of 2011, it was advised to the mining authorities that Carballeira adit will be drained towards Carmen portal and discharged to the Costa do Cuzo quarry ponds (Phase 1)
5	Run-off from quarry	X		In Phase 2 the mine will take control over the quarry
6	Run-off from the waste rock storage facilities		X	In Phase 1 the quarry stockpile area will be used. There are no mine wastes storage facilities.

Water Flows *(Continued)*

		Phase 1	Phase 1	Commentaries
7	Seepage from the waste rock storage facilities		X	In Phase 1 the quarry stockpile area will be used. There are no mine wastes storage facilities.
8	Run-off from the tailing's management facilities		X	In Phase 1 the quarry tails ponds will be used. For phase 2, the TMF waters will be incorporated into the process water circuit. For big storm events the water balance will determine whether an authorization of discharge is needed, or the collection pond can hold the volume.
9	Seepage from the tailing's management facilities		X	In Phase 1 the quarry tails ponds will be used. In phase 2, seepage is minimized as tailings are expected to be filtered. Any seepage can be incorporated to the process water circuit.
10	Run-off from the plant area	X	X	It will be sent to the process water circuit
11	Run-off from the stockpile area		X	In Phases 1 and 2 the quarry stockpile area and terrace will be used.
12	Process water	X	X	Close circuit
13	Workshop area	X	X	Small volume to a decantation tank for oil and grease
14	Sewage from toilets	X	X	Small volume

Table 5.2 Water flows

According to the climate data, the project area has a positive water balance. However, there is deficit during 2-3 months in the summer. The excess water (run-off, seepages, and drainages) will have to be managed and integrated within the mining complex, according to the criteria above. The project will try to maintain a closed system for the process water and re-use the excess water: run-off from plant and plant stockpile areas and run-off from TMF. Seepage from the waste rock storage facility (WRSF) and TMF can be sent to the process water circuit or to a passive water treatment system, both possibilities will be set in place. The possibility that the environment can accommodate the seepage with no treatment will be studied in the hydrogeochemical modelling and the environmental impact assessment.

The operational water requirement at the beginning will be met by utilizing groundwater from the underground workings.

5.5.1 Water Treatment

Three possible pathways of Acid Mine Drainage (AMD) mitigation can be followed:

Natural attenuation, which is currently taken place in the area, due to the iron and aluminium present in the aluminosilicates. This also determines the natural pHs in the municipality of Santa Comba, which are around 5.5.

Passive treatment, for which there is plenty of experience in Galicia, where the technology of tecnosols for mine remediation and passive treatment of Mining-Influenced Waters (MIW) was developed.

Active treatment. The active treatment process is a physico-chemical classical one to precipitate hydroxides or sulphates by raising the pH with lime (calcium hydroxide) with a final thickening step to generate a sludge, which is then disposed of properly.

The active treatment is a better option for short term approaches (operation) than long term ones (operation and closure). There are modular treatment plants on containers that can be hired if necessary for sporadic discharges (drain of part of the underground mine). The sludge will be disposed of in the tailings disposal dump or included in underground mine fill.

6.0 OPEN PIT MINING

6.1 Mining Operations

The present drilling and resource development are in and around the "Quarry and Varilongo" mineralised zones consisting of lower grade Endogranite hosted mineralisation and higher-grade vein mineralisation contained within the open pit envelope. These are by far the most advanced and easily available areas for development of medium tonnage open pit operations, but there are several areas that will be targeted for resource upgrade and expansion drilling in early 2021.

The mining will be planned as a conventional truck / backhoe open pit operation using mining contractors with shallow bench selective ore mining operations employing proven equipment, procedures, and controls. Waste mining will be separated from ore mining and use 12m benches with truck / shovel operations.

Health and safety culture will be as expected in any Rafaella Resources operation to best available standards, training, monitoring, and reporting. Contractors will be inducted into the Rafaella Resources training and reporting, and monitoring systems, cameras will be installed, and correction procedures implemented.

The mining economics are based on quotes from local mining contractors for drill & blast, haulage of waste and ore and maintenance of waste dumps, haul roads and pit slopes.

Management will continue to review several alternative operational models for development and operations of the Santa Comba Open pit operations in the long term, including:

- Contract mining,
- Partial contract mining - Contractors mine waste/Contractors mine ore etc.
- Full owner operator operations

Additionally, cost/benefit studies are being undertaken to compare mining methodologies such as:

- Truck /Shovel
- In-pit crushing and conveying
- Truck/shovel ore and in-pit crushing and conveying waste

Figure 6.1 North and west walls of Santa Comba quarry

Figure 6.2   South wall of Santa Comba quarry

Figure 6.3 Aerial view of the Mina Carmen open pit (Quarry)

6.2 Mine Planning

The in-situ resource model was regularised, so as to provide a model for mine planning which reflects expected selectivity, with an overall bench height of 12m and a sub-bench height of 4m, for mining ore. This regularisation gave effective mining factors of 12% dilution and 97% mining recovery. This prepared model was then used for pit optimisation. The resultant main pit shell, corresponding to maximum cashflow, was then used as the guide for the development of a final pit design.

This design was used the basis for development of 5 pushback scenarios, from which a 5 year production schedule was generated.

1. Block Model Preparation

The in-situ resource model was regularised, so as to provide a model for mine planning which reflects expected selectivity. The mineralised parts were regularised to a parent block size of 1m x 5m x 4m, to allow for 3 x 4m sub-benches per overall 12m bench. The waste parts were regularised to a parent block size of 5m x 5m x 12m. The effective mining factors applied by use of this regularisation are summarised in **Error! Reference source not found.**.

EFFECTIVE MINING FACTORS	
Dilution Factors	**12%**
Mining Recovery	**97%**

Table 6.1 Mine design parameters

2. Slope Regions

A slope region field was also added to the regularised block model, to allow overall slope angles to be correctly defined for subsequent pit optimisation. These regions and angle parameters were those recommended in the geotechnical study.

Pit Optimisation. Based on operating parameters and assumptions supplied by Rafaella, the base case parameters summarised in **Error! Reference source not found.** were prepared. These were used to run a pit optimisation on the resource block model. For reserve purposes, only Measured and Indicated resource categories were considered as potential ore. No external limits were applied to the optimisation.

3. Pit Design

An ultimate pit shell was selected from the optimisation work, corresponding to maximum cashflow (100% revenue factor). The separate satellite pit in the NE Eliseo area was excluded, due to minimal benefits on overall cashflow versus the complications of opening another pit area and requires additional drilling to define the ultimate size of the deposit. The ultimate shell was used as the basis for developing a practical open pit design, according to geotechnical recommendations and haul road requirements corresponding to planned mining equipment. This final design, shown in a 3D views and plan in **Error! Reference source not found.** to **Error! Reference source not found.** respectively, was used as the basis for reserve evaluation. A fixed cut-off of 0.05%WO3 was applied.

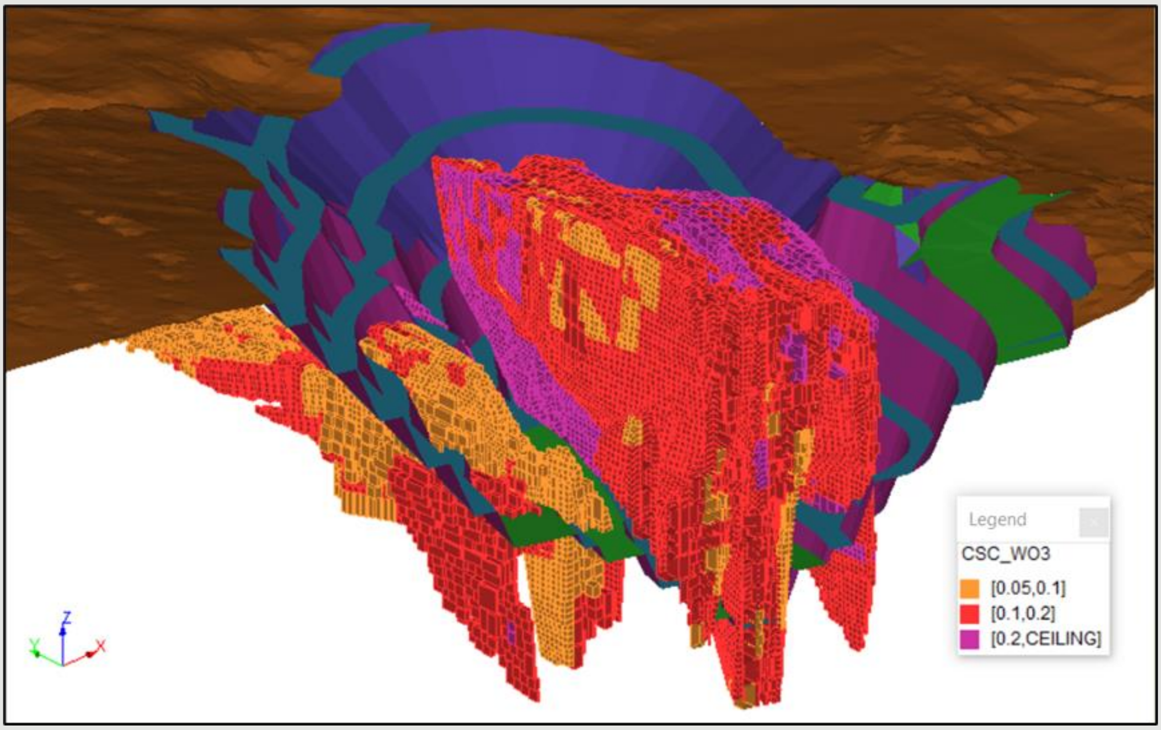


Figure 6.4 Cut-Away 3D View – Pit Design and Resource Block Model
[Only Measured and Indicated blocks shown]

6.2.1 Mine Design Criteria

The Santa Comba operations will extract ores from the Quarry and Varilongo sections of the deposit which have shallow disseminated resources and exhibit mineable widths and continuity of economic grade. Ore consists of low to medium grade endogranite hosting disseminated and fine-grained wolframite and scheelite of ~1mm to 100-micron dimension with irregular zones of scheelite, with zones of massive fine-grained wolframite.

The endogranite is cut by numerous high-grade quartz veins with coarse wolframite, scheelite, cassiterite and sulphide minerals. The mineable zone in the main pit is approximately 50m to 125m in width and over 400m in length which encompasses an economic ore zone of 6.283Mt at 0.149% WO_3 of Measured, Indicated, and Inferred Resource. The mineralisation is continuous and does not taper out at depth, this factor gives a low stripping ratio of 3.14:1 for the present 5-year mine plan.

The following Ore Reserves have been ascribed to the Santa Comba Project.

Summary of Pit Reserves -25 November 2020			
	Tonnes Mt	**WO_3 %**	**Sn ppm**
Proven	1.245	0.150	117
Probable	3.348	0.147	94
Total	**4.593**	**0.148**	**100**

Table 6.2 Summary of Pit Reserves

- Cut-off = 0.05% WO3, which corresponds to the breakeven cut-off using an assumed price of US$240/mtu WO3 APT and an estimating combined processing and G&A cost of $6.23/t of ore.
- Reported reserves are below the topography and exclude depleted underground workings.
- Reserves are inside a designed pit, which was developed using operational and geotechnical parameters as described in the updated Reserve Estimation Report.
- The reserve calculation comes from a regularised block model, which is equivalent to mining factors of 12% dilution and 97% mining recovery.
- The pit design also contains 761Kt of Inferred resources at economic grades.

Cautionary Statement

There is insufficient geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

6.3 Mine Design Criteria

The Santa Comba operations will extract ores from the Quarry and Varilongo sections of the deposit which have shallow disseminated resources and exhibit mineable widths and continuity of economic grade. Ore consists of low to medium grade endogranite hosting disseminated and fine-grained wolframite and scheelite of ~1mm to 100-micron dimension with irregular zones of scheelite, with zones of massive fine-grained wolframite.

The endogranite is cut by numerous high-grade quartz veins with coarse wolframite, scheelite, cassiterite and sulphide minerals. The mineable zone in the main pit is approximately 50m to 125m in width and over 400m in length which encompasses an economic ore zone of 6.283Mt at 0.149% WO_3 of Measured, Indicated, and Inferred Resource. The mineralisation is continuous and does not taper out at depth, this factor gives a low stripping ratio of 3.14:1 for the present 5-year mine plan.

Economic evaluation of Santa Comba open pit with Management Case of US$ 240/mtu		
Ore Tonnes Measured & Indicated (M+I) JORC	5.07 Mt	@ 0.145% WO3
Ore tonnes Total LOM (M+I+Inferred)	6.283 Mt	@ 0.149% WO3
Mineralised waste Tonnes	2.89 Mt	@ 0.05% WO3
Waste tonnes	19.7 Mt	
Stripping ratio	3.14:1	
Mine Life	5 years	
Tonnes WO3 recoverable	5,882 t	

Table 6.3 Optimised open pit mining resource

The planned mining process rates from the present open pit schedule range between 934 kt/yr. to 1.4 Mt/yr. for a total of 6.28Mt @ 0.149% WO3 over an ~5 year "Life of Mine" span, additional capacity to increase ROM ore up to 1.6 Mt/yr. could be sourced from underground operations from ~year 4 at a rate of 150 - 200,000 tpy or possibly earlier.

The width of the orebody also allows significant separation of ore and waste mining and allows an even stripping ratio to be maintained through the life of the pit of between 1.5:1 and 3.5:1 apart from year 3 where the orebody narrows and requires an increase in waste movement of up to 5.4:1 although more detailed mine planning is required to generate a smooth waste schedule.

There is a significant amount of sub-grade "mineralised waste" of ~2.8Mt @ 0.05% WO3, which is tabulated as "waste" but will not be classified or mined as waste, but stockpiled for an the X-Ray sorting upgrade project.

Open pit design is based upon the economically optimised pit shell selected for the range of tungsten values (APT), mining rates and expected production costs. Intermediate pits will be developed in-house by GTT mining engineers for years 1-3 years & years 4 & 5, allowing input of accurate performance data of pit slope performance, ramp configuration, haulage cycle time studies, wet weather drainage / erosion issues and equipment performance envelopes.

It is envisioned that underground development operations will be initiated in years 2-3 and in year 4 the process plant feed will be supplemented by additional higher-grade tonnages from underground bulk mining operations.

Underground recommissioning has commenced with the preliminary aim to carry out underground mapping and surveying to ascertain if disseminated ores are intersected at depth and map out the geological target of the deeper southern Endogranite Cupola.

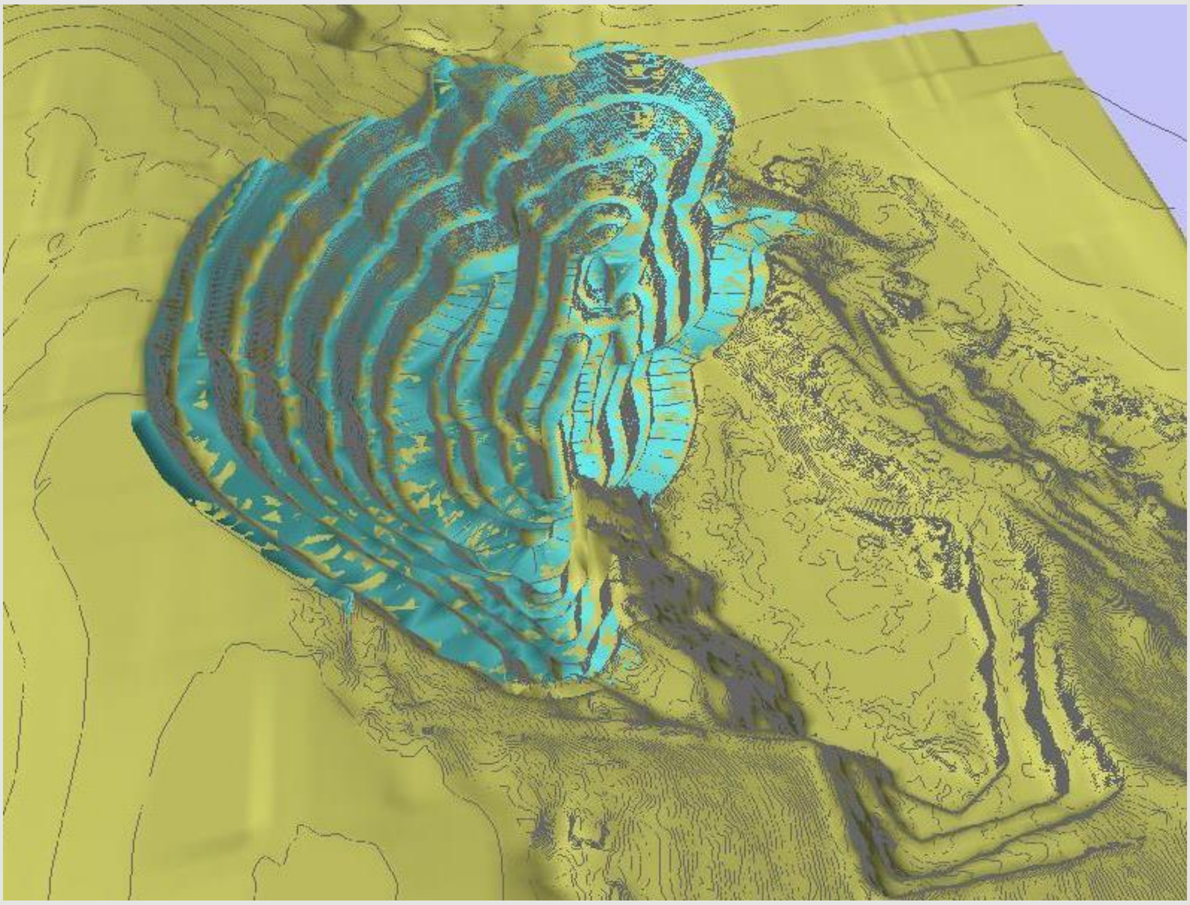


Figure 6.5 Santa Comba open pit design (in blue).

6.4 Grade Control

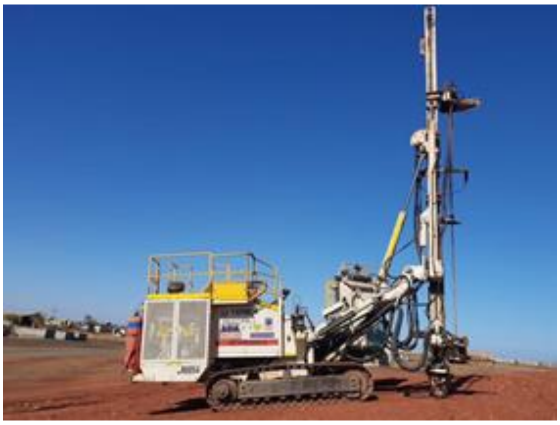
Ore control boundaries will be surveyed in from the short term mine plan based upon exploration drilling and "bench above" data. In pit geological mapping, grab sampling and dozer costeaning will be used to determine boundaries between ore, mineralised waste, and waste.

Ore mining blocks will be controlled by blast hole sampling and surveyed to determine approximate hanging wall and footwall contacts, intermediate zones, and mineralised waste blocks. Full time In-pit geological and mining control will be aided by re-survey of blasted drill holes and the use of handheld XRF analysers to minimise ore loss and maximise discretion between each mining category.

Excavator operator and pit geologist will control allocation of each truck load by radio and a central truck dispatch system to ensure each rock type is properly sorted and allocated to the correct stockpile.

Due to the process plant ore feed being pre-processed by X-ray sorting, the emphasis for geological control is minimising ore loss, separating ore and low grade/mineralised waste rather than minimising dilution.

Lower grade areas below cut-off but not barren (~0.02 - 0.05%WO3) will be sent to a "mineralised waste" dump for future consideration and testing for X-ray sorting to produce a pre-concentrate for plant feed when tungsten prices spike or at the end of the project life.



Surface blasthole drill and sampling rig

Use of a handheld X-Ray fluorescence analyser

Figure 6.6 Grade control systems

6.5 Ore Mining

Mining of ore will be by conventional close spaced drilling blasted with ANFO or emulsion explosives and mined by hydraulic excavator (backhoe configured) on 4m-6m benches loading 50 tonne dump trucks with ore and mineralised waste.

Ore allocation will be directed by the pit geologist and the truck driver informed by the excavator operator by radio and from the central dispatch system either to the primary crusher or blending stockpile, the mineralised waste will be directed to the dedicated mineralised waste dump. Contaminated ore and contact ores will be sent to the resample pad where individual truck loads will be sampled for re-allocation to ore or mineralised waste dump.

Zones with very high grades, coarse mineralisation or large blocks of massive sulphides will be sent to high grade stockpiles near the crusher for re-analysis and gradual blending into the plant to prevent surging of heavy mineral concentrates through the plant and overloading the various systems, leading to mineral losses and sulphide concentrate flooding.

The open pit will mine through a number of underground workings including old stopes and haulages up to 4m wide in places and standard precautions will be taken for the safety of operators and machines to prevent collapse of the floors into the old workings. Previous underground operations would also leave residual materials such as rock bolts, bent drill steels and discarded bits. When an old stope is encountered, the backhoe excavator will open the workings and side-cast the rock (ore or waste) to allow physical removal of the larger bolts, mesh, rails and drill steels etc. before being loaded to the waste dumps or to the crusher

Most ore mined will be direct dumped from trucks to the primary crusher for processing, to lower re-handling costs, with excess feed directed to a surge stockpile. Crushing capacity is higher than plant process capacity with excess ore stored in surge silos or live stockpiles for treatment on night shift and over weekends/holidays.

A front-end loader will feed the crusher from stockpile on off-shift occasions if required and blending in high grade ores or if the ore loading excavator is down for maintenance etc. It is envisaged that there will eventually be a stockpile of 40-50,000 tonnes (2-3 weeks production) of target and high-grade ores stockpiled at the crusher to enhance flexibility with ore blending and emergency coverage if mining experiences issues with ore availability, storm event weather, labour issues, or equipment failure.

Due to the hard-blocky nature of the deposit and mining around old workings, oversize blocks are expected on a regular basis, to tackle this issue, there will be a requirement for a mobile impact breaker for breaking these large blocks into a manageable size that will not block the 0.75m primary crusher grizzly.

Alternative mining methods will be studied with the potential to use much lower cost 12m benches in ore using face shovels rather than 4m benches with backhoe excavators to potentially further optimise the pit design. This will be determined by the ore block sizes and grade distribution in the pit floor.

Figure 6.7 Backhoe excavator loading ore into dump trucks on 4m benches

6.6 Waste Mining

Waste operations will be separated from ore mining and carried out with face shovels and 50 tonne trucks on 12m benches and hauled to waste dumps outside of the pit. The waste rock consists almost exclusively of exogranite and contact between the exogranite and the ore bearing endogranite will be mapped and marked in the pit by the pit geologists to separate the different mining methodologies.

Contract drill and blast operators will be using tracked drills for a low cost/m3 blasted and good fragmentation. Modern electronic detonators will be utilised to maximise fragmentation but also reduce ground vibration peaks, fly rock, noise, and dust.

The drill and blast contractors will be warned of open void potential from re-surveying the approximate location of the known underground workings. Care must be taken and attention paid when drilling and charging blast holes due to collapse of ground under the drill or ANFO truck. Unregistered voids can also be overfilled with explosives resulting in excessive fly rock and air blast and this needs to be avoided.

Large deep stope voids encountered will be backfilled with ore or waste depending on where the voids are located. Complex or narrow voids will be filled with old tailings to ensure safe filling with no hang-ups found with ROM rock fill, potentially causing underfoot stability dangers.

All blast hole drill cuttings will checked with a hand held XRF analyser and any that indicate the presence of base metals be check assayed in the on-site laboratory and the area checked by the pit geologists for the presence of ore pods/veins in waste zones for protecting and mining separately to stockpile or the re-sample pad.

Waste zones will be regularly mapped and checked for vein splays and zones of irregular disseminated mineralisation or contact/mixed zones between ore and waste due to blasting dilution. Any areas deemed to contain mineralised waste, low grade or contaminated ore will be redirected to mineralised waste stockpiles.

Certain amounts of selected waste rock can be redirected to an aggregate stockpile for treatment at the present aggregate operations nearby.

Multiple medium scale blasts will be carried out every 3-4 days using ANFO and or emulsion explosives delivered from off site. There will be a small magazine on-site to store in-house explosives, primers & detonators for small blasts for breaking very large blocks, construction, or road building. A blast warning system will be agreed with the local community to prevent annoyance, complaints, and potential health issues etc.

Waste will be mined as close to a constant mining rate as is possible to achieve even pit development without becoming waste bound and to manage working capital, maintaining an even pit mining fleet for the duration of operations.

Waste mining rates will be increased in year 2 & 3 as the ore zones pinch and increased waste mining rates are necessary to expose additional ore

Pit slope optimisation will be monitored regularly to ascertain the optimum final pit slope angles and bench heights and the mapping of faults, clay & sandy zones and potential toppling or wedge failure blocks. Survey stations will be set up at intervals around the edge of the final open pit crest with laser reflectors for ease of measurement and early detection of slope movements. One area of technical development using selected waste is the co-mingling of process plant tailings and screened waste rock (-75mm) to be formed into agglomerates that can be dumped onto the waste dump by truck or conveyor thereby eliminating the need for a tailing's repository.

Figure 6.8 Face shovel loading waste into dump trucks on 12m benches

6.7 Waste Dump Design and Operation

To ensure rapid reclamation of waste dump areas Santa Comba operations will follow best available practices presently being used by some of the more innovative mining companies around the world. Dumps will be constructed by 50 tonne trucks dumping in a manner to form an outside wall that are designed to accept a specific tonnage of broken waste rock.

The formation of the outer wall will enable immediate reclamation operations to commence. In this method, the final design contour (outside face) of the waste dump is constructed first, while being shaped by bulldozer to <25 degrees to create a stable final contour, then fines are pushed from the top of the dump to mix with the lower more rocky levels to ensure sufficient fines to support plant re-growth.

Reclaimed topsoil will be evenly spread along with forestry slash waste to encourage the revegetation of the dump face years before the dump is filled and decommissioned. The dump will have holes left in the face or the dump to catch sediment wash out and hold topsoil, coarse vegetation, and seeds etc. Revegetation should be natural with local flora, but this process will require starter species that can establish quickly and protect the selected end use flora such as heather, trees and shrubs etc.

It is recommended that at least 5+ rows of fast-growing Eucalyptus trees will be planted around the base of the waste dump to provide a local visual shield and help collect any erosional materials escaping from the slopes of the dump in the early part of the reclamation cycle. This process also provides woody plant seeds and attracts other flora and fauna to repopulate the area surrounding the waste dumps. As Eucalyptus plantations currently dominate the surrounding areas, this will assist in the blending of the waste dumps with the local landscape and flora.

Figure 6.9 Stages of open pit reclamation from closure, recontouring and revegetation

With reforested waste dumps and the flooded open pit may be used for water storage. boating and/or fishing.

- **Pre-mining land use**: Brownfield quarry and native vegetation
- **Post mining land use:** Native vegetation with permanent lake catchment
- **Change in land use values:** Land returned to pre-mining land use with the inclusion of a water storage & recreation dam
- **Key success factors:** Development of specific detailed closure criteria which have been used to refine rehabilitation strategy

6.8 Geotechnical Parameters

Due to the vast majority of the rocks mined being different forms of granite, the present pit slopes in the "Quarry" and seen in old underground workings are very stable and some exposures have been unaltered during 40 years of exposure.

The weathering depth is generally <20m and mostly confined to cross cutting post mineralising faults that experience weathering and kaolinisation which is mapped and studied as part of the pit slope geotechnical programme.

Due to the rapid rate of the mining schedule, it is imperative to understand slope stability prediction for both intermediate and final pit limits. As waste will be mined continuously on multiple levels using intermediate pit slopes, any data used for calculation of slope angle stability can be adjusted as the mine matures.

One area of special interest is at the northern extent of the open pit that has experienced widespread rock degradation through kaolinisation, with geotechnical calculations from oriented core drilling showing that slope angles must be significantly reduced to ~35 degrees and will require stabilisation and revegetation to prevent erosion from rain events.

Geotechnical studies have indicated that the following slope parameters can be applied:

Final pit face slopes:

- West 55 degrees
- North 35 degrees
- East 55 degrees
- South 55 degrees

Pit limits will be mapped and surveyed for zones of kaolinisation and clay gouge that may appear in fault zones that could intersect the pit slopes. When found, these zones will require excavation, drainage, and possible reinforcement or shotcreting to prevent excess weathering and slope erosion preventing the possibility of localised slope failure. There are few openings from underground workings that will be entering the final open pit walls and the few drainage adits that exist will be gated and sealed once the pit floor is below the adit levels to prevent any stability or slope erosion issues from water inrush etc.

