DOVER
CASTLE METALS PTY. LTD.

ACN 169 880 380

North Queensland Ag-Pb-Zn Project
Mines and wines conference, Orange 2017

August 2017

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Introduction

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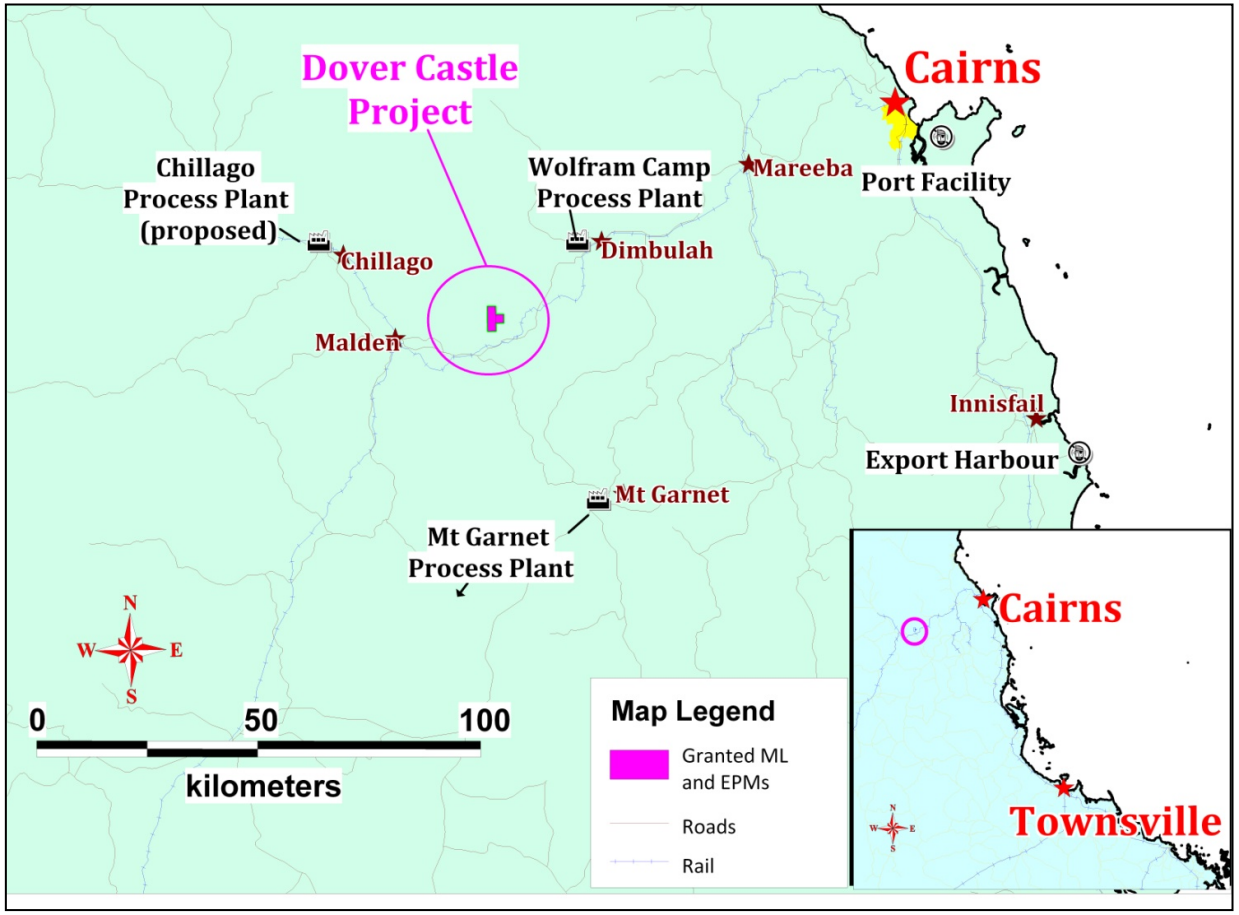
The Dover Castle project is located 30km SW of Dimbulah in northern QLD, a two hour drive from cairns city and hosts lode-style Zn-Pb-Ag ± In ± Au mineralisation.



Dover Castle metals Overview

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- In 2014 I began prospecting in the area with a close friend, realized the potential of the Dover Castle prospects, and put together a deal with the tenement holder which lead to the establishment of Dover Castle Metals Pty Ltd.
- Private company with 49 share holders.
- DCM holds two EPM's (EPM10834 and EPM15452), and one ML (ML20499) located in the centre of EPM10834.

Historical mine activity

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- Original miners worked the Comstock Ag-Pb vein between 1884 and 1893 (Hilla, 2000) dominantly with primitive mining methods, transporting ore in saddlebags by mule pack teams to the Mt Albion Silver Lead Smelting Works approximately 50km away. A collapse in the silver price in 1893 led to the abandonment of the mine.
- The Dover Castle tin mine was then founded in 1958 to mine cassiterite, the shaft was sunk to a depth of 170m grades are were said to be as high as 18% Sn and associated with calcite.

Significant historical mines on the lease include;

- **Feldspar**
- **Betterluck**
- Dover Castle
- Silver king
- Comstock

Historical mine activity

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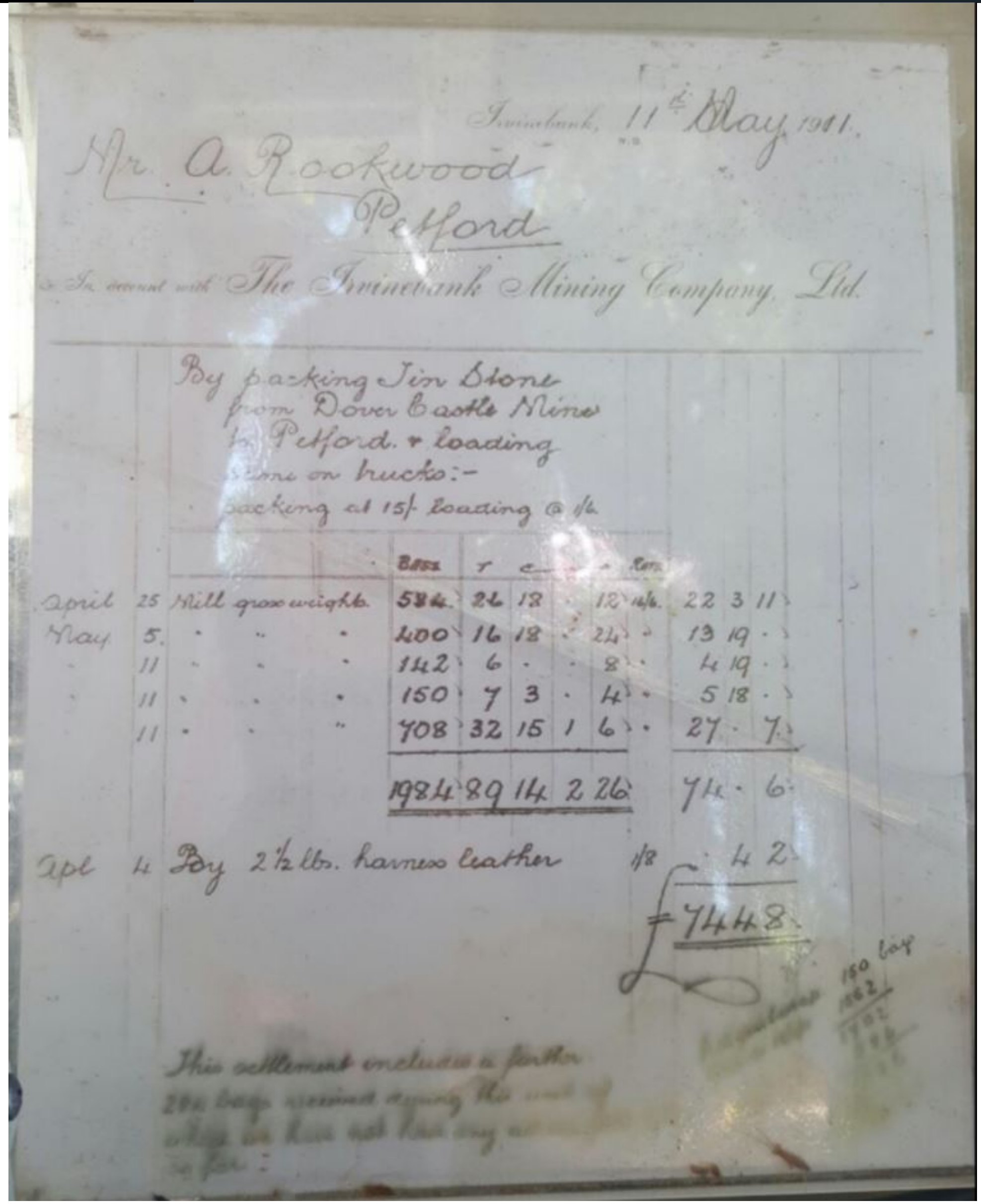
- Ore Sales Certicate for the Dover Castle mine in 1911 for **£7,448**



