MINERAL EXPLORATION PARTIAL SURRENDER REPORT

BORROLOOLA PROJECT EL25591 Year 3

TENEMENT HOLDER: SANDFIRE RESOURCES NL

OPERATOR: SANDFIRE RESOURCES NL

REPORTING PERIOD: 13 July 2007 to 12 July 2010

1:250,000: BAUHINIA DOWNS (SE5303)

1:100,000: Batten (6065)

Commodities: Cu, Pb, Zn, Diamonds

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Authors: Wynne, A., Hansen, A., Lauricella, P.

TITLE PAGE AND BIBLIOGRAPHIC DATA SHEET

Project Name	Borroloola Project
Combined Reporting Number	121/09
Tenement Numbers	EL25591
Tenement Operator	Sandfire Resources NL
Tenement Holder	Sandfire Resources NL
Report Type	Partial Surrender
Report Title	Mineral Exploration Partial Surrender Report Borroloola Project EL25591 Year 3
Report Period	13 July 2007 to 12 July 2010
Author	Wynne, A., Hansen, A., Lauricella, P.
Date of report	24 January 2011
1:250,000 map sheet	BAUHINIA DOWNS (SE5303)
1:100,000 map sheet	Batten (6065)
Target Commodity	Cu, Pb, Zn, Diamonds
Keywords	Orthophotography, Surface Geochemistry, Re-processed Airborne Geophysics
Prospects drilled	
List of Assays	

ABSTRACT

Location	Borroloola, NT
Geology	Middle Proterozoic sediments of the Tawallah, McArthur and Roper Groups of the McArthur Basin, the Scrutton Volcanics, and Cretaceous and Tertiary cover sediments.
Work done	Air Photographs acquisition, Orthophotography. Contouring of Historical Surface Geochemistry. Re-processing of Historical Airborne Geophysics.

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Digital Data

Digital Data on CD: Technical Report and Figures in PDF format.

1 Summary

This partial surrender report details mineral exploration conducted by Sandfire Resources NL on two further sub-blocks surrendered from Borroloola Project Exploration Licence EL25591 from 12th July 2010 (gazettal on 11th August 2010). Sandfire considered the area surrendered to have been prospective for base metals: copper, lead and zinc, and for diamonds.

Activities undertaken on EL25591 during the period between grant of the tenement on 13th July 2007 and the date of partial surrender of two sub-blocks on 12th July 2010 were:

Exploration Activity	**EL25591**
Air photo acquisition and processing to orthophotos	✔
Acquisition and Re-processing of Historical Airborne Magnetic – Radiometric Surveys	✔
Acquisition and Contouring of Historical Surface Geochemistry Surveys	✔

Table 1 Exploration Activities

2 Location

The Borroloola Project is centred about 660 km southeast of Darwin in the “Gulf Country” of the Northern Territory, Australia. On the eastern boundary are the township of Borroloola and the McArthur River (HYC) Mine. To the south is Cape Crawford and to the northwest is Roper Bar.

Access is good to some parts via bitumen and unsealed roads. From Darwin access can be gained by travelling about 590 km southwards along the Stuart Highway to Daly Waters and then eastwards along Carpentaria Highway to Cape Crawford (270 km). The unsealed Nathan River Road and Ryan’s Bend road cross some tenements. Access deteriorates significantly in the northern parts of the project area.

