TUNGSTEN WEST

RESTARTING THE HEMERDON TUNGSTEN MINE

JUNE 2020

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A GREAT OPPORTUNITY FOR INVESTORS

WORLD CLASS DEPOSIT OF A STRATEGIC METAL

PROJECT NPV OF £306m

IRR of 111%

RAISING £5m TO FINALISE DFS

KEY HIGHLIGHTS

FIXING A WORLD CLASS TUNGSTEN MINE

>£200m sunk capital

WORLD'S 4th LARGEST TUNGSTEN RESOURCE

332 Mt @ 0.12% WO_3

LOW CAPEX & QUICK PAYBACK

£35m Capex, est. £35m p.a. EBITDA

MINE LIFE OF 23 YEARS WITH POTENTIAL FOR +30

Post Tax NPV(5%): £306m

LOW OPEX & 3 REVENUE STREAMS

B/E WO_3 PRICE: $134/mtu

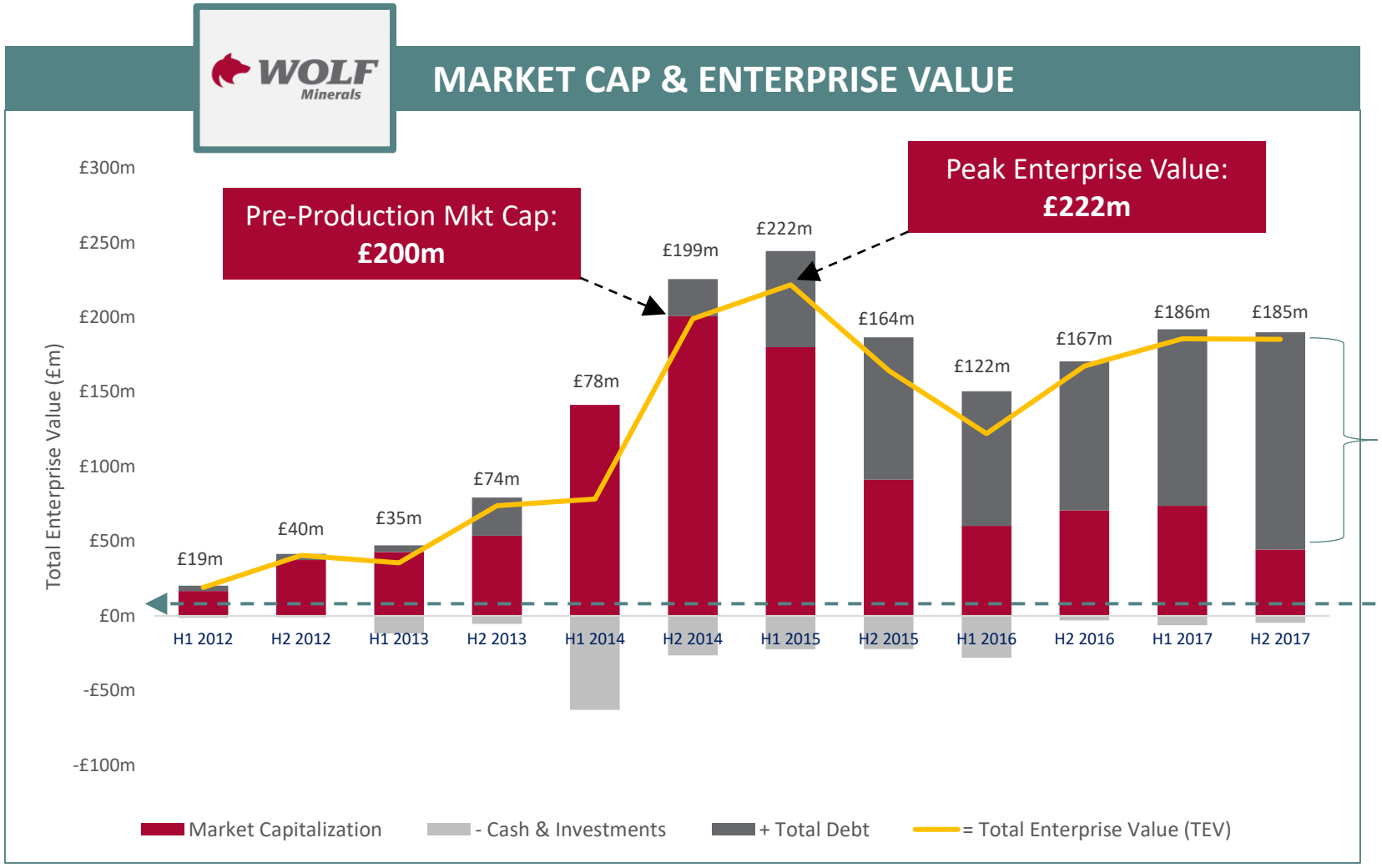
IMMEDIATE CASH FLOW FROM AGGREGATES

Sales into local market

DEFINITIVE FEASIBILITY STUDY ON TRACK FOR Q1 2021 WITH A PLANT REBUILD TIME OF 6 MONTHS

VALUE PROPOSITION

MARKET CAP & ENTERPRISE VALUE



£145m of Debt Prior to Receivership

£5.6m Acquisition Price

Source: Capital IQ

ACHIEVEMENTS TO DATE

CORPORATE

- **Acquisition of the Hemerdon Mine Completed:**
  - Initial consideration of £5.6m, plus a £1.8m top-up payment into the Restoration Bond (increased to £13.2m)
  - Deferred consideration of £1m per annum for 8 years, commencing 2022
- **10 year Mining Services Contract signed with Hargreaves Services:**
  - Life of contract average margin of 7.5%
- **All historic property issues with neighbours and landlords resolved**
- **Major changes to the Minerals Lease:**
  - Landlords' termination right upon mining cessation deferred until Dec 2024
  - Overall royalty reduced from 4.00% to 2.25%
  - Option over Southern Extension
- **Management system under construction**
  - ISO 14001 – Environmental Management - Approved
  - ISO 45001 – Health and Safety – pending
  - ISO 39001 – Traffic Management - pending
  - ISO 9001 – Quality Management – pending
  - ISO 27001 – Information Technology – pending
  - ISO 50001 – Energy Management – pending
  - ISO 31001 – Risk Management - pending

TECHNICAL

- **New Technical Reports:**
  - New Competent Persons Report (Wardell Armstrong)
  - Updated JORC Resource (Mining Plus) plus further internal resource upgrade
    - Grade increased by 12%
    - New Optimised Pit Shell and Financial Model (Mining Plus and TWL)
  - Multiple Metallurgical Test Work Reports:
    - XRT Ore Sorting (Steinert and Tomra)
    - Tailings classification analysis (Grinding Solutions)
    - Ore and tailings magnetic separation characteristics (Eriez)
    - WHIMS lab-scale testing on ore and tailings (Outotec)
    - Gravity and magnetic separation (Wardell Armstrong)
    - Concentrate dressing via leaching (Grinding solutions)
    - Pilot Plant (GTK)
    - Independent Metallurgical Reviews (Mike Halliwell and Doug Caffell)
  - Project Review (Fairport Engineering)
- **Trenching of the Southern Extension:**
  - 220m of trenching, including very high grade intercepts
- **Aggregates:**
  - Characterisation and certification of aggregates (John Grimes Partnership)
- **Core Technical Team Recruited:**
  - Technical Director, Geologists, Metallurgists, Sustainability Manager, Consultant Project Manager, IT and Data Manager, Planning and Permitting Consultants

FINANCIAL HIGHLIGHTS

ASSUMPTIONS

WO_3 Price Deck:	$275 / mtu	Years 1 - 5
	$300 / mtu	Years 5 - 10
	$325 / mtu	thereafter
Sn Price Deck	$20,000	per tonne
WO_3 Payability	78%	of APT price
Mine Life	23	years
Capex	£35m	
Avg Granite Grade	0.18%	WO_3
	0.03%	Sn
Avg Killas Grade	0.11%	WO_3
	0.02%	Sn
Granite Ore Mined	59.9	Mt
Killas Ore Mined	17.8	Mt
Killas waste Mined	85	Mt
Strip Ratio	1.1 : 1	
Recovery - Granite	58%	
Recovery - Killas	44%	
Total WO_3 Recovered	72,000	tonnes
Total Sn Recovered	7,400	tonnes
Mining Cost	£3.94	per bcm
Processing Cost	£5.75	per mt
Royalty	2.25%	
USD / GBP	1.25	

FINANCIAL METRICS

Based on the Interim Technical Update the project metrics are: (Mining Plus)