Irvinebank, 11th May 1911.

Mr. A. Rockwood
Petford

In account with The Irvinebank Mining Company, Ltd.

By packing Tin Stone from Dover Castle Mine to Petford. & loading stone on trucks:-
packing at 15/- loading @ 1/6

			Bags	T	C						
April	25	Mill gross weight	584	26	18	.	12	16/6	22	3	11
May	5	"	400	16	18	.	24	"	13	19	.
"	11	"	142	6	.	.	8	.	4	19	.
"	11	"	150	7	3	.	4	.	5	18	.
"	11	"	708	32	15	1	6	.	27	.	7
			1984	89	14	2	26		74	.	6

Apl 4 By 2½ lbs. harness leather 1/8 . 4 2

£74 4 8

This settlement includes a further

Historical mines

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Previous exploration and historical production

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- Historical working of the 1.2m wide Comstock Ag-Pb vein reported grades **38.5 ounces of Ag/t (1192 g/t Ag) & 35.8% Pb**
- The Dover Castle mine was discovered in 1890 however no significant production reported until the period 1906 to 1958 when 361.5 tons cassiterite was mined.
- A review of the Comstock vein was undertaken by geologist Frank Hilla in 2000. Four samples collected during this review reported an average of **9.76% Pb, 4.31 % Zn, 778 g/t Ag, 421 ppm Cd, 11.7 ppm Ga and 567 ppm In,** with only one sample being analysed for Sn, which reported **3.45%.**
- **The Better Luck, Silver king and Feldspar** lodes were mined in the early 1900's where in excess of 2,000 tonnes of high grade ore was removed.

Historical mines

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Dover Castle Tenements

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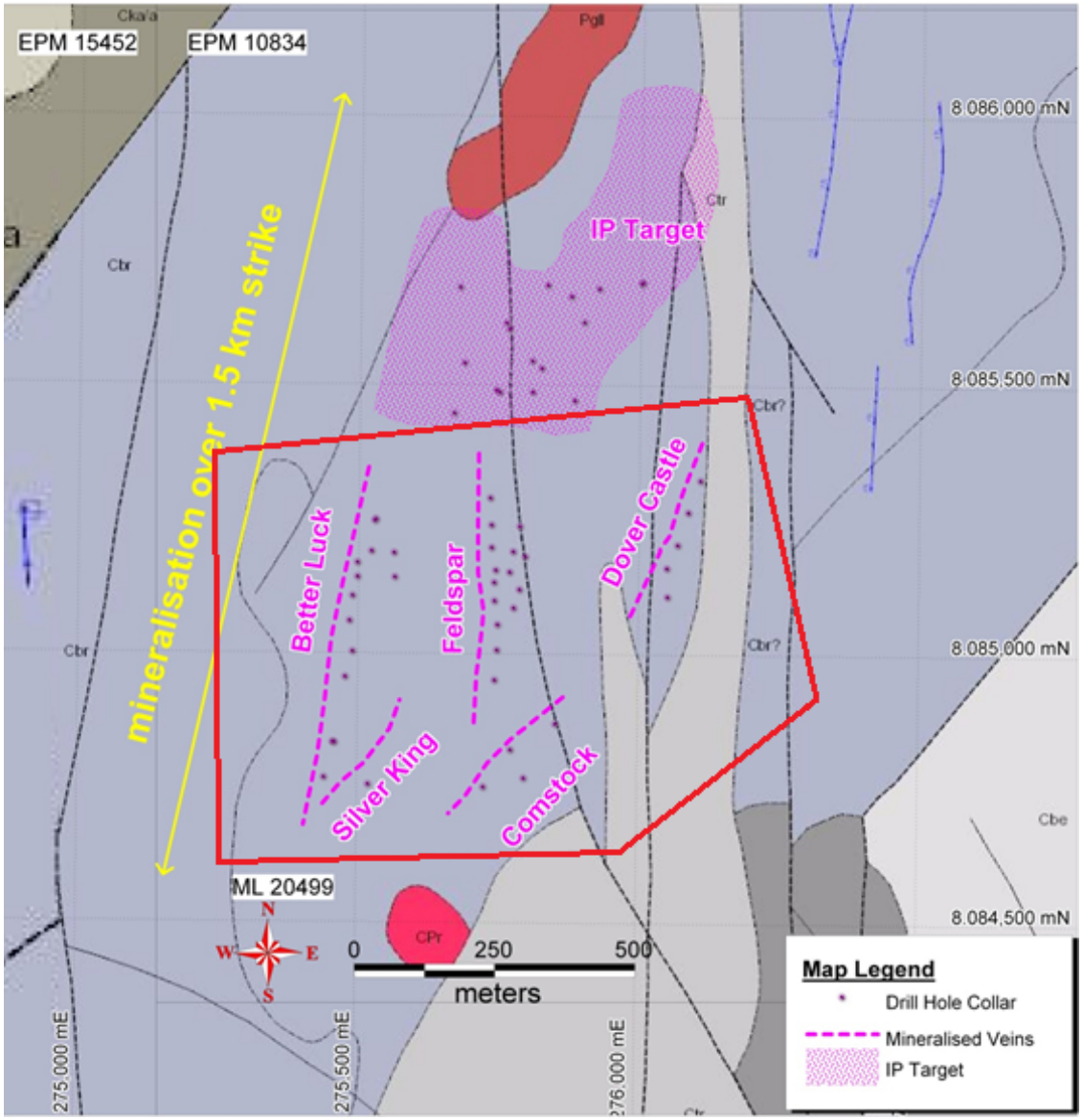
- The Dover Castle Project consists of two EPM's, EPM10834 and EPM15452 as well as mining lease ML2099 where most exploration has taken place.



Program Highlights

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- High grade base metal (Ag-Pb-Zn) veins identified (near surface);
- Since 2014 76 Reverse Circulation (RC) drill holes for 10,448 metres with multiple significant high grade **zinc equivalent** intercepts, including:
  - *6m at 31.20%* *4m at 24.32%* *2m at 15.79%*
    4m at 26.10% *5m at 11.96%* *3m at 21.11%*
    2m at 13.14% *2m at 13.79%*
- Exploration Target (JORC 2012) of 920,000t – 1,380,000t at 6.5% - 12.0% Zinc equivalent expected in late September 2017.
- Mining Lease already in place allows for potential near term production.

