MCLEOD PROJECT

EPM 18171

ANNUAL EXPLORATION REPORT

FOR THE PERIOD ENDING

19 July 2013

DEPARTMENT OF NATURAL RESOURCES AND MINES, QUEENSLAND

TENEMENT HELD BY: NORTH QUEENSLAND TUNGSTEN PTY LTD

MANAGER & OPERATOR: VITAL METALS LTD

MAP SHEETS:	**1:250,000 Mossman SE55-1** **1:100,000 Mossman 7965** **1:100,000 Rumula 7964**	
MGA CO-ORDS:	**Min East -288340** **Min North -8169385**	**Max East -302670** **Max North -8187865**
COMMODITY:	**Tungsten, Tin, Gold**	
KEY WORDS:	**Tungsten, Tin, Gold, Orogenic, Sulphide Mineralisation, Watershed, Mt Carbine, Stream Sampling, Magnetic Inversion**	
PREPARED BY:	**Vital Metals Ltd**	**10/07/2013**

CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

Exploration for economic gold and tungsten mineralisation on Exploration Permit (EPM) 18171 during 2012-13 has included literature review of QDEX reports and inherited company data, interpretation and assessment of previous exploration results, a hyperspectral airborne survey including interpretation and reconnaissance visits, the planning of a soil and stream sediment program and its partial completion.

EPM 18171 was granted on the 20 July 2011 to Vital Metals Ltd (Vital). The tenement covers an area of some 69 sq km and is comprised of the blocks and sub-blocks of the Townsville 1:1,000,000 Series B Map. Land from the Mount Lewis National Park (Sterile Land 2935) was excluded from the granted EPM.

The work completed this year has shown that the prospectivity of EPM 18171 is high for tungsten, tin and gold and needs to be properly assessed via a systemic exploration program. While there is significant evidence of artisanal mining of tungsten, tin and gold in the past, there has been little modern exploration conducted in the last ten to 20 years.

A regional airborne hyperspectral survey was planned and carried out in partnership with the Japan Oil, Gas and Metals National Corporation (JOGMEC). The survey identified several features that may be related to alteration mineral assemblages connected to mineralisation. Reconnaissance visits including rock chip sampling have been carried out to some of the features and more will follow in the next year to evaluate these features.

The review of open file data has shown that the EPM has only limited coverage of geochemical samples such as stream sediments and a program was started during to address this deficiency. The initial stage of the program identified a number of geochemical anomalies in the northern part of the tenement.

Application of our exploration model and strategy confirms that EPM meets the criteria in all of the areas with:

- An igneous association related to W/Sn mineralisation
- The distribution of related granitoids coincides with the known distribution of historical W/Sn production
- The magnetic inversion work suggests that there are shallowly buried granitoid cupolas
- Deep routed regional structures can be identified
- Metal zoning is apparent and needs further study

The work program for the upcoming year will include the continuation of the soil and stream sediment sampling program, continued interpretation of hyperspectral data and field evaluation of identified features, field mapping, geological modelling and possibly acquisition of detailed aeromagnetic data.

Vital is an active explorer and developer in the area having spent over $23,000,000 on the Watershed Tungsten project. The EPM is located to the south of Watershed and to the immediate north of the Mt Carbine Tungsten mine.

Vital believes that the application of systematic and modern exploration techniques on this EPM may have the potential to identify mineable resources of sufficient grade to transport to the planned Tungsten processing facility that Vital Metals Ltd is proposing to construct at Watershed in 2014.

2.0 INTRODUCTION

This report outlines the exploration work carried out by Vital Metals Limited on EPM 18171 during the year ended 19 July 2013. It is the second annual report since the grant of the tenement in July 2011.

2.1 Location and Access

The EPM is located 35 km W of Mossman in North Queensland and the centre of the EPM is around 10 km from Mount Carbine. The EPM is part of VML's extensive portfolio of tenements that are being actively developed and explored throughout the region.

The project area is covered by the Mossman 1:250,000 geological sheet, the Mossman 1:100,000 and Rumula 1:100,000 geological and topographic sheets.

The EPM overlies the two pastoral leases; Curraghmore and Brooklyn Station.

Access to the project area is good via the sealed Mulligan Highway from Mareeba to Mount Molloy and through to Mt Carbine. Approximately 8 km west of Mount Carbine a gravel road on the right along the McLeod River provides access to station tracks. Access across McLeod Project is limited during the wet season, from around December to March.

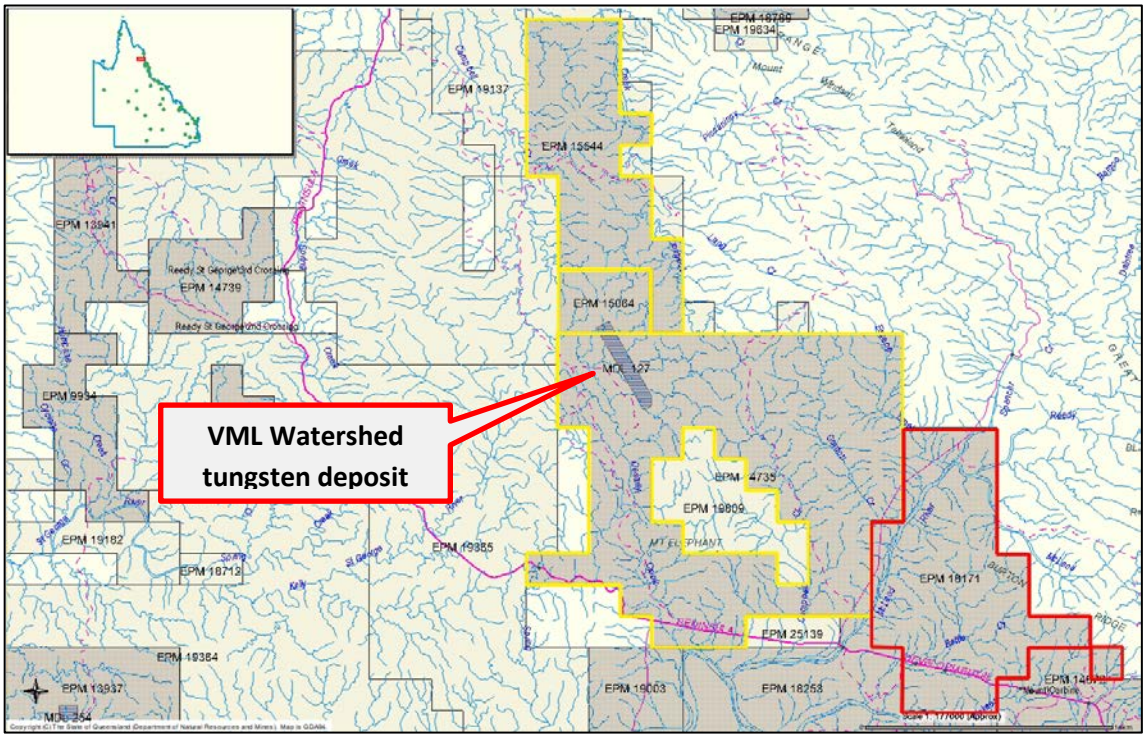

Figure 1 EPM 18171 Tenement Location – Edited map from the Queensland Department of Mines and Natural Resources.

2.2 Physiography, Vegetation & Climate

The EPM is covered by mixed tropical savannah woodland consisting largely of stunted eucalypt and spear-grass. Large gums, paper barks and tea trees are generally restricted to the main creek courses. The landscape consists of stony hills and ridges and is incised with a well-defined, dendritic drainage. The hilly terrain includes more resistant beds of chert and massive arenite rising to 500 to 600m above sea-level and some 200 to 300m above the primary drainage channels and adjacent alluvial flats.

Rainfall in the area is mainly restricted to the period November to April when summer storms and the north-west monsoonal influence affect the area. The average annual rainfall at nearby Mt Carbine is approximately 40 inches (1016mm). Mean monthly temperatures vary from around 13° minimum in July to 33° maximum in November-February. Because of the seasonal bias in rainfall, exploration during December-March is severely restricted.

3.0 TENEMENT STATUS

The McLeod Project EPM 18171 was granted on the 20 July 2011 to Vital Metals Ltd (Vital). The tenement covers an area of some 69 sq km. It comprises blocks and sub-blocks of the Townsville 1:1,000,000 Series B Map as listed below. Land from the Mount Lewis National Park (Sterile Land 2935) was excluded from the granted EPM. Notification was received that the tenement conditions were varied to the new legislation on the 10/04/2013 and the tenement was transferred to North Queensland Tungsten Pty Ltd on the 10/07/2013 which is a wholly owned subsidiary of Vital metals Ltd.

