SANDFIRE RESOURCES NL

EPM25950 ALTIA PROJECT

ANNUAL MINERAL EXPLORATION REPORT 2018

REPORTING PERIOD 3/02/2017 TO 2/02/2018

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BIBLIOGRAPHIC DATA SHEET

Project Name:	Altia
Tenement Numbers:	EPM25950
Tenement Operator:	Sandfire Resources NL
Tenement Holder:	Sandfire Resources NL
Report Type:	Annual
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Report Period To:	2/02/2018
Author:	M. Reid, M. Porter, Sandfire Resources,
1:250,000 map sheet:	DUCHESS FS5406
1:100,000 map sheet:	MOUNT ANGELAY 7055
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Geodetic Datum:	GDA94
Projection:	MGA94 Zone 54
Prospects Drilled:	Ionized
Keywords:	NW Queensland Proterozoic Eastern Succession, Broken Hill-type (BH-t) deposits, Iron-Oxide Copper Gold (IOCG) deposits, Airborne Magnetic Survey, Target Ranking, Soil and Rockchip Sampling, Diamond Drilling, RC Drilling, DHEM, MLEM, FLEM
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ABSTRACT

Location: The tenement is located approximately 80km south-southeast of Cloncurry, Queensland,

Geology: EPM25950 lies on the northern fringe of the Eromanga basin where Mesozoic and Permian rocks overlay Lower Proterozoic basement rocks belonging to the Eastern Succession fold belt of the Mt Isa Inlier. The Eastern Succession is one of the most intensely mineralized areas in Australia, in commodities such as copper, gold, silver, lead and zinc. The geology of the Altia Project area interpreted from geophysics and previous exploration is considered prospective for Broken Hill-type (BHt), breccia-hosted, or Iron-Oxide-Copper-Gold -type (IOCG) targets.

Work Done: Work completed on the tenement within the current reporting period includes several prospectivity and geological reviews, the drilling of nine drillholes, DHEM on four drillholes, Petrology on three drillholes, a MLEM-FLEM survey and collection of ten rockchip samples.

Results: The new inputs of detailed magnetics, a structural interpretation and BHt and IOCG prospectivity analysis have significantly improved the understanding of the region and the critical factors for mineralisation. The Ionised prospect drilling programme has successfully identified interpreted BHt lithologies, alteration and mineralisation along a strike length of 2.8km. Although no ore grade mineralisation has been discovered, the presence of the BHt indicators including BIF's, muscovite sillimanite schist (similar to the footwall to Cannington lodes) and garnet psammites, give strong encouragement that the targeted horizons at Ionised hold the potential for a discovery.

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1. INTRODUCTION

EPM25950 was formed by the amalgamation of EPM19832 and EPM25388 into EPM25950 on 3 February 2016. This report details mineral exploration conducted by Sandfire on EPM25950, between 3 February 2017 and 2 February 2018 (the 'reporting period') as part of the Altia Project.

The Landsborough area over northern graticule blocks of EPM25950 includes the former Corona, Solar and Ionised Prosects, the Landsborough Cu-Au Mineral Occurrence and three regional copper targets at Melchior, Gaspar and Balthasar. The area of the southern graticule blocks of EPM25950 is referred to as Australis and encompasses the Aurora, Peartree Creek, Lenny's Dam, Bull Creek and Peartree Creek West Prospects.

2. LOCATION AND ACCESS

The Altia Project tenements are located 50km southeast of Cloncurry, western Queensland. Access to the exploration base at the Eloise copper-gold mine operated by FMR Investments is via the bitumen Landsborough Highway running between Cloncurry and Winton; then the formed Oorindi Road (Figure 2-1), and fences and station tracks south-west from the highway.

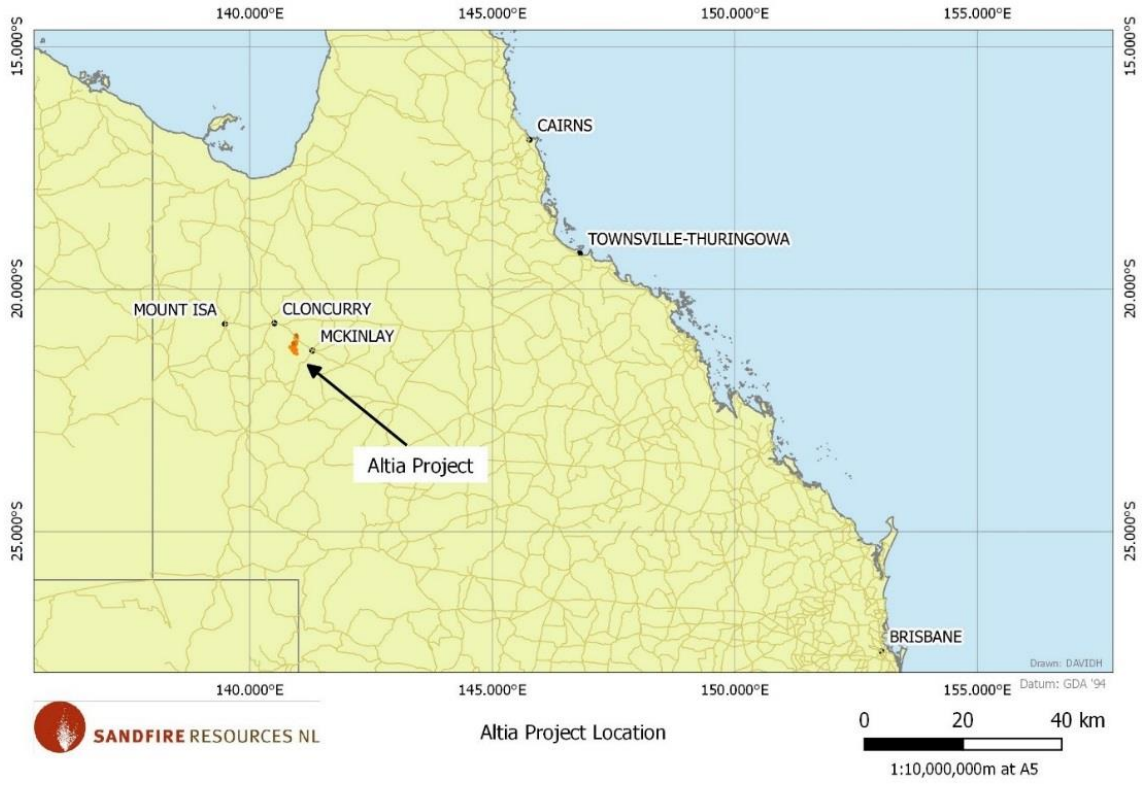

Figure 2-1: Altia Project -Locality Map

3. LAND TENURE

3.1 Tenements

The Altia Project refers to tenements EPM25950, EPM26184, EPM26447, EPM26508 and EPM26572 held by Sandfire and a portion of EPM17838, MDL431 and MDL432, held by Levuka Resources Pty Ltd (Levuka) a wholly owned subsidiary of Minotaur Exploration Ltd, within the Sandfire – Minotaur Farm-in Joint Venture. The Farm-in Joint Venture was executed on 3 September 2012 by which terms Sandfire has the right to earn from Levuka an interest in the tenements shown as the two hatched areas on tenement location map, Figure 2-1.

EPM25950, the subject of this annual technical report is held by Sandfire over forty-six non-contiguous sub-blocks; applied for on 5 May 2015 and granted on 3 February 2016 for a period of five years to 2 February 2021. This application was lodged as an amalgamation of former Sandfire tenements EPM19832 and EPM25388.

Table 3-1: Altia Project EPM25950 - Tenement Details

Tenement Number	Holder/JV Details	Project Name	Area	Grant Date	Expiry Date	Expenditure
EPM25950	Sandfire Resources NL	Altia	46 sub-blocks	03/02/2016	02/02/2021	$69,000

3.2 Landholders

EPM25950 is underlain by the following pastoral lease holders, all of which Sandfire holds Access Agreements with:

- Elrose Station – Lorena Dawn Jefferis & Rodger Grant Jefferis
- Maronan Station – Colin Muller & Josephine Muller
- Glen Idol Station – Leonard Lionel Bode & Suzanne Dorothy Bode

3.3 Native Title

During the commencement of the application process for EPM25950, the tenement was not subject to any registered Native Title Claims. On 8 July 2015 the Mitakoodi and Mayi People #5 Native Title Claim (QC2015/009) was lodged with the Federal Court of Australia and formally registered on 25 September 2015. The tenement proceeded to be granted under Native Title Protection Conditions.

There was one Cultural Heritage Survey undertaken over EPM25950 with the Mitakoodi and Mayi People during the reporting period.