Exploration Work Undertaken by Dover Castle Metals to date

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- Reconnaissance lithology and alteration mapping, rock chip sampling, and soil geochemistry (utilising handheld XRF) across the Project to delineate drill targets;
- Dipole-pole IP (resistivity) survey which identified a large IP anomaly that has the potential to host significant, high tonnage mineralisation;
- Four (4) Reverse Circulation (RC) drill programs for 76 holes and for a total of 10,448m.
- Review of all available information to develop a geological model for the project ***–low sulphidation epithermal veins (high grade) in south, with large tonnage intrusive porphyry potential in the north;***

Regional Geology

- Mineralisation in the Dover Castle area is hosted within the 301 (± 9) Ma, Late Carboniferous (Black 1978) porphyritic Muirson Rhyolite of the Featherbed Volcanic Group.
- Dark grey, medium grained diorite was observed on the mullock heap at Midas mine, is believed to correlate with the Ootann Granite suite and may be a heat source driving hydrothermal fluid flow.
- NW of EPM 10834 is a large area mapped as the Early Permian (288 ± 17 Ma, Mackenzie, 1993) Arringunna Rhyolite which is coincident with a large aeromagnetic and gravity low. This area has been described as Featherbed Cauldron, one of nine nested volcano-tectonic collapse structures.

Local Geology

- Mr John Nerthery (2014) documents four main periods of intrusive activity within the region based on dating of the separate supergroups (Mackenzie, 1993), which are O'Brien's Creek Supersuite at 315 Ma, Almaden and Ootann Supersuite at 300 Ma, Claret Creek and the Lags Supersuite at 290 Ma and 280 Ma respectively. The Dover Castle project area is bordered by the arcuate shaped younger Tennyson Ring Dyke to the east, which extends for some 30km. Three major faults in the area are the Lappa Creek Fault to the NW, the Oaky Creek Fault to the S and the Bamford Creek Fault to the E.

Hydrothermal alteration

- Intense silicification with moderate to strong sericite alteration is observed in the quartz porphyritic rhyolite at Dover Castle hill which appears to have leached out feldspar and locally shows a vughy texture.
- Silicification has ensured that this unit was resistive to weathering and, as a result, has created the prominent ridgeline of Dover Castle hill.
- Moderate sericite alteration is also evident within the porphyritic rhyolite.
- Galena-sphalerite-pyrite bearing veins contain minor rhodochrosite (pink Mn carbonate) which is an indication of the mixing of bi-carbonate bearing waters with metal bearing magmatic fluids as proposed by Corbett and Leach (1998). This is supported by historical petrographic studies by Huston Oil which reported the occurrence of sericite-chlorite alteration of rhyolitic volcanic with vein gangue of carbonate, chlorite, and quartz.

Gravity Data

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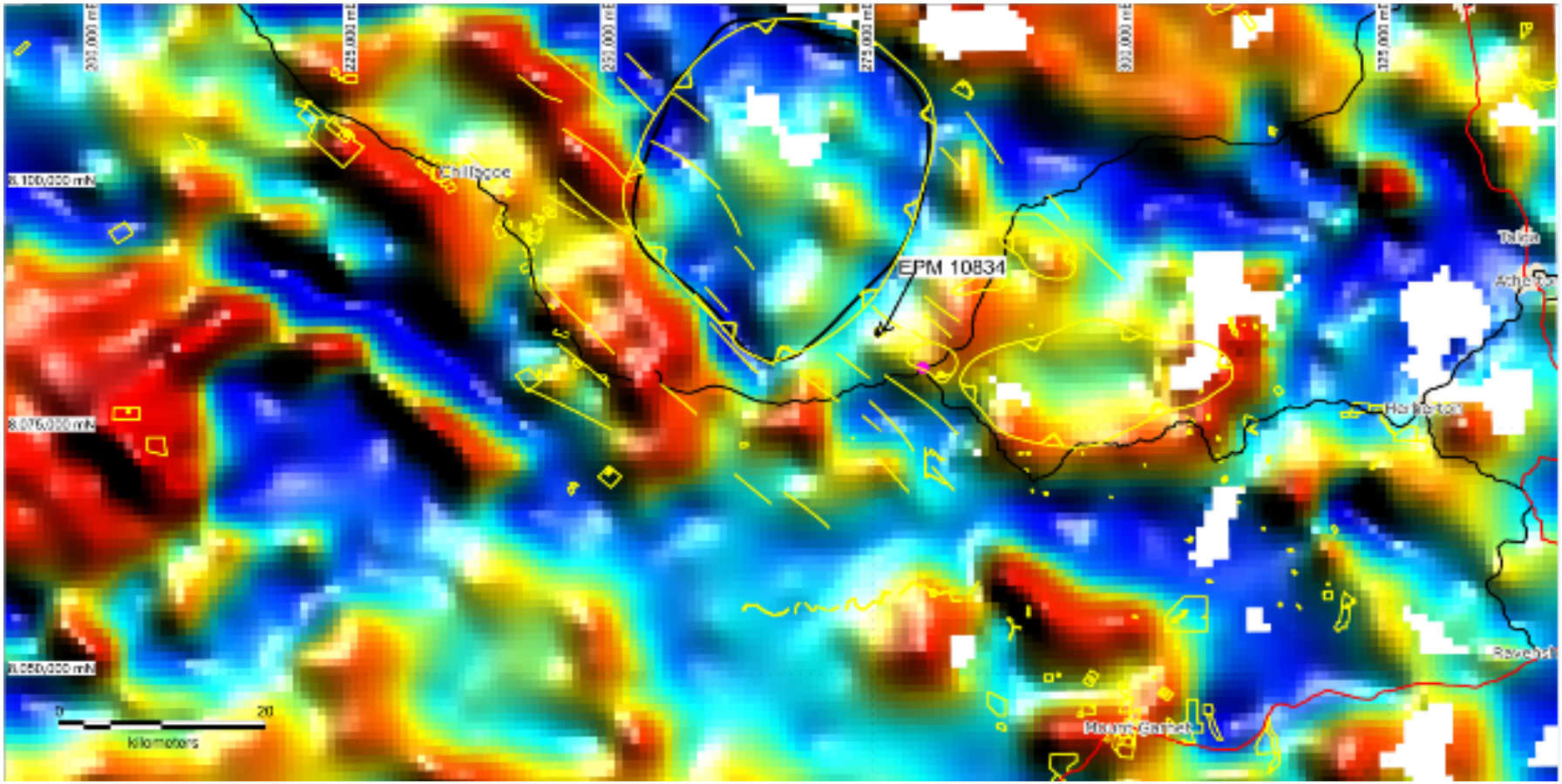

Regional gravity data highlights a large low coincident with the aeromagnetic low displayed , indicative of a less dense granite intruded into the denser volcano-sedimentary pile. A NW trending structural grain can also be seen in this gravity data.