Title	Date of Grant	Date of Expiry	Current Area	Registered Owner
EPM 18171	20/07/2012	19/07/2016	40 sub-blocks	Vital Metals Ltd

Table 1 EPM 18171 Tenement Status

Bim	Blk	A	B	C	D	F	G	H	J	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
TOWN	301																S	T	U			X	Y	Y
TOWN	373		C	D	E	G	H	J	K		M	N	O	P		R	S	T	U		W	X	Y	Y
	374									L					Q					V	W	X		
	445		C	D	E		H	J	K				O	P										
	446	A		D																				

Table 2 EPM 18171 Tenement Blocks

4.0 GEOLOGICAL SETTING AND MINING HISTORY

4.1 Regional Geology

EPM 18171 is situated in the central part of the meta-sedimentary Hodgkinson Province that forms the northern sector of the Tasman Fold Belt. The Hodgkinson basin is separated from the Archean Dargalong Metamorphics to the west by the Palmerville fault. The metamorphics were the source of the sediments in the basin where the lithologies vary with proximity to the Palmerville fault.

The Chillagoe Formation, along the eastern sedimentary margin of the Palmerville Fault corridor, includes a large proportion of shallow marine facies.

The Hodgkinson Formation is dominated by laterally discontinuous arenites, siltstones and shales with minor conglomerate, chert, basalt and limestone units. The sedimentary structures and bedding features are diagnostic of turbidity current deposits in a deepwater, submarine fan system. The geological age of the formation is Late Silurian to Late Devonian.

The formation has been subjected to a complex brittle and ductile structural history in the Late Devonian to Early Permian. At least four deformation phases have been recognised, resulting in a progressive sequence of overprinting structures ranging from early isoclinal folds and brittle ductile protomylonite zones, to later more open steeply plunging folds and reverse faults. Major structures of the region trend north-west to north.

The South Palmer 1:100,000 Geological Map (Figure 2) published by GSQ9 (Edition 1, 2000), shows the Hodgkinson Formation in this area subdivided into nine units:

- **Dh/a** Pale to dark or greenish grey, fine to medium and locally coarse-grained, quartz intermediate greywacke, interbedded with minor siltstone and mudstone; minor conglomerate, conglomeratic greywacke
- **Dh/am** Rhythmically interbedded fine to medium-grained arenite and mudstone (locally phyllitic); minor conglomerate, minor chert and metabasalt; rare limestone
- **Dh/b** Dark greenish grey, fine-grained metabasalt; minor flow-margin breccia
- **Dh/c** Pale grey to cream, thin-bedded to massive chert with minor interbedded mudstone
- **Dh/cg** Dark grey, thick-bedded pebble to boulder conglomerate, conglomeratic greywacke
- **Dh/h** Hornfelsed/metasomatised arenite and mudstone
- **Dh/l** Pale to dark grey, variably recrystallised, bioclastic limestone
- **Dh/m** Mainly dark grey, thin bedded, mudstone, subordinate thin to thick bedded arenite beds, minor chert and basalt
- **Dh/mc** Thin to thick interbedded chert and mudstone

Cratonisation of the Hodgkinson Province took place in the Early Permian after numerous granitic plutons were emplaced and several major sub-aerial volcanic sequences were erupted (Bain & Draper, 1997).

The Hodgkinson Formation regionally has been intruded by various large, late-orogenic and

post-orogenic granitoids (Permian-Carboniferous) of I- and S-type character. On Vitals tenements including EPM18171 the Whypalla Supersuite granitoids (S-type) are the predominant type of igneous rocks.

The South Palmer 1:100,000 Geological Map published by GSQ9 (Edition 1, 2000), shows the Whypalla Supersuite in this area being subdivided into four units:

- **Pgwc** White, medium to coarse-grained, equigranular to sparsely porphyritic (muscovite-) biotite adamellite
- **Pgwc/m** Granite
- **Pgwe** Pale to medium grey, medium-grained, porphyritic (hypersthene-) garnet - biotite adamellite and granodiorite(?); inclusions common
- **Pgwu** White to pale grey, medium-grained, moderately to highly porphyritic muscovite-garnet-biotite monzogranite; deformed locally with a gneissic foliation

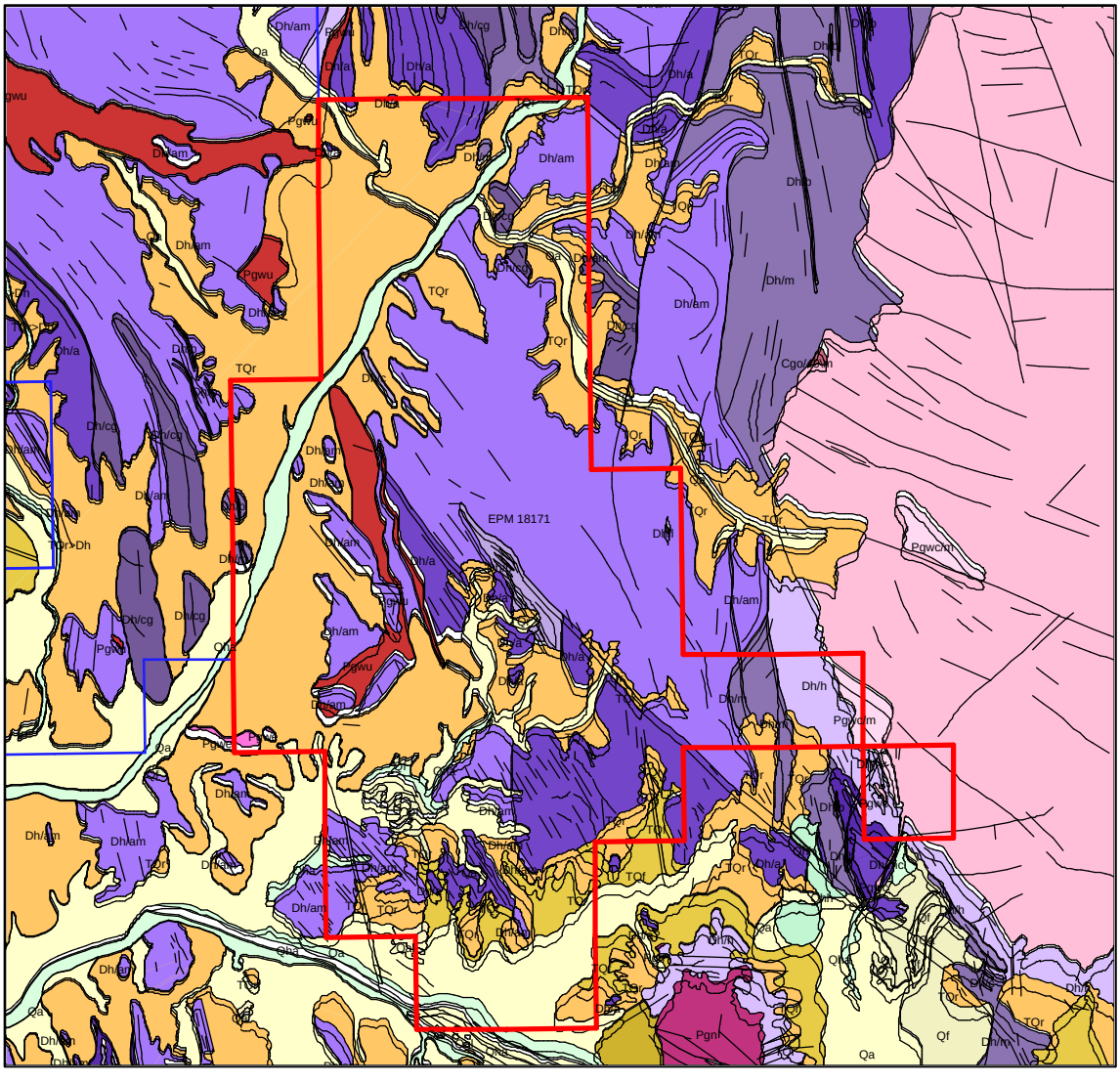

Figure 2 EPM 18171 Tenement Geology

4.2 Local Geology

Large areas of gravels, sands and silts are present along the major stream courses. In particular, the Mitchell and McLeod Rivers have extensive development of such sediments. Distinction can be made between active channels and the broad alluvial plains present along the margins of the main streams. There are higher level units which represent a mixture of older alluvials, colluvials, various residuals and soil development.

Granitoid units of the syn-deformational Whypalla Supersuite are recognised and do not exhibit the trend lines and fold axes so common in areas of the Hodgkinson Formation outcrop. The NW-SE trending elongated Curraghmore granite crops out in the western part of the tenement. It hosts the Henry Hill tungsten prospect just outside the EPM18171 on the western side of the McLeod valley. The major Mt Carbine granite is located to the east of the EPM. Small portions of the granite, which is linked to the genesis of the Mt Carbine tungsten deposit, are located on the EPM. The small McLeod Granite is partially located on the EPM in its southwestern part.

The Devonian Hodgkinson Formation consists of arenites/greywakes, siltstones, mudstones and sub-ordinate chert, mafic volcanics and conglomerates. A general north-north-westerly trend is dominant with steep dips and tight folds. Fold axes generally trend north-north-westerly, but there are some areas where cross-folding or contorted zones are evident. Fold axes are commonly observed to plunge both to the north-north-west and south-south-east. In places the wavelengths of the north-north-westerly trending folds are quite short (down to 500 metres or 250 metres from synform to antiform axis). Some overturned folds have been observed and plotted.

4.3 Mineralisation

The Hodgkinson Province is host to widespread mineralisation with gold, tin, tungsten and copper being the main commodities. Major centres of past production were the Palmer and Hodgkinson Goldfields, the Herberton tin field and the Mt Carbine tungsten deposit. The occurrence of tungsten and tin mineralisation are widespread.

