W Resources

La Parrilla Mine, Extremadura, Spain

Financial Investment Decision Report

August 2017

La Parrilla Project Profile

Facility	Key Area / Characteristic	Details / Comments
Location	Mine	La Parrilla Mine Site, 250km north of Seville, Spain
	Port	Huelva, 330km south of La Parrilla (Atlantic port)
	Nearest Town	Miajadas, 15km northeast
Timeframe	Life of Mine	6 years (initial) 11 years JORC LOM
	T2 Phase	Years 1 - 2
	T3.5 Phase	Years 3 - LOM
	Final Investment Decision	Q3 2017
	First Product Delivery	Q4 2018
Project Phases	Phase 1: T2	2Mtpa ROM producing 2,700tpa of WO_3 concentrate
	Phase 2: T3.5	3.5Mtpa ROM producing 4,000tpa of WO_3 concentrate
Marketing	Price Deck	WO_3 price (APT): 240 - 320 US$/mtu
		Tin price (LME): 18k - 20k US$/t
	Product Sales	Off-take contracts under negotiation
Geology	Ore Types	Hercynian tungsten mineralisation as quartz vein packages
Resource	JORC Resource (2017) (400 ppm WO_3 cut-off)	Measured: 1Mt @ 1,115 ppm WO_3, 278 ppm Sn
		Indicated: 35Mt @ 1,004 ppm WO_3, 110 ppm Sn
		Inferred: 13Mt @ 974 ppm WO_3, 97 ppm Sn
		Total: 49Mt @ 998 ppm WO_3, 110 ppm Sn
Reserves	JORC Reserves (2017) (330 ppm WO_3 cut-off, 5% dilution)	Proven: 1.2Mt @ 995 ppm WO_3, 251 ppm Sn
		Probable: 28.6Mt @ 928 ppm WO_3, 111 ppm Sn
		Total: 29.7Mt @ 931 ppm WO_3, 116 ppm Sn
Hydrology	Mine Water Management	Pit water management via in-pit sumps if necessary
		Surface run-off in immediate catchment area managed though pit diversion bunding
		Excess water disposal - volume in excess of project requirements (stored in tailings & raw water facilities) zero discharge projected
Mining	JORC Reserves (2017) (330 ppm WO_3 cut-off)	29.8Mt @ 931 ppm WO_3, 116 ppm Sn
	Mining Method	Open pit mining: Standard drill, blast, truck, shovel operation
		6,240 hours per year, 90% asset utilisation
	Strip Ratio	Years 1-6: 1.35:1 (avg.) | Years 6+: TBC
	Depth of Pits	Existing pit bottom: 270m above sea level; 75m in the deepest part
		Initial mining area: Pit bottom 270m above sea level
	Explosives & ANFO	100% Drill and blast at a powder factor of 0.314 kg/m^3

Processing	Processing Plants	325tph dry crushing and screening with ore sorting 350tph jigging pre-concentration plant 155tph wet gravity concentrator with sulphide flotation and electrostatic separation	
	Product & Size	Tungsten concentrate P_{100} 200 µm	
	Product Moisture	1% (diesel fired kiln dryer)	
	Product Specification	Tungsten: 66-68% WO_3, 1-2% Sn, 0.1-0.3% As	
		Tin: 52-55% Sn, 2.5-3.5% WO_3, 0.2-0.5% As	
	Yield	Crushing & Screening	100%
		Pre-Concentrate & Jigging	56%
		Concentrator	0.013%
	Metal Recovery	Tungsten	72%
		Tin	68%
	Operating Hours	Crushing, Screening, Sorting	6,048 hours per year 90% asset utilisation
		Pre-Concentrate & Jigging	7,581 hours per year 95% asset utilisation
		Concentrator	7,581 hours per year 95% asset utilisation
Product Delivery		Continued road haulage to EU customers and overseas freight for North America and Middle East customers Concentrate shipped in 1m^3 bags	
Infrastructure	Administration	Existing offices & workshop facilities to support plant operations and maintenance functions	
	Wet Fines Storage Facility	Existing tailings facilities for full volume of initial mining and processing operations during the T2 Phase	
		Existing tailings facilities expandable via raising of dam and dyke walls for the T3.5 stage to LOM	
	Communications	100% mobile 3G coverage via municipal communications towers	
	Road Access	Major site access via sealed municipal roads 7km from National Highway A-5 (Madrid - Seville)	
	Power Peak Demand (T2)	Grid connection in place: Currently 0.76 MW installed and connected. Expandable to 1.5 MW. Initial production will be supplemented NG gen-set power with grid power expansion works (additional 3.5 MW) for the T3.5 stage proceeding in parallel	
	Water Supply	First 3 years will consume water in current pit via repurposed existing dam	
		Later years will draw on rainfall in the catchment area of the fresh water dam, and utilise water from the federal irrigation network 1.5km east of the proposed water dam location	
	Laboratory	Existing laboratory facilities for processing up to 50 samples per day	
	Offices	Existing facilities for 8 office personnel	
Environment	Rainfall	Average annual rainfall 463 mm/a	