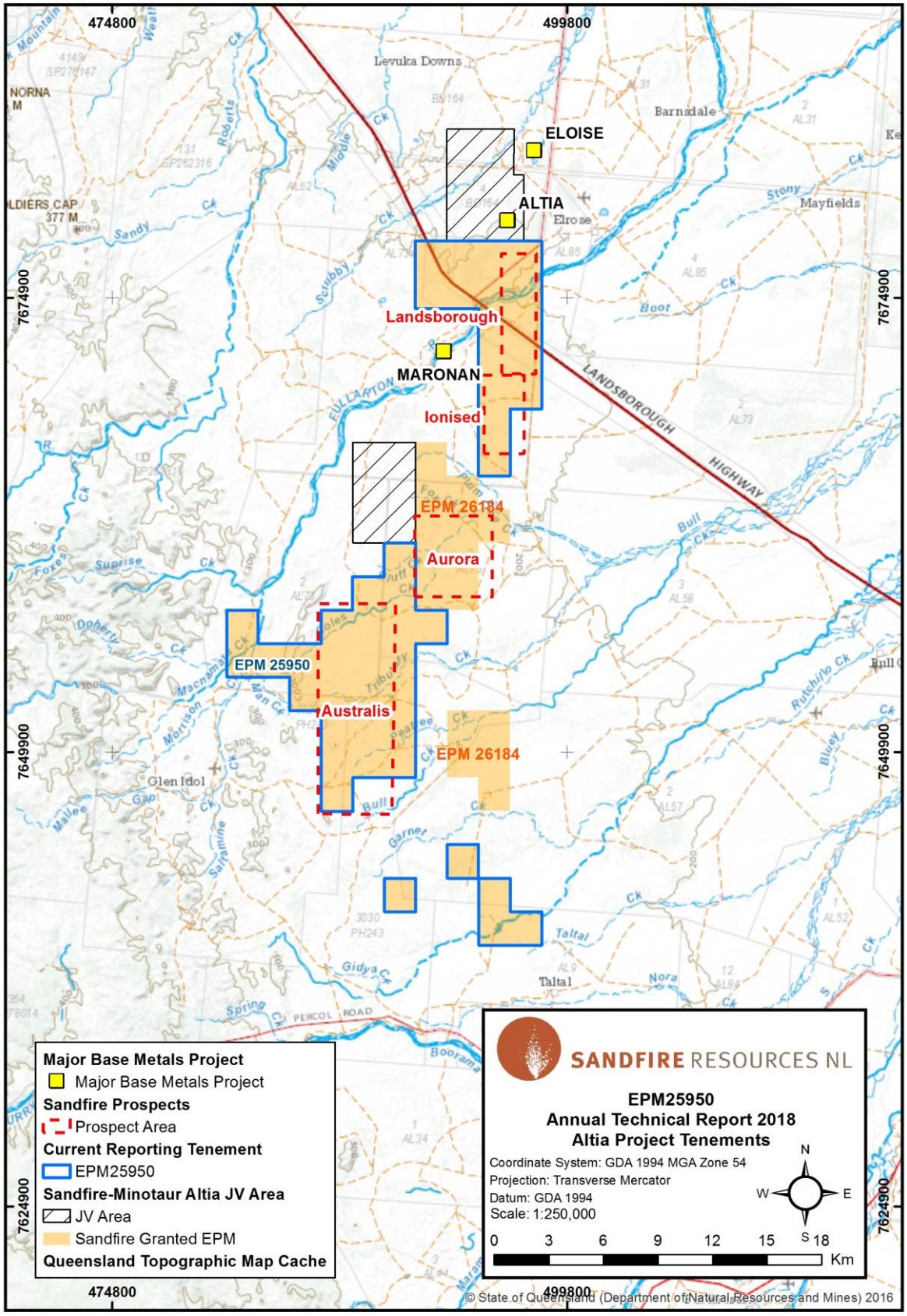

Figure 3-1: Altia Project EPM25950 Tenement Map

4. GEOLOGY

4.1 Regional Geology

The Altia Project area is located in the Eastern Fold Belt of the Mt Isa Inlier. The main outcropping lithostratigraphic packages in the Eastern Succession are the Malbon, Mary Kathleen and Soldiers Cap Groups. The Eastern Succession is one of the most intensely mineralized areas in Australia, in commodities such as copper, gold, silver, lead and zinc. Available aeromagnetic data shows that the Eastern Succession rocks appear to continue to the south under the Eromanga Basin cover.

The Proterozoic rock sequences assigned to the Soldiers Cap Group are subdivided into (from oldest to youngest): the Llewellyn Creek Formation, Mount Norna Quartzite, and the Toole Creek Volcanics. Lithologically the lower two units comprise of pelitic and psammitic dominated sequences respectively, whilst the Toole Creek Volcanics have alternate amphibolite- and sediment-dominated sequences.

Proterozoic rocks outcrop to the west of the Landsborough Highway on EPM 17838. East of the highway, on MDL431 and 432, the basement sequence is unconformably overlain by Mesozoic sediments of the Eromanga Basin. In the vicinity of the Altia Prospect, the cover sequence is about 40m thick but deepens to the north and east with a maximum depth to basement on EPM 17838 being approximately 120m.

Structurally, in outcropping areas west of the highway, the Proterozoic sequence occurs in an open fold termed the Middle Creek Anticline. The eastern area under cover has a more linear NNE oriented structural grain, with several layer parallel shears inferred from magnetic interpretation. The Altia Prospect occurs in the Mt Norna Quartzite, on the eastern limb of an antiform apparent in the magnetics. Lead-Zinc mineralisation is associated with Banded Iron Formation and garnetiferous psammites and arenite. To the east, the Eloise Cu Au deposit within the Levuka Shear is hosted by mafic altered psammites adjacent to thick amphibolites (Figure 4-1).

4.2 Prospect Geology

The Landsborough and Australis Prospect areas are covered by conductive Mesozoic to Cainozoic sediments at the western margin of the Mesozoic Eromanga Basin. The Mesozoic Wallumbilla Formation lithologies of monotonous, mostly carbonaceous mudstones, siltstones and rarer sandstones and gravels, are overlain by a thin veneer of Quaternary and Tertiary sands, gravels and clays, forming a flat lying terrain dissected by the Fullarton River channel and associated terraces.

The northern area of EPM 25950, the Landsborough Prospect has depths to basement ranging between 30m-90m, whereas the southern Australis Prospect area of the tenement (southern Australis) exhibits outcrop to shallow subcrop, less than 20m, of Proterozoic units.

The basement Proterozoic geology which underlies both prospect areas is interpreted as two dominant units within the Soldiers Cap Group (SCG): quartz-biotite schist and amphibolite, roughly northerly trending and variably altered. The Mt Norna Quartzite within the SCG occupies most of northern areas and the central part of southern areas. The Central part of the Landsborough Prospect area, has cover between 50-60m deep with basement folded and eroded metasediments and metavolcanics of the SCG, with Proterozoic granites nearby. At the southern margin of the Australis Prospect area, visible galena occurs in basement outcrop.

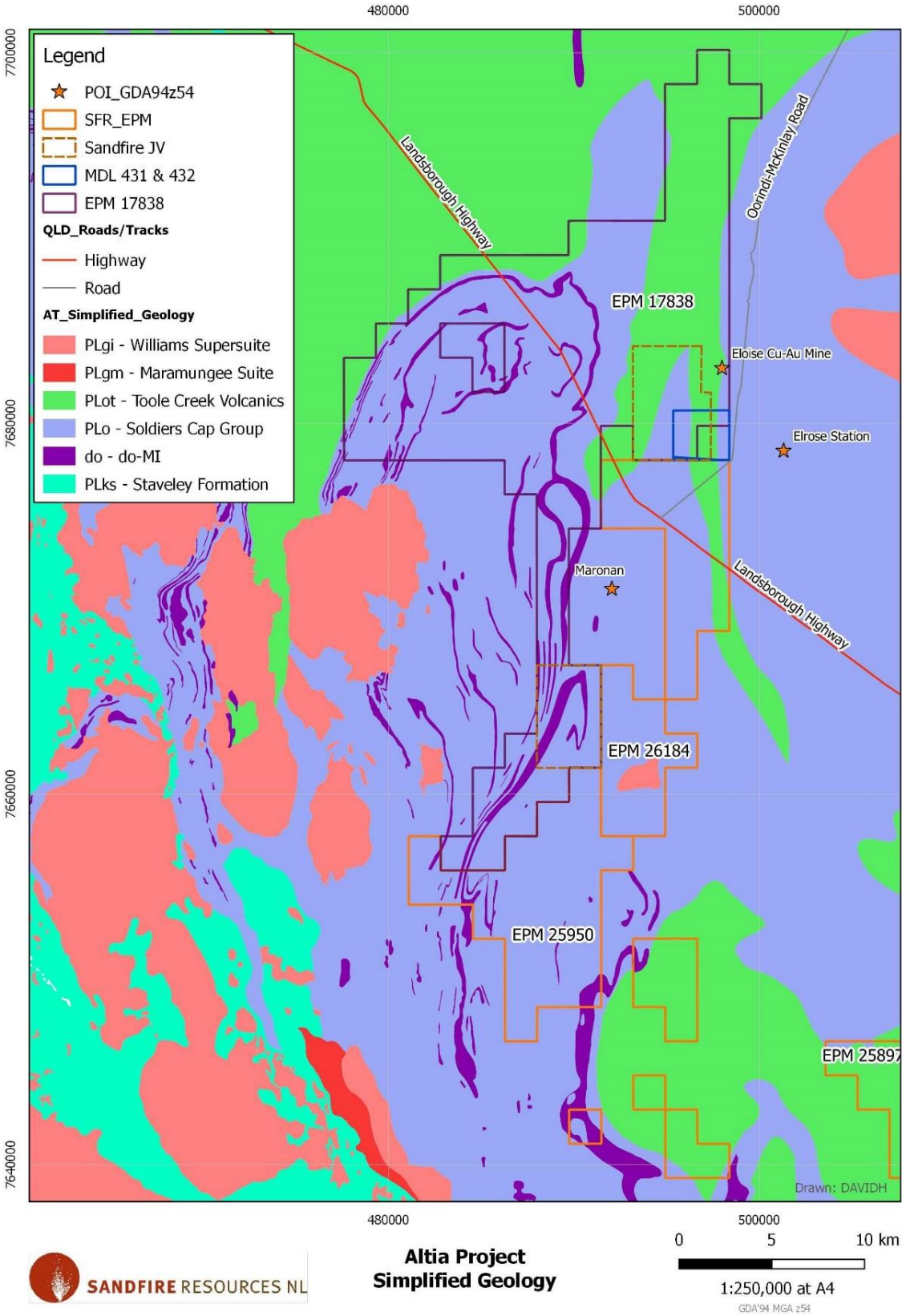

Figure 4-1: Altia Project - Simplified Solid Geology Plan

5. PREVIOUS EXPLORATION ACTIVITIES

5.1 1980's and 1990's Exploration

Modern exploration of the area was commenced by BHP in the early 1980's with the search for Broken Hill type (BHt) style and granitoid related base and precious metal mineralisation of the hydrothermal Iron-Oxide-Copper-Gold (IOCG) type. Geophysical exploration techniques were used particularly in areas of cover, with drilling of an EM anomaly in 1987 resulting in the discovery of the buried Eloise copper-gold deposit. By 1991, BHP had outlined resources at Eloise of 3.2million tonnes at 5.8% copper, 1.5g/t gold and 19 g/t silver.

Exploration work by BHP continued on regional targets up until 1993. After the decision by BHP to divest Eloise, MIM conducted an intensive diamond drilling program to evaluate the upper part of the orebody, with MIM ultimately deciding not to proceed with its option to purchase the deposit.

Amalg Resources NL (Amalg) purchased Eloise in 1994, with mine development beginning in late 1995. Amalg's work to 1996 focused on exploration at the mine, with only small diamond and percussion drilling programs at the Roberts Creek and Sandy Creek Prospects on EPM17838 outside of the JV areas.

RGC Exploration entered into a joint venture to explore the EPMs (exclusive of the Eloise mining leases) in 1996. Exploration emphasized geochemical exploration techniques, with the additional use of an in-house induced polarization technique in areas of cover.

Subsequent to RGC's withdrawal in 1998, Amalg conducted limited off-lease percussion and diamond drilling programs at Eloise South and Altia, resulting in several encouraging intersections of lead and zinc at Altia, and confirmation that the style of mineralisation was of a BHt - Cannington sediment-hosted lead-zinc-type.

5.2 2000s and 2010s Exploration

During the period 2003-2008 Breakaway conducted exploration including substantial diamond drilling programmes at Altia that led to the definition of an inferred resource of 5.96Mt @ 3.9% lead, 0.5% zinc, and 40ppm silver.

