Annual Report

for EL31/2011 Great Musselroe River

for the Period 5 December 2013 to 4 December 2014

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OutSide InSight

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ABSTRACT

This report describes the exploration activities completed within EL31/2011 during the period 5 December 2013 to 4 December 2014. This is the third annual report for the third year of grant of the Tenement.

The Tenement is located generally north, east, and south of Gladstone, a small mining town located 140 km east of Launceston.

The Tenement covers a number of past producer alluvial tin mines and many known alluvial tin deposits, but there are very few known basement tin deposits.

There has been a long history of investigations since 1874. Large scale mining for tin ceased in 1982. Past production of cassiterite is about 3,100 tonnes, and unmined resources, calculated by various authors, total about 1,400 tonnes.

The company's main focus is exploration for tin, in alluvial deposits and in bedrock. Prior to Tin Dragon's activities there has been no past exploration for bedrock tin mineralisation.

The area is characterized by relatively poor outcrop. Much of the basement rocks are covered with various types of unconsolidated sediments, from Eocene to Recent in age, most of which are tin bearing.

In the district the original sources of the tin were phases of the Devonian tin-bearing granites of the Blue Tier Batholith. Tin occurs as cassiterite in quartz and greisen vein systems in the roof zone of the granites near the contact with overlying Silurian Mathinna Beds.

Exploration work included a continuing compilation of datasets of past exploration and mining, and a review of the data to target potential new alluvial resources, and areas prospective for basement tin mineralisation. This was concentrated on the Musselroe River system and the Dorset Flats area.

Alluvial tin occurs in the Musselroe River system for an extraordinary strike length exceeding 14 km. Locally where drilling has been done grades are encouraging though the known better areas are probably inaccessible for mining. It is highly unlikely that a single source area to the south has supplied the cassiterite, and so it is very likely that source bedrock mineralisation occurs with multiple centres all along this strike. This means that undrilled sections of the leads, where there are significant strike lengths potentially accessible for mining, could have encouraging grades. It also means that there is a vast area prospective for basement mineralisation, which is presently totally unexplored.

In the Dorset Flats area the data review gave no clues about the presence or absence of basement mineralisation. There appear to be no remaining resources immediately adjacent to the former dredged areas, but there appears to be potential in the Eastern Leads area to the west.

The Eastern Leads are identified as an area warranting further data review.

The general area Amber Hill to Garfield has great potential for outcropping basement mineralisation. A further data review to generate targets is required.

KEYWORDS

NE Tasmania
Geology
Mineralisation
Alluvial
Paleochannel
Leads
Primary Deposits
Granite
Mathinna Group
Tin

SUMMARY OF ACTIVITIES for EL31/2011 Great Musselroe River for the Period 5 December 2013 to 4 December 2014

Exploration work included a continuing compilation of datasets of past exploration and mining, and a review of the data to target potential new alluvial resources, and areas prospective for basement tin mineralisation. This was concentrated on the Musselroe River system and the Dorset Flats area.

CO-ORDINATES

All lat/long co-ordinates in this report refer to the GDA94 Datum, unless stated otherwise.
All AMG co-ordinates in this report refer to the GDA94 - Zone55, unless stated otherwise.

FILE SUMMARY LIST

File name	Format	Contents
EL312011_2014_01_report.pdf	pdf	Annual Report

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1.0 INTRODUCTION

This report describes the exploration activities completed within EL31/2011 (The 'Tenement') during the period 5 December 2013 to 4 December 2014. This is the third annual report, for the third year of grant of the Tenement.

For convenience the project is named "Musselroe Project".

The Tenement is located generally north, east, and south of Gladstone, which is a small mining town located 140 km east of Launceston, in north-east Tasmania.

Table 1 – Tenement Details

Tenement	Holder	Date Applied	Date Granted	Size
EL31/2011 Great Musselroe River	Tin Dragon Pty Ltd 100%	20 May 2011	5 December 2011 (Categories 1 and 5)	138km^2

The tenement was reduced in size during the year. The current tenement is shown on Fig 1.

There are small Mining Leases for category 1 minerals which are excluded from the tenement in the Riverside and Dorset Flats areas. The bulk of land within the tenement is logged state forest, timber plantation and timber reserves. Some private farming land is concentrated in the northern-most parts of the Tenement.

The project lies within the Tasmania NE (SK55-21) 1:250,000 map sheet, and the 1:25,000 map sheets of Gladstone, Lanka, Spurrs Rivulet, Derby and Pioneer. Access is via a sealed major road between Gladstone and Pioneer. Formed local roads and logging tracks and other rough tracks provide access within the project area.

The tenement covers a number of past producer alluvial tin mines and many known alluvial tin deposits, but there are very few known basement tin deposits. Past production of cassiterite is about 3,100 tonnes, and unmined resources calculated by various authors total about 1,400 tonnes.

The company's main focus is exploration for tin, in alluvial deposits and in bedrock.

As stated in the 2012 Annual Report the potential for primary tin resources in the Tenement has not been addressed by previous owners of the deposits and leases. There is a natural tendency for alluvial miners to seek alluvials and not bedrock tin sources-and vice versa for hard rock explorers.

The cassiterite and the other heavy mineral suites have traditionally been regarded as derived from greisen systems in the main ranges of the Blue Tier to the south, but there is the likely possibility that a large proportion is derived from local sources. Basement rocks in

these local areas are almost completely unexplored for any style of deposit. The area has very high potential for discovery of basement deposits.

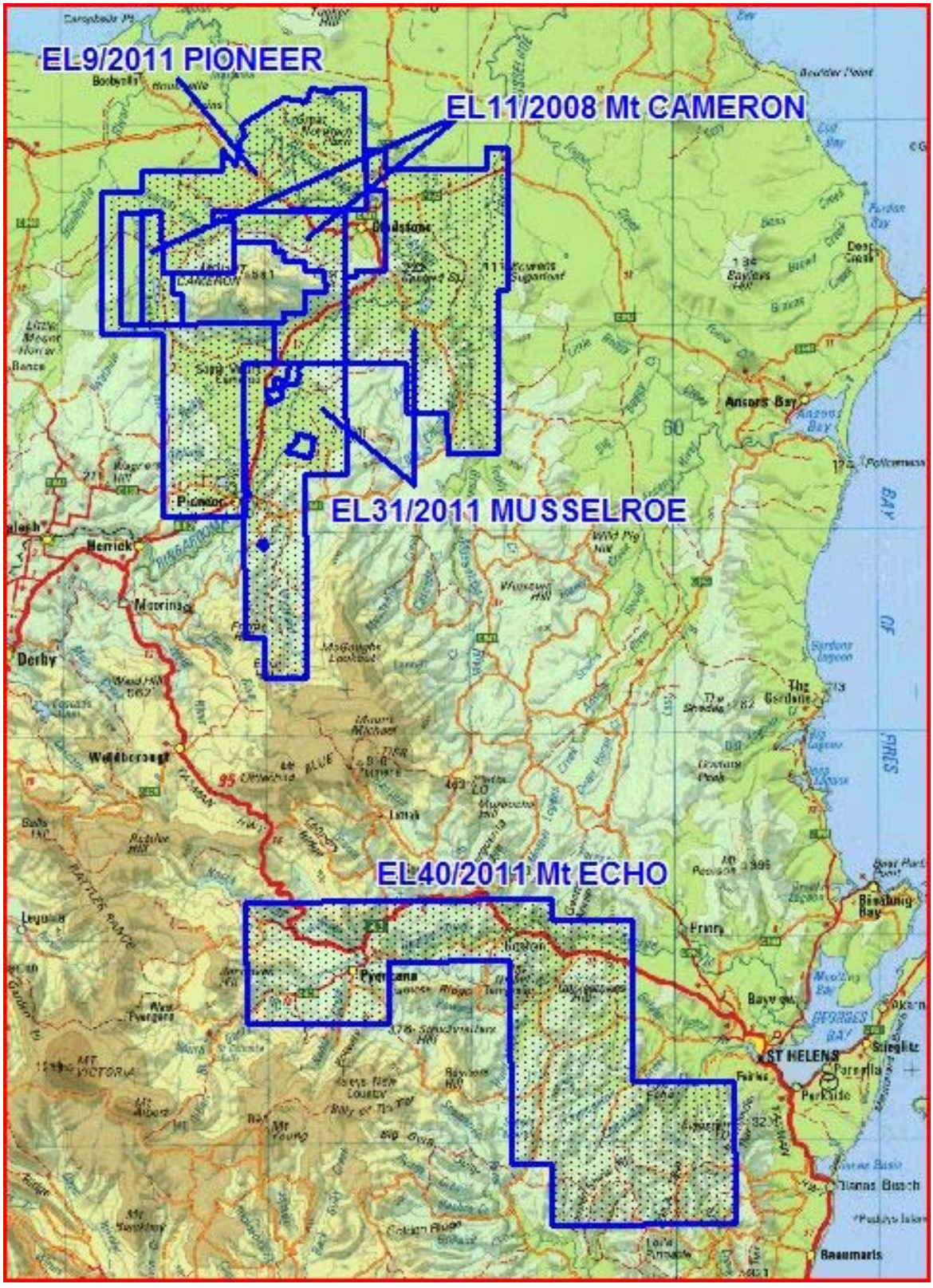


Fig 1

2.0 GEOLOGICAL SETTING and MINERALISATION

The area is characterized by relatively poor outcrop. Much of the basement rocks are covered with various types of unconsolidated sediments, most of which are tin bearing.