Gold has been mined mainly from gold-quartz veined related to late-stage orogenic processes and subsequent alluvial workings. Gold in the veins is related with antimony (as stibnite) and in some cases tungsten (as scheelite).

Tungsten was mined at Mt Carbine from swarms of quartz-wolframite-scheelite veins in argillites. The Mt Carbine deposit is located just south of the south-eastern corner of EPM18171. At Wolfram Camp, tungsten was produced from a pipe-style W-Bi-Mo near the contact between Hodgkinson sediments and a Permian granite. The Watershed tungsten deposit currently being developed by Vital just south of EPM 15544 contains tungsten in the form of scheelite in quartz veins and disseminations within calc-silicate lenses and minor arenites.

Tin was mined at the Herberton tin field and numerous other locations in the Hodgkinson province from greisen, granite related veins and related alluvial workings.

Copper associated with zinc and lead occurs in stratiform sulphide lenses within Hodgkinson sediments at Mt Molloy and the Dianne mine (Gregory and Robinson, 1984). A small copper prospect called Peninsular is located on neighbouring EPM25139 not far west of EPM18171 within Hodgkinson Formation sediments.

4.3 Mining History

The Hodgkinson Basin has a history of mineral production extending back to the Palmer River gold rush days in 1873. Since that time gold, tin, tungsten, copper and antimony have all been produced in the region.

Mt. Carbine is the largest mine in the area, occurring just outside the eastern margin of the EPM. It has been the prime source of tungsten in Queensland. The mine produced 16,400 tonnes of wolframite and scheelite concentrates from around 19 million tonnes of ore up to 1987 (Garrad & Bultitude 1999). The deposit is probably one of the best exposed examples of tungsten mineralisation related to a quartz vein system in Australia (Bultitude et al 1996. Mineralisation occurs as a swarm of sub-vertical, parallel quartz veins containing wolframite and minor scheelite with accessory pyrite, chalcopyrite, pyrrhotite, molybdenite and arsenopyrite.

The bulk grade of the deposit was low (0.09% W03). Host rocks are described as tourmalinized and silicified micaceous siltstone, feldspathic sandstone and greywacke and the mineralisation is thought to be genetically related to the large granitoid body (forming the Mt. Carbine Tableland massif) just to the east of the mine.

The deposit was first worked in 1895 and has been operating sporadically up to recent times. The operation has recently restarted with an operation processing old tailings which if successful will fund a plant to crush the hard rock waste dumps and use ore-sorting or gravity pre-concentration techniques to feed a process plant.

At Mt. Holmes, which is also located to the east of the EPM tin was worked in a small way from quartz veins and pegmatite dykes. Some small quantities of wolfram are also noted here. Alluvial tin (cassiterite) has been worked in streams draining Mt. Holmes and Mt. Alto.

In the upper McLeod river system in the north of the EPM there are a number of known small workings on alluvial tin and auriferous reefs (quartz veins/lodes). Most of this work took place late in the late 1800's and early 1900's.

The only reported copper occurrence is in the general region of a prospect called the "Peninsula" located just north-east of Curraghmore Homestead, and just outside the western boundary of the EPM.

Total output of gold from the Palmer River catchment to the north of the EPM was recorded as 1.335 million oz. More than 90% of this was from alluvial sources and approximately 10% was from hard rock mining of auriferous quartz reefs at Maytown, some 80 km WNW of the project area. Conversely, some 90% of the 300,000 oz production from the Hodgkinson field to the south has been from hard rock sources.

Alluvial gold in the Palmer River and Hodgkinson goldfields has been shed from gold-quartz

veins, ranging from stringers to veins up to 2m wide, that commonly also contain some sulphides as noted earlier. The veins are associated with shear zones in the Hodgkinson Formation with numerous, mostly very small scale workings present.

Notable hard rock gold mines in the region that have produced over 10,000 oz, but less than 50,000 oz, have included the Queen of the North and Ida near Maytown in the Palmer goldfield, the Tyrconnell, General Grant, Flying Pig and Union in the Hodgkinson goldfield, and the Anglo-Saxon near Groganville in the Limestone Creek area all of which are now abandoned.

5.0 PREVIOUS WORK ON EPM 18171

5.1 Exploration of Previous EPMs

The Mt Carbine deposit (which is located to the east of the EPM) is the most significant mine in the area and was first worked in 1895 and has been operating sporadically up to recent times. The operation has recently restarted with an operation processing old tailings which if successful will fund a plant to crush the hard rock waste dumps and use ore-sorting or gravity pre-concentration techniques to feed a process plant.

Exploration to the north of the EPM has been largely targeted at the Watershed scheelite deposit and this was the focus of work conducted by UTAH, Geopecko, BHP and by Vital Metals Ltd.

The third focus for exploration in the area has been the historic tin and tungsten mines on the Mt Windsor Tablelands such as the Mt Stephanie deposit that has been described as potential for an open cut mining operation. However all of those targets are now in the National Park which was declared in 2006.

In summary exploration activities of previous companies have included:

- Literature research, data compilation and review
- Aerial photogeological/lineament interpretations and structural analysis
- Geological field reconnaissance, geological mapping, petrographic studies
- Maintenance of access tracks
- Stream sediment, rock chip and soil sampling, multi-element laboratory analyses
- Preparation of technical reports

A search of the Q-DEX database indicates reports of relevance to the current EPM 18171 area over recent decades. They are summarised as follows:

CR #	EPM	Company	Commodity	Year
4231	**735**	**Nickel Mines Australia**	**Sn**	**1970-72**
12047	**3333**	**Amax Australia (Operations) Pty Ltd**	**W Sn**	**1982-83**
13682, 12937, 12615, 11812	**3334**	**Amax Australia Limited**	**Au**	**1983-85**

12286, 11930	**3316**	**Mareeba Mining & Exploration Pty Ltd**	**Sn W Au**	**1983**
10488, 10487, 9480, 8888, 8323	**2301**	**Broken Hill Proprietary Co Ltd**	**W Sn Au**	**1980-82**
20451	**5248**	**BHP Minerals Exploration**	**Au**	**1988**
16627	**4105**	**Nobelex Limited**	**Au**	**1987**
18769	**5006**	**Centenary International Mining Ltd**	**Au**	**1988**
22366, 19890, 18255, 16057	**3975**	**Queensland Wolfram Pty Ltd & Poseidon Exploration Limited**	**W Sn Au**	**1985-89**
11358, 11357	**2710**	**Bremar Minerals Pty Ltd & Pahminco Pty Ltd**	**Sn W**	**1982**
28991, 27563	**10010**	**Murchison United N.L.**	**Au Sn W**	**1995**
50501	**14872**	**Kangaroo Metals Limited**	**Au**	**2008**
54585	**14735**	**Republic Gold Ltd**	**Au Sn W**	**2008**

Table 3 EPM 18171 List of QDEX Reports from Previous EPMs

- Nickel Mines Limited (1972) and BHP Ltd. (1980-1982) investigated alluvial tin. BHP carried out the most work, undertaking stream sediment sampling, panned concentrate sampling surveys, resistivity surveys and rotary air-blast drilling. In the second year BHP also completed a program of churn drilling. Results did not reach expectations and the tenements were relinquished.
- Amax Australia Limited held 3334 which was centred around Curraghmore Station (Hammond and Duncan 1983). They carried out aerial photographic studies, limited multi-element stream sediment sampling, some soil geochemical surveys and petrological studies.
- Centenary International Mining Ltd explored 5006M during 1987-1988 (Thom 1988). This A to P was located within the northern area of the present EPM and work was targeting gold. Centenary carried out a BLEG sampling survey (50 samples) in the area, and also analysed samples for Cu, Pb and Zn. They reported results as being moderately encouraging and follow-up work was recommended. However the area was relinquished before any further work was attempted.
- Queensland Wolfram Pty Ltd and latterly Poseidon Exploration Ltd undertook detailed magnetic survey to locate extension of mineralisation from Mt Carbine. As tungsten prices fell and the mine was close Poseidon Exploration undertook gold exploration

with a view to process at the Mt Carbine plant. Minus 80 mesh trap stream sediment samples were taken for gold and located a few anomalies. some small quartz veins and cherts were rock chip sampled and assayed. The highest value from the cherts was 0.8 g/t Au, while one of the quartz vein samples gave 3.2 g/t Au.

6.0 Activities undertaken during review period

6.1 Summary

Activities undertaken in the past year by Vital Metals Ltd on EPM 18171 included:

- Literature review of QDEX reports and inherited company data.
- Digitising stream sediment data from available QDEX reports and entering them to the VML exploration database
- Regional geophysical and geological review.
- Interpretation and assessment of previous exploration results.
- Airborne hyperspectral survey, data interpretation and reconnaissance visits to identified features
- First stage of a stream sediment and soil geochemistry program

6.2 Literature Research and Technical Data Review

A thorough review of open file tenement reports and technical data in QDEX and in VML's database continued throughout the year. Considerable time and effort has been spent in converting the historic stream and rock samples into a GIS database with all metallogenic attributes. This is being necessary for the identification of metal zonation.