BHP Billiton farmed into the Altia prospect area in about 2009, drilling three deep diamond holes in an unsuccessful attempt to significantly upgrade the resources outlined by Breakaway. Subsequent to BHP Billiton's withdrawal in 2012, Sandfire Resources farmed into a larger area than that covered by the BHP Billiton JV, with the view to test not only the Altia Prospect for Lead-Zinc mineralisation but also test the Boralis and Capricorn Prospects, which had had little exploration done on them since the early work by BHP.

Sandfire reviewed the regional geology, geophysics and settings for IOCG and BHt mineralisation and previous exploration, including geochemical studies on previous drilling results and geophysical modelling. In particular following the JV agreement, ioGlobal Consulting reviewed the previous drilling at and around the Altia Project and identified some 3D trends and G. Mackee from the GeoDiscovery Group compiled new 3D inversions of gravity and magnetic data

Following the grant of EPM19832 in 2012 and EPM25388 in 2014, Sandfire further reviewed the compilation of historic exploration work. Historical AC and diamond drilling at the Altia South, Landsborough, Corona, and Ionised Prospects was ground truthed during April 2014 and data validated before input into project database. Soil sampling at Bull Creek West is also shown on the April 2014 Data Compilation Figure 5-1.

Subsequently Sandfire carried out exploration over two field seasons 2014 and 2015. Infill gravity surveys were carried out in two phases: May and September 2014, at 100m x 100m stations, and

integrated with previous gravity coverage on the northern Landsborough Prospect area. Follow-up AC drilling was completed at several copper-anomalous occurrences. Infill soil sampling at 100m x 40m spacing was carried out with geological mapping and rockchip sampling on the southern Australis Prospect area. These programs are reported in the respective 2015 Annual Reports for EPM19832 (C. Sherriff, 2015) and EPM25388 (C. Sheriff and A. Wynne, 2015).

Exploration activities within the 2016-2017 period delineated several airborne magnetics trends of interest, and soil anomalies. Review of the 2016 airborne magnetics highlighted several places where magnetic inversion modelling might provide further information. The 2016 airborne magnetic survey covered multiple tenements, including EPM25950, and was submitted whole to the Geophysics Department of the Queensland Geological Survey in early 2018 independent of statutory reporting. The aeromagnetics delineated the continuation of a magnetic trend from Eloise and Altia into the northern portion of tenement EPM25950, on the Landsborough Prospect area. This area required a review of historic drilling and available data to appropriately target the trend.

Mapping of the Aurora Prospect, which represents the most coherent soil anomalism within the southern Australis Prospect area delineated several quartz veins and gossanous zones. However, no obvious drill targets were generated by the mapping and further review was required.

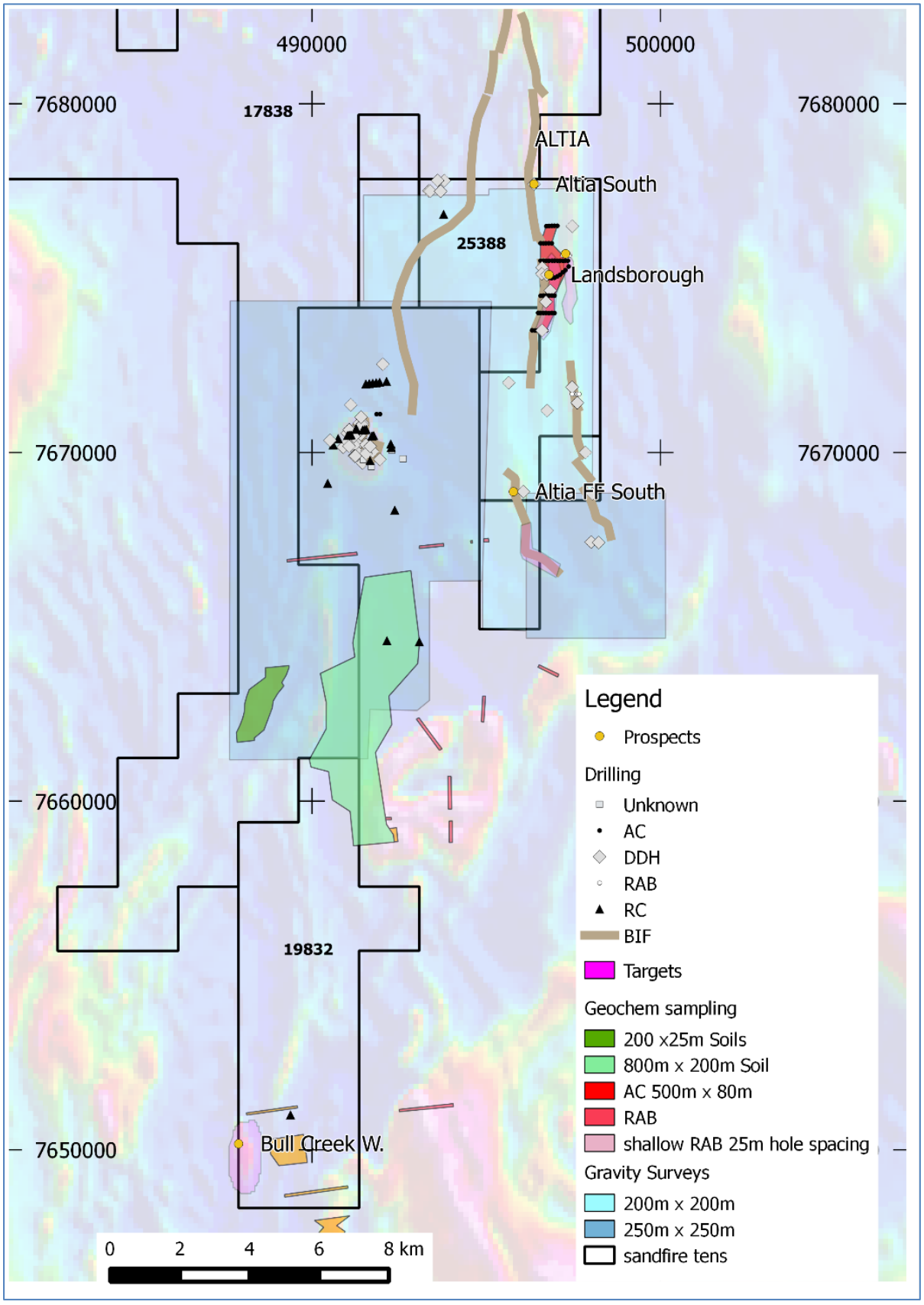

Figure 5-1: Altia Project EPM25950 – Previous Exploration Data Compilation April 2014

6. CURRENT EXPLORATION ACTIVITY

Work completed on the tenement within the current reporting period includes several prospectivity and geological reviews, the drilling of nine drillholes, DHEM on four drillhole, Petrology on two drillholes, a MLEM-FLEM survey and collection of 10 rockchip samples. Activities are detailed below and data, where applicable, is appended to this report.

Table 6-1: Exploration Activities Summary Table

Activity	Type	Quantity
Drilling	RC	4 drillholes for 738m
	Diamond (with RC pre-collars)	5 drillholes for 2336.8m (including precollars)
Petrology		9 samples from 3 drillholes
Surface Sampling	Rockchip	10
Assays	Chip, Core	659 samples for 1020.2m
Geophysics	DHEM	4 drillholes
	MLEM	8.9km in 5 lines for 94 stations
	FLEM	3.15km in 4 lines for 78 stations

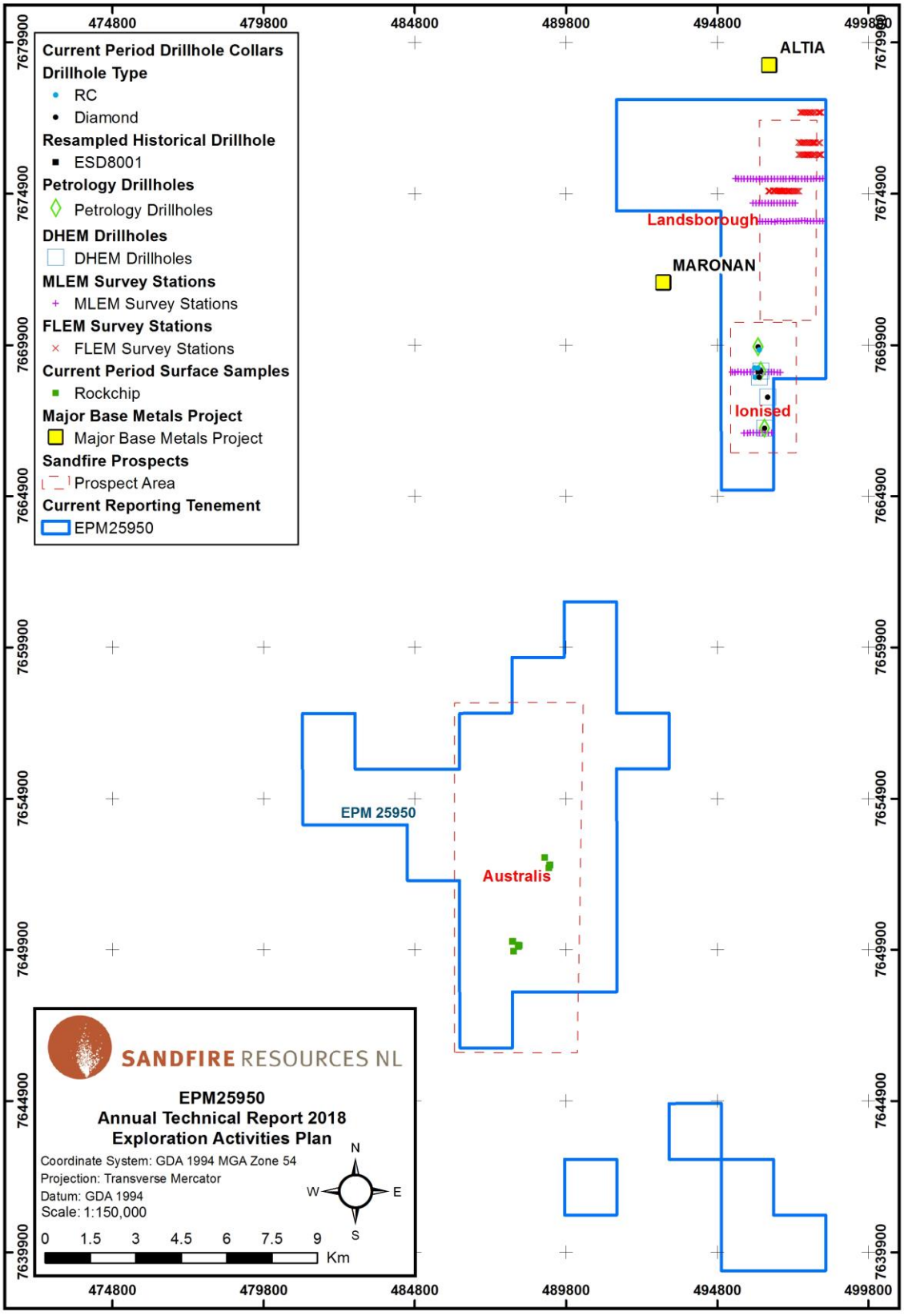

Figure 6-1: 2018 Altia Tenement EPM25921 Exploration Activities Index Plan

6.1 Technical Reviews

6.1.1 BHT & IOCG Review

Within the current reporting period the company undertook a desktop study of the Iron Oxide Copper Gold (IOCG) and Broken Hill Type (BHT) prospectivity and mineralising models used by the company for exploration across their Queensland tenure. The reviews considered open file and company geological, geophysical, geochemical and drilling datasets. The aim was to define geological features within Sandfire's tenure relevant to locating BHT and IOCG mineralising systems (Figure 6-2). The review noted that gravity-only targets representing non-magnetic BHT systems look to be underexplored within the area and opportunities exist to further target these. Furthermore there remained some un-resolved zinc-lead geochemical anomalies associated with amphibolites in the overall area.