Nearly all known metallic deposits in the Tenement are alluvial tin (with accessory gold, monazite, sapphires) hosted in paleochannels (leads). Some tin deposits in basement rocks occur around Gladstone, but this area is outside the Tenement. Given the widespread alluvial occurrences, the lack of known tin mineralisation in basement is striking.

In the district the original sources of the tin were phases of the Devonian tin-bearing granites of the Blue Tier Batholith. Tin occurs as cassiterite in quartz and greisen vein systems in the roof zone of the granites near the contact with overlying Silurian Mathinna Beds.

The distribution of known mineralisation is outlined in Fig 2.

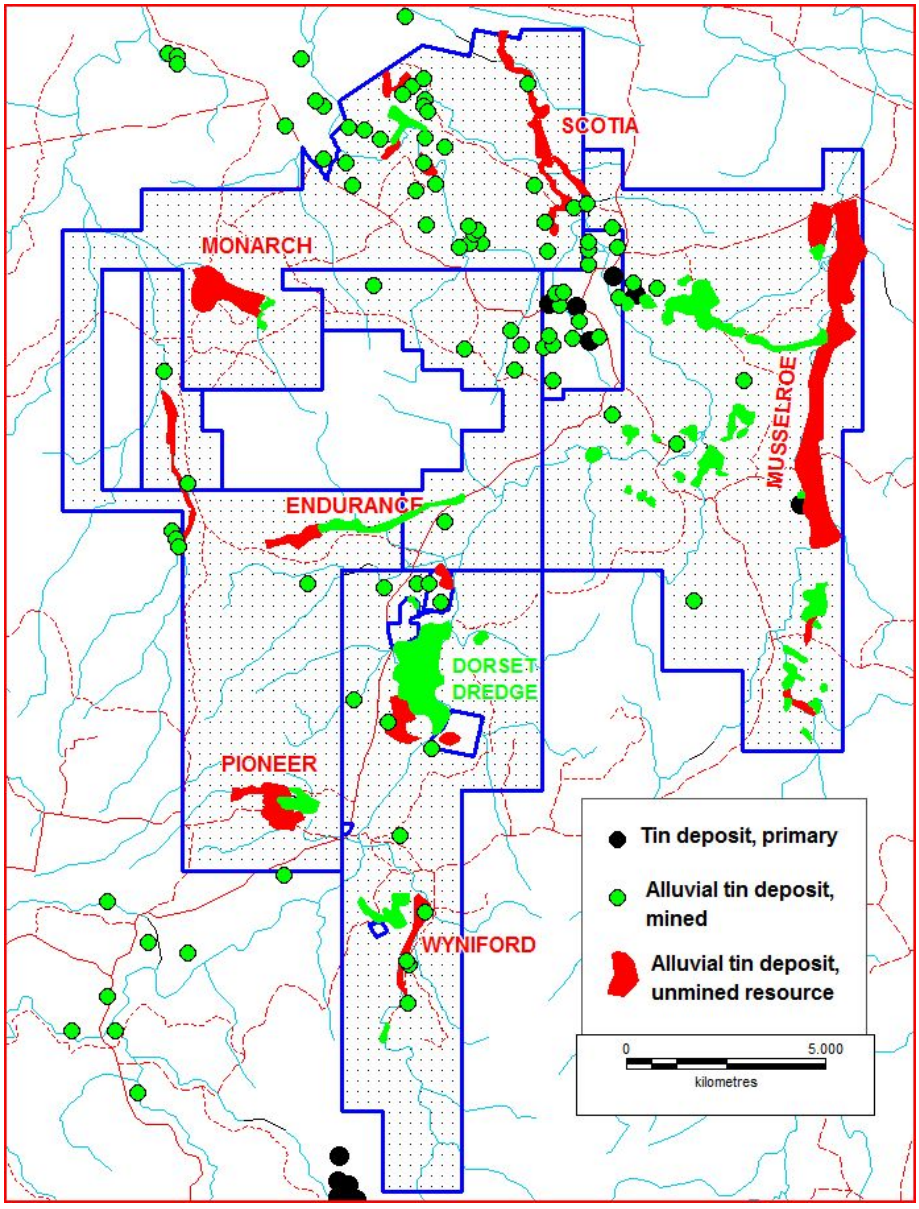


Fig 2

3.0 REVIEW OF PREVIOUS WORK

Exploration work by Tin Dragon during the previous periods was:

In the 2012 annual report; a compilation of earlier company exploration, mining activities, and government surveys. This data was reviewed to determine the distribution and nature of known mineral deposits, to compile past production and estimates of remaining known resources, and to assess the prospectivity of the areas for untested or undiscovered alluvial tin and basement tin mineralisation. No field work was undertaken.

In the 2013 annual report; a continuing review of previously compiled datasets to help target basement tin mineralisation. This was concentrated on

- Stream sediment geochemical data
- Geophysical datasets such as airmagnetics, and gravity surveys.

This data was then reviewed to aid targeting for undiscovered basement tin mineralisation.

Visits were made to local people, to the History Room at St Helens, and to the Queen Victoria Museum in Launceston, so as to garner useful information.

Reconnaissance field inspections of several areas were done to check access, the nature of the alluvial deposits, and search for basement alteration and mineralisation.

4.0 EXPLORATION COMPLETED DURING THE REPORT PERIOD

Exploration work by Tin Dragon during the year to 4 December 2014 consisted of further investigations of the Musselroe River area and the Dorset Flats area mined by the Dorset Dredge. This was done to evaluate any unmined alluvial deposits and to generate clues about the location of the (assumed) nearby basement sources of the cassiterite.

No field visits were carried out.

Details of these activities follow.

Continuing efforts to attract a joint venture partner or buyer for the project have been again thwarted by the general industry downturn, which has worsened during the year.

5.0 MUSSELROE RIVER AREA

Introduction

A search was made of the MRT plan catalogue to determine if data in addition to that in the open file company reports existed. The following extra data was found:

Plan 0446_002. Drill location and grade data for Woods mine area annotated in feet and lbs/cu yd.
Plan 0446_003. Same area, replotted by R Munro, converted to metres and g/m3. He thought drilling was carried out by Pioneer Tin Mining Co but Utah [in 68_0532] stated it was drilled by Endurance Tin.
Plan 1311B. Government boring at junction of Garfield Ck and Musselroe River.
Plan 987. Government boring east bank of Musselroe River.

The location of all drilling was obtained from available company reports and digitised into Mapinfo, and bottom wash grades were plotted to determine the distribution of alluvial resources. The distribution of drilling is shown on Figs 3 and 4.

The main open file reports covering the area are
Utah 65_0409. Covers drilling in the Garfield Creek to Cybele Creek area, west of the Musselroe River, and Anson's Bay Road area.
Utah 66_0430. Covers drilling in the northern Musselroe Swamp, and Anson's Bay Road area.
Utah 68_0532. Covers drilling in the Woods Flat and Eastern Terrace areas.
BMI 72_0843. Covers drilling in the southern Musselroe Swamp.

Geology

The geological history of alluvial deposits in this area is complex and the limited exploration done here has given only some clues to unravel it.
Utah, in various reports, for example [66-0430], thought that there were three stages, and I (PWA) can add another Recent stage:-
Recent, where the Great Musselroe River has become choked and swampy and a veneer of sediment is developing.
?Quaternary ("stage 3") located in the current valley floor of the Great Musselroe River; the river has cut down to fresh bedrock only at Woods Flat.
Miocene (stage 2") clayey sands, rounded wash, no easily traceable channels, interpreted to be flood plain deposits.
Eocene ("stage 1") has a basal quartz wash, common lignitic material, pyritic, now discontinuous because of faulting and erosion, dated by spore palynology at Eastern Terrace. The cassiterite commonly occurs as "chats", ie with adhered quartz, indicating a nearby source.