Environment (Continued)	Temperature	Minimum recorded temperature: -3˚ C Maximum recorded temperature: 45˚ C Average summer temperatures: 26˚ C Average winter temperatures: 8˚ C	
	Disturbance (Total ~300 ha)	Mine site infrastructure	40ha
		La Parrilla Mine (pit & waste dumps)	200ha
		La Parrilla Tailings	60ha
Land Access	Land Access Agreements	T2 phase approved	
Tenure	Environmental Licence	T2 phase approved	
	Mining Tenement Licence	Expires 2068	

Capex (US$'000)	**Operating Area**	**2018**	**2019**	**2020**	**2021**	**2022**
	Mine	226	-	-	-	-
	Pre-Strip	-	-	-	1,8155	809
	Crushing & Screening	3,520	-	853	743	-
	X-Ray Ore Sorting	-	-	3,032	6,415	-
	Pre-Con Plant	3,020	1,334	1,334	-	-
	Concentrator	8,580	-	-	-	-
	Lab	232	-	-	-	-
	Tailings	1,776	599	-	1,357	-
	Services	2,151	-	281	-	-
	Sub Total (Directs)	**19,504**	**1,933**	**5,498**	**10,330**	**809**
	Owners cost + EPCM (20%)	2,995	-	-	874	-
	Contingency (20%)	2,995	-	617	1,747	-
	Project Grand Total	**25,494**	**1,933**	**6,116**	**12,950**	**809**

OPEX ($ / mtu)	**Operating Area**	**Initial 6 Years of Planned Production**
	Mining	23
	Drill & Blast	13
	Grade Control	5
	Crushing & Screening	18
	Pre-Concentration (Jigging)	14
	Concentrator	7
	Waste Haulage	6
	Laboratory	4
	Management & Administration	5
	Sub Total	94
	Contingency (15%)	12
	Royalty	4
	Tin Credits	(16)
	Total OPEX	94

Financial Evaluation	**Initial 6 Years of Production**	**Real 2017 US Dollars ($M)**
	Project NPV (After-tax)	59
	IRR (After-tax) %	64
	Revenue US$M	341
	Opex US$M	(145)
	EBITDA US$M	195
	EBITDA US$M p.a.	32.6
	EBITDA Margin %	57
	Payback Yrs.	2
Project Development	Major Capital Items Assumed Funded by Contractors	Mining equipment Haul fleet Drill & Blast Equipment Process Plant Maintenance & Services Equipment
	Key Construction Packages	Process Plants Bulk Earthworks (Mine & Plant) Miscellaneous Buildings (Mine) Project Management Contractor (PMC)
	Key Operations Packages	Mining Contractor Drill & Blast Diesel Supply
	Ownership Model	Small Owners Team PMC during construction Maximum contracting for mining operations
	Construction Workforce (peak)	80
	Construction Roster	8hr days; 5 days per week
	Operations Workforce (peak)	Years 1+2: 157 (inclusive of contactors and management team)
		Years 3+: 221 (inclusive of contactors and management team)

