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EL 5394

WARRINER CREEK

ANNUAL REPORT AND FINAL REPORT TO LICENCE EXPIRY/SURRENDER, FOR THE PERIOD 16/4/2014 TO 15/4/2016

Submitted by
Fortescue Metals Group Ltd
2016

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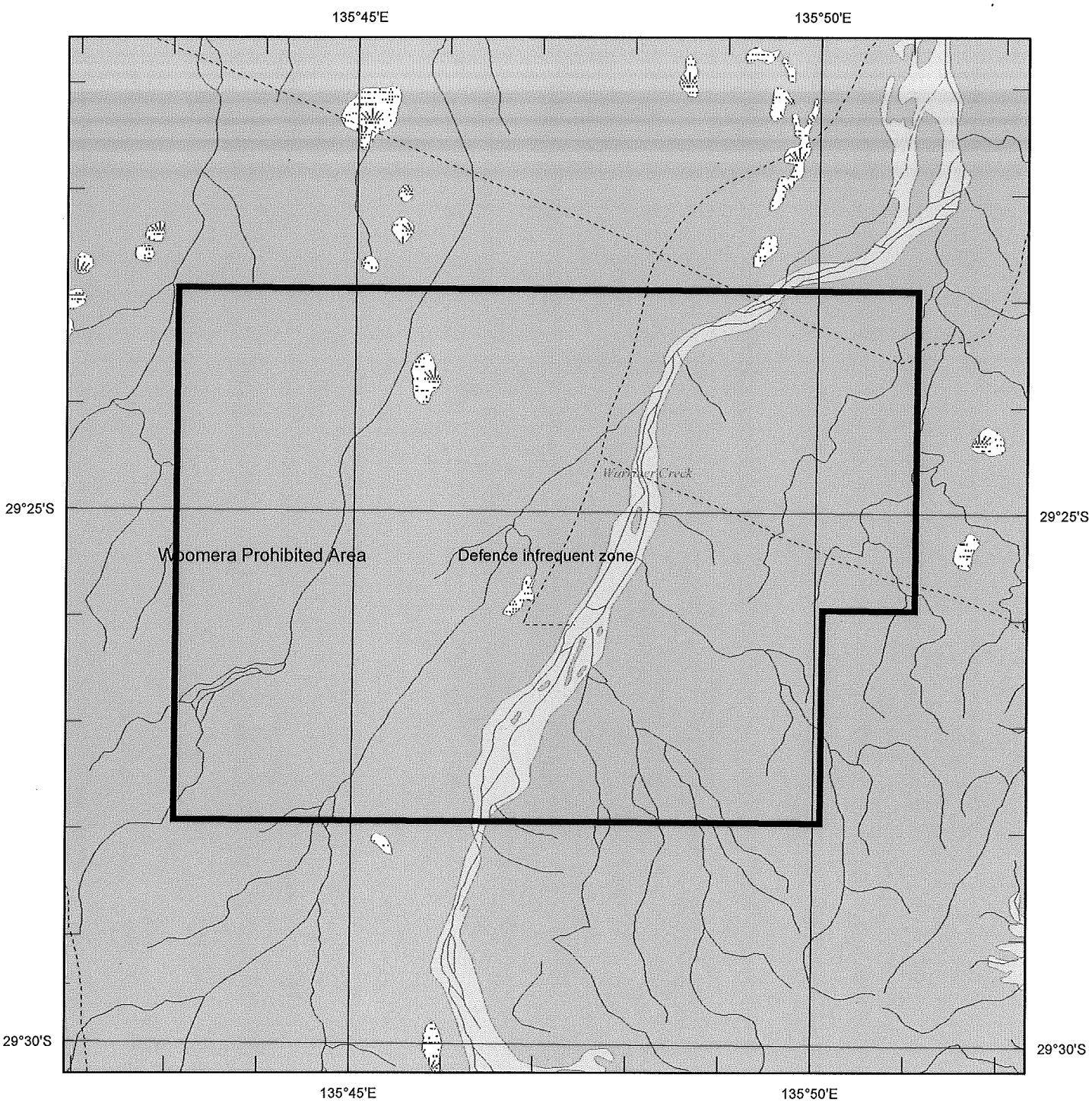
Government of South Australia
Department of State Development

SCHEDULE A



SCALE 1 : 100 000

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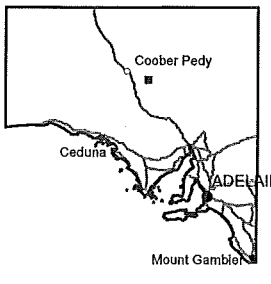
Kilometres

GDA GEOCENTRIC DATUM OF AUSTRALIA

LICENCE BOUNDARIES IN : DATUM AGD66

LOCALITY



APPLICANT : **FMG RESOURCES PTY LTD**

FILE REF : **2013/00187** TYPE : **MINERAL ONLY**

AREA : **113** sq km (approx)

1 : 250 000 MAPSHEETS : **BILLA KALINA**

LOCALITY : **WARRINER CREEK AREA -**
Approximately 110 km southeast of Coober Pedy

DATE GRANTED: **16-Apr-2014** DATE EXPIRED: **15-Apr-2016** EL NO: **5394**

Report

Annual Technical Report: EL 5394

16 April 2014 to 15 April 2015
100-AN-EX-1492

Fortescue
The New Force in Iron Ore

Report Title	Annual Technical Report for the Period 16 April 2014 to 15 April 2015, EL5394
Project Name	Billa Kalina
Tenement Number	EL 5394
Tenement Operator	Fortescue Metals Group Ltd
Tenement Holder	FMG Resources Pty Ltd
Report Type	Annual Exploration Report
Report Period	16 April 2014 to 15 April 2015
Author	Rachel Backus
Date of Report	15 June 2015
Report Number	100-AN-EX-1492
Target Commodity	Copper, Gold, Uranium

TABLE OF CONTENTS

1. SUMMARY

This report discusses the exploration activities of FMG Resources Pty Ltd ("Fortescue") carried out within EL 5394 for the period 16 April 2014 to 15 April 2015.

1.1 Location

EL 5394 is located approximately 105 km east-southeast of Coober Pedy, in the Gawler Craton of South Australia. Access to the licence is via the Stuart Highway, and unsealed secondary roads and tracks.

1.2 Geology

The licence is situated in the north-eastern Gawler Craton – specifically in the Eromanga Basin – and is situated approximately 30 km northeast of Prominent Hill, in the north of the Olympic IOCG Province. This area is known as a favourable location for exploration for IOCGU type mineralisation systems.

1.3 Work Carried Out

During the reporting period, in-house background research and a historic data compilation and review were conducted on this licence. External geological training to better understand the geological terrain was also accomplished during the period.

Fortescue has progressed negotiations to acquire an agreement with the appropriate native title group. An agreement with Arabana People native time claimants has been finalised; therefore, future on ground exploration can be conducted as required.

1.4 Results & Conclusions

Fortescue considers that potential for IOCG(U)-type mineralisation remains on this licence. The work program is likely to be focused on further desk top studies, and possibly geophysical campaigns. Planning and logistics for the programs will be undertaken henceforth.

2. INTRODUCTION

This report discusses the exploration activities of FMG Resources Pty Ltd ("Fortescue") carried out within EL 5394 for the period 16 April 2014 to 15 April 2015.

3. LOCATION AND ACCESS

EL 5394 is located approximately 105 km east-southeast of Coober Pedy, in the Gawler Craton of South Australia. Access to the licence is via the Stuart Highway, and unsealed secondary roads and tracks (**Figure 1**).

The licence falls within the Woomera Prohibited Area, specifically within the Defence Infrequent Zone. On 9 August 2014, amendments to the Defence Act 1903 – affecting permits and access to the Woomera Prohibited Area (WPA) – came into force. These amendments will provide new non-Defence users – including Fortescue – greater certainty over access arrangements.

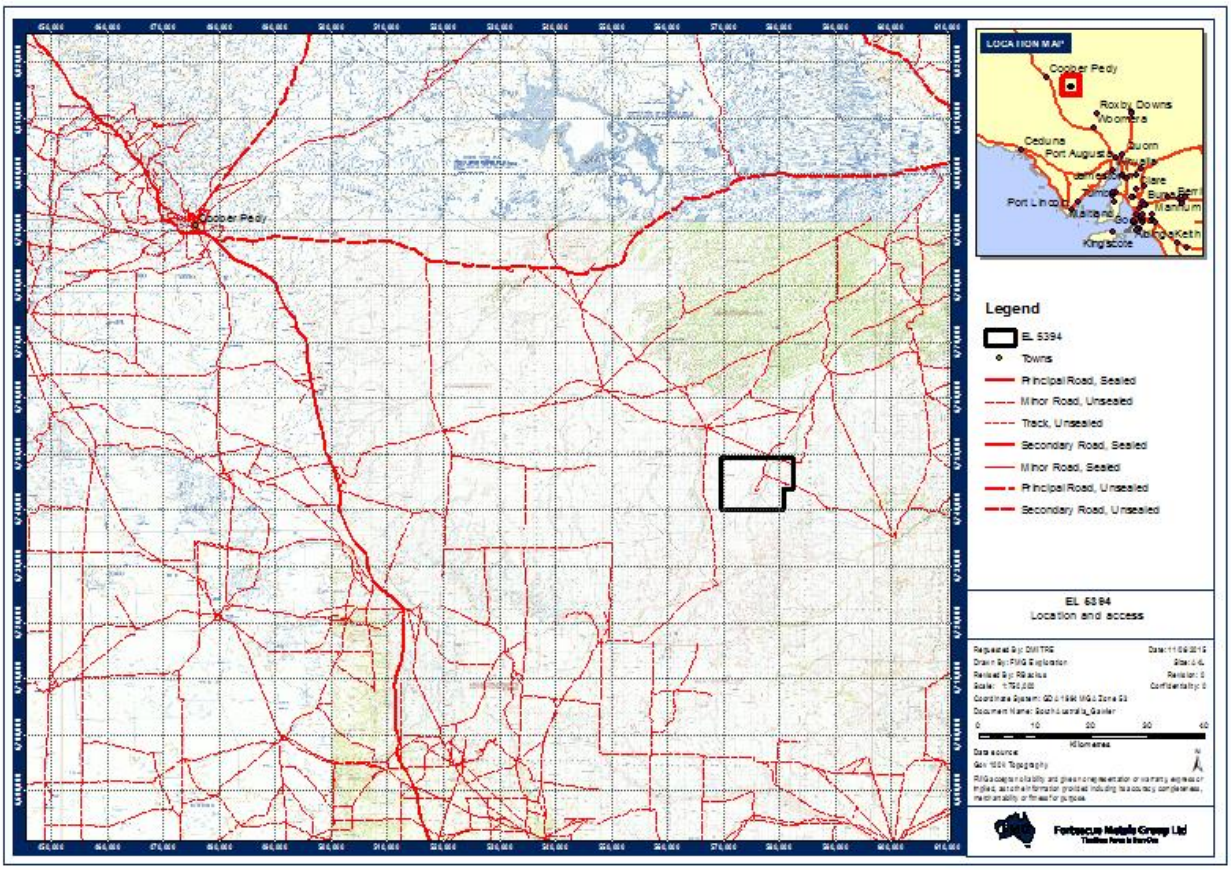


Figure 1: Location and Access

4. TENEMENT STATUS

The current tenement status is summarised below in **Table 1**.

Tenement	Number	Area (sq. km)	Grant Date	Expiry Date	Period Reported On
Billa Kalina	EL 5394	113	16/04/2014	15/04/2016	16/04/2014 – 15/04/2015

Table 1: Summary of tenements

5. GEOLOGY & MINERALISATION

The licence is situated in the north-eastern Gawler Craton (**Figure 2**) – specifically in the Eromanga Basin (**Figure 3**) – and is situated approximately 30 km northeast of Prominent Hill, in the north of the Olympic IOCG Province. This area is known as a favourable location for exploration for IOCGU type mineralisation systems.