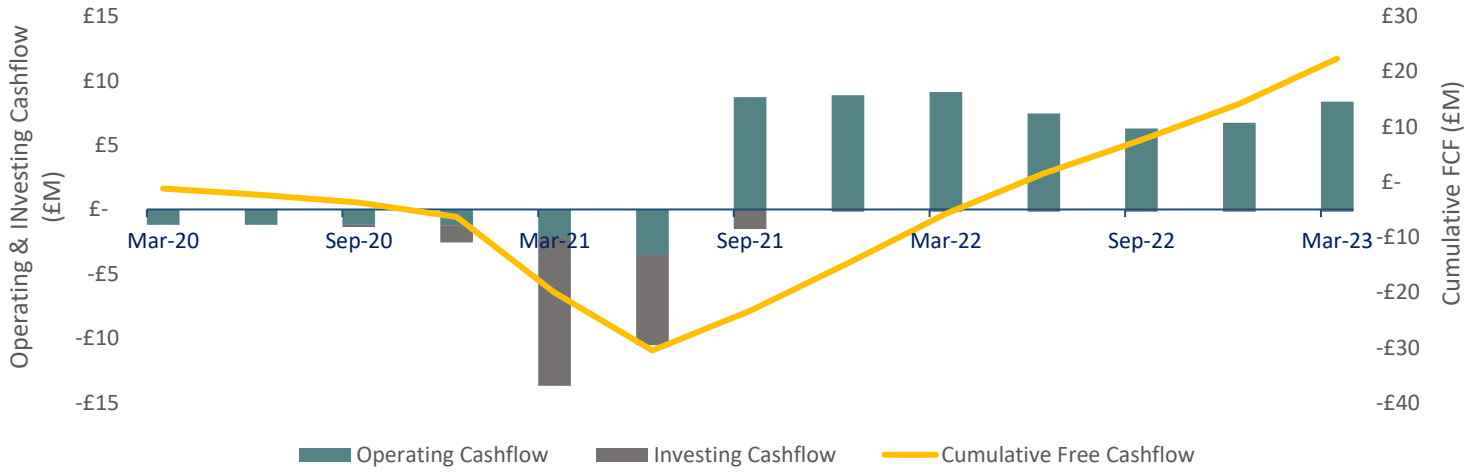
NPV(5%)	£306m	Post Tax
IRR	111%	
LOM Cash Flow	£526m	Post Tax
Project Breakeven	$134 / mtu	APT Price
Total Revenue	£1,595m	
Total Opex	£874m	
Operating Margin	45%	

DFS OPTIMISATION

Further upside to this Financial Model will come from:

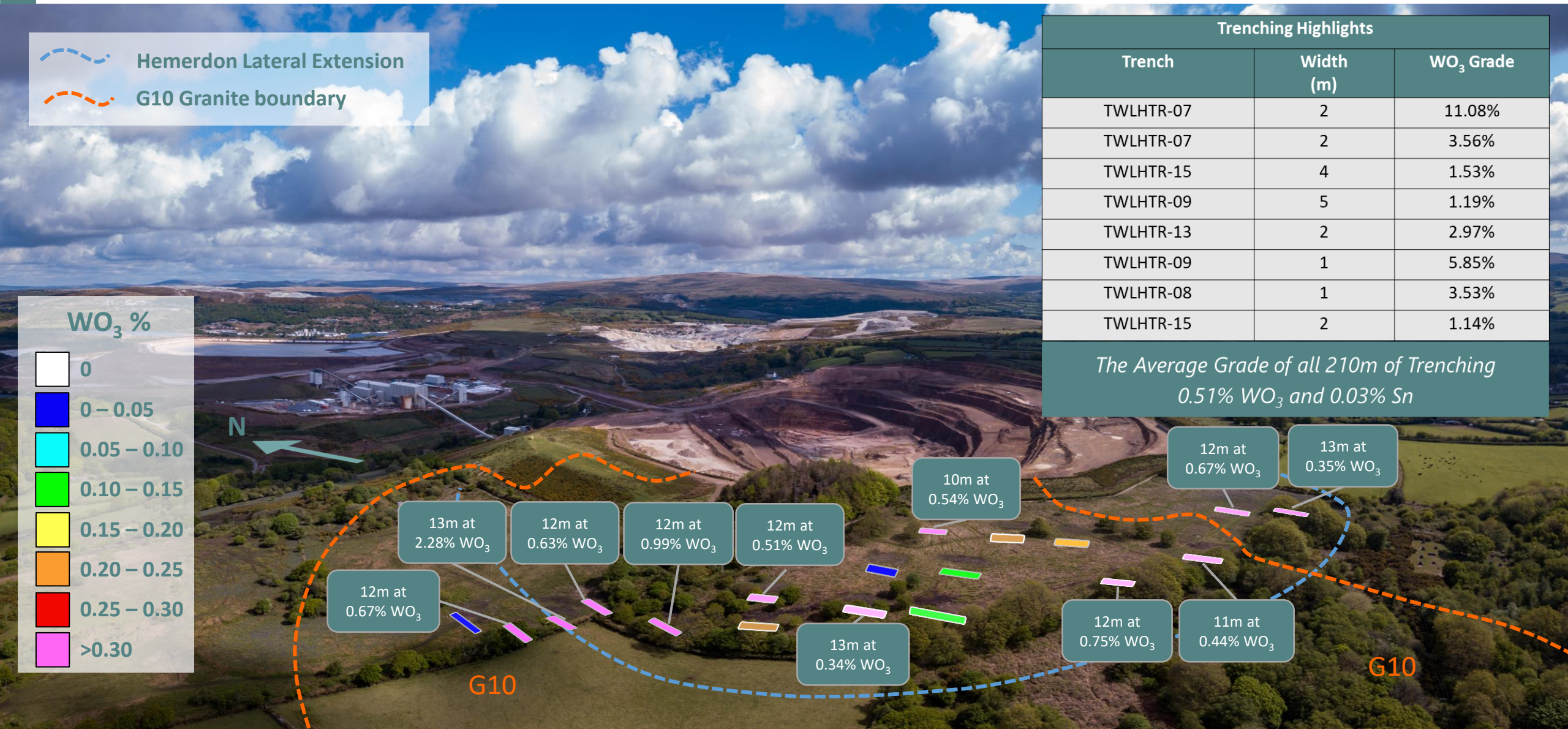
- Drilling out the Southern Extension
- Drilling the Northern extension at depth
- Optimising / Steepening pit walls angle by 5 degrees
- Optimising overall recovery from granite (target +65%)
- Optimising killas metallurgy
- Hydrometallurgical and tailings retreatment test work
- Planning applications to increase pit dimensions
- Mine Waste Facility re-design.

CUMULATIVE CASH FLOW YEARS 1 to 3



Source: TWL and Mining Plus

EXPLORATION UPSIDE



Trenching Highlights		
Trench	Width (m)	WO_3 Grade
TWLHTR-07	2	11.08%
TWLHTR-07	2	3.56%
TWLHTR-15	4	1.53%
TWLHTR-09	5	1.19%
TWLHTR-13	2	2.97%
TWLHTR-09	1	5.85%
TWLHTR-08	1	3.53%
TWLHTR-15	2	1.14%

The Average Grade of all 210m of Trenching 0.51% WO_3 and 0.03% Sn

PROJECT OPTIMISATION

MAJOR PROCESSING ROUTE CHANGES IN THE HEMERDON PLANT:

	TWL	Wolf
Ore Sorting	✓	✗
Magnetic Separation	✓	✗
Definitive Metallurgy	✓	✗
Optimised Pit Design	✓	✗
Minimised Pumping	✓	✗
Optimised Crushing	✓	✗
Resource Expansion	✓	✗
Real Time Technology	✓	✗
Near Mine Exploration	✓	✗

❑Crushing, Screening And XRT Ore Sorting:

- Complete redesign of the front end crushing, sorting and screening circuit
- Inclusion of XRT Ore Sorting fundamentally changes the project economics

❑DMS Pre-concentration & Fine Gravity Circuit:

- 17% increase in the feed to the Dense Media Separator
- Fines circuit recoveries are also improved by the addition of a WHIMS magnetic scavenger

❑Concentrate Dressing:

- A new purpose built off-site leach plant will be a phase 2 upgrade option for the plant
- Test work has demonstrated a 98% stage recovery of WO3 from leaching, leading to a 67% final concentrate

❑Operational Efficiencies:

- Maximising gravity flow to minimise pumping in order to minimise the production of fines
- Additional surge capacity throughout the system provides additional operational flexibility
- Technology added wherever possible

"The TWL plans for Hemerdon Processing Plant re-design are logical and make eminent sense."

M.P.Hallewell BSc, F.I.M.M.M., F.S.A.I.M.M., F.M.E.S., C.Eng Consulting Metallurgist

DIRECTORS & MANAGEMENT TEAM

BOARD OF DIRECTORS

Mark Thompson – Director & Executive Chairman

Mark holds a B.A. in Physics from Oxford University. He has 26 years of experience in financial markets, commodity trading, minerals exploration and mine development. He has founded and sat on the boards of several junior mining companies and has particular expertise in tin and tungsten and in the South West of the UK. He consults widely within the metal derivatives and mining industries and as an expert witness in metals and mining related commercial litigation.

Maximillian Denning – Director & CEO

Max holds a B.A. from the University of Leeds. He has over 10 years experience in the mining sector mainly in commercial & finance, management consultancy and project delivery. He is on the Investment Committee of Morebath Ltd, a family office that holds several investments in the mining sector. He was formally GM Commercial & Finance of Pan African Minerals Ltd and Deputy Country Manager at Hummingbird Resources Ltd.

Stephen Fabian – Non-Executive Director

Steve holds as B.E. (Min) from the University of New South Wales, Australia. He has over 25 years experience in mining industry, as a fund manager and venture capitalist. He is the Founder & Chairman of Brazil Tungsten Holdings and the CEO of Anglo Saxony Mining.

Francis Johnstone – Non-Executive Director

Francis trained in corporate finance at Citibank before entering the mining business in 1989 with Cluff Resources where he became Group Projects and Operations Manager. He has also previously held the position of Commercial Director at Ridge Mining plc. He is currently an investment advisor to LSE listed Baker Steel Resources Trust and is a NED of a number mining companies.

MANAGEMENT TEAM AND CONSULTANTS

David Price – Chief Financial Officer

David Qualified as Chartered accountant with PwC and has since worked for 25 years in investment management and Private equity. His last two roles were at CD Capital a private equity mining fund manager and AXA Rosenberg as European Finance director for Quantitative equity manager.