Aeromagnetic Data

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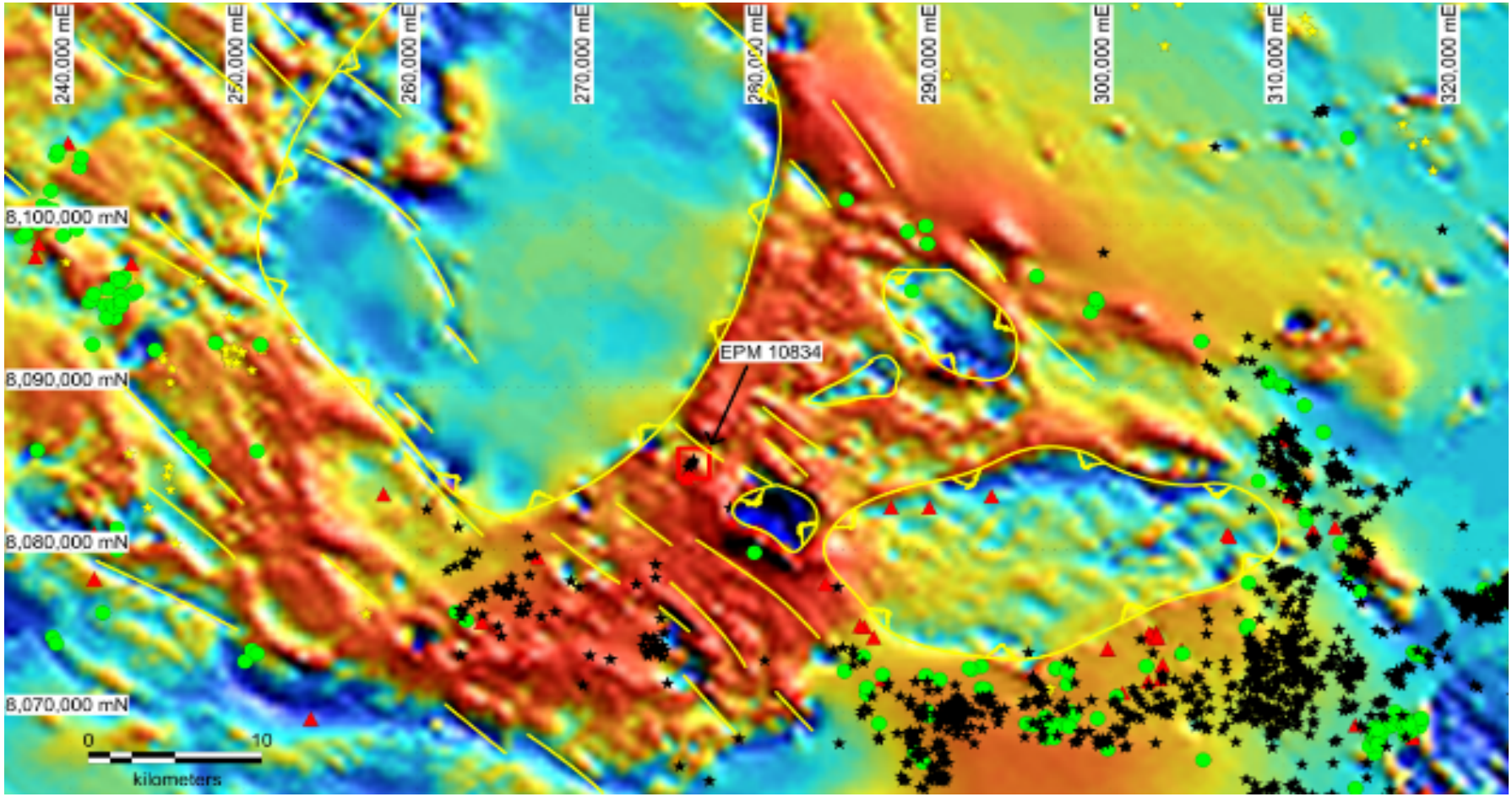

Total magnetic intensity aeromagnetic data (Geoscience Australia) showing a prominent low to the NW, E and NE of EPM 10834 (Dover Castle), NW trending faults (yellow lines) and mineral occurrences (yellow stars = Au, red triangles = Ag, green circles = Cu, and black stars = Sn) (Menzies, 2014)

Mineralisation

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Tennement Map

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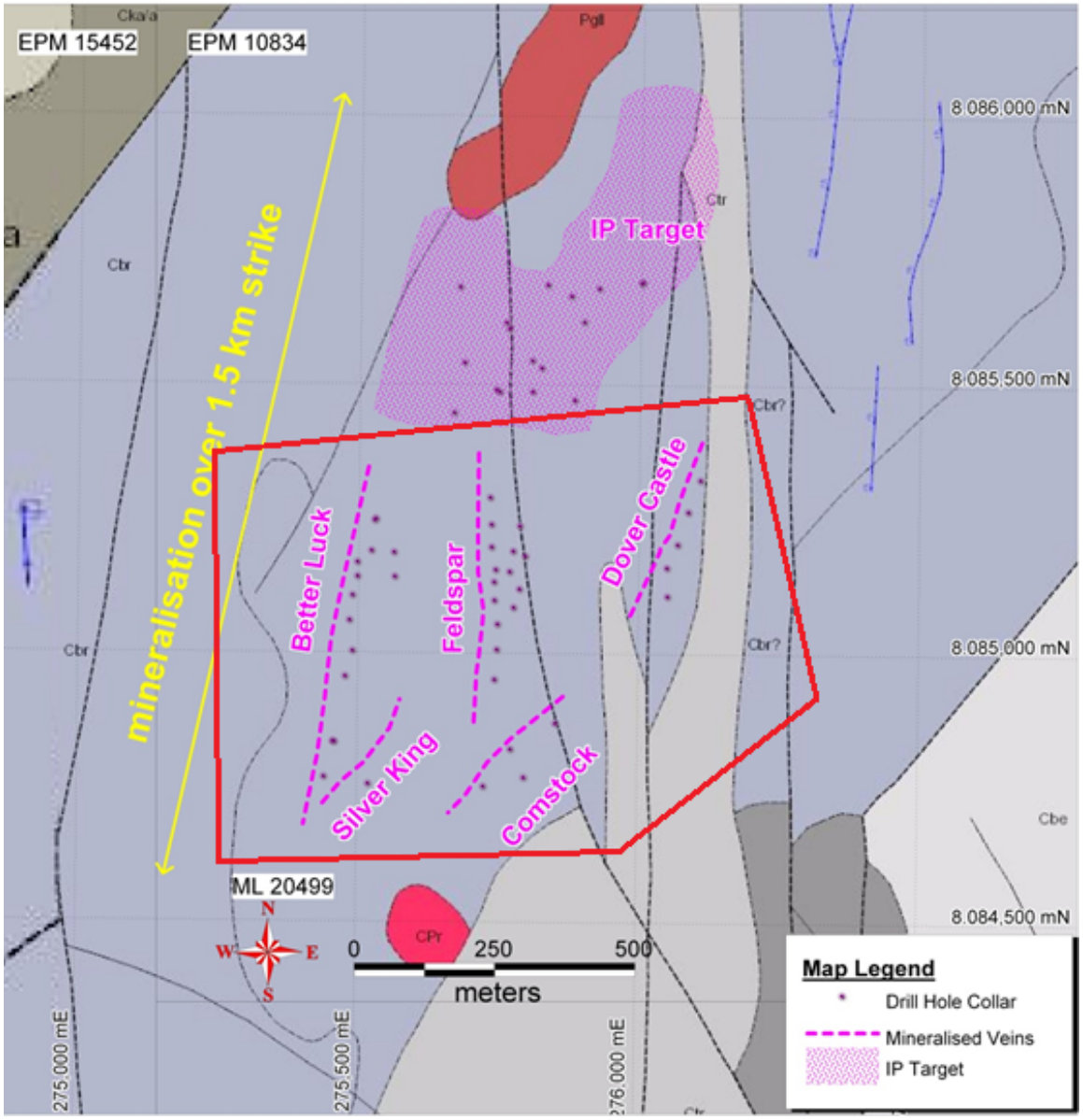

Mineralisation Better Luck Strike

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- The NS trending Better Luck vein, which exhibits a strike length of approximately **500m**, is 1-1.5m wide and exhibits **massive galena-red brown sphalerite-chalcopyrite-bornite-pyrite ± tetrahedrite with chalcedonic silica.** The occurrence of Fe-rich, red brown sphalerite, bornite and chalcopyrite in these samples is indicative of proximity to a high temperature fluid source.