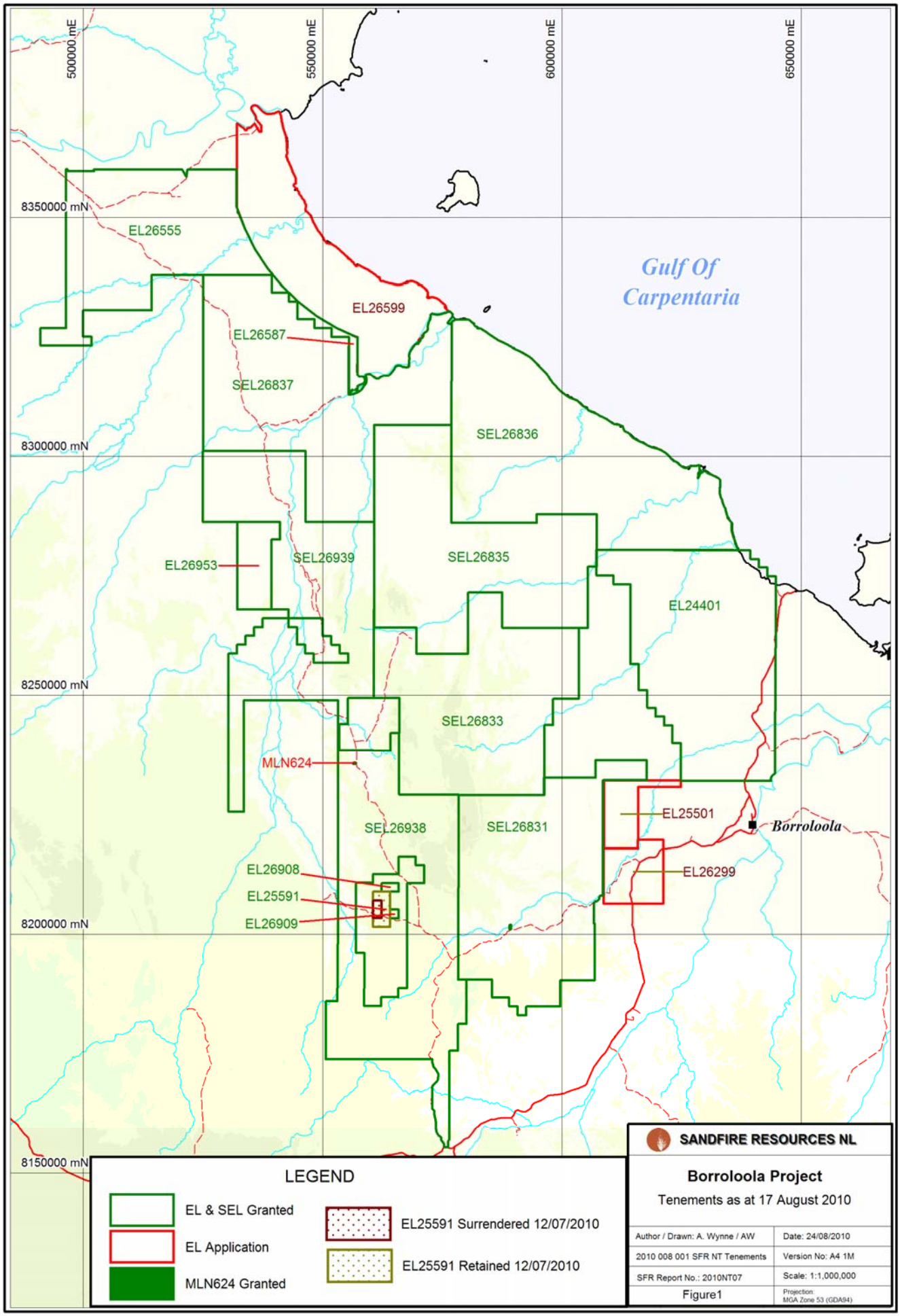

Figure 1 Tenement Location

3 Tenure

EL25591 was applied for on 11th September 2006 and granted on 13th July 2007 for a period of six years. It was previously incorporated into the Reporting Group 068/09, which was updated to Reporting Group 121/09 on 15th July 2009 upon the grant of Substitution Exploration Licenses SEL26831, 26833, 26835, 26836, 26837, 26938 and 26939. See Figure 1 for tenement locations as at 17th August 2010.

Previously, three sub-blocks had been surrendered, effective from the second anniversary, 12th July 2009 (gazettal on 16th December 2009), as detailed in the Mineral Exploration Partial Surrender Report Borroloola Project EL25591 (Wynne et.al. 2009P).

Table 2 summarises the details of two surrendered and six retained sub-blocks for EL25591 at the third anniversary, 12th July 2010 (gazettal on 11th August 2010).