James McFarlane – Technical Director

James holds a MSc from the Camborne School of Mines in Mining Geology and has worked as both a production and exploration geologist in the UK, Ireland and Australia, and as a principal mining consultant across a range of commodities globally. He was formerly Mining Technical Services Manager at Hemerdon under Wolf Minerals.

Jon Hsuan – Consultant Project Manager

Jon has over 40 years experience in senior management roles covering all aspects of project and mine activities. His expertise lie in geological studies, beneficiation test work and process design, pilot plant programmes, plant technical and engineering work, EPCM contracts and project management. Since 2012, Jon has been a senior consultant of Behre-Dolbear.

CAPITAL STRUCTURE AND CAPITAL RAISING

CORPORATE STRUCTURE

Fully diluted there are currently 84,871,889 shares in issuance

This consists of 52,148,489 shares, 1,678,400 warrants and 31,000,000 convertible loan notes:

- Convertible notes have a 3 year maturity from 29th November 2019 and pay 8% interest PIK
- Convertible at holders option at 30p per share
- Callable by TWL at 45p before 25th of May 2021 or at 60p before 25th October 2022
- Mandatory conversion upon qualifying IPO raising >£10.0m at +60p

Capital raised to date: £15.9m with £2.4m in treasury as of June 2020

The Founding Shareholders will earn 10% additional equity by hitting project milestones:

- 3.33% each upon: financial close for mine restart, declaring commercial production, and upon a liquidity event through sale of the Company or IPO

TOP 10 SHAREHOLDERS

Fully Diluted Effective Interest:

Baker Steel Resources Trust	28.57%
Henry Maxey	16.50%
Denning Family	16.37%
David Lilley	10.73%
Eden Rock	6.29%
Ian Hannam	5.33%
Thompson Family	4.95%
Fabian Family	3.67%
Beth Korein	2.04%
South American Ferro Metals Ltd	1.16%

CAPITAL RAISING

TWL is currently raising £5.0m in order to complete and enhance the current Definitive Feasibility Study, and to extend the corporate runway to the end of 2021

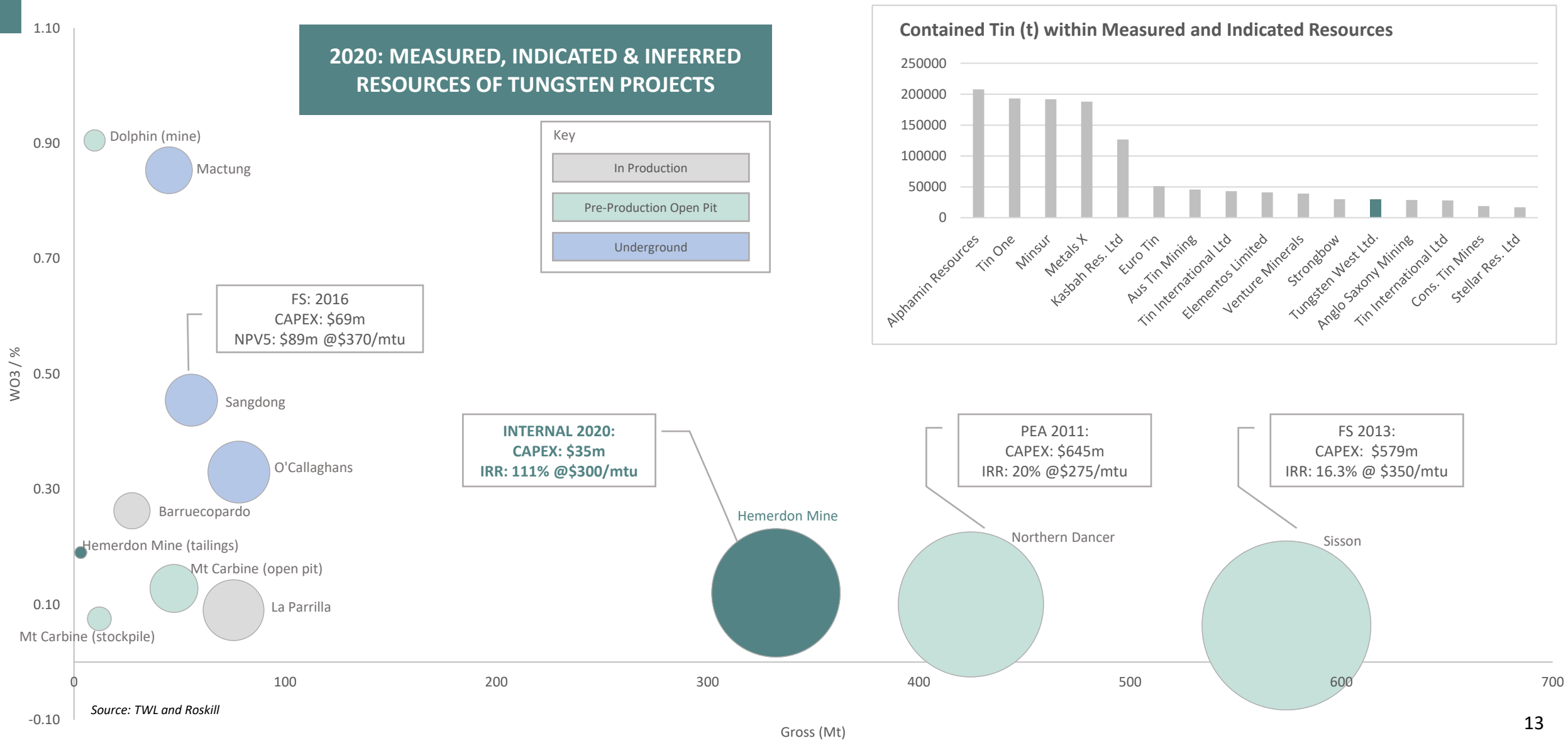
This is by way of an equity offering

Use of Funds:

- General corporate purposes
- Southern Extension exploration drilling
- Tailings reprocessing feasibility study
- DFS optimisation studies
- Aggregates infrastructure

THE HEMERDON PROJECT

COMPARABLES



Source: TWL and Roskill


TUNGSTEN WEST
10
Caution
Pedestrians
10
PEDESTRIAN ZONE MAXIMUM SPEED 10MPH

THE PROJECT

OVERVIEW OF THE HEMERDON TUNGSTEN MINE

HISTORY

- **The Hemerdon Tungsten Mine is located 7 miles Northeast of Plymouth**
  - Discovered in 1867
  - Mined during WW1, WW2 and then 2015-18 by Wolf Minerals
- **Drilled by AMAX in the mid 1980's:**
  - AMAX built and operated a pilot plant using this fresh ore demonstrating +65% recoveries
- **Wolf Minerals' invested +£200m into the project between 2007 and 2019**
  - Production commenced in 2015
  - Poor plant design resulted in <50% recoveries
  - Wolf Minerals (UK) Ltd entered receivership in October 2018
- **Tungsten West completes acquisition of the Hemerdon assets in December 2019.**
  - 2.25% net smelter royalty
  - £90k p.a. certain rent
  - 40 year term from February 2014
  - Comes with £13.2m of Restoration Bond and £1.8m of Environmental Bond cash
- **Planning permission granted in 1986 and Modified in 2010:**
  - Remains in good standing until 2032
  - 24/7 working

Source: TWL

Source: Google Earth

SUMMARY OF PLANT CHANGES

FRONT END

Old Configuration:

- **Primary And Secondary Hybrid Rolls Crushers**
- **Attrition Scrubber**
- **Low Frequency Noise Generating Screens**

New Configuration:

- **Phase1:** Mobile Primary Jaw Crusher And Secondary Cone Crusher
- **Phase 2:** Permanent Crushing Circuit In New Building Adjacent To New Rom Pad
- **XRT Ore Sorters Rejecting 70% Of Feed**
- **New, Smaller and Quieter Screens**

CONCENTRATOR

- **50% to Coarse Circuit**:
  - Primary Dense Media Separator
  - Secondary Dense Media Separator
- **50% to Fines Circuit**
  - Spirals
  - Tables

- **67% to Coarse Circuit**:
  - Primary Dense Media Separator
  - Secondary Dense Media Separator
  - Scavenger Dense Media Separator
- **33% to Fines Circuit**
- **Phase1:** Spirals, Tables, new High Intensity Magnetic Separator scavenger
- **Phase2:** Wet High Intensity Magnetic Separator (WHIMS)

CONCENTRATE DRESSING

- **Reduction Roast Kiln and Low Intensity Magnetic Separation Of Iron Minerals**
- **High Intensity Magnetic Separation Of Tin And Tungsten Products**
- **Single WO_3 Concentrate Produced**

- **Phase 1:** Existing kiln
- **Phase 2:** New custom built hydrometallurgical facility for alkali leaching
- **Medium and High Grade WO_3 concentrates produced**