Significant high grade RC drill intersections include:
– 4m @ 24.32% Zn eq. [from 86m] – DCRC0001
– 4m @ 14.50% Zn eq. [from 57m] – DCRC0002
– 2m @ 11.12% Zn eq. [from 129m] – DCRC0004

- Rock samples collected **returned bonanza Ag grades including two sample from Better Luck prospect that reported 5030 g/t Ag, 783 ppm As, 604 ppm Cu, 147.5 ppm In, 58.50 % Pb and 0.97% ZN**, and a second sample that reported **767 g/t Ag, 5.94 % As, 178 ppm Cu, 31.7 ppm In, 11.35 % Pb, 8.2% Zn.** Overall Sn values were of a low tenor with the maximum value of 480ppm Sn reported from Better Luck prospect.

Massive galena-quartz ± carbonate which reported **5030 g/t Ag, 783 ppm As, 604 ppm Cu, 147.5 ppm In, 58.5 % Pb, 1.0% Zn** from Better Luck prospect.

Mineralisation Comstock site

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Comstock Lode

- The Comstock prospect, which contains a 7m deep shaft, comprises several pits into NE trending veins some of which exhibit a shallow dip. Mineralisation occurs as a massive galena and red-brown, Fe-rich sphalerite bearing lode. Red-brown, Fe-rich sphalerite is indicative of deposition from a high temperature fluid proximal to a magmatic source. Quartz-galena veins exhibit a gangue of fine silica and orange Fe-rich carbonate (ankerite) within grey medium-grained diorite porphyry. Previous samples collected at Comstock prospect by Hilla (2000) show highly anomalous Ag-Pb-In-Zn values.
- The highest Indium grades were reported from Comstock prospect where assays returned maximum values of **423 g/t Ag, 1.43% As, 0.27% Cu, 3130 ppm In, 14.35 % Pb, and 16.90 % Zn**, and another that reported **1510 g/t Ag, 1.70 % As, 0.57% Cu, 1920 ppm In, 32.20 % Pb, and 17.05 % Zn.** The association of high Indium with high grade Zn supports the interpretation that Indium is

Galena and red-brown sphalerite which reported **1510 g/t Ag, 1.65 % As, 0.6% Cu, 1920 ppm In, 32.2 % Pb, & 17.0 % Zn** Comstock prospect.

Mineralisation Feldspar prospect

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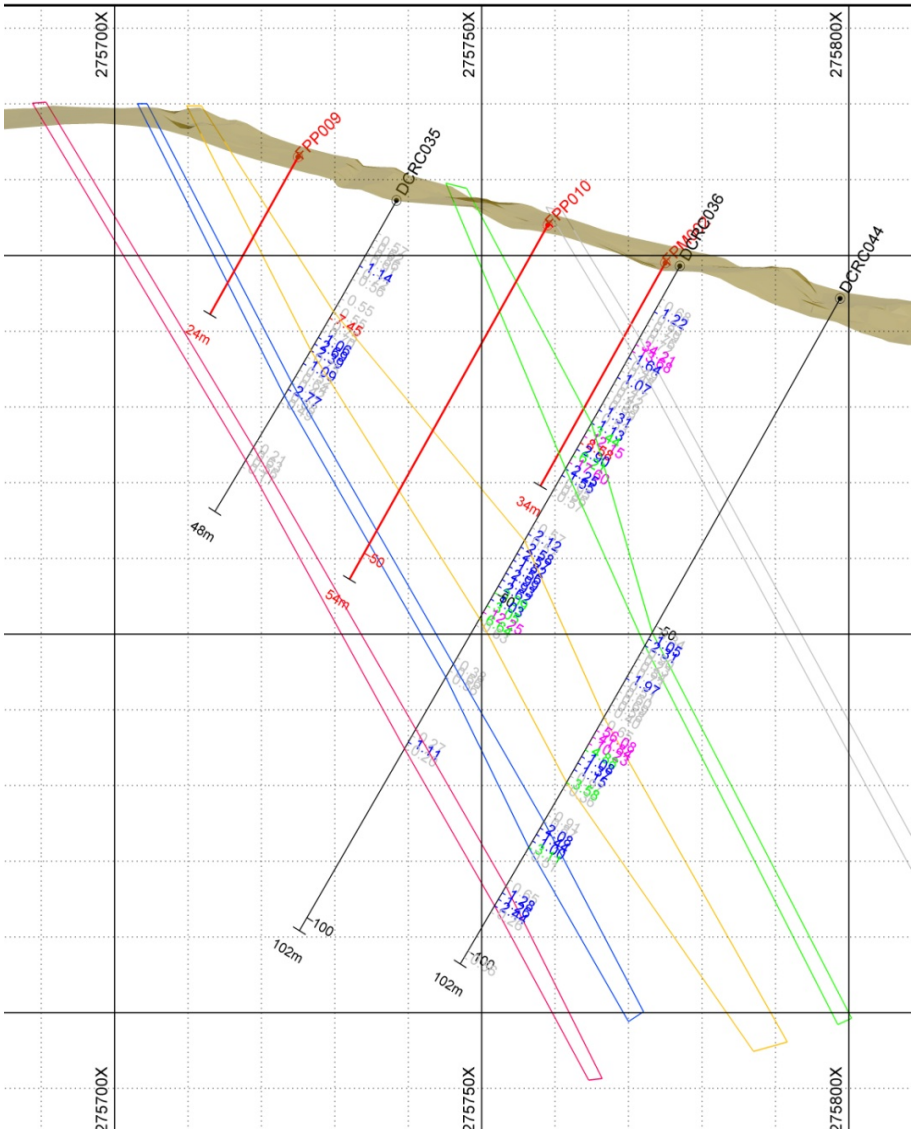
Feldspar Prospect

The NS trending Feldspar vein lies 150 to the east of the better luck strike. And also exhibits a strike length of approximately **500m**, unlike the better luck lode Feldspar contains a number of N-S striking veins ranging from 0.5m -1.5m true width and also contains **massive galena-red brown sphalerite-chalcopyrite-bornite-pyrite ± tetrahedrite with chalcedonic silica.**

Significant high grade intersections include:-

Feldspar (multiple lodes)

- 5m @ 9.94% Zn eq. [from 31m] – DCRC016
- 5m @ 11.96% Zn eq. [from 80m] – DCRC017
- 4m @ 8.93% Zn eq. [from 54m] – DCRC018
- 5m @ 8.41% Zn eq. [from 25m] – DCRC036
- **4m @ 26.10% Zn eq.** [from 65m] – DCRC044