Tenement	Graticule Sub-blocks Surrendered	Graticule Sub-blocks Retained
EL25591	SE53187U, SE53187Z	SE53187P, SE53188L, SE53188Q, SE53188V, SE53259E, SE53260A

Table 2 Tenement Status

4 Native Title

The Borroloola project area tenements are subject to several Native Title Claims that have been scheduled and registered with the Federal Court. The distribution and extent of these is shown in Figure 2.

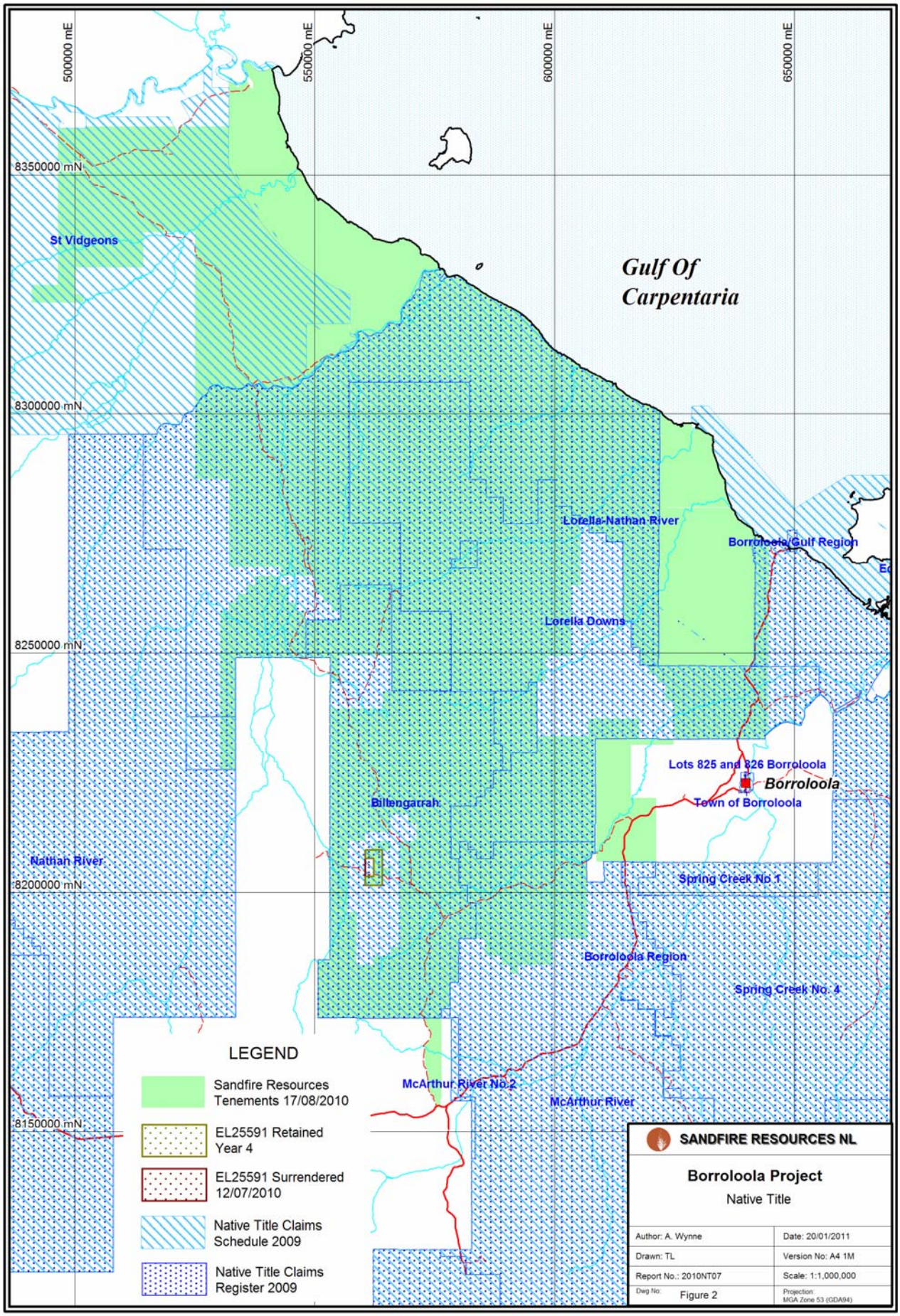

Figure 2 Aboriginal Claim Areas

5 Geological Framework

The McArthur Basin is a large sedimentary basin with an exposed area of about 180,000 km². Most of it lies within the northeastern Northern Territory, and it extends over the border into the state of Queensland. Thick marine and non-marine sedimentary rocks were deposited from the late Palaeoproterozoic to the early Mesoproterozoic (1800-1430 Ma).

The basin also contains volcanic rocks and related intrusive igneous rocks and is a prime target area for SEDEX type economic sulphide deposits. This type of deposit hold 50% of the world's zinc and lead reserves, and make up around 25% of world zinc and lead production. In particular the McArthur Basin hosts the world-class McArthur River (HYC) zinc-lead-silver deposits.

The geology of the Borroloola Project area within the Batten Fault Zone consists of middle Proterozoic sediments of the Tawallah, McArthur and Roper Groups of the McArthur Basin. They rest unconformably on the Scrutton Volcanics and are partially concealed by Cretaceous and Tertiary deposits.

During the Cretaceous Period, around 90 to 100 million years ago, the coastal areas along the Gulf of Carpentaria were inundated by a shallow sea. Manganese accumulations were formed in embayments close to the shoreline of this sea in a series of episodes of deposition. The largest of these is on Groote Eylandt, a large island located within the Gulf of Carpentaria, 130kms northeast of Sandfire Resources' tenements. This style of Manganese occurrence is the target of exploration in the northern tenements of the Borroloola Project.

Also in the north of the Borroloola Project tenements, a target exists for Uranium where the McArthur Basin basal sediments overlie, in part, coeval sequences of acid volcanics and granites, elsewhere host settings for major unconformity related uranium deposits.