XRT ORE SORTING

XRT PROVIDES SIGNIFICANT IMPROVEMENT IN TUNGSTEN RECOVERY

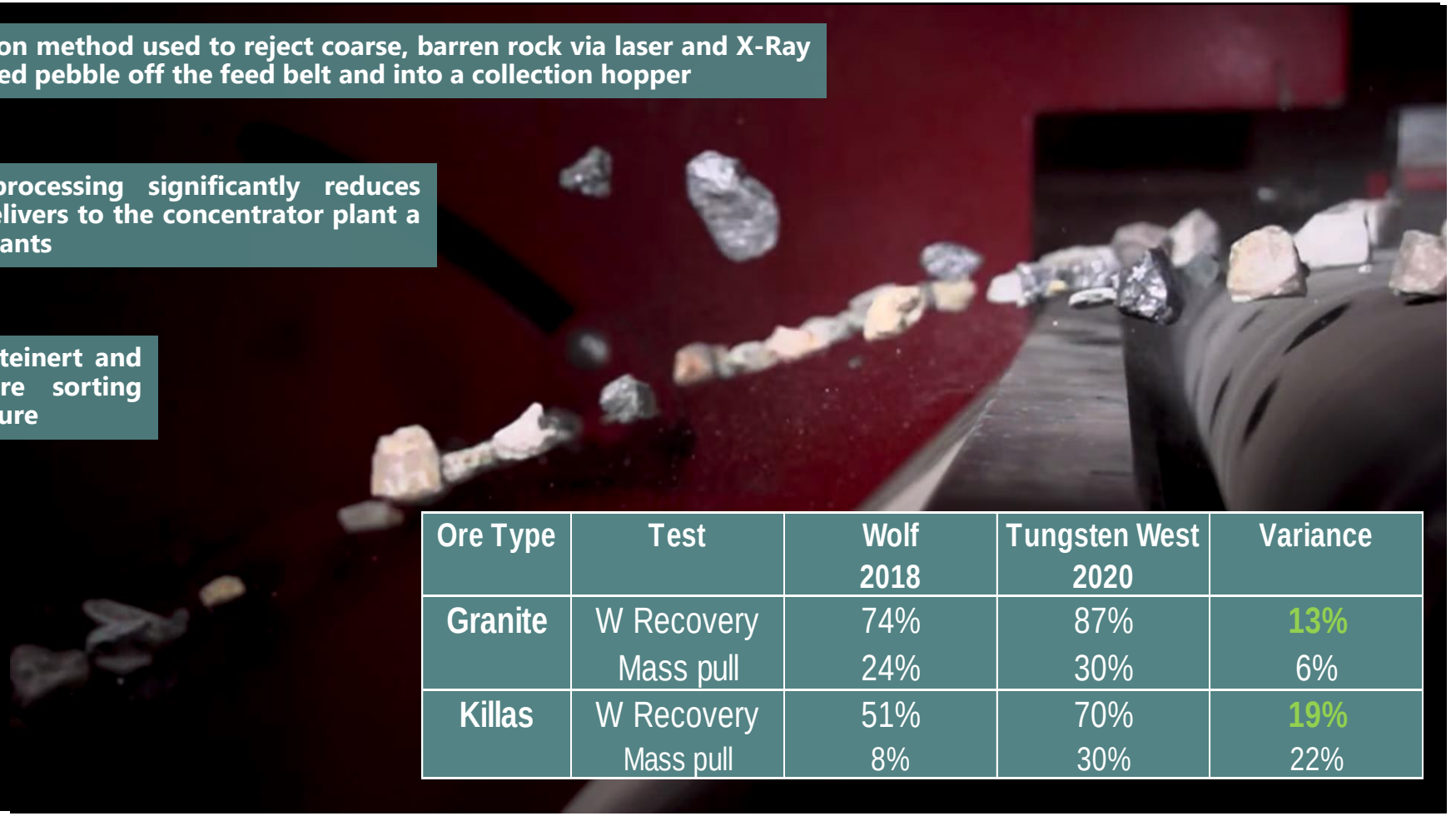
XRT Ore Sorting is a pre-concentration method used to reject coarse, barren rock via laser and X-Ray scanning. Air jets kick each mineralised pebble off the feed belt and into a collection hopper

Rejecting ore prior to further processing significantly reduces downstream processing costs and delivers to the concentrator plant a higher grade feed with less contaminants

TWL has undertaken test work at Steinert and Tomra to optimise work on ore sorting undertaken by Wolf just prior to closure

Optimised Pilot Plant Test Work has demonstrated:

87% WO_3 Recovery
30% Mass Pull

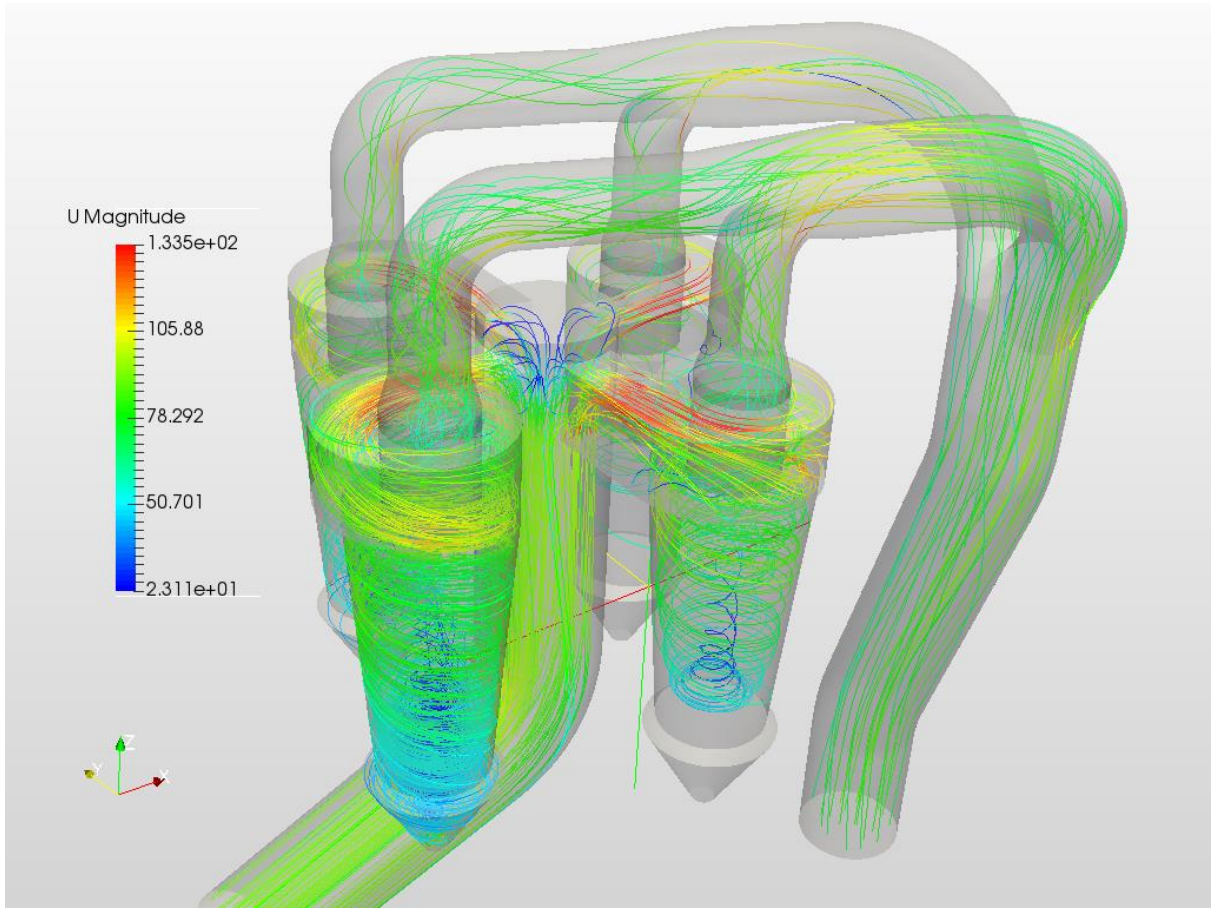


Ore Type	Test	Wolf 2018	Tungsten West 2020	Variance
Granite	W Recovery	74%	87%	13%
	Mass pull	24%	30%	6%
Killas	W Recovery	51%	70%	19%
	Mass pull	8%	30%	22%

Photo Source: Tomra

GRAVITY SEPERATION

DMS CYCLONE



Source: Simscale

DYNAMIC DMS CYCLONE PRE-CONCENTRATION

- The main recovery mechanism at Hemerdon is via gravity and the use of Dense Media Separation
- Tungsten ore in a 0.8mm to 8mm size range is introduced to a water/magnetite/ferro-silicon slurry with a specific gravity separation density of 2.70 g/cm^3
- Light gangue minerals float and heavy minerals sink and are recovered to a secondary cyclone with an SG of 3.50 g/cm^3
- Major upgrades were made to the existing two stage DMS plant at Hemerdon under Wolf Minerals, achieving +85% recovery at the end of operations to a 36% WO_3 pre-concentrate
- Further minor modifications are required to this circuit to optimise it including recommissioning the scavenger circuit

DESLIME AND FINE GRAVITY CIRCUIT

- -0.8mm crushed ore is fed to the fines circuits consisting of spirals, shaking tables and hydrosizers
- TWL is introducing a High Intensity Magnetic Separation scavenger on fine gravity tails, with a view that this may replace the fine gravity circuit in due course

PILOT PLANT

TRIALS AT GTK COMPLETED – RESULTS INTERPRETATION UNDERWAY

- ❑ GTK Mintec is owned and run by the Geological Survey of Finland.
- ❑ It is a leading European competence centre on the assessment and sustainable use of geological resources
- ❑ GTK has operated a pilot plant for TWL, processing 45 tonnes each of Hemerdon run of mine ore and ore sorter product
- ❑ Pilot Plant runs have been completed with the results from the program due imminently
- ❑ Initial indications show increased recoveries by using WHIMS in the fines circuit, and from the DMS by feeding at higher ore-sorted grades