A number of tin, tungsten and gold occurrences are registered in the geological survey database and these have been added to the GIS database. There is a significant trend of workings centred around the Mt Carbine mine to the east of the EPM.

There is a limited amount of open file stream sampling information available which is largely concentrated in the south east near the Mt Carbine mine and was gathered largely as a result of near mine exploration. Stream sediment geochemistry data (38 points on EPM 18171) along the McLeod River and the alluvial plains in the southern part of the EPM were digitised from QDEX report 18769 (Centenary International Mining Ltd, 1984; EPM 5006). This sampling campaign targeted gold and base metals not including tungsten tin or arsenic. Only 3 of the 38 bulk cyanide leach samples exceeded 2ppb of gold and none of the base metal values was anomalous. The northern part of the area tested by Centenary is covered by the Vital soil and stream program carried out this year and results are presented in Section 6.4. Additional historical surface sample data were available to Vital through the GSQ Queensland surface sample dataset. Most of those samples are located in the easternmost portion of the tenement and were tested for base metals. Very few samples were analysed for tin. Figure 3 shows the samples of previous exploration work available to Vital.

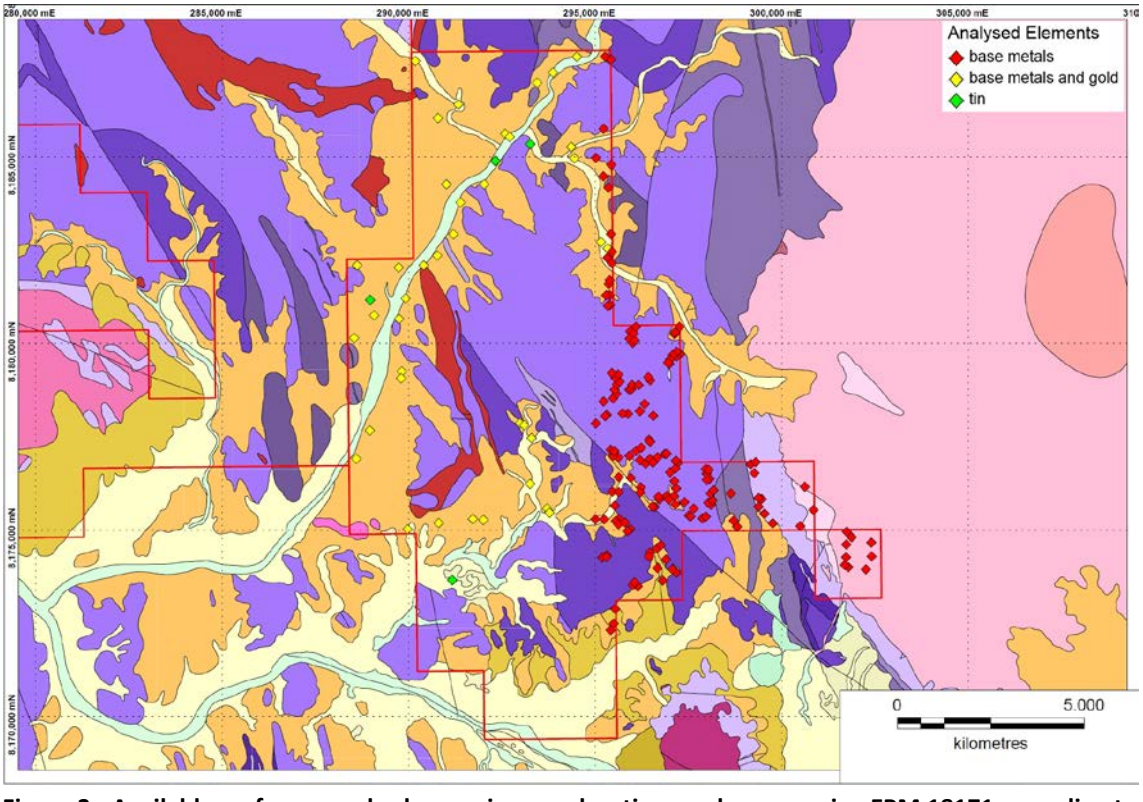

Figure 3 - Available surface samples by previous exploration workers covering EPM 18171 according to their analysed element suite.

6.4 Exploration model

Vital is exploring for tungsten and related styles of mineralisation using a geological model derived from tungsten occurrences mined in China and observed at its Watershed Scheelite Project (Table 4 and Figure 4).

Tungsten mineralisation noted at Watershed consists of fine to coarse scheelite hosted by quartz – albite veins and finer disseminated scheelite hosted by brittle calc-silicate altered arenites.

The scheelite-quartz-albite veins are dominantly east-west striking and dipping steeply to the south, whilst the calc-silicate units are striking NNW dipping moderately to the west. A ductile deformed shale unit is likely to have acted as an impervious unit to the rising scheelite rich granitic derived fluids. High grade short intervals of a sometimes quartz-albite altered granite dyke have been encountered at depth.

Watershed is a quartz vein type five floor structure (9) on our geological model. Tungsten mineralisation tenor tends to increase with depth as in hole MWD119 which intersected 20m @ 1.27 % WO3 from 302m (Figure 4). This suggests that there is good potential for an underground operation after open pit mining at Watershed.

Stratabound W Type	Greisen type W-Be-Mo-Bi type
Granite type niobium & tantalum	Granite type niobium & tantalum deposit
Skarn type scheelite-polymetallic	Granite type W-Mo deposit
Vein type Cu-Pb-Zn-Sb-As	Granite type rare-earth element
Granite type W-Sn-Mo-Bi	Porphyry W-Sn-Mo deposit type
Broken zone type W-Sn polymetallic	Pegmatite type Ta-Nb-Li-Be type
Wolframite-qtz vein type, five floor structure	greisen type W-Mo-polymetallic deposit
Greisen type W-Be-Mo-Bi type	Carbonate type scheelite polymetallic type