Specifically relating to the Altia project and EPM25950 it was noted that the review could identify no additional clear BHT targets to those that Sandfire had already identified. Observations noted by the review and summarised below largely reinforce the existing areas of interest that Sandfire has outlined.

At Altia there are several interesting higher amplitude, short strike length magnetic features which remain undrilled south of Altia on Sandfire's tenure. The review noted these to be within a favourable gravity setting for BHT mineralisation but anomalism in shallow aircore on the Landsborough prospect nearby shows copper anomalism (up to 770ppm) rather than zinc-lead. Furthermore there is a magnetic trend extending south from the Altia/Eloise area through Sandfire tenure which the review noted to be associated with copper anomalism south of Eloise and a conductor in recent Sandfire EM work. This trend is the same as identified in the 2016 airborne magnetic survey (Section 5.2).

6.1.2 Structural Review

Within the current reporting period the company undertook a desktop study of the structural and stratigraphic framework of the company's Queensland tenure with the aim of identifying IOCG and BHT targets or prospective horizons, structures or zones. The review considered open file, state geological survey and company geological, geophysical, geochemical and drilling datasets. The review also considered previous targeting models which utilised neural networks and weights of evidence.

BHT/Cannington style targets occur in favoured stratigraphic positions near the top of coarser rift cycles, commonly with intercalated mafics, and basinal IOCG deposits share a similar position. This model is overprinted by the complexity of the geological sequence underlying Sandfire's tenure with a protracted structural history of rifting, basin inversion, complex folding and faulting spanning brittle to ductile conditions over approximately 260 million years and at least four events. In addition the rocks have undergone significant and variable metamorphism and a high proportion of the target stratigraphy is under younger cover.

6.1.3 Prospect Review, Targeting & Ranking

Data and interpretations compiled and acquired within current and preceding reporting periods have been used within the period to review, rank and generate targets over a number of existing target areas within the Altia project.

The review and interpretation of the 2016 airborne magnetics in the prior period highlighted the continuation of a magnetic trend interpreted as concealed 'lead belt stratigraphy' from Eloise and Altia into the northern portion of tenement EPM25950, to the Landsborough and Ionised prospects (Figure 6-2). This trend was subject to review, which identified anomalous geochemistry in historic drilling and evolved into full scale targeting. This feature was the focus for field activities in the current reporting period and as detailed below in sections 6.2-6.3 and 7 this work has led to the delineation of BHT indicators over a 2.8km strike length in the Ionized prospect.

6.1.4 Surface Sampling

Within the period ten rockchip samples were taken during reconnaissance at the Australis prospect. The samples did not detect significant anomalism with maximum values returned of 85ppm copper, 107ppm zinc and 58ppm lead but require further interpretation to asses ratios and pathfinders.

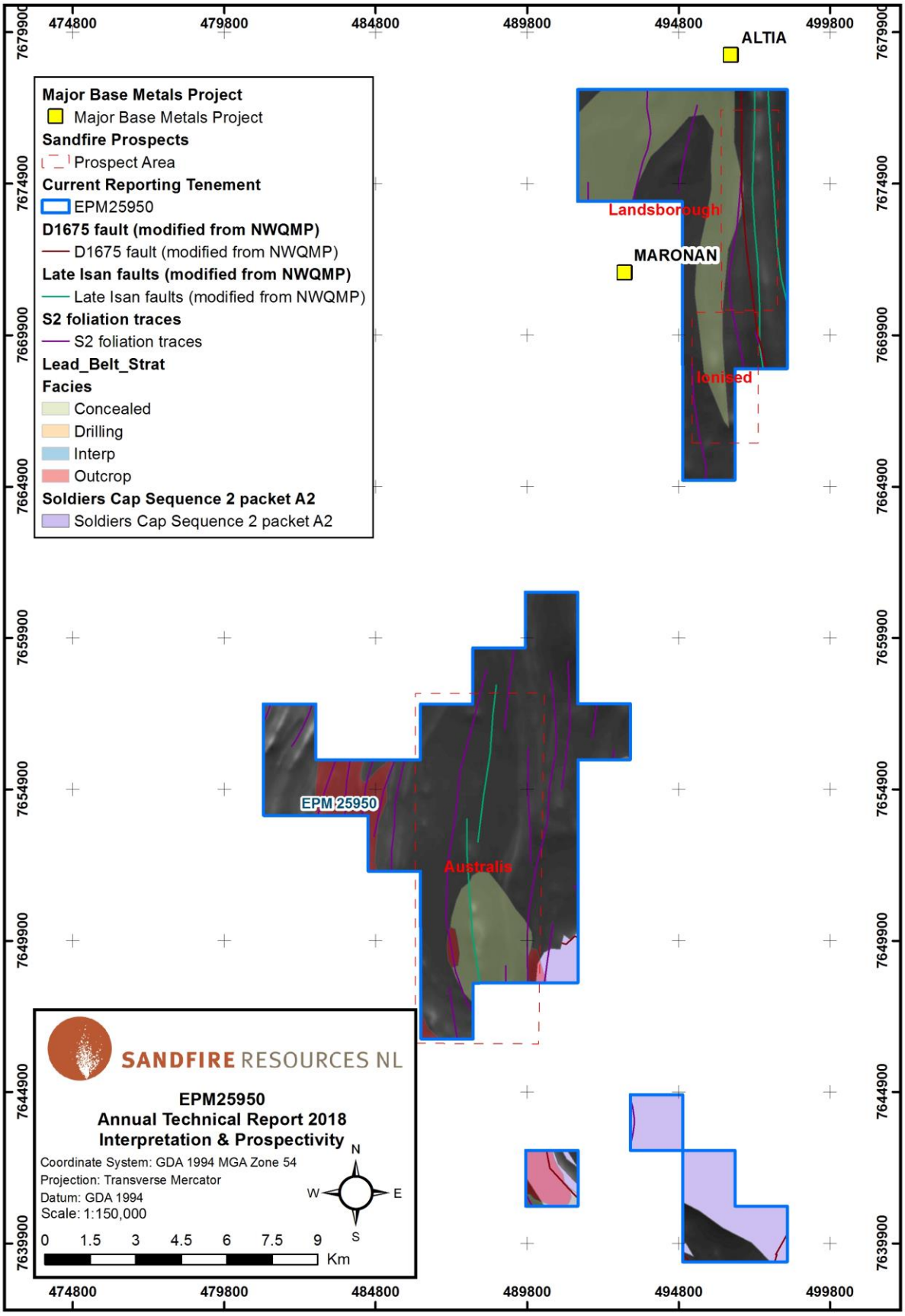

Figure 6-2: Altia Tenement EPM25950 IOCG & BHT Prospectivity and Targeting Features

6.2 Geophysics

6.2.1 Reprocessing of Previous Geophysical Data

Within the prior period available historic gravity data were reviewed, collated and reprocessed. Within the current period Sandfire's geophysical consultants Newexco reprocessed local and regional subsets of the compiled gravity data to ensure the imagery held by the company is of the best possible quality for both regional (Figure 6-3) and tenement scale interpretation (Figure 6-4).

6.2.2 Downhole Electromagnetic Surveys

Within the current reporting period four drillholes, 17IZ001, 17IZ003, 17IZ004, and 17IZ005, were surveyed using downhole electromagnetic survey (DHEM) techniques. All four drillholes were drilled within the current reporting period and are further detailed in section 6.3. Small, off-hole conductors were detected in two of the four drillholes surveyed (17IZ001 & 17IZ003).

A single well defined anomalous response was recorded centred at 360 m down-hole in drillhole 17IZ001. Geophysical interpretations by Newexco indicate the source is oblique to the hole and mostly below, and suggests that the feature is a result of the intersection of two horizons around 355m and 370m.The relatively weak conductance for the model is not consistent with massive or matrix pyrrhotite. Comparison of EM plates to down hole lithology suggests that the response may be the result of a thin, semi massive quartz – pyrrhotite – pyrite - chalcopyrite breccia.

A high frequency response was recorded centred at 205 m downhole in drillhole 17IZ003 with a moderate overburden signal. Geophysical interpretations by Newexco (Newexco Services Pty Ltd) indicate the source is off-hole; however, it is still possible that some indication of the source mineralisation, albeit, thinner and weaker may have been intersected based on the proximal high frequency response. The clear negative-positive cross-over in Bv is consistent with the source left of hole. The conductance is higher than the neighbouring holes although it remains inconsistent with massive or matrix pyrrhotite. The source is small, around 30 x 40 m, and proximal to or on-hole. Comparing the conductor to the down hole lithology indicates that the response may be the result of a quartz – pyrite vein breccia.

6.2.3 Moving Loop Electromagnetic Surveys

Within the current reporting period a Moving Loop Electromagnetic (MLEM) survey was completed over the Landsborough and Ionized prospects. These surveys aimed primarily to investigate historically identified conductors in proximity to anomalous Cu mineralisation.

At the Ionised prospect, MLEM stations on 100 m station spacing were observed along 2 profiles encompassing a total of 2.5 line-kilometres. No anomalous response associated with a bedrock conductor was observed.

At the Landsborough prospect, a total of three profiles of moving-loop EM at 100 m station spacing, and one profile of fixed-loop EM were completed. Anomalous responses were observed on all four lines. These are interpreted to be hosted by a strike extensive conductive horizon with a second discrete source in parallel to the east.