6.9 Mine Design and Scheduling

The open pit geological modelling is based upon an upper, middle, and low-price range for tungsten concentrates at >60% WO3 based on assumed global ATP pricing.

	ATP Price Ranges
1.	Upper Range US$ 300 mtu
2.	Middle Range US$ 240 mtu – Management Case
3.	Lower Range US$ 180 mtu

Table 6.4 Mine design parameters - metal pricing ranges

The mining schedule will be a live process that is modified in-line with the prices for tungsten and tin by-product credits. Once mining, ore sorting and processing costs, efficiency and throughput are smoothed out and optimised, even a daily or weekly cut-off grade can be used by the short term mine planning engineers and geologists in the pit.

There is a significant tonnage of sub 0.05% WO3 mineralised blocks ~2.8Mt that would be available for re-classification should ATP pricing rise significantly.

Due to the flexibility of the ore grade control systems, stockpiling/blending, and the potential for adjustment of the X-ray sorting parameters (reject more or less rock), Santa Comba is designed to be a very robust operation for withstanding fluctuations on concentrate pricing.

The effect of ore sorting technology

Our ore sorting test work indicates that at a Management Case ATP price of US$ 240/mtu the sorter selection criteria would use a >1% surface area discriminator (if >1% of the internal area of each rock particle shows >1% metal detection) for the selection of "accept" at a mill head grade of ~0.25% WO3.

At an ATP price of US$ 300/mtu the ore sorters would use a 0.75% surface area factor to allow more particles to be accepted for milling treatment at a lower overall head grade of ~0.2%WO3.

On the other hand, If the ATP price hits a low of US$ 180/mtu, the sorters would use a 2% surface area factor to reject lower grade particles to generate a mill feed of ~0.35-0.45% WO3 or higher.

The option of adjusting "accept or reject" factors with a small amount of re-programming of the ore sorting control system can enhance the robustness of the project and allow interesting projects to be considered such as the pre-processing of low grade ores to generate mill feed grade "accepts" from a significant tonnage of low grade and mineralised waste inventory.

6.10 Dewatering, erosion and flood prevention

Open pit operations are always susceptible to heavy rainfall, snow, snow melt and ingress of groundwater once mining below the water table.

Santa Comba is in a costal vicinity with exposure to Atlantic storms and potential persistent storm rainfall. This will be considered in sump design, bench drainage and pumping requirements. Erosion aspects in the pit designs will be important especially on the northern (Kaolinised) slopes and operations will implement continuous survey monitoring of the pit slopes to detect movement. Design of haul road culverts, piping and the placement of filter curtains and sumps and use of the adit drainage/storage potential from old underground workings.

Permanent haul roads will be designed and built with super-elevation, crowning, gutter drains, and culverts under the roads to divert water to soak drains/sediment traps and Geotextile covered drainpipes. The haul roads will be constructed in layers, compacted and top dressed with fine gravel and cemented/water-proofed with a commercial hydrophobic binder to seal the surface to prevent dust generation and rapid drainage of any rainfall before the road surface softens, causing rapid erosion and can be easily damaged by heavy traffic.

Road design will include sufficient side berm walls to prevent a loaded truck being able to breach the berm if out of control or in an accident. Run off areas will be included at each end of the decline ramps and at any hairpin bends that are necessary.

Inter-bench catch berms will be designed to slope into the pit wall to collect rain, small gabions will be installed to prevent surge drainage and consequent slope erosion, pipe drains will be installed in areas of potential pit wall erosion to direct water to soak drains and sediment traps.

The annual rainfall data in l/m2 are.

The average annual rainfall recently recorded.

- in 2018 was 247.23 l/m2
- in 2019 was 215.13 l/m2.

There is good meteorological data for the area both locally and at A Coruña with good records going back for a sufficient period to be able to calculate predicted maximum storm events.

The data of maximum precipitation in 24 hours for different periods of return, in the Santa Comba weather zone shows that the maximum precipitation predicted is:

- For a return period of 25 years: 110 mm
- For a return period of 50 years: 115 mm
- For a return period of 100 years: 120 mm
- For a return period of 250 years: 150 mm

To cater for storm events and expected seasonal annual rainfall, sufficient sump volumes will be planned and designed into the temporary pit floors, although as the open pit will intersect old underground workings, storm water will drain into these workings and gabions/filter dams will be placed in front of the adits to prevent sediment washing into the workings and blocking potential access or inundating the old workings with sediment. When underground operations are initiated, all potential drainage adits in the open pit will be blocked to prevent dangerous ingress of storm water into operational areas.

The present open pit base is at 420m RL, 40m above the static water level in the historic underground workings. The pit operations will shortly intersect this water table as the pit is deepened, and static ingress will need to be prevented.

Lowering of the water table will initially be by installation of submersible pumps into the underground workings and a pipeline to the mill process water reservoir after pH adjustment and de-silting. The chemistry of the underground water inflow is presently acidic and will require air and lime/alumina treatment for neutralisation prior to use in the process plant, reclamation irrigation or discharge to the environment.

Longer term dewatering of both open pit and underground operations will be by deeper water bores to emplace a cone of depression around the operations and preventing groundwater ingress into both open pit and underground workings.

Acid mine water generation

All open pit and underground mines that contain sulphide minerals in the host rock matrix will generate acidic products from the gradual oxidation of sulphide minerals contained. If the rocks contain limestones or dolomite then in most cases the acid is naturally neutralised.

In the case of Santa Comba, the district rocks are granitic and contain small amounts of natural pH modifiers and slow oxidation of any exposed sulphides will generate acids and fine ochre muds.

GTT has a programme in place to treat any waters generated on site for depressed pH and containment of sediments. Generally, waters generated on site will be captured used for process water and dust suppression as the site has a negative water balance during 2-3 months of the summer.

7.0 UNDERGROUND MINING

7.1 Potential for Underground Operations

The project was previously mined underground for high grade veins by both artisanal and modern mining methods quite successfully, with good ground conditions and simple mining methods. Significant underground development was achieved but operations foundered in the mid 1980's due to low tungsten and tin prices and poor mill recovery.

Presently underground mine resources are of low confidence and require a significant programme of surface and possibly underground drilling. The underground workings are presently flooded to adit level and require gradual dewatering, refurbishment and installation of utilities and ventilation

These works are being initiated in Q3 2020 and will be ongoing and extended to allow resource development and implementation of modern bulk mining methods with the initial target to supplement the mill with much higher-grade ores at a rate of 150 - 200,000 tonnes per year. Underground resources are presently small but of a high-grade tenor (see table below) but will require significant resource development drilling before any underground mining plan could be envisioned for extending the Quarry and Varilongo operations underground.

The costs and benefits of this additional high-grade ore have not been included in the Pre-feasibility economics and would be the subject of a separate study.

Vein	Tonnes*	WO3 %	Sn %	WO3 t	Sn t
F4	38,603	1.32	0.102	509	39
F5	51,550	1.04	0.421	537	217
F18	41,060	0.795	0.264	327	108
Restrevas	130,032	0.75	0.224	972	291
All	**261,245**	**0.90**	**0.251**	**2,345**	**655**

Table 7.1 JORC compliant underground inferred resources at Mina Carmen

7.2 Modern Mining Methodology

Modern narrow vein mining techniques such as low cost "raise mining" could rapidly exploit shallow high-grade resources over a long strike length, using contract mining within 3-4 years from the beginning of open pit operations ramping up over 3-4 years to supply 150 – 200kt/yr of high grade ores or earlier (subject to further review).

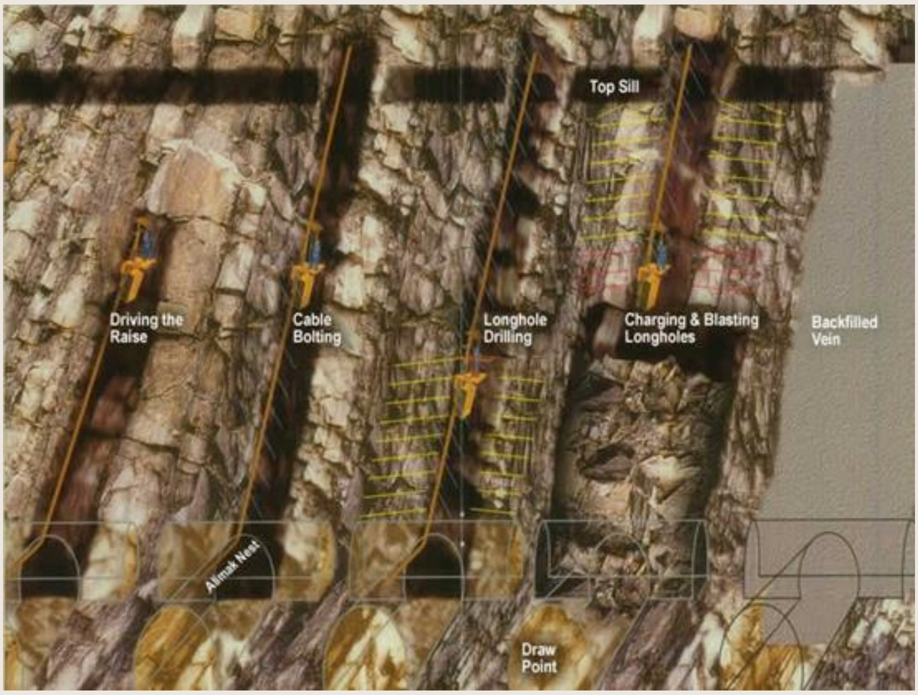


Figure 7.1 Modern raise mining methods
Schematic of raise mining progression

https://manroc.com/services/alimak-production-mining/
https://manroc.com/services/alimak-production-mining/ (mass blasting)

7.3 Underground Deposit Exploration and Development

Vein deposits in the Exogranite host little to no disseminated mineralisation and occur in several separate shallow vein bearing deposits 1-5km from the main open pit operations. Deposits such as Eliseo will be targeted for shallow narrow vein mineralisation potential as the understanding of the geology of these areas becomes better understood and drilled at depth.

There are clear targets for quickly delineating mineable underground resources by extending the Mina Carmen historic underground workings deeper by drilling to target known veins. Pumping for processing water will gradually lower the water table in the old workings and refurbishing and extending the decline would make sense for larger LHD and truck haulage and for underground drilling in the deeper zones.

One particularly suitable mining system would be small to medium tonnage "raise mining" or Alimak mining techniques with stoping heights of 75m to 150m between levels, quickly exposing potentially significant tonnages of high-grade ores, this will however require numerous targeted deep holes from surface or drilling from underground developments. Safe access is being initiated but going deeper into the previous workings for mapping activities, will require dewatering and refurbishment of the existing underground decline and installation of operational infrastructure.

The Santa Comba granitic massif is exposed for ~7km in length and over 1.5km in width and obviously longer and wider at depth. There are multiple open pit and underground targets delineated throughout the massif that can be tested and delineated by rapid shallow reverse circulation (RC) drilling (to ~400m) and deeper core drilling (1.5-2 km.)

Figure 7.2 Underground mining equipment LHD loading dump trucks underground

Underground development of suitable deposits would use normal decline development techniques and some adit development in steep terrain. There is a significant investment in drill targeting potential underground targets. X-ray sorting and metallurgical testing will be required to ensure suitability for co-treatment in the Santa Comba process plant.

COPAREX, the company that operated the underground mine known as Mina Carmen at Santa Comba in the 1980's, delineated non-JORC compliant resources for the satellite vein systems around Mina Carmen (see table 7.2 and figure 4.6).

Prospect	Tonnes*	WO3 %	Sn %	WO3 t	Sn t
Santa María	102,060	0.65	0.18	667	184
Vilar	1,868,738	0.53	0.21	11,865	3,955
Northern Zone (ex-Vilar)	**693,630**	**0.53**	**0.21**	**1,782**	**594**

Table 7.2 Potential satellite underground targets
** tonnage calculated on 0.7m resuing mining width*

7.4 Water Ingress and Dewatering

The historic mining operations were not wet mines with only modest pumping requirements and the water was mostly consumed in the processing plant and for mine duties.

The future handling and treatment of underground water will be mostly by a gradually expanding network of deep circumferential water abstraction bores that will tap into and lower the water table around underground developments and ahead of the excavations. Some nuisance and perched inflows will be removed by underground pumps into a pipe network feeding to underground sumps that are pumped directly to surface for treatment and reservoir storage for further use.

The disposing of underground mine waters is ideally aimed at "zero discharge" with no potential for contamination of local waterways or underground water tables by acid mine waters or "red sludge" slurry leaving the mine site via waterways.

Bore water will be relatively fresh, pumped to the project water reservoir and will be utilised directly for mill process water and dust suppression with any excess allocated to rehabilitation irrigation.

The benefits of "dry workings" are substantial and allow the use of cheaper explosives and eliminating multiple sumps and traps to collect mud and oily sludge. The effects of removing water pressure on underground rock stability is important and will make workings safer and lessen the requirements for roof support with rock bolts, meshing and shotcreting.

Figure 7.3 Supplementary roof support

Figure 7.4 Pumpable roof "cribs" for rapid low-cost support (grout fill)

Underground development will be limited in the first 2 years as dewatering progresses along with stabilisation works to ensure safe ingress into the old Mina Carmen workings for mapping and limited underground drilling. The main decline (4m x 3m) will be assessed for potential re-use or for expansion for the use of larger LHD's, haul trucks and conveyors.

8.0 MINE SCHEDULING

8.1 Open Pit Operations

Contract mining will be carried out under the direction of the GTT mine superintendent, grade control geologists and surveyors. Short term mine planning will be developed for each year's operations and monthly plants, targets, schedules, and drilling and digging plans issued to the contractor.

Reconciliation of movements, ore grade target and general mining cleanliness will be carried out at the end of each months and invoices from the contractor approved after agreed survey checks for volumes achieved. Any issues concerning operations behaviour, failure of targets and breaching of safety systems will be addressed in writing at this time.

8.2 Ore and Waste Scheduling

Mine scheduling is based on matching ore resources, process efficiency and costs to the current Management Case target price for APT at US$240/mtu. This pricing option generates a Measured Indicated and Inferred (M, I & I) minable resource of 6.28 Mt from an optimised open pit, giving a mine life of 5 years. 5.1Mt is based upon Measured & Indicated resources and 1.21 Mt of Inferred resources, which will be targeted in early 2021 for upgrading to Measured and Indicated.

The phase 1 processing plant scale is based upon treating 765kt per year, however, mined ore will initially be pre-concentrated by X-Ray ore sorting, with a reject ratio of 45-55% so this will require a mining rate of 1.3 Mt of ore per year, or a mine life of approximately 5 years at steady state production, without including supplementary high-grade feed from underground operations.

Waste mining rates will be scheduled to match a ore production as required with an overall stripping ratio of 3.14:1. Rates will be somewhat uneven during certain periods of operation due to orebody shape and grade. Short term mine planning will focus on keeping waste stripping 2-3 months ahead of ore mining, once at steady state operation.

PRODUCTION SCHEDULE						
Year	**Rock**	**Waste Mined**	**Strip Ratio**	**Ore Mined**	**WO3%**	**WO3 Tonne**
	Mt	*Mt*	*t/t*	*Mt*	*%*	*t*
1	3.98	2.60	1.91	1.36	0.163	1338
2	5.77	4.47	3.44	1.30	0.146	1199
3	8.40	7.10	5.47	1.30	0.133	1085
4	5.51	4.21	3.24	1.30	0.154	1265
5	2.36	1.34	1.32	1.02	0.146	934
Total	**26.01**	**19.73**	**3.14**	**6.28**	**0.149**	**5,883**

Table 8.1 Production schedule

Mining shifts will be on a 2 x 10 hour shifts per day on a 5 to 6 day week for 5000 available hours per year with no planned overtime shifts. This will require a small workforce of approximately 40 equipment operators, supervisors, and samplers, and eliminates the requirement for rostered shifts and extra costs associated with this system. The mine will target 800 to 1500 tonnes of waste per hour on 2 - shifts and 500 to 600 tonnes of ore per operating hour on day shift only.

Early short term mine development scheduling is driven by the need to push the pit limits back, develop the mining levels and to prepare an even pit floor for ore and waste extraction. This will require a period of pre-stripping while the process plant is being built.

This period is important for exposing ore zones abut also for medium to long term establishment of haul roads and installation of safety berms along the pit crest and haul road edges.

Ore extraction in this initial period will be sporadic as the pit takes shape for medium term operations. The mine will be configured with 12m benches used for waste extraction and 4-6m benches for ore. Separation of waste and ore mining is necessary to allow the establishment of double to triple ore benches within the waste mining envelope for selective mining of ore and mineralised waste.

Figure 8.1 Waste drill pattern for large scale blasts

Waste blasting will be on 12m bench drilling by large diameter DTH drill rigs, with ore and sub grade drilled on 4m-6m benches for tight ore control, but mining on 12m benches for ore will also be reviewed for lower cost, higher production rates.

Figure 8.2 Waste drilling with face shovels and trucks

Waste mining will be by face shovels on 12m benches with 15-20t bucket payload face shovels and 50t dump trucks, ore mining will be on 4m benches by backhoe excavators with 8-12t bucket payload top loading 50t dump trucks.

Waste will be scheduled to both long term waste dumps and an aggregate stockpile for the local quarry operator.

Grade control will be carried out mostly using ore blast hole cuttings surveyed in after blasting, geological control with in-pit geologist on call when mining ore, to ensure control is in place using geological structure, drill hole ore block survey and using hand held XRF monitors and Ultra Violet (UV) lamps to discriminate contacts between ore, mineralised waste and pure waste.

Resampling areas will be established on "mineralised waste" stockpiles to manually sample small amounts of individual truck loads to allow tighter control of mixed zones of ore/low grade zones ensuring minimal amounts of lower grade ores reaching the ore sorter (this may be possible using the handheld XRF analyser).

Mineralised waste will be tested to determine if a concentrate for mill feed can be produced using a dedicated ore sorting system as there is estimated to be 2.8Mt of mineralised waste with an average grade of 0.05% WO_3, which tests by TOMRA show can be upgraded to ~0.1-0.15% WO_3.

A target grade blended stockpile will be built up in front of the crusher to cover gaps in ore production from the pit with sufficient tonnage (~50,000 tonnes) to cover a 2-3 week or more hiatus in mine production due to weather, equipment, or pit configuration issues. Ore will be taken from this blended pile by front end loader and fed to the crusher feeder.

Very high-grade zones or blocks with massive sulphide mineralisation will be stockpiled separately at the crusher to allow bleeding into the system without flooding certain parts of the concentration circuit.

There will also be 2-3-day capacity (3,500 tonnes) in silo capacity for sorter pre-concentrate in front of the milling section giving significant flexibility for sampling and blending to ensure target grades are being met.

8.3 Underground development

Underground exploration and orebody extension drilling will commence in conjunction with open pit operations and deeper extensions below the present open pit envelope will be prioritised for underground targeting alongside fresh drilling for developing shallow satellite open pit resources.

There is insufficient underground resource remaining to presently justify mine planning, but the ore zones are well defined and expansion drilling along strike and down dip indicated by underground stope maps will be initially targeted for resource development. However, the underground project is not included in this study.

Figure 8.3 Underground development drilling
Twin boom development jumbo

9.0 PROCESSING AND INFRASTRUCTURE

9.1 General Overview

The deposits that make up the Santa Comba Tungsten and Tin project in Galicia consist of two styles of mineralisation, namely high-grade quartz veins and disseminated mineralisation hosted in a granite (endogranite) host. In the endogranite, vein and disseminated mineralisation occur together and will be mined and processed together. Outside of the endogranite, exogranite quartz veins alone host economic mineralisation and will be selectively mined if of economic grade by open pit and underground methods.

Weathering is limited and generally to <20m so the impact of oxidation of sulphides is limited and localised so gravity processing should not be inundated with haematite or scorodite stained mineral grains or excessive kaolin in the ore.

Santa Comba mineral process logic follows standard proven heavy mineral gravity extraction processes with modern equipment design and operation. X-Ray sorting pre-concentration technology to increase head grade and lower significantly the volume being finely crushed, milled and sent to tailings.

ORE PROCESSING SCHEDULE			
Year	**Process Ore**	**Feed grade**	**WO3**
	Mt	**WO_3 %**	**t**
1	1.36	0.163%	1,399
2	1.30	0.146%	1,199
3	1.30	0.133%	1,085
4	1.30	0.154%	1,265
5	1.02	0.146%	934
Total	**6.28**	**0.149%**	**5,883**

Table 9.1 Ore processing schedule

9.2 Plant Design Concept

To consider both coarse crystals of wolframite in the veins and relatively fine-grained wolframite in the granite, the process design needs flexibility to have both coarse and fine mineral recovery stages and to prevent as far as possible over breakage of soft wolframite/scheelite/cassiterite crystals thereby generating fines (slimes) which are difficult to recover and lower plant efficiency. The approach to this is to eliminate as much as possible the main sources of mineral sliming and losses to tailings by maximising fine crushing prior to coarse concentration and eliminating ball mills and hydrocyclones and instead using fine screens and short duration rod milling.

The liberation of tungsten minerals occurs at a relatively coarse size at approximately 300 microns at which most tungsten mineral grains are free, this allows the use of enhanced gravity equipment which has a small footprint and low Capex and Opex.

Tungsten Concentrations	
WO_3	**= 74% W**
65% WO_3 concentrate	**= 48.1% W**
Pure APT	**= 62.3% W**

Table 9.2 Tungsten concentrations

Wolframite (Fe, Mn, WO4) = 51%W
and 64.44% WO3 - S.G 7.0 - 7.5

Scheelite (CaWO4) = 63.7%W
and 80.1% WO3 - S.G 5.9 - 6.1

Figure 9.1 Tungsten bearing minerals found at Santa Comba

9.3 Process Design Logic

Pre-sorting using X-Ray source technology allows pre-concentration of crushed particles from +8mm to 75mm using two to three sorters on two size populations of +8mm to -25mm and +25mm to -75mm. Sorting is effective with both vein and endogranite hosts due to uneven mineralisation in both (zones with little or no metal content at these size ranges).

The preliminary design of the process plant is presently aiming at processing ~765,000 tonnes of ore per year. Initially the process is being modelled on primary sorting only, but further test work will be carried out to determine if an additional stage of secondary sorting will increase recovery and efficiency.

Figure 9.2 TOMRA X-Ray sorting equipment Twin XRT 1200 sorting units

9.4 Crushing

Ore from the pit will be fed directly to the crusher during day shift, any emergency ore movements at night will be truck dumped at the stockpile for later assessment and removal to waste/low grade or fed into the crusher by a front-end loader. An area will be designed close to the process plant for the storage of ~50-70,000 tonnes of various open pit ores for blending and to cater for seasonal storm interference with mining operations without interrupting processing operations.

The crushing plant is designed to accept ROM ore which would have a top size of ~0.75 m dimension and a grizzly screen over the truck dump hopper would prevent oversize ore blocking the primary crusher feeder. A mobile excavator mounted with a hydraulic rock breaker will be available at the hopper and in the open pit to deal with oversize ore blocks.

The coarse crusher section is conventional with primary Jaw crusher feeding a standard cone crusher in closed circuit with dry screens to produce a -75mm to +8mm product that will be separated fed to the ore sorters. Tests have shown that around 10% of the blasted rock coming into the plant is less than 8mm in diameter (~85kt/yr), the Coarse crusher section screens out the -8mm product, which will go directly to the vertical shaft impact crusher (VSI) stockpile and does not incur coarse crushing or sorting costs.

As the open pit will be mining through layers of underground workings, the crusher will need to deal with underground mining consumables such as drill steels & bits, rock bolts, hose couplings and machinery parts etc. tramp magnetic removal of these contaminants is essential before contacting the crushing machinery. Magnets cannot pull heavy rounded or elongated tramp and metal detectors will be installed on all feeder conveyors going into primary & secondary crushers which will stop the process while the steel is manually removed.

Sorting rates

+8mm to –25mm ore will be fed to the fine ore Xray sorter at ~30-40 tonnes per hour and the +25mm to –75mm ore will be fed to the coarse Xray sorter at 85-90 tonnes per hour.

Concentrate from the sorters will be fed to a large blending stockpile before being conveyed to high capacity Vertical Shaft Impact Crushers (VSI) in closed circuit with dry screens, to generate a fine mill feed product with initially a p90 of -8mm (the system is designed to go to -3mm if necessary).

Fine crushing is being implemented to impart significant internal fracturing to the rock particles from the VSI impact (impellers @ 1400 rpm) to help release minerals and reduce the grinding load. This effect will reduce the widespread problem of preferential grinding of dense minerals to "slimes" which is difficult to extract and this fraction generally gets lost to tailings.

This level of VSI crushing produces a substantial portion of sub-1mm component that will be fed to a coarse concentrator for removal of coarse wolframite and scheelite product prior to milling.

Discard from the sorter will be conveyed to a stockpile for the third party aggregate quarry operation.