Source: GTK

AGGREGATES

UNLOCKING AGGREGATES FOR IMMEDIATE CASH FLOW

BACKGROUND

- **Aggregates background:**
  - The Mine Waste Facility is built from an estimated 20Mt of pre-stripped material from the pit (mainly killas) and coarse waste from the processing plant
  - All of this "waste" has potential as saleable aggregates, ranging from fine sand through to granite cobbles and Type 1A Fill
  - Removing tonnes from site extends the MWF life and reduces future op-ex

- **Quality Certification:**
  - TWL has received certification of quality from the John Grimes Partnership for the sale of multiple products

- **Logistics:**
  - Within the current planning permission TWL is allowed 50 lorry movements per day or 150,000 tonnes per year
  - A temporary increase to 120 movements per day (approx. 750,000t p.a.) has been granted and formal planning application to increase this to 3 Mtpa is being prepared.
  - Export to the London market is possible in 15kt barges from the Port of Plymouth – TWL is targeting +1Mtpa of sales into London
  - A railway siding is 1.3km from mine site and studies are ongoing into rail freight logistics options

Source: TWL

"Aggregate Sales to support both UK and global demands is extremely viable and lucrative secondary business model, allowing financial support to the primary operation of mining Tungsten." ***Panoptic Consultancy***

AGGREGATES STRATEGY

PHASED APPROACH

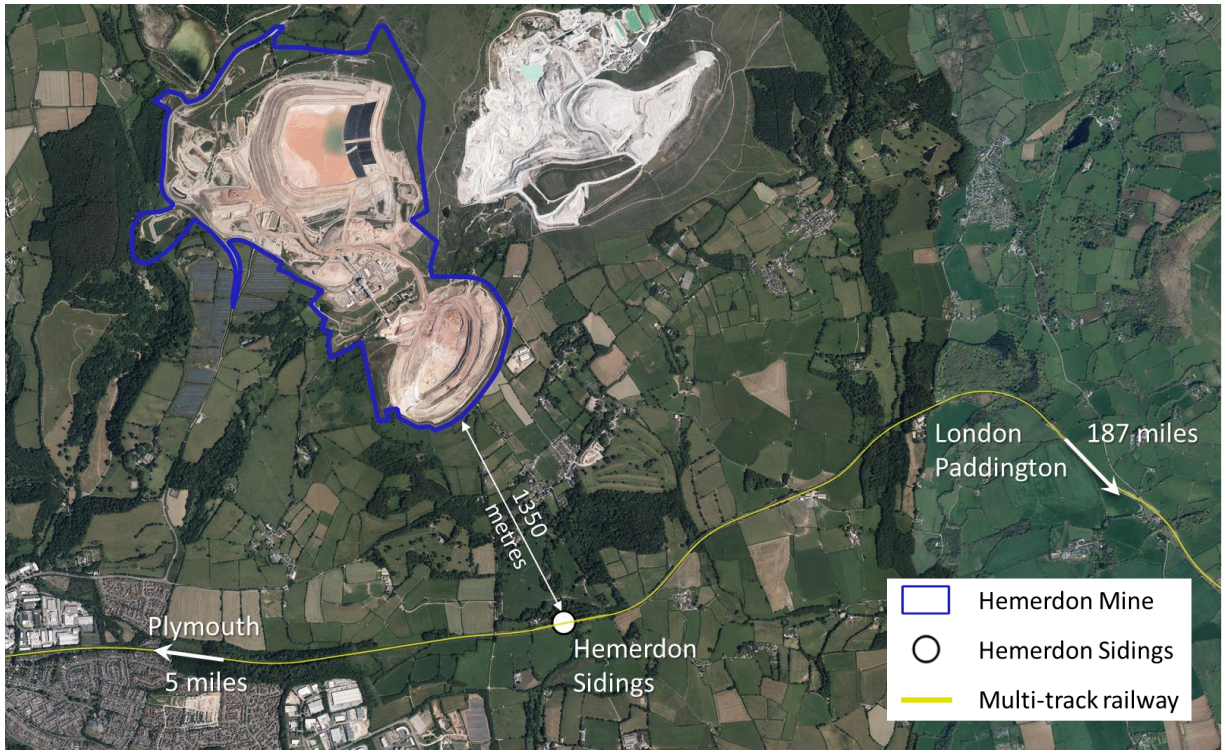
- **TWL is working with the Duo Group to process stockpiles of waste and tailings and to produce 6 different aggregates:**
  - Type 1 A Fill
  - 2 different types of sand
  - 3 different sizes of gravel
- **This is being approached on a phased basis with Phase 1 already active and Phase 2 under way**
  - Phase 1 A – Mobile Crusher
  - Phase 1 B – Mobile Wash Plant
  - Phase 2 – Large Scale Mobile Wash Plant (+1Mtpa capacity)
  - Phase 3 – Aggregates Production Integrated into Plant Rebuild

MARKETS

- **Achievable local market share is estimated at 500kt per annum**
- **Achievable sales into London market are estimated as 1 – 2 Mtpa in the medium term, barging from Plymouth to Tilbury**
- **Hemerdon would be a "Super Quarry" at this size**

RAIL FREIGHT OPTION

- **TWL is investigating the feasibility of stockpiling and selling aggregates via the Hemerdon rail siding that is located less then 1 mile from the site**



Source: Google Earth and TWL

AGGREGATES

PHASE 1B - 55 tph MOBILE WASH PLANT ON SITE AT HEMERDON

Source: TWL

RESOURCE AND EXPLORATION POTENTIAL

RESOURCE

2020 INTERNAL RESOURCE ESTIMATE

- Tungsten West's resource stands at 331.4 Mt @ 0.12% WO_3 and 0.03% Sn
- 399kt contained WO_3 and 80kt contained Sn
- In-pit mineral resource of 161.5 Mt for 211kt of WO_3 and 44kt of Sn
- **This new resource statement reconciles the 17.5% actual vs resource grade increase experienced by Wolf**
  - **0.17% WO_3 resource grade vs an actually mined grade of 0.21% WO_3**
  - **Derives from the "nugget effect"**
- Identified exploration upside is consistent with the potential for Hemerdon to become the largest tungsten resource in the World.

Notes:

- Mineral Resources reported at a cut-off grade of 0.04% WO_3 in the granite and 0.06% WO_3 in the killas
- In-pit mineral resource calculated basis a WO_3 price of $500 per mtu and a pit boundary outside the current permitted area
- Does not include either on surface granite stockpiles (0.9Mt at 0.18% WO_3 and 0.05% Sn) or tailings (3.3Mt at 0.19% WO_3 and 0.03% Sn)
- Includes some tonnage in the Southern Extension in inferred category

Global Resource:

Category:	Tonnes (Mt)	WO_3 Grade	WO_3 Contained (t)	Sn Grade	Sn Contained (t)
Granite:					
Measured	26.7	0.18%	49,323	0.03%	8,723
Indicated	48.6	0.16%	78,118	0.02%	10,941
Inferred	87.5	0.12%	101,882	0.02%	17,630
Killas:					
Measured	-	-	-	-	
Indicated	26.4	0.11%	28,835	0.03%	6,602
Inferred	142.2	0.10%	140,574	0.03%	35,616
Total	**331.4**	**0.12%**	**398,732**	**0.03%**	**79,512**

In Pit Mineral Resource:

Granite:					
Measured	26.7	0.18%	49,259	0.03%	8,688
Indicated	32.2	0.17%	55,153	0.02%	7,283
Inferred	1.7	0.11%	1,788	0.02%	290
Killas:					
Measured	-	-	-	-	
Indicated	26.3	0.11%	28,778	0.03%	8,016
Inferred	74.6	0.10%	77,014	0.03%	19,719
Total	**161.5**	**0.13%**	**211,992**	**0.03%**	**43,996**

SOUTHERN EXTENSION

HISTORY OF EXPLORATION AT HEMERDON

❑ **Original Tungsten Discovery:**

- Tungsten was first discovered at Hemerdon Ball in 1867 within the Southern Extension where hard granite is found as little as 1m from surface

❑ **Operating Mine During WW1 and WW2:**

- During WW1 extraction began in 1916 on the northern weathered granite (current pit) due to the existing technology and limited supply of explosives and then mining recommenced during WW2 in the same pit

❑ **AMAX Exploration Programme:**

- Amax began exploring in 1979 they drilled out the northern area - this is now shown to be on a dyke emanating from the main granite intrusion