STRUCTURAL MODEL FOR DOVER CASTLE MINERALISATION

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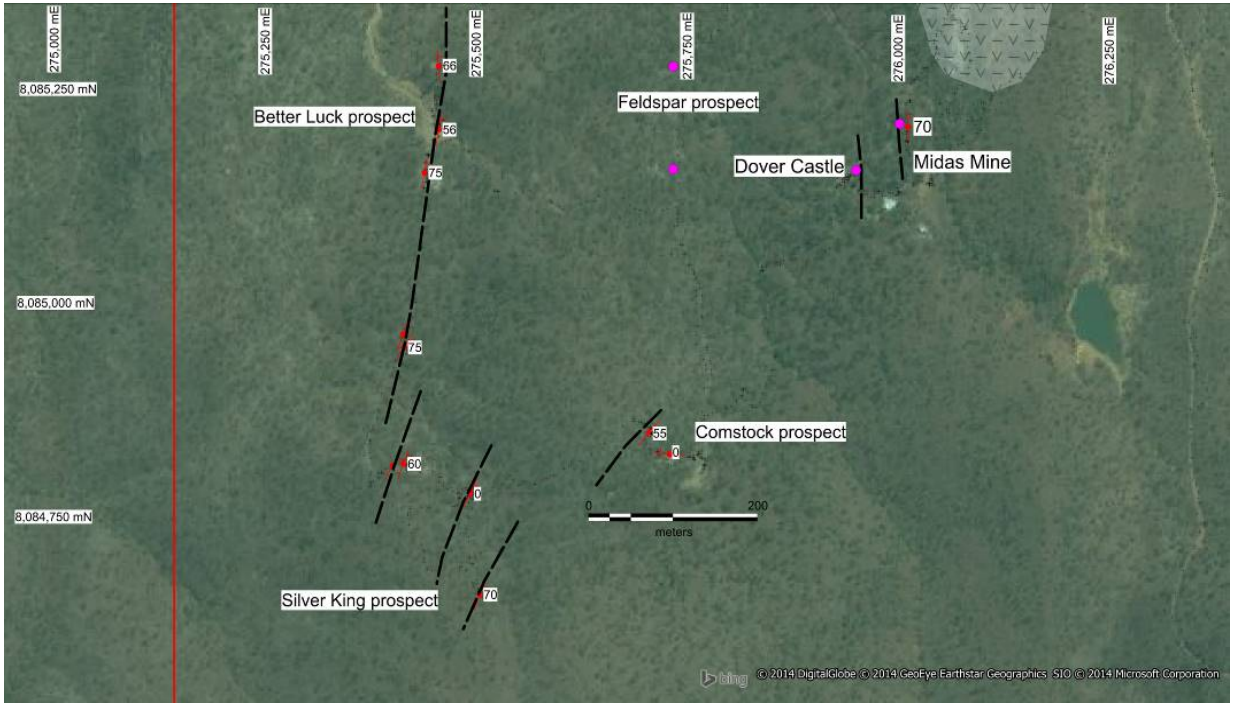
The Dover Castle Project Ag-Zn-Pb-Sn ± In ± Au lode mineralisation occurs in a series of en echelon veins at the **Dover Castle, Midas,Comstock, Silver King, Feldspar and Better Luck prospects,** which trend broadly NNE-SSW at approximately 355-020° dipping 55-80° E. Old mine workings along the Better Luck vein, which strikes 355-020° and dips 56-75°E, indicate the vein has a strike length of approximately 500m in length. The Silver King veins appear to be along strike from the Feldspar prospect 500m to the N. These veins are sub parallel with regional structures identified on both the aeromagnetic data and satellite imagery, suggestive of a NS trending dilatant environment emplaced by dextral movement on NW trending faults.



Prospect locations with vein strike and dip measures (red symbols), interpreted vein extents (black dashed lines), track and EPM boundary (red line) (Menzies 2014b).

STRUCTURAL MODEL FOR DOVER CASTLE MINERALISATION

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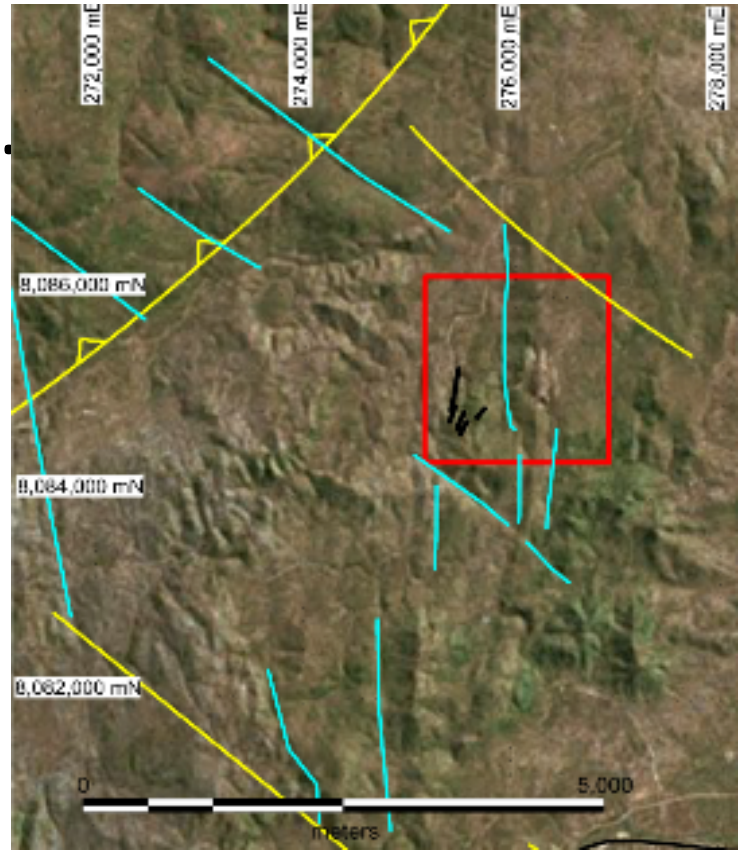

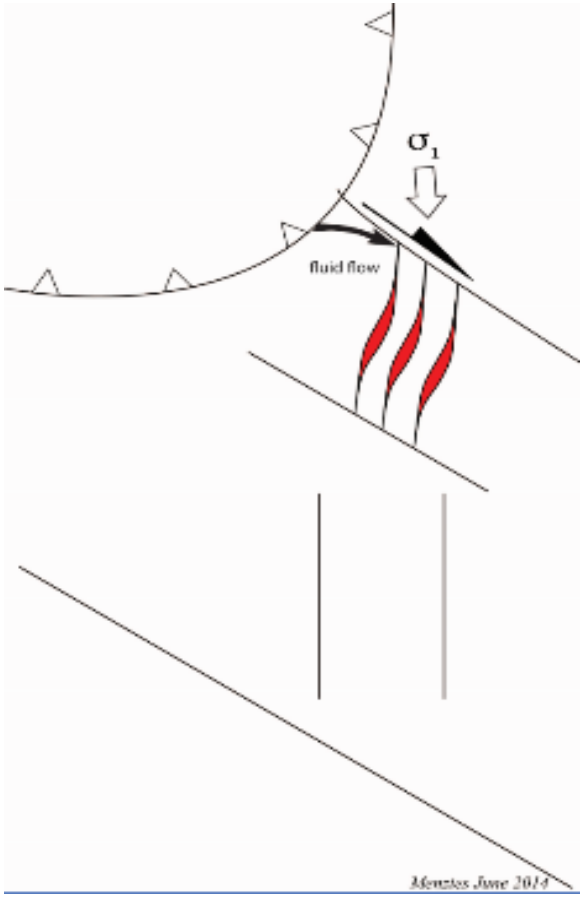

Regional aeromagnetic interpretation from figure 1. (yellow lines) and drainage lineament interpretation (blue lines) with orientation of **Better Luck, Silver King and Comstock veins** (black lines), EPM boundary (red lines) on a satellite image, Plate B. Regional structural model showing dextural movement along NW trending faults which created dilatant NS structures and facilitated fluid flow and vein formation at **Better Luck, Silver King, Comstock, Midas and Dover Castle prospects** (Menzies 2014).