Diamonds have been a target of exploration in the southern tenements of the Borroloola Project where there has been recovery of multiple macro-diamonds, as well as micro-diamonds and kimberlitic indicator minerals from alluvial samples. The diamonds and indicators were recovered from creeks surrounding a remnant Cretaceous plateau within surrounding McArthur Group sediments. This situation is analogous to the Merlin kimberlite cluster where Devonian-aged kimberlite pipes may occur beneath Cretaceous cover rocks.

6 Work undertaken by Sandfire

6.1 Aerial Photography

Four hundred and thirty aerial photographs with a nominal scale of 1:40,000 captured in 2005 were scanned at high quality to create colour digital images for the area of the Borroloola Project tenements. These were georeferenced to the published 1:50,000 scale topographic surveys using a softcopy photogrammetric system.

6.1.1 Orthophotography

Using terrain elevations stereoscopically measured across the area, orthophotographs and hill-shaded relief visualisations were produced to aid geological and terrain landform interpretation across the tenements and general logistics including access. As of May 2009, orthophotographs and hill-shaded landform maps have been produced for some 60% of the Borroloola Project tenement areas. All digital data for the resultant orthophotos, as rectified compressed images and algorithms in MGA94 Zone 53, are included as Appendix A in the Combined Annual and Surrender Mineral Exploration Report on Tenement Group 068/09 (Wynne, et.al. 2009AS).

The orthophoto encompassing air photo 1196 covers a small part of the area of EL25591 which was surrendered, as shown in Figure 3.

6.2 Historical Airborne Geophysics Surveys

Figure 4 shows a Total Magnetic Intensity image derived from open file airborne magnetic data obtained from the NTGS originally processed by Southern Geoscience Consultants during 2007, as detailed in the 2007 – 2008 Combined Annual Report (Street, et. al. 2008A). The data from the SGC processing, as re-processed by Baigent Geosciences in 2008 to provide better levelling between survey lines of the different historical surveys, is included as Appendix 1.