The Quaternary deposits at Woods Flat have clearly formed by reworking of the Eocene ones, and constitute the highest grade mined deposits.

The entire length of the Quaternary/Recent deposits of the Great Musselroe has a coincident uranium and thorium anomaly in imaged airborne radiometrics, suggesting that it would be a good potential source of monazite.

There are no reported sapphires and none can be expected because no basalts have been mapped in this drainage system. However it is possible that basalt did exist previously in the drainage as evidenced by the presence of common ilmenite in the Miocene and younger alluvium yet absent in the Eocene alluvium, and by the presence of likely source vents represented by circular airmagnetic anomalies in a few places east of the Musselroe River.

Wood's Flat

History and production [66-0430]. The first recorded mining activity was by M.H. Groves and F.D. Richardson, who held the ground in 1946. No production figures are known, but a recovery of 600g/m^3 is quoted by Keid [UR1946_073-80]. In the period 1948-1957 the property was leased by the Lanka Tin Mining Company who treated 200,000m^3 of material. In 1957 Dunn and Park began operating a pit and treated 17,000m^3. In 1959 Wood and Bartels acquired the property and from 1960 operations continued under the sole ownership of V. Wood, the lessee in 1963-4 at the time Utah took out an option to purchase. A calculation based on pit surveys carried out by Utah showed that to February 1964 Mr Wood worked 255,000m^3 of material with an average recovered grade of 330g/m^3. This production figure differs from the official MRT records, which Utah believed to be incorrect. Production from that time, as documented in Director of Mines Annual Reports, is:
To December 1964, 50,800m^3 at a recovered cassiterite grade of 480 g/m^3; to December 1965, 24,400m^3 at 620g/m^3; to December 1966, 44,600m^3 at 400g/m^3; to December 1967, 40,000m^3 at 500g/m^3; to December 1968, 56,700m^3 at a poor 53g/m^3; to December 1969 from a different face, 21,700m^3 at 650g/m^3; to December 1970, 45,000m^3 at 300g/m^3; to March 1971 when the operations ceased, 6,800m^3 at 120g/m^3.

Geology. This is evidently a Quaternary Stage 3 deposit; it differs from the alluvium at the Eastern Terrace in a number of respects including absence of carbonaceous sediment and marcasite, and presence of much ilmenite. It is likely to be derived from erosion and reworking of the Eocene lead postulated to run from Bald Hill direct to the Eastern Terrace, as shown on Fig 6. The heavy mineral concentrate of the wash at Wood's Flat contains abundant fine and coarse grained (to 6mm) rounded cassiterite with an approximately equal quantity of ilmenite, minor coarse-grained well rounded tourmaline, zircon and fine-grained reddish garnet. Utah thought that Jurassic dolerite, though not seen at Wood's but is known to exist to the east and south, was the source of the large quantities of ilmenite; the source of garnet is not discussed. It is possible however that basalt once occurred atop the Eocene Leads, and now is entirely eroded, or is locally present but has not been mapped.
A thick section of coarse alluvium containing the carbonaceous material is overlain by fine sand, silt and clay complexly inter-fingered. The sequence is considered to represent sediments deposited by a braided river migrating laterally across the broad valley floor.

Drilling.
A number of companies and individuals are known to have carried out some drilling [68-0532]; namely, Endurance Tin Mining Company N.L. , Utah, Storey's Creek Tin Mining Company N.L. , Lanka Tin Mining Company N. L. , the Star Hill Syndicate (Mr Lawry), and Mr

Wood. Of these only the drilling by the Endurance Tin Mining Company and Utah was extensive.
In 1951 the Endurance Tin Mining Company drilled 80 holes varying in depth from 1.5m to 19m.This showed two main, nearly parallel channels in the bedrock with other smaller tributary channels. It also indicated one major and two subsidiary stanniferous runs, which are not contained in the basement channels but are on the flanks of the channels and in part on the high between them. The Endurance drill data is not in open file reports but is plotted on plans 0446_002 and 0446_003 and plotted by Utah in [68_0532].
Utah in 1963 entered into an option agreement at Wood's Flat based on their estimate that there was potential for a reserve of 3.8Mm^3 at a grade of 600g/m^3. An initial scoping study made before the option was entered into estimated that a total resource of 3.25Mm^3 at a recoverable grade of 255g/m^3 mined at a rate of 750,000m^3/year would be viable.
Utah drilled 63 holes varying in depth from 1.8 to 11m, averaging 7.5m, in lines (when combined with Endurance drilling) about 300m apart, revealing greater complexity in the basement configuration than was suggested by the Endurance drilling. Two distinct stanniferous runs are indicated which are only roughly coincident with the deposits found by Endurance. Their relationship to the basement channels is not entirely clear, as some high values are found in the channels but most are on the channel flanks, probably on the inside of bends. Cassiterite occurs in trace amounts throughout the sequence but the higher concentrations are restricted to the wash horizon at the bottom. Values from a trace to 50g/m^3 were recorded from the upper clay, silt and fine-grained and coarse-grained alluvium. Values in the wash horizon vary from 50 to 2400g/m^3.

Resource Estimates by Utah. Drill lines were too far apart to project relative positions of the stanniferous gravels with any real hope of accuracy. The overall average grade (weighted by holes) of the Endurance drilling is 420g/m^3, compared to the Utah figure of 210g/m^3.The discrepancy between the figures is not readily explained, and presumably is some combination of natural variability and quality of drilling/sampling.
Utah calculated that Wood's Flat contained 940,000m^3 at a grade of 190g/m^3 in a deposit 7.3m deep. These volumes and grades were so far below their scoping study requirements that the option was not exercised.

Eastern Terrace

History and production[66-0430]. The earliest recorded mining in the southern Mussel Roe River area was at the Eastern Terrace. The upper shallow stanniferous ground was worked intermittently to a maximum of 3.7m depth by a number of operators from as early as 1890 until 1959. The principal operator was the Great Mussel Roe Proprietary Company, which abandoned the area in 1901. From the size of the pits it appears that 500,000m^3 of material of unknown grade were mined.

Geology. The basal Eastern Lead is a narrow (max 180m wide), deeply incised channel with headwaters rising to a watershed separating the lead from Wood's Flat to the south [68-0532]. It contains abundant marcasite throughout, and the basal wash where intersected in drilling contains only trace amounts of tin with almost no ilmenite or other heavy minerals. The finest-grained sediments towards the base are distinctive laminated brown carbonaceous siltstones with nodular marcasite and some fragments of lignitised wood, and are overlain by sand, silt and clay.

There is an overlying (?)Miocene alluvial sequence about 4m thick, with wash about 0.6m thick containing values up to 175g/m^3 at the base.
The mined parts of Eastern Terrace were located in yet younger alluvium in so-called "gutters", which are restricted in size and lenticular. The cassiterite concentrate from these gutters is coarse, nuggety in nature, and contains a high proportion of 'chats' (cassiterite with quartz attached), with minor ilmenite. The source area for this tin appears to be the exposed granite immediately adjacent to the east of the Eastern Terrace because cassiterite occurs in granitic eluvium in the head waters of the gutters and in drilling, (see below), and because the presence of chats necessitates a nearby source.

Drilling. Apart from a line of six holes drilled by the government in 1902 (Twelvetrees, 1916), the only drilling conducted here has been by Utah in 1964. The positions of the government holes are not accurately known, and are shown approximately on Utah maps.
Utah noted that previous mining was less than 5m deep and taken to a siltstone "false bottom" rather than to bedrock. The aim of the Utah drilling was thus twofold: (1) to establish if the stanniferous upper wash zone was present in confined gutters or as a sheeted deposit of more or less uniform grade, and (2) to establish if payable tin existed in deeper ground below the siltstone false bottom.
22 holes were drilled to bedrock along 5 lines spaced about 600m apart. Six holes drilled in the northern part of the Terrace penetrated a narrow, deep, sharp-sided channel with basement at 16 to 27m below the surface. The maximum width (north end) is 180m. To the south the floor of the valley rises steeply south to a watershed. The lower wash horizon varies from 0.5 to 5m in thickness, with low cassiterite concentrations up to 100g/m^3.
The overlying (?)Miocene alluvial sequence was found to be about 4m thick, with wash about 0.6m thick containing values up to 175g/m^3 at the base.
The younger gutters were found to have the best tin values and no sheeted horizon extended from the workings. The total thickness of the alluvium in these gutters varies from 1.5 to 4m, with the stanniferous concentrations of up to 1200g/m^3 occurring primarily in the wash horizon, which is up to 2m thick but generally much thinner.
A few holes on the east side of the Eastern Terrace recorded eluvium with cassiterite, indicating that a bedrock source is probably nearby. In bore 38, line 6, the lower most 1.6m contained no recognisable wash and so is probably eluvium, and contained 300g/m^3; in bore 14, line 1 and bores 32 and 33 of line 5 there was "high grade cassiterite….detected" [68_0532].