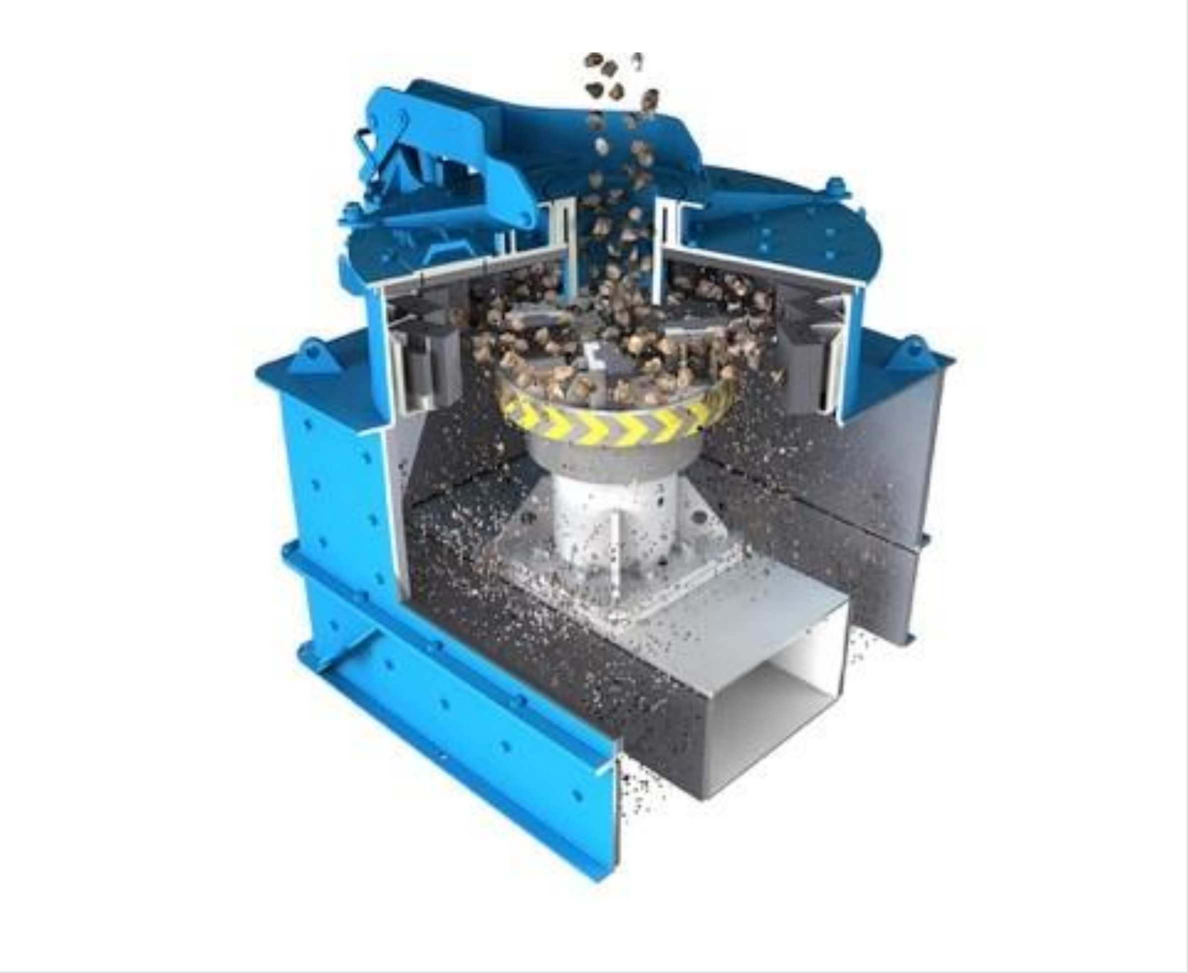


Figure 9.3 Fine crushing
Diagram of a Vertical Shaft Impact Crusher (VSI)

SANTA COMBA CRUSHING AND X-RAY SORTING DESIGN

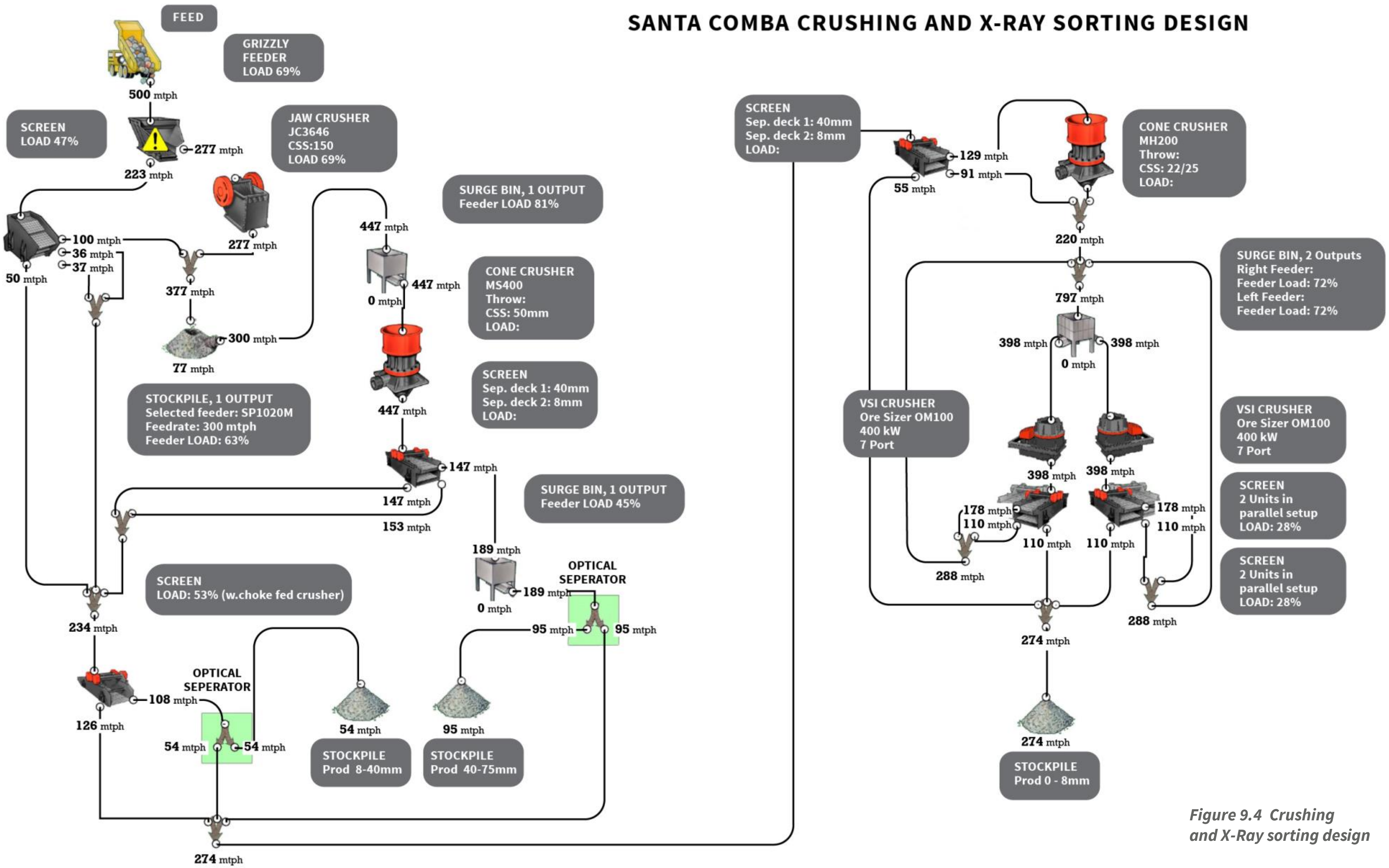


Figure 9.4 Crushing and X-Ray sorting design

9.5 Grinding and Fine Size Reduction

Size reduction for the -8/-5mm size fraction has been given significant consideration and the screening equipment will be carefully selected. Test work showed that the optimum release sizing for the finer wolframite is ~300 micron so intense grinding is not required. The use of a rod mill will help prevent significant fines generation. The use of fine screens (stack sizers) in place of hydrocyclones is another way in which fine size dense minerals such as wolframite will not be recycled back to the milling circuit and lower losses to sliming of the ore minerals, which was one of the big recovery problems for previous operators at Santa Comba.

Figure 9.5 Grinding section
- a used Allis Chalmers 3.8m x 4.6m 1100kW Rod Mill

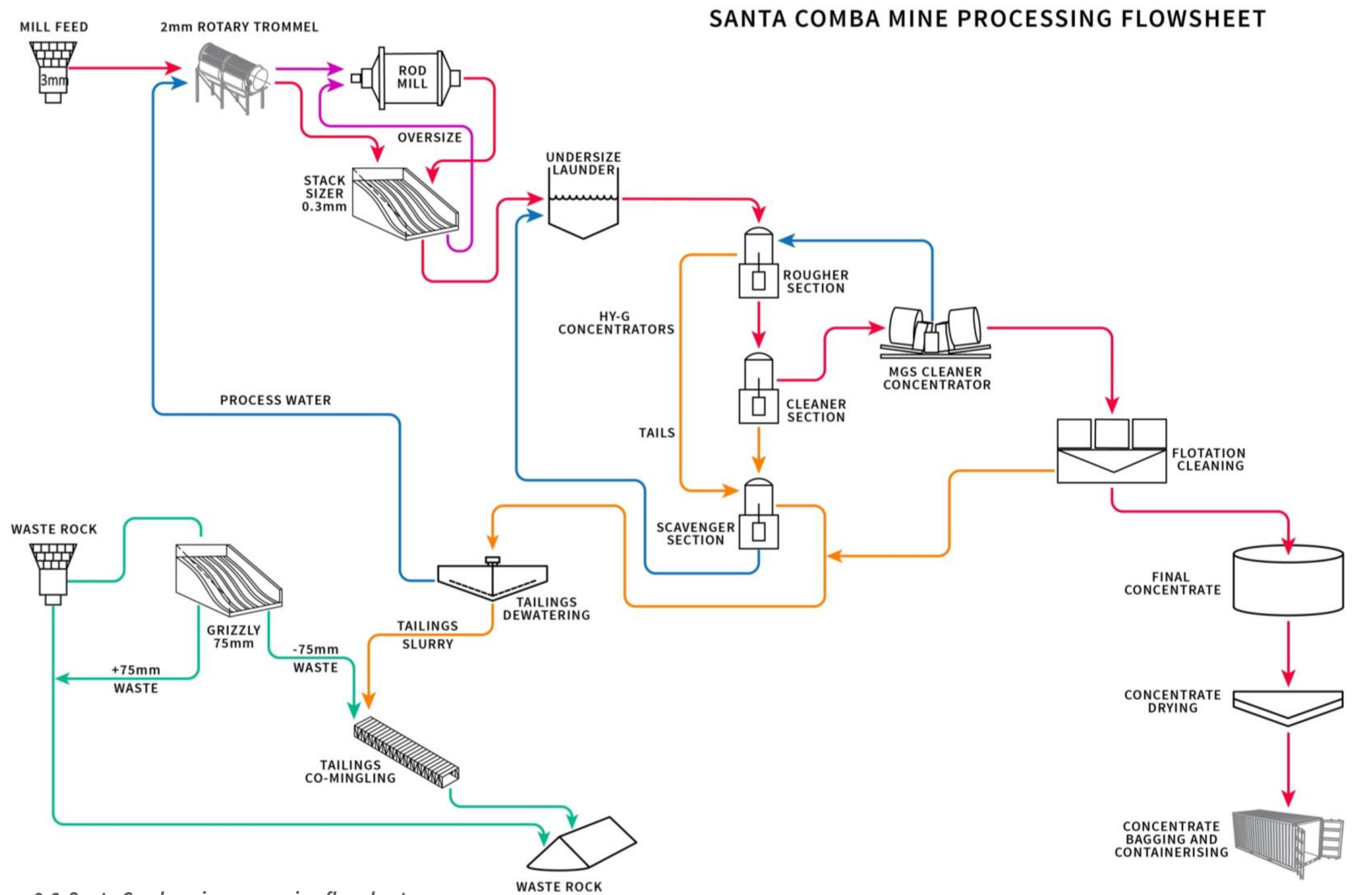


Figure 9.6 Santa Comba mine processing flowsheet

9.6 Gravity Processing

Coarse gravity equipment based upon enhanced gravity (Hi-G) concentrators such as manufactured by Knelson or Sepro (Falcon range). Discharge from the coarse circuit will be fed through sieve screens to split coarse feed for milling and fines for stage 2 gravity concentration again in Knelson/Falcon type concentrators. Enhanced gravity concentrators have many benefits for maximising mineral recovery from coarse through to ultra-fines and the ability to extract tungsten minerals from the +10-micron (possibly down to 5 micron) size range is the logic behind the use of these units. Conventional tungsten concentrators such as spirals and shaking tables are unable to concentrate such fine grain minerals.

Falcon C type Hi-G centrifugal concentrator

Knelson 48 CVD Hi-G centrifugal concentrator

Figure 9.7 Hi-G centrifugal concentrators Knelson CVD and Falcon C type

Primary Hi-G coarse circuit tailings will be sent to the primary rod mill for size reduction to a p80 of 300 micron and mill discharge will be treated in the fine Hi-G gravity circuit using various specialised units such as the Falcon Ulra Frequency units to remove fine and ultrafine minerals before being discharged to tailings.

The cleaning of concentrates to remove light and or extra heavy minerals can be achieved through devices such as the MGS (Gravity Mining) fine mineral separator prior to flotation cleaning to remove sulphides and other contaminants from the final concentrates.

9.7 Flotation Cleaning of Gravity Concentrates

Concentrates from the gravity circuit will recover a wide spectrum of minerals apart from ore minerals including sulphides such as pyrite, arsenopyrite, chalcopyrite and other trace heavy minerals. These minerals will be removed by a small flotation section to enhance the quality of the final concentrate and reduce any potential smelter penalties.

Testing flotation cleaning of gravity concentrates showed >98% of base metal sulphides removed by flotation with <1.5% losses of WO3. There is an ongoing test programme to pilot the process using much larger ore samples targeting increased recovery and maximising concentrate quality by removing unwanted minerals from the concentrate product.

Associated sulphide minerals have been analysed for economic value and there are copper and zinc sulphides present which will be studied for potential extraction. Arsenopyrite will bagged for future treatment or bled back into the tailings stream.

FINAL CONCENTRATE QUALITY		
Cu	0.013	%
Pb	0.012	%
Zn	0.013	%
As	0.018	%
Ni	0.078	%
Cr	0.14	%
Mn	7.69	%
SiO2	1.08	%
Al	0.21	%
Fe	7.56	%
Ca	1.16	%
S	0.06	%
K	0.73	%
WO3	68.01	%

Table 9.3 Final concentrate quality

9.8 Tailings Handling

Tailings will be fed into an agglomeration drum with a 3.5 to 1 ratio of screened mine waste to 55-60% solids tailings roughly agglomerated into handleable balls and fed back to the waste dumps via truck or conveyor, hence eliminating the requirement for a tailings dam and the potential environmental issues around permitting, liability and reclamation bonding. Less waste rock can be used if tailings is further dewatered or filtered to increase solids content.

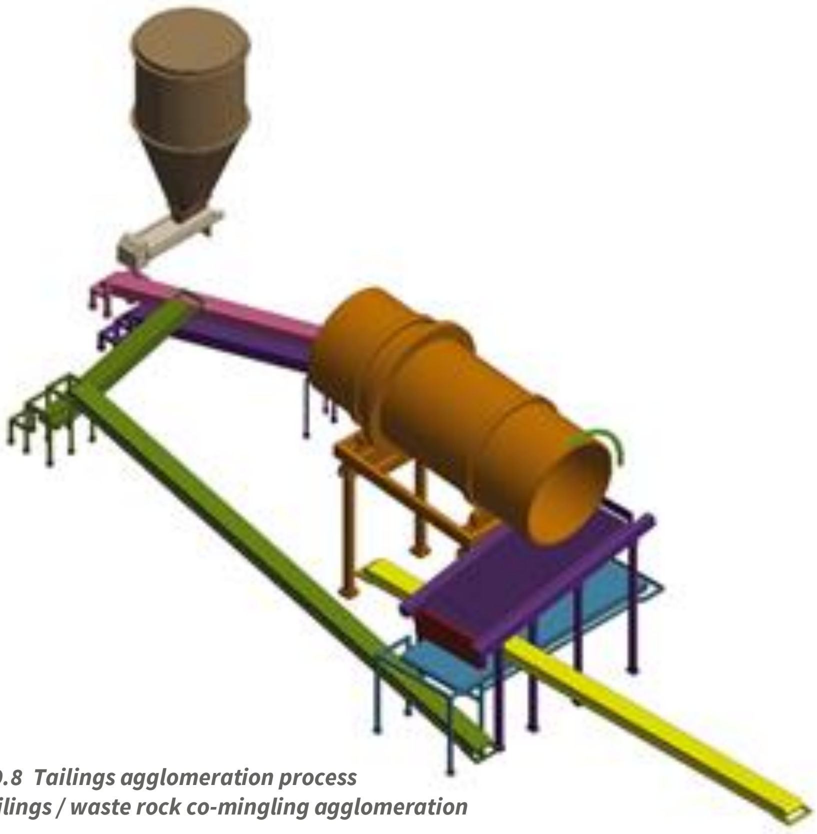


Figure 9.8 Tailings agglomeration process
Mine tailings / waste rock co-mingling agglomeration

Works will be undertaken to install sufficient surge capacity of tailings slurry to account for breakdowns and blockages of the tailing's disposal process.

Tailings agglomeration tests		Waste rock @ 13.2% moisture		
Trial A @ 50% solids tailings	**Tailings g**	**Waste rock g**	**% solids**	**State**
Stage 1	2000	2500	70%	Semi liquid
Stage 2	2000	3000	72%	Stiff liquid
Stage 3	2000	3500	73%	Soft balls
Stage 4	2000	3750	74%	Competent balls

Table 9.4 Tailings agglomeration tests content results

Data from the table above is promising and with a 74% solids, a co-mingled agglomerate could eliminate a conventional tailings facility.

GTT intends to use a high rate thickener and generate much higher % solids tailings comprising approximately 70% solids paste prior to co-mingling. Ongoing testing is underway to pilot this process.

Figure 9.9 Santa Comba co-mingled tailings & waste rock

9.9 Processing Plant Design and Construction

The process design for 1.3Mt/yr. crusher feed and 765,000 t/yr. mill feed using modular plant applications will be configured as follows.

- ROM ore feeder / grizzly
- Primary jaw crushing
- Cone crushing and screening - +8mm to -25mm and +25mm to -75mm
- 2 x Surge silos or buried feeder storage for ~1500 tonnes
- X-Ray sorting 2 - 3 x units TOMRA 1200 XRT 2.0
- Fine crushing to p90 -8mm – 1 x cone and 2 x VSI crushers
- Recirculating triple deck screens for closed circuit crushing
- Silo or buried feeder for 4500 tonnes
- Trommel for mixing to pulp - containerised
- Rod mill 1100 kW on concrete foundations
- Multistage wet screening containerised
- Hi-G gravity concentration equipment for roughing, cleaning, and scavenging - containerised
- High efficiency flotation for removal of sulphides and other contaminants - containerised
- Final cleaning of concentrates – separate tungsten from other by-products - containerised
- Concentrate handling and bagging – containerised
- Storage and containerising of concentrates
- Storage of sulphide discards / possible feeding system into tailings
- Modular high rate thickener for dewatering tailings to paste.
- Agglomeration and "dry stacking" of tailing system

Operational redundancy will be built into the design to allow continuous operation for most rolling maintenance programmes apart from major mill shutdowns – (5 x mill shutdowns per year.

The modular skid mounted and containerised design will allow flexibility in operation and cater for re-plumbing the process flow in case of potential recovery issues and ease of equipment addition or relocation in the event of process plant enlargement.

Due to the modular nature of the equipment only limited parts of the process plant will be under cover, most of the modular equipment will be containerised for rapid installation (& relocation) and low-cost foundations plumbing and electrical services. Mobile cranes will be used to install, maintain, and replace/enlarge with ease. Larger equipment such as crushers, ore sorters and the rod mill will have some protection essentially for electrical/control protection, most of which will be containerised.

Plant energy consumption and peak electrical draw will be between 1.5 - 2.0 MW and depending upon the operational effectiveness of ore sorting prior to fine crushing (12 hours) and grinding (24 hours) where most of the energy is consumed in the circuit.

9.10 Capital Costs - Processing

A survey of the equipment located at site showed it to be too small and in too poor condition to be usefully salvaged for this application. Therefore, the process equipment will consist of a combination of used, refurbished and new, sourced both from Spain and overseas.

The units selected will be installed at site either in modular or containerised form to ensure rapid low-cost installation requiring small amounts of foundation works, with equipment mostly located at ground level for ease of access and without the need for a large building.

Used and refurbished machinery is plentiful at the time of writing with low to medium prices. Refurbishment and fabrication, where necessary will be undertaken locally at site to train local engineers and artisans in the detailed workings of the equipment in preparation for the maintenance of the plant machinery.

The estimated Capex for the upgraded crushing and process plant is US$ 6.5M with built in contingencies for stripping & packing, freight, refurbishment of salvageable equipment on-site and any used machinery purchased that requires refurbishment and fabrication/installation.

PROCESS PLANT CAPEX								
	Unit Cost US $	**Freight $**	**Install $**	**Import $**	**Refurb $**	**Commission $**	**Stores $**	**Total $**
Concentrator Capex	1,863,00	229,500	403,250	140,250	56,000	21,000	44,000	2,757,000
Crushing & Sorting Capex	3,103,000	123,000	188,000	54,750	55,700	28,500	137,000	3,689,950
Contingency (10%)	496,600	35,250	59,125	19,500	11,170	4,950	18,100	644,695
Total Ore Treatment Capex Estimate	**5,462,600**	**387,750**	**650,375**	**214,500**	**122,870**	**54,450**	**199,100**	**7,091.645**

Table 9.5 Process plant capex

9.11 Operating Costs Processing

Operating costs for the stage 1 plant design operating at 765,000 tpa (ROM) have been estimated from metallurgical testwork results and local labour and taxation rates as **US$ 6.00** per dry tonne.

Significant cost savings result from the use of ore sorting ahead of the process plant to remove barren rock inclusions in the ore and thereby reduce the volume of ore being treated by ~50-55% at a sorting cost of ~Euro 0.32/tonne Vs US$ 6.00/t to treat ore, ~50% of which will be sub-grade or barren-rock.

Tonnage	900,000	500,000
Primary and secondary crushing	$ 0.44	
Ore sorting section	$ 0.32	
Fine crushing		$ 0.60
Rehandling sorter reject @45%		$ 0.15
Trommel mixer		$ 0.10
Rod Milling		$ 2.50
Rougher Concentrator		$ 0.20
Cleaner Concentrator		$ 0.20
Scavenger Concentrator		$ 0.20
Concentrate cleaning		$ 0.15
Final concentrate cleaning		$ 0.10
Drying, bagging concentrate		$ 0.05
Tailings disposal agglomeration		$ 0.50
Tailings disposal conveying		$ 0.10
Totals	**$ 0.87**	**$ 4.65**
Cost/yr.	**$ 684,000**	**$ 2,325,000**
Total crushing and concentrating costs		**$ 3,009,000**
Cost/tonne milled		**$ 6.01**
Cost/tonne ore mined	**$ 3.34**	

Table 9.6 Process plant operating cost estimates

9.12 Production Build Schedule

Positioning of the process plant and installation of all equipment required for Phase 1 production will require 9-12 months of permitting, site preparation, equipment transport, installation, wiring, commissioning, and training of operators.

This rate of production is based upon 1.3 Mt/yr. mined and crushed and with a 50-55%% sorter concentration factor and 765,000 tonnes per year processed.

9.13 Construction Works

The crushing and processing plant is designed for treating 1.3 Mt/yr. run of mine (ROM) ore which will be truck dumped or loaded from surge stockpiles by front end loader into the crusher grizzly feeder.

The crushing section will be laid out in three discrete sections:

- Primary and secondary crushing to -70mm (Jaw & cone crushers and 2 x double deck screens)
- Ore sorting +8mm to -25mm and +25mm to -70mm – (2-3 x TOMRA Xray ore sorters)
- Tertiary crushing to P90 -8mm (1 x cone crusher and 2 x Vertical Shaft Impact crushers (VSI) and 2 x double deck screens)

Primary and secondary crushing is engineered to achieve sufficient throughput to stockpile for operations on 1 x 8-hour shift, 5-6 days per week. Surge capacity silos or buried feeders will hold sufficient inventory for feeding ore sorters on 1 x 12 hr shifts 5 days per week.

Sorted ore will be stockpiled ahead of the milling section for steady state processing and reject rock will be conveyed to an aggregate stockpile or to a holding waste dump (long term stockpile).

Process section capacity for 765,000 tpy.
will consist of:

- 1 x 1.5m x 6m mixing trommel to optimise pulp density
- 1 x 1100kW rod mill with tramp magnet
- 3 x banks of Stack sizers with pumps
- 8 x Hi-G gravity concentrators - containerised
- 1 x flotation section - containerised
- 1 x Mozley MGS concentrator - containerised
- Drying and bagging concentrates - containerised
- Sulphide bagging and storage
- Tailings agglomeration section – 1x agglomeration drum, piping and stacking conveyors.
- Small additions of equipment may be required to fine tune the recoveries such as shaking tables etc.

The selected process site will be levelled and sheeted with ~500mm of screened compacted gravel in graded layers with a fine sand top course. Certain sections of the site will have raised concrete bays (for hose down) laid in preparation for containerised equipment to be sited and levelled. Some containers will require raising somewhat to allow natural drainage and flow of concentrate and tailings streams.

Each bay will be connected by power, fresh water and slurry feed lines in concrete trenches which will be covered by grating to protect connections and catch any leakage from slurry or water.

This style of layout also allows ease of site access with cranes, trailers and vehicles for maintenance, inspection, repair/replacement, and operators tuning performance of individual units, without interfering power lines or large pipes laying on the surface.

There will be laid out walkways and roadways with the walkways covered to allow operators/maintenance to move around the site in all weathers without exposure to sun, rain, wind, and dust, without requiring additional PPE for wet or hot weather. Small 4x4 mini-trucks or golf buggies work well for these repetitive short trips and increase operator efficiency substantially. Having bulk Ready-Mix concrete production on-site is a significant bonus for foundations and concrete quality.

10.0 TRANSPORT, INFRASTRUCTURE AND PORT LOGISTICS

10.1 Transport Logistics

10.1.1 Road Network

The road transport network in Galicia and in a 100km radius of Santa Comba consists of a combination of modern motorways between major centres allowing easy connecting to Santa Comba site by well-maintained country roads. Heavy freight capability is available and the sizeable port at A Coruña is 65km from the mine. Road haulage of concentrates out and equipment and consumables in is freely available including low profile heavy lift transport companies.

10.2 Airports

10.2.1 Passenger

The region is well serviced by air transportation with modern domestic and international passenger services from A Coruña, Santiago De Compostella, Vigo, and Asturias giving significant flexibility for both passenger and light freight delivery in close proximity to Santa Comba.

10.2.2 Heavy Lift

The best airport for heavy lift delivery of large sensitive equipment using C-130 or AN-76 / AN 124 would be Santiago De Compostella with a main runway length of 3,200m compared with La Coruña at 1,920m and Vigo at 2,385m.

10.3 Rail Networks

The area is well served by rail infrastructure and has both commuter/tourist and long distance / high speed rail connections.

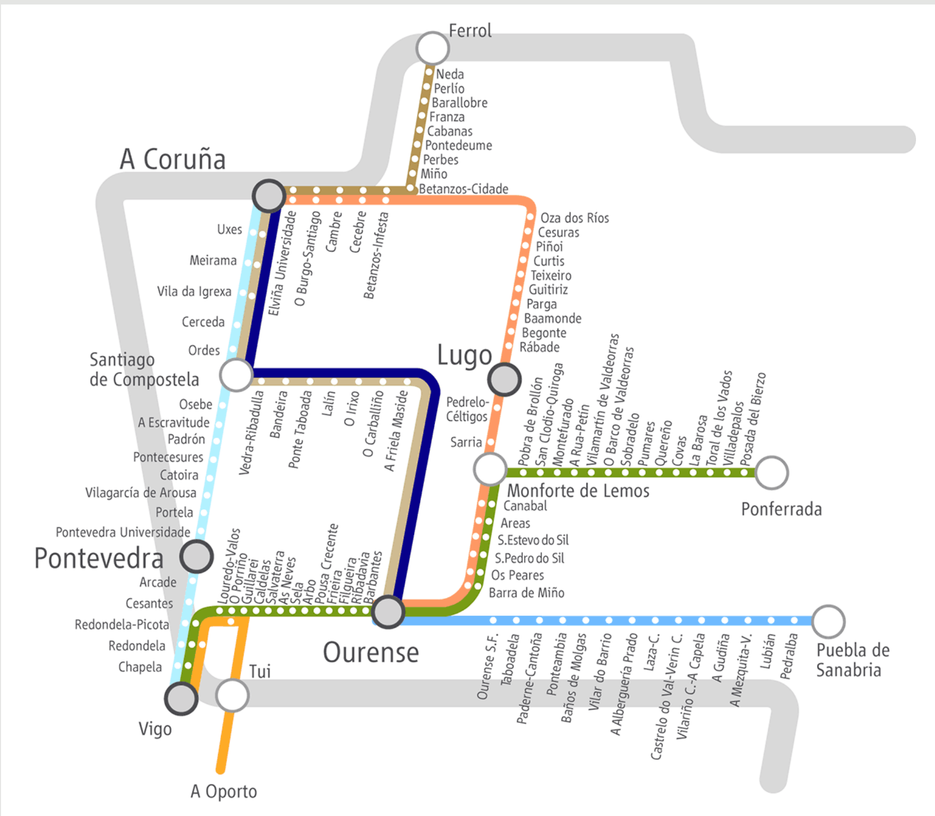


Figure 10.1 High speed Galician commuter and freight rail network

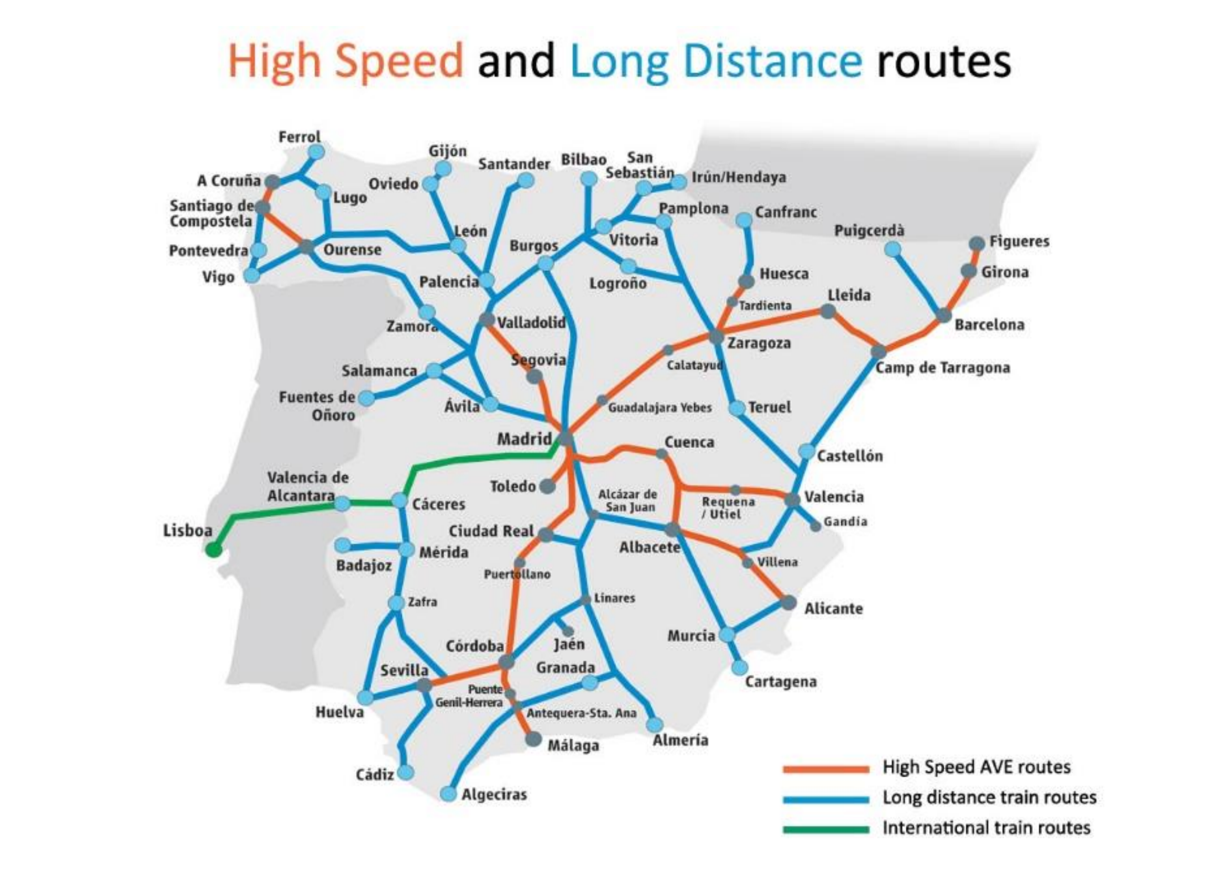


Figure 10.2 Local sidings & loading/unloading

10.3.1 Local Sidings and Loading/Unloading

There are numerous stations and sidings that have possibilities for loading and unloading of heavy cargo and possibly the dispatch of bulk aggregates.