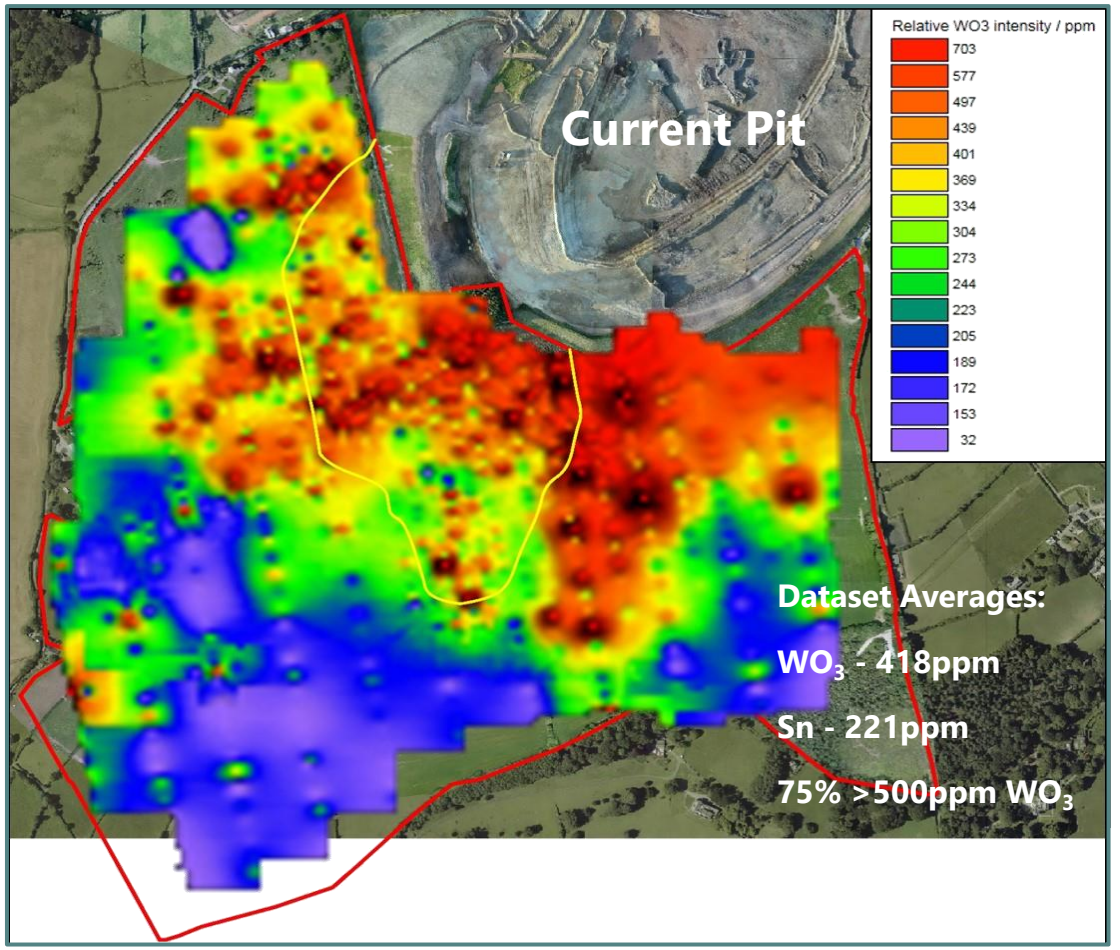
❑ **Wolf Develops Project:**

- Wolf undertook no investigations into the Southern Extension until 2018, when a soil sampling program took place - soil sampling and float assays are considered exceptional and consistent with very significant resource potential

❑ **TWL Trenching:**

- TWL immediately recognised that the existing pit may not be coincident with the main ore-body and in September 2019 TWL undertook 210m of trenching as part of its due diligence process, achieving spectacular results
- **Average trenching grade was circa 3x that of the in-pit resource grade**

SOUTHERN EXTENSION SOIL SURVEY 2018



Source: Wolf Minerals

SOUTHERN EXTENSION

TRENCHING PHOTOS

Source: TWL

ENVIRONMENTAL SOCIAL AND GOVERNANCE

ENVIROMENTAL, SOCIAL AND GOVERNANCE

BUSINESS PLAN FOUNDED ON ESG PRINCIPLES

Environment:

- **Licencing Requirements** – Existing mining licence requires robust environmental compliance and commitment
- **Carbon Neutral Target** – TWL has set itself the challenging target of being carbon neutral by 2027
- **Operating Efficiencies** – Optimising energy usage and minimising environmental impacts
- **Sustainability** – Integrating aggregates production into a sustainability and restoration plan
- **Restoration** – A fully cash funded commitment to site restoration is in place with a £13.2m Restoration Bond

Social:

- **Health and Safety** – Striving to monitor, assess and mitigate all of the potential risks that could cause harm
- **Community Engagement** – Commitment to local stakeholder engagement
- **Aggregates** – Local construction industry benefits from a sustainable long term supply with a low carbon footprint
- **Local Job Creation** – Working with specialist recruitment consultants to recruit ex-military personnel
- **Skills Training** – Actively working with local tertiary education establishments for research projects

Governance:

- **Business Practices** – Strong business ethics, corporate responsibility, and codes of conduct in place
- **Experienced Management** – Extensive track record of financial competence and corporate governance
- **Regulatory and Operating Environment** – The South West of the UK is a very large current and historic mining landscape regulated by the Mineral Planning Authority and the Environment Agency

LOCAL REGION

Sources: Creacombe Solar Farm; Plymouth City Council

CARBON FOOTPRINT

CARBON NEUTRAL STRATEGY

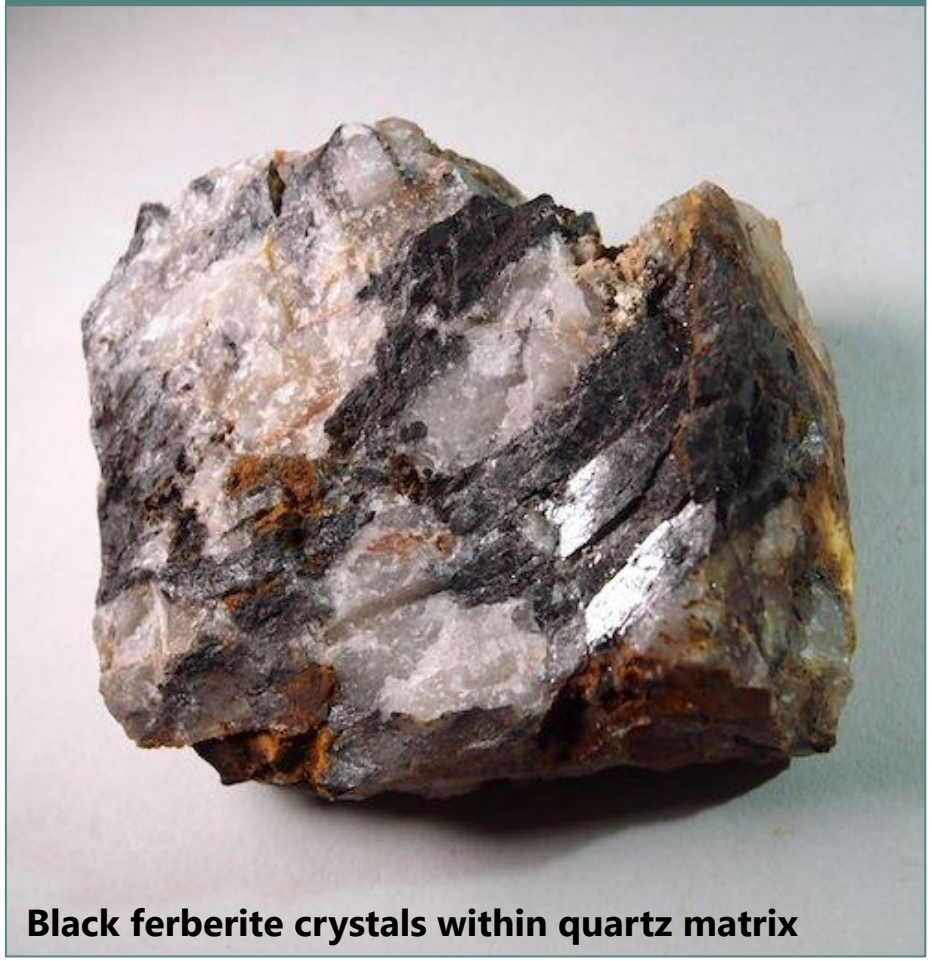
- TWL is committed to minimising its carbon footprint and has set itself the ambitious target of being carbon-neutral by 2027.
- Processing plant power consumption will be of the order of 6.5 MW with grid power to be replaced by new-build renewables.
- Energy consumption and efficiency for individual pieces of plant and equipment is a key factor in the choice of suppliers
- The mining industry is making great advances in moving away from diesel vehicles, with all electric shovels currently available, and hydrogen and battery powered haul-trucks coming to market.
- TWL is operating to ISO 50001 global standards on energy efficiency and management.

Komatsu HD 605-7 converted by Kuhn to be an eDumper with a 65t capacity, running on a 600 kWh lithium ion pack
Source: autoblog.com