Resource. Utah stated [68-0532] that it was difficult to assess resources for the stanniferous material in the upper irregular gutters as insufficient drilling had been done, but estimated around 400,000m^3 at grades between 150 and 300g/m^3 could possibly exist.

Musselroe Swamps

History and production. There has been very minor production in an area just west of the Musselroe River at about 5459500m N by North Musselroe Pty, of which no records can be found.

Geology. This area is a broad linear heavily wooded river swamp approximately 10km in length and 300m in width, which is rather deeply incised into a more extensive Tertiary covered area. The Mussel Roe River is entirely restricted to the swamp, and in winter flood

flows the full width at shallow depth, and in the drier summer period it has a meandering channel seldom greater than 6m wide and 0.5 to 3m deep. Granite basement rocks bar both ends of the swamp, and the river passes through these bars in joint controlled V section valleys. A number of granite restrictions pinch off the swamp along its course.
It had been assumed by me and others that the valley and swamp hosts vast volumes of probably Quaternary Stage 3 alluvium of similar style to that at Woods Flat. However my recent study of the distribution of the alluvium suggests that the swamp follows and has eroded into the early Eocene Lead.

Drilling. On adjacent terraces there has been in 1953 a boring program carried out by the Department of Mines, and near Anson's Bay Rd west of the River there was a program by Storey's Creek Tin Mining Co. N L, and east of the river by Utah; drilling in the swamp has been conducted only by Utah [66-0430] and BMI Mining Ltd [72-0843].
Utah in 1965 concentrated on the potential of a swampy zone referred to as Test Area 5, north of the confluence with North Cybele Creek. The original proposal was to test the swamp as a possible dredging proposition, and called for drilling on five lines at about 1200m spacing. However, due to the nature of the swamp itself, in part heavily timbered with abundant fallen logs, or open reed swamp with still water up to 1.5m deep, the cost of clearing traverse lines suitable for a drill rig led to the clearing/ drilling of only 3 lines, covering 2.5km length of swamp. In all, 38 holes totalling 337m, eleven with values greater than 60g/m^3, the peak ones being 340g/m^3 over 10m and 470g/m^3 over 8.7m, were completed by Utah in the swamp, and a further 31 holes, totalling 346m, were drilled to extend the drill lines on the adjacent river flats, where drilling found significant values in one area (see below). Alluvium varied in depth from 5 to 14m, and consists of complexly interbedded coarse grained sands, silty sands and clay, with in part a thin basal stanniferous wash on granite basement. The basement was hard and unweathered on two of the lines.

BMI Mining Ltd in 1971 aimed to check the area for a potential resource of 21Mm^3, especially south of areas drilled previously by Utah. They drilled 90 percussion holes for 945m, ie an average depth of 10m, with up to 14.5m to basement. Holes were spaced every 30m along lines roughly 500m apart, sampling all the profile at intervals of 1.5m.
Cassiterite was generally confined to the bottom few metres of alluvium, where locally values reached 3000g/m^3, but often around 150g/m^3. The logs in the BMI report record progressive tin values down hole.

The location of drill holes was digitised by me into Mapinfo and bottom-of-hole wash values classified and plotted. The table below, extracted from BMI logs, is of the bottom-of-hole intercepts which exceed 5 ounces cassiterite per cubic yard. Figs 7 and 8 show location of holes and distribution of values.
Wash intervals exceeding 1.5m thickness and for cassiterite grades of >5<10 oz/cu yd (>185<370 g/m^3) and >10<20 (>370<740), >20<30 (>740<1100), and >30 (>1100) are plotted.
Fig 7 shows that north to Cybele Ck all these significant intercepts lie within the swamp floodplain and none on the higher terraces.
Fig 8 shows that north of Cybele Ck the significant intercepts align in a different trend and not all are in the floodplain, however generally widths and values are poorer than to the south.

TABLE 1 BMI DRILLING, Source Open File Report 72_0843			
BOTTOM-OF-HOLE INTERCEPTS exceeding cassiterite content of 5 oz/cu yd.			
LINE No	**Hole No**	**INTERCEPT, feet**	**oz/cu yd**
0	2	35-40	5.6
		40-47	6.4
	4	35-41	5.0
	7	50-55	7.0
1	5	40-45	10.1
		45-47	11.5
	7	30-35	20.3
		35-40	23.0
		40-43	13.4
	7HM	40-43	47.7
	8	35-40	13.3
	9	40-44	88.6
	11A	30-35	15.7
2	15	30-35	13.3
	19	40-45	9.3
	20	35-41	13.3
	U2	15-20	8.9
3	23	5-10	17.3
		20-25	29.2
		25-30	21.6
	24	35-40	6.5
	25	35-40	36.9
		40-42	22.9
	27	40-44	26.3
	28	35-40	5.6
		40-43	19.7
	31	35-40	16.1
	32	40-44	18.2
	U2	10-15	15.8
4	24A	30-35	90.0
5	45	25-30	18.0
		30-34	34.4
	49	30-35	9.8
		35-40	7.7
	50	30-35	10.2
6	60	25-30	5.7
	63	20-24.5	28.0

Resource.

BMI did not produce a post-drilling resource calculation. They calculated whole-of-hole cassiterite grades, and did not seem to have a concept that barren overburden should be separated from pay wash in their evaluation, and so reached a conclusion that no payable

reserves existed. At that time it is possible that the bottom wash, which does have some local very high values, could have been viable as a dredging operation.

Utah calculated that their drilling potentially located two 1200m sections with resources of 587,000m^3 at 135g/m^3 and 553,000m^3 at 190g/m^3.

Elizabeth aka **Park, Groves and Richardson**

This deposit was being mined at the time of a 1952 visit by A Reid from the Department of Mines [UR1952_129-145]. The first two clean-ups produced about 2t of cassiterite, but no full records of production have been located.

Storey's Creek Tin Mining Co. N L drilled from Elizabeth north to the Anson's Bay Road; only sketchy results are available but Utah [66-0430] plotted the locations on their plan and calculated that there was a resource of 1,100,000m^3 at 70g/m^3. There is no record available to check if this is based on whole-of-hole values but this seems likely. It is possible that better values occur specifically within the bottom wash.

Anson's Bay Rd

This area lies east of the River and south of Anson's Bay Rd, Fig 3.
It was drilled by Utah in 1966 [66_0430]. It was thought that a series of generally linear disconnected reed swamps might indicate an ancestral drainage. A total of 32 reconnaissance auger holes were put down on three lines, and defined a broad flat floored channel approximately 1200m wide, and in excess of 1km in length, containing a maximum of 40m of sediments. 19 sample holes were drilled to test the section, which consists of an upper and lower sand and gravel horizon, separated by a continuous blanket of carbonaceous siltstone. The upper horizon is about 13m thick, and consists of clayey coarse grained quartz sands, with an erratic basal wash up to 3m thick. This massive siltstone contains nodular marcasite to 10cm diameter, particularly in the vicinity of the upper surface, with some lignite horizons, although extensive logs or tree trunks were not encountered. The basal section resting on highly decomposed biotitic granite consists of up to 12m of fine to coarse grained, highly marcasitic sands, with erratic wash horizons containing rounded quartz pebbles generally less than 30mm diameter. Only very sporadic values were recovered from the upper section, none of which were associated with the recognisable wash horizons. The maximum cassiterite value recovered from any 1.5m section was 30g/m^3. In the basal section the maximum cassiterite value recovered from any 1.5m section was 100g/m^3.
The alluvium for both the horizons could be Eocene in age and reflect a braided riverine environment. The presence of cassiterite albeit of low grades over this widespread area is encouraging for the presence of bedrock source(s) to the south, separate from the lead passing through Elizabeth to the west.