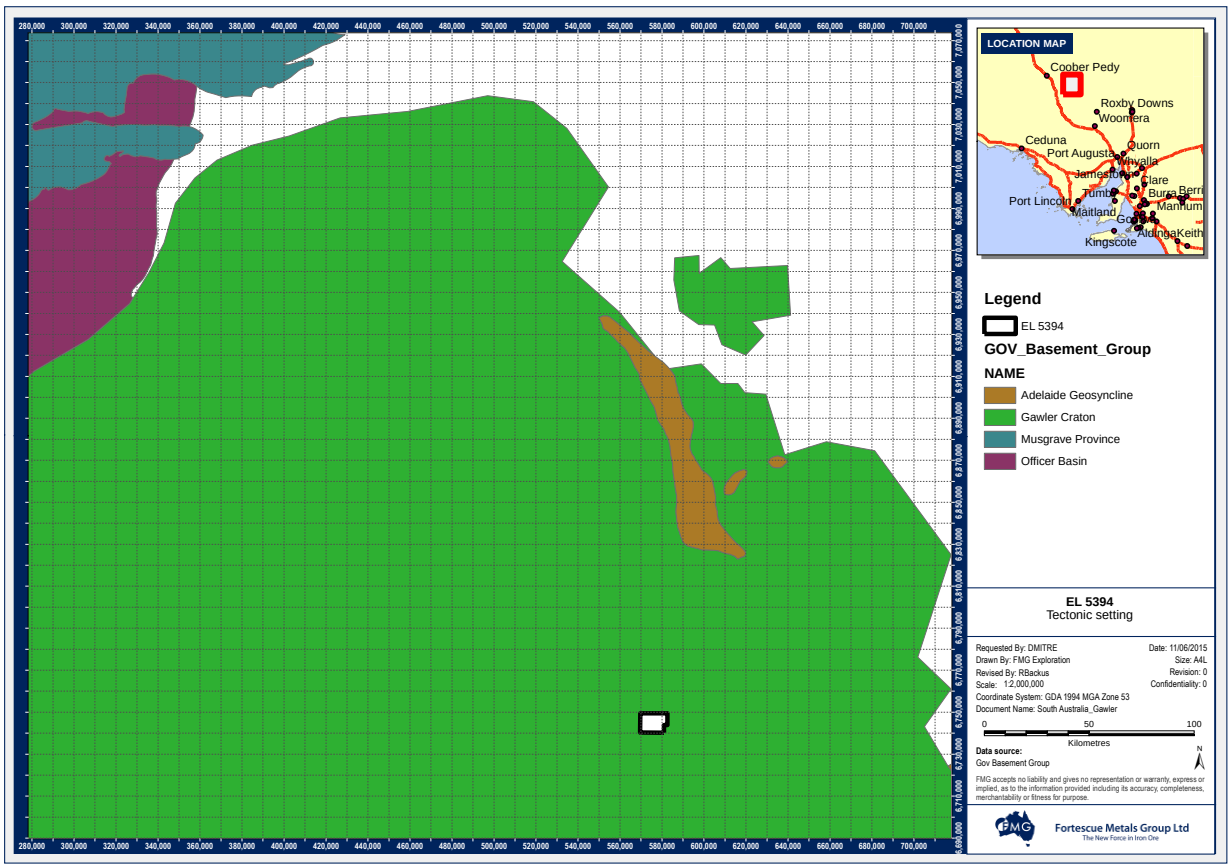


Figure 2: Tectonic setting

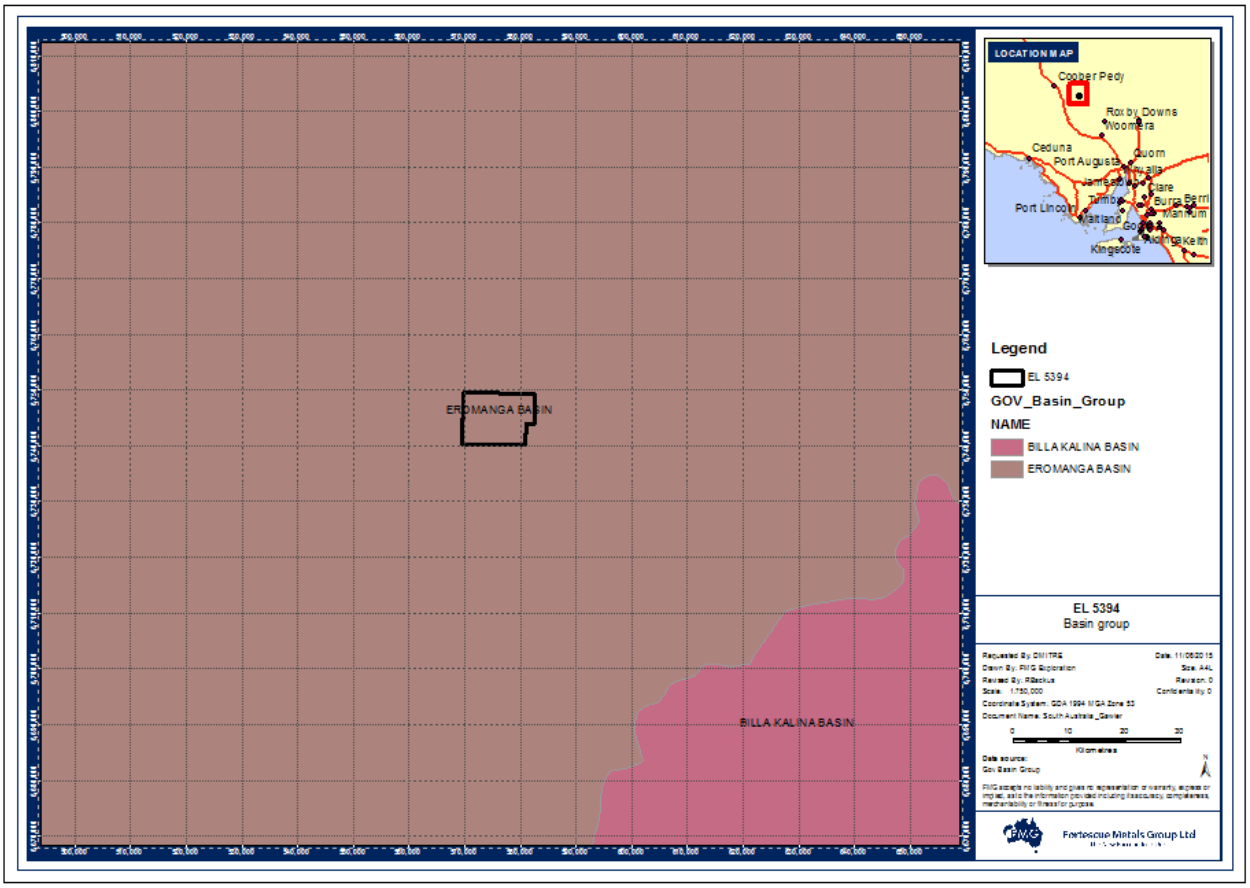


Figure 3: Basin group

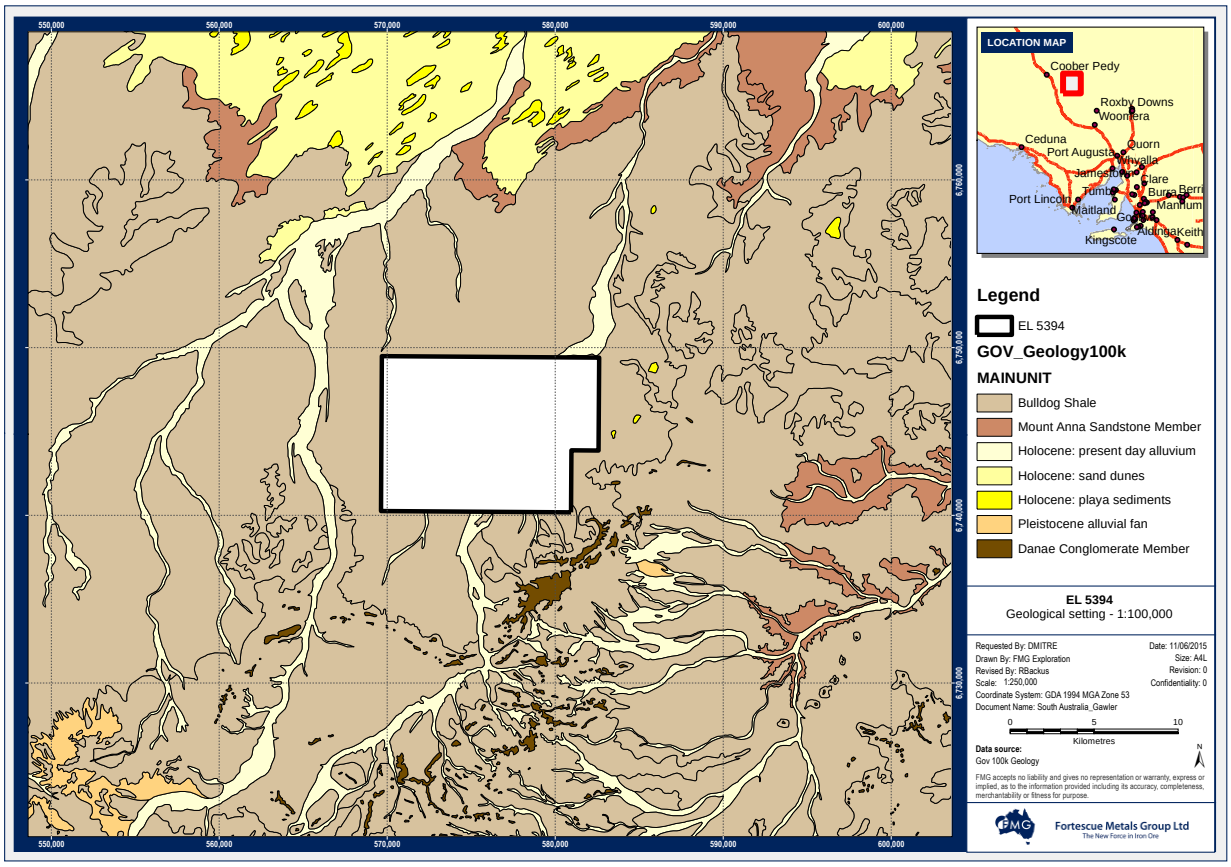


Figure 4: Surface geology

Sediments of the Jurassic to Cretaceous Eromanga Basin occur in the region, but are generally poorly exposed, being largely covered by Cainozoic sediments and weathering mantles. In this licence, the Bulldog Shale is present (Freytag, 1966) – see **Figure 4**. The Cadnaowie Formation and Bulldog Shale are representatives of the Neales River Group (Wopfner et al., 1970), while the Bulldog Shale is the oldest formation within the Marree Subgroup (Thomson, 1980).

The Gawler Craton is interpreted to form the Archaean basement underlying the licence. The Gawler Craton is a stable crystalline basement province comprising rocks mantled in part by thin platformal sediments and regoliths of Neoproterozoic to Cainozoic age (Mesozoic to Cainozoic on this licence). It is defined as a region of crystalline basement that has not been substantially deformed or remobilised, except by minor epeirogenic movements, since about 1,450 Ma (Drexel et al, 1993).

Specifically, the basement comprises the Coober Pedy Domain (Mount Woods Complex) - **Figure 5.** This comprises granulite-grade paragneiss, often iron-rich; and felsic granulite.