Access to these facilities requires negotiation with the owner/operator of these depots and will be engaged when the requirement arises.

10.4 Ports and Wharfs

A Coruña has excellent port facilities including a newly upgraded container port named "Exterior Port of A Coruña," with draft up to 25m allowing no limit for shipping tonnage. The new port has more than 6km wharf length, handling with bonded warehouse up to 10,000m2, heavy lift cranage (>130 tonnes) and loading bays with direct motorway access from the port for oversize/over width loads as can be experienced with mining and processing equipment.

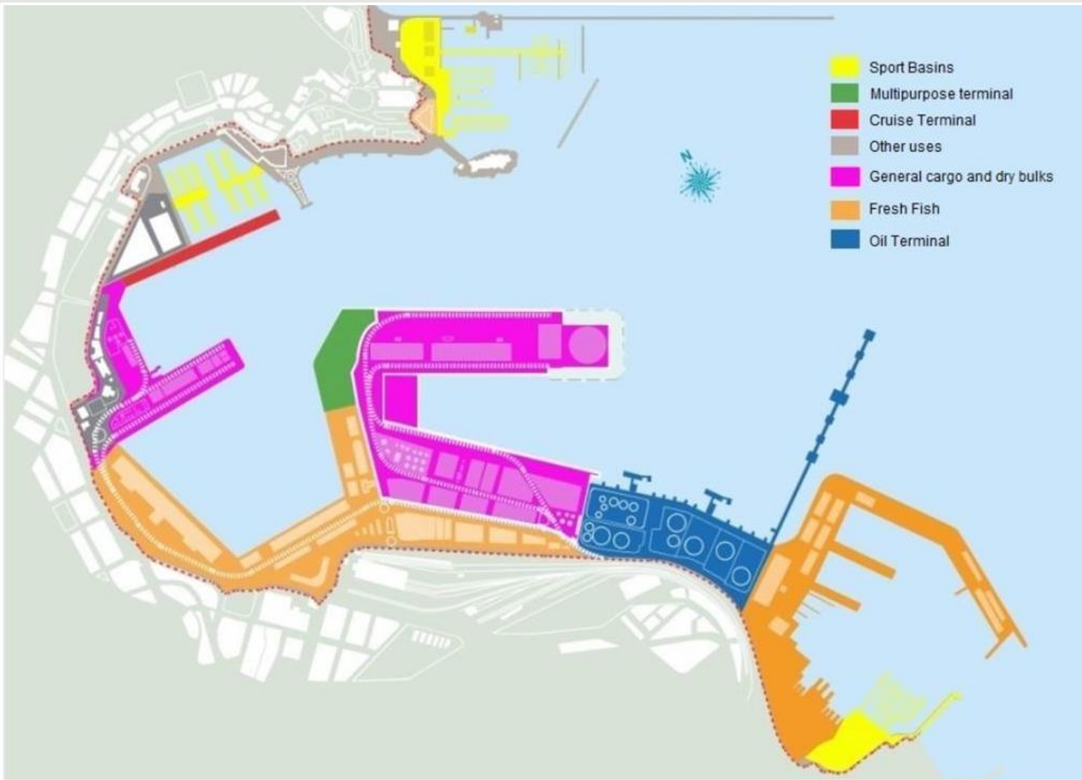


Figure 10.3 Port facilities at A Coruna

10.5 Costs for Haulage

General freight for aggregate and container haulage costs 12-15 Euro cents per km/tonne

Heavy and oversize freight depending upon distance is 18-25 Euro cents per km/tonne

Local companies are well equipped with trucks and trailers suitable for freight of heavy and wide loads to supply contract services for Santa Comba during construction and commissioning.

10.6 Fuel Supply Logistics

Bulk fuel supplies are plentiful with up to 30,000 litre deliveries from local suppliers and there is a bulk Repsol refinery located in A Coruña.

10.7 Power Supply

The region is well supplied with power networks and a number of large and medium size power generation facilities. The As Ponte 1.4GW coal fired power station in A Coruña is one the largest baseline power providers in the region with both gas and wind power suppliers integrated into the power supply market.

The power costs in the region are remarkably well priced at € .045/kWhr for a demand of up to 4 MW delivered to the Santa Comba site.

There are numerous wind turbines located close to the mine site and the partial supply of green electricity for processing and underground mining could be viable.

11.0 ENVIRONMENT AND HERITAGE

11.1 General Environment and Legacy

The project is located in Santa Comba municipality, in a rural area that has been subject to historical mining. The topography is smooth, with low areas divided in small land plots dedicated to agriculture and farming and highlands left to scrubby bush, a type of vegetation linked to historical man-made fires. Small streams run through the area, as it is at the head of two main water basins: the Xallas river to the south and the Grande river to the north. Rainfall at the Fontecada-Santa Comba weather station, 14 km south of the project, averages 2,156 mm/year (2004-2019), being the annual rainfall very variable (1,311 mm in 2004 vs 3,130 mm in 2014)

The Santa Comba municipality covers an area of 203.1 km2 and has a population of 9,426 inhabitants (2019). It is scattered with small villages, being the nearer San Salvador, about 1.3 km southeast of the project-adjacent ‘Costa do Cuzo’ quarry tails ponds. The capital of the municipality, Santa Comba, is 6.5 km to the south.

There is a legacy of portals from the tungsten mining, most of them on the east side of the Couso mountain, whetre the quarry is also located. Carballeira portal is, however, on the west side, draining to Rego de Carballeira, which also feeds the Xallas river basin.

11.2 Landforms, Soils and Landscape

The study area is located in the Council of Santa Comba (A Coruña), in what is called the pre-coastal strip of the Galician Atlantic coast, extended between the central-western range and the Atlantic range. It is characterized by having a morphology with a predominance of flat areas and gentle undulations. Elevations oscillate in the range of 300-500 m.

The soils are relatively shallow and sterile, on a fractured bedrock. It is an Inceptisol soil whose porosity is about 0.4 with a thickness of about 20 cm, and a vertical conductivity of 1.4 x 10-5 m/s. The shallow layers are generally silty sands, the deeper ones are clayey-sandy. The typical soil profile is very little evolved in the high lands but deeper in the low areas.

Figure 11.1 Landscape in the project area
Source - Google Earth

Regarding the landscape two main units are identified:

- Agroforestal unit, located in the valleys and flat areas. The predominant use is agricultural, arable land and meadows that sit on a network of irregular plots. Agricultural plots are combined with scrub and / or mostly wooded. The predominant colours are those of the range of the greens and yellows, with green bluish patterns typical of the eucalyptus foliage and the greens and browns of the pine forests mixed with deciduous woods and scrubby bush.
- Scrub unit: on the steepest areas (monte do Couso), with less soil and linked to recurring man-made fires. It is characterized by the change of colour according to the time of year. So, on a dark brownish green tapestry the landscape is illuminated with the yellows of gorse and brooms flourishing and the pinks, purples, or lilacs of the heaths, according to the zones and the season.

11.3 Climate

The climate in A Coruña is warm and temperate. The winter months are much rainier than the summer months. This location is included within the Köppen and Geiger classification as oceanic Mediterranean (Csb). Its main characteristics are:

1. Climate without any arid period.
2. Non-high mountain climate (altitude less than 1500 meters).
3. Short cold season (average of the coldest month above 8ºC).

The wet season with the highest rainfall is between the months of October to May, with June to September being the dry season.

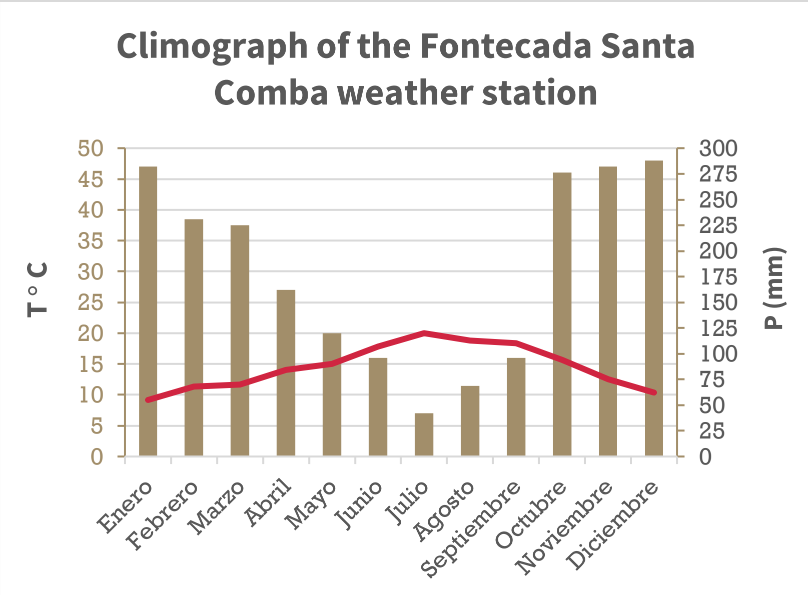
The following tables represent the mean monthly precipitation and mean monthly temperature in the Fontecada- Santa Comba weather station, 14 km south of the project and at a similar elevation.

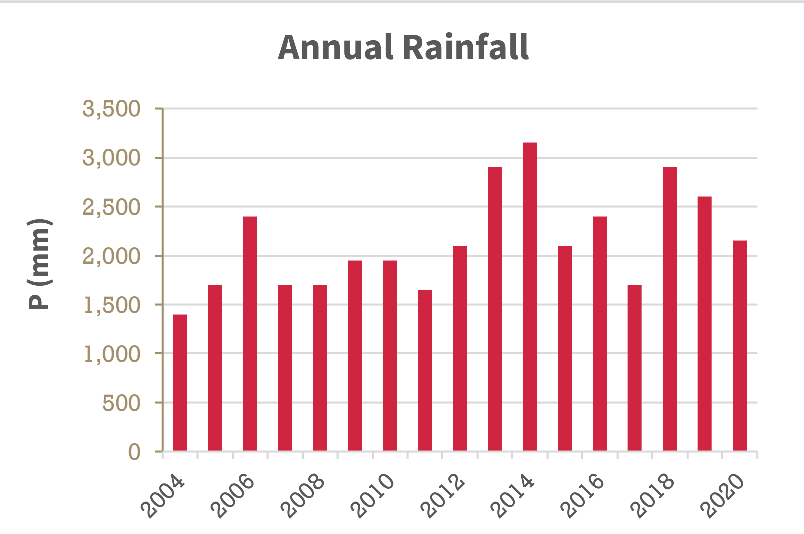
Years 2004-2019	Temperature ºC	Rainfall (mm)	Max daily rainfall (mm)
January	9,1	282	117
February	11,0	230	114
March	11,5	226	83
April	14,2	160	107
May	15,0	117	62
June	17,9	93	80
July	19,8	42	39
August	18,8	67	77
September	18,4	94	113
October	15,7	276	136
November	12,2	281	270
December	10,7	288	138
ANNUAL	**14.5**	**2156**	

Table 11.1 Monthly averages temperatures and rainfall (2004 – 2019) at Fontecada-Santa Comba weather station

Rainfall is high and so are maximum daily rainfalls. The variability of annual rainfall is very high, ranging from 1311 mm (2004) to 3130 mm (2014) for the period 2004-2019.

Annual Rainfall 2204 - 2019 at Fontecada Santa Comba weather station





Year	Rainfall
2004	1311
2005	1717
2006	2427
2007	1743
2008	1749
2009	1932
2010	1916
2011	1652
2012	2145
2013	2944
2014	3130
2015	2149
2016	2451
2017	1680
2018	2967
2019	2582
Average	2156

Table 11.2 Climate graph of the Fontecada Santa Comba weather station

11.4 Water Protection Areas

According to the Galicia-Costa Hydrological Planning, the upper part of Xallas river and the last stretch of Grande river are areas that require special protection for the conservation of some species Margaritifera margaritifera, Galemys pyrenaicus, Isoetes fluitans, Emberiza schoeniclus L.subsp. lusitanica Steinbacher, Emys orbicularis L. and Charadrius alexandrinus *L.*

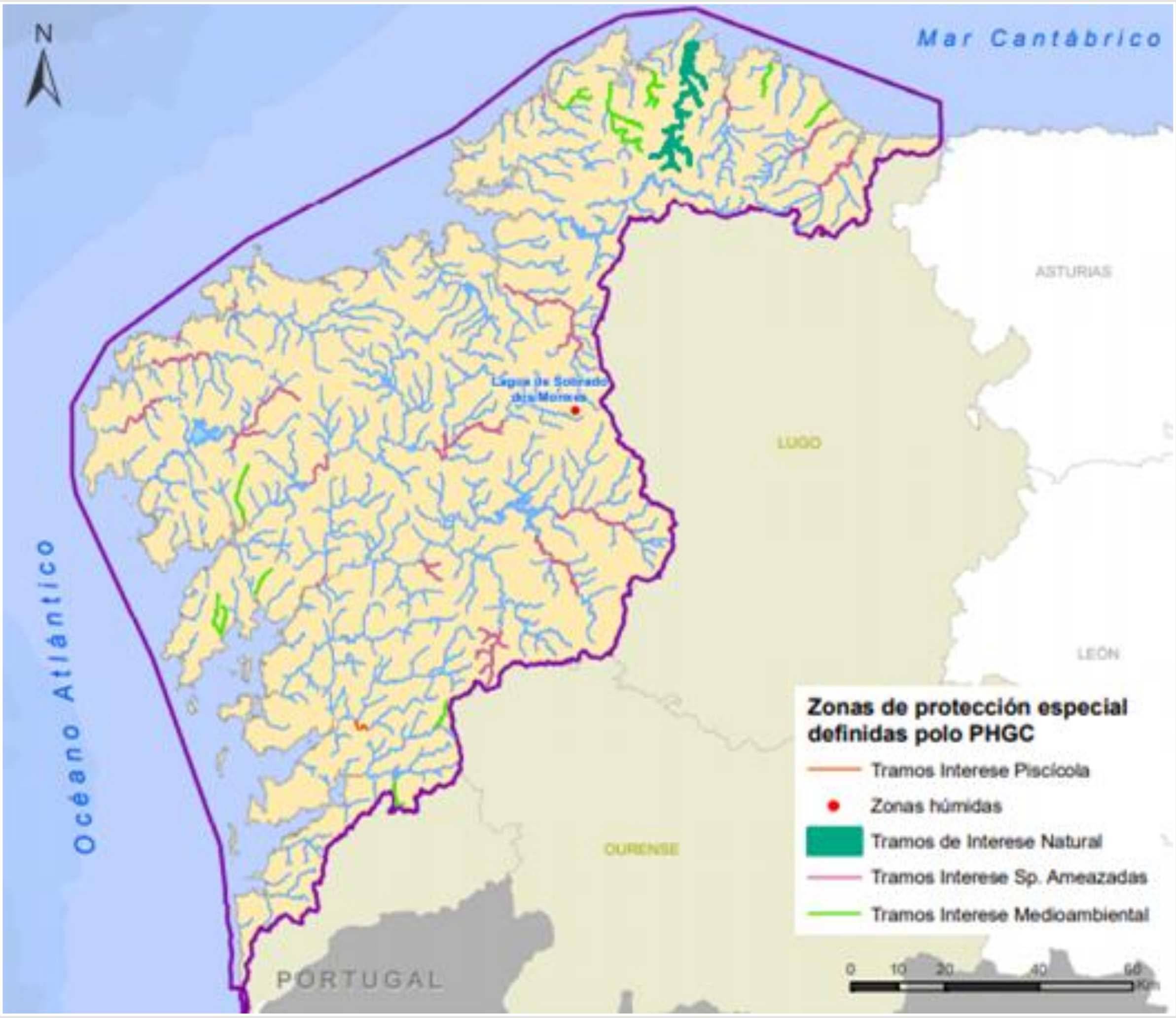


Figure 11.2 Areas of special protection in the hydrological planning of Galicia-Costa

Stream stretches of special protection in Grande and Xallas rivers		
River	UTM-29 X_Y start	UTM-29 X_Y end
Rio Grande	503065, 4776902	491120, 4776673
Rio Xallas	522114, 4768195	517772, 4770565
Rio Xallas	517772, 4770565	508778, 4760706

Table 11.3 Areas of special protection points

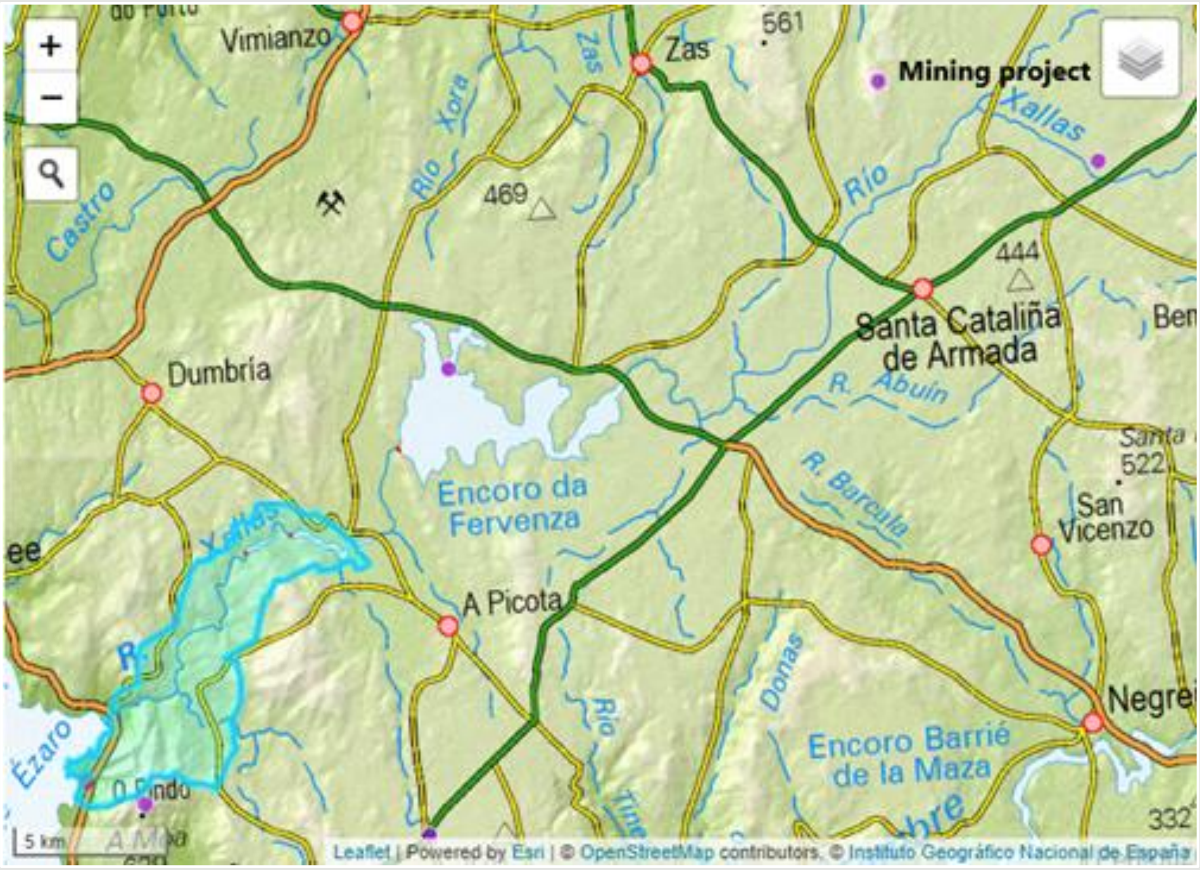


Figure 11.3 Local map showing protected location with respect to the mine area

Location of the Site of Community Interest 'Curso bajo, cascadas y desembocadura del Xallas. Salto de Fervenza'

11.5 Hydrochemistry

The streams in the area are small, with flows in the summer in the order of the 1 to 10 l/s (the upper stretch of Rego da Banda Ancha carries no water in summer), and no buffering capacity due to the granite composition in the soil and ground. This makes them very sensitive to any mining-influenced water (MIW) discharge. Also, the project is located on the head of some basins. So, MIW may influence the hydrochemistry of the streams for a long distance.

The webpage of Santa Comba municipality summarises the results of a campaign of water quality. The conclusions are that the streams and springs in the municipality do not comply with the pH for human consumption (recommended 6.5-9.5) and that they lack buffering capacity (neither surface nor groundwater, the latter being more acid).

An environmental monitoring plan is currently followed with monthly sampling of some streams around the area of the project (sampling points P1 to P4, below). Only rego da Banda Ancha and rego de Carballeira receive waters from the current quarrying-mining. The following parameters are being analysed: pH, tª, suspended solids, oil and greases and OCD (oxygen chemical demand). In February 2020, a more complete analyses were carried out with the inclusion of some metals.

UTM ETRS89 29T			
P1	515244	4769956	Rego da Braña Ancha (Pontela de Portaporcos)
P2	515793	4772743	Rego de Esternande
P3	513770	4772365	Rego da Ponte da Balsa
P4	515244	4769956	Rego da Braña Ancha (Pontela de Portaporcos)

Table 11.4 Sampling points in some streams in the limits of the project, February 2020

		P1	P2	P3	P4
Parámetros	**Ud**	**Banda Ancha**	**Esternande**	**Ponte da Balsa**	**Carballeira**
pH in lab	-	6.3	5.1	6.1	6.6
Aluminium	µg/l	28	210	22	<20
Copper	ug/l	<30	<30	80	<30
Iron	µg/l	174	26	50	176
Manganese	µg/l	140	14	32	26
Nickel	ug/l	<50	<50	<50	<50
Zinc	ug/l	30	<10	<10	<10
Oil and greases	mg/l	<2	<2	<2	<2
Suspended solids	mg/l	<2	<2	2,8	2,0

Table 11.5 Analytical results of some streams in the limits of the project, February 2020

GTT is updating the environmental monitoring plan and will include measurements in situ of pH, electrical conductivity (EC) and redox potential. Also, GTT is duplicating the sampling points so that upstream and downstream receiving mining-influenced waters (MIW) are taking into account. Beside this, water monitoring plan will be completed with flow measurements, cations, and anions (especially sulphates) and a full array of metal analysis to establish the complete baseline for the environmental impact assessment of phase 2.

The following table shows the results obtained for the Santa María and Carballeira adits in specific surveys carried out in June and July 2020.

		P5	P6	P6	P6
Parámetros	**Unidades**	**Jun-20**	**Jul-20**	**Jun-20**	**Jul-20**
pH	-	5.9	6.1	4.2	4.4
Chlorides	mg/l	8.1	8.1	8.1	8.1
Fluorides	mg/l	<0.05	<0.05	<0.05	<0.05
Phosphorus (total)	mg/l	<0.10	<0.20	0.17	<0.20
Nitrates	mg/l	<0.22	<0.22	6.64	5.97
Nitrites	mg/l	n.a.	n.a.	n.a.	n.a.
Sulphides	mg/l	<0.05	<0.05	<0.05	<0.05
Sulphites	mg/l	<0.05	<0.05	<0.05	<0.05
Sulphates	mg/l	11.4	12.1	80.5	86.2
Ammonium	mg NH_4/l	2.69	0.63	4.00	0.71
Aluminium	mg/l	0.04	0.21	5.2	5.3
Arsenic	mg/l	0.007	<0.005	<0.005	<0.005
Barium	mg/l	<0.050	<0.050	<0.050	<0.050
Boron	mg/l	<0.200	<0.200	<0.200	<0.200
Cadmium	mg/l	<0.020	<0.020	<0.020	<0.020
Copper	mg/l	<0.030	<0.030	0.760	0.710
Chrome III	mg/l	<0.050	<0.050	<0.050	<0.050
Chrome VI	mg/l	<0.050	<0.050	<0.050	<0.050
Iron	mg/l	0.026	<0.020	1.63	2.23
Manganese	mg/l	0.018	<0.010	0.85	1.68
Mercury	mg/l	<0.020	<0.020	<0.020	<0.020
Nickel	mg/l	<0.100	<0.100	<0.100	<0.100
Lead	mg/l	<0.050	<0.050	<0.050	<0.050
Selenium	mg/l	<0.050	<0.050	<0.050	<0.050
Tin	mg/l	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	<0.030	<0.030	0.130	1.040
Oil and Grease	mg/l	<2	<2	<2	<2
Suspended Solids	mg/l	1.8	<2	15.8	42.0
Cyanide	mg/l	<0.050	<0.050	<0.050	<0.050

Table 11.6 Recent water sampling analytic results
Santa María and Carballeira adits June / July 2020

At present, apparently only Banda Ancha and Carballeira streams are receiving surface MIW from the project area (rego da Braña Ancha receives MIW from the mine and quarry sites).

The probable presence of iron in the waters may exert a control over arsenic solubility as arsenic is a metal that adsorbs easily (or coprecipitates) on HFO precipitates. Iron may also be present in the silicates at the mine and may be released (chlorite, biotite, tourmaline). A hydrogeochemical study for the environmental impact assessment for Phase 2 will shed light on the probable attenuation by adsorption of As and other metals.

11.6 Geochemistry (AMD)

The presence of sulphides in the orebody requires an assessment of the possibility of acid mine drainage (AMD) and metal leaching (ML) and a quantification of the minerals present. The feldspars present have low kinetics and provide low buffering capacity. Biotite and chlorite have intermediate kinetics of weathering, but their buffering effectiveness will depend of their relative abundances and the hydrological paths within the deposit or the waste facilities.

A total of 183 samples were submitted for ABA testing according to European procedure EN15875. Of them, 100 samples were also subject to NAG testing and 73 samples to whole rock analysis (4 acid digestion + ICP). The number of samples for ABA testing was selected based in the hypothetical curve to determine the number of samples required to characterise geological units (Steffen, Robertson, and Kirsten, 1989) and the Prediction Manual for Drainage chemistry from Sulphidic Geologic Materials (MEND, 2009)

The samples were selected by the project geologists so that they cover spatially the deposit and the different geological alterations. All samples were taken from drill core except samples from the overburden and tailings. The tailings samples were taken from the quarry tails ponds.

Total sulphur and Sulphide sulphur correlate quite well. More than 90% of the sulphur is present as sulphide, what is in accordance with the mineralogy identified by the geologists.