TECHNICAL INFORMATION

MINERALOGY

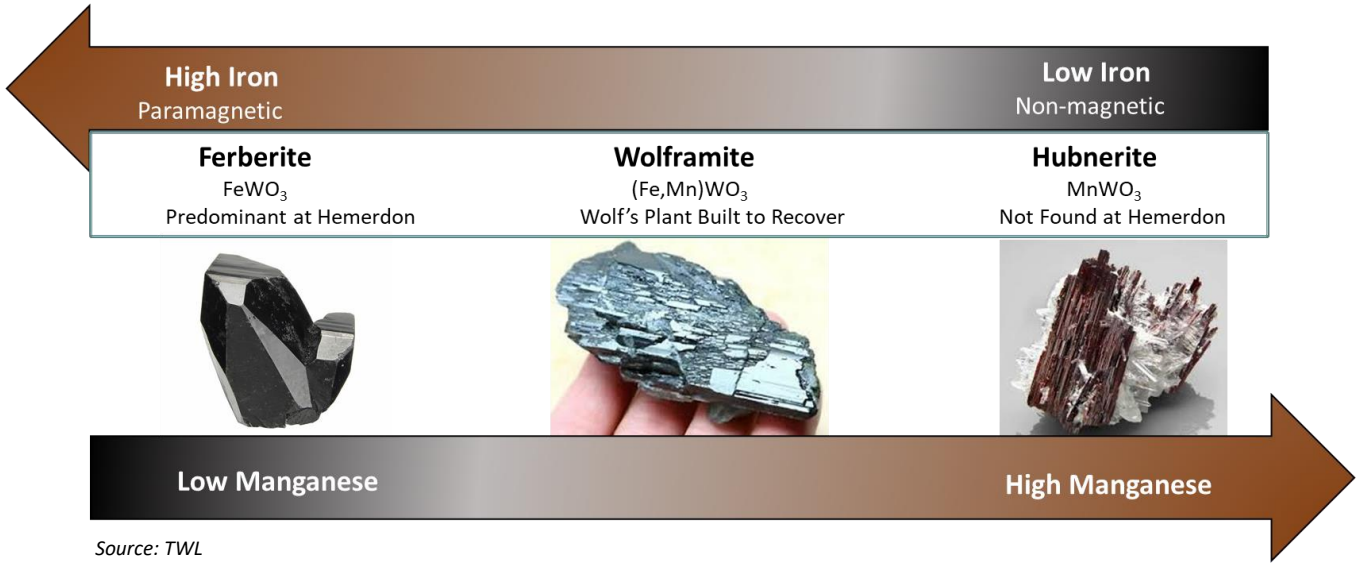
TYPICAL HEMERDON ORE



Black ferberite crystals within quartz matrix

Source: TWL

DIFFERENCE BETWEEN FERBERITE AND WOLFRAMITE



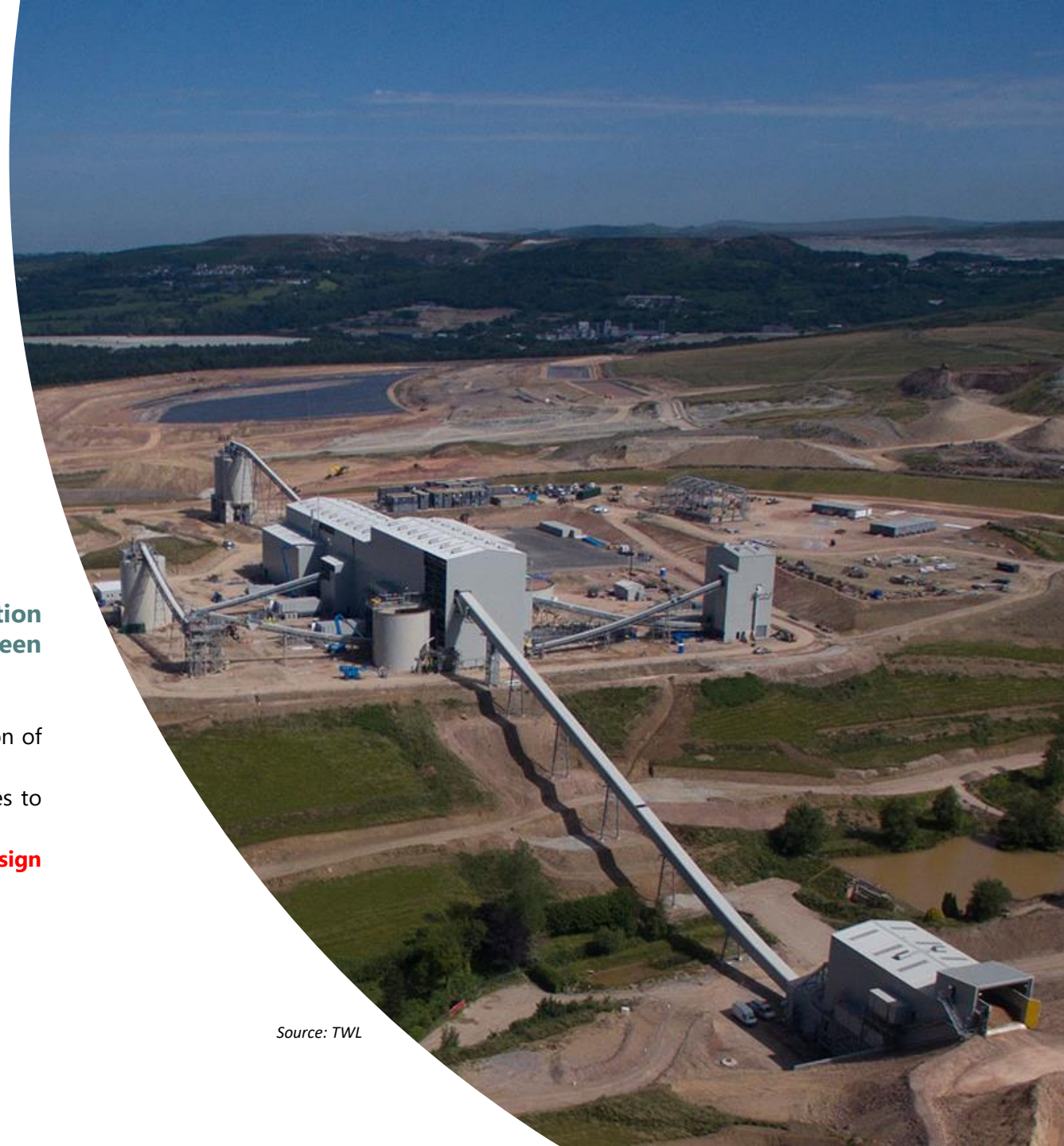
Source: TWL

- Hemerdon is a sheeted vein system of hundreds of thousands of quartz veins hosted within granite and killas
- Tungsten predominantly presents as millimetre to centimetre scale crystals of ferberite, which is found within these quartz veins
- This makes Hemerdon ore particularly amenable to X-Ray Transmission Ore Sorting

WHY WOLF FAILED: OVER PRODUCTION OF SLIMES

- **Primary and secondary crushing fed to a rotary drum scrubber designed to break down the clay fraction within the run of mine ore**
  - In the upper levels of the open pit clay levels were very high due to kaolinisation of the granite host rock
  - Failure to sort ore by size fraction prior to scrubbing inadvertently resulted in significant attrition of the tungsten bearing minerals – ferberite and wolframite
  - Both these minerals are soft and highly friable – i.e. amenable to breakage and attrition

- **32% of contained tungsten was lost to tails in the -38 micron fraction post scrubbing: this is before any mineral separation had been attempted.**
  - Significant use of pumps within the plant also contributed to further creation of slimes and the underperformance of the concentrator circuit
  - Poor choices in concentrate dressing equipment resulted in significant losses to LIMS tails and a low to medium grade final product
  - **Overall recoveries averaged between 20% and 40% only, versus a design expectation of 65%**



Source: TWL

TUNGSTEN MARKET

ABOUT TUNGSTEN

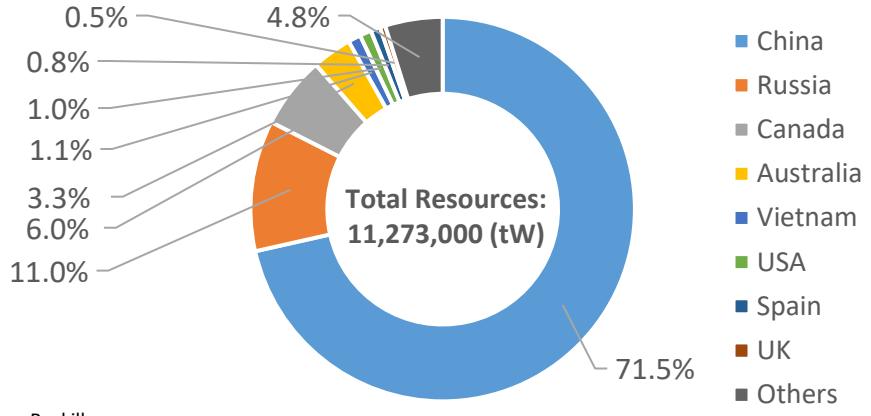
BACKGROUND TO TUNGSTEN

- **Tungsten is a Transition Metal W that has extreme physical characteristics including:**
  - Highest tensile strength and melting point of any metal
  - Hardest material other than diamonds
  - Density of 19.3 (g/cm3) - comparable to Uranium and Gold
- **WO_3 Concentrates are an intermediate product**
  - Further refined into Ammonium Paratungstate ("APT") by metals processors
- **Tungsten Concentrates are traded basis the APT price**
  - Typically 65% WO_3 concentrate trades at 77%-82% of the APT price

STRATEGIC IMPORTANCE OF TUNGSTEN

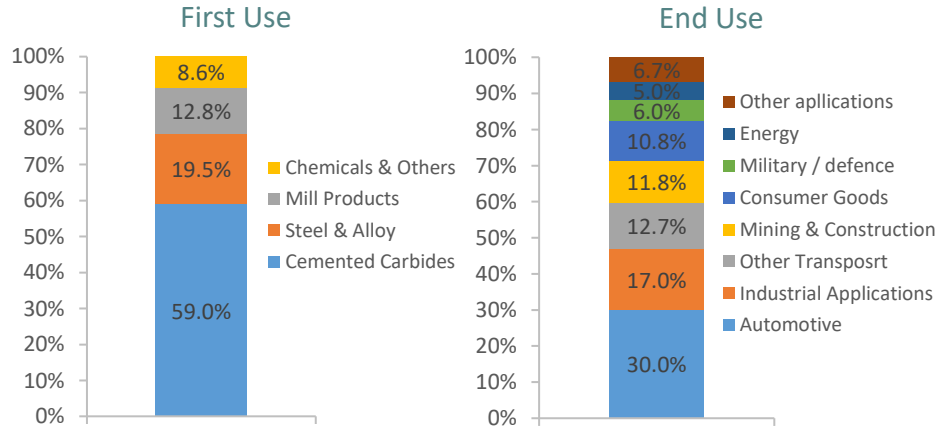
- **China Dominates the tungsten market**
  - China controls over 71% of global resources of tungsten
  - Primary mine production accounted for 56.3% of Global tungsten production in 2018
- **51% of Tungsten demand was ex-China in 2018**
  - Global reliance on Chinese supply and processing
- **Tungsten sits high on the EU and US list of critical minerals due to Chinese domination of supply**