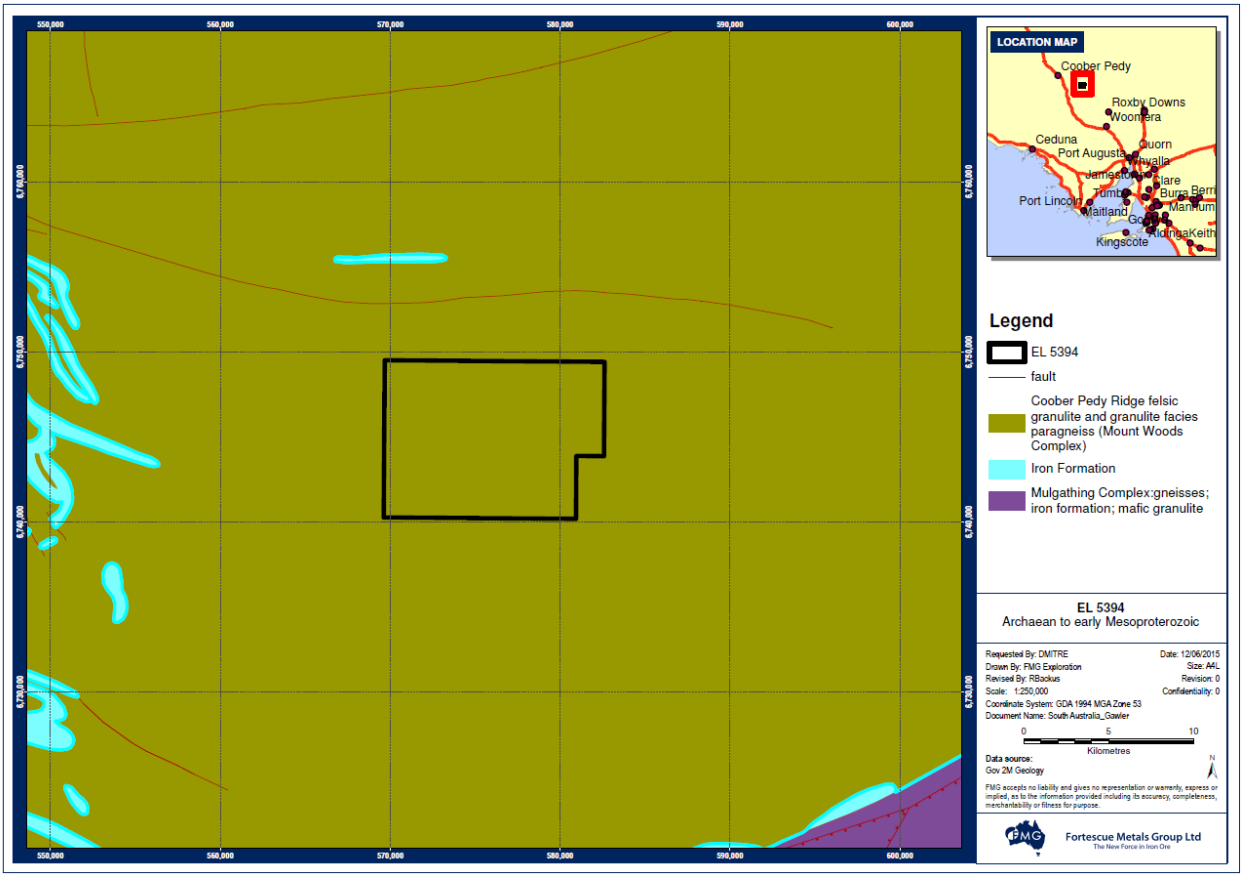


Figure 5: Archaean to early Mesoproterozoic geology

The Mount Woods is a sparsely outcropping domain in the far north of the Gawler Craton. It is bounded to the west of the Coober Pedy Ridge (Domain) and the Christie Domain; and to the south and east by undifferentiated Precambrian rocks. It comprises supracrustal successions of interlayered banded iron-formation, leucocratic gneiss, psammitic and pelitic schists, and calc-silicates. The depositional ages on the meta-sedimentary rocks are poorly constrained, but there appear to be three phases of magmatism at ~1,740 Ma, ~1,690 Ma and ~1,585 Ma. The

youngest reported age is 1,575 +/- 3 Ma. At least some of the meta-sedimentary rocks have been intruded by the ~1740 Ma granites, although one meta-sedimentary sample has an apparent maximum depositional age of ~1,630 Ma. This and other samples contain a major detrital peak at ~1,750-1,740 Ma. It is possible that two or more meta-sedimentary rock packages are present in the Mount Woods Domain. One (the older) of these packages may correlate with the Hutchson Group of the southeastern part of the Gawler Craton (Fraser and Reid, 2007; Betts et al., 2003).

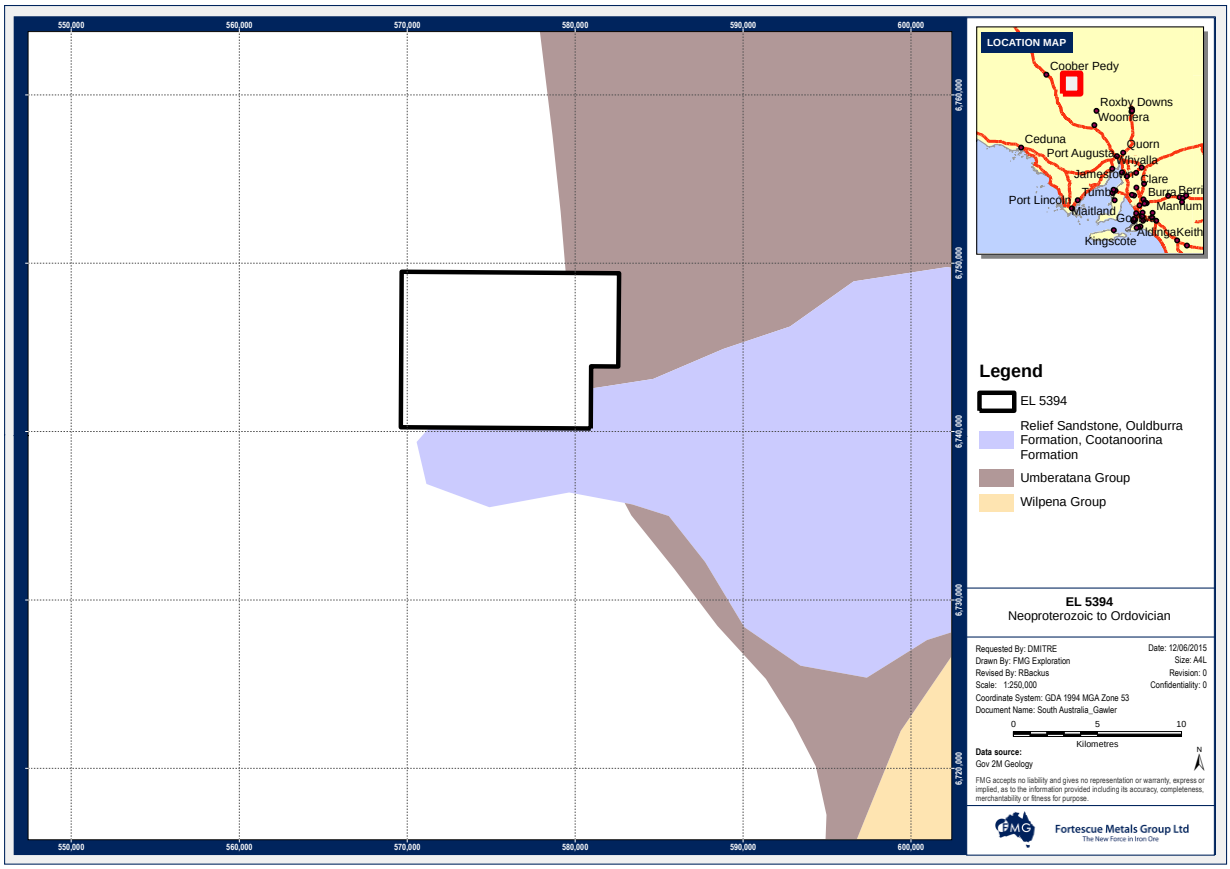


Figure 6: Neoproterozoic to Ordovician Geology

The Umberatana Group in the east of the licence (**Figure 6**) was defined by Thomson et al. (1964) to encompass all the undoubted glacial deposits of the Adelaide Geosyncline; it is of Sturtian to early Marinoan age. After recognition of the regional unconformity at the base of the Sturtian tillites, the original definition of the base of the Umberatana Group was adjusted to this unconformity (Thomson, 1969). The Umberatana and Wilpena Groups record gradual transgression of the platforms (Stuart Shelf and Curnamona Craton) during a phase of regional subsidence after early Adelaidean rifting, and were combined by Preiss (1982) into the Heysen Supergroup. Evidence of rifting persists into the early Sturtian, but such rifts are in different orientations and locations from those of the early Adelaidean. The break between the Burra and Umberatana Groups changes from a disconformity in the Mount Lofty Ranges to a low-angle unconformity in the southern Flinders Ranges, but more severe tectonic effects occur at this level in the central Flinders Ranges, associated with diapirism and extensional faulting (Drexel et al., 1993).

In the south of the licence, Early Cambrian aeolian, fluvial and evaporitic to tidal sandstone to mudstone; and marine limestone and dolomite sediments of the Relief Sandstone, Ouldburra Formation, Cootanoorina Formation are interpreted to occur (**Figure 6**).

The major mineralisation systems with in the project area are associated the iron oxide copper-gold (IOCG) metallogenic belt. IOCG mineralisation is typically found in hydrothermal styles, which is more prevalent along the eastern margin of the Gawler Craton. Also known as the Olympic IOCG Provence, there are three known areas with major metal endowment within the belt, they are in the Moonta-Walleroo-Roopena region, the Mount Woods Inlier and in the Stuart Shelf Basement. The basic vectors associated with mineralisation formation in these areas appear to be the occurrence of the Hiltaba Suite mafic and felsic intrusions (1,590 Ma), strong iron oxide alteration. Gawler Range Volcanics in many occasions are also strongly associated with areas of mineralisation. Major examples of these styles of deposits in close proximity to the tenure are Olympic Dam and Prominent Hill.

6. PREVIOUS EXPLORATION

EL 104 (2,462 square km covering the entire tenement) was granted to Shell Development (Australia) Pty Ltd for one year, commencing on 31st. October, 1973. The exploration target was shallow surface mineable coal in Permian sediments along the southern rim of the Boorthanna trough which forms part of the Arckaringa Basin. Assessment was made concurrently with that of EL 108. Nine holes with a total of 3,640 ft. (1,110 m) were drilled in EL 104. The drilling results showed that there were no coal measures present within the area. The edge of the area where Permian coal measures are subcropping below Mesozoic sediments follows approximately the northern lease boundary. The lease was subsequently relinquished.

An area covering most of EL 5394 (Exploration Licence 345) was granted to Kennecott Explorations (Australia) Ltd on May 3, 1977 to explore for stratiform copper potential. Interpretation of regional aeromagnetic and gravity data led to the identification of four target areas within all of Kennecott's licences. Subsequent review led to the selection of one of these target areas for detailed aeromagnetic survey to facilitate selection of an initial stratigraphic drill site. The survey area (approximately 1,200 sq. km) covered the southern portion of the Mt. Purvis (EL 345) exploration lease, which covers EL 5394. The survey was flown by Geometries Ltd at a spacing of 500 metres, a flight height of 100 metres, and intervals of 10 km. Navigation was visual with flight paths on E-W flight lines with flight line N-S tie lines were flown at a Geometrix 6803 proton magnetometer. The aeromagnetic data was interpreted to show depths to Carpentarian Basement through analysis of anomalies attributed to iron-formations; mafic and felsic intrusions; and gneisses. In general, depths increase from about 100 to about 2,000 metres from west to east, but the basement topography is irregular due to numerous fault block movements. The exploration target was a body of copper mineralisation similar to that at Olympic Dam, and was presumed to be located on the flanks of a basement topographic high; and adjacent major faults or fault intersection were thought to be of importance. Recognition of basement topography, at the time of deposition of the Adelaidean sediments, was considered virtually impossible because of subsequent fault block movements. However, it was suggested that basement highs may have been associated with intrusive bodies and these can be recognised from the magnetic data. The area of intermediate basement depths (400-700 metres) was considered most likely to contain sufficiently thick sequence of Adelaidean sediments to host a major body of mineralisation at accessible depths. Two priority targets, A1 and A2, indicated possible basement highs associated with basic intrusives, and seismic reflection traverses over each of the targets was recommended for drill planning. It was decided to complete a stratigraphic drill hole over the A1 (Warriner Creek) anomaly. This drill hole did not intersect Adelaidean sediments, and the EL 345 was recommended for relinquishment.