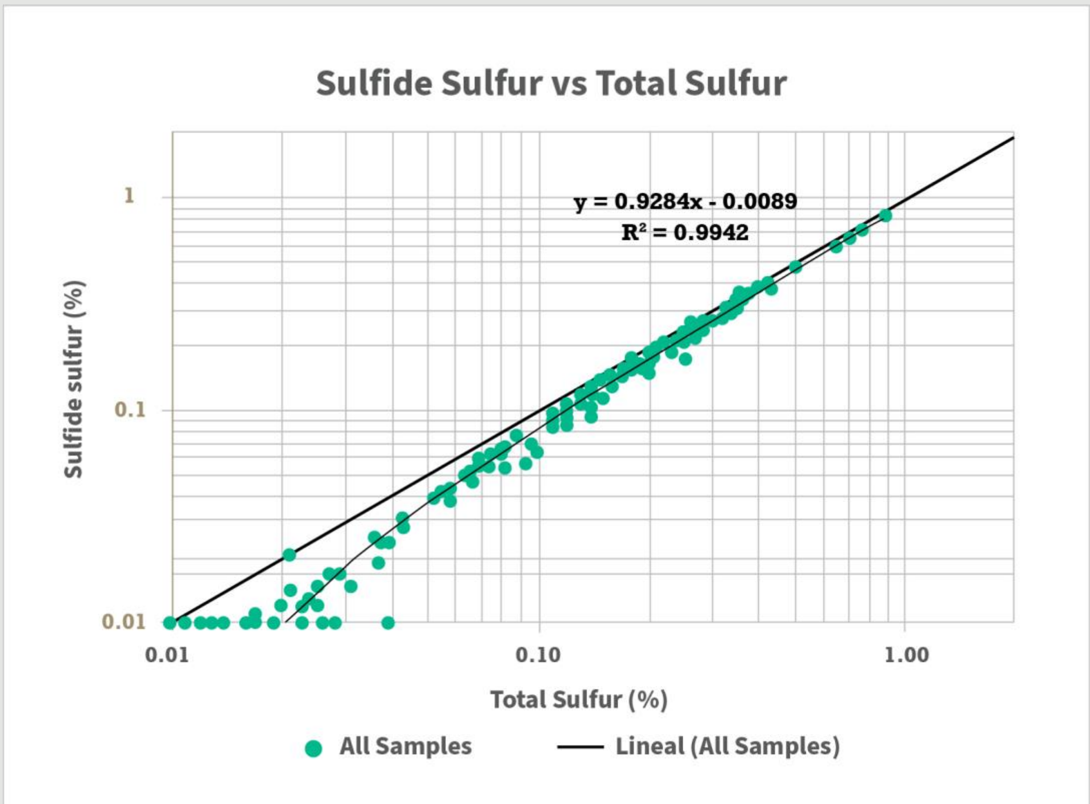


Figure 11.4 Sulphide sulphur versus total sulphur

Net Potential Ratio (NPR) correlates well with the sulphide sulphur. So, the sulphide sulphur (and total sulphur) could be used in the block model to define which blocks have a potential for acid production or not. Arsenic, iron, or tungsten do not correlate well.

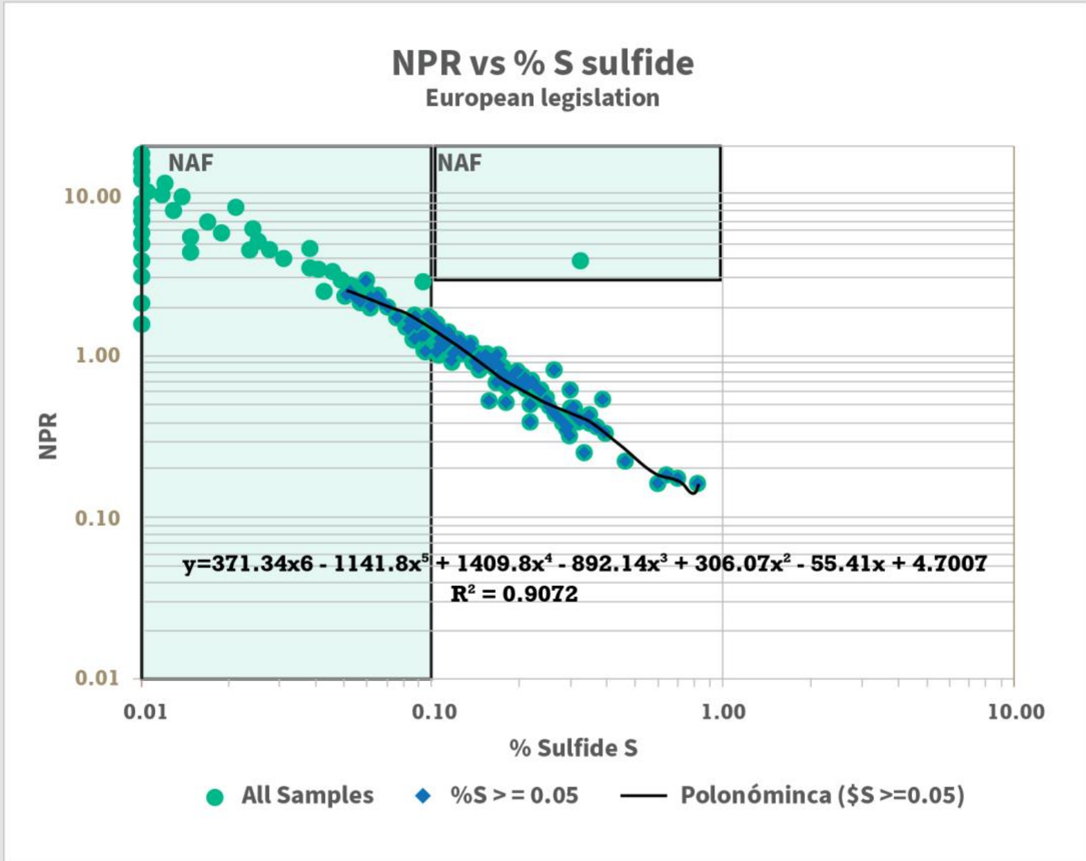


Figure 11.5 Net potential ratio versus sulphide S.
Samples are classified according to European and Spanish legislation.

According to EU classification, 53% of all samples are NAF. According to Australian classification (based in Amira 2002) 58% of samples are NAF, 30% uncertain and 12% PAF (Potentially Acid Forming). The latter have been classified as low-PAF (8%) and high-PAF (4%) based on the NAG acidity at pH 4.5.

The best materials are overburden, kaolinitic and episyenitic. Sericitic, muscovitic and tourmalinic alterations are less adequate, being the sericitic the one with more PAF samples. The exogranite gave lower NAG pHs than the endogranite.

The results are summarized in the following table.

Type	Lithology	Major alteration	ABA Sulfide S				Sulfide NNP	Sulphide NPR		NAG (Averages)				a) NNP>0 (NPR>1 NAGpH≥4.5;			
			n	Min	Average	Max	Average	Min	Max	n	NAG pH	NAG 4.5	NAG 7.0	NAF	Uncertain	PAF-low	PAF-high
Low grade	Endogranite	Kaolinitc	2	0.11	0.16	0.21	-2.6	0	1.36	1	4.70	0	7.58	0%	100%	0%	0%
		Muscovitic	4	0.04	0.16	0.35	-1.2	0.38	3.38	2	5.32	0	5.56	50%	50%	0%	0%
		Sericitic	19	0.01	0.15	0.32	-0.5	0.4	12.09	11	5.76	0.34	4.22	55%	27%	18%	0%
		Turmalinic	11	0.01	0.15	0.33	-0.9	0.26	7.91	7	5.51	0	4.99	57%	43%	0%	0%
		SUBTOTAL	**36**	**0.01**	**0.15**	**0.35**	**-0.82**	**0.00**	**12.09**	**21**	**5.58**	**0.18**	**4.76**	52%	38%	10%	0%
Waste	Endogranite	Episyenite	2	0.13	0.14	0.15	0.1	1.01	1.03	1	6.57	0	0.78	100%	0%	0%	0%
		Kaolinitic	4	0.01	0.04	0.09	2.9	1.35	17.38	2	6.35	0	2.71	100%	0%	0%	0%
		Muscovitic	1	0.47	0.47	0.47	-11.3	0.23	0.23	0	-	-	-	-	-	-	-
		None	1	0.11	0.11	0.11	0	1.01	1.01	1	6.91	0	0.37	100%	0%	0%	0%
		Sericitic	25	0.01	0.18	0.06	-1.3	0.16	9.96	13	5.58	0.63	4.96	38%	46%	15%	0%
		Turmalinic	23	0.01	0.14	0.82	-0.3	0.16	14.27	12	5.71	0.71	5.41	67%	25%	0%	8%
	Episyenite	Episyenite	1	0.01	0.01	0.01	3.5	10.47	10.47	1	5.98	0	3.71	100%	0%	0%	0%
	Biotitic Exog	Sericitic	4	0.17	0.24	0.04	-2.8	0.33	1.01	2	5.07	0.39	6.22	0%	50%	50%	0%
	Endogranite	Chloritic	5	0.01	0.06	0.19	2.8	0.78	15.17	3	4.67	0.26	10.63	67%	33%	0%	0%
		Kaolinitic	8	0.01	0.01	0.03	1.3	0	14.43	4	6.18	0	3.45	75%	25%	0%	0%
		Muscovitic	6	0.01	0.13	0.38	0.5	0.35	13.95	1	4.01	2.90	15.10	0%	100%	0%	0%
		Sericitic	50	0.01	0.11	0.65	1.1	0	43.84	29	5.04	1.13	8.95	52%	28%	10%	10%
		Turmalinic	3	0.01	0.04	0.06	2	2.36	4.74	1	4.64	0	13.00	100%	0%	0%	0%
		SUBTOTAL	**133**	**0.01**	**0.12**	**0.82**	**0.31**	**0.00**	**43.84**	**70**	**5.38**	**0.77**	**6.94**	56%	30%	9%	6%
Overburden		Kaolinitic	2	0.08	0.09	0.09	3.6	1.67	2.85	2	6.90	0	0.48	100%	0%	0%	0%
		None	10	0.01	0.01	0.01	-0.30	0	8.77	5	5.53	0	6.76	80%	20%	0%	0%
		SUBTOTAL	**12**	**0.01**	**0.02**	**0.09**	**0.35**	**0.00**	**8.77**	**7**	**5.92**	**0.00**	**4.97**	86%	14%	0%	0%
Trailings	Mix	Mix	2	0.01	0.01	0.01	4.5	15.23	15.87	2	6.82	0	1.34	100%	0%	0%	0%

Table 11.7 Summary of ABA and NAG results and classification of risk

11.6.1 AMD 116/ ML Mitigation

For AMD/ML prevention see section on Mine Waste Management.

For AMD/ML treatment see chapter 5.0 Hydrology

11.7 Biodiversity

11.7.1 Habitats and Protected areas

No protected areas (water resources, natural landscapes, bird protection areas, etc) have been identified in the project or nearby areas). Birds, flora, and habitats are being surveyed monthly following the Environmental Monitoring Plan.

Habitat of Community interest 4030 -European dry heaths- is present in the area of expansion (Phase 2). However, it is widespread in the North of the Iberian Peninsula and linked to recurring man-made fires. Its natural value in the area is limited and it is not a habitat that the authorities require to compensate for or reproduce in the restoration plans of the mining operations.

11.7.2 Vegetation and Flora

The scrubby bush is, in general, dominant in practically the entire project area, appearing as the only vegetation layer in the high lands, and as accessory vegetation in areas of lower elevation dominated by tree plantations. It is composed basically of gorse dominated by the species Ulex europaeus and Ulex minor with different proportions of heather among which stand out as predominant the Erica cinerea, Erica tetralix and Erica arborea. There are areas where Daboecia cantabrica is also present, as well as the broom Cytisus scoparius, the bramble Rubus ulmifolius or the fern Pteridium aquilinum.

Forests are basically reduced to the presence of masses from the repopulation of eucalyptus (Eucalyptus globulus) and to a lesser extent masses from pine (Pinus radiata and Pinus pinaster). Isolated plants of autochthonous species also appear, as is the case of oaks (Quercus robur), hazel tree (Corylus avellana), alder buckthorn (Frangula alnus), butcher's broom (Ruscus aculeatus), etc.

At the streams there are riparian species such as birch trees (Betula celtiberica), willows (Salix atrocinerea) and oaks (Quercus robur).

Herbaceous vegetation develops in small areas of artificial grassland in areas where there was previously arboreal or shrub vegetation, in the vicinity of villages. GTT’s environmental monitoring program sets monthly prospects to identify possible protected flora in the area. None has been found at present.

11.7.3 Fauna

In the project area, three types of fauna communities can be found associated with the different types of existing vegetation cover in the area: the present in wooded masses, the present in scrub areas and the one linked to rocky outcrops. Given the absence of autochthonous corridors and riparian forests, the different species that can be found is limited.

GTT’s environmental monitoring program sets monthly prospects to identify bird species in the area. No species with an important category of protection have been found, except the Sylvia undata (Long-tailed Warbler), a species included in Annex IV of Law 42/2007, of December 13, on Natural Heritage and Biodiversity, according to which it will be subject to measures of special conservation in terms of their habitat, in order to ensure their survival and reproduction in its area of distribution. Its main habitat is open lands with scrubby bush, widespread in Galicia.

According to local sources, there are no bats in the old adits. Amphibians can be found at a small wetland at the quarry water discharge and at the tail's ponds. The wetland has presumably formed by deposition of sediments from the run-off. There are lagoons to the north of the project, on kaolin old pits, where the amphibians could be relocated if necessary.

The Environmental Impact Assessment for Phase 2 will provide protective, corrective, and compensatory measures for the conservation of flora or fauna, as necessary. The main direct impact on the fauna is the temporary elimination of surface habitats. The removal of vegetation would displace the associated fauna and it would be placed in nearby areas with similar characteristics. Prior to the removal of any vegetation, the area will be examined for any nests or areas of animal concentration that would be eliminated. If any protected species are found, a relocation plan will be implemented that will place the individuals in similar habitats with a high hosting capacity.

11.8 Atmospheric Emissions

The air dispersion conditions in the area and the distance to any industrial or urban area, ensuring that the air quality is good in the area under study.

The primary impact will be caused by dust (blasting, earth works, ore and waste loading and depositing, traffic on mine trails) and vehicle emissions. The Project has developed a series of mitigation measures to reduce dust emissions such as compacting; maintenance and watering of trails and roads; limiting speed limits for machinery; wheel cleaning; consistent preventive maintenance of machinery and systems; installing dust collection devices on some equipment; optimized blasting designs, etc.

11.9 Noise and Vibration

The noise levels in the area under study are those of a rural environment with reduced activity and small populations.

The company carried out various measurements throughout 2020. Specifically, 3 measurements of the sound pressure level with a monthly periodicity at four points: 3 measurement points in the villages closest to the study area, and 1 measurement point in the area of implantation of the exploitation, in the vicinity of the workhouse and premises of the mine. The measurement points on which acoustic measurements are made are as follows:

Puntos De Control	X-UTM	Y-UTM
P1 Varilongo	513.710	4.771.580
P2 Grixoa de Esternande	515.796	4.772.584
P3 Casa das Petosas	515.629	4.770.181
P4 Casas da Mina	514.775	4.771.491

Table 11.8 Local sound and vibration control and monitoring locations

Evaluating the results obtained on the sound level according to Royal Decree 1367/2007, of October 19, which develops Law 37/2003, of November 17, on Noise, it is concluded that the measurements are below the permitted limits in both residential and industrial use areas. Although, at point P1 (Varilongo), where the highest values are recorded, the regulated limits were exceeded once. This is due to the agricultural activity that takes place on a near farm.

The main sources of noise in the project will be blasting, earth works, traffic and crushing grinding at the treatment plant. The main source of vibration will be blasting. The Project will apply a series of mitigation measures to reduce noise and vibration such as optimized blasting designs; limiting speed limits for machinery; consistent preventive maintenance of machinery and systems; installing covers or walls around crushers and mills, etc.

11.10 Cultural Heritage

There are no items of the cultural heritage listed in the Heritage Register. However, surface expansion for project phase 2 will require a detailed investigation of the site to identify any item and quantify the impact and the protective or corrective measures to be implemented.

Any activities affecting items listed in the Heritage Register, or discovered on site, require detailed documentation and prior authorization from the Department of Culture and Heritage

The 'Study of impacts to the Cultural Heritage of the expansion of the quarry Costa do Cuzo' was an annex written by archaeologists in the Project of expansion of the adjacent quarry, dated December 2007. The Study considered that there were no elements (in the quarry and close surroundings) worthy of being incorporated into the cultural heritage catalogues.

11.11 Social Acceptability

In general, direct, and indirect jobs have proved to be a factor with not enough weight for the social acceptability of a mining project in Galicia or Spain. Pro-project and anti-project positions may work at different spatial levels (local pro, but regional anti). It is difficult to know whether the long-term crisis caused by the side effects of the coronavirus pandemic might change past tendencies.

The area is rural and relatively sparsely populated. The main activities are those linked to rural areas (agriculture, farming, quarrying). However, as mining in the project area took place over some decades during the 20th century, there are people still alive that worked in the Varilongo underground metal mines in the 80's, and whose late fathers worked in the 40's. This may be taken as a favourable factor in the social environment. However, many people in the area at present may be neutral (not position taken yet) as they have no personal or ascendant ties to the mines. Each change of phase (exploration – permitting - construction operation - closure) is a high-risk situation. A stakeholder engagement strategy / process of social engagement is recommended and is being prepared with a specialist consulting group.

11.12 Infrastructure and Traffic

The Project will cause increased traffic in the area, which will be particularly heavy during the preoperational and operational phases. The main impact will be noise. This heavy traffic will also increase the dust emissions and wear on the road surfaces. GTT will employ protective measures to prevent dust and materials from being deposited on the road surfaces by washing wheels and underneath the vehicles and covering all loads on trucks. Road surface deterioration will be monitored, and repairs made accordingly.

As the affected population, mainly disturbed by the traffic and its noise, will be the close communities, it will be a policy to hire local residents as drivers.

11.13 Camino de Santiago

The Camino of Santiago pilgrimage/tourist route does not run through the municipalities of Santa Comba or Coristanco.

11.14 Water Users

One well in the current mine area supplies water to GTT site offices. Another well located in the quarry supplies water to 16 houses of San Salvador village. A detailed study will be conducted to get an inventory of local water consumption in order to quantify any impact by the Project. The appropriate mitigation measures will be employed so that local potable water consumers are not affected by the Project.

11.15 Solids and Liquids Wastes

There are several residues management companies in the region that collect non-mining wastes: packaging containing residues of (or contaminated by) hazardous substances; used oil and grease; contaminated absorbents or wiping cloths, etc. GTT has separate, identified containers for the collection of those residues before dispatch. The sewage sludge will be removed by a specialised company according to necessities.

11.16 Mine Waste Management

11.16.1 Mine Waste Disposal Facilities

Potential ex-pit waste rock storage facility (WRSF) and fines management facilities (FMF) sites are located to the east of the access to the mine site, at the beginning of the Rego da Banda Ancha, and to the northwest, at the beginning of the Rego da Ponte da Balsa. Also, a third area can be considered on the 'Costa do Cuzo' quarry tails ponds and its western surroundings.

The Regulation of Public Hydraulic Domain (national legislation) states as a general criterion that coverings or alternative routes of streams are not authorized, but in justified cases they are. And more if they are very small basins, as it is the case for both streams. Authorization will require a project with a hydrological-hydraulic study to ensure that flows of 500-year floods can be drained (Galicia Costa may allow 100 years if it is justified that the effects on a 500-year flood would not be harmful). A geomorphological design of the final topography will include those considerations.

The locations will need power lines to be diverted, so that an area of about 30-35 hectares (Area 1) and 9 ha (Area 3) can be made available.

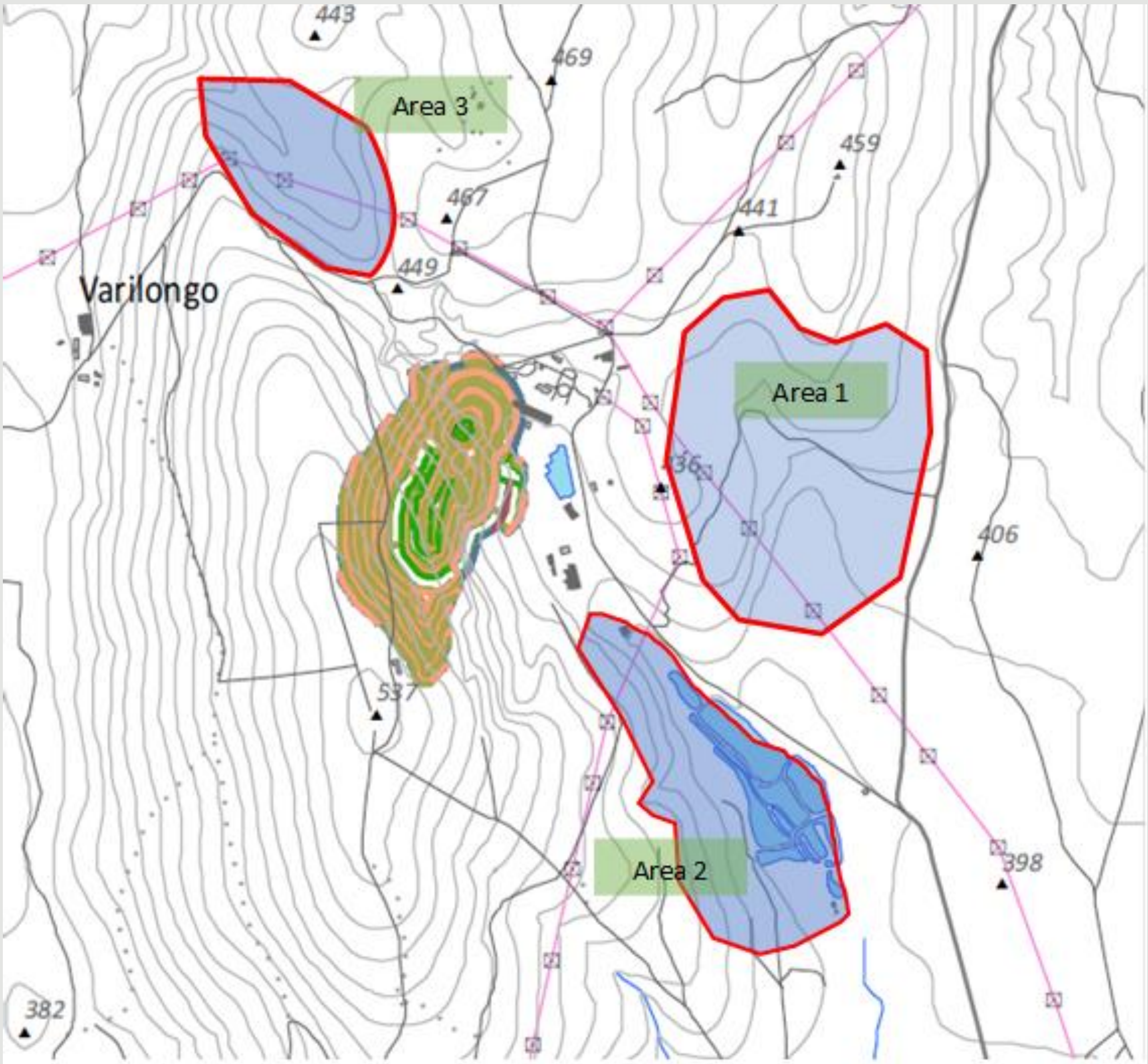


Figure 11.6 Sites for location of the waste rocks storage facilities

Some strategies will be followed to minimize impacts:

- Three types of wastes may be considered: NAF (non-acid forming), low-risk PAF (potentially acid forming and/or metal leaching) and high-risk PAF. These types can be handled separately. According to the geochemical assays (ABA) the sulphur can be used as a direct predictor of the NPR (neutralization potential ratio). This allows the use of S to set the risk categories.
- WRSFs for PAF (and NAF if metal leaching) will be constructed from the bottom levels upward by paddock dumping and compaction in 2-m-height lifts. This will limit air and water flows through. The limited percolation may be accommodated by the environment (environmental impact assessment) or would make it possible to treat the small seepage on a wetland system. The risk of impacting the streams is reduced to a minimum in the short and long terms. It will also optimise the footprint and depending on the outcomes of the hydro chemical modelling, no cover may be required.
- Two layers of finer-texture material can be incorporated in the WRSF. This will reduce the gas-flux inside the WRSF and will act as capillary barriers preventing percolation downwards. For this purpose, overburden can be used.
- Geomorphological restoration, which will design a final smooth topography with swales and ridges and natural-like channels that can accommodate storm events for long return periods. In addition, maintenance costs in post closure (both a legacy for the company or the society) are minimized and has considerable public relations value for the mine.

11.16.2 Plant Tailings management facility

During Phase 1 tailings will be tested for compatibility with co-mingling of waste rock and deposited along with waste rock on the proposed waste dumps. There is an option for storing wet tailings on the quarry tailings ponds area, but this requires work on walls and storm capacity and this option will be reviewed. Tailings agglomerates can be disposed of in a dry stack and transported by dump truck to a storage facility.

If required, a tailings management facility (dam) can be built in pre-approved area #2 (Figure 11.6). The initial surface will be lined with geomembrane. A series of subsurface drains beneath the tailing's facility will daylight downgradient. Seepage from the exit will be directed to a wetland system where water mostly infiltrates the soil (depending on the hydro chemical modelling and impact assessment). As an alternative, it will be sent to the process water circuit.

11.17 Restoration

The restoration of the mine sites is regulated by the Royal Decree 975/2009, of June 12, on waste management from extractive industries and the protection and rehabilitation of the area affected by mining activities.

In accordance with current applicable legislation, GTT will submit a restoration plan as part of the approval process for Phase 2. After finishing the environmental impact assessment process, the restoration plan may have to be amended with the possible requirements and conditions set by the environmental impact statement, and submitted again to the regional mining authorities, who will grant the approval along with the final bonding amounts.

During operations, GTT will also submit annual environmental and rehabilitation plans as part of the annual compulsory mine work plans (Plan de Labores). These plans outline the intended environmental monitoring program, completed rehabilitation, on-going rehabilitation of non-operational areas, and details of areas to be disturbed during the forthcoming year. The plans are subject to approval by the regional mining authorities. Bonding requirements and reimbursement of bonds for satisfactorily completed restoration are also calculated annually.

Prior to closure, GTT will submit, for approval, an application for the authorization to abandon the mine, treatment and waste facilities, and site infrastructure.

A geomorphological design of the final topography in closure will be used. The relatively small increase in costs for engineering and construction for creating natural landforms are more than offset by improved visual appeal, decreased slope maintenance costs, and improved long term stability. In addition, constructing landforms that visually blend with the surrounding landscape has considerable public relations value for the mine. This will help for the environmental impact assessment as the project is required to conduct a Landscape Impact and Integration Study pursuant to Law 7/2008, of 7 July, on the Protection of the Landscape in Galicia.

12.0 STATUTORY REQUIREMENTS AND PROJECT APPROVALS

12.1 Historic Approvals and Existing Permits (Phase 1)

GTT is the only title holder of the mining rights called Grupo Minero Santa Comba (hereinafter, GMSC). The GMSC is made up of the following mining concessions:

- “San Antonio”, no. 1789
- “Santa María y demasía”, no. 1790
- “Oportuna y demasías”, no. 1792
- “Carballeira y demasía”, no. 1801
- “Santa Bárbara y demasía”, no. 1802
- “Carmen y demasía”, no. 1807
- “Ampliación a Oportuna y demasía”, no. 2912

The Santa Comba Group of mining concessions covering an area of 4,519 hectares, occupying part of the municipalities of Santa Comba and Coristanco. The nearest two major cities are Santiago de Compostela (capital of the Galicia region) and A Coruña (capital of the province) and are located respectively 40 km and 60 km far from the mine, in the northwest of Spain.