IP Survey results

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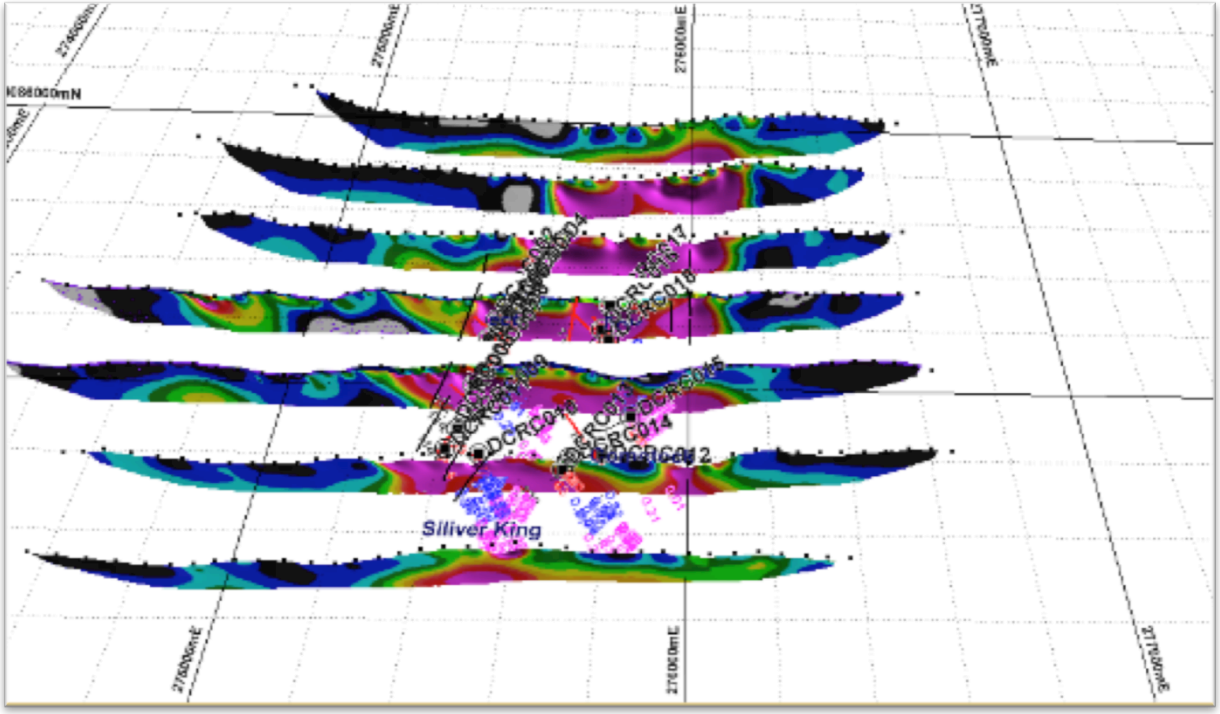
- Data returned from a 14-line km dipole-dipole induced polarisation survey, completed with 50m spaced dipole centres on 250m spaced lines, when incorporated in the 3D geology model shows a positive correlation between elevated chargeability and zones of **known Pb-Zn-Ag mineralisation**. The survey highlighted two zones to the north, coincident with historically worked pits and Zn-Pb-As in soil samples, that are along strike from the Better Luck, Feldspar and Dover Castle prospects. The approximate depth to the source of chargeability anomalies is 150-200m and exhibits a width of 200 m and strike length of 1400m. A 3-dimensional block model of this data highlights an oblate zone of elevated chargeability which trends to the NE and is coincident with historically worked pits.



3D model of induced polarisation chargeability pseudo sections (purple is >12.09 mV/V) and previous Dover Castle drill holes (Menzies 2014c).

IP target drill results

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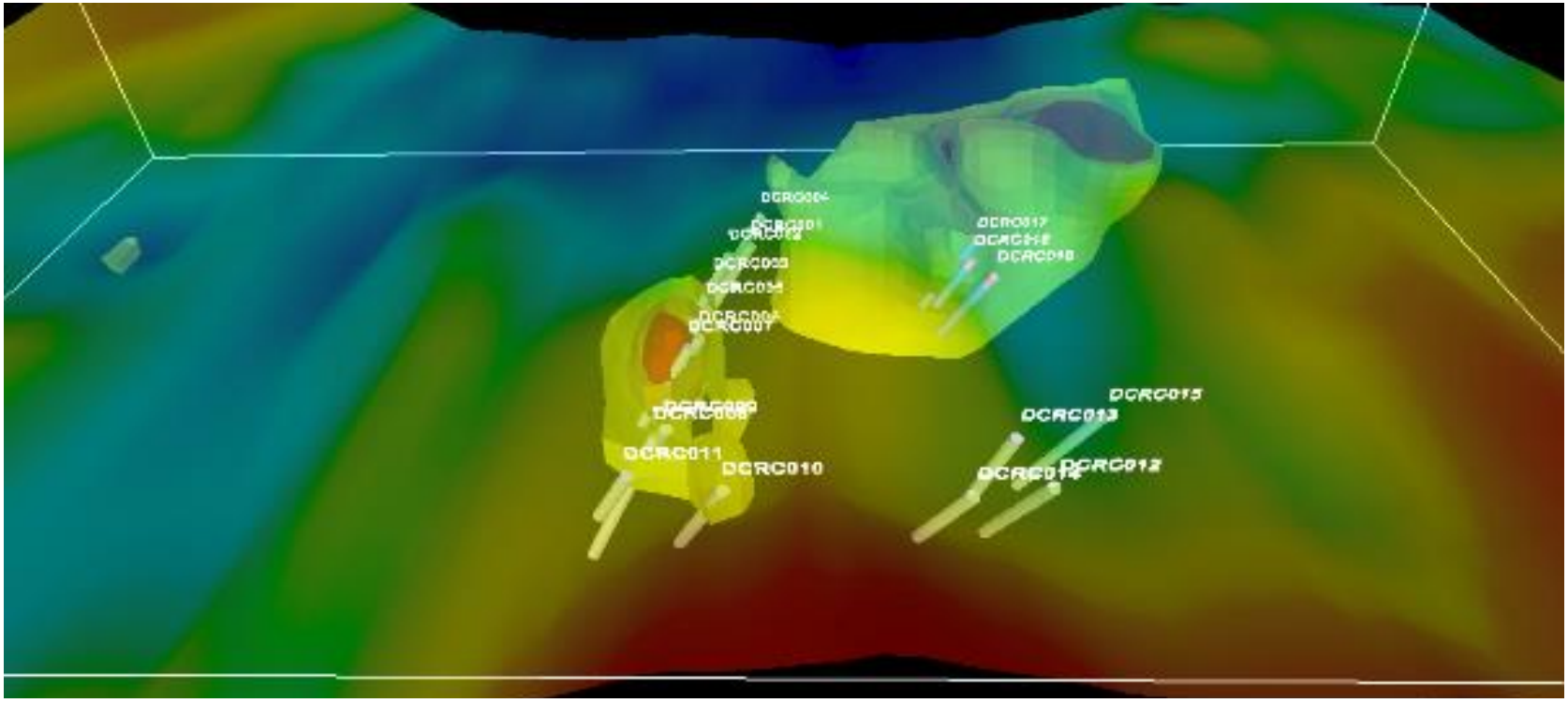
- A total of 15 RC holes were drilled over a large area with encouraging, large down hole drill intercepts at depth including:-
  - 12m @ 6.77% [from 166m] – DCRC0024
  - 29m @ 3.31% [from 187m] Zn eq. – DCRC0032
  - **6m@ 31.2%Zn eq**.[from69m] – DCRC0050
  - 18m @ 7.15% [from 58m] – DCRC0051
  - 21m @ 2.29% Zn eq. [from 220m] – DCRC0052
  - 13m @ 5.16% [from 212m], 21m @ 3.75% [from 230m] – DCRC0053