East Cybele Creek Terrace

This area, located NE of Traceys on the east side of the Musselroe River, was drilled in 1953 by the Department of Mines (99 holes at 30m spacings on three lines 80m apart)

[UR1954_062-71]. Utah reviewed the data and calculated a possible resource of 68,500m^3 at 180g/m^3.

West of Garfield Creek

One drilled line, MR2, on this western terrace intersected stanniferous wash for which Utah estimated a resource of 40,000m^3 at 120g/m^3 over a 60m length.

Resource Assessment, this report

Woods and Eastern Terrace. A plot of workings and drilling on a base of a Utah geological map, from [68_0532], is shown on Fig 5.
I interpret that an Eocene lead traversed through the area as shown on Fig 6. This was subsequently overlain by a Miocene sequence. The Miocene alluvials were mined in places at the Eastern Terrace. Subsequent faulting and perhaps basalt flows diverted the Musselroe River so that at Woods workings the original leads were eroded and reworked during the Quaternary, creating the mineable resources there.
The bulk of the resources in the Woods area have probably been mined by Woods after the drilling was carried out. If there is remaining tin bearing alluvium it nowadays is probably unavailable for mining because it would entail direct environmental disturbance to the Musselroe River.
This leaves potentially mineable ground in the unmined parts of the lead on the adjacent terraces, as shown on Fig 6. Although Utah's drilling at the Eastern Lead found tin values in the deeper Eocene alluvium to be low, there is nevertheless a good chance that better grades exist elsewhere. Between the Eastern Terrace workings and Woods there is an area where this lead is untested by drilling. To the south the mapped Tertiary sediments at Bald Hill have not been drill tested, or no records exist of drilling, yet an Eocene lead seems very possible to occur there. To the north of the Eastern Terrace workings there is also at least 500m of untested strike potential.

Musselroe Swamp. The best cassiterite values encountered in drilling are all in the floodplain area. Some are good grades. Although in the 1970's it may have been possible to dredge here it is almost certain that mining in the floodplain would not be permitted today.
The area north of Cybele Ck however does have potential for a deep lead which is shown on Fig 8. Much of this interpreted lead is away from the river floodplain and could be mineable. The main such areas are east of Traceys and north of Elizabeth.

Potential for Primary Tin Deposits

This area is vast and coarse alluvial tin occurs in many places suggesting that bedrock sources are close by, yet no deposits are recorded and no exploration has been conducted for them. Only at the Eastern Terrace has the granitic source of cassiterite been recorded, (see above).
The country rocks beneath and surrounding the Tertiary alluvial deposits are Devonian granitic rocks; the main rock type is a coarse-grained biotitic adamellite but in common with other granitic areas of the NE Tasmanian tinfields, according to Utah, close search reveals a number of other granitic types, particularly a late stage leucogranite, intrusive into the main mass. The granitic rocks are strongly jointed and in places veined by thin quartz, pegmatite

and greisen. The exposed granite is generally hard and weathers along joints into large rounded boulders. Below the Tertiary cover, the granite is commonly weathered, chiefly by decomposition of the feldspars to a pasty, incoherent, gritty mass, containing angular quartz fragments and some unweathered biotite. The weathering is sometimes in excess of 7m in depth. Soils over weathered granite and extensive Tertiary cover have doubtless hindered prospectors from locating bedrock mineralisation.

Around 2km south of Woods Flat there is a belt of mapped Mathinna Beds. No known mineralisation is recorded here. No exploration has been recorded, yet the Beds and the contact with granite may be prospective for tin mineralisation. The Beds may in part be the source of tin at Woods Flat, and being contact metamorphosed could be the source of garnet known in the concentrates at Woods Flat.

Near Woods Flat and Eastern Terrace there are uranium anomalies (airborne radiometric survey)- these could reflect different phases of granite, possibly mineralised so would be worthwhile exploring.

The postulated Eocene leads are remarkably straight with northerly strikes for long distances, Figs 6, 7 and 8. They are thus likely to be structurally controlled. The whole Musselroe River system is postulated to be a north-south fault zone and the fracture system could control tin mineralisation, occurring perhaps in sheeted veinlet systems of similar style to those known for example at Emmaville in the New England area of New South Wales. If basement mineralisation were generally confined to the leads, this would explain why cassiterite occurs for such an extraordinary distance along the valley, yet not being exposed, has remained undetected.

6.0 DORSET FLATS AREA

This area contains the site of the large former producer, the Dorset Dredge, and the recently producing deposits at Riverside and South Mt Cameron.

The presence of coarse grained cassiterite and other recovered heavy minerals like gold suggests that the basement source is nearby, Yim (1990, 1991). It has been assumed that there are cassiterite bearing greisen veins developed in granite near its upper contact with Mathinna Beds, and gold in quartz veins in the Mathinna Beds, and that this upper contact zone has been removed by erosion. However it is possible that basement deposits in the form of granite hosted sheeted micro-veins of quartz and greisen, like the systems in the Taronga area of NSW, do occur below the dredged alluvium, or close by. Such systems have apparently never been explored. The large alluvial tin endowment here suggests a large bedrock source can be found.

In order to investigate this further and to check for unmined alluvial resources, a search was made of the MRT plan catalogue to determine if data in addition to that in the open file company reports existed. Several plans were found and there is still one apparently unscanned by Munro as mentioned in the previous annual report. The located plans showed dredge paths and production by year and one showed extensive drill results.

The review of that data found no clues about the presence or absence of basement mineralisation. There appear to be no remaining resources immediately adjacent to the former dredged areas, but there appears to be potential in the Eastern Leads area to the west.

This data on the Eastern Leads is still being reviewed. A report on that review as well as a full report on the Dorset Flats area will be covered in the 2015 Annual Report.

7.0 GENERAL CONCLUSIONS

Alluvial tin occurs in the Musselroe River system for an extraordinary strike length exceeding 14 km. Where drilling has been done, grades locally are encouraging though the known better areas are probably inaccessible for mining. It is highly unlikely that a single source area to the south has supplied the cassiterite, and so it is very likely that source bedrock mineralisation occurs with multiple centres all along this strike. This means that undrilled sections of the leads, where there are significant strike lengths potentially accessible for mining, could have encouraging grades. It also means that there is a vast area prospective for basement mineralisation, which is presently totally unexplored.

The Eastern Leads are identified as an area warranting further data review.