Table 4 EPM 18171 geological model mineralisation styles

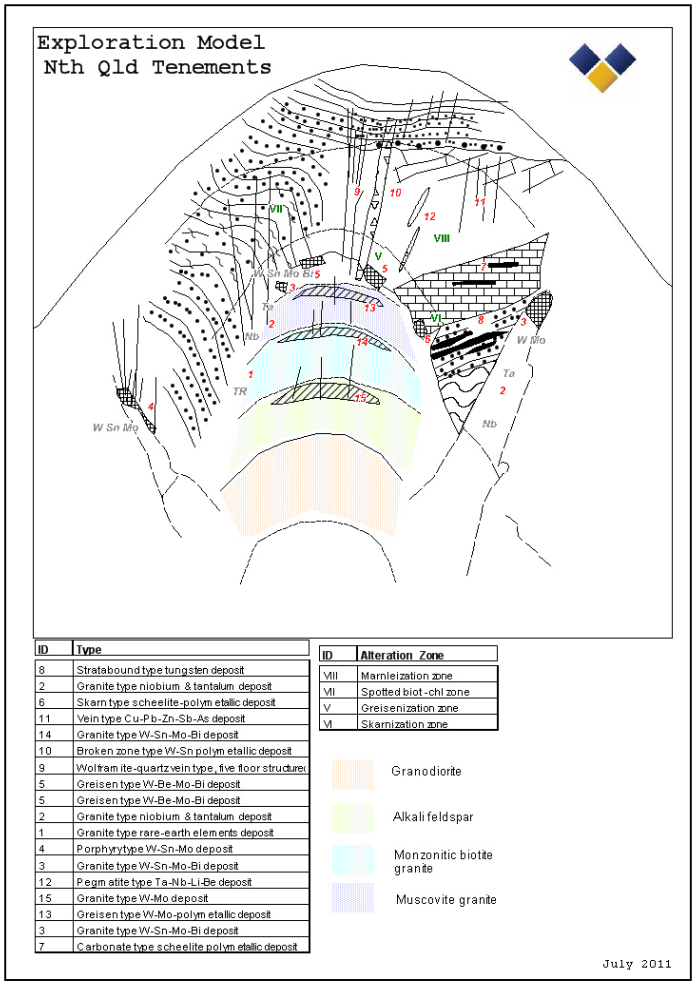

Figure 4 EPM 18171 cartoon showing geological model mineralisation styles

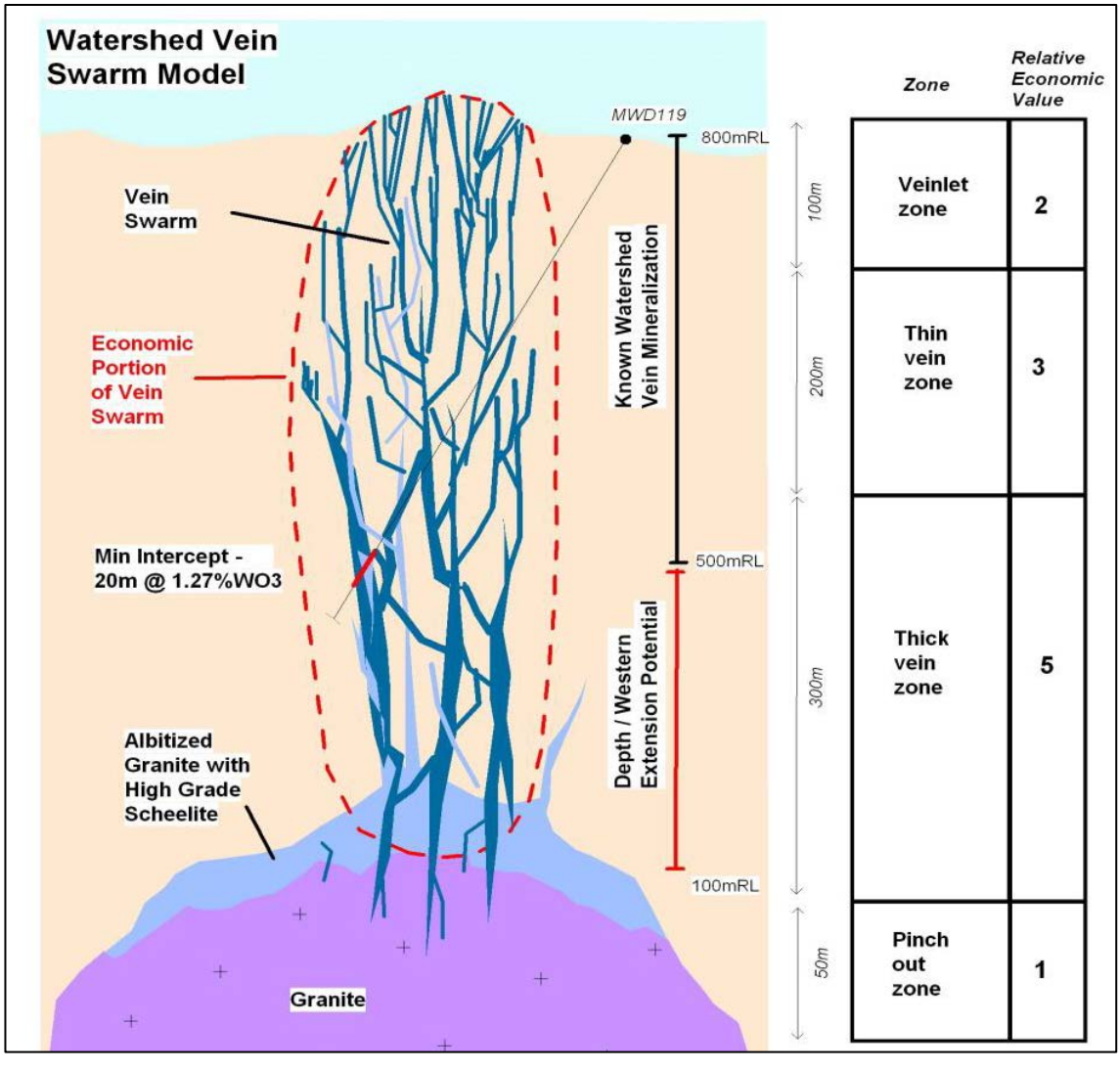

Figure 5 Watershed Mineralisation equates to the Five Floor Model (9)

Vital also considers the work and exploration guidelines identified by Blevin (1998) as important to its exploration effort to prioritise areas and targets for exploration work on the EPM:

- Define Sn provinces, based on historical records.
- Determine igneous association (suite/supersuite) related to Sn mineralisation. Determine the chemical and geophysical properties of the related granitoid suite/supersuite.
- Establish the extent of this association locally and regionally. Does the distribution of related granitoids coincide with the known distribution of historical Sn production or are the related granitoids more extensively developed regionally?
- Within the region of prospective granites so defined, locate areas that may indicate just unroofed or shallowly buried granitoid cupolas, using structure, gravity, contact aureole geometry, dyke swarms, presence of contemporaneous volcanics, hydrothermal alteration zones, and metal zoning. Cupolas and dykes may form linear belts where they have intruded along structural weaknesses to higher levels.
- Interpret regional structure to identify potential fluid pathways that may have focussed magmatic fluids emanating from granitoid cupolas. The distribution and relationship of these structures relative to older reactive rocks should also be examined.
- Consequent stream sampling for cassiterite and elements associated with specialised granitoids and related mineralisation (As, Ag, F, etc) may define alteration systems over buried cupolas. More detailed studies of metal zoning may also assist at this stage, as well as mapping of alteration at prospect scale. Metal zoning at all scales needs to be emphasised. For example, low Sn grades in stockworks carrying Zn, Pb and As may indicate the lower temperature distal end of an economic Sn system.

6.5 Hyperspectral Survey

Vital Metals Ltd is worked with Japan Oil Gas and Metals National Corporation (JOGMEC) on carrying out a Hyperspectral remote sensing project (the "HSRS project") to acquire new airborne HSI data and the collection of ground truth data regionally and over the whole of EPM 18171. Unfortunately the processed datasets cannot yet be released as the data processing methods used are being developed by JOGMEC and are considered confidential, however the targeted locations may be released.

Vital and JOGMEC will carry out the HSRS project. The project consisted of a preliminary survey, HSI data acquisition, HSI data analysis including rock and mineral mapping, ground truth and integrated analysis for new prospective areas. The outlines of each activity are as follows:

- A preliminary survey was conducted with Vital to check the conditions of vegetative cover and outcrops in the JV area. JOGMEC and an aerial survey company verified whether or not the acquisition of spectral reflectance of rock/mineral is possible
- The HSI data were collected using an airborne hyperspectral sensor which covers the 400-2400nm wavelength range with over 120 spectral bands and less than 5m spatial resolution. Additionally, a survey was carried out on ASTER satellite spectral data.
- HSI data analysis was carried out to do mapping based on the spectral reflectance feature of rocks and minerals. Moreover, lineament analysis was conducted to clarify geological structures using the HIS data at high spatial resolution.
-

Activity	2012									2013		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Planning and preliminary survey	23rd - 25th May: Field visit and meeting											
Request for Proposal for HSI data acquisition												
Judgment for proposal												
HIS data acquisition and data processing												
Data analysis												
Ground truth								1week				
Re-analysis												
Report writing												

Table 5 Timetable for HIS survey

Outcomes of the hyperspectral survey

Identified features of the hyperspectral survey are shown in Figure 6 according to their mineralogy type. The majority of features is classed as kaoline, muscovite or kaoline-muscovite targets. Two areas with identified features in the central and southern part of the tenement where subject to follow-up visits with JOGMEC geologists in December 2012. Rock chip

samples were taken from all locations (results are presented in section 6.6). The northernmost of the visited locations is located close to the intersection of two major regional faults trending NW-SE and N-S. There are also historical stream sediment sample locations close-by showing high values of tungsten. The NW-SE trending fault (Mt Carbine Fault) cuts through the Mt Carbine deposit. Thus, this area is of special interest regarding its potential to host tungsten mineralisation. The field visit showed the presence of minor quartz veining in Hodgkinson Formation argillites, but no minerals of interest were observed in the veins. UV lamping showed no presence of scheelite. Further to the south on the N-S-striking fault, the hyperspectral feature coincides with the occurrence of a large chert unit elevated in iron and manganese as indicated by typical staining. No minerals of interest were observed and UV response was negative. The area of these two features in the central part of the tenement will be covered by the next stage of Vitals stream sediment and soil geochemistry program started this year.

The southern features are of the muscovite type. They are located in an area of low relief in the broad Mitchell River valley and the underlying geology is locally exposed by washouts. One of the features was in an area of intensive quartz veining within Hodgkinson Formation arenites. At places there were indications of pyrite haloes (as small cubic pseudomorphs of goethite after pyrite) around the veins. Other minerals of interests were not observed, UV lamping had negative results.