Handheld XRF supported soil sample survey

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- Soil samples were collected at 50m centres on 100m spaced E-W grid lines over the project area and analysed with a hand portable **XRF device** (Thermo Scientific Niton XL3t Series Mining Analyzer).
- Elevated Pb-in-soil values occur in close proximity to the **Better Luck, Silver King, Feldspar, and Dover Castle prospects** which indicates this element is immobile in the weathered environment and a good indicator for primary sulphide.
- Sporadic weakly anomalous Sn in the soil sampling data is consistent with the low Sn content in rock chips and drill core. **Elevated Sn values are evident near the Dover Castle/Midas prospect and weakly elevated values occur with Pb-As-Zn north of Dover Castle at the porphyry outcrop and associated with historically worked pits to the NW.**

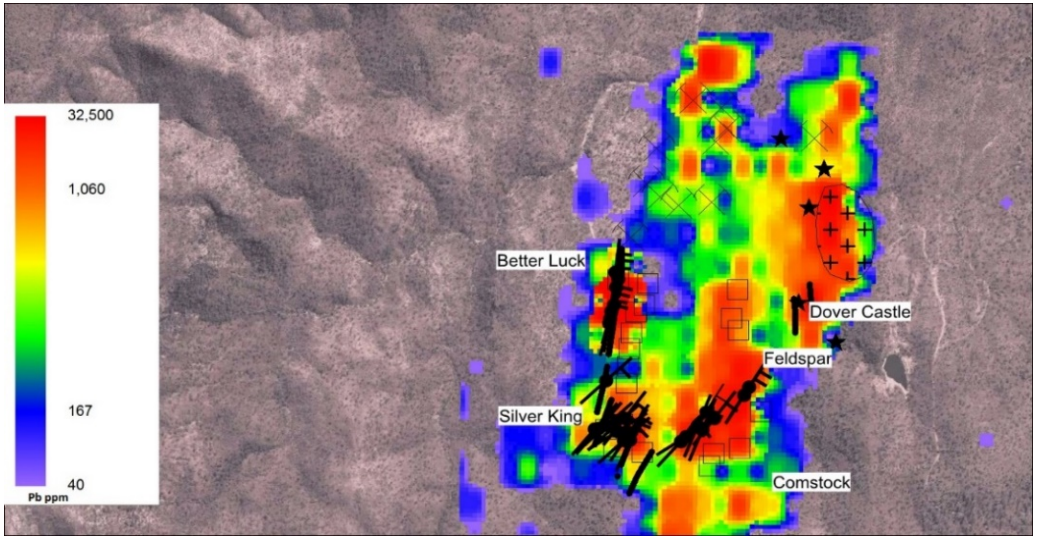

Figure: Gridded Pb ppm in soils on a satellite image overlain by Dover Castle Metals RC drill holes (squares), Houston Oil and Minerals drill holes (black stars), interpreted vein orientations (black lines), historically worked pits (black crosses) and Dover Castle porphyry outcrop (cross hatch) (Menzies, 2014c).

Drill Data

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Drill data

- **Since 2014, we have conducted four (4) RC programs for 76 holes totaling 10,448 meters,** drilling across the project area has defined a mineralised zone of over 1.5km in strike length. Best drill intercepts reported from these drill holes were:

Better Luck prospect

- 4m @ 24.32% Zn equivalent from 86m depth in drill hole DCRC0001
- 4m @ 14.50% Zn equivalent from 57m depth in drill hole DCRC0002
- 2m @ 11.12% Zn equivalent from 129m depth in drill hole DCRC0004
- 2m @ 9.54% Zn equivalent from 62m depth in drill hole DCRC0048

IP prospect

- 6m @ 31.20% Zn equivalent from 69m in drill hole DCRC051 located 250 metres north of Feldspar

Silver King prospect

- 3m @ 10.63 Zn equivalent from 42m depth in drill hole DCRC011.
- 2m @ 5.73% Zn equivalent from 69m depth in drill hole DCRC009.

MODEL FOR THE CONTROLS TO Pb-Zn-Ag-Sn-In±Au MINERALISATION

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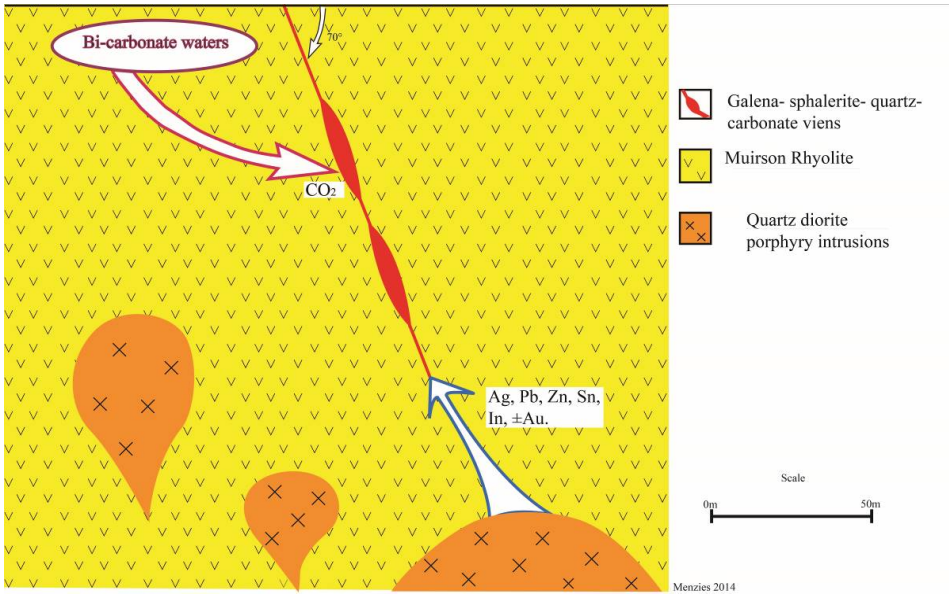
The interaction of three controls have governed the development of the Pb-Zn-Ag-Sn-In±Au mineralisation within EPM 1084, namely:

- **Competent host rocks**. Competent components within the rhyolite rock package, as opposed to less competent sediments or volcaniclastics, have allowed a greater amount of brittle fracturing and vein formation.
- **Structural controls.** Dextral movement on NW trending structures created dilatant NS trending fractures which facilitated fluid flow from a magmatic source at depth and the formation of veins which produced the flat lying quartz-sulphide veins seen at Better Luck prospect.
- **Mechanism of base and precious metal deposition** provides a major control to elevated metal grades. The mixing of rising Pb-Zn-Ag-Sn-In ± Au carrying fluids with oxidising weakly acidic bi-carbonate waters has facilitated the carbonate-base metal Pb-Zn-Ag-Sn-In±Au mineralisation (Corbett and Leach, 1998).



A schematic sectional model for the formation of Pb-Zn-Ag-Sn ± In ± Au mineralisation by the mixing of metal bearing magmatic fluid with bi-carbonate waters producing metal deposition.

Dover Castle, where next

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- Prospect still considered highly under explored.
- DCM Maiden JORC resource expected in late September.
- More Exploration!!

Thank you