Executive Summary

Project Overview

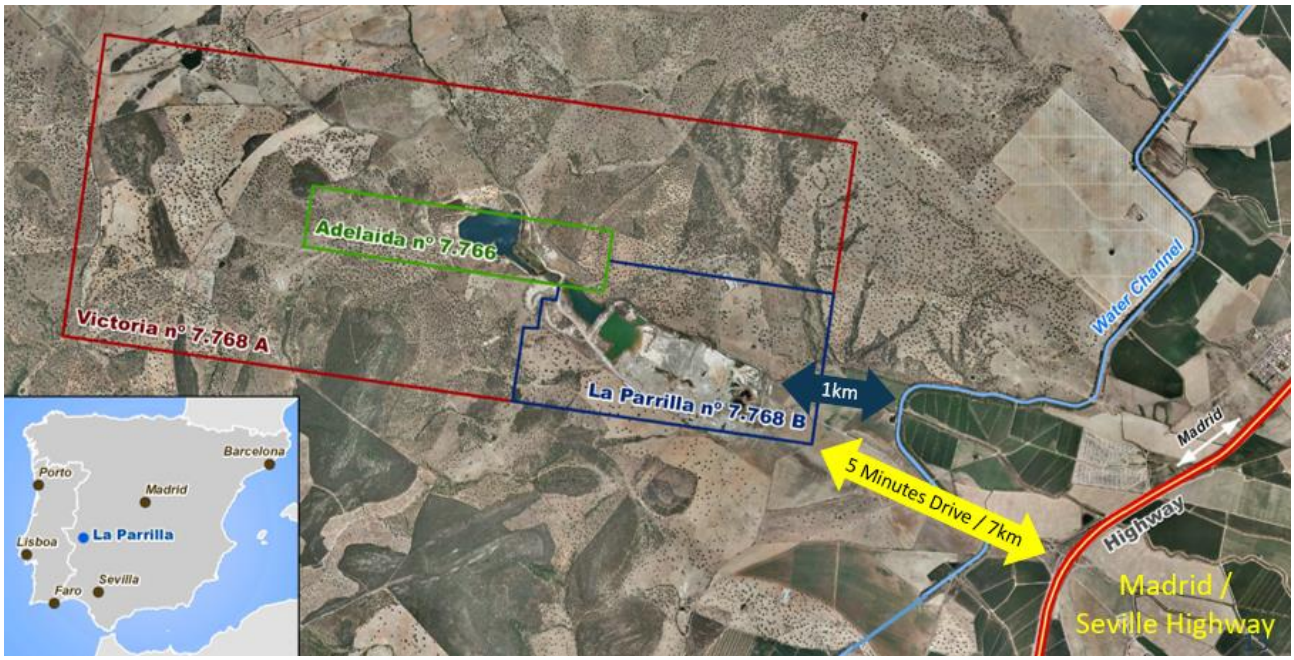
La Parrilla is a large, low capital, low operating cost tungsten and tin mine development located in Spain. The mine is approximately 300km southwest of Madrid and approximately 257km north of Seville, Spain. The planned staged development of the mine will begin production at 2,700 tonnes (t) of tungsten concentrate increasing production in 2020 to 4,000t of 66% tungsten tri-oxide (WO_3) and 500t of tin (Sn) concentrate with an expected total mine life in excess of 11 years.

La Parrilla, Spain	
Location:	257km north of Seville
Licence Status:	Granted Mining Licence 2068
JORC Resources:	49.0Mt @ 998ppm WO_3
JORC Reserves:	29.8Mt @ 931ppm WO_3
Metres Drilled:	22,043 metres from 159 holes
Mine Life:	6 years (planned) 17.7Mt @ 1127ppm
Mine Capex:	US$25.4m / US$47.3m total
Mine Economics:	US$59m NPV / 64% IRR
Milestones:	Full Environmental, Mining and Access approvals in place

Key Project Highlights

- World Scale Resource: 49 million tonnes (Mt) at 998 parts per million (ppm) WO_3 at a 400ppm cut-off grade, making it one of the largest tungsten deposits in the western world
- Australasian Joint Ore Reserves Committee (JORC) compliant Mining Reserves of 29.8Mt @ 931ppm WO_3
- All major infrastructure already in place: power, water, site offices and access roads
- Located in first world country proximate to major European tungsten consumers
- 2 million tonnes per annum (Mtpa) initial Run of Mine (ROM) rate producing 2,700 tonnes per annum (tpa) of concentrate increasing to 3.5Mtpa ROM in 2020 targeting production in excess of 4,000tpa of concentrate at 66% WO_3
- Bottom quartile of global tungsten operating cost curve estimated at $94 per metric tonne unit (mtu) average over the first six years of production
- Low capital cost of $25.4M to achieve targeted production rates of 2,700tpa of final concentrate and an additional $21.9M to expand concentrate production to 4,000tpa of WO_3
- Simple coarse grain metallurgy permits early liberation of tungsten at coarse sizes
- Simple gravity processing techniques produce superior quality concentrates
- IRR of 64% and NPV of $59M based on the initial 6 years of planned mining