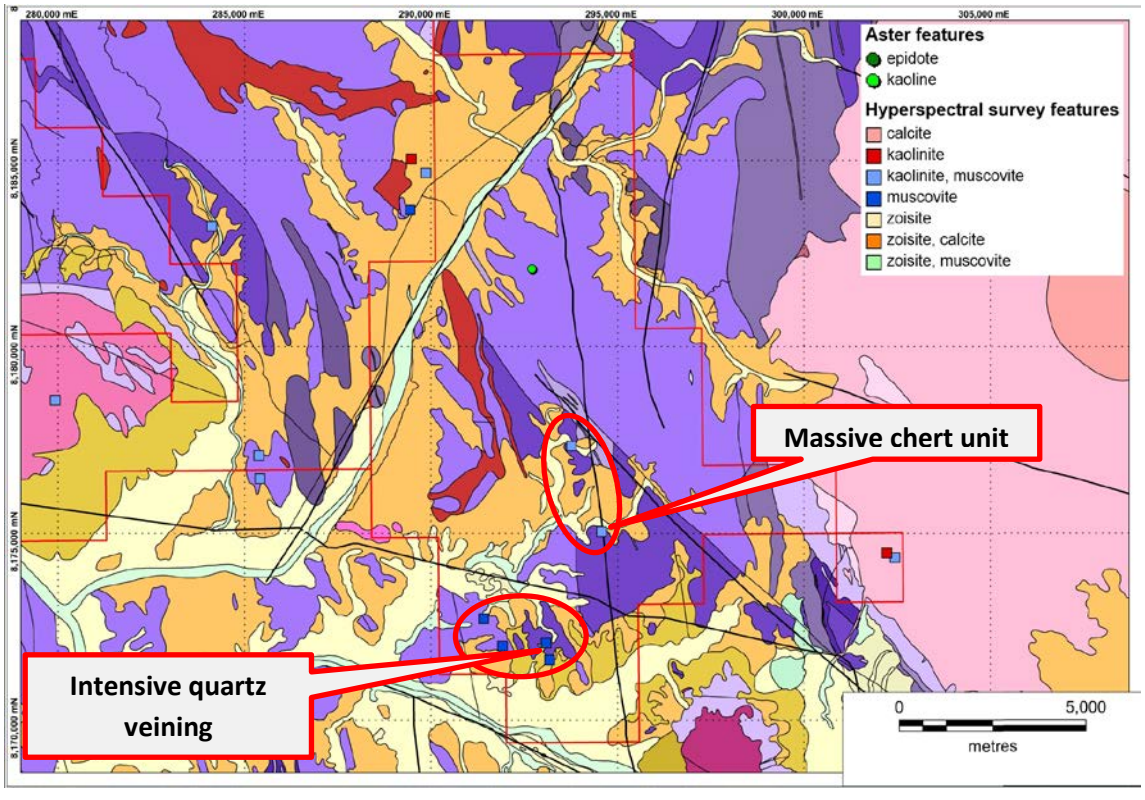

Figure 6 - Selected hyperspectral features. Red ovals mark those features which were visited with JOGMEC geologists in December 2012.

6.6 Geochemistry and mapping

During the reconnaissance visits of features identified during the 2012 hyperspectral survey as described in section 6.5, several rock chip samples were taken. Additional samples were taken during the soil and stream sediment sampling program in May 2013 described below. The samples were sent to ALS for multi-element analyses (4acid digestion, ICP-AES measurement) and some were analysed for gold as well (lead collection fire assay).

A major soil and stream sediment sampling was designed over the northern and central part of the tenement. Figure 7 shows the project outline with this years completed area. The sampling corridor was chosen along the major NW-SE trending Mt Carbine Fault on which the Mt Carbine tungsten deposit, the Henry Hill and Anomaly 18 tungsten prospects are located. Further, the zone covers the late-stage orogenic Curraghmore granite of the Whypalla Supersuite hosting the Henry Hill prospect. Therefore the area is highly prospective for tungsten and associated elements.

Stream sediment sample location focused on first and second order stream close to the source of the creeks in the adjacent mountainous areas. These areas have only a limited coverage for a small range of elements by previous explorers. Stream sediment samples were taken in heavy mineral traps in the streams and sieved in stages to -40+80mesh and -80mesh fractions. The -40+80 mesh fraction was UV-lamped to identify any scheelite in the samples. The

-80mesh fraction was sent to ALS laboratories in Townsville for multi-element (near total 4 acid digest, ICP-AES) and gold analyses (aqua-regia digest, ICP-MS).

Soil samples were taken in the valley of the McLeod valley avoiding the alluvial depositional environments. A line spacing of 800x200m was chosen for soil sampling. The work was carried out using a small petrol-powered auger drill where possible. Depending on ground conditions, samples were taken from depths between 10 and 65cm targeting the lower B-horizon. Samples were processed as stream sediment samples with the -40+80mesh samples being UV-lamped for scheelite and -80mesh samples being send to Townsville for analyses using the same analytical methods. Eight field days were spent on EPM18171 for stream sediment, soil and rock chip sampling in May 2012. A total of 74 samples were taken from the northern part of the tenement mostly east of the McLeod River, including 49 stream sediment samples, 22 soil samples and 3 rock chip samples. The sample locations are given in Figure 8 as an overview and Figure 9 as a detail map for the northern part of the EPM.

Geological mapping was carried out alongside geochemical sampling. Together with the data collected for each stream/soil/rock chip sample, an interpretive geology map was produced of the area covered by the geochemical surface survey (Figure 10).

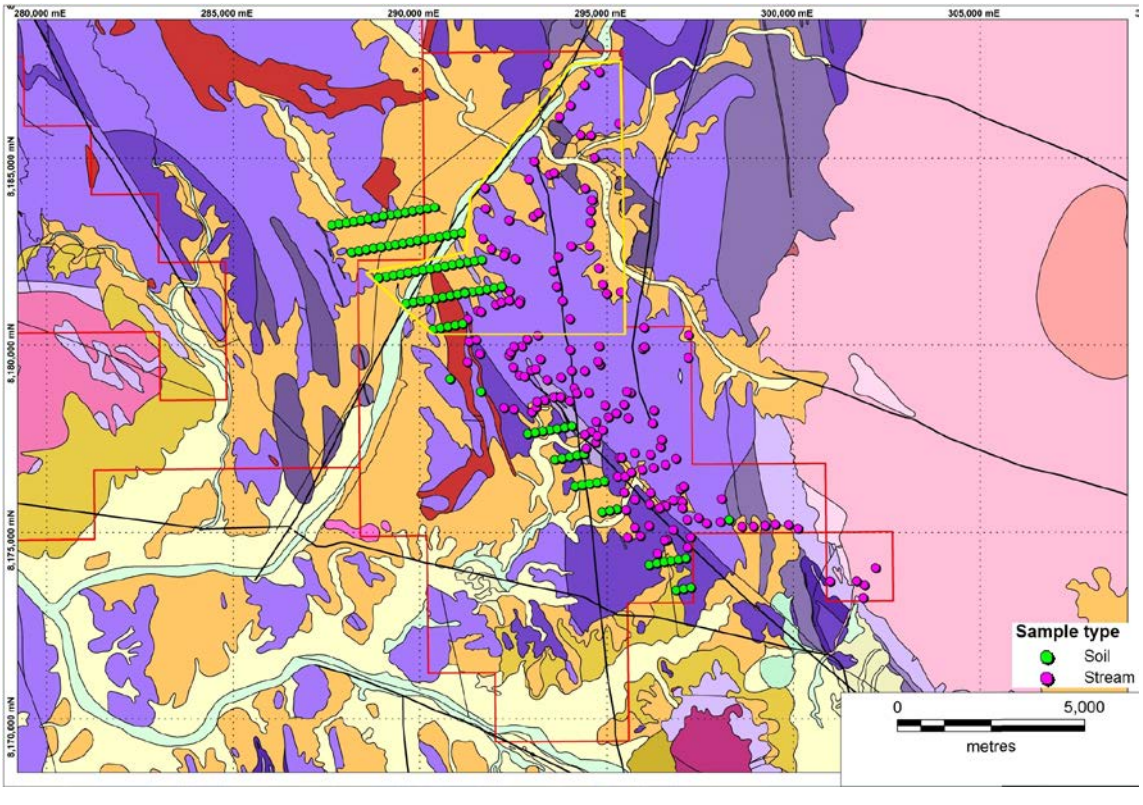

Figure 7 - Planned stream sediment and soil geochemistry program. Yellow outline marks the area finished during the year 2012/13.

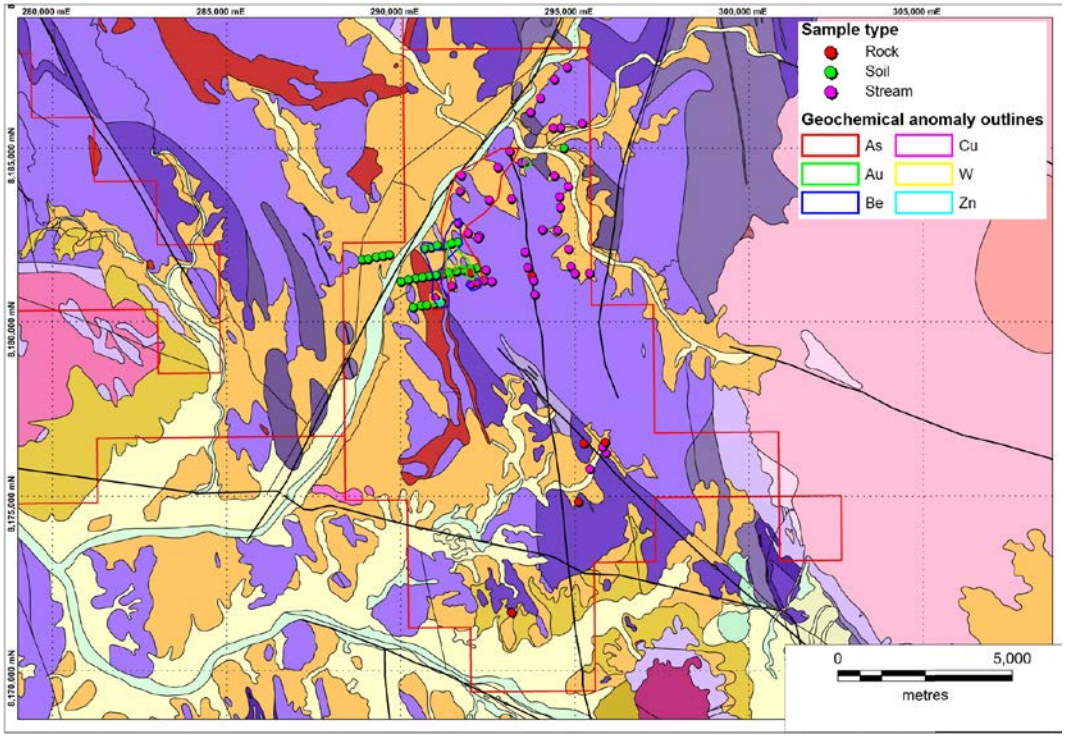

Figure 8 – Overview map of EPM 18171 showing sample locations for geochemistry as well the outlines of identified geochemical anomalies.