Aquitaine Australia Minerals Pty Ltd had a licence covering most of EL 5394, except for the far east of the licence, from 1980-1981: EL 626. Results of a gravity survey completed in late 1980 over two regional gravity/magnetic anomalies in EL 626 were received in February, 1981. A four milligal residual gravity anomaly was found to exist on the flank of the northern regional gravity/magnetic anomaly. Drill hole SCH001 was drilled – although not on current licence EL 5394 – to test this residual anomaly for Adelaidean sediments and underlying Roxby Downs type Cu-U-Au bearing host rocks. Neither of these rock types was intersected before penetrating basement gneiss. Potential for these types of deposits was therefore considered have diminished, and no further work was planned.

Stockdale Prospecting Ltd explored an area over most of the licence as part of its Painted Hill Project (EL 1013) from mid-1982 to mid-1987. During this time, the company conducted geophysical surveys on the licence, including aeromagnetics, ground magnetics, radiometrics, and EM. The company also conducted heavy mineral sampling, a photographic geological interpretation, and a review of seismic data. The heavy mineral sampling revealed that five out of 65 samples taken on the licence contained kimberlitic indicator grains (garnets, ilmenite and spinel). Interpretation of magnetic data showed broad anomalies, interpreted to be the basement at a depth of over 300 metres, for the main anomaly of interest. Based on this interpretation, Stockdale concluded that the anomaly was of no further interest. The company concluded that the scattered kimberlitic grains recovered from the heavy mineral sampling were probably not from a proximal source, and that a secondary source was likely to be Cretaceous sediments. This conclusion was backed up by the results of the geophysical studies and remote sensing, which failed to recognise any surface expression of kimberlitic emplacement. Stockdale relinquished the licence. Cyprus Australia Coal Company completed exploration for sub-bituminous Permian coal on the licence during this period, in a joint venture with Stockdale. At the time of relinquishment of the licence by Stockdale, Cyprus was compiling data to complete a feasibility study on its Weedina Deposit.

Minotaur Operations Pty Ltd explored conducted work over the licence area from 1999 to 2010. Two gravity anomalies (Warriner Creek and Mt Purvis) were identified near the major NE-trending Bulgunnia Fault. The Warriner Creek gravity anomaly had a magnitude of ~3 mGals and was associated with a 600 nT aeromagnetic anomaly, whereas the Mt Purvis gravity anomaly has a greater amplitude of 6 mGals, associated with a weaker aeromagnetic anomaly of only 200 nT. Modelling of the Mount Purvis gravity anomaly indicated a probable depth to top of the source body of ~600 metres. Drilling of the Mt Purvis gravity anomaly was initiated in November 2004 with a pre-collar to 221 metres through succession of Mesozoic and Palaeozoic sediments (WC04R001). An NQ diamond tail was added in June 2005 to a total depth of 849.7 metres (WC05D001). Overlying the crystalline basement in drill hole WC04R001/WC05D001 was a flat-lying, undeformed sequence ~435 metres thick and comprising, in ascending stratigraphic order: a basal sandstone (139 metres thick); dolomite and dolomitic siltstone (244 metres thick); and capped by an amygdaloidal basalt (52 metres thick). The precise age for the sequence(s) was not known and options included equivalence to Pandurra Formation (Mesoproterozoic), basal Adelaidean (Neoproterozoic) sediments, volcanics of the Callanna Group, and Cambrian sediments. Depth to crystalline basement within drill hole WC04R001/WC05D001 was 649 metres. Assumed to be of Palaeoproterozoic age, basement consisted predominantly of garnetiferous quartz-feldspar-biotite paragneiss and quartz-feldspar pegmatite with lesser, foliated granitoid, chlorite-amphibole skarn and biotite-cordierite schist. Apart from some sericitic alteration and minor haematite alteration of feldspar, evidence is lacking for any other pervasive alteration and fluid movement. No significant anomalous Au or base metal results were recorded. The recorded specific gravity values for drill hole WC04R001/WC05D001 were lower than anticipated for the modelled ~5 mGal gravity, prompting re-appraisal of the gravity model and data. It was possible to modify the size and depth extent of the causative body to produce consistent results between observed and computed gravity profiles. Assumptions used were a body of average density of 2.86, extending from 650 metres below ground level to a depth of 1.5 km, width of 3.5 km and strike extent of 5.0 km, which were thought to be reasonable assumptions for a Palaeoproterozoic metasedimentary succession. WC07D01 was drilled to test the modelled broad, deep Trumpeter gravity anomaly which straddles the tenement boundary between EL 3302 and EL

3545. The gravity anomaly was interpreted to reflect the presence of garnetiferous gneisses (average SG of 2.8) within a palaeo-topographic high in the basement. A similarity between the native copper association in the basalt intersected by WC07D01 and native copper occurrences in prehnite-pumpellyite facies altered basalts in northern Michigan, North America was noted. The basalt was also found to be anomalous in copper with an average grade of ~200 ppm, though maximum recorded was 2,020 ppm Cu over a 1 metre interval. The absence of Mesoproterozoic strata (e.g. Gawler Range Volcanics) and lack of any significant alteration in WC07D01 indicated very low potential for classic Mesoproterozoic IOCG-style mineralisation in the immediate vicinity. Toro Energy withdrew from the Joint Venture with Minotaur Operations to explore for potential uranium mineralisation on the 15th March 2010. Minotaur Operations also withdrew from the Joint Venture with BHP Billiton (all minerals) and elected to transfer all its acquired equity in the project to BHP Billiton. BHP Billiton decided to continue exploration on the tenements; however, it later reassessed its position and relinquished the package.

Straits Exploration (Australia) Pty Ltd conducted exploration for IOCG(U) deposits on the tenement between 2010 and 2013 in a joint venture with Uranium Exploration Australia Ltd (UXA), prior to acquisition of the licence by Fortescue. All available geophysical was reprocessed with UBC inversions carried out on both the gravity and magnetic data, by GeoDiscovery Group. The UBC inversions revealed some interesting gravity and magnetic anomalies; however infill gravity was required. Inversion modelling of the gravity data to assist in target generation, and possibly further drill testing of subsequent drill targets was planned, once infill gravity surveying was completed. However, Straits dropped the project in 2012, and UXA went into administration during 2013.

7. FORTESCUE EXPLORATION 2014-2015

On 9 August 2014, amendments to the Defence Act 1903 – affecting permits and access to the Woomera Prohibited Area (WPA) – came into force. These amendments will provide new non-Defence users – including FMG – greater certainty over access arrangements. Negotiations to obtain the required permits from the Department of Defence was been finalised late in 2014.

During the reporting period, in-house background research and a historic data compilation and review were conducted on this licence. External geological training to better understand the geological terrain was also accomplished during the period.

Fortescue has progressed negotiations to acquire an agreement with the appropriate native title group. An agreement with Arabana People native time claimants has been finalised; therefore, future on ground exploration can be conducted as required.

8. CONCLUSIONS

Fortescue considers that potential for IOCG(U)-type mineralisation remains on this licence. The work program is likely to be focused on further desk top studies, and possibly geophysical campaigns. Planning and logistics for the programs will be undertaken henceforth.

9. REFERENCES

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10. ATTACHMENTS

Work	File Name	Format
Annual report	EL5394_2015A	PDF
Verification	EL5394_2015V	PDF
Figure	AttachmentA_LocationAccess_EL5394_2015A	PDF
Figure	AttachmentB_TectonicSetting_EL5394_2015A	PDF
Figure	AttachmentC_BasinGroup_EL5394_2015A	PDF
Figure	AttachmentD_SurfaceGeology_EL5394_2015A	PDF
Figure	AttachmentE_ArchaeanEarly MesoprotBasement_EL5394_2015A	PDF
Figure	AttachmentF_NeoprotOrdovicianBasement_EL5394_2015A	PDF

Table 2: Files submitted in digital format

Report

Verification Report: EL 5394

16 April 2014 to 15 April 2015
100-AN-EX-1492

Fortescue
The New Force in Iron Ore

Report Title	Annual Technical Report for the Period 16 April 2014 to 15 April 2015, EL5394
Project Name	Billa Kalina
Tenement Number	EL 5394
Tenement Operator	Fortescue Metals Group Ltd
Tenement Holder	FMG Resources Pty Ltd
Report Type	Annual Exploration Report
Report Period	16 April 2014 to 15 April 2015
Author	Rachel Backus
Date of Report	15 June 2015
Report Number	100-AN-EX-1492
Target Commodity	Copper, Gold, Uranium

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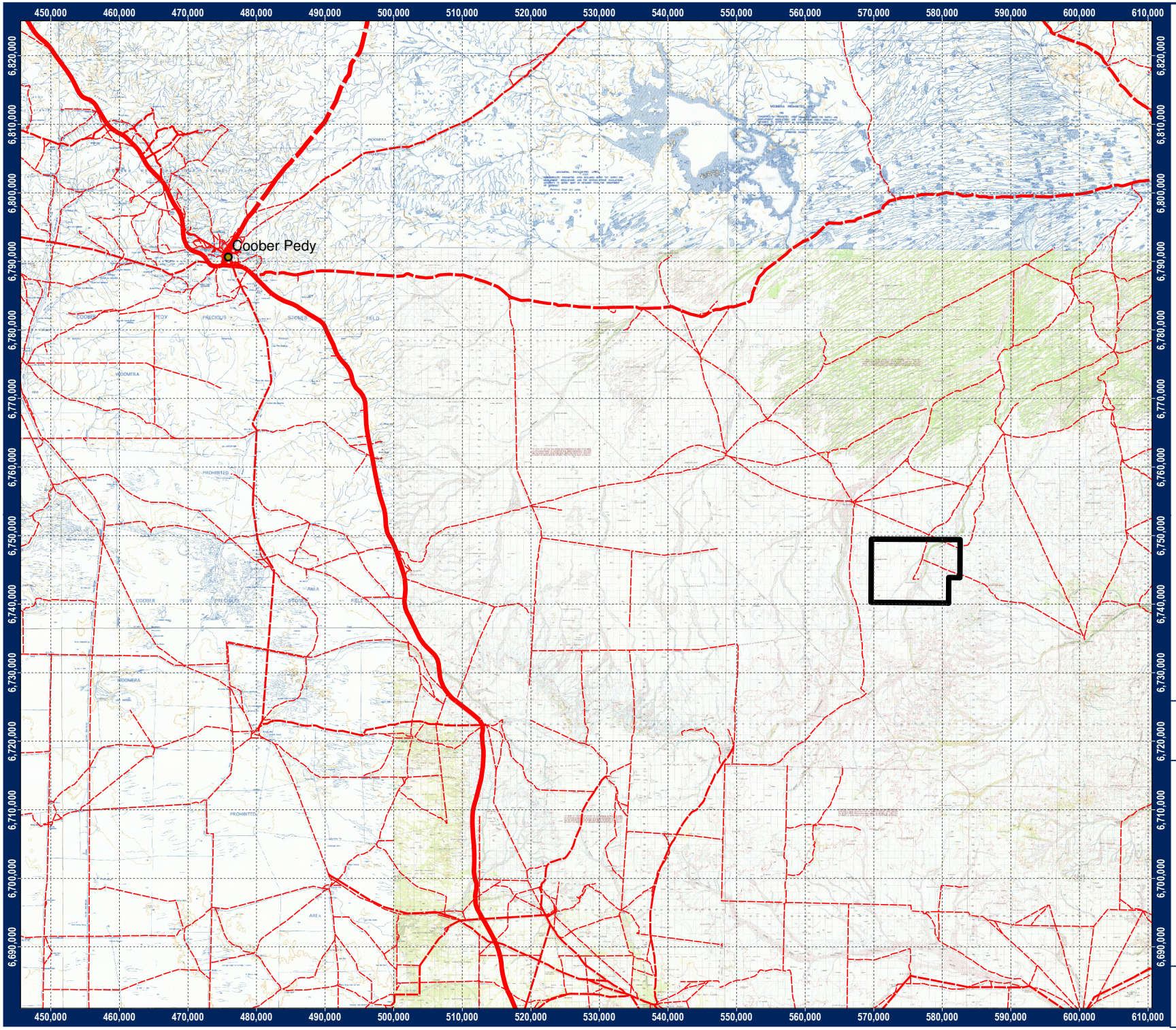