6.2.4 Fixed Loop Electromagnetic Surveys

Three lines of Fixed Loop Electromagnetic (FLEM) surveys were also conducted at the Landsborough prospect. These were targeted to cover the extrapolated horizons of the newly reported mineralised drilling intersection at Minotaur's Jericho prospect. The modelling of the data shows that the conductors dip 60 degrees to the west and matches the magnetic stratigraphy. Conductors appear to strike parallel to EPM25950 and probably dip beneath the tenement. Conductance of the northern plate exceeds 4000S, which is consistent with massive pyrrhotite. The southern model is less well constrained but also appears to be highly conductive.

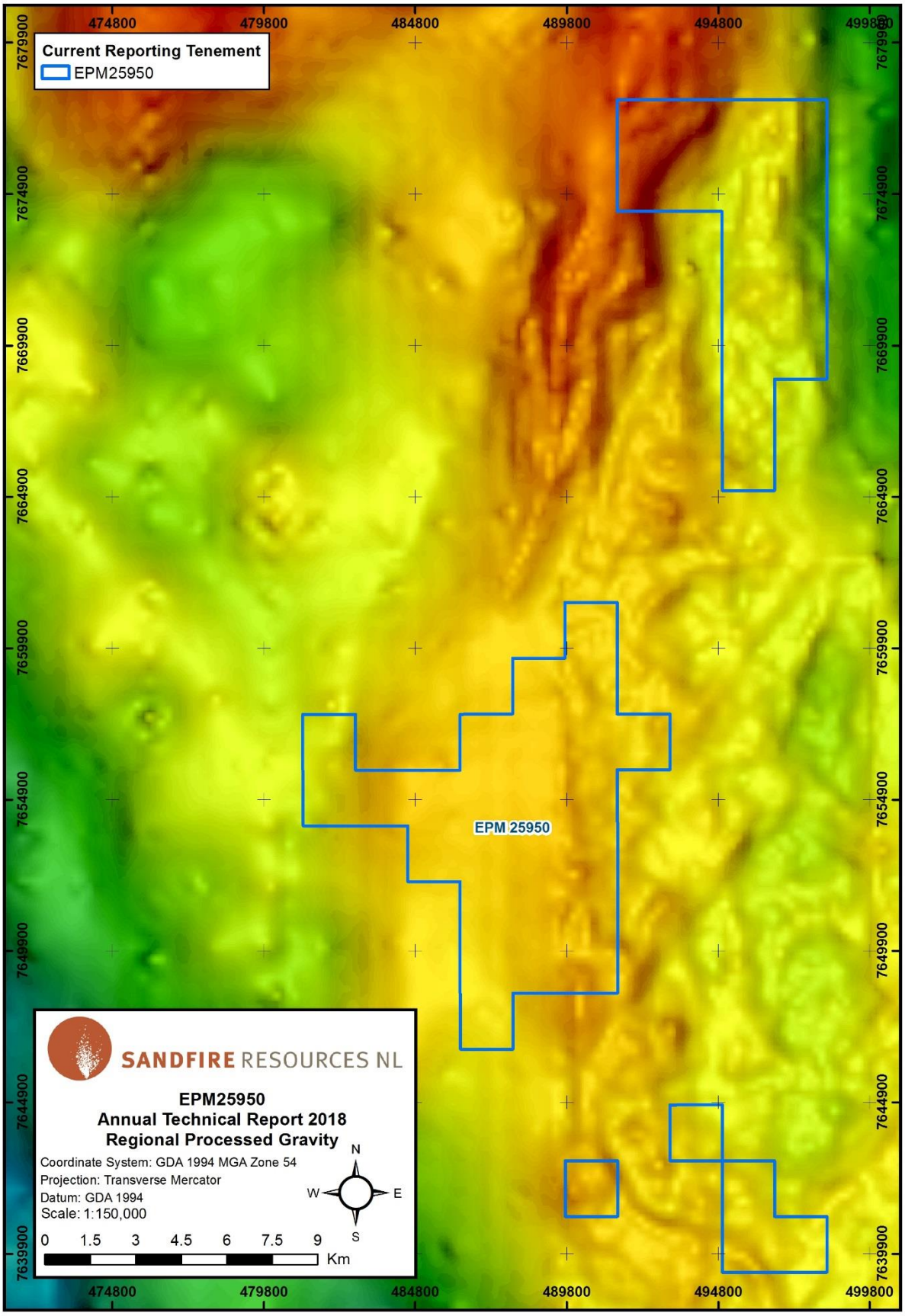

Figure 6-3: Altia Tenement EPM25950 Compiled and Regionally Processed Gravity Data