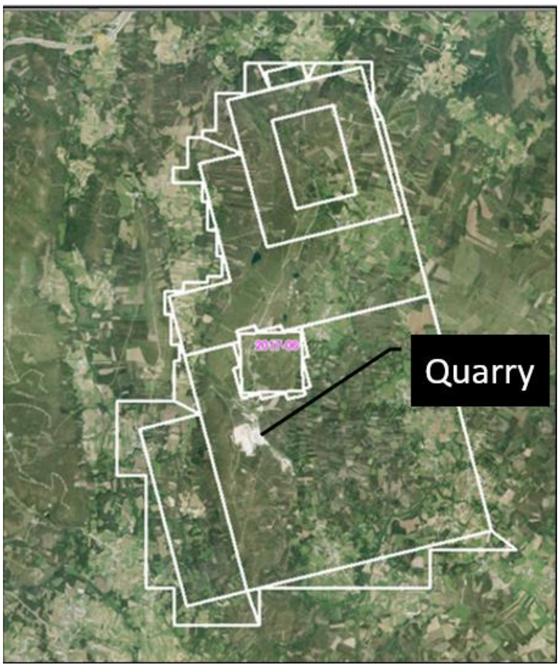


Figure 12.1 Satellite image of the GTT concessions

These mining concessions were granted for 90 years through resolutions dated 1978 and allow GTT to conduct mining operations and beneficiation of metallic mineral resources (mainly W and Sn) located within the GMSC license, and in accordance with the approved mining projects.

There are records of mining activities in the GMSC mining concessions since 1914, but the mining concessions were normalized in the early 1940s and have been historically mined with underground methods and owned by different companies until the mid-1980s, since when the underground operation closed. Several companies have held interests in the GMSC until the mining rights were transferred to GTT by resolution of the General Directorate of Energy and Mines of November 5th, 2015 (hereinafter, the Transmission Authorization).

GTT is in possession of the following mining, processing, and environmental permits for the Underground mine:

- GMSC Exploitation Project (Underground Mine), granted on September 23rd, 2011 (Mining License)
- GMSC Reclamation Project, granted on September 23rd, 2011 (Closure Plan license).
- GMSC Processing Plant, granted on October 18th, 2012.
- GMSC municipal license, granted on September 27th, 2012 (Santa Comba Municipality).

GTT's works are in compliance with the Annual Mining Plan (Plan de Labores), which is a mandatory technical document that any title holder must submit to the Mining Authority every year reporting the main production and economic figures, safety indicators, etc. for the past year and describing all mining activities planned for the coming year, including a revision and/or update of the Health & safety document, if necessary.

GTT has deposited 104,410.36 Euro as the required financial guarantee for the Closure Plan.

According to these permits and the Plan de Labores, GTT has already commenced the initial mining works in the Underground Mine on September 30th, 2020, and this has been officially communicated to the Department of Mines, Galicia (DoM), including the designation of the underground mining contractor.

The DoM is undertaking regular inspections to supervise the progress of the restart of the mining works.

Preparation of the basin, refurbishment of the existing facilities and construction of the new processing and ancillary facilities is expected to commence in 2021.

Once the processing plant is fully constructed, GTT will apply for the authorization of the commissioning and operation of the plant. This permit will be issued by the Mining Authority after inspection that the facility has been constructed according to the authorized Project and is in compliance with all safety regulations. The maximum legal time for the Mining Authority to issue this permit is 3 months.

Within the license of the GMSC there is a quarry for aggregates owned by a third party, independent of GTT. Part of the Project resources are located in the quarry . The quarry can extract the rock, process, and sell the aggregates but GTT is the only party authorised for the processing and beneficiation of the tin and tungsten metals, even if these metals are contained inside the quarry.

Once the Mining Authority issues the Commissioning and Operation Permit for the process plant, GTT will be able to process any ore outside the permitted underground mine and for which GTT may get a commercial agreement, such as to process the ore inside the existing quarry.

This is Phase 1 of the permitting.

12.2 Expansion of operations and development of open pit mine (Phase 2)

In addition to the current authorized Underground mine and Processing Plant, GTT will apply for an Open Pit permit within the same GMSC concession boundaries.

This permitting application must include a new Environmental Impact Assessment (EIA) since it will affect a new footprint area. Part of the works for the EIA and other projects have already commenced in order to shorten the permitting timeline.

For the Open Pit, the following are considered the most important permits:

- Environmental Impact Assessment. This includes public consultation.
- Exploitation Project including health and safety provisions
- Construction of Processing and Ancillary facilities
- Authorization for Commissioning and commence of Processing operations.
- Authorization for the use of mining explosives Municipal License
- Restoration Project which must include a Waste Management Plan for the Waste Rock and Tailings Storage Facilities. This includes public consultation.
- Water concession and water discharge. This includes public consultation.
- Authorization for Management of Industrial Residues
- Permits for emissions of gases or dust

In addition, GTT will have to provide at least 3 financial guarantees:

- Budget for the planned restoration activities in the case that such work must be completed by a third party
- Civil liability insurance policy in case of environmental Accident or negligent operation
- Environmental bond in case of environmental remediation caused by accident or negligent operation

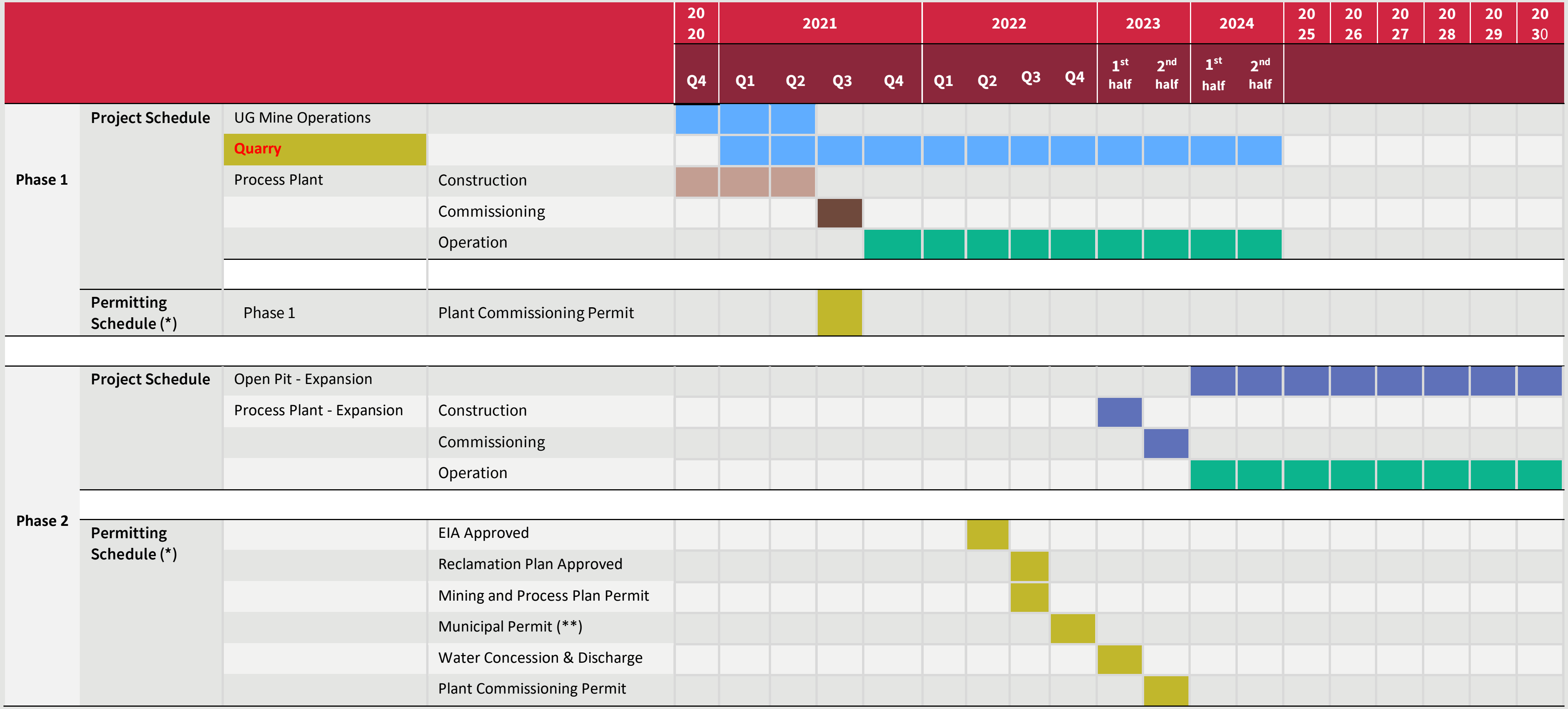


Table 12.1 Permitting timeline

The main driver of theses permits for Phase 1 and Phase 2 development are included within the above timeline.

(*) This chart includes the maximum legal time for the Administrations to process the applications and issue a resolution, according to the rules which regulate these procedures. Notwithstanding, it is very common to suffer delays in the process and issuance of the permits.

(**) In the scope of the Autonomous Community of Galicia the need to obtain a municipal activity licence is generally not enforced.

Notwithstanding the exploitation project could include works that should be authorized by the Town Council

12.3 Mine Waste Management Plan and Reclamation Plan

The Spanish regulation on mining wastes and reclamation is regulated by the Royal Decree 975/2009, of June 12, on the management of waste from extractive industries and the protection and rehabilitation of the area affected by mining activities (hereinafter, RD 975/2009), which is an adoption of the European Directive (2006/21/CE).

Any mining operation in Spain must have approved the Reclamation Plan before obtaining the mining authorizations.

Specifically, in relation to management of mining wastes (waste rock and tailings), the Reclamation Plan must include technical solutions to prevent or minimize the generation of mining wastes and also include the infrastructure for the waste rock and tailings storage facilities, ensuring the safe disposal and environmental and geotechnical stability of the wastes, in compliance with the Best Available Techniques[4] and allowing for a progressive rehabilitation.

The Waste Management Plan must contain, amongst others, the geochemical and geotechnical characterization of the wastes; the classification of the storage facilities based on risk categories which will be the basis for the determination of the liability insurance policies and environmental bonds; operational and monitoring procedures; a study of the conditions of the land affected by the facilities; as well as a conceptual closure plan.

The Reclamation Plan is much broader than the Waste Management Plan and contains the actions provided for the rehabilitation of the natural space affected by the exploitation of mineral resources as well as its associated ancillary facilities.

A proposal for a financial guarantee or equivalent will be submitted with the Reclamation Plan to ensure that any third party can undertake the planned rehabilitation works in absence of the mining company.

The Reclamation Plan must include a liability insurance policy in case of any accident proportional to the risk classification.

The approval of the Reclamation Plan involves a public information stage, as well as a consultation stage ensuring full compliance with all participation and transparency procedures.

12.4 Employee Training, Safety and Mines Inspectorate Reporting

The exploitation of mineral resources in Spain is highly regulated, including the safety conditions in which the referred works must be carried out.

The main legal framework is:

1973. Mining Act.

1978. Mining regulation. This develops in more detail the mining act.

1985. Mining Safety Rules. Basic guidelines for safety in mining operations

Complementary Technical Instructions (ITCs). Technical instructions to develop the safety guidelines.

1995. Labour Safety Risk Prevention Act. To develop the preventive safety techniques in all industries and promotion of the safety culture in the organization.

2009. Reclamation Plan.

2013. Environmental act.

2013. Entrepreneurial act in Galicia.

[4] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/best-available-techniques-bat-reference-document-management-waste-extractive-industries

Spanish mining legislation designates the Director Facultativo (Statutory Engineer) as legally responsible to ensure that all mining activities are in compliance with all safety standards and regulations, having the authority to set out all necessary internal security provisions that are deemed appropriate for the mining works to be safe. These internal security provisions include the safety protocols of the exploitation

All employees must be trained in the prevention of occupational risks, receiving appropriate training in accordance with the safety prescriptions for each job type and also to obtain the necessary licenses for operating mining equipment. Each employee will have a training card.

Prior to the start of any mining activity, the promoter shall submit to the Mining Authority a Health and Safety Document which includes the planning of the company's preventive action on health and safety. The Health and Safety Document will be updated when necessary and, in any case, every year together with the Plan de Labores.

The Mining Dpt. Has the authority to undertake inspections at any time on the mining activities, safety conditions and compliance with legislation.

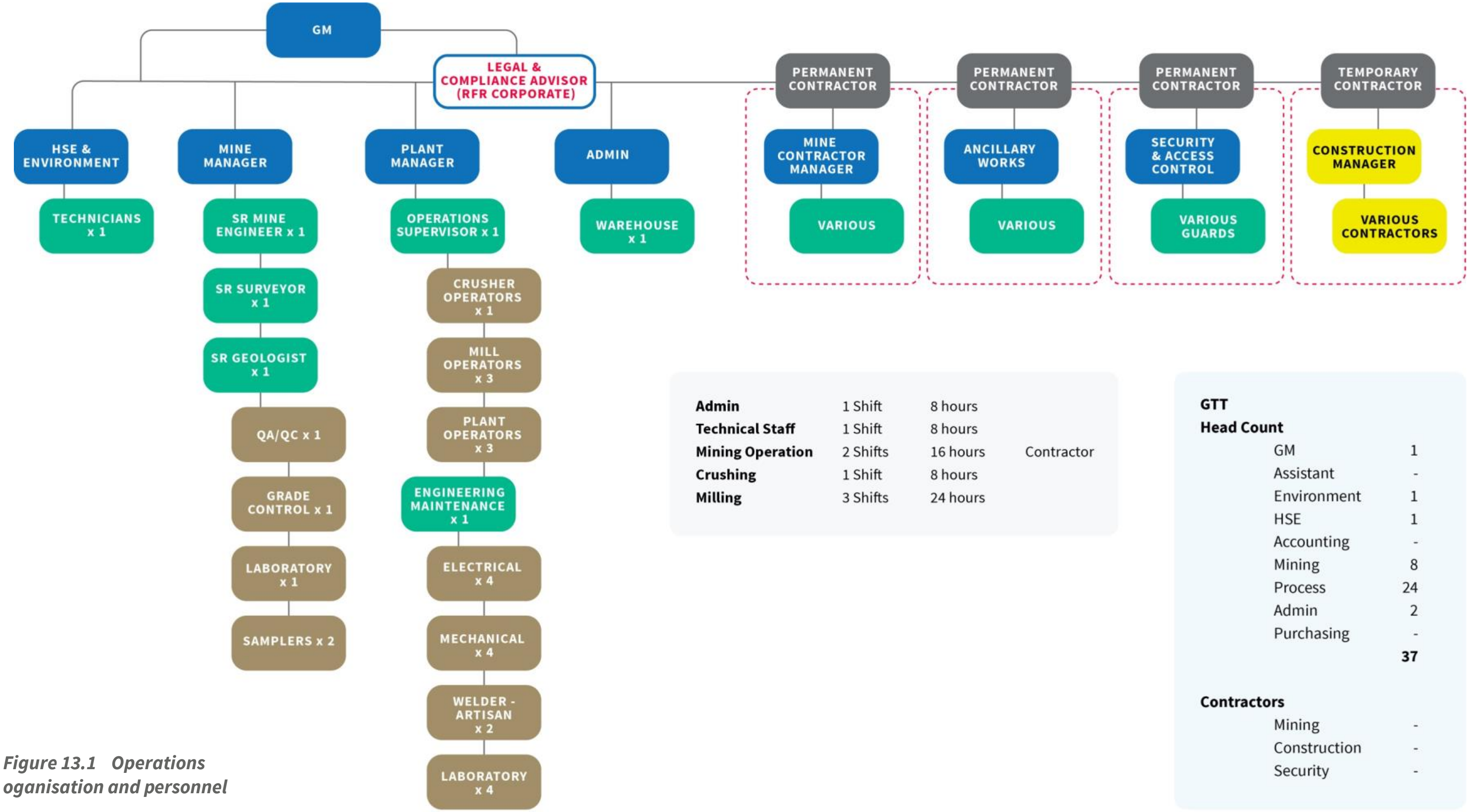
13.0 OPERATIONS MANAGEMENT

13.1 Operating Philosophy

Safe, efficient, and cost-effective operations are only possible where corporate design is fundamentally aligned with these goals. Rafaella Resources intends to implement best available technology, training, and management processes to achieve maximum benefits in safety, motivation, productivity, and environmental stewardship.

13.2 Organisation and Personnel

Santa Comba management is being organised in a structure that maximises the employment and involvement of the local labour force and community. Significant amounts of contract labour will be utilised for mining, plant construction/refurbishment, regional geology, and exploration/resource development, enabling Santa Comba staffing to be lean and highly trained in safety, environment and technical innovation.



Admin	1 Shift	8 hours	
Technical Staff	1 Shift	8 hours	
Mining Operation	2 Shifts	16 hours	Contractor
Crushing	1 Shift	8 hours	
Milling	3 Shifts	24 hours	

GTT		
Head Count		
	GM	1
	Assistant	-
	Environment	1
	HSE	1
	Accounting	-
	Mining	8
	Process	24
	Admin	2
	Purchasing	-
		37
Contractors		
	Mining	-
	Construction	-
	Security	-

Figure 13.1 Operations oganisation and personnel

13.3 Health and Safety

Best available practices, training and motivation will be implemented at the outset of site works with set working standards for approved pre-employment medicals, standard PPE, appropriate training levels, recording site attendance, injury reporting and investigation and hazard identification, reporting and correction.

On-site monitoring will be undertaken for the general health of the operations and management staff and routine drug and alcohol tests will be included into the safety matrix in operations. A fixed breathalyser will be installed at the mine entrance where all personnel entering will be required to pass the stipulated alcohol and drug limits. Lost time injuries and reporting standards to Spanish mines department requirements will be adhered to from the beginning of operations and had already been implemented for the recent drilling campaign.

13.4 Environmental stewardship

Environmental protection, innovation and creativity will be of great importance to creating a sustainable relationship with the local communities and authorities, as Santa Comba has been in operations for many years at a small scale without any significant environmental issues, but Rafaella Resources is cognisant that as a foreign company it will attract more attention, especially with significantly increased activity and a medium scale open pit that will have a local visibility and larger surface impact than has previously been experienced.

Environmental management of waste dumps, tailings, equipment noise, dust, blasting noise & vibration and blast times etc. will need to be strictly controlled.

24/7 plant operations will require creative work practices, continuous local engagement, and notice procedures for high impact aspects of the project such as large blasts and night shift mining and crushing operations (although crushing and sorting is aimed at 8-12-hour day shifts).

The design of open pits, waste dumps and tailings disposal will be created with the intent to visually shield the local population from the above aspects of the operation and with the long term aim to create a useable post mining asset design (i.e. a fishing lake with forested waste dumps etc) that can submitted to the environmental authorities and disseminated locally as part of the public engagement strategy.

13.5 External Relations

Presently there are no outstanding issues with the local communities with all site activities co-ordinated with the on-site quarry management and to local health and safety standards.

INCIS (incis.net) an investor relations consultancy with experience in advising mining companies has been engaged by GTT to advise on matters of external relations and regulatory communications.

13.6 Commercial and Logistics

Due to excellent logistics of the site due to the proximity of an A-class port, multiple airports and high-speed rail and road network, stores inventories can be minimised as can staffing and storage facilities. The project is in a very fortunate location with a low-cost local environment and international quality logistics facilities.

Stores ordering, spare parts and chemical inventory can all be highly geared to the local availability of commercial supplies and a dense dealership and contractor network for spares and contract services and labour etc.

13.7 Engineering and process optimisation

Metallurgical, engineering, drilling and assaying expertise will gradually be taken over by employees as the project grows and matures. On site chemical analysis for grade control, plant operations and orebody extension and satellite exploration will be covered to allow tight control and flexible low-cost geological operations.

Computerised mine planning, grade control and on-line equipment dispatch and on-line monitoring (e.g. CAT Minestar system) will be introduced allowing site engineers and local and head office management to monitor and react to various operational, marketing and global metal pricing issues in very short time cycles, enhancing economic benefits and help to direct and achieve corporate budgets and targets.

The operations will have maintenance workshops which will be small due to using contract mining and drilling services essentially carrying spare parts and consumables for a 4-week period due to reorder timings more than sufficient to cover project requirements during this time frame.

Senior GTT staff will be employed to develop high quality site activities in geology, mining and earthwork design, survey, mineral processing, environmental development, reclamation engineering and equipment maintenance.

13.8 Communications and IT Systems

Relevant IT hardware and software is required to address the following operational areas:

- Accounting, payroll, stores control and ordering
- Mine planning, mine scheduling, survey & grade control (several mine specific software options have been assessed),
- Blast design and electronic blast control
- Mine dispatch, ore/waste movement optimisation
- Exploration planning, geological and orebody modelling,
- Automated and semi-automated process control systems for maximising plant efficiency,
- Laboratory data entry and logging

Local telecommunications systems are adequate at the moment but require reviewing for future capacity for data intensive systems operation and could require a dedicated microwave system for the project. This aspect of site communications needs to be addressed early in the project development phase.

13.9 Operations

Construction, mine development, equipment refurbishment and infrastructure development will be mostly undertaken by selected local contractors through to commissioning and hand over of the process plant upon certification of GTT operators and operations management.

Mining contractors have quoted on the drill & blast, excavation, and haulage with medium term options for GTT to take over with in-house equipment or change to a different form of excavation and control.

Control and monitoring of the operations will be headed by a Mine Manager with authority over mine safety, blast design and blasting, surveying coverage, grade control, pit geology and contractor/mine fleet daily operations and digging planning. This management function will form the basis of essential controls such as mill ore feed reconciliation, contractor payments and waste/ore movement, mine schedule and monitoring.

The Process Manager will be responsible for all process functions from overall processing operations. safety, training and supervising the movement and processing of ore from the truck dump hopper, primary and secondary crushing, ore sorting, fine crushing, grinding, concentration and tailings disposal. This is a critical operational role, and the mine and process superintendents will work closely together to ensure the operation obtains the optimum ore grade and maximum recovery and concentrate value.

A dedicated training and certification system will be established to ensure skill growth in the local workforce for both technical and operational staff and enhancement of operational efficiency and employee satisfaction.

14.0 PROJECT IMPLEMENTATION

14.1 Project Scope

Santa Comba mine site is a busy operational quarry and aggregate production operation, with an adjacent pre-mix concrete operation. Rafaella through GTT has offices and an operational exploration crew in an established and equipped office block.

The ramping up of site works, construction, equipment refurbishment and process plant relocation and installation will require an influx of contractors and temporary staff and will be managed by Rafaella Resources and GTT on site staff.

The aim is to build a modular process plant on site with "lean procurement" practices capable of processing 765kt of pre-concentrated ore per year, while also being cost effectively expanded and quickly relocated if required.

- Feed to the process plant will come from an X-ray sorting stage that will reject approximately 45% of barren rock which will require approximately 1.3Mt/of ROM ore from the open pit.
- Process equipment will be a combination of new, used and refurbished for sorting, crushing, grinding and concentration.
- Mining equipment will be supplied by contractors, but an option is also a combination of new, used and rebuilt.
- Mining operations will commence 2 months prior to the commissioning of the process plant to establish haul roads, waste dumps, workshops, messing facilities, fuel supply and in-field maintenance and establish practices to ensure high quality blasting, grade control, excavation, and stockpiling systems.
- There is a pre-strip period that will allow the pit to be rationalised and established for steady state operations.
- An explosives magazine will be required to be established/shared and permitted,
- Radio net and equipment dispatch system needs to be implemented prior to operations and radio protocols need to be instilled into site operational training.
- Sufficient low grade stocks needs to be available for commissioning the process plant, crushing, X-ray sorting, grinding, concentration, tailings disposal and control/safety systems before feeding higher grade ores into the process.
- Emergency fire systems need to be commissioned prior to the commissioning of the process plant,
- Laboratory services are required to handle >100 daily mill and grade control assaying loads and this requires the services of a least 1 skilled chemist/chemical engineer to train and assist 1-2 laboratory staff preferably sourced from the local population.
- Geology, grade control, mine planning/scheduling and blast design engineers are required to be trained and field tested to ensure adequate support of the earthmoving operations.
- An auditable health and safety system are required to be implemented with approval of the local mines inspectorate and instilled into induction, operational training and available from the mine managers rule book.
- In Spain, the statutory health and safety responsibility resides with the Director Facultativo. GTT will have qualified staff to satisfy this position and able to establish appropriate safety systems and train sufficiently skilled personnel in operations to ensure safe and efficient commissioning and operations.
- A comprehensive first aid facility is required prior to construction and site development, and at least one 4x4 on site needs to be capable of being quickly converted and stocked to become a basic ambulance for rapid transport of injured or sick colleagues.

14.2 Commercial and Administrative

There will be a lean management structure at site with short chains of command and very hands on engineering focused management.

Accounts, stores, and consumables will be automated as much as possible with the centralisation of financial services as an integrated segment of the company automation streamlining

- Marketing is initially covered by an offtake relationship that will cover the requirements for the majority of marketing of concentrates upon project commissioning and steady state operations. The company continuously reviews the spot metal markets and hedging opportunities and will work with our offtake partners to maximise stability.
- The prospect of generating additional income from other mineral product streams such as metal sulphides, heavy minerals or kaolin etc. requires additional study but is well understood by management as an area of interest and is under investigation
- Insurance of operations will be adjusted to the level of liability with contractor's involvement and the analysis of the various risks associated with operations and developments.
- Stores management, re-ordering and level of inventory is part of the automation process and stores software and hardware will be acquired to enhance the efficiency of this process and to ensure that the operation always has sufficient inventory to enable seamless operations.
- Standard contracts have been established under Spanish collective bargaining agreements with pay levels, pension, holidays, sick leave etc all prescribed. Staff will be put on these standard contracts other than any international or senior executive personnel that will be recruited under a separate executive contract. The executive contract offers some greater flexibility with regards to terms. A senior executive incentive scheme has been prepared and approved by the Rafaella Resources Board to be used to attract and retain key staff.
- GTT will invest in an ERP system to ensure accurate financial records through construction and commissioning. This is critical in ensuring that costs are controlled, and budgets are closely monitored. It is also important in ensuring that local delegation of authorities is properly adhered to. The ERP system will monitor budgets, offer project accounting, management accounting and financial reporting, as well as procurement and possibly HR/payroll, inventory management, fixed asset register and maintenance modules.
- GTT is in discussions with the Santa Comba council to utilise a building located at the mine site as the operational offices. The intention would be to renovate and refurbish the historic building and ensuring that at the conclusion of mining operations, the local community will be able to benefit from the investment in the building.

14.3 Risk Management

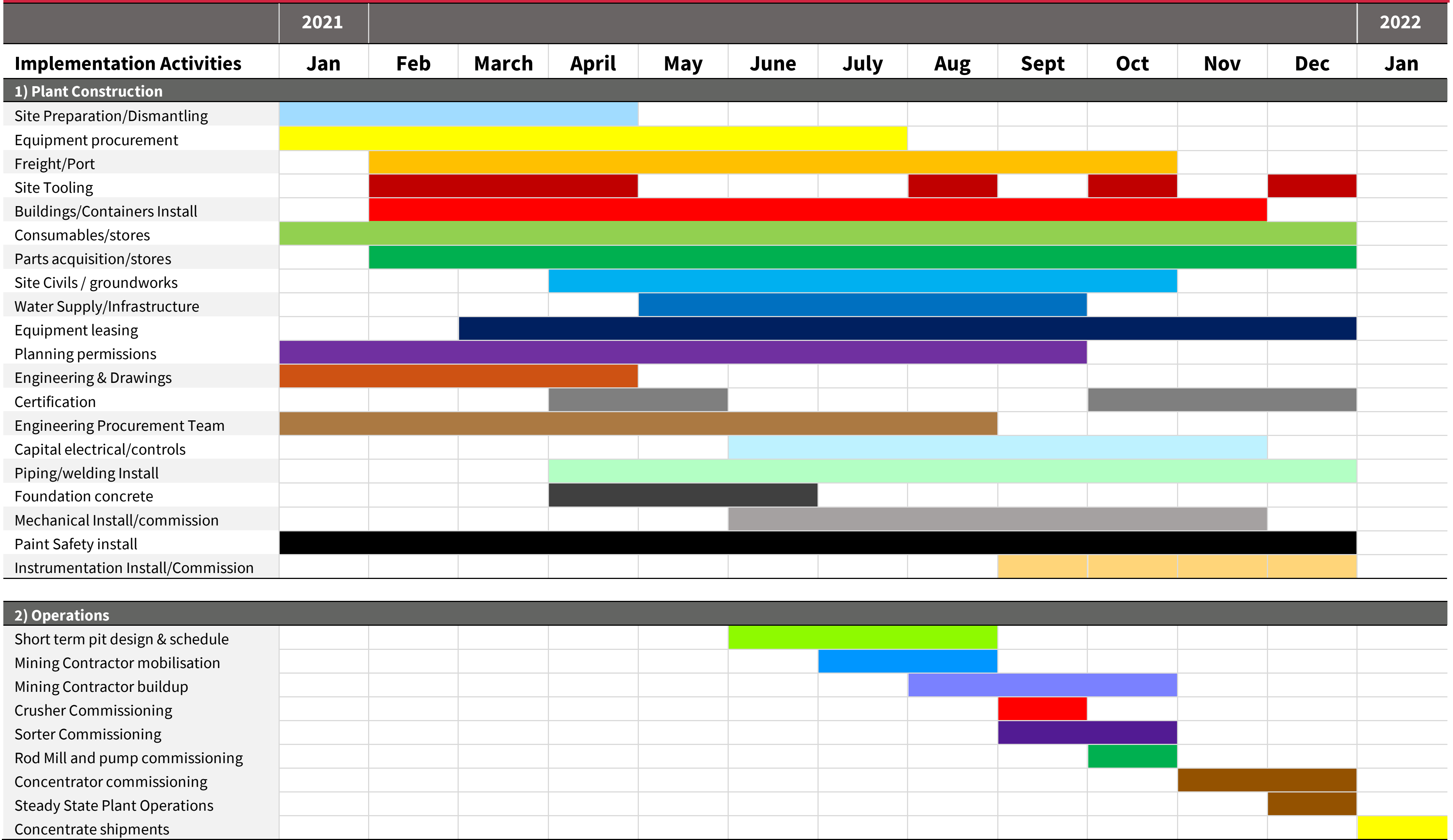
Mining and processing operations are inherently risky ventures based upon variable natural resources, estimated costs and income over many years, erratic market conditions, labour and equipment shortages and requiring market financing of many millions of dollars.