La Parrilla Project Footprint

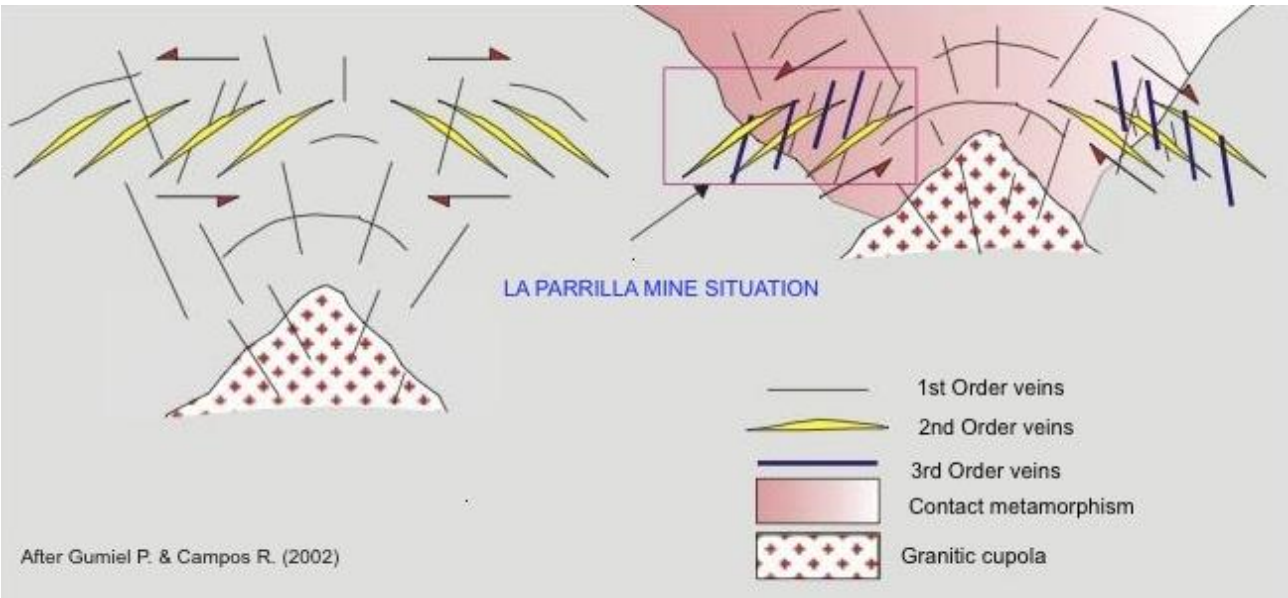


The La Parrilla Project comprises of a staged development at the La Parrilla mine with the initial phase delivering 2,700tpa of +66% tungsten concentrate and over 400tpa of final tin concentrate at >52% Sn. Expansion in 2020 ramps production up to 4,000tpa of tungsten concentrate and over 500tpa tin concentrate. The Final Investment Decision Report (FID) proposes two stages of development summarised as:

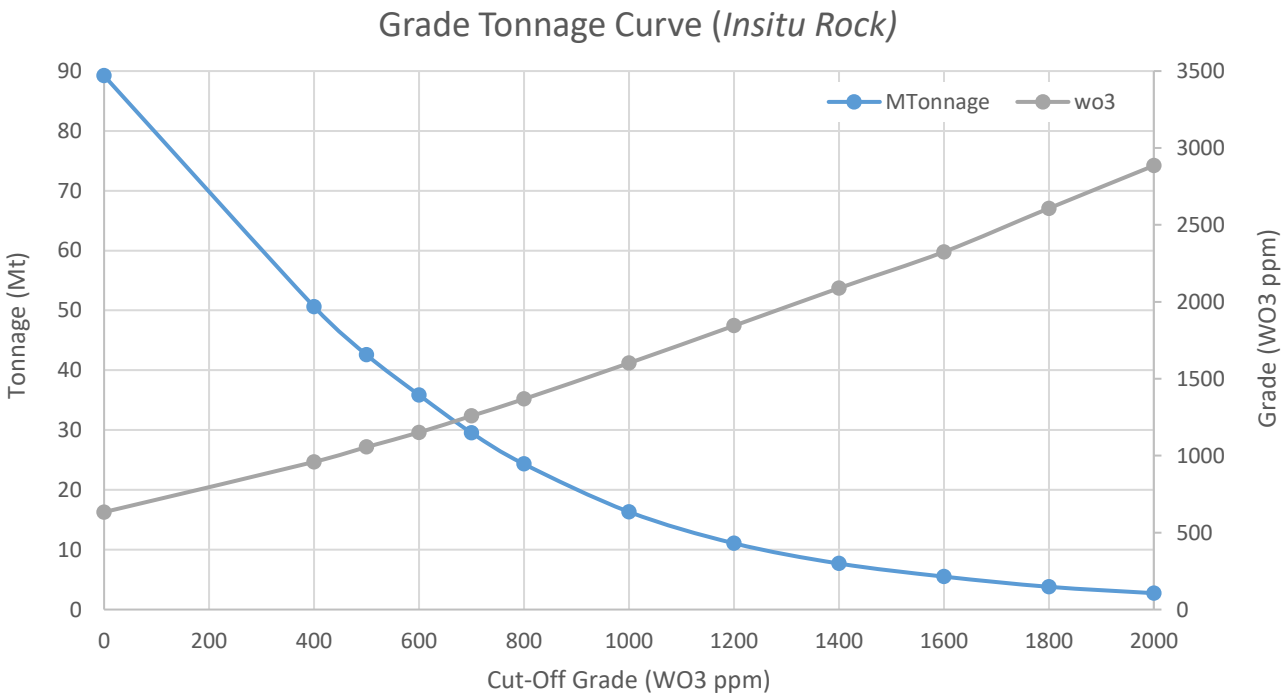
- **T2 Production FY18:** Production ramping up to 2Mtpa ROM delivering 180,000mtu/a utilising a conventional dry crushing and screening plant, advanced jig technology for pre-concentration and finally concentrated by conventional gravity techniques. Final product specifications are achieved though reverse floatation and electrostatic separation to produce a clean tungsten and tin concentrate.
- **T3.5 Production FY20:** Steady state production at 3.5Mtpa ROM delivering 255,000mtu/a though the addition of an x-ray ore sorting circuit and incremental crushing circuit capacity expansion.

Geology and Resource

The Hercynian tungsten mineralisation is interpreted to be of granitic affiliation. Mineralisation occurs as quartz veins bundles within a ring-dyke model and disseminated in greissenized granitic fingers.



The La Parrilla Project is currently underpinned by a 49Mt Mineral Resource at 998 ppm WO_3 (prepared to the JORC standards: JORC 2012) with additional resource potential though high grade extensions adjacent to the existing pit. Currently W is considering a cut-off of 400 ppm providing >0.1% WO_3 ROM for the Life of Mine (LOM).



Mining

Ore is to be mined utilising a conventional truck and shovel configuration at a strip ratio of approximately 1.35t of waste for every 1t of ore (1.35:1) averaged over the initial years of planned production. The strip ratio beyond the planned 6 years of production to LOM is currently being optimised. Currently the planned six years mining is as follows:

Summary Mine Schedule	Y1	Y2	Y3	Y4	Y5	Y6	Total
Ore tonnes (Mt)	2	2	3.2	3.5	3.5	3.5*	17.7
Waste tonnes (Mt)	3.6	3.4	8.7	4.1	1.5	0.5	22
Strip Ratio	1.82	1.71	2.73	1.19	0.42	0.25	1.35
Grade WO_3 ppm	1,352	1,258	1,025	1,116	1,000	1,008	1,127
Grade Sn ppm	120	121	183	121	114	99	126

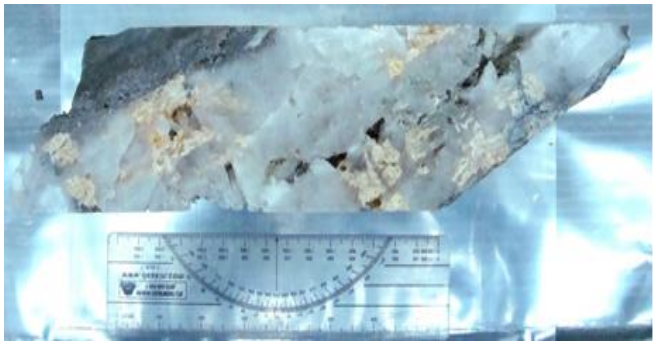
Mining optimisations at the La Parrilla main pit have been undertaken with Measured and Indicated Resources. The current block model and surface mineralised-vein outcrops indicate the potential for Inferred Resources to be upgraded to Indicated and/or Measured. The study author recognises that the principal has addressed and planned a drilling campaign focused on continued resource upgrades and mine schedule optimisations. The scheduled ore rate in year 6 is 3.5Mt* (2.1Mt as modelled within the initial 6-year pit + 1.4Mt of expected transition tones) as long term mine planning transitions to the LOM pit shell.