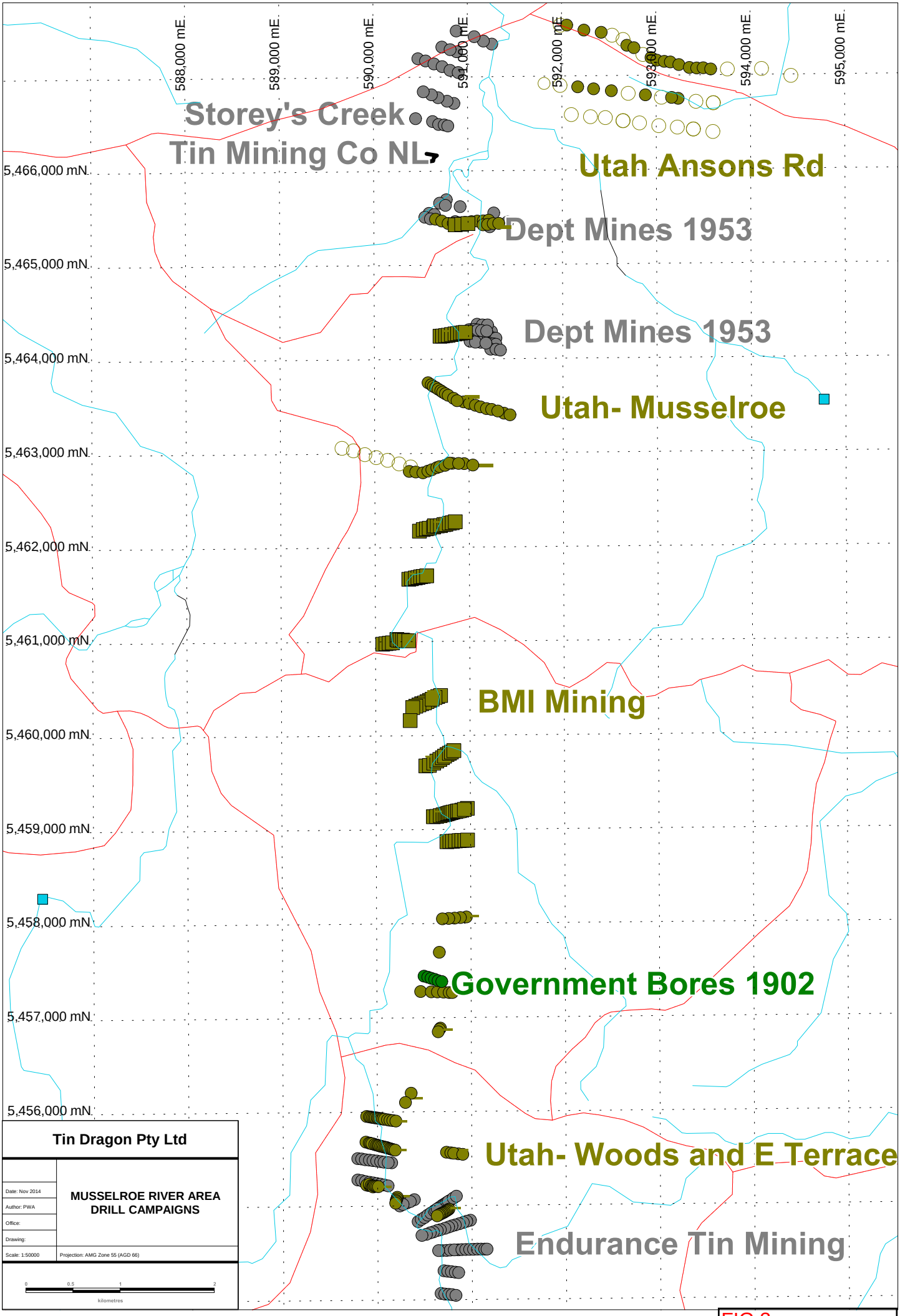
8.0 RECOMMENDATIONS FOR WORK IN 2005

The Eastern Leads are identified as an area warranting immediate further data review.

The general area Amber Hill to Garfield has great potential for outcropping basement mineralisation. A further data review to generate targets is required.

9.0 EXPENDITURE

Expenditures have been reported via MRT Quarterly Returns.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Utah Ansons Rd
Dept Mines 1953
Dept Mines 1953
Utah- Musselroe
BMI Mining
Government Bores 1902
Utah- Woods and E Terrace
Endurance Tin Mining
Tin Dragon Pty Ltd
MUSSELROE RIVER AREA
DRILL CAMPAIGNS
Date: Nov 2014
Author: PWA
Office:
Drawing:
Scale: 1:50000
Projection: AMG Zone 55 (AGD 66)
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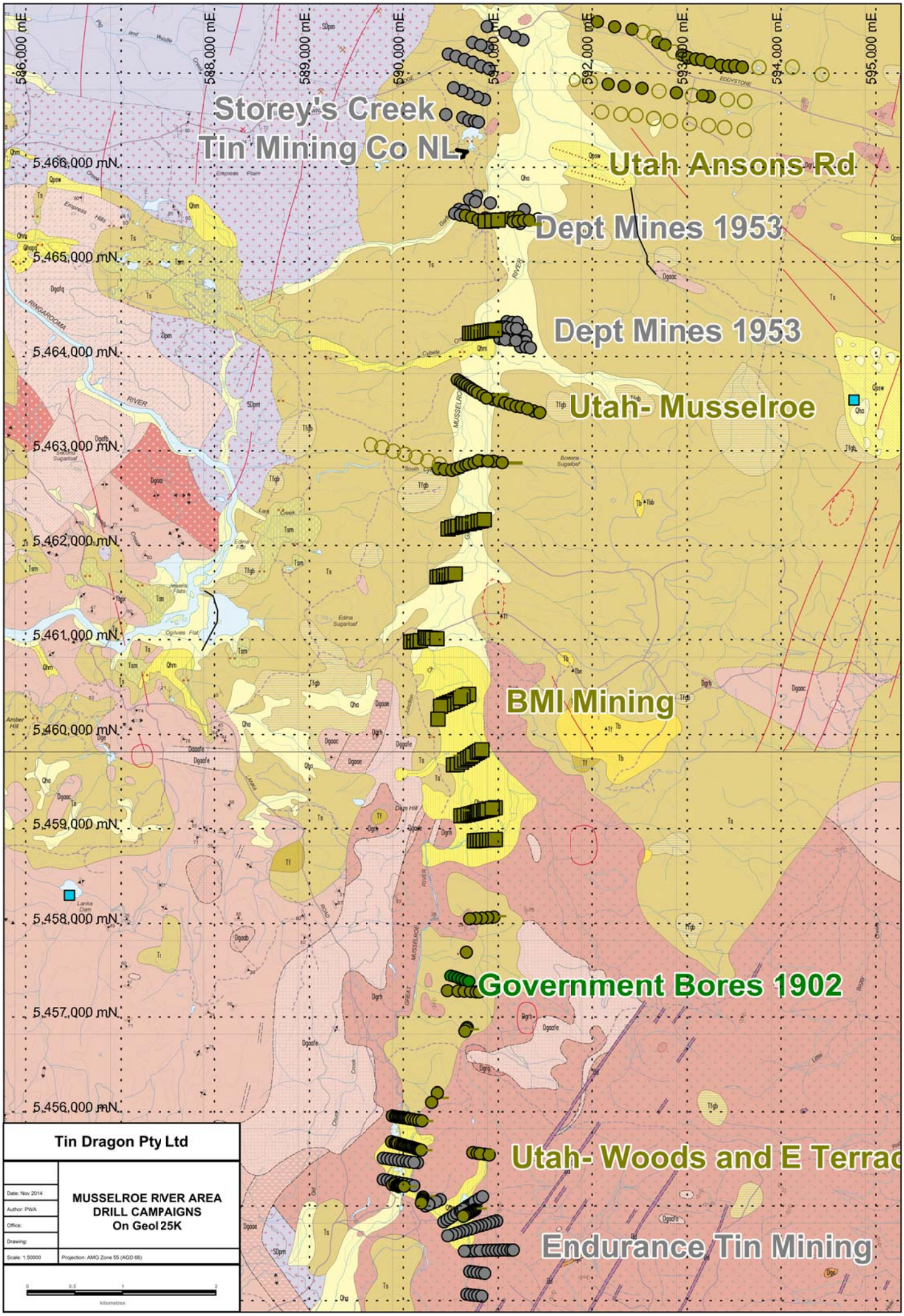
kilometres