Legend

- EL 5394
- Towns
- Principal Road, Sealed
- Minor Road, Unsealed
- Track, Unsealed
- Secondary Road, Sealed
- Minor Road, Sealed
- Principal Road, Unsealed
- Secondary Road, Unsealed

EL 5394
Location and access

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:750,000
Coordinate System: GDA 1994 MGA Zone 53
Document Name: South Australia_Gawler

Date: 11/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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Kilometres

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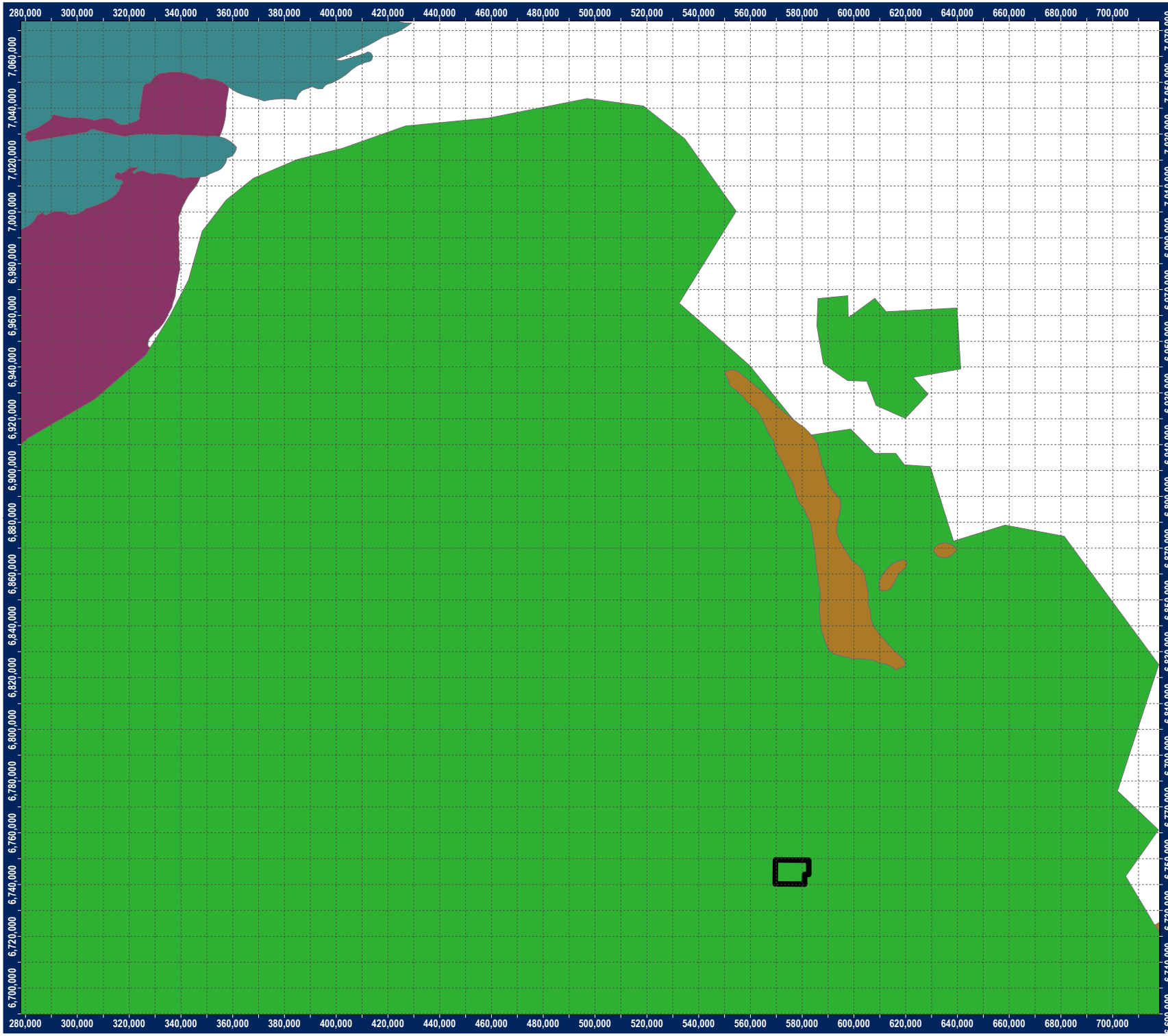
Data source:
Gov 100k Topography

Fortescue Metals Group Ltd
The New Force in Iron Ore



Legend

EL 5394

GOV_Basement_Group

NAME

- Adelaide Geosyncline
- Gawler Craton
- Musgrave Province
- Officer Basin

EL 5394
Tectonic setting

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:2,000,000
Coordinate System: GDA 1994 MGA Zone 53
Document Name: South Australia_Gawler

Date: 11/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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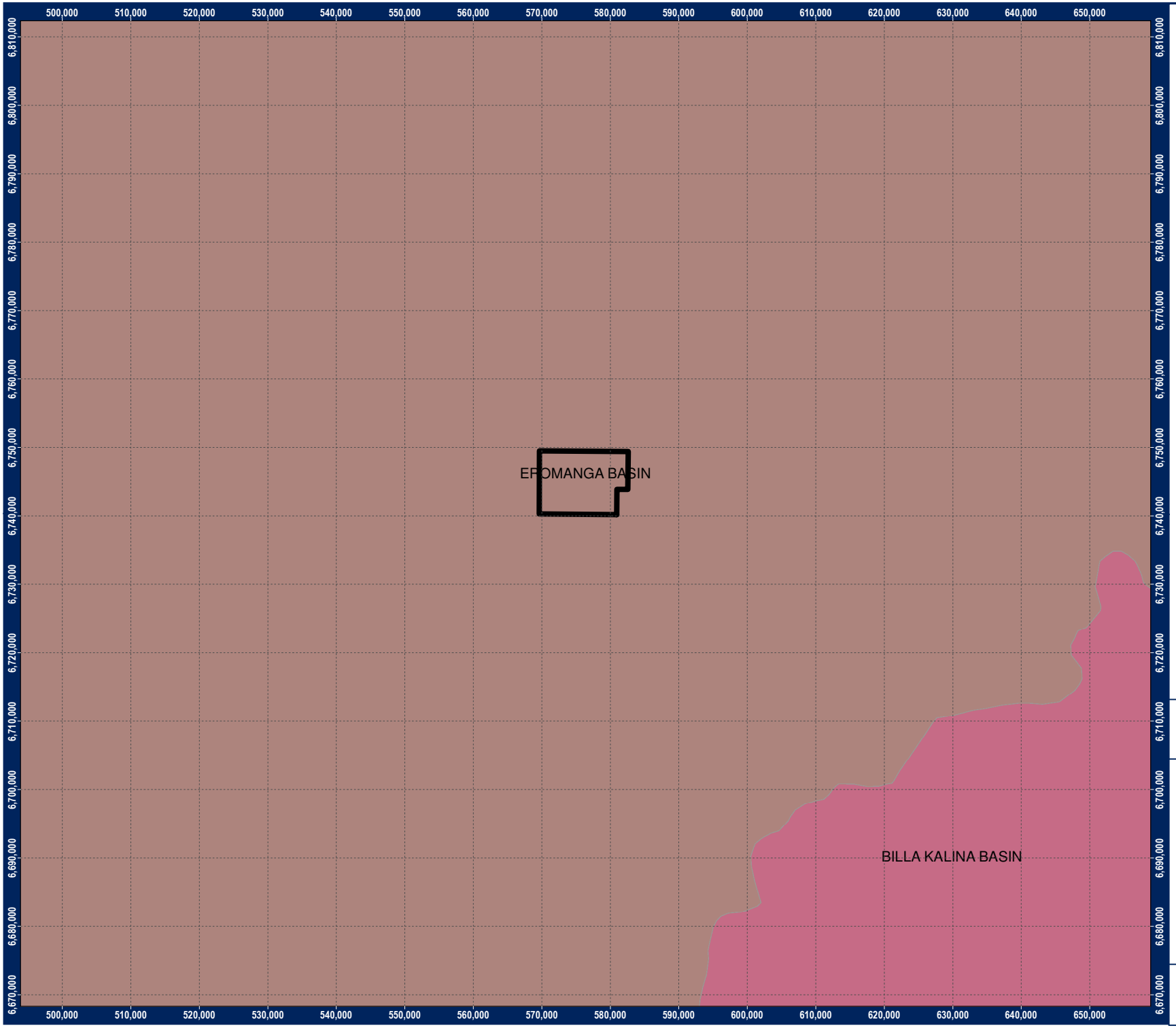
Kilometres

N

Data source:
Gov Basement Group

Fortescue Metals Group Ltd
The New Force in Iron Ore



Legend

EL 5394

GOV_Basin_Group

NAME

BILLA KALINA BASIN

EROMANGA BASIN

EL 5394
Basin group

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:750,000
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Date: 11/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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Kilometres

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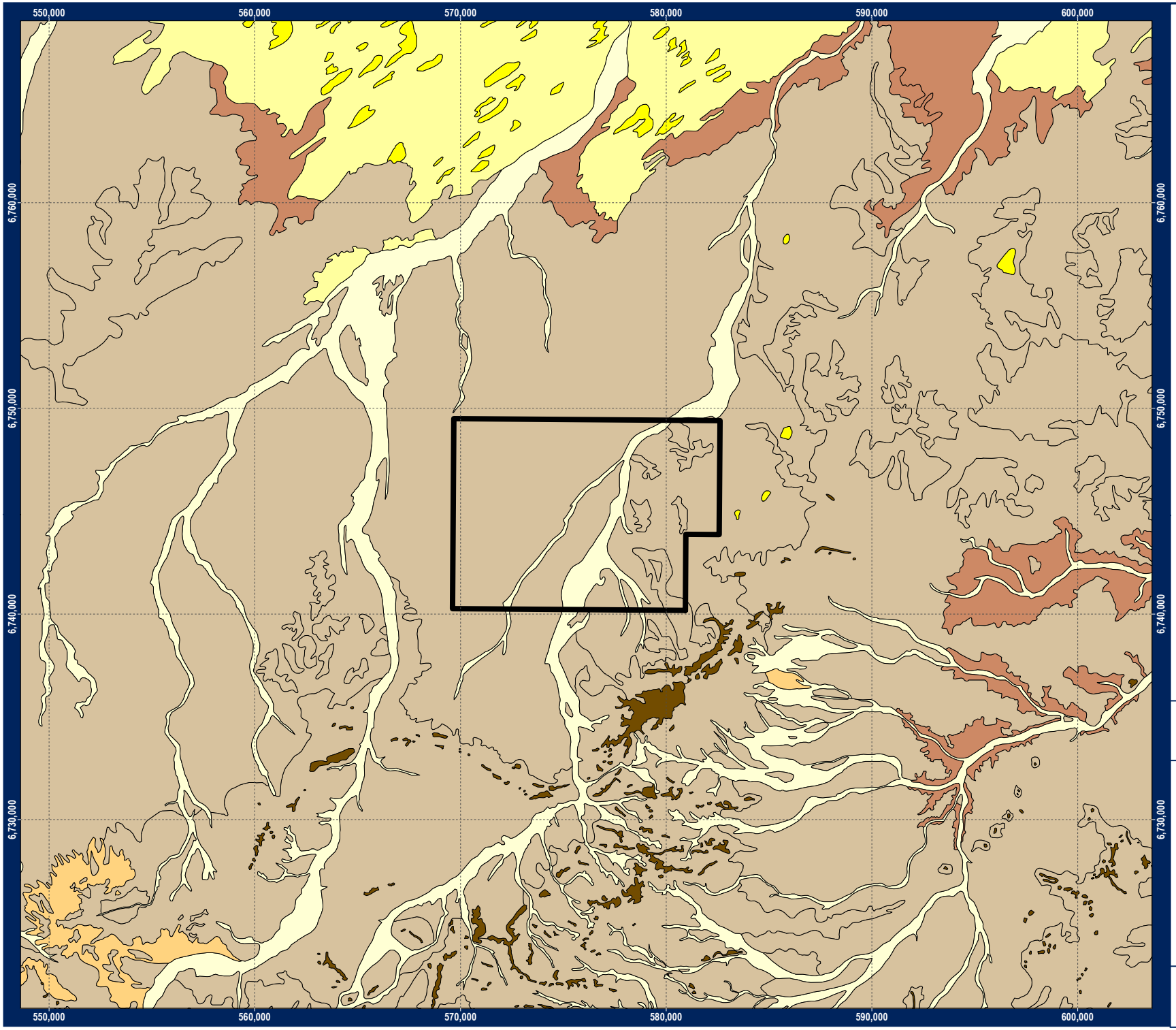
Data source:
Gov Basin Group