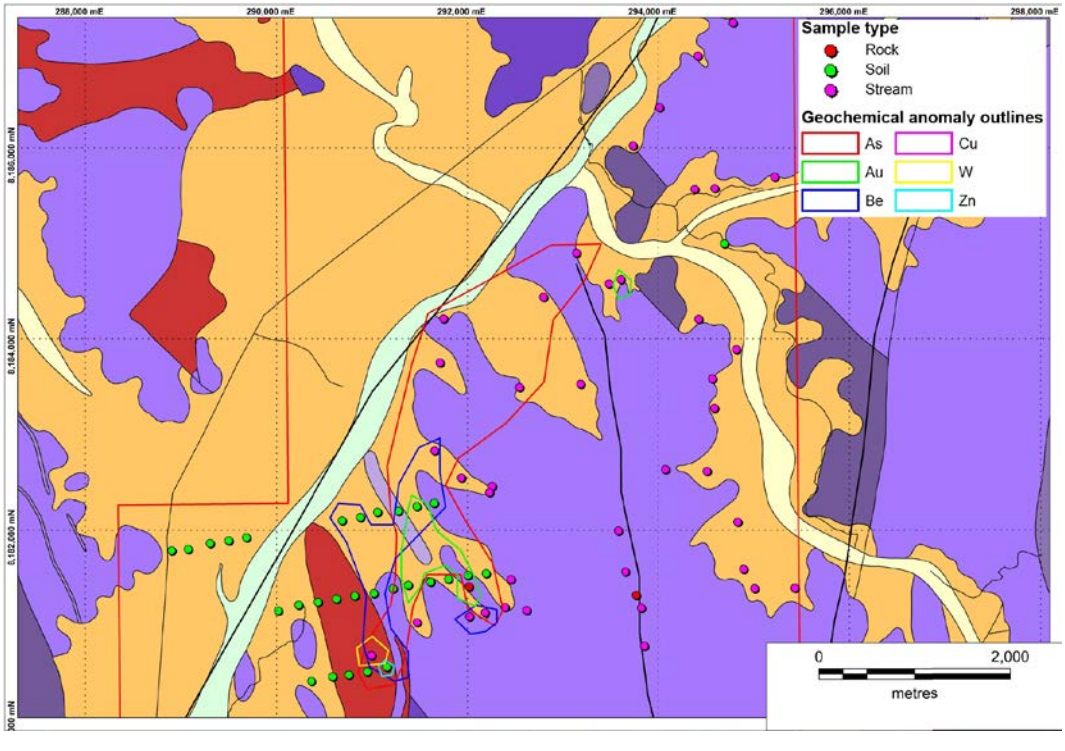

Figure 9 - Detailed map of the northern part of EPM18171 showing sample locations for geochemistry and outlines of identified geochemical anomalies.

Results

Rock chip sample values are summarised in Table 6 for selected elements. With the exception of two samples they did not show any significant enrichment of elements of interest. One of the anomalous samples was taken during a field check on the southern hyperspectral feature with significant quartz veining. The location is shown in Figure 6. The sample shows elevated values of tungsten (60ppm) and arsenic (52ppm) compared to most quartz samples outside known tungsten prospects taken by Vital. The second anomalous sample was taken from a silicified rock with mm-wide quartz veining and the presence of specular hematite (Figure 10). It was taken during the soil and stream sediment sampling program in May 2013. The sample showed a high arsenic content of 266ppm and 0.02ppm gold. Molybdenum was also elevated with 9ppm in comparison to the other rock units in the area which have generally values below 1ppm. It is further described together with soil and stream sediment data below.

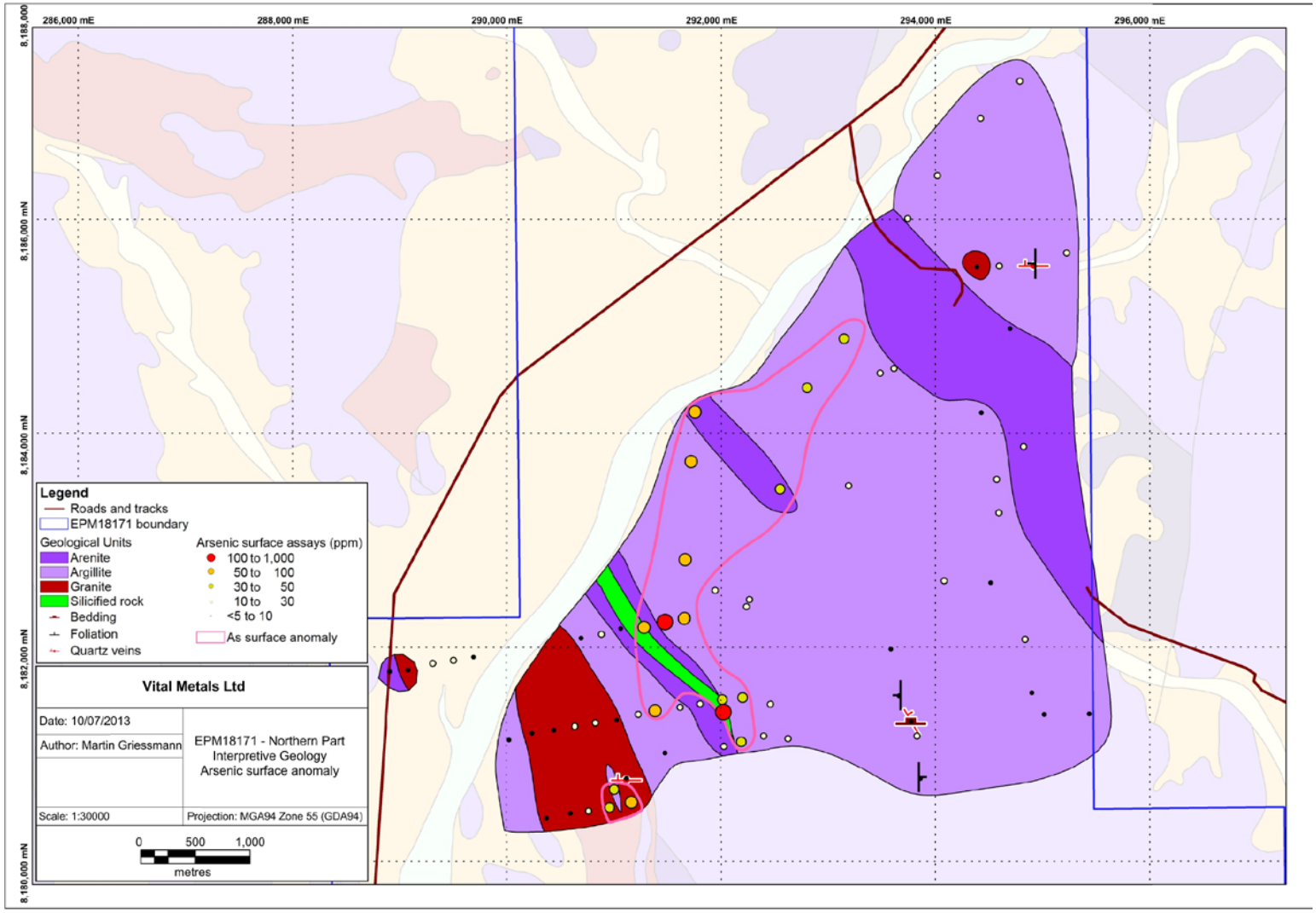

Figure 10 - Interpretive geology and arsenic surface anomaly in the northern part of EPM18171

SAMPLE	Northing MGA94-55	Easting MGA94-55	Lithology	As	Cu	Mo	Pb	Sn	W	Zn	Au
34537	8181312	293775	quartz vein	<5	28	<1	14	<10	<10	17	<0.01
34612	8181401	292022	veined silicified sediment	266	21	9	43	<10	<10	3	0.02
34613	8180784	291119	quartz vein	<5	98	<1	41	<10	<10	7	<0.01
34498	8174829	295114	quartz vein	52	7	-1	13	-10	60	12	-0.01
S12WS36-1	8174829	295114	oxidised chert, quartz veining, Fe-rich		39	1	48	-1	5	11	
S12WS36-2	8176542	295884	quartz vein		-1	1	-2	-1	-1	-2	
S12WS37	8176499	295265	siliceous fine grained sandstone		35	-1	11	2	2	33	
S12WS38	8171665	293184	oxidized chert		2	-1	2	1	1	12	
S12WS39-1	8171647	293204	silty sandstone		14	-1	16	3	5	75	
S12WS39-2	8171647	293204	quartz vein		34	-1	2	-1	1	9	

Table 6 - Summary for rock chip samples taken on EPM 18171 during 2012/13 for selected elements.