FIG 3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Endurance Tin Mining
Tin Dragon Pty Ltd
MUSSELROE RIVER AREA
DRILL CAMPAIGNS
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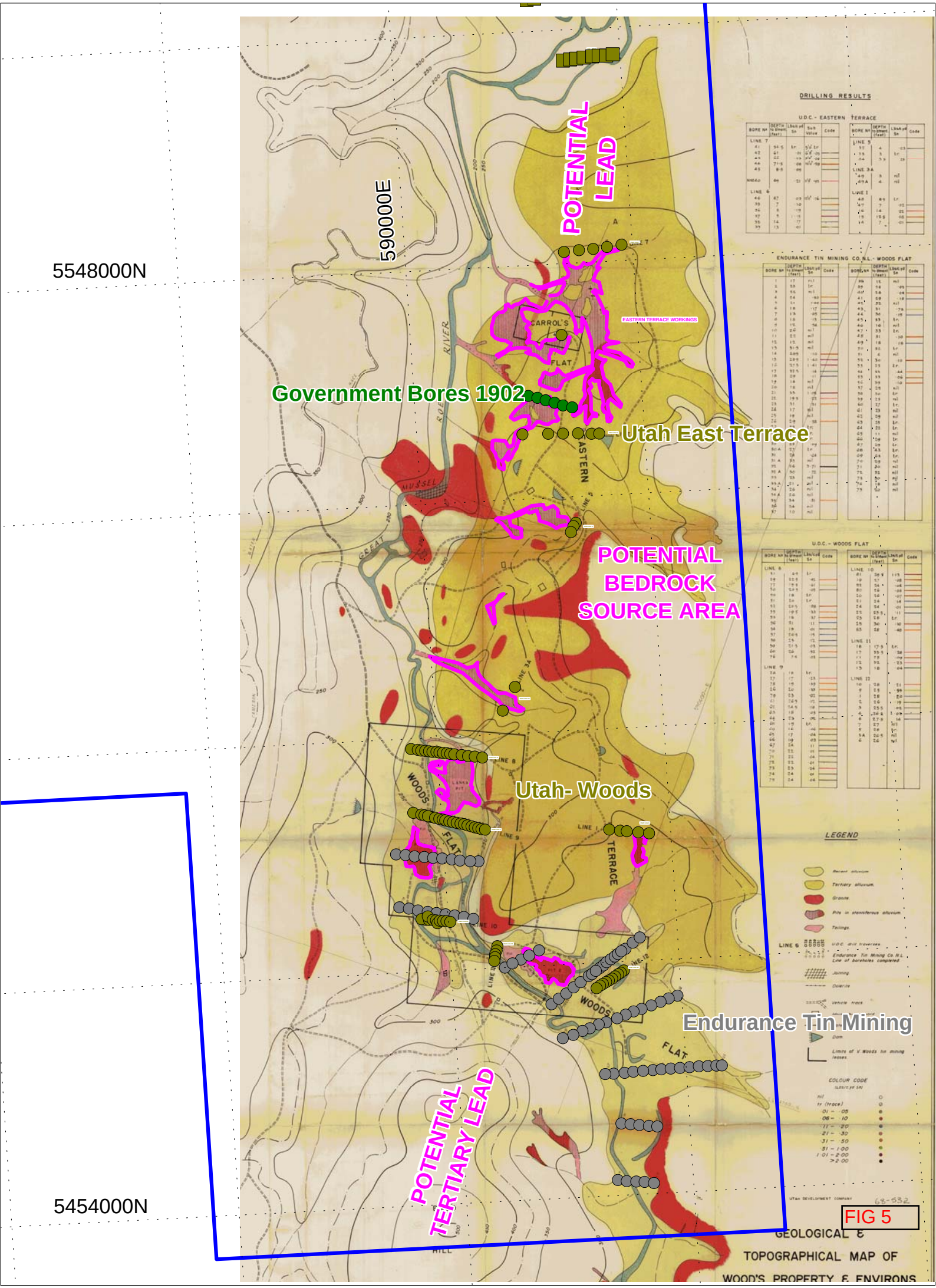
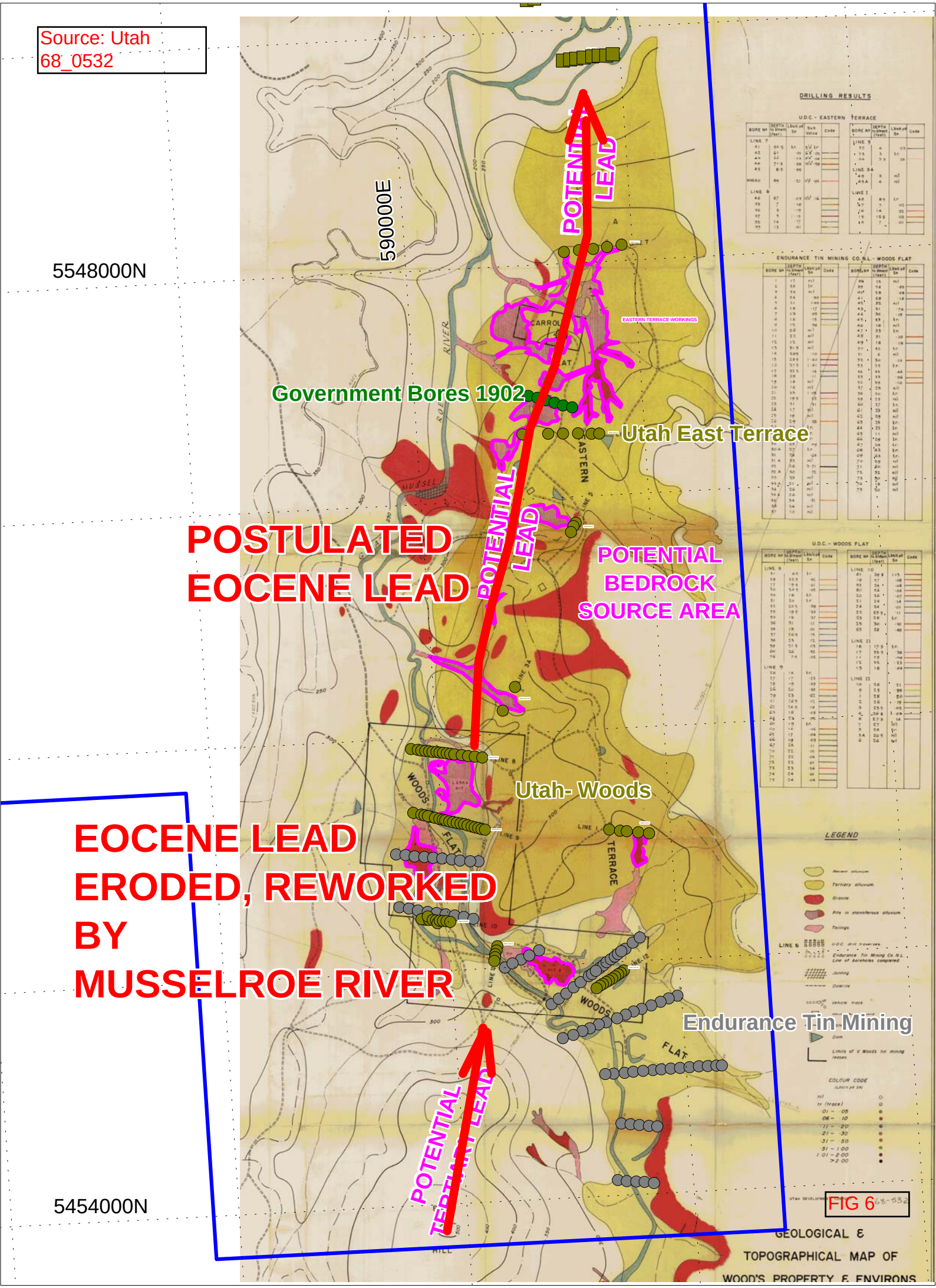
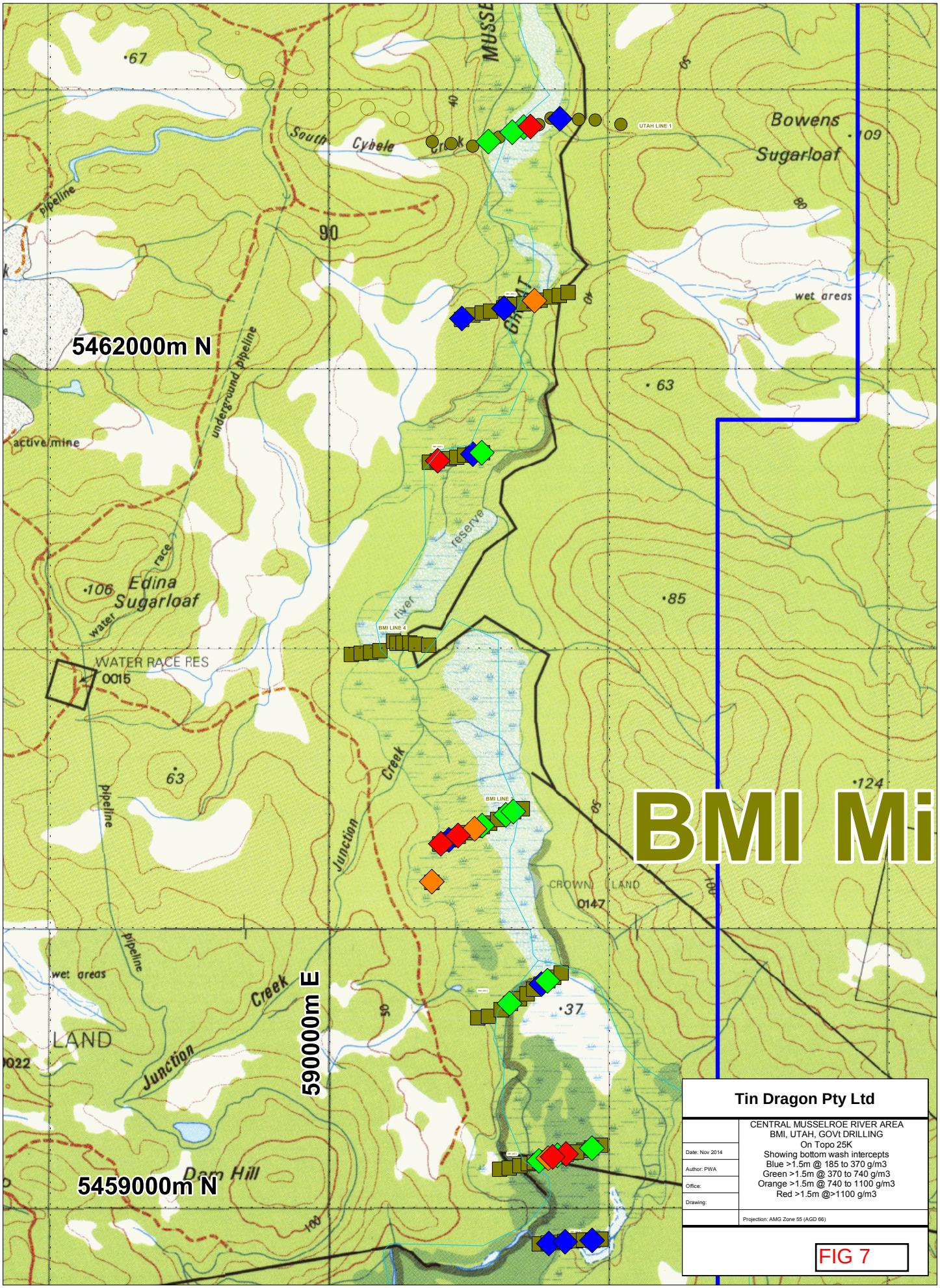
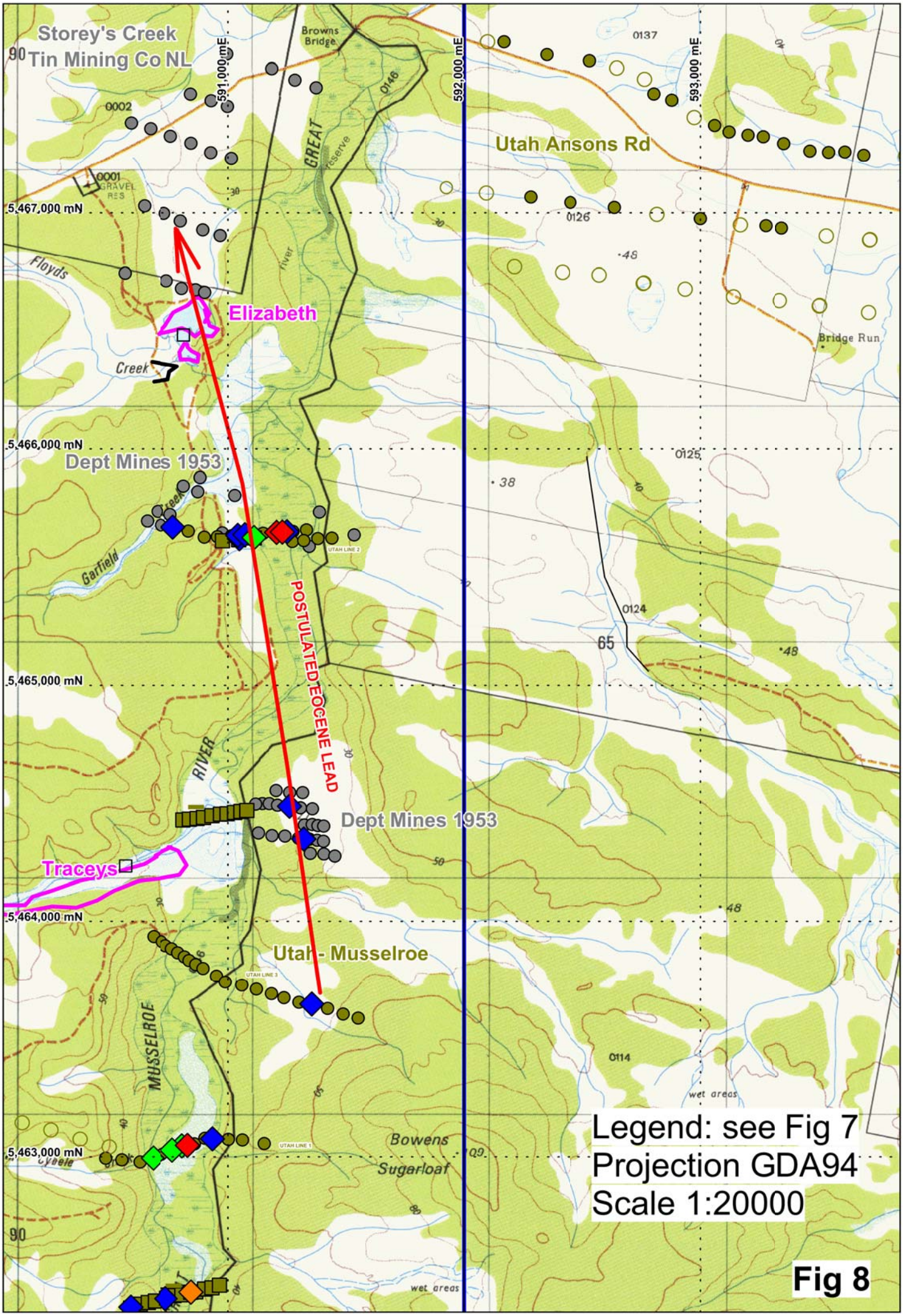
Date: Nov 2014
Author: PWA
Office:
Drawing:
Scale: 1:50000
Projection: AMG Zone 55 (AGD 66)
kilometres