Fortescue Metals Group Ltd
The New Force in Iron Ore



Legend

EL 5394

GOV_Geology100k

MAINUNIT

- Bulldog Shale
- Mount Anna Sandstone Member
- Holocene: present day alluvium
- Holocene: sand dunes
- Holocene: playa sediments
- Pleistocene alluvial fan
- Danae Conglomerate Member

EL 5394
Surface geology - 1:100,000

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:250,000
Coordinate System: GDA 1994 MGA Zone 53
Document Name: South Australia_Gawler

Date: 11/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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Kilometres

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Data source:
Gov 100k Geology

Fortescue Metals Group Ltd
The New Force in Iron Ore

Legend

- EL 5394
- fault
- Coober Pedy Ridge felsic granulite and granulite facies paragneiss (Mount Woods Complex)
- Iron Formation
- Mulgathing Complex:gneisses; iron formation; mafic granulite

EL 5394
Archaean to early Mesoproterozoic

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:250,000
Coordinate System: GDA 1994 MGA Zone 53
Document Name: South Australia_Gawler

Date: 12/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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Kilometres

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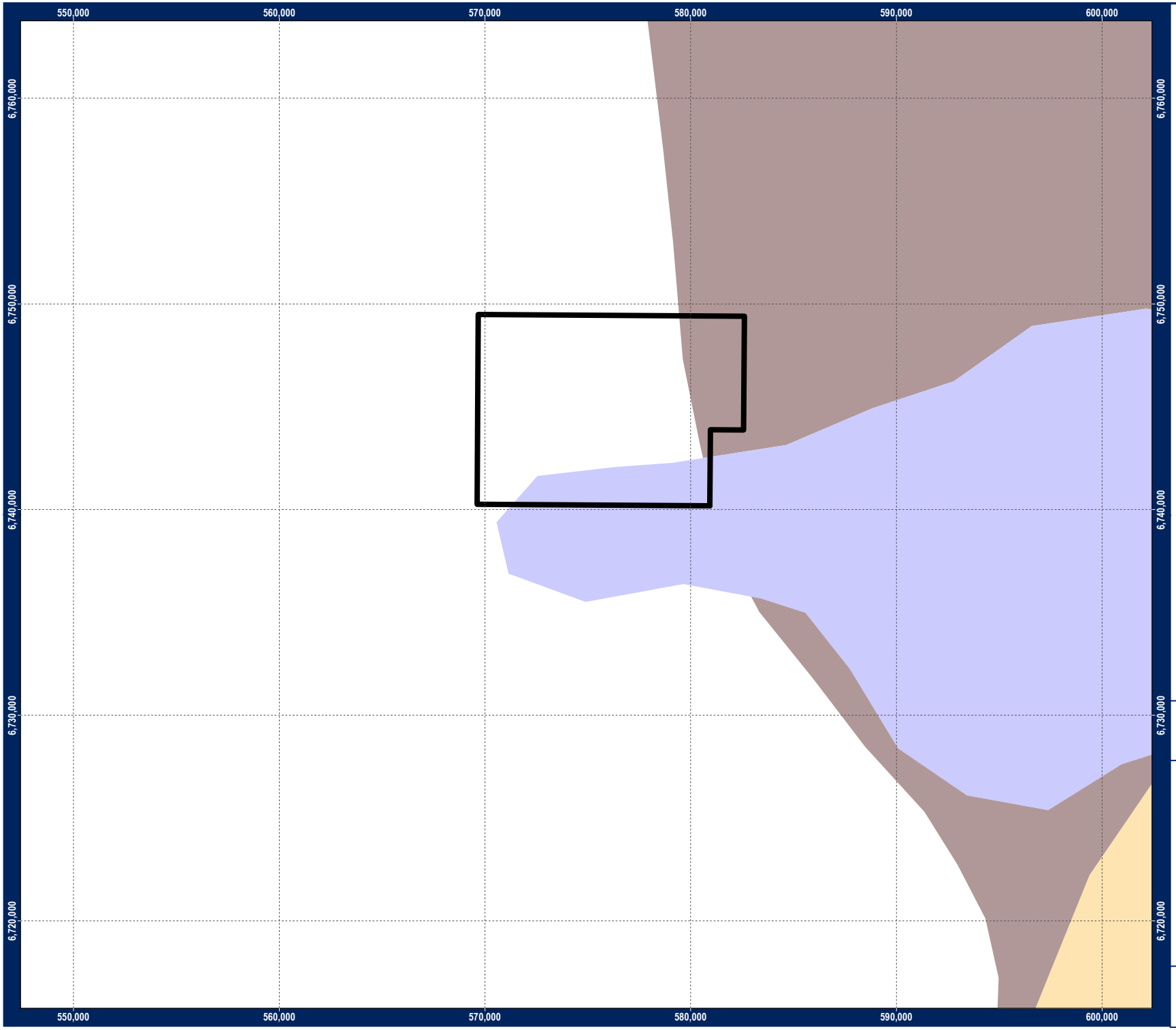
Data source:
Gov 2M Geology

Fortescue Metals Group Ltd
The New Force in Iron Ore



Legend

- EL 5394
- Relief Sandstone, Ouldburra Formation, Cootanoorina Formation
- Umberatana Group
- Wilpena Group

EL 5394
Neoproterozoic to Ordovician

Requested By: DMITRE
Drawn By: FMG Exploration
Revised By: RBackus
Scale: 1:250,000
Coordinate System: GDA 1994 MGA Zone 53
Document Name: South Australia_Gawler

Date: 12/06/2015
Size: A4L
Revision: 0
Confidentiality: 0

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Kilometres

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Data source:
Gov 2M Geology

Fortescue Metals Group Ltd
The New Force in Iron Ore

Report

Final Surrender Report: EL 5394 (Billa Kalina)

16 April 2014 to 15 April 2016
100-AN-EX-1682

Fortescue
The New Force in Iron Ore

Report Title	Final Surrender Report for the Period 16 April 2014 to 15 April 2016, EL5394
Project Name	Billa Kalina
Tenement Number	EL 5394
Tenement Operator	Fortescue Metals Group Ltd
Tenement Holder	FMG Resources Pty Ltd
Report Type	Final Annual Exploration Report
Report Period	16 April 2014 to 15 April 2016
Author	Rachel Perkins
Date of Report	13 June 2016
Report Number	100-AN-EX-1682
Target Commodity	Copper, Gold, Uranium

TABLE OF CONTENTS

1. SUMMARY

This report discusses the exploration activities of FMG Resources Pty Ltd ("Fortescue") carried out within EL 5394 for the period 16 April 2014 to 15 April 2016. This is the final report for the licence.

1.1 Location

EL 5394 is located approximately 105 km east-southeast of Coober Pedy, in the Gawler Craton of South Australia. Access to the licence is via the Stuart Highway, and unsealed secondary roads and tracks.

1.2 Geology

The licence is situated in the north-eastern Gawler Craton – specifically in the Eromanga Basin – and is situated approximately 30 km northeast of Prominent Hill, in the north of the Olympic IOCG Province. This area is known as a favourable location for exploration for IOCGU type mineralisation systems.

1.3 Work Carried Out

During the reporting period, native title negotiations were conducted for this licence, as well as in-house background research and a historic data compilation and review were conducted on this licence. External geological training to better understand the geological terrain was also accomplished during the period.

1.4 Results & Conclusions

After completing a historic data review, Fortescue has deemed that the licence is a low priority target, and has subsequently surrendered the licence.

2. INTRODUCTION

This report discusses the exploration activities of FMG Resources Pty Ltd ("Fortescue") carried out within EL 5394 for the period 16 April 2014 to 15 April 2016. This is the final report for the licence.

3. LOCATION AND ACCESS

EL 5394 is located approximately 105 km east-southeast of Coober Pedy, in the Gawler Craton of South Australia. Access to the licence is via the Stuart Highway, and unsealed secondary roads and tracks (**Figure 1**).

The licence falls within the Woomera Prohibited Area, specifically within the Defence Infrequent Zone. On 9 August 2014, amendments to the Defence Act 1903 – affecting permits and access to the Woomera Prohibited Area (WPA) – came into force. These amendments will provide new non-Defence users – including Fortescue – greater certainty over access arrangements.

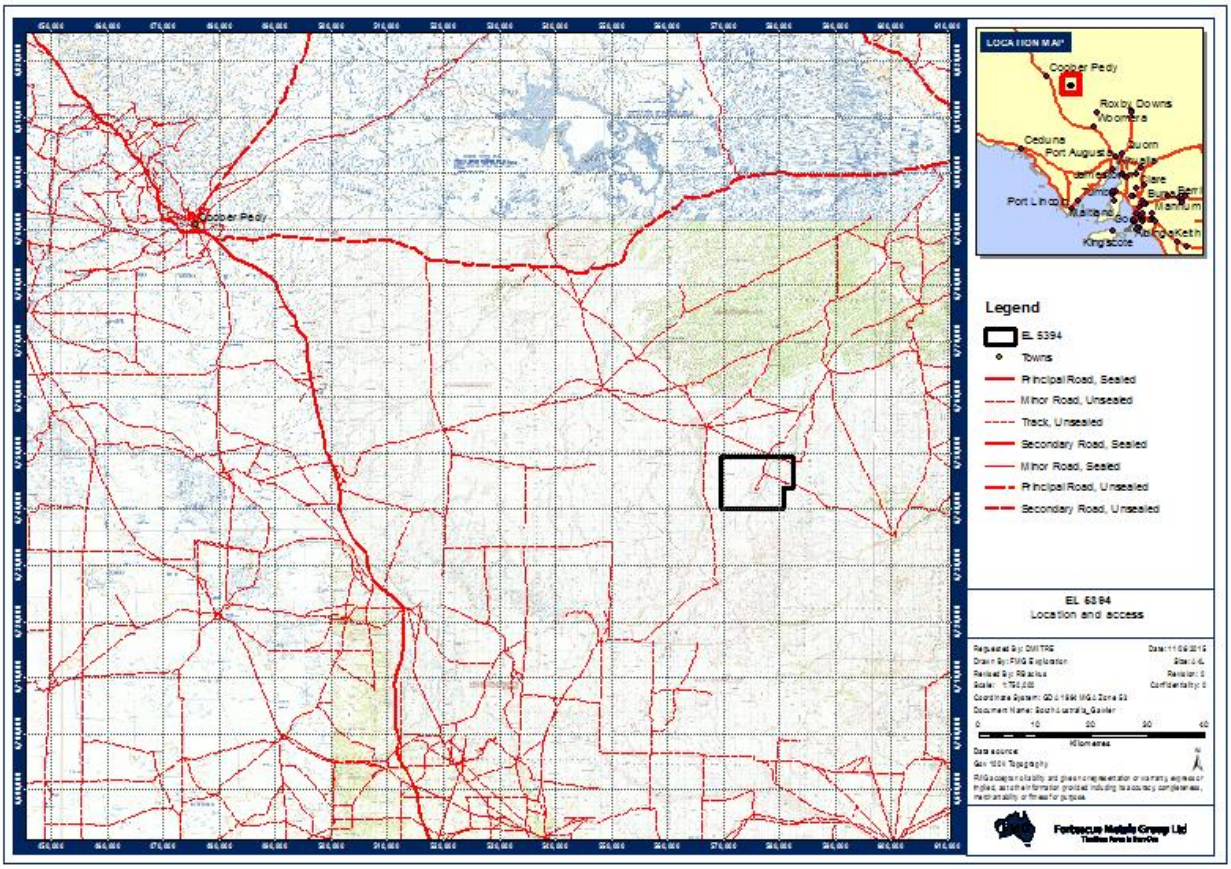

Figure 1: Location and Access

4. TENEMENT STATUS

The current tenement status is summarised below in **Table 1**.