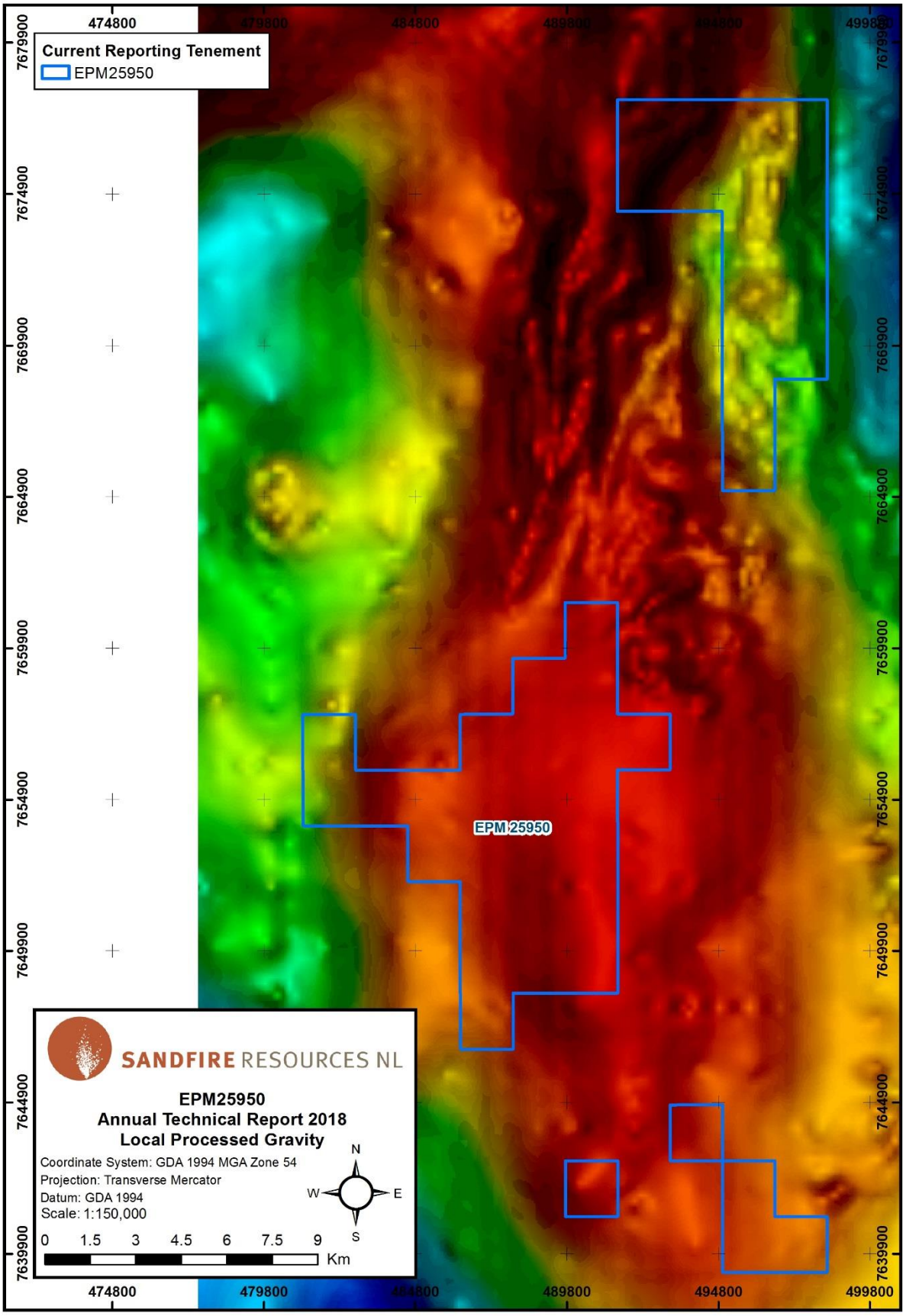

Figure 6-4: Altia Tenement EPM25950 Compiled and Locally Processed Gravity Data

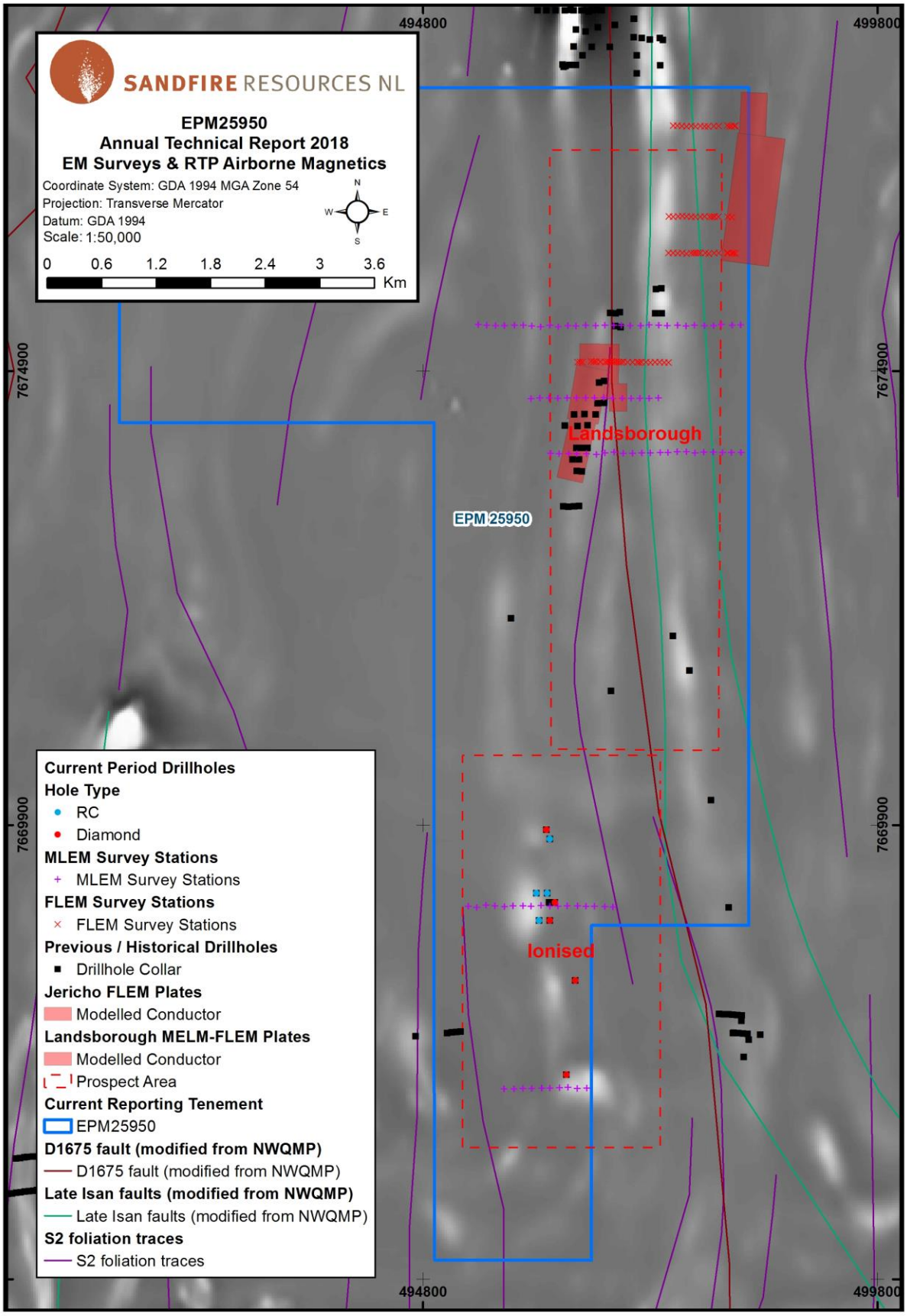

Figure 6-5: Altia Tenement EPM25950 2017 MLEM & FLEM

6.3 Drilling

Within the current reporting period Sandfire completed nine drillholes at the Ionized prospect. As detailed in Section 6.1.3 above this prospect is the southerly continuation of magnetic stratigraphy from the Altia and Eloise deposits and was the focus for exploration activities within the period.

The overall magnetic anomaly is approximately 3km long with four separate magnetic highs occurring along this trend. These individual highs were targeted by five diamond and four RC drillholes between September and November 2017 for a total of 3074.8 metres. These magnetic anomalies were postulated to be associated with BHT style mineralisation based upon review of previous drilling that revealed anomalous zinc mineralisation and non-coincident ironstones in this area. As detailed below the current drilling supports this hypothesis with BHT anomalism or indicators identified over a 2.8km strike length within this anomaly.

Table 6-2: Altia Tenement EPM25950 Ionized Prospect Drilling 2017

Hole ID	Drill Type	Easting (MGA z54)	Northing (MGA z54)	Dip	Azimuth (Grid)	Total Depth (m)
17IZ001	DDH	496254	7669050	-60	270	524.8
17IZ002	RC	496080	7668850	-60	270	180
17IZ003	DDH	496200	7668850	-60	270	339
17IZ004	DDH	496380	7667150	-60	90	453.5
17IZ005	DDH	496480	7668190	-60	270	638.6
17IZ006	DDH	496160	7669850	-60	270	380.9
17IZ007	RC	496050	7669150	-60	260	162
17IZ008	RC	496170	7669150	-60	260	180
17IZ009	RC	496200	7669745	-60	260	216
					Total:	**3074.8**

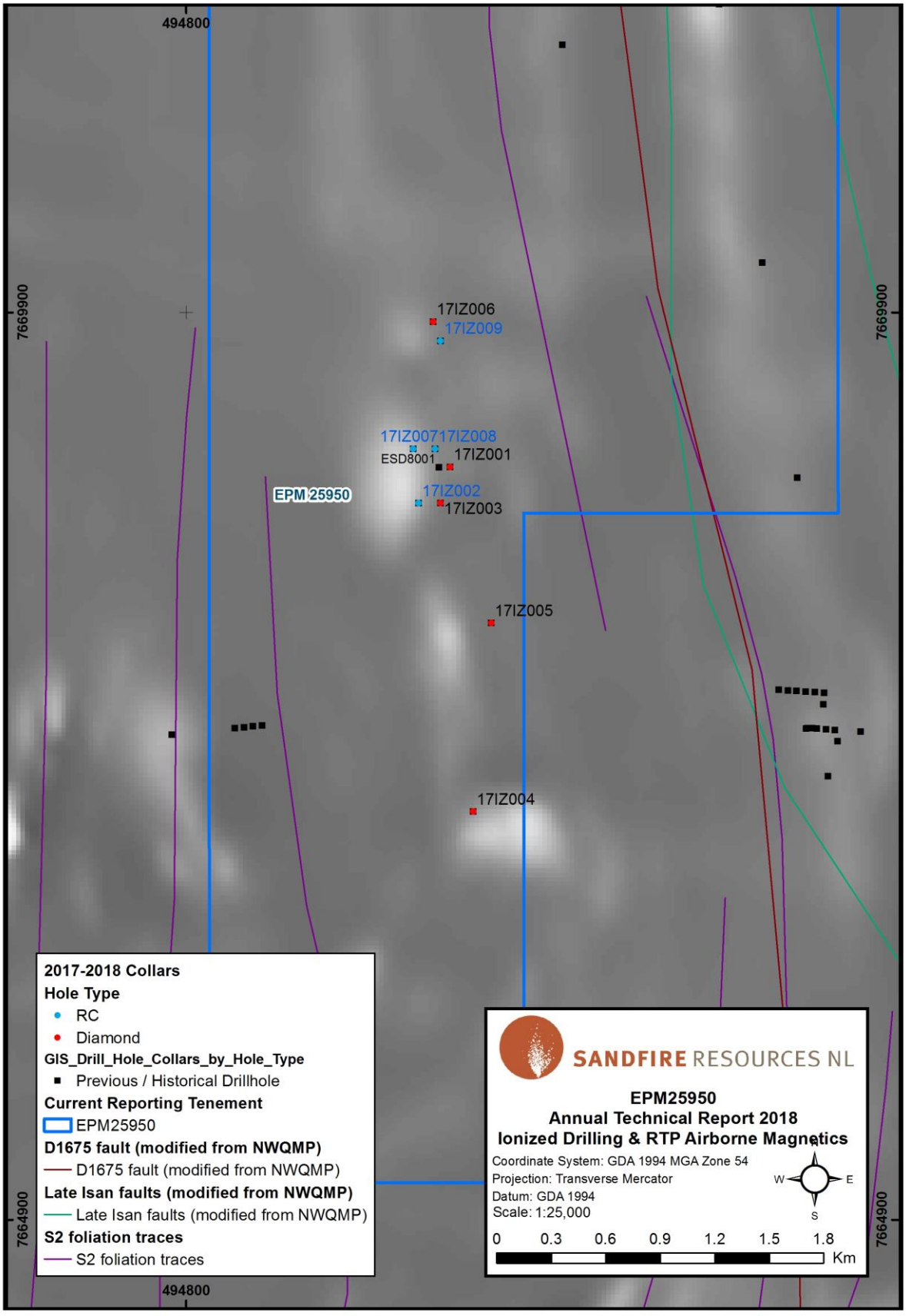

Figure 6-6: Altia Tenement EPM25950 Ionized Prospect Drilling 2017

6.3.1 Drilling, Sampling and Assay Details

Holes were drilled by Titeline Drilling using a Sandvik DE880 (UDR1200) drill rig. Cuttings from the RC drill holes were collected from the cyclone at one metre intervals in plastic retention bags and stored on-site. Assay samples of about 3kg weight were taken from the retention bags using a PVC spear, routinely comprising 3m composites or 1m samples in zones interpreted to be potentially mineralised. Samples were geologically logged and representative samples kept in chip trays. Cuttings from the RC precollars were collected in 3m intervals and placed on the ground for geological logging and sampling where appropriate. Samples consisted of grab samples of basement material, as well as a short interval above the basement- overburden contact. Sampling of HQ core was done using a manual core saw. Routine samples were ½ core; intervals of obviously mineralised rock and of BHt-style alteration were sampled continuously at 1m intervals; core outside of these zones was sampled at the rate of 1 metre per 3m of core. Assay quality control samples consisted of duplicate samples of ¼ core, blanks, and certified reference material inserted into the sample stream at the rate of approximately 1 QA/QC sample per 20 routine samples.

Samples were assayed for gold and 48 other elements by ALS laboratories in Townsville. Gold digestion from a 50gm sub-sample was by fusion at approximately 1100^0C in a mixture of fluxes, with element concentration determined by Atomic Absorption Spectrometry (AAS). Analysis for other elements used a sub-sample size of 0.25gm with the four acid digestion regarded as a "total digest"; element concentrations were determined initially by ICP Atomic Emission Spectrometry (ICP-AES), with selected elements analysed further with ICP-Mass Spectrometry (ICP-MS).

Summary of analytical methods and detection limits are given in the table below. Digital assay data is included in MRT format with this report.

Table 6-3: Summary Analyses and Analytes Used Within the Current Reporting Period

METHOD CODE	METHOD DESCRIPTION	ANALYTES (detection limit in ppm unless stated otherwise)
Au-AA22	Up to a 50g fire assay, AAS finish	Au (0.002)
ME-MS61	0.25gm sample size, multi acid digestion with HF acid, ICPAES and ICPMS finish	Ag(0.01), Al(0.01%), As(0.2), Ba(10), Be(0.05), Bi(0.01), Ca(0.01%), Cd(0.02), Ce (0.01), Co(0.1),Cr(1), Cs (0.05), Cu(0.2), Fe(0.01%), Ga(0.05), Ge(0.05), Hf (0.1), In (0.005), K(0.01%), La(0.5), Li(0.2), Mg(0.01%), Mn(5), Mo(0.05), Na(0.01%), Nb(0.1), Ni(0.2), P(10), Pb(0.5), Rb(0.1), Re(0.002), S(0.01%), Sb(0.05), Sc(0.1), Sn(0.2), Sr(0.2),Ta(0.05), Te(0.05), Th(0.01), Ti(0.005%), Tl(0.02), U(0.1), V(1), W(0.1), Y(0.1), Zn(0.5).

6.3.2 Ionized Prospect Drilling Summary Results

6.3.2.1 17IZ001

The first drillhole completed this season at Ionised, 17IZ001 (DDH), intersected moderate zinc/lead mineralisation in the form of sphalerite and galena with several intersections of gahnite, and chalcopyrite. The drillhole was designed to test for mineralisation down-dip of zinc anomalism intersected in historical drillhole ESD8001 (BHP). Assay results from 17IZ001 returned 55m at 1768ppm zinc from 189m depth in graphitic schist, calc-silicates and garnet psammites (Figure 6-7). In addition a late overprinting pyrrhotite and chalcopyrite semi-massive breccia was intersected at approximately 364m. Assays returned 11m at 1712ppm copper, including 1m at 0.456g/t gold.