FIG 4


5548000N
590000E
POTENTIAL LEAD
CARROL'S FLAT
EASTERN TERRACE WORKINGS
Government Bores 1902
Utah East Terrace
EASTERN TERRACE
POTENTIAL BEDROCK SOURCE AREA
Utah- Woods
WOODS FLAT
TERRACE
Endurance Tin Mining
POTENTIAL TERTIARY LEAD
5454000N
DRILLING RESULTS
U.D.C.- EASTERN TERRACE
ENDURANCE TIN MINING CO N.L.- WOODS FLAT
U.D.C.- WOODS FLAT
LEGEND
COLOUR CODE
FIG 5
GEOLOGICAL & TOPOGRAPHICAL MAP OF WOOD'S PROPERTY & ENVIRONS


Source: Utah 68_0532
5548000N
590000E
5454000N
POSTULATED EOCENE LEAD
POTENTIAL LEAD
POTENTIAL BEDROCK SOURCE AREA
EOCENE LEAD ERODED, REWORKED BY MUSSELROE RIVER
Government Bores 1902
Utah East Terrace
Utah- Woods
Endurance Tin Mining
EASTERN TERRACE WORKINGS
MUSSELROE RIVER
DRILLING RESULTS
U.D.C.- EASTERN TERRACE
ENDURANCE TIN MINING CO. N.L.- WOODS FLAT
U.D.C.- WOODS FLAT
LEGEND
COLOUR CODE
FIG 6
GEOLOGICAL & TOPOGRAPHICAL MAP OF WOOD'S PROPERTY & ENVIRONS


5462000m N
5459000m N
590000m E
Bowens Sugarloaf
Edina Sugarloaf
South Cybele Creek
Junction Creek
Dam Hill
UTAH LINE 1
BMI LINE 4
BMI LINE
WATER RACE RES
0015
CROWN LAND
0147
pipeline
underground pipeline
race
water
river
reserve
wet areas
active mine
BMI Mi
Tin Dragon Pty Ltd
CENTRAL MUSSELROE RIVER AREA
BMI, UTAH, GOVt DRILLING
On Topo 25K
Showing bottom wash intercepts
Blue >1.5m @ 185 to 370 g/m3
Green >1.5m @ 370 to 740 g/m3
Orange >1.5m @ 740 to 1100 g/m3
Red >1.5m @>1100 g/m3
Date: Nov 2014
Author: PWA
Office:
Drawing:
Projection: AMG Zone 55 (AGD 66)
FIG 7


Storey's Creek
Tin Mining Co NL
Browns Bridge
591,000 mE
592,000 mE
593,000 mE
Utah Ansons Rd
Great Reserve
River
Floyds
Creek
Elizabeth
Bridge Run
5,467,000 mN
5,466,000 mN
Dept Mines 1953
Garfield
POSTULATED EOCENE LEAD
5,465,000 mN
RIVER
Dept Mines 1953
Traceys
5,464,000 mN
Utah - Musselroe
MUSSELROE
5,463,000 mN
Bowens
Sugarloaf
wet areas
Legend: see Fig 7
Projection GDA94
Scale 1:20000
Fig 8