Tenement	Number	Area (sq. km)	Grant Date	Expiry Date	Period Reported On
Billa Kalina	EL 5394	113	16/04/2014	15/04/2016	16/04/2014 – 15/04/2016

Table 1: Summary of tenements

5. GEOLOGY & MINERALISATION

The licence is situated in the north-eastern Gawler Craton (**Figure 2**) – specifically in the Eromanga Basin (**Figure 3**) – and is situated approximately 30 km northeast of Prominent Hill, in the north of the Olympic IOCG Province. This area is known as a favourable location for exploration for IOCGU type mineralisation systems.

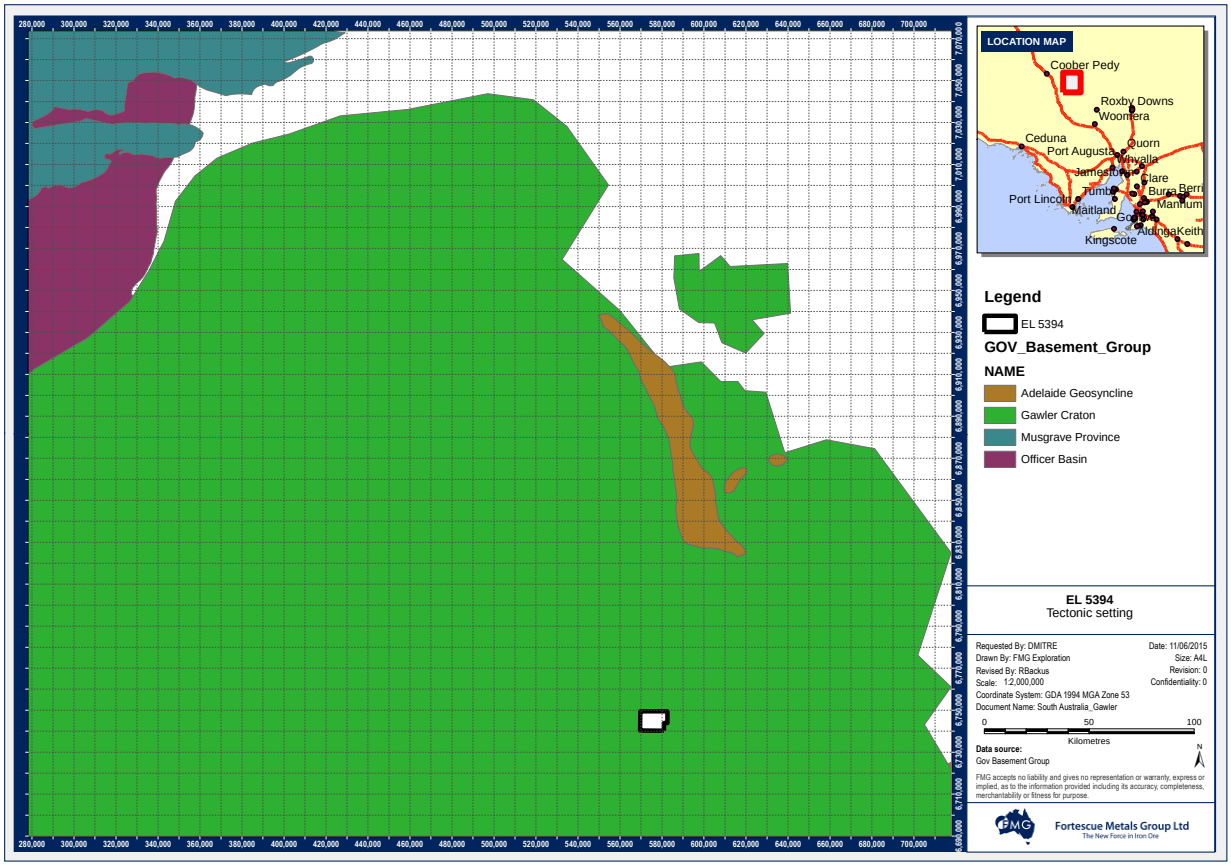

Figure 2: Tectonic setting

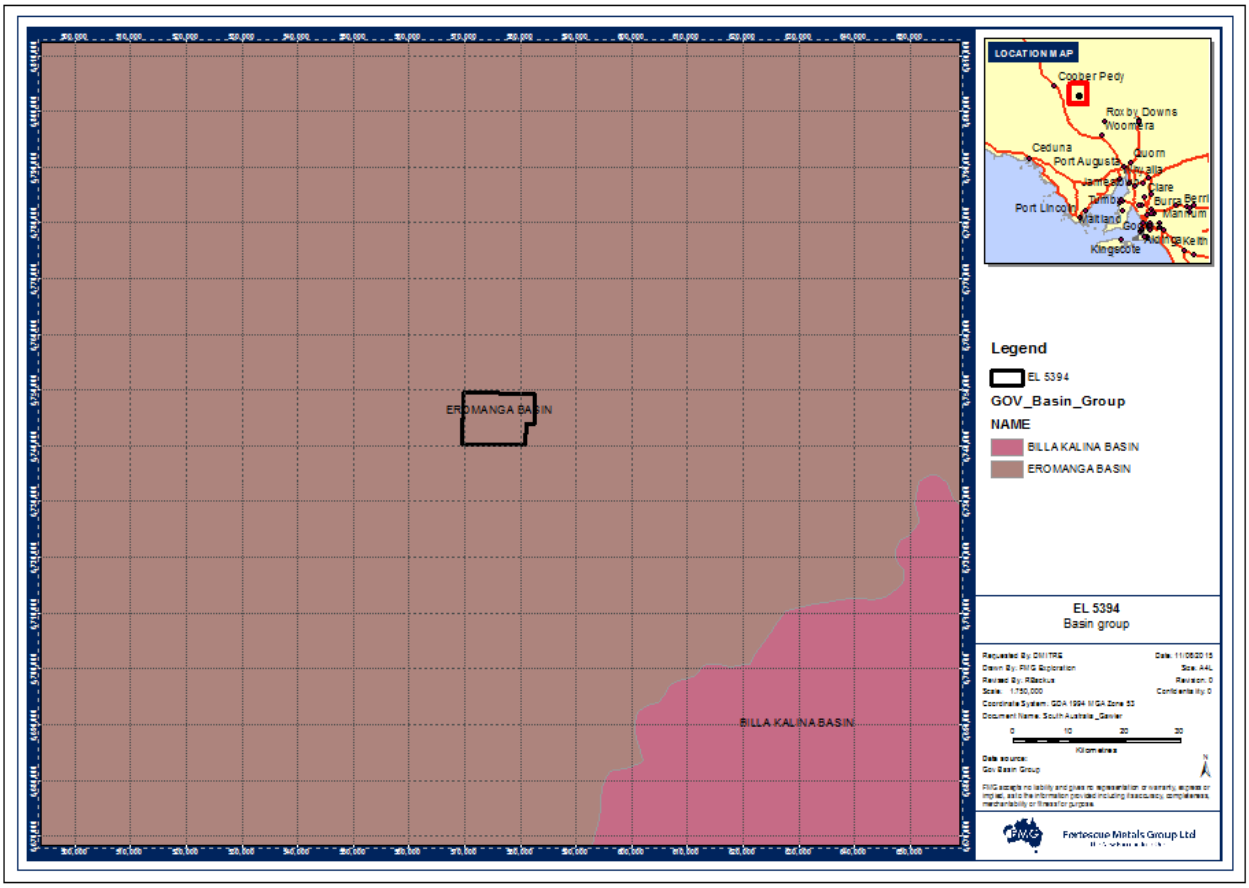

Figure 3: Basin group

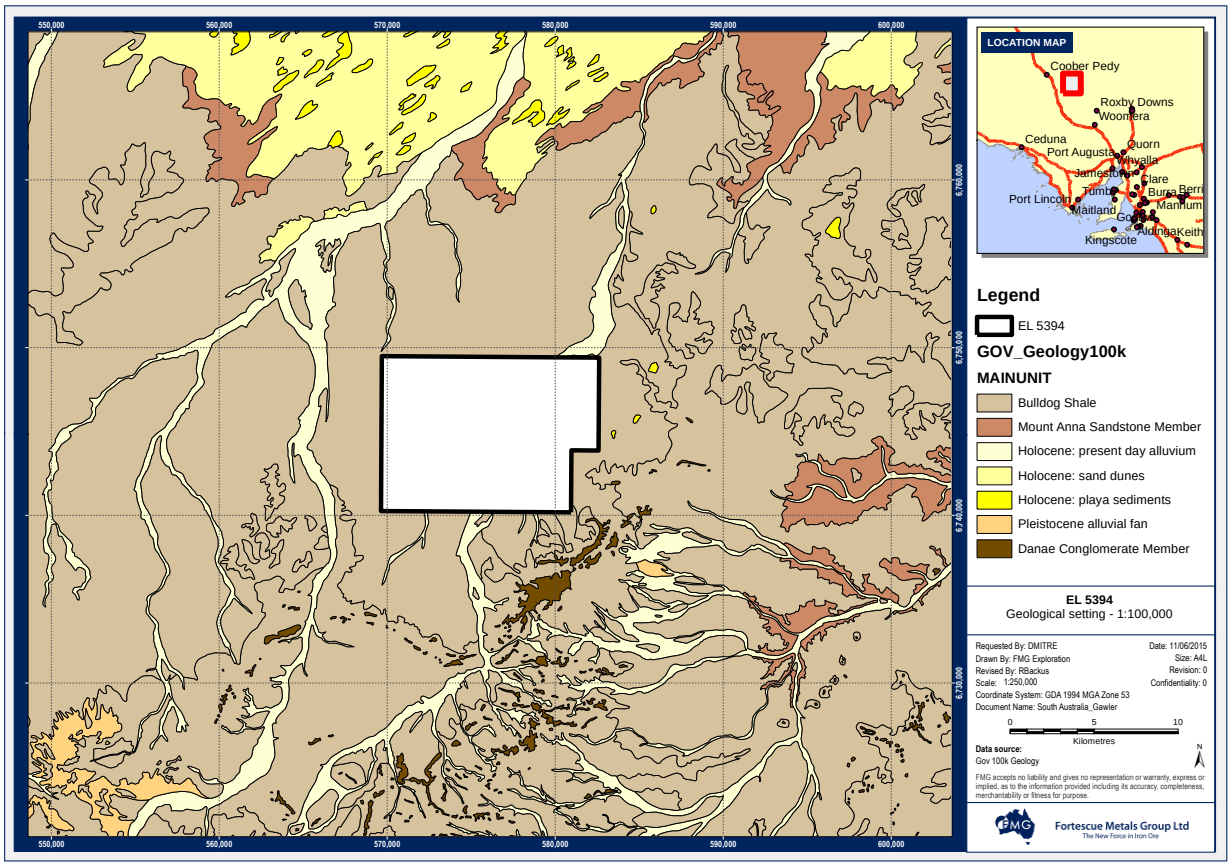

Figure 4: Surface geology

Sediments of the Jurassic to Cretaceous Eromanga Basin occur in the region, but are generally poorly exposed, being largely covered by Cainozoic sediments and weathering mantles. In this licence, the Bulldog Shale is present (Freytag, 1966) – see **Figure 4**. The Cadnaowie Formation and Bulldog Shale are representatives of the Neales River Group (Wopfner et al., 1970), while the Bulldog Shale is the oldest formation within the Marree Subgroup (Thomson, 1980).