TUNGSTEN RESOURCES BY COUNTRY 2018



Source: Roskill

GLOBAL TUNGSTEN USES 2018



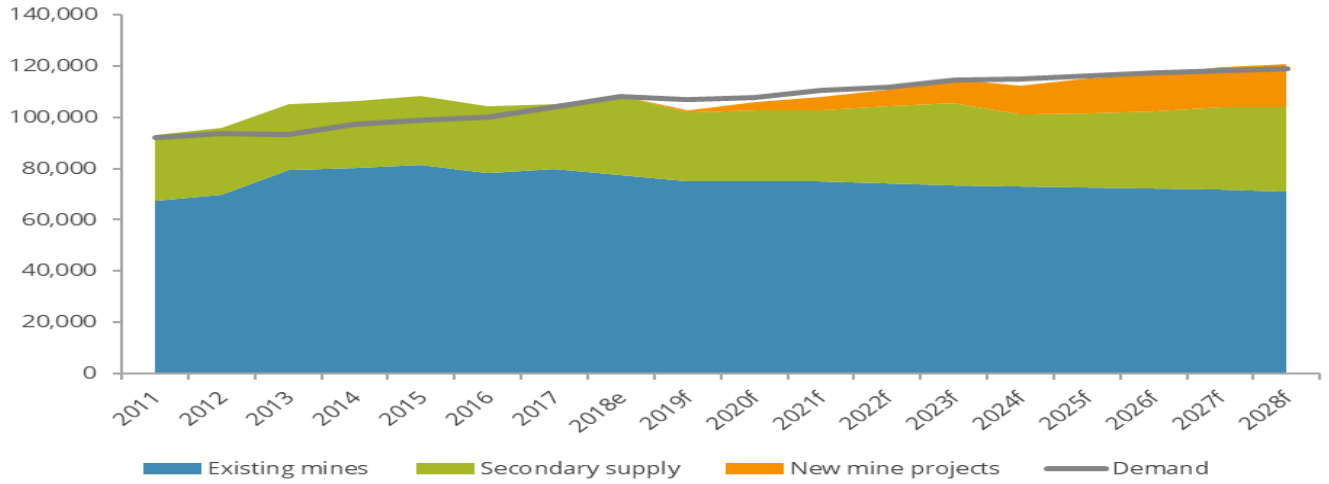
Source: Roskill

TUNGSTEN SUPPLY / DEMAND

SUPPLY /DEMAND COMMENTARY

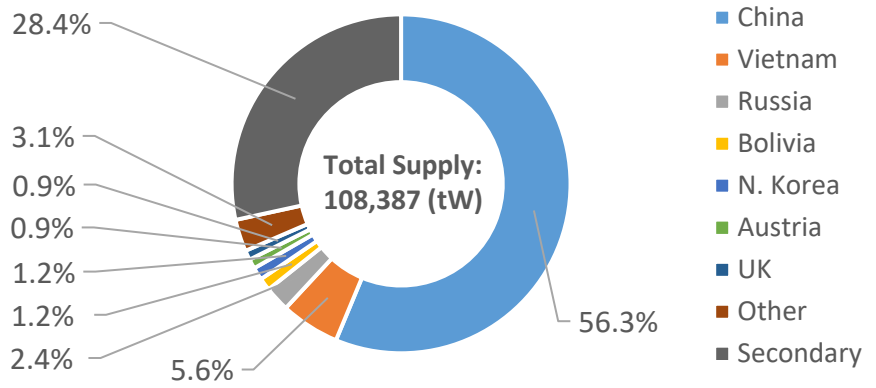
- **Mine Production slipped in 2018 to 82,000t despite demand growth of 5% YoY:**
  - Existing Chinese and international mines face depleting ore grades and reserves
- **Demand growth forecasts robust and require additional sources of production**
- **Pre-development tungsten projects struggle to raise the required capital**
  - Very few large deposits – mainly small deposits that are unattractive investments

SUPPLY AND DEMAND FORECAST 2011 TO 2028



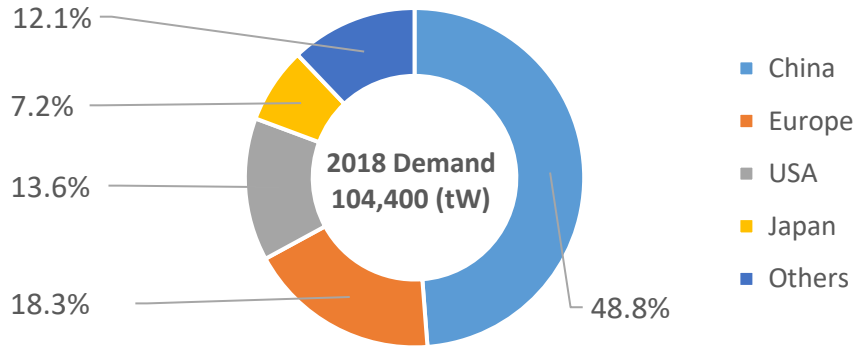
Source: Roskill

GLOBAL TUNGSTEN SUPPLY BY REGION 2018



Source: Roskill

GLOBAL TUNGSTEN DEMAND BY REGION



Source: Roskill

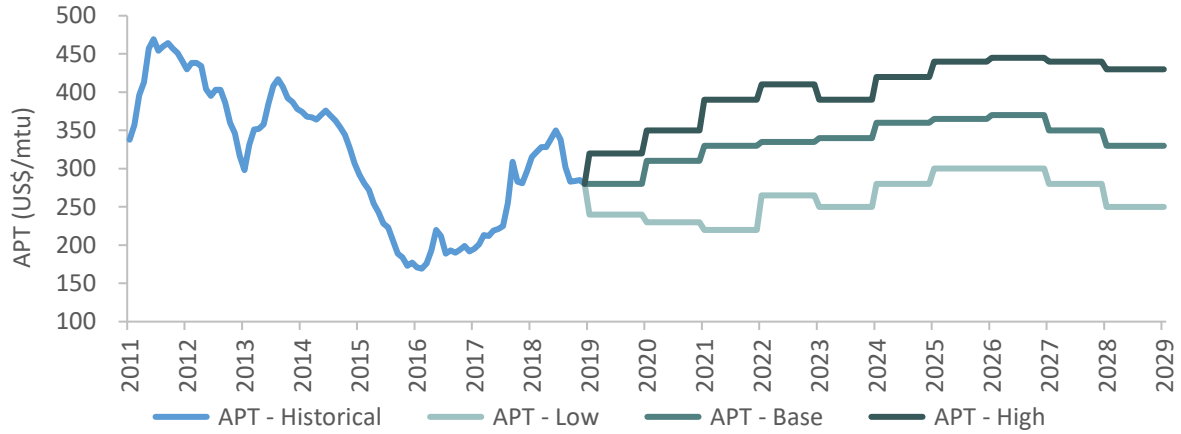
TUNGSTEN PRICE FORECAST

MARKET PRICING DYNAMICS

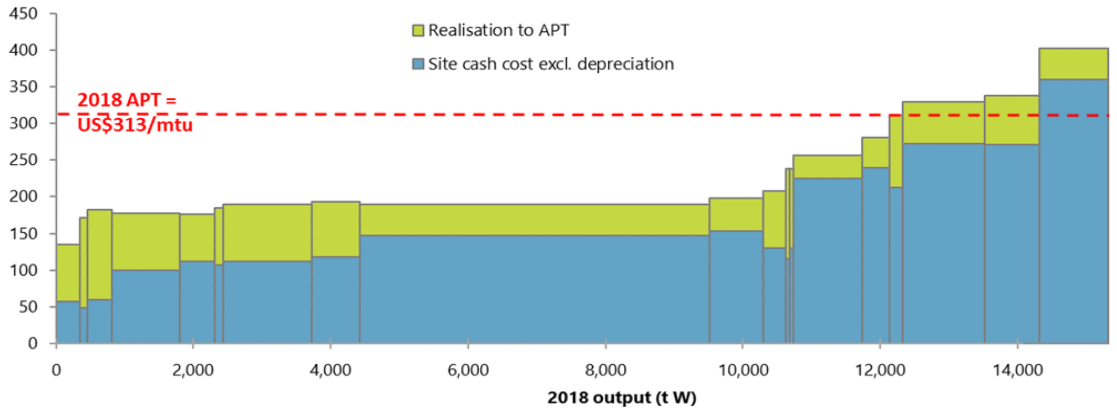
- The current spot price for APT (as of 16th June 2020) is quoted as US$215-225/mtu, down from a pre-Covid level of US$250-270/mtu
- A good guide for long term commodity price outlook can be the cash-cost curve: a plot of production of WO3 versus the cash cost of production - it is rare to see the price of any commodity below the 80th percentile of the cash cost of production for any sustained period of time.
- For Western World tungsten mine production this level would be at US$313/mtu (Roskill) but Tungsten West is using a long-term average of US$300/mtu for financial modelling purposes

- Roskill long term APT pricing forecast: US$335/mtu
- At a project breakeven APT price of $135 per mtu Hemerdon would be a first quartile cash cost producer

HISTORICAL AND FORECAST APT PRICE 2011-29 (US$/MTU)



CASH COST, TUNGSTEN CONCENTRATES EX-CHINA



Source: Roskill and Bloomberg, 2019