Figure 11 – Anomalous rock chip sample 34613 was taken from this silicified unit exhibiting specular hematite in the northern part of EPM 18171.

Alongside geochemical sampling, geological mapping was carried out. Together with the geological data collected on the stream and soil samples sites, a interpretive geological map of the sample area was produced (Figure 10). The area consists mainly of Hodgkinson sediments, mostly dark argillites and less abundant arenite units following the regional NW-SE trend. In the southeastern part the sample area covers the NW-SE trending Curraghmore granite. A relative thin silicified sediment unit occurs as well in the southern area which is linked to the arsenic and gold anomalies discussed below.

Geochemical anomalies were defined using the soil and stream sediment data obtained in May 2012. To define geochemical anomalies, individual cut-off grades were selected for each element of interest. Those grades are based on previous exploration experience and statistical analyses of existing data. The selected cut-offs are as follows:

- As – 30 ppm
- Au – 0.005ppm
- Be – 3 ppm
- Cu – 50 ppm
- Sn – 30 ppm
- W – 30 ppm
- Zn – 75ppm

A number of anomalies could be identified on the range front east of McLeod River.

Arsenic — Arsenic shows the largest anomalous area defined by soil, stream sediment and rock chip samples. Figure 10 shows the arsenic anomaly on top of the interpretive geology map of the northern part of EPM18171. The North-South extension of the anomaly is about 5km. There is a small gap in the southern part of the anomaly, but it is open to the south in the area not tested during this years program. The highest values were detected in the detected in a soil sample in the central part of the anomaly and a rock chip sample in the southern part of the anomaly with 131 and 266ppm As respectively. The rock chip sample is a highly siliceous rock cut by a fine network of quartz-veinlets. It also contains minor specular hematite (Figure 11).

Gold — A gold anomaly is overlapping with the southern part of the arsenic anomaly. Highest gold values coincide with the samples having the highest arsenic values mentioned above. The high-arsenic soil sample contains 0.009ppm gold and the high arsenic siliceous rock chip sample contains 0.02ppm gold. An isolated stream sediment sample with an increased gold content of 0.008ppm occurs in the northern part of the sampled area.

Beryllium — A low intensity beryllium anomaly is present overlapping with the southern part of the arsenic anomaly.

Tungsten — On stream sediment sample in the southern sample area has a tungsten concentration of 70 ppm. It is located on the Curraghmore granite and overlaps with the arsenic and beryllium anomalies.

Zinc A soil sample showed an isolated value above the cut-off with 78ppm at the southern end of the sampled area.

The southern sample area containing the overlapping arsenic, beryllium, gold and tungsten anomalies showed the most promising results. This area warrants a follow up program including detailed mapping, rock chip sampling and infill soil sampling. It will be important to characterise the highly siliceous rocks (Figure 11) containing both increased arsenic and gold concentrations and understand if it is a chert or if it is the result of hydrothermal processes. The increased beryllium values may be related to the covered parts of the Curraghmore granite indicating a higher grade of fractionation. The Zinc anomaly can be regarded insignificant through its isolated nature. Tin was not detected above the defined cut-off.

6.7 Granitoid Geochemistry and Petrology Characterisation Project

Vital has commenced a project to study the geochemical and petrological characteristics of the felsic intrusives (mainly belonging to the Whypalla Supersuite) on its tenements including EPM 15544. The project has the following aims:

- classification of igneous intrusives in the exploration area according to their geochemistry and calculated mineralogy
- comparison of igneous intrusives in the exploration area to those in other mineral fields known to be linked to mineralisation
- identification of internal geochemical zoning / alteration giving vectors of fluid flow or direct identification of mineralisation
- Identification of regional geochemical zonation/variation in granites and the potential for differing chemistry between ore forming fluids i.e. Mt Carbine wolframite + scheelite, Watershed scheelite only
- geochemical data to evaluate rock properties as potential construction material for any future VML developments or waste rock material (e.g. the felsic dykes cutting the mineralisation at Desailly)
- Identification of regions or localities with an increased potential for the formation of economic mineralisation
- Assist with the interpretation of stream sediment and soil geochemical data by providing background values
- To assist with the Watershed genetic model

This study includes the review of existing data from Geoscience Australia, the Geological Survey of Queensland and other scientific publications as well as the acquisition of further data through rock chip sampling by Vital. Required sampling will be incorporated in the ongoing field work program.

7.0 Future work

The next year exploration program on EPM 18171 will see the continuation of the soil and stream sediment sampling program on the central part of the tenement. Together with the planned sampling on neighbouring EPM14735 this will close the surface geochemical coverage

between the Mt Carbine deposit and the Henry Hill prospect. There will be also further reconnaissance visits to hyperspectral features on the EPM including rock chip sampling on these points. Based on the results of this program, follow up work will be planned (e.g. detailed mapping of areas with geochemical anomalies, rock chip sampling and infill geochemical soil sampling) to generate drill targets.

The igneous rock study program will be continued in the coming months. The study is due for completion in Q4 2013 and results will be presented in the next annual report.

8.0 Conclusion

The prospectivity of EPM18171 remains high for a wide range of elements including gold, tungsten and tin. The ongoing acquisition and interpretation of open file historical exploration literature showed the potential of the tenement, and also the large gaps in previous exploration work. Areas identified to be of particular interest are a corridor between the Mt Carbine tungsten deposit directly southeast of the EPM and the Henry Hill tungsten prospect northeast of the EPM on neighbouring EPM 14735. This corridor contains the Whypalla Suite Curraghmore granite and a major SE-NW striking fault. The latter cuts through the Mt Carbine open pit and the Henry Hill and Anomaly 18 prospects on EPM 14735 are located on its trend. The Whypalla Suite, to which the Curraghmore granite belongs, is linked to all tungsten deposits and prospects after current geological understanding on and around Vitals tenements in northern Queensland.

Vital started closing the existing gaps in exploration coverage since taking on the EPM in 2011. Vital together with its partner JOGMEC has carried out a regional airborne hyperspectral survey covering EPM18171 and the other EPM held by Vital in north Queensland. A soil and stream sediment sampling program was planned and begun to be carried out covering the corridor of interest described above. Both programs identified the presence of anomalous features that warrant follow up exploration work and underpin the potential of the EPM.

Vital remains committed to exploration on EPM18171 and will continue its exploration efforts on the EPM incorporating the latest understanding of the regional geology, geophysics and the geology of the Watershed deposit and other prospects on its ground in particular.

9.0 References

Bain JHC & Draper JJ 1997: North Queensland Geology. AGSO & Qld. Dept. Mines & Energy.

Blevin, P., 1998. Palaeozoic tin ± tungsten deposits in eastern Australia. AGSO Journal of Australian Geology & Geophysics, 17(4), p75-79

Bultitude RJ et al 2000: South Palmer River Geological Sheet 7865. Department of Mines and Energy Queensland.

Duck BH, 1982: Annual Report, ATP 2710M, unpubl Co Rep for Bremar Minerals Pty Ltd, CR11357

Duck BH, 1982: Final Report, ATP 2710M, unpubl Co Rep for Bremar Minerals Pty Ltd, CR11358

Garrad PD & Bultitude RJ 1999: Geology Mining History and Mineralisation of the Hodgkinson and Kennedy Provinces Cairns Region North Queensland. Department of Mines and Energy Queensland.

Hammond JM, 1984: Third Report 4th April 1984, ATP 3334M, North Queensland, unpubl Co Rep for Amax Australia (Gold) Pty Ltd, CR12937

Hammond JM, 1985: Six Month and Final Report 7th January 1985, ATP 3334M, North Queensland, unpubl Co Rep for Austamax Gold Pty Ltd, CR13682

Harwood A 2011: Regional Exploration Review Watershed Tungsten Project Vital Metals Ltd Company Report

Henry R, 1988: Report for six months ended September 15 1988, ATP 3975M, Mt Carbine North Queensland, unpubl Co Rep for Poseidon Minerals Limited, CR19890

Henry R, 1988: Report March 16 1987 to March 15 1988, ATP 3975M, Mt Carbine North Queensland, unpubl Co Rep for Poseidon Minerals Limited, CR18255

Northcott MJ, 1990: Final Report,, ATP 3975M, Mt Carbine North Queensland, unpubl Co Rep for Poseidon Minerals Limited, CR22366

Royle DZ 1983: Final Report 14th July to 11th November 1982, Authority to Prospect 3333M, unpubl, Amax Australia (Operations Pty Ltd), CR 12047

Stuart NF, 1996: Report for the Twelve Month Period Ending April 14th 1996 and Final Report, EPM 10010, unpubl Co Rep for Murchison United NL, CR28991

Unknown, 1972: A to P 735, Final Report, Nickel Mines Ltd, CR4231

Unknown, 1981: Six Monthly Report, Authority to Prospect 2301M, McLeod River North Queensland unpubl Co Rep for BHP, CR9480

Unknown, 1982: Six Monthly Report, Authority to Prospect 2301M, McLeod River North Queensland unpubl Co Rep for BHP, CR10488