6.3 Historical Surface Geochemistry

Figure 5 shows the 1:250,000 regional geology (BAUHINIA DOWNS SE5303) and location of stream sediment samples sourced from the NTGS Surface Geochemical Datasets derived from previous company exploration report. During 2008, values for Cu, Pb and Zn were plotted at each sample point and hand contoured at the following intervals:

- Cu at 20ppm and 75ppm
- Pb at 26ppm and 40ppm, as selected for Figure 5
- Zn at 20ppm and 50ppm

The polygonal areas defined by these intervals were then digitised and saved into the GIS package, MapInfo, to be used along with raster geology and geophysics layers to identify areas for follow-up exploration.

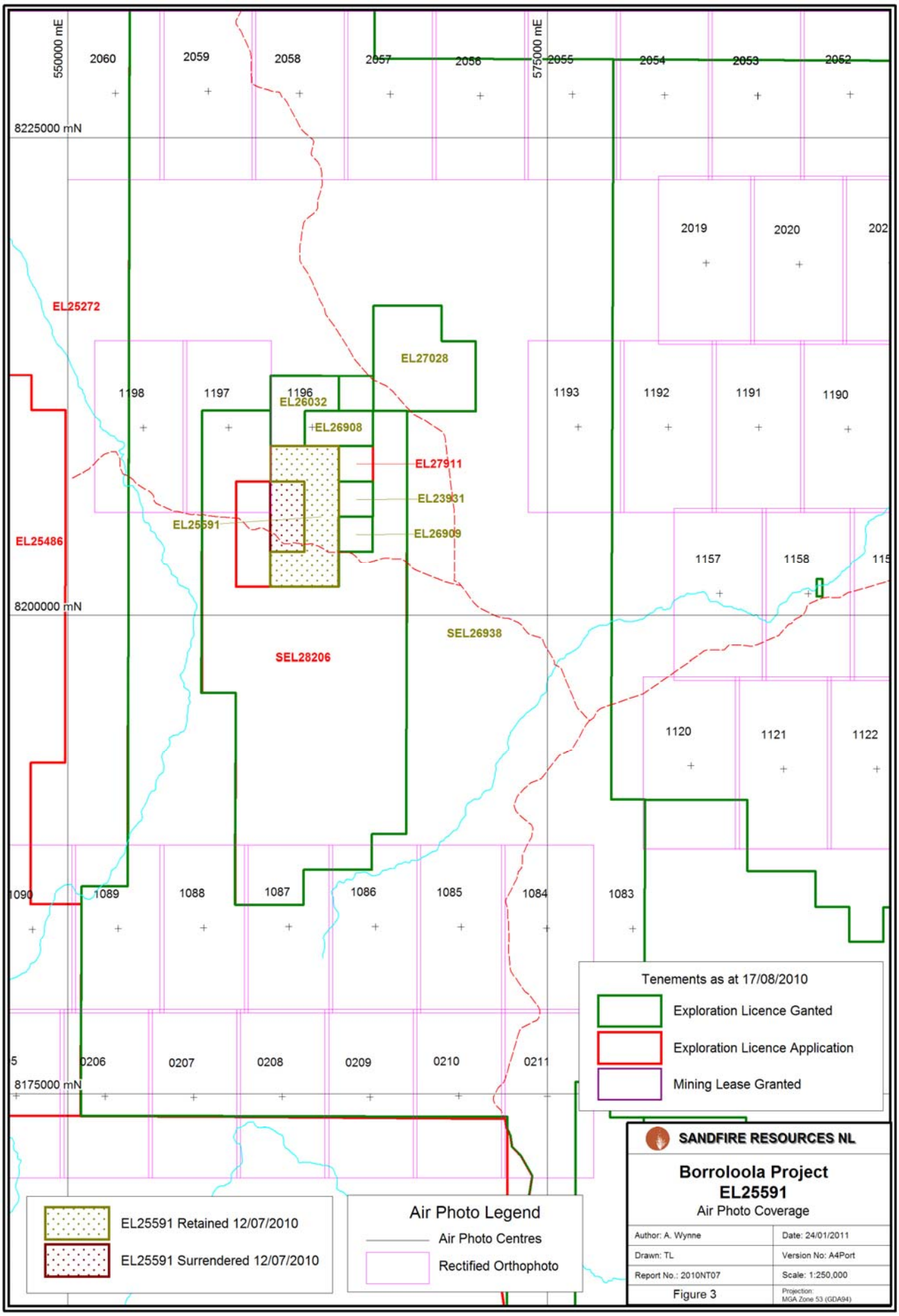

Figure 3 EL25591 Air Photo Coverage

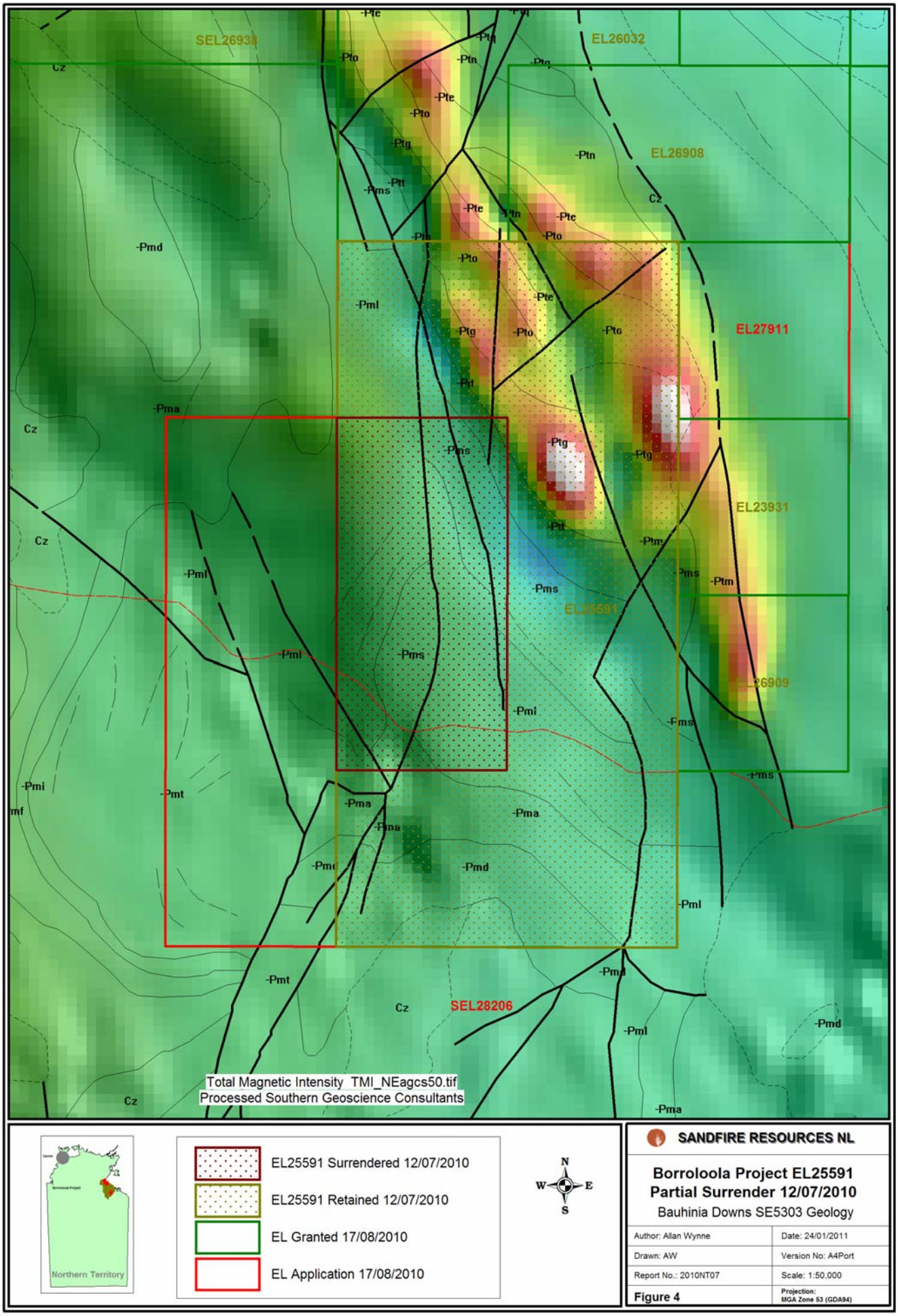

Figure 4 EL25591 Airborne Total Magnetic Intensity

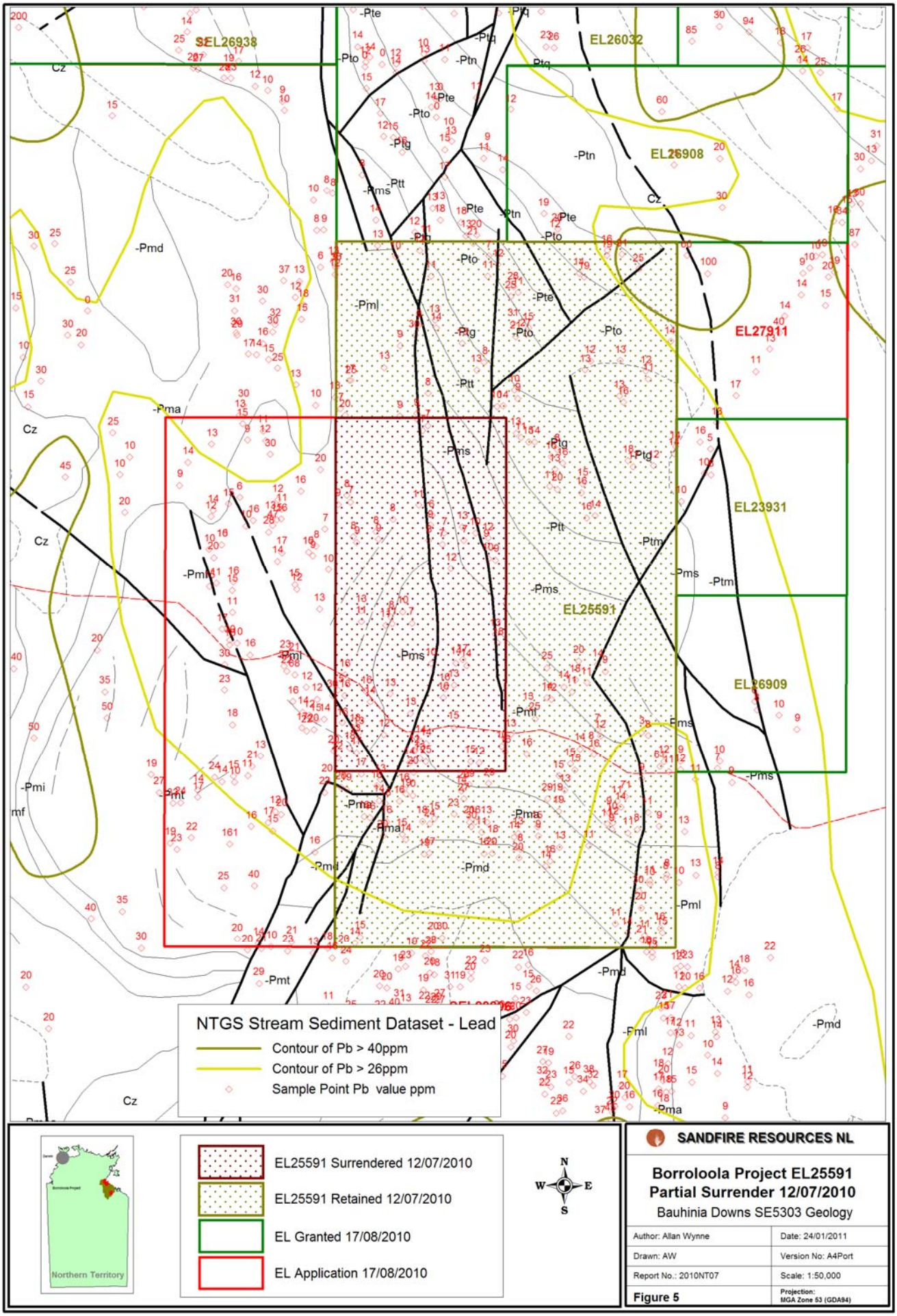

Figure 5 EL25591 Geology and Stream Sediment Samples

7 Conclusions and Recommendations