6.3.2.2 17IZ002 & 17IZ003

The second hole 17IZ002 (RC) and third drillhole 17IZ003 (DDH) were drilled 200m to the south of 17IZ001 and were targeted to test the same magnetic anomaly and to test for strike and depth continuations of the BHt system encountered in the first drill hole. 17IZ002 & 17IZ003 failed to intersect the same anomalism as 17IZ001 and returned only pathfinder, low level zinc and manganese anomalism. It is possible that the initial interpretation of the strike of the stratigraphy around the targeted magnetic bodies is incorrect due to the presence of a set of northwest trending faults. Further interpretation and modelling is required.

6.3.2.3 17IZ004

Encouraging BHt stratigraphy was encountered in 17IZ004, the most southerly drillhole of the program, including 4 weakly mineralised BIFs, sillimanite-garnet alteration and garnet psammites. Assay results show a weakly anomalous zone of zinc and manganese above the basement contact and a highlight in basement of 4m @ 1932ppm copper from 197m in quartz-pyrite-chalcopyrite veins (Figure 6-8).

6.3.2.4 17IZ005

This hole failed to intersect a magnetic body sufficient to explain the magnetic anomaly it was targeted for. A small band of magnetite (0.2m) was intersected, however it is viewed as unlikely that this thin zone could have produced the anomaly targeted. Further interpretation is required but it is possible that either; there is a large change in dip direction to the west, or that the magnetic unit encountered is part of a highly variable system. The best assay result returned was 1m @ 4.19 g/t gold from 372m in a biotite schist.

6.3.2.5 17IZ006

Drill hole 17IZ006 returned weak zinc anomalism with assays including three separate one-metre intersections of greater than 400 ppm zinc. Lead values were not anomalous, however there was one zone of anomalous manganese (213-216.8m @ 6872ppm manganese, including 0.85m @ 10950ppm manganese). The drill hole intersected magnetite-quartz-apatite BIF layers flanked by thin garnet rock, and possible sillimanite-garnet alteration within a biotite schist. Interpretation of the sillimanite - garnet rock as indicative of BHt style alteration is tenuous, as the sillimanite-garnet rich rock is grossly similar to the remainder of the biotite schist sequence.

A shear zone intersected at 172m may be a major structure as logging revealed significant lithological changes either side of the zone, including differences in orientations of the various structural fabrics.

6.3.2.6 17IZ007

Drillhole 17IZ007 was terminated at 162m before the target depth of 180m due to excessive water in the drill hole made continuing with RC untenable. The targeted ironstone (BIF) was not intersected. Stratigraphy appears correct to host the ironstones and the last few meters of the drillhole are magnetic suggesting the drillhole may have terminated shortly above the target

ironstone formation. The best assay result returned from the drillhole was 6m @ 215 ppm zinc from 114m.

6.3.2.7 17IZ008

Drillhole 17IZ008 was collared 100m to the north of 17IZ001 to test for the presence and strike of anomalous zinc mineralisation intersected in drillhole 17IZ001. Drilling intersected the target horizon (a very fine grained graphitic quartz-biotite massive metasediment) between 78 and 124m. The assays results returned confirmed the extension of the anomalous zinc mineralisation encountered previously, with the drilling returning 71m @ 1443ppm zinc from 75m depth including 40m @ 2128ppm zinc from 86m depth.

6.3.2.8 17IZ009

The last drillhole of the campaign, 17IZ009, was targeted 100m south of the BIF intersection returned in 17IZ006. Basement was intersected at 92m and consisted almost entirely of biotite schist, with some interbedded biotite psammite from 198m to the end of hole at 216m. None of the rock is magnetic and no significant anomalous geochemistry was detected with the best assays returned being 6m @ 203 ppm zinc. The biotite schist sequence in 17IZ006 is 180m thick which raises the possibility that drillhole 17IZ009 may have drilled above the target horizon.

6.3.3 Resampling of Historical Drillholes

6.3.3.1 ESD001

Resampling of zones of BIF within historical drillhole ESD8001 was undertaken within the period to confirm the historical data. Assay results returned broadly confirmed the lack of anomalous zinc and lead mineralisation within the BIFs. However, two sections of a thin BIF from 337.5m returned 0.5m anomalous intercepts of 2800 ppm and 3540 ppm copper.

6.3.4 Petrological Study of Selected Samples for 2017 Ionized Prospect Drilling

Nine samples from drillholes 17IZ001, 17IZ004, and 17IZ006 were selected for petrographic examination by R.N. England. Samples were selected to hopefully yield information pertinent to a potential mineralising model for the prospect or to closer inspect features observed in core. Sample details, photographs and detailed descriptions are included in the petrographic report attached at Appendix 5.