Understanding the risks of individual components is essential to ensure that there are no fatal flaws in estimates, assumptions, permits, local resistance, environmental law changes and government legislation.

Rafaella has addressed risks in the many areas of project sensitivity and is aware of what is required to ensure that these risks are properly mitigated, or action plans developed to overcome particular obstacles in development, operation, and closure.

Procedures will be rolled out to cover regular HAZOPs for any new material activities undertaken at site. Risk management will be made an integral part of the operational culture.

Santa Comba Implementation schedule



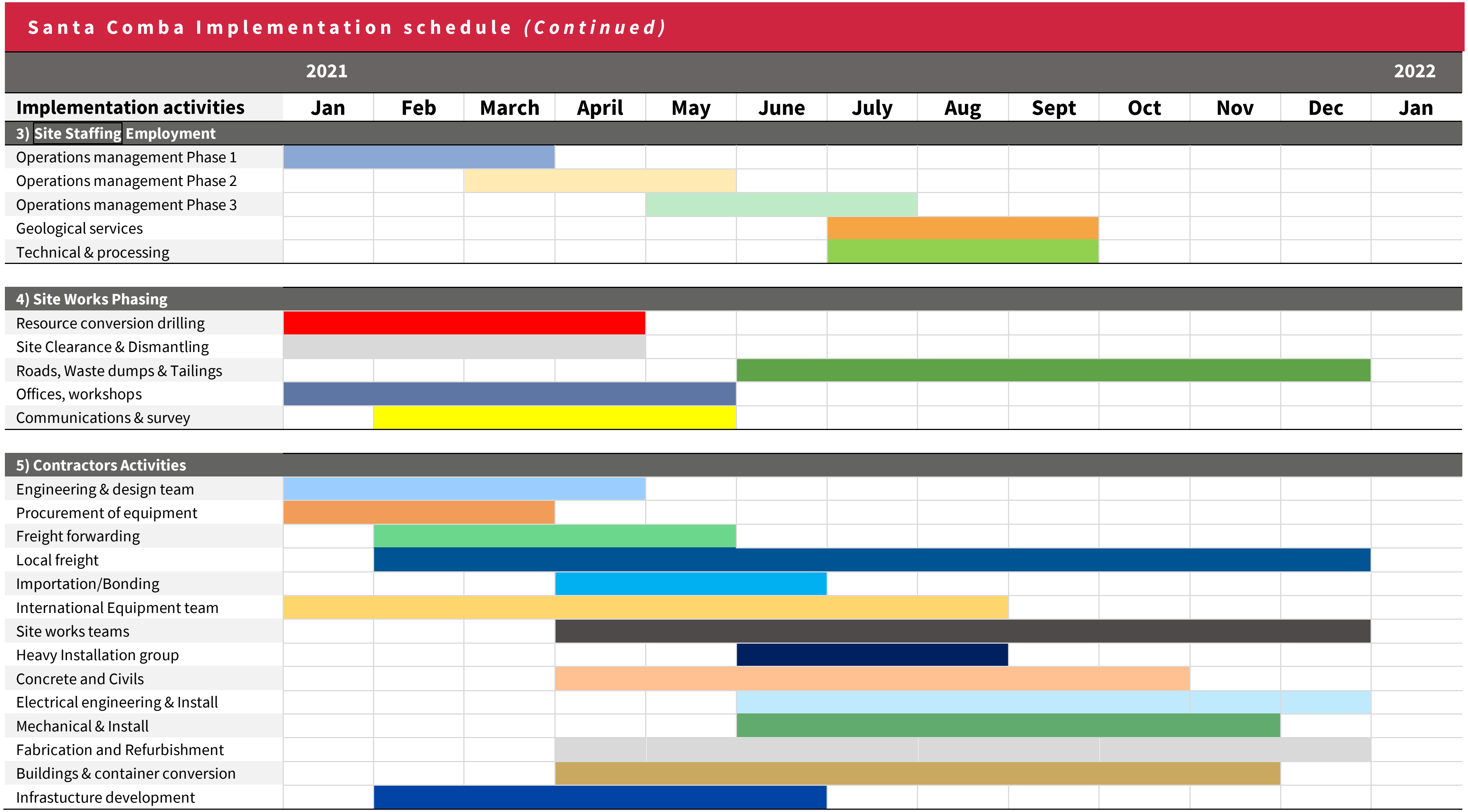


Table 14.1 Project Implementation Schedule

14.4 Health, Safety, Environment and Community

Management is aware of and is investing into state-of-the-art systems and techniques to ensure that the Santa Comba project is started as it means to carry on and will be implementing systems for maximum coverage of potential risks with stake holder health & safety with pre-employment background checks, medical assessment and regular employee health monitoring. A non-smoking policy has been implemented, a shift change breathalyser system established and will be part of the daily routine before being allowed to operate heavy equipment or company machinery, vehicles, and facilities. Regular drug and alcohol testing regime will be part of the employment contract for employees and contractors allowed to operate at site.

Company-wide operating policies are to be rolled out covering health and safety, reporting of near misses and other incidents, including follow up investigative reports. Daily toolbox meetings will be held in which health and safety and other risks will be discussed prior or commencement of shifts. Meeting notes are to be kept and actions followed up. The Company will have a zero tolerance to alcohol and drugs and will actively enforce the use of appropriate PPE, failure of which will be a disciplinary action. Responsibility will reside with all personnel to ensure adherence to company policies although reporting and dissemination of such policies will reside with the health and safety officer/Director Facultativo.

Figure 14.1 Mine site breathalyser.
Mine entrance breathalyser for alcohol & drug screening prior to working on site.

14.5 COVID-19

The worldwide pandemic has severely impacted mining operations with stringent procedures being implemented to mitigate the risk of community transmission. The mine site has implemented temperature checks on all personnel visiting the mine site with anyone showing a temperature above 37.5C being refused access.

Alcohol based sanitising gels and face masks have been provided for personnel. Further PPE will be provided as required to ensure the protection of all visiting personnel.

One the numbers of personnel visiting the site increases, bubbles will have to be implemented to ensure that working groups are isolated from one another so that if anyone in a working bubble is found to have contracted the virus, only the relevant bubble will need to be quarantined and the rest of the operations will be able to continue uninterrupted. Nevertheless, the development timeline will need to incorporate downtime to accommodate possible quarantine periods, either implemented at site or wider across the region. Delays in moving people and/or equipment will also need to be built into the timetable.

Once operating stringent procedures will need to be applied to minimise the potential downtime from possible exposure to the virus. Vaccines may be available by the time that the mine goes in to operation and checks may then be required to ensure that all visiting personnel have been vaccinated as recommended by relevant health authorities.

14.6 Site Establishment

storage buildings for the immediate start up and development project. Investment in office, stores, tooling, and equipment will be required during the mine start up and arrival of heavy equipment.

Organisation of stores, bar code inventory management and re-ordering systems and tendering will be necessary before the project can be commissioned.

There is no intension to provide accommodation at site as there are many towns and villages in the region that can provide suitable rental accommodation.

Some investment in planning, permitting, and enlarging/repairing the local roads is necessary as is the installation of gates, fencing and notices to prevent accidental or intentional access onto site and the mining areas or high walls of the pit.

Security gates will be added where visitors will be required to register, undertake inductions, receive any PPE for the duration of the visit and submit to alcohol breath and COVID-19 temperature tests. Security will be 24/7 and will comprise security guards, site fencing, lighting, and security cameras.

14.7 Commissioning and Production Ramp-Up

The production will scale up initially with mining operations developing a regular ore extraction platform in the pit from its present irregular form, with ore and waste movements irregular while short term straightening and haul road installation is carried out.

Processing plant will commission on lower grade ores while the ore sorting equipment is optimised and any crushing parameters resolved, the fine crushing and grinding sections will be commissioned in sections with screen sizes adjusted to suite both coarse and fine separation.

Gravity separation sections will be commissioned and optimised on recirculating load while concentration settings are experimented with to find the best setting for speed, slurry density and sizings. Tailings analysis will be carried out both by analysis and microscopy to determine types and sizes of minerals being lost to tailings. The potential for installation of in-line X-Ray analysis will be tried at different section of the plant to determine advantages versus cost and health and safety issues. Sulphide occurrence in the ore and in concentrates will be an area of great interest as arsenic is a major penalty element if allowed to build up in the concentrates. This is one area that will be of special interest. Other mineral components will be analysed to determine if a separate circuit for separation from the arsenopyrite is of economic benefit.

The scale of the present open pit deposit can support an open pit operation of 1.3 Mt/yr. for 5 years without additional ore being delineated and depending upon the price of tungsten and without the benefit of ores sourced from other open pits or from underground.

This strategy allows Rafaella Resources to build up a world class technical and operational team to be able to expand Santa Comba operations and explore or acquire newly developed local projects as incremental sources of revenue.

The ability of ore sorting to significantly boost the profitability of lower grade ores gives the project the ability to process what would have been sub-grade ores into higher grade plant feed, and also to alter the sorter settings to reject more lower grade ore particles giving a higher-grade pre-concentrate product to the plant.

15.0 PROJECT ECONOMICS

15.1 Economic assumptions

Detailed mine schedules have been prepared based upon;

3 x APT price scenarios (US$180/mtu, US$240/mtu, and US$300/mtu flat over the life of mine). Sn price is fixed at US$19,000/t over the life on mine.

4 x mining and processing rates (850ktpa, 1Mtpa, 1.3Mtpa and 1.5Mtpa)

Models for both Measure and Indicated (M&I) and M&I& Inferred.

Results from these analysis showed that the optimum economics versus mine life and risk for the US$240/mtu APT scenario is mining 1.3Mt of ore per year and processing ~750,000 tonnes of sorted pre-concentrate through the concentrator. This has been deemed the Management Case.

Cautionary Statement

There is insufficient geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

PARAMETER	FACTOR USED
Project status	Open pit development, exploration and underground Pre-feasibility
Pre-feasibility Mining Method	Open pit
Ore grade	0.149% WO3
Mining rate	1,300,000 tonnes per year
Stripping ratio	3.14 : 1 - Waste tonne to ore tonne
Mining programme	Contract mining, drill & blast
Drilling & blasting	12m benches in waste, 4-6m benches in ore (selective mining)
Crushing programme	In-house, Jaw, cone & VSI crushing to -8mm – 500tph
Pre-concentration type	Xray sorting - between 1% and 2% pixel surface area (adjustable)
Xray sorting stages	2 stage – 1) +8mm to -25mm & +25mm to -75mm
Stage 1 crushing	Jaw & cone to -75mm
Stage 2 crushing	Cone and Vertical shaft impact crushing (VSI) to -5mm
Sorter efficiency	50-55% to product
Sorted ore grade	~0.25- 0.30 % WO3
Concentrator type	90-100 tph Gravity concentration, flotation cleaning of concentrates
Concentrator throughput	765,000 tonnes per year
Concentrator recovery	70%
Concentrate grade	65% WO3
Value per mtu	US$240/mtu baseline
Variable mtu values	US$ 180/mtu and US$ 300/mtu
Concentrate sales	Sale at point of offtake at site gate
Operations type	Local training of employees no expatriates
Local employment	25-40 local and Spanish nationals directly employed
Contractor employment	Local contractor – 40 persons employed
Tailings handling	Co-mingling with waste for solid disposal – slurry emergency
Environmental type	Concurrent reclamation with disposal of waste rock for aggregates
Closure design	Disturbance reclaimed with native vegetation and flooded pit

Table 15.1 Economic assumption

Management Case - Outputs (USD)							
Financial Outputs							
NPV	US$ '000	20,986					
IRR	%	120%					
Payback period	years	0.42 (5 months)					
Profit & Loss Statement		**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Revenue	US$ '000	-	28,026	23,988	21,281	25,427	18,542
Opex	US$ '000	(1,002)	(11,161)	(14,858)	(18,794)	(15,012)	(9,025)
EBITDA	US$ '000	(1,002)	16,865	9,130	2,487	10,415	9,516
Depreciation & Amortisation	US$ '000	-	(1,478)	(1,607)	(1,781)	(2,048)	(2,737)
EBIT	US$ '000	(1,002)	15,387	7,523	706	8,366	6,779
Interest	US$ '000	-	-	-	-	-	-
Tax	US$ '000	-	(3,596)	(1,881)	(422)	(1,846)	(1,970)
Net Profit	US$ '000	(1,002)	11,791	5,642	284	6,520	4,810
Cashflow							
Cashflow	US$ '000	(8,003)	13,790	6,629	1,524	7,956	6,194
Physicals							
Ore - Measured & Indicated	tonnes	64,791	1,185,126	1,039,327	1,101,610	1,001,042	679,794
Ore - Inferred	tonnes	543	114,567	261,419	197,759	299,196	338,101
Ore - Total	tonnes	65,334	1,299,693	1,300,746	1,299,369	1,300,238	1,017,895
WO3 %	%	0.15%	0.16%	0.15%	0.13%	0.15%	0.15%
Sn grade	ppm	100	111	103	86	91	83
Waste	tonnes	47,642	2,554,744	4,471,273	7,102,258	4,216,029	1,339,965
Ore processed	tonnes	-	750,765	715,410	714,653	715,131	559,842
WO3 produced	tonnes	-	1,446	1,230	1,103	1,304	958
WO3 produced	mtu	-	144,642	122,970	110,349	130,358	95,803
Sn produced	tonnes	-	143	116	104	122	87
Concentrate produced	tonnes	-	2,296	1,952	1,752	2,069	1,521

Table 15.2 Management Case - Financial outputs

Management Case - Key Project Outcomes		
Mining Physicals		
Project life	*years*	5
Total ore mined	*tonnes*	6,283,275
Average WO_3 % mined	*tonnes*	0.15%
Contained WO_3	*mtu*	933,719
Measured & Indicated %	%	80.72%
Inferred %	%	19.28%
Ore Sorter		
Ore fed	*tonnes*	5,654,948
Average ore fed WO_3 %	%	0.15%
Sorted ore to concentrator	*tonnes*	7,697
Average sorted ore WO_3 %	%	0.27%
Production Physicals		
Concentrate produced	*tonnes*	9,589
Contained WO_3	*mtu*	604,123
Revenue		
Average APT price	*US$/mtu*	240
Mtu sold	*mtu*	604,123
Average Sn price	*$/t*	19,000
Sn sold	*tonnes*	572
LOM Revenue (net marketing costs)	*US$ '000*	117,263
Capital Costs		
Concentrator	*US$ '000*	2,757
Crushing and sorting	*US$ '000*	3,690
Contingency	*US$ '000*	645
Total development capex	*US$ '000*	7,092
LOM Operating Costs		
Mining	*US$ '000*	43,654
Processing	*US$ '000*	19,130
General & Admin	*US$ '000*	7,069
Total	*US$ '000*	69,853
LOM Unit Operating Costs		
Capex / WO_3 mtu	*US$/mtu*	1.07
Opex / WO_3 mtu	*US$/mtu*	115.63
Capex / t ore processed	*US$/t*	0.19
Opex / t ore processed	*US$/t*	20.21
Financial Metrics		
LOM EBITDA	*US$ '000*	47,410
Post Tax NPV_8 %	*US$ '000*	20,986
Post Tax IRR	%	120%
Payback period	*years*	0.42

Table 15.3 Management Case - Key Project Outcomes

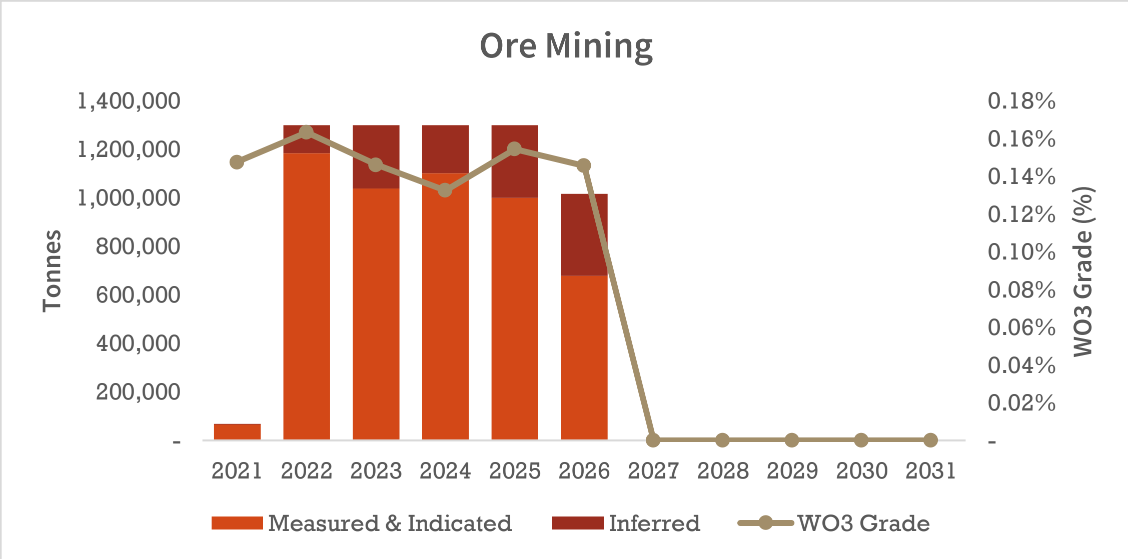


Figure 15.1 Management Case – Production by Ore Classification and Grade

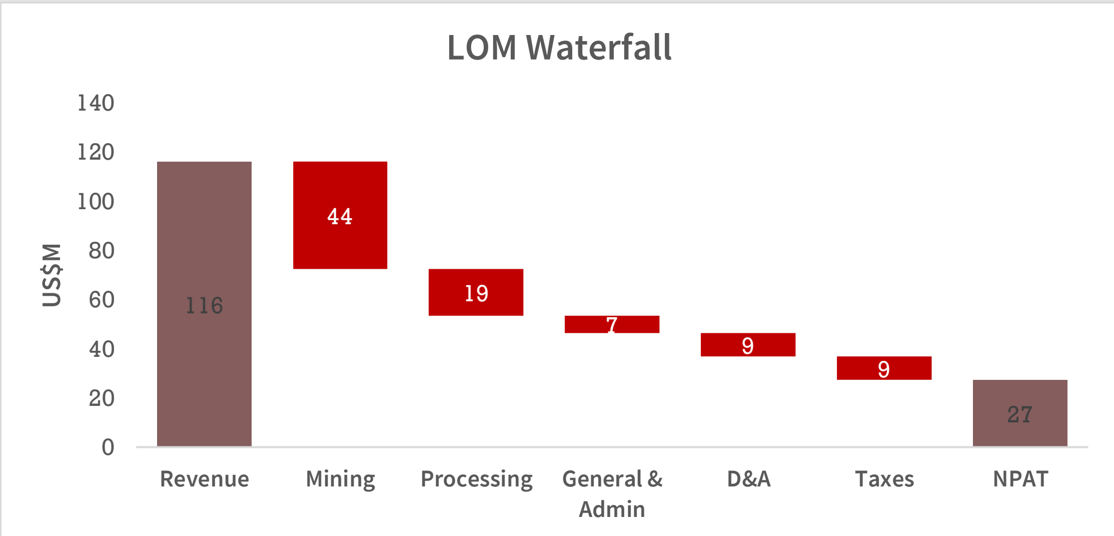


Figure 15.2 Management Case - LOM waterfall showing breakdown of operating costs

The above charts show the 5-year mine life assuming 1.3mtpa of production comprising Measured and Indicated Resources with a small proportion of Inferred Resource (19%). The costs of converting the Inferred Resource to the Measured and Indicated categories has been budgeted and included in the economic analysis.

For comparative purposes, a US$300/mtu production case has also been run. The Optimistic Case has been run assuming a US$3000/mtu flat APT price and tin has been run at US$19,000/t also flat over the life of mine. The following table summarises the outputs from the Optimistic Case.

OPTIMISTIC CASE OUTPUTS (US$300/mtu APT and US$19,000/t Sn)		
Key Project Outcomes		
Mining Physicals		
Project life	*years*	6.5
Total ore mined	*tonnes*	8,333,916
Average WO_3 % mined	*tonnes*	0.14%
Contained WO_3	*mtu*	1,155,825
Measured & Indicated %	*%*	73.10%
Inferred %	*%*	26.90%
Ore Sorter		
Ore fed	*tonnes*	7,500,524
Average ore fed WO_3 %	*%*	0.14%
Sorted ore to concentrator	*tonnes*	9,465
Average sorted ore WO_3 %	*%*	0.25%
Production Physicals		
Concentrate produced	*tonnes*	12,644
Contained WO_3	*mtu*	796,552
Revenue		
Average APT price	*US$/mtu*	300
Mtu sold	*mtu*	796,552
Average Sn price	*$/t*	19,000
Sn sold	*tonnes*	745
LOM Revenue (net marketing costs)	*US$ '000*	192,103
Capital Costs		
Concentrator	*US$ '000*	2,757
Crushing and sorting	*US$ '000*	3,690
Contingency	*US$ '000*	645
Total development capex	*US$ '000*	7,092
LOM Operating Costs		
Mining	*US$ '000*	65,657
Processing	*US$ '000*	25,368
General & Admin	*US$ '000*	9,805
Total	*US$ '000*	100,830
LOM Unit Operating Costs		
Capex / WO_3 mtu	*US$/mtu*	1
Opex / WO_3 mtu	*US$/mtu*	127
Capex / t ore processed	*US$/t*	0.14
Opex / t ore processed	*US$/t*	22.00
Financial Metrics		
LOM EBITDA	*US$ '000*	91,272
Post Tax $NPV_{8\%}$	*US$ '000*	43,655
Post Tax IRR	*%*	163%
Payback period	*years*	0.42

Table 15.4 Optimistic Case - Outputs

A third case has been run using only the Ore Reserves. APT Pricing has been set at $240/mtu over the life of the mine. Tin has been kept constant at US$19,000/t over the life of mine. Production has been set at 1Mtpa. The results of this Ore Reserve Only Case are summarised below:

ORE RESERVES OUTPUTS		
Key Project Outcomes		
Mining Physicals		
Project life	*years*	4.25
Total ore mined	*tonnes*	4,073,336
Average WO_3 % mined	*tonnes*	0.15%
Contained WO_3	*mtu*	613,132
Measured & Indicated %	*%*	100.00%
Inferred %	*%*	4.25
Ore Sorter		
Ore fed	*tonnes*	3,666,002
Average ore fed WO_3 %	*%*	0.15%
Sorted ore to concentrator	*tonnes*	5,060
Average sorted ore WO_3 %	*%*	0.28%
Production Physicals		
Concentrate produced	*tonnes*	6,754
Contained WO_3	*mtu*	425,481
Revenue		
Average APT price	*US$/mtu*	240
Mtu sold	*mtu*	425,481
Average Sn price	*$/t*	19,000
Sn sold	*tonnes*	306
LOM Revenue (net marketing costs)	*US$ '000*	80,745
Capital Costs		
Concentrator	*US$ '000*	2,757
Crushing and sorting	*US$ '000*	3,690
Contingency	*US$ '000*	645
Total development capex	*US$ '000*	7,092
LOM Operating Costs		
Mining	*US$ '000*	24,380
Processing	*US$ '000*	12,438
General & Admin	*US$ '000*	6,332
Total	*US$ '000*	43,149
LOM Unit Operating Costs		
Capex / WO_3 mtu	*US$/mtu*	2
Opex / WO_3 mtu	*US$/mtu*	101
Capex / t ore processed	*US$/t*	0.29
Opex / t ore processed	*US$/t*	19.26
Financial Metrics		
LOM EBITDA	*US$ '000*	37,595
Post Tax NPV_8 %	*US$ '000*	15,297
Post Tax IRR	*%*	72%
Payback period	*years*	1.08

Table 15.5 Ore Reserves Only Case - Outputs

15.2 Production targets

Present economics and mining/process rates for a 5-year mine life, these metrics indicate that the open pit mine will produce 1.3Mt of ore per year which will provide ~765kt of sorted concentrate for extraction of tungsten at a rate of ~1000 to 1400 tpa of WO3.

15.3 Concentrate sales

Concentrates will be bagged in 0.5m3 heavy duty bulk bags (~2 tonnes) and once weighed, umpire quality sampled and tested for moisture, the bags will be stacked on pallets inside a 6m (20ft) shipping container by forklift until the load reaches 20-22tonnes.

The containers will be picked up by self-loading trucks and taken to a railway loading dock for shipment to Europe or taken to the container handling port at A Coruña for overseas shipment.

15.4 Offtake arrangement

The concentrates will be accepted for sale at the mine gate with 80% credit from the off-takers upon pick up and the balance upon delivery and receipt of the umpire sample results from each party.

Smelter penalties of concern will be for arsenic and sulphur, although testing has shown very good separation of sulphide minerals >98% during flotation cleaning of the gravity concentrates and therefore no penalties have been assumed in the economics.

Commercial terms for offtake, including pricing for different concentrations of contained tungsten have been based upon a fully termed offer received by the Company.

15.5 Capital costs

Capital estimations have been made using a combination of used, refurbished and new machinery firm quotes in the crushing and process areas for the project. Capital costs are estimated to be +/- 15% accurate. A contingency of 10% has been added in the economics.

GTT decided that there is a compelling case for utilising combinations of new, used and refurbished equipment with in some cases significant savings and coupled with immediate delivery. Pricings of equipment are attached in the appendices.

The areas of Capital expenditure budgeted

- Site preparations
- Equipment purchases
- Freight
- Refurbishment
- Instrumentation and power supply
- Installation & commissioning

Total Capital budget in US$ 7.1M

The company will be reviewing financing options for new and refurbished equipment and employing local artisan contractors and operators during installation to significantly reduce costs compared to an EPCM style of project management. Cost estimates have been supplied by equipment suppliers, manufacturers, consultants and from operations using similar equipment on similar ores.

15.6 Operational costs

- GTT is implementing a lean management and control culture, Project management has been kept to a minimum and project operations simplified, resulting in the capital and operating costs being low and flexible. Many aspects of project development, engineering and operations that would generally be contracted are being brought in-house to build internal skills. Significant streamlining has been carried out in many aspects of the project allowing simplification and cost reduction.
- Operating cost estimates have been sourced from equipment manufacturers, suppliers, contractors and consultants working on similar operations with similar ore types, and due to utilising used and refurbished equipment, operational costs are lower for depreciation and amortization.
- Contract Mining
- Minimum pre-stripping and stockpiling

- Modular crushing, sorting, and processing equipment
- Automation where possible for enhanced safety and lower costs
- Local employees highly trained and motivated for operational roles
- Reduction of tailings dam exposure
- Gradual introduction of underground mining
- Review of alternate revenue streams from aggregate and by-product minerals
- Mining separation of sub-grade "ores" for separate treatment to generate ore grade concentrate
- Simplified process route to significantly reduce Capex, Opex and labour force
- Day shift only operations where possible
- Concurrent reclamation planning as part of mine operations
- Lean senior management with wide range of skills and deliverables

15.7 Establishment costs and working capital – bonds and closure insurance

Working capital has been estimated as 12 months leading to revenues from first sales. Labour recruitment has been phased over the development period to ensure appropriate skill sets are in place to support the development and commissioning whilst minimising carrying costs of a large work force.