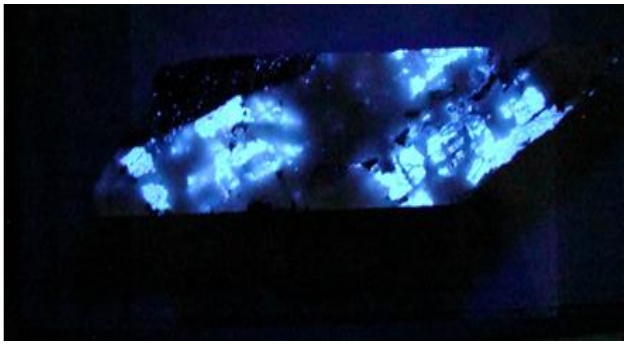
Metallurgy

Easily liberated, coarse grained tungsten located in the veins of the deposit permit high mass rejection of non-tungsten bearing rock post crushing and pre-final concentration stages.

The tungsten predominantly exists as massive scheelite within quartz vein. Minor occurrences of wolframite are noted; however, it only represents a small minority of the orebody. Recovery of tungsten increases from 80% in the -10+2 millimetre (mm) fraction to 94% in the -2+1mm after which there is little improvement.

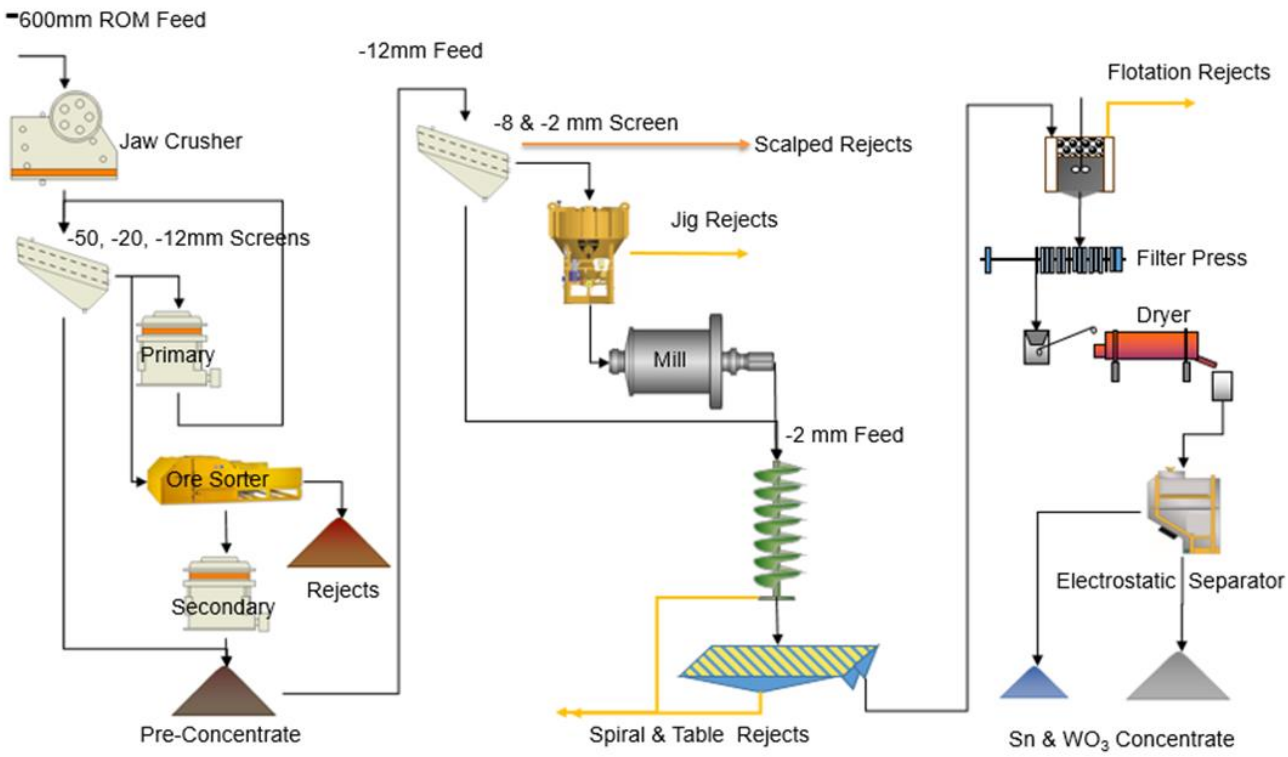
Tin mineralisation predominantly exists as cassiterite. Approximately 10% of the tin is noted to be locked to chalcopyrite and thus reports to the floats fraction during reverse flotation and is unrecoverable. Small amounts of stannite are also noted however unrecoverable due to locking with silicates. Recovery of tin varies from 50% in the -10+2mm fraction steeply increasing immediately thereafter up to 90% in the -2+1mm fraction.