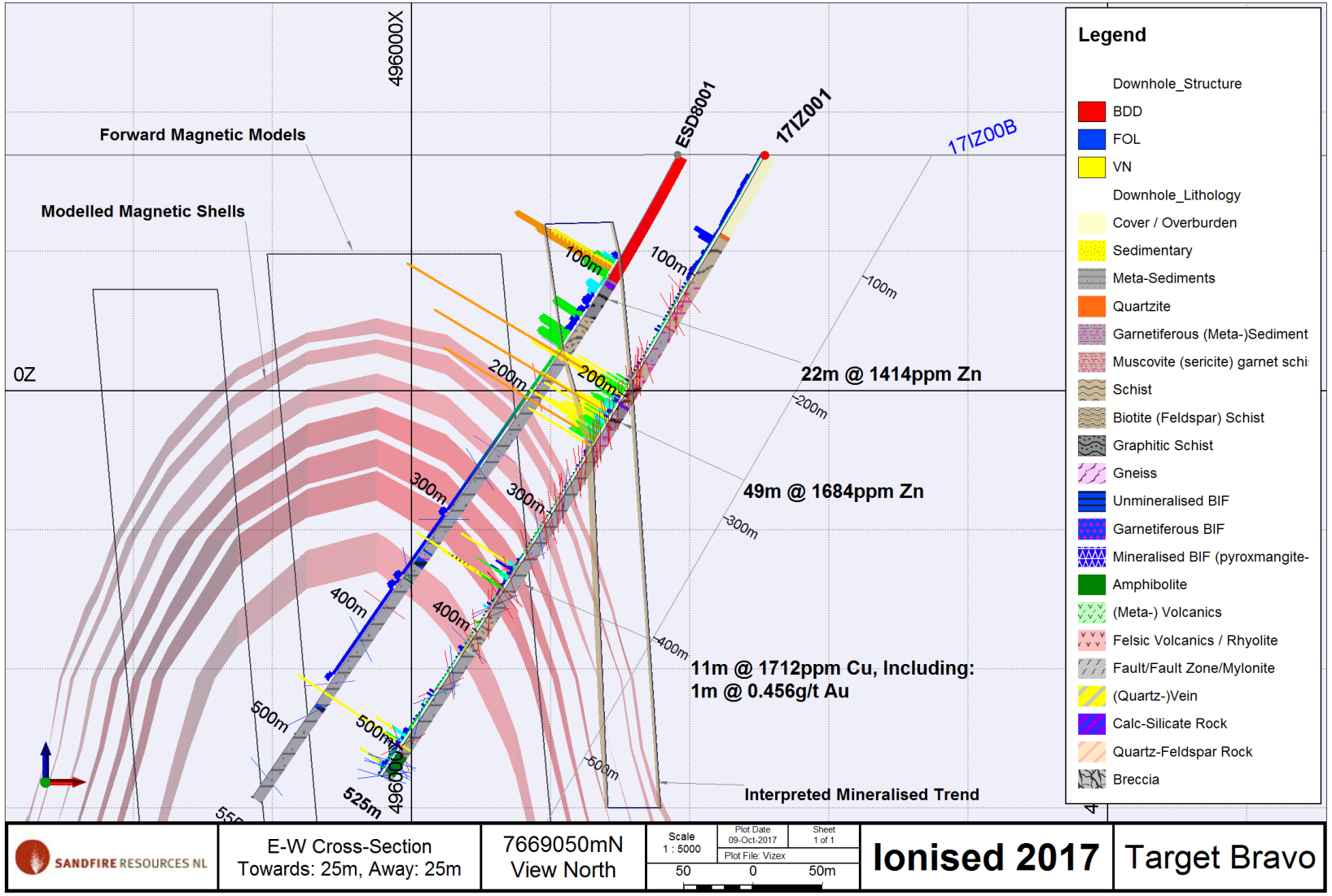

Figure 6-7: Drill hole 17IZ001 Cross Section

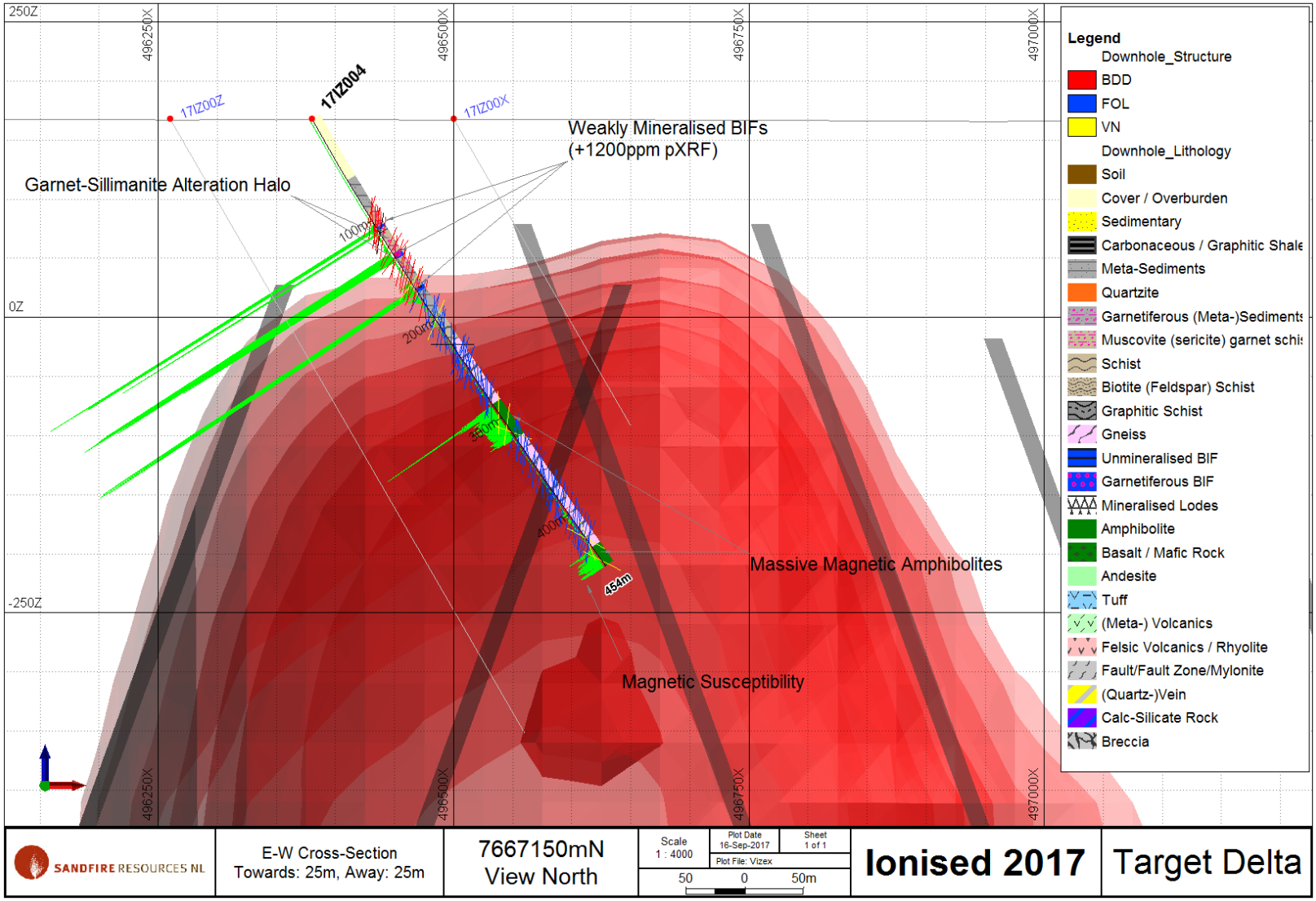

Figure 6-8: Drillhole 17IZ004 Cross Section

6.3.5 Results and Interpretation

6.3.5.1 Lithologies

Current drilling intersected a sequence dominated by psammite and schist (pelitic) lithologies in varying proportions, with minor thin BHt horizons and some ortho-amphibolite. Some of the sequence, particularly the biotite schists, have felsic segregations and thin pegmatitic bands, and have a gneissic appearance. Magnetic lithologies are a minor component of the sequence and further investigation is required to determine if the magnetic anomalies targeted can be explained by lithologies intersected. Depth to basement varies from approximately 50m to 80m vertical (60 to 97m downhole).

BHt lithologies including magnetite-amphibole-garnet +/- apatite BIF, garnetite, and garnetiferous psammite, occur dominantly within a thick biotite schist sequence. Biotite-muscovite-sillimanite-garnet schists similar to the alteration halo at Cannington are associated with some of the BHt horizons. However, as much of the biotite schist contains similar mineral assemblages, it can't be certain that these horizons are BHt-style alteration.

6.3.5.2 Structure

Structural fabrics are locally well developed and fairly consistent throughout the northern and central portions (drillholes 17IZ001-3, 17IZ005-9). Foliation (S1) is the most obvious fabric, dipping dominantly at a moderate to steep angle (about 70^0) to the northeast. Strong crenulation cleavage is common, with S2 orthogonal to S1, dipping at a moderate angle (60-70^0) to the north to north-northwest. Bedding is difficult to discern, and is assumed to be the contact between thinly interbedded psammite and schist units (originally sandstone-shale units). Bedding (S0) has a variable orientation, but is mostly sub-parallel to S1, dipping dominantly at about 70^0 to the northeast, but with some moderate dips to the north. In the southern part of the prospect area (drillhole 17IZ004), S1 is sub-vertical, dipping both to the west-northwest and east-southeast.

As described in section 6.3.2.4 above significant shear planes mark the contact between major lithological units in 17IZ05 and 17IZ06. In both instances the faults separate thick psammitic sequences from biotite schists. Fabrics in the fault zones suggest both early and late movements.

6.3.5.3 Geochemistry

Assays returned from BHt lithologies shows that there is at best weakly anomalous phosphorous with sporadic copper and gold, and very little lead, zinc, or manganese anomalism through the package overall.

Anomalous zinc occurs in a graphitic schist sequence in ESD8001 and 17IZ001 in the northern part of the prospect with intersections in the order of 52m @ 1800ppm zinc, with accompanying lead (250ppm) and manganese (3540ppm). The zinc occurs as fine grained brown sphalerite in layer-parallel lens and laminae, and in some fracture fill. This occurrence is not typical of BHt style mineralisation in the Eastern Succession lacking associated ironstone and garnet, and may be more of a Sedex- style of mineralisation.

Copper +/- gold anomalism occurs at some amphibolite-metasediment contacts. Within the Isa Block there are numerous small copper occurrences at the margins of amphibolites and this is not interpreted to be immediately significant. Low grade veinlets of a variable assemblage of copper, gold, lead and zinc minerals within psammitic lithologies is also a fairly common association and equally is not deemed immediately significant. Zones are variably copper or lead dominant with best intersections of 11m @ 1700ppm copper from 354m in drill hole 17IZ001 and 14m @ 188ppm lead from 216m in drillhole 17IZ004.

One example of gold with minor silver anomalism and without base metals within psammites is recorded within the drilling from the current period (17IZ005) and is interpreted to relate to late faulting.

7. CONCLUSIONS AND RECOMMENDATIONS

The new inputs of detailed magnetics, a structural interpretation and BHt and IOCG prospectivity analysis have significantly improved the understanding of the region and the critical factors for mineralisation.

The Ionised prospect drilling programme has successfully identified interpreted BHt lithologies, alteration and mineralisation along a strike length of 2.8km. Although no ore grade mineralisation has been discovered, the presence of the BHt indicators including BIF's, muscovite sillimanite schist (similar to the footwall to Cannington lodes) and garnet psammites, give strong encouragement that the targeted horizons at Ionised hold the potential for a discovery.

Further work that was suggested during the field season for the upcoming reporting period includes modelling of magnetic data, further drilling and potentially a gravity survey. However, the field program is in preparation and the planning of what will be achievable within the relatively short field season is yet to be determined.

Modelling of magnetic data would aim to constrain whether magnetic lithologies intersected in drilling are sufficient to account for the observed magnetic anomalies. A potential gravity survey would aim to decrease the current 250m^2 grid to a 100 x 50m measurement spacing. The area between drillholes 17IZ004 and 17IZ005 is currently interpreted to be the highest priority. A moderate sized BHt orebody should have an associated gravity anomaly and given that the depth of cover is <100m, a detailed gravity survey may be required to image it.

Further drilling could be targeted to more definitively resolve the source of the magnetic anomalies but this will be dependent on ongoing review of the results from the current report period and detailed targeting.

8. REFERENCES

Evans, R., and Wynne, A., 2016 Altia Project EPM25950 Annuam Mineral Exploration Report 2016, Sandfire Resources. Unpublished Report.

Reid, M., and Wynne, A., 2017 Altia Project EPM25950 Annuam Mineral Exploration Report 2017, Sandfire Resources. Unpublished Report.

Sheriff, C., 2015. Altia Project EPM19382 Annual Mineral Exploration Report 2015. Sandfire Resources. Unpublished Report

Sheriff, C., and Wynne, A. 2015. Altia Project EPM25388 Annual Mineral Exploration Report 2015. Sandfire Resources. Unpublished Report.

9. APPENDICES

9.1 Appendix 1: 2018 Rockchip Sampling Data

File Name: Surface Sample Data.zip

Note: The drillhole digital data is included in MRT TAB-delimited text format.

File Verification List:

File Name	File Format	Contents / Description
EPM25950_A_SSAMP	.txt	Surface Sample Locations and assay results
EPM25950_A_SQAQC	.txt	Surface sample QA/QC assays

9.2 Appendix 3: 2018 DHEM Data & Report

File Name: DHEM.zip

File Verification List:

File Name	File Format	Contents / Description
NX22519_17IZ001,3-5 DHEM Interp	.pdf	Acquisition, processing and interpretation report
17IZ001_1	.tem	DHEM data
17IZ001_2	.tem	DHEM data
17IZ001_DHEM_Plate	.dxf	DHEM modelled conductor
17IZ004_1	.tem	DHEM data
17IZ004_2	.tem	DHEM data
17IZ003	.tem	DHEM data
17IZ003_DHEM_Plate	.dxf	DHEM modelled conductor
17IZ005	.tem	DHEM data

9.3 Appendix 3: 2018 MLEM/FLEM Data & Report

File Name: MLEM-FLEM.zip

File Verification List:

File Name	File Format	Contents / Description
ISACL_2017_ION_EM_Report 964	.pdf	MLEM-FLEM acquisition, processing and interpretation report
FLEM_2017_LAN_stns	.cpg, .dbf, .prj, .qpj, .shp, .shx, .TAB	Landsborough FLEM Station Location
LAN_FLEM_7675000	.tem	Landsborough FLEM data
LAN_FLEM_7676200	.tem	
LAN_FLEM_7676600	.tem	
LAN_FLEM_7677600	.tem	
LAN_MLEM_2017	.tem	Landsborough MLEM data
LAN_2017_EM_plates_final	.dbf, .dxf, .shp, .shx	Landsborough Modelled Conductors
MLEM_2017_LAN_stns	.cpg, .dbf, .prj, .qpj, .shp, .shx, .TAB	Landsborough MLEM Station Location
ION_MLEM_2017	.tem	Ionized MELM data
MLEM_2017_ION_stns	.cpg, .dbf, .prj, .qpj, .shp, .shx, .TAB	Ionized MELM Station Locations

9.4 Appendix 4: 2018 Digital Drilling Data

File Name: Drilling Data.zip

Note: The drillhole digital data is included in MRT TAB-delimited text format.

File Verification List:

File Name	File Format	Contents / Description
EPM25950_A_COLL	.txt	Collar Locations
EPM25950_A_COMBINEDGEOLOGY	.txt	Downhole geology
EPM25950_A_DHASSAYS	.txt	Downhole assays
EPM25950_A_DHHXRF_ASSAYS	.txt	Downhole pXRF data
EPM25950_A_MAGSUS	.txt	Downhole Magsus data
EPM25950_A_METADATA	.txt	Drillhole Metadata
EPM25950_A_QAQC	.txt	Downhole QA/QC assays
EPM25950_A_SAMP	.txt	Downhole sample metadata
EPM25950_A_SURV	.txt	Downhole survey data

9.5 Appendix 5: 2018 Petrology Report

File Name: 2017 Ionised Petrography.zip

Note: The pdf report includes hyperlinks which are relational and require the photos and report to be stored as is. Please see the report for further details.

File Name	File Format	Contents / Description
Petrographic Notes Ionised 2018_01	.pdf	Petrographic report by RN England for Sandfire Resources NL
DSCN3112	.jpg	Thin section billet photographs and thin section photomicrographs
IMG_9900	.jpg	
IMG_9906	.jpg	
IMG_9908	.jpg	
IMG_9913	.jpg	
IMG_9914	.jpg	
IMG_9915	.jpg	
IMG_9918	.jpg	
IMG_9919	.jpg	
IMG_9920	.jpg	
IMG_9921	.jpg	
IMG_9922	.jpg	
IMG_9923	.jpg	