Corporate costs such as the ERP system, certain corporate employees etc have been excluded from the project working capital. Also importantly the underground commissioning works sits outside of this feasibility study and therefore both the costs and the benefits from the extraction of the high grade are not included in the project economics.

Insurance costs have been estimated at 1.5% of total capital costs per annum base on standard market metrics.

Rehabilitation bonds are calculated by negotiation with the environmental authorities and the bond is calculated to cover planned disturbance that is exposed at any point in time. GTT has a concurrent reclamation policy and will be reclaiming completed areas as soon as they are completed such as waste dump slopes, abandoned haul roads which will be deducted from the total exposed current disturbance inventory.

Pit slopes on the final pit boundary once established will be protected by engineered drainage and storm erosion will be prevented by the use of sumps, drain pipes and revegetated slopes which will trap sediment, biomass and water as the reclamation species become established.

Pit benches will be wide enough for machine access to clean up any slumping across the berms and revegetation will be monitored and bolstered where necessary.

15.8 Project economic risks and sensitivity

The Santa Comba project has many advantages and also areas of potential cost and revenue risk that are addressed in the planning, design and management of the operations and environment.

Obviously, downward commodity pricing is always injurious to mining projects and designing and engineering the project to be able to weather these periods is one of management's main objectives.

Main technical risks to the project economics are.

- mining grades,
- dilution control
- poor reconciliation between estimated ore tonnage and grade and that mined,
- price spikes in fuel and power supply
- contract mining rate increase
- problematic ore sorting,
- harder crushing and grinding than expected,
- poor liberation of wolfram grains in the ore
- poor quality concentrates or contaminated concentrates
- sales contract issues

- conflicts with local government
- possible NGO activists causing delays with permits and operations.

The project is economically robust, and the issues outlined above are ingrained into operational planning, production monitoring and adjustment. The project can adapt with flexible ore mining schedules and rates, backed up by sophisticated grade control systems, adjustable ore sorting discriminator, simple semi-automated process plant and dry stacked tailings design.

The project ore schedules have been modelled with variances in operational costs and 3 x APT mtu pricings of US$180/mtu, US$240/mtu (Management Case) and US$ 300/mtu.

These results are shown below and indicate that the project is the most sensitive to commodity price and metallurgical recoveries variation which would trigger operational adjustments to ore cut-off grades, grade control selectivity and ore sorting parameters, crushing product specifications, and milling throughput optimisation.

The crushing and grinding equipment and circuit designs are selected for a certain amount of capacity flexibility and redundancy, which can be taken advantage of rapidly in times of economic downturns to increase mill grades and mitigate poor prices or boost throughput and product production in price upturns and increased demands for concentrate.

Terms taken from the HC Starck offtake proposal has been modelled, including the flexibility to sell lower grade concentrate down to 50%. This flexibility offers considerable mitigation to the risk of low recoveries as there is an inverse relationship between metallurgical recoveries and concentrate grade.

As can be seen in the graphs, commodity price and recovery have the most impact to the profitability of the project. In the Management Case, each 1% of additional recovery equates to an increase in NPV of approximately US$1M.

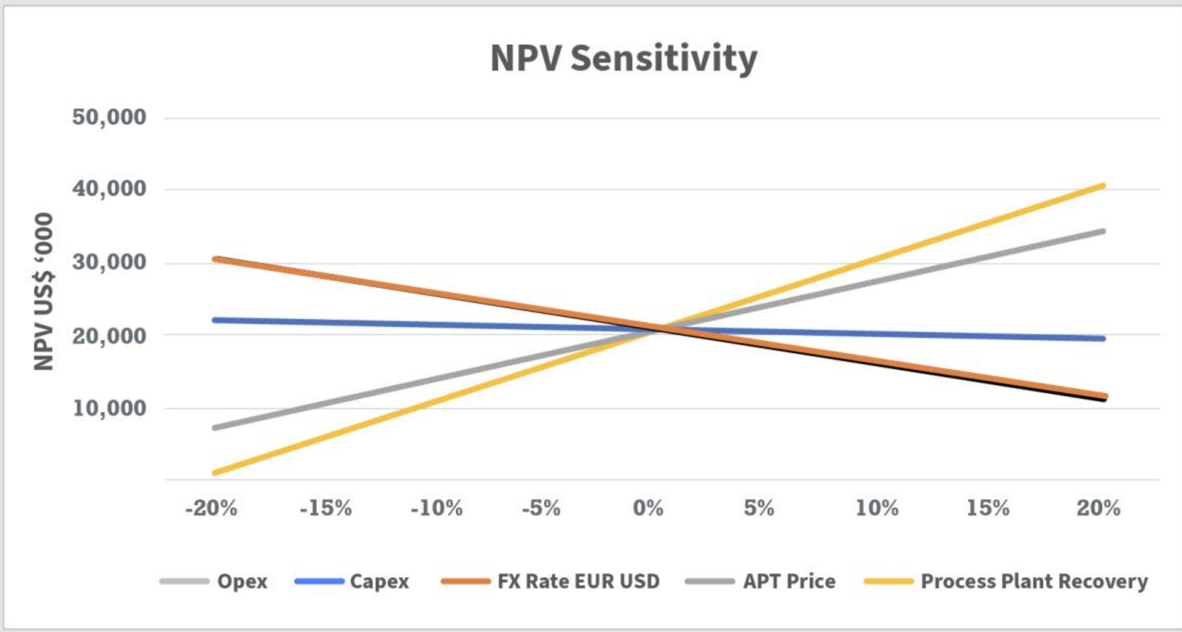


Figure 15.3 Management Case Sensitivity Graph

As can be seen in the graphs commodity price and recovery have the most impact to the profitability of the project. However, these scenarios are simplistically modelled without the positive impacts of the operational adjustments as described above.

15.9 Opportunities for cost reduction and alternate sources of income

Cost reductions can be gradually implemented by greater use of process automation, more throughput per equipment unit and increasing the efficiency of ore sorting to process lower grade ores.

Lower costs could be found using.

- larger mining equipment with reduced working shifts,
- finer fragmentation blasting techniques,
- higher ore and waste benches,
- alternate mining methodologies such as in-pit crushing and conveying,
- Lowering the resource cut off grades to encompass the sub-0.05% WO3 ore tonnage
- sales of by-products such as kaolin.

16.0 RISKS

16.1 Commodity Risk

The market for tungsten is driven by several factors industrial output globally especially automotive production and issues with China that presently produces ~80% of the world market of tungsten products.

Long term price estimates show a range between $200 – 300/mtu of APT and the fluctuation around this range depends upon global industrial output, infrastructure projects, mining activity and global military budgets.

The consumption trend shows steady growth as tungsten is being used in more innovative industrial applications such as robotics and autonomous vehicles and developments in ferro-metallurgy for machine tooling, high stress, high temperature components and abrasion resistant steels are finding the performance of tungsten alloys superior to older alloys and in some cases irreplaceable.

GTT has modelled the project around a Management Case of US$240/mtu of APT nominal flat over the life of the Project and shows the project to be robust and would be able to continue to be profitable even in the worst case of $180/mtu of APT nominal flat over the life of the Project.

Note that a $300/mtu case nominal flat has also been run as many recent Pre-feasibility studies for tungsten developments have been run under this scenario and higher, and hence this offers a useful comparative to the Santa Comba Project.

16.2 Regulatory Risk

The Project benefits from existing permits for both underground mining and the building of a process plant. GTT is working closely with the Department of Mines in Galicia to ensure that it remains compliant with the requirements of its Concessions and the permitting that is associated with the Concessions. GTT is working closely with the aggregate quarry company, Canteira da Minas (CdM) to ensure that the disposal of tailing and any emissions under the planned open pit operations also remains compliant with the CdM permits.

16.3 Public Domain Risk

Certain anti-mining groups have been particularly active in the Galician region. GTT is working to ensure that such groups have no grounds upon which to attack the development. The Santa Comba Project benefits from several factors:

- The mine is located at an existing operating site (aggregate quarry)
- The underground and process plant are permitted
- The mineral wolframite uses primarily gravity separation and therefore has a relatively small environmental impact from processing

Nevertheless management is cognisant of a very real threat from activist groups and has engaged the services of INCIS to assist the Company in managing the external messaging.

16.4 Early Access to Open Pit Resources

The ability of fast-tracking the Project is predicated upon reaching a suitable commercial arrangement with the aggregate quarry operator. The Project currently assumes that the first 3 years of operations will be carried out through such an arrangement, whereby GTT will benefit from the quarry operator delivering ore that resides within its existing open pit permit to the GTT process plant. The rationale for both parties reaching an agreement is strong as the Santa Comba waste material is the aggregate product for the quarry and therefore there exists considerable synergies and hence costs savings to work together. The discussions are ongoing and the operator has confirmed a willingness to operate under a commercial arrangement with GTT, however the terms of this arrangement have not finalised as at the time of this report. The fact that the terms remain outstanding is one of the key reasons that this report has been deemed to be "Pre-feasibility" rather than a "Feasibility" study. Key items to be resolved under the arrangement with the quarry operator are the commercial terms, the management of the waste piles (or product stock piles from the quarry operator's perspective) and management of any rehabilitation liabilities arising from mining the tungsten ore.

16.5 Construction Risk

The development of the process plant project will be managed by the GTT/Rafaella Resources engineering management team with significant project management, construction, equipment relocation and equipment refurbishment experience.

The team will be responsible for the site works, sourcing and relocating equipment, supervising local and foreign contractors, transport and haulage, customs and site preparation works

The design of the process plant is focused on modular process units installed into converted sea containers or on skid mounted frames for ease of installation and commissioning. There will be a significant amount of input for maximising off site preparation of modular units of equipment that will be simple to install once on site.

The GTT maintenance and operations teams will be involved as much as possible in the design, layout, refurbishment and installation of the equipment and to oversee contractors employed in short term projects such as concrete foundations, piping and electrical installation to Spanish regulatory code.

This will require additional tooling and equipment to be purchased, leased or rented, but the ability of an in-house team to build, commission and manage the project will be a significant asset to the company.

Hands on project management with the instilling of skills in the local workforce is one of the key mitigants of risk in the delivery of complex projects and avoids the issues with significant and sometimes massive overruns in time and Capital cost experienced with so many EPCM contracts, with some good examples in the Spanish tungsten industry that have caused significant damage to the owner companies due to lack of client control and involvement. Risks during commissioning and early start up will be mitigated by the contracting of experienced technical teams versed in their particular fields to mentor and train GTT operations staff in efficient operation of the particular aspects of the operations and will be contracted until the operations reach steady state and the various team members are signed off by these companies as being competent. These companies will include amongst others.

- Sepro engineering
- Knelson equipment
- Grinding Solutions
- Gravity Mining
- Ore Sizer
- TOMRA
- Watson Marlow
- Warman/Weir
- Mining software consultants (TBA)

Most of the training will be supplied as part of the equipment supply contract and will be supplemented as required to obtain operations certification.

16.6 Operational Risk

The mining in the open pit is considered straightforward using a simple blast and haul system. The deposit is well understood and is compact with competent rock forming the pit walls on all sides other than the north where there is kaolin mineralisation. This has weaker competency has been addressed through much shallower walls but may also be addressed through the mining out of the entire kaolin mineralisation.

Processing of tungsten is normally perceived as the greater operational risk in tungsten mining given the softness of the mineral and the experience of overgrinding in many projects around the world. Indeed, Santa Comba experienced such issues in the underground operations of the early 1980's, only resolving the low recoveries just before closing in 1985. Extensive testing by Grinding Solutions, who have direct experience in tungsten operations (including the recent issues faced by Drakelands in the UK) have provided GTT with comfort that these issues are well understood. Nevertheless, further testwork is planned to revisit the grinding parameters and to also optimise recoveries further by addressing the potential losses from the ultra-fine fractions.

To mitigate risk with the overgrinding issues, GTT has structured the metallurgical testing to address this matter with an innovative approach using;

- Ore sorting to reduce the ore load into the process plant by ~50%
- fine impact crushing to produce a high % of –1mm particles with maximum internal fracturing (for mineral boundary liberation)
- Utilising rod milling and fine stack screens as opposed to ball milling with hydrocyclones,
- Using enhanced gravity up to 600G instead of spirals and shaking tables at 1G
- Developing a dry tailings system to mitigate costs, environmental/permitting issues with tailings dams

16.7 Personnel

Spain is a well-established mining jurisdiction with a number of well recognised universities providing excellent training in the mining industry. Mining in Spain dates back to the Roman times and beyond. Significant projects in copper, lead and gold providing significant experience development over the years. Skill sets are well developed, and international exposure is also excellent with many Spanish mining professionals having worked in Africa and South America as well as Australia and North America. GTT is actively seeking such experience to ensure that latest operational practices and technological awareness is brought to the Project.

16.8 Environmental Risk

Santa Comba is an active brownfield project with surface disturbance going back to the 1940's across a large part of the 1.5km x 7.5km massif and therefore poses low environmental risk potential.

There is ongoing activity in an active quarry inside the mining leases of the mine and there is significant surface disturbance from ongoing quarry and pre-mix concrete operations, buildings, crushing plants and the historic tailings dam.

Access roads are already existing and there are wind farms in the immediate vicinity of the mine, with small eucalypt plantations on the slopes of the massif that are cropped on a regular basis. The local granite sand soils are poor with no commercial food cropping or intensive grazing in the vicinity.

Previous disturbance has not been planned for closure and little if any reclamation planning has been implemented. GTT has a modern and technically advanced reclamation planning mentality built into the mine planning function and the area will be reclaimed to Spanish environmental expectations leaving a safe, accessible and beneficial resource for the local community in the form of a flooded lake and revegetated dumps, tailings and operations facility areas.

There is a historic building that GTT will refurbish as its mine site office and will be left for the local community to enjoy.

17.0 Opportunities

This Pre-feasibility study has analysed what GTT has structured to be a low risk, low Capex and low Opex project that will get into cashflow quickly and give good long term returns on investments. The project has several attractive aspects for investment and the main ones are discussed below. There is an excellent local core management team that can identify and take advantage of opportunities as they are developed, both on site and through acquisitions.

GTT has identified numerous opportunities with the development of Santa Comba and these have been identified during the course of the Pre-feasibility study.

17.1 Tungsten recovery

Increasing metallurgical recovery is a focal opportunity with on-going pilot plant work being undertaken at this time. Present process recovery is 70% and the losses identified are within the fine fractions and are difficult to extract. Technology exists to extract heavy minerals down to 5 microns and this opportunity will be investigated in the coming 6 months to allow adjustment of the process plant design and the way the ores are treated at each size reduction stage. This work will also focus on improving concentrate quality to enhance value per tonne shipped. Increasing metallurgical recovery also lowers mine cut-off grade enabling an increase in mineable tonnage, making this a priority for GTT to work on.

17.2 Resource opportunity

There is excellent resource growth potential from multiple sources both within the resource and extensions to it.

17.2.1 Open Pit Expansion

- The Phase 1 drilling campaign is targeting conversion of Inferred Resource to JORC level Measured and Indicated categories. The Inferred Resources have been identified as priority drilling targets and these zones have been identified and planned for drilling in early 2021. The presently delineated orebody is open at depth and along strike, especially to the south where the Coparex underground workings extend for over 1km along multiple veins which will be the subject of Phase 2 drilling.
- The geological interpretation indicates that the Endogranite cupola strike dips under the south pit wall following the previous underground mining stopes. These targets will be targeted from surface via RC and core drilling to rapidly generate the boundaries of the Endogranite mineralization along strike and at depth. The present open pit resource is ~400m in length so the southern extension potential is of significant interest.
- Low grade open pit resource: 1) conversion into JORC resource is very interesting utilising the company's experience with Xray sorting. Recent testwork showed that sub grade ore containing specimens of 0.01% to 0.05% WO3 can be efficiently sorted to produce a pre-concentrate of 0.09% to 0.15% WO3 and a 20-30% yield. The present Santa Comba resource contains ~2.8Mt @ ~0.05 – 0.06% WO3 and with additional drilling planned this tonnage could expand considerably. This is important not only due to the financial impact of extracting all mineral bearing ores, but also the effect on stripping ratios, open pit optimisations and open pit depth limits.

17.2.2 Underground Development

- Conversion of underground resources into JORC Measured and Indicated Resources, along with expansion along strike, down dip, and exploration of known historic stopes and artisanal workings offers considerable economic potential to the Project. This is low risk, low cost and short duration drilling development that could generate sufficient resource of adequate tenor for justification of underground mining operations planning. It is usual when analysing mineral deposits to determine at which point does underground mining become more cost effective than deep open pit operations. Without a defined underground resource this exercise is not possible and is important in the longer term development of the project as the deposit has potential for a long term bulk underground mine.

There will be a different category of low grade when developing and mining underground resources and a significant opportunity exists to lower underground mining costs, eliminate dilution and extract ore grade feed from low grade / contact zones within the mining stopes. Containerised Xray sorters are presently being utilised underground and this format would allow sorting underground to generate high grade mill feed and barren backfill which will significantly lower backfill costs and allow the design of wider stopes and bulk mining practice using longer stopes, larger equipment and underground conveying systems.

- Development of known satellite open pit and underground resources within the 7km x 2km massif, discussed in section 4, are being reviewed and scheduled for investigation in late 2021 early 2022. There are multiple zones known and surface sampling, trenching, and mapping activity using handheld XRF analysers will help fact track these developments.
- An excellent opportunity is the local acquisition of projects as shown in Section 4. Acquiring developed projects allows the expansion of assets quickly in conjunction with concrete expansion and development at Santa Comba and the investment in facilities and people to develop these projects.

17.3 Owner operator mining

The use of in-house mining may significantly reduce mining costs, and this would impact mineable ore resources, NPV and IRR of the project. A study was undertaken by Rafaella Resources to assess in-house or partial in-house mining. An open pit mining fleet consisting of low hour used and refurbished machinery would cost ~US$ 3M including workshops, explosives handling and service machines. New equipment was also reviewed and finance options are being investigated but these costs are four times the used capex estimates although there is a significant opportunity for new or modified remote control and autonomous machines to lower costs significantly and increase overall safety.

This potential opportunity will be investigated further once M&I open pit resources have been materially increased to support the upfront investment.

17.4 Alternate mining methods

Opportunities for changing the mining methodology is being studied as the simple standard contractor truck/shovel scenario is easy, simple and low overhead. However, this is can be more expensive than well managed owner operator mining by 30-50% as discussed above, however alternate methodologies have the potential for lowering even in-house truck shovel operations by another 30-50% by the use of in-pit crushing and conveying (IPCC) and possibly combining in-pit Xray sorting. In-pit crushing and conveying requires a more permanent in-pit infrastructure which would require initial installation capital such as steep angle conveyors, but once installed haulage costs are 35-50% of truck haulage, especially with such low electricity pricing of Euro 4.5 Cents/kWhr. Presently the resource is insufficient to justify IPCC infrastructure and would require a single pit with over 50Mt of rock to be hauled, the present resource is 26Mt.

17.5 Green electricity

There are multiple wind turbines ~0.5-4MW in the vicinity of the mine and there is an opportunity to utilise significant amounts of green electricity thereby lowering the CO2 footprint of the mine, as electricity is by far the largest amount of energy consumed on site and presently the power supplied would be powered by coal baseload. This would be significantly increased if in-pit crushing and conveying mining methods are introduced.

18.0 JORC Code 2012 Edition

– Table 1 Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Mineral Resource estimate for conversion to Ore Reserves	• Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.	• The mineral resource estimate was completed in June 2020 and is that shown in the current report. These resources are summarised in the table below.

	Class	Tonnes	WO_3	Sn
		Mt	*%*	*ppm*
Near Surface Open Pit Potential *	Measured	1.205	0.159	118
	Indicated	4.927	0.155	90
	Meas + In	6.132	0.156	96
	Inferred	4.241	0.159	91
	Total M = I + I	10.373	0.157	94
Underground Potential #	Inferred	0.234	0.948	2,797
Global Total	Meas + Ind + Inf	10.608	0.175	154

Notes: * WO_3 Cut-off = 0.05% # Cut-off = 10kg/m² = 0.53% WO_3

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	• Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	• The resources are inclusive of Ore Reserves.
Site visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• Adam Wheeler visited the Santa Comba site and core processing facilities, from May 27th-28th, 2016. This included visits to quarry area and accessible underground workings.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Study status	• The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. • The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	• The current work has been part of a Pre-Feasibility Study (PFS). • The mine plan has been developed for three pricing scenarios, 1 x current pricing, 1x low pricing and 1x higher pricing and 3 x mining and processing throughput scenarios for each pricing target. The present pricing has been used with the commercially optimum throughput rate used as the Management Case. Mining process and operations costings have been considered for each of these scenarios and compared. The feasibility study has demonstrated that the mining and processing plan is commercially viable and has sufficient flexibility to lower operational and commercial risk.
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	• The applied cut-off for reserves was 0.05% WO3, which corresponds to the breakeven cut-off using an assumed price of $240/mtu WO3 APT. and an estimating combined processing and G&A cost of $6.23/t of ore.
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).*	• Pit optimization, followed by detailed pit design. • Open pit mining will be a conventional drill and blast operation. Benches will be of 12m height in waste, and sub-benches of 4m height in ore. Ore will be trucked to an ROM stockpile, from where it will be fed into an ore-sorter. • Designed slope angles have been based on a kinematic assessment of structural data. These data were obtained from oriented core as well as mapping results in the existing quarry. Limit equilibrium methods of used in the assessment of slope stability, as well as benchmarking from precedent open pit projects.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	• *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*	• Blocks were split and regularised, so as to make an overall parent block sizes of 5m x 5m x 12m, in line with the overall 12m benches being planned. Any mineralised parts were regularised to a block size of 1m x 5m x 4m, to allow for 3 x 4m sub-benches per overall 12m bench. These parameters imply a minimum mining width of 1m. • The regularization process effectively applies a 12% mining dilution, and 97% mining recovery. • Inferred resources have not been utilized in the pit optimization work leading to the main pit design. Inferred resources are also excluded from the Ore Reserves. • The pit design incorporated a double-lane haul road of 26m width for the upper part, and single-lane haul roads of 16m and then 12mfor progressively deeper benches.
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.*	• The processing of the ore is matched to the nature of the mineralization contained in the ores to be processed. The process is industry standard X-ray ore sorting followed by wet gravity concentration and flotation cleaning of concentrates. The process equipment is off the shelf and standard mode of operations. Testing has covered the different ore types and grades and the process design has taken these parameters into account. Bulk sample batch testing derived from 1.15 tonnes of PQ core from the main ore zone has been carried out, through to production of saleable concentrate quality, which has been analysed to determine commercial value and any deleterious elements and potential smelter penalties.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	• *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	• Mineralogical studies identified mineral types, sizings and liberation/joined grains analysis and process testing was based upon these criteria for maximum liberation and minimum sliming of the softer economic minerals.
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	• The waste rock component has been studied from core for various chemical and physical characteristics and the potential for acid mine water generation and run-off. Some of the more mineralized (barren sulphides) waste zones have shown the potential for oxidation and the potential for Acid formation. • The operational reclamation statement contains this information and waste dumps will be built with acid mitigation procedures such as placement of limestone blankets and dump drainage through reed beds etc. • There are environmental permits in place for the project at present with plans to expand the scope of the study to take into account the expansion of the open pit and the location of waste dumps and tailings facilities (vertical expansion of existing dam). • There is an active quarry on site at present consuming 300-500kt/yr. of waste rock granite to the local aggregate market and the waste inventory of ~25Mt is eventually destined for sale as aggregate. • The application of an open pit permit to cover production in the latter years for those resources not covered by the existing quarry open pit permit will require an updated environmental impact study.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	• The project is a brownfield site for both underground mining and open pit quarrying with all facilities present and operational for construction and operation of the mine and process facility. There is good local labour availability both skilled and unskilled and the project is in close proximity to motorways, main railway, and major container port within 60km.
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*	• Capital costs have been estimated from firm quotes obtained from international equipment suppliers, contractors and local suppliers of goods and services. • Operating costs have been generated from local cost metrics, supplier information and consultants to the company specializing in specific cost centers of the study. • A range of commodity prices have been used in every aspect of the value chain from geological model through to concentrate sales to offtake customer. • The published spot rate has been used for the $/Euro exchange. • The company has a fully termed offtake offer in place that forms the cash flow calculation based upon the concentrate tenor as determined from bulk metallurgical testing. • All costs and applicable royalties have been included in the cost analysis
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals, and co-products.*	• The financial model has been generated using multiple commodity pricing and multiple process throughput estimates using diluted head grade, ore sorter predictions from independent testing, metallurgical recovery from independent testwork and concentrate tenor from process testing concentrate analysis.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	• Demand for tungsten generally follows that of GDP growth, although market shocks do occur due to geopolitical events, such as conflict and more recently COVID19 which has seen a drop in demand for application in drill rigs and in the manufacture of automobile engines. Longer term the price is expected to be more heavily influenced by supply side factors as supply is dominated by China (circa 80%). China has been open about its desire to reduce supply outside of domestic markets for this critical material. In China, smaller mines have been closed and larger mines are seeing declines in resources and grade. Few new mines are being developed outside of China. • Reliable supply from a Western producer would be welcomed by Western end users. There is no material production in North America and Europe supplies less than half of its 8,000tpa demand. Benchmark pricing of Ammonium para-tungstate (APT) has a premium on the Rotterdam exchange over Chinese trade. • End users set out the specifications for the tungsten concentrate. It is expected that the concentrate from the Santa Comba mine will meet these specifications. Santa Comba has previously supplied tungsten concentrate that met acceptance specifications (1980–1985). • Pricing assumptions for the tungsten concentrate have been based off a fully termed offer from an end user. • Tin concentrate is widely traded, and all pricing assumptions have been based off market norms, including smelter charges and typical losses.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	• Exchange rates have been based on published spot rates. • All economics have been prepared on a real basis. No nominal figures have been prepared and hence no inflations assumptions have been applied. • Net Present Values have been calculated using a discount rate of 8%. This has been calculated on an unleveraged project basis. Sensitivities have been run at different rates for comparative purposes.
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	• Existing rights of way agreements are in place with local landholders. These are paid monthly and there have been no issues in gaining access to the property to conduct drilling activities. • Landholders of areas that cover the extended resource have been identified and approaches will be made to secure access as required. • The Project has deposited a reclamation bond for the underground permit of €104,410 and is in compliance with the Reclamation Plan. • For a new Open Pit permit a new Reclamation Plan will need to be submitted and will involve public consultation and a further bond to be deposited.
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.*	• The Project has an agreement with a major international commodity trader to acquire 100% of the tungsten and tin concentrate for a period of three years. An offtake agreement has yet to be executed with an end user, although this is a risk for the commodity trader, not the Project.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	• *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	• A commercial agreement has yet to be finalized with the aggregate quarry operator to allow the early commencement of open pit operations as modelled in the economics. These discussions are ongoing, and the quarry operator is amendable to work with the Company, as evidenced with access granted for both resource drilling campaigns. • The Project has permits to construct the processing plant. Once the plant is constructed, a further authorization is required to commission and operate the plant. • The Project has a permit to operate an underground mine. The Project does not have a permit to operate an open pit. The expectation is that the Project will initially access near surface material through a commercial arrangement with the aggregate quarry operator, whereby the quarry pit operator will mine the granite and deliver ore as identified by the Company to the process plant. This arrangement will continue until such time as the Company has obtained its own open pit permit to operate independently of the aggregate quarry operator. Allowance is being made in the commercial discussions to ensure continuity of operations until the award of the open pit permit.
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	• Measured resources within the designed open pit were converted into Proven Reserves, after application of regularization, equivalent to the application of mining factors. Similarly, indicated resources within the designed open pit have been converted into Probable Reserves. • This result reflects the CP's view of the deposit. • 100% of the Probable Ore Reserves have been derived from Measured Mineral Resources.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	• There have been no audits of the Ore Reserve estimates.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The criteria for resource classification were developed from a conditional simulation study. Measured Resource criteria corresponded to a maximum 15% relative error (at the 90% probability level) in grade estimation over a 3-month production period. Similarly, Indicated Resource criteria corresponded to a maximum 15% relative error in grade estimation over a 12-month production period. • These criteria were used to assign a resource classification field in the resource block model, and thereby related local estimates of overall and bench evaluation of Ore Reserves. • No other modifying factors have been applied. • There have been no previous open pit tungsten mining operations, so no relevant production data is available.

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