Processing and Products

Mined ore is to be initially dry processed at the mine site through a conventional dry crushing and screening plant, including coarse x-ray ore sorting. Advanced jig technology produces a quality pre-concentrate which is ultimately concentrated by conventional gravity techniques. A tin concentrate will be produced via electrostatic separation and arsenic levels reduced to below product specifications via standard sulphide flotation techniques.



The product strategy for the La Parrilla Project will be to produce a tungsten and tin product at a ratio of ~8:1. W and its market advisors expect the La Parrilla product to price at 80% of ammonium paratungstate (APT) pricing per mtu. As La Parrilla has provided in excess of 130t to European customers thus far with excellent feedback and product support, the higher grade, minimum 66% product with trace impurities will continue to exceed customer expectations.

Resource Area	WO_3 (%)	Sn (%)	As (%)
Tungsten Product	66-68	1-2	0.1-0.3
Tin Product	2.5-3.5	52-55	0.2-0.5

Mine to Customer

Initial production will utilise standard road transport in 20t shipments to European customers. As the production increases in 2020 road transport will remain as the primary shipment method, however seaborne freight to North American and Middle Eastern customers will be accommodated though one of Spain's largest ports, Huelva, which is 330km south of La Parrilla mine site on a sealed 4 lane national highway.

Tenure and Approvals

The main tenure and primary approvals for the T2 project stage have been secured. This includes all miscellaneous licences underpinning the development and upside potential of the La Parrilla Project business cases.

Current Mining Lease	
Fully granted	✓
Provides accesses to tailings facilities for the T2	✓

T2 Mining Lease	
Mining plans submitted to the Department of Mines (DM) in Q1 2015	✓
The Environmental Impact Assessment submitted in Q1 2015	✓
First initial review stage completed Q2 2105 by the DM	✓
Environmental team has provided written feedback to queries	✓
Environmental Impact Assessment approval granted in Q3 2015	✓
Full Mining approval granted in Q4 2015	✓

T3.5 Mining Lease	
Environmental team has begun to draft the application for the T3.5	✓

Marketing

The La Parrilla Project will produce a minimum 66% tungsten product and anticipates producing a tin product >60% Sn for sale into the European markets. The La Parrilla product has no major contaminants and our existing product has been well received by customers. The higher-grade products the La Parrilla Project will produce are expected be well received in the European markets as a stable, long term supply for European APT production.

Development Model

W has adopted an operating strategy of maximum vendor engagement for infrastructure engineering and construction. This aligns with the W corporate strategy of striking an acceptable balance between owner capital investment, owner risk exposure and acceptable returns. It is acknowledged that this approach may evolve further post FS to achieve optimum funding and profitability considerations. Construction phase contracting will comprise a combination of fixed price / lump sum design and construct contracts and schedule of rates service contracts. A small La Parrilla Project owners' team

will oversee the key performance areas of contractor operations which will be assisted during the construction phase by Project Management Contractor contract. The owners' team will also be directly responsible for long term mine planning and product and process quality control at the mine and plant operations of which the operations will be directly employed under W.

Project Metrics

The study focuses on the first six years of production. The main capital infrastructure items are quoted contract capital expenditures and services such as mining and drill & blast being reflected in the operating costs. Principal funded capital items include the process plant (crushing & screening, ore sorting, pre-concentration, and final concentration). This excludes major mining equipment or any contracted services. The T2 base case Capital Cost (excluding the contractor funded items) is US$27.8M, which will allow a ramp-up to target capacity of 2,700tpa in the first year of operation. An additional US$20M Capital Cost has been allocated for the T3.5 to be incurred across Production Years 3-4 which will increase production levels to above 4,000tpa.