Two further sub-blocks along the western margin of EL25591 have been surrendered. The remainder of EL25591 remains a region of interest for exploration for copper, lead and zinc, and diamonds, as part of the continuing integrated geological and geophysical exploration on Sandfire Resources' Borroloola Project tenement holding.

Exploration work proposed for year 4 of the tenement licence is:

- Review of past regional geology and setting and previous exploration in available open file reports. Sandfire Resources's stream and surface geochemistry data will be updated with any recent data made available to open-file.
- Review of relevant previous ground and airborne geophysical surveys data and imagery, including any recently released airborne magnetic-radiometric (Mag-Rad) and electromagnetic (EM) surveys which can be integrated into Sandfire Resources's current GIS coverage.
- Reconnaissance geological mapping and surface sampling as required.
- Detailed low level airborne magnetic survey at a nominal line spacing of 100m is proposed to be flown over the retained tenement area of EL25591, and over Sandfire Resources's EL26908, EL26909, and regions of prospective Mallapunyah Group sediments within SEL26938, subject to an investigation that establishes whether a detailed airborne magnetic survey had not already been flown by the previous tenement holder.

8 Bibliography of Annual and Surrender Reports

Jones, D., Roberts, R., Ahmat, A., Wynne, A., 2010A Group Annual Mineral Exploration Report Borroloola Project EL24401, EL25591, EL26555, EL26587, EL26908, EL26909, EL26953, SEL26831, SEL26833 SEL26835, SEL26836, SEL26837 SEL26938, and SEL26939 Combined Reporting Number: 121/09 Reporting Period: 11 April 2009 to 10 April 2010 Sandfire Resources NL Report 2010NT03 (Submitted 14 July 2010).

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Street, G., Lauricella, P., and Algie, C., 2008A Combined Annual Report EL 10121, 24349, 24373, 24374, 24401, 24402, 24714, 24664, 24700, 24946, 24778, 24943, 24996, 24997, 25070, 24942, 25328, 25312, 25590, 25591, 25592, 25462, 25647 Exploration Licence Year 11 April 2007 To 10 April 2008 Borroloola Project McArthur Basin, NT Sandfire Resources NL Report No. 2008NT02 (Submitted April 2008).

Wynne, A., Hansen, A., Hawke, M., Jones, D. , Lauricella, P., Evans, J., Lewis, T., Marshall, T., 2009AS Group Annual and Surrender Mineral Exploration Report Sandfire Resources NL Borroloola Project EL10121, EL24349, EL24373, EL24374, EL24402, EL24664, EL24700, EL24714, EL24778, EL24942, EL24943, EL24946, EL24996 EL24997, EL25070, EL25312, EL25328, EL25462, EL25590, EL25592, EL25647 EL26298, EL26361, EL26480, EL26481, EL26482, EL26486 and EL26637. Combined Reporting Number: 068/09 Reporting Period: 16 April 2004 to 9 June 2009 Sandfire Resources NL Report 2009NT04 (Submitted 29 June 2010).

Wynne, A., Hansen, A., Lewis, T., 2009P Mineral Exploration Partial Surrender Report Borroloola Project EL25591 Combined Report Number C121/09 Reporting Period 11 September 2008 to 22 January 2010 Sandfire Resources NL Report 2010NT01 (Submitted 6 March 2010).

9 Digital Data

The text of this report, including tables and figures, is compiled in PDF format.

Digital Data CD

Digital Data on CD: Technical Report and Figures in PDF format.