- **Operating Cost:** The average operating cost is US$94/mtu at the mine gate during the first six years of planned production. These estimates are in Q1 2017 dollar terms at a +10% level of accuracy with all areas quoted by multiple vendors.

- **Investment Analysis:** Based on an APT price profile incorporating a long-term price of US$300/mtu (66% WO_3 product, realising 80% of the APT price 2017 dollar terms) and a EURO dollar exchange rate of US$0.91.

  The La Parrilla Project has the potential to deliver attractive financial returns during the first six years of planned production including a pre-tax NPV_{10} real of US$59M, an IRR of 64% and an average EBITDA per annum of US$32.6M. On a pre-tax basis, the La Parrilla Project is cash flow positive throughout the six years of planned mining with a payback of 2 years from commencement of operations.

- **First Production:** Assuming FID and funding commitments by the end of Q3 2017, the La Parrilla Project T2 could deliver first product in early Q4 CY2018.

Infrastructure Opportunities

The requirement for new power, water and office infrastructure is minimal over and above the currently installed, available capacity. Currently, 1.5MW of available grid power is connected at site. Supplemental natural gas fired generators are being considered for the first year to power the pre-concentration and concentrator plants whilst the LOM grid power line is installed in parallel. Existing offices supply sufficient capacity for construction management and will be expanded for operations. There is sufficient water on-site for 3 years of operations after which raw make-up water will be supplied from the adjacent irrigation channel.

There is significant potential for further project upside to be developed prior to FID. Value could be added through a range of initiatives, including:

- Value engineering studies to be conducted with the aim of optimising overall capital and operating cost estimates.
- Further mine optimisation studies beyond the first years of planned production which may include resource definition / expansion drilling programmes.
- Continued exploration of the La Parrilla northwest extension confirms significant tungsten intersections indicating that significant upside to growing the La Parrilla resource in both size and grade exist. Preliminary field mapping confirms additional tungsten vein mineralisation in previously unexplored areas on the La Parrilla lease.

Fast Track Project Engineering Works Underway

Mine and Tailings

- LOM mine optimisations underway
- Waste haulage optimisations underway for LOM
- T2 tailings infrastructure designed and optimisations underway for LOM

Processing Infrastructure

- Crushing circuit preliminary engineering completed. Detailed engineering underway
- Pre-concentration plant preliminary engineering completed. Detailed engineering underway
- Final concentration plant preliminary engineering optimisation underway

Infrastructure Services

- Discussions underway with regional power supplier for T3.5 power expansion
- Raw water dam designed and optimised for LOM
- Lab expansion completed
- Office infrastructure expansion defined

Final Investment Decision Team and Competent Persons

The FID report was managed by W Resources Plc and supported by an expert external team of leading industry specialists including Golder Associates Pty Ltd, FF Consultores SL, IDEXMA, ATM, AYMA Mining Solutions and many others. The main contributors and consultants engaged for the FS and their broad areas of contribution are noted below.

Contributor	Background	Description of Contribution
W Resources Plc	Successful track record in proving up and commercialising resources	Study management/coordination, marketing strategy, environmental inputs, stakeholder information, financial modelling
FF Consultores, S.L	Consultants in geological and resource development	Management of W Resources Spanish assets, Geological management, resource development, drilling, project consultation
Golders Associates Pty Ltd	Geology, resource, and mining consultants	Conducted Resource Estimation and JORC sign off

Contributor	Background	Description of Contribution
IDEXMA (Laura Golfe Ariete)	Environmental consultants	Provided environmental consulting services for environmental approvals
AYMA Mining Solutions	Resources and reserves mining consultants	Conducted mining study optimisations and scheduling including JORC reserves sign off. Provided assessment of exiting tailings and dumps as well as expansion designs
ATM	Civil engineering experts with significant experience in the operation of crushing, screening, and pre-concentration plants in Spain	Provided infrastructure consulting services: power & water estimation, existing infrastructure capacities, earthworks estimate and installation estimates
GR Engineering Services Limited	Engineering design and construction services	Overall plant layout optimisation and engineering including specialist input to crusher and concentrator design and procurement support
Gabinete Técnico Minero	Blasting & mining experts in Spain	Provided guidance in the estimations of bulk mining, drilling and blasting, and cost estimation

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