The Gawler Craton is interpreted to form the Archaean basement underlying the licence. The Gawler Craton is a stable crystalline basement province comprising rocks mantled in part by thin platformal sediments and regoliths of Neoproterozoic to Cainozoic age (Mesozoic to Cainozoic on this licence). It is defined as a region of crystalline basement that has not been substantially deformed or remobilised, except by minor epeirogenic movements, since about 1,450 Ma (Drexel et al, 1993).

Specifically, the basement comprises the Coober Pedy Domain (Mount Woods Complex) - **Figure 5.** This comprises granulite-grade paragneiss, often iron-rich; and felsic granulite.

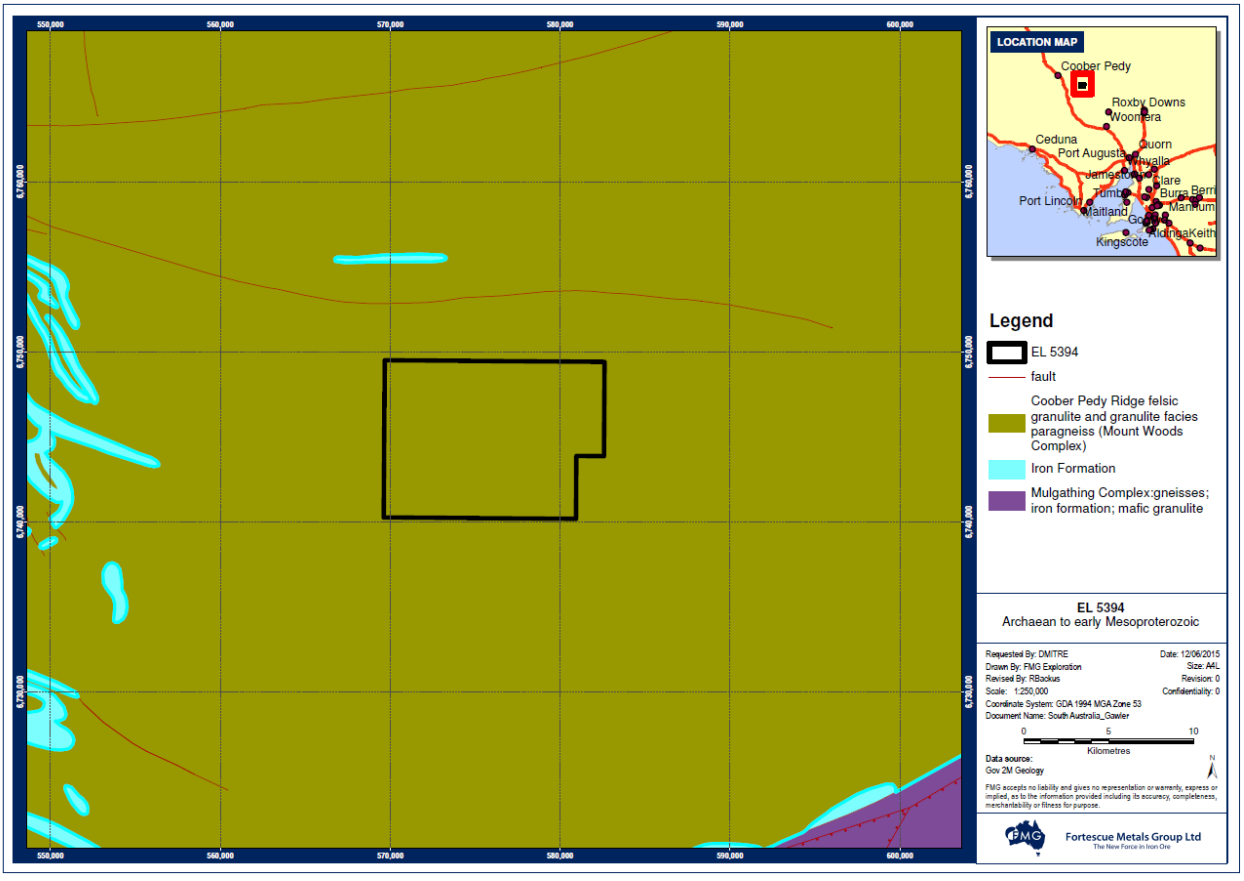

Figure 5: Archaean to early Mesoproterozoic geology

The Mount Woods is a sparsely outcropping domain in the far north of the Gawler Craton. It is bounded to the west of the Coober Pedy Ridge (Domain) and the Christie Domain; and to the south and east by undifferentiated Precambrian rocks. It comprises supracrustal successions of interlayered banded iron-formation, leucocratic gneiss, psammitic and pelitic schists, and calc-silicates. The depositional ages on the meta-sedimentary rocks are poorly constrained, but there appear to be three phases of magmatism at ~1,740 Ma, ~1,690 Ma and ~1,585 Ma. The youngest

reported age is 1,575 +/- 3 Ma. At least some of the meta-sedimentary rocks have been intruded by the ~1740 Ma granites, although one meta-sedimentary sample has an apparent maximum depositional age of ~1,630 Ma. This and other samples contain a major detrital peak at ~1,750-1,740 Ma. It is possible that two or more meta-sedimentary rock packages are present in the Mount Woods Domain. One (the older) of these packages may correlate with the Hutchison Group of the southeastern part of the Gawler Craton (Fraser and Reid, 2007; Betts et al., 2003).

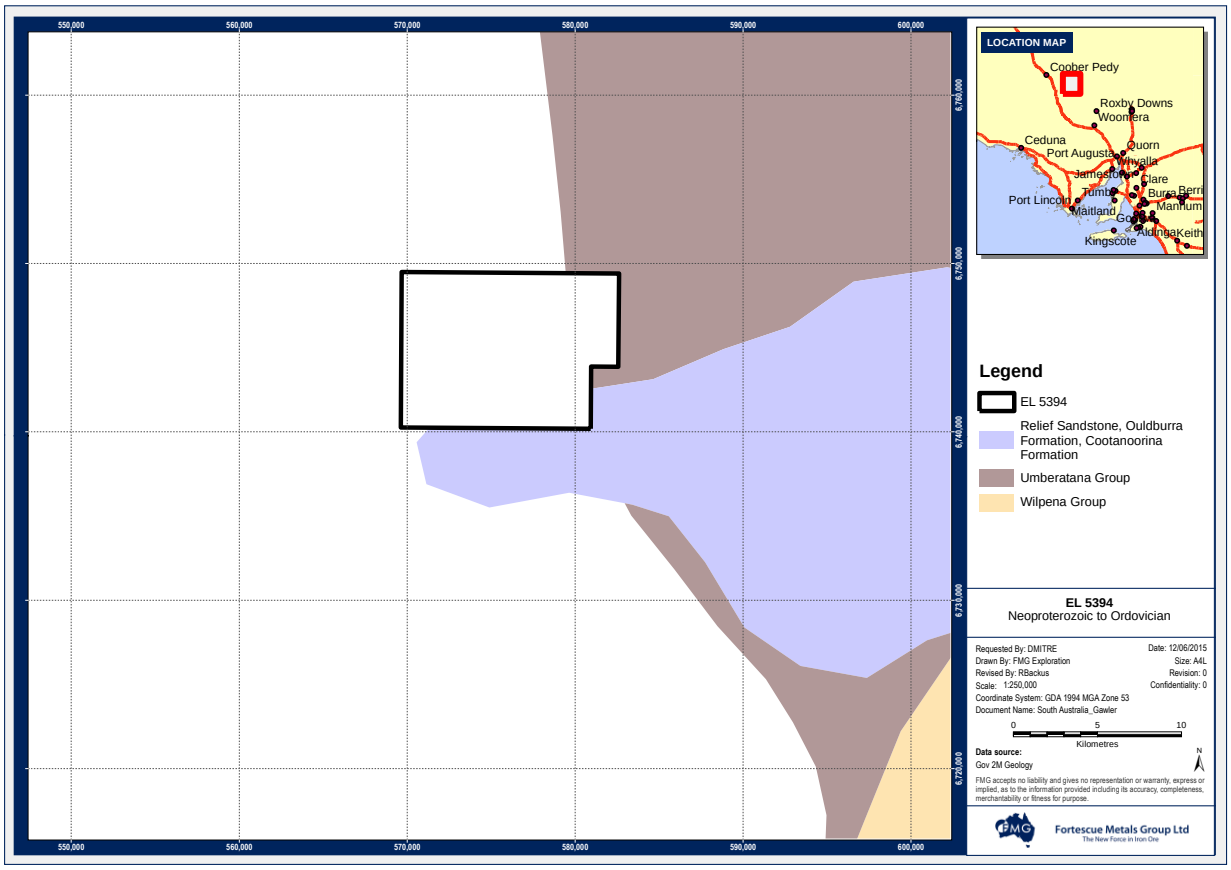

Figure 6: Neoproterozoic to Ordovician Geology

The Umberatana Group in the east of the licence (**Figure 6**) was defined by Thomson et al. (1964) to encompass all the undoubted glacial deposits of the Adelaide Geosyncline; it is of Sturtian to early Marinoan age. After recognition of the regional unconformity at the base of the Sturtian tillites, the original definition of the base of the Umberatana Group was adjusted to this unconformity (Thomson, 1969). The Umberatana and Wilpena Groups record gradual transgression of the platforms (Stuart Shelf and Curnamona Craton) during a phase of regional subsidence after early Adelaidean rifting, and were combined by Preiss (1982) into the Heysen Supergroup. Evidence of rifting persists into the early Sturtian, but such rifts are in different orientations and locations from those of the early Adelaidean. The break between the Burra and Umberatana Groups changes from a disconformity in the Mount Lofty Ranges to a low-angle unconformity in the southern Flinders Ranges, but more severe tectonic effects occur at this level in the central Flinders Ranges, associated with diapirism and extensional faulting (Drexel et al., 1993).

In the south of the licence, Early Cambrian aeolian, fluvial and evaporitic to tidal sandstone to mudstone; and marine limestone and dolomite sediments of the Relief Sandstone, Ouldburra Formation, Cootanoorina Formation are interpreted to occur (**Figure 6**).

The major mineralisation systems with in the project area are associated the iron oxide copper-gold (IOCG) metallogenic belt. IOCG mineralisation is typically found in hydrothermal styles, which is more prevalent along the eastern margin of the Gawler Craton. Also known as the Olympic IOCG Provence, there are three known areas with major metal endowment within the belt, they are in the Moonta-Walleroo-Roopena region, the Mount Woods Inlier and in the Stuart Shelf Basement. The basic vectors associated with mineralisation formation in these areas appear to be the occurrence of the Hiltaba Suite mafic and felsic intrusions (1,590 Ma), strong iron oxide alteration. Gawler Range Volcanics in many occasions are also strongly associated with areas of mineralisation. Major examples of these styles of deposits in close proximity to the tenure are Olympic Dam and Prominent Hill.

6. PREVIOUS EXPLORATION

EL 104 (2,462 square km covering the entire tenement) was granted to Shell Development (Australia) Pty Ltd for one year, commencing on 31st. October, 1973. The exploration target was shallow surface mineable coal in Permian sediments along the southern rim of the Boorthanna trough which forms part of the Arckaringa Basin. Assessment was made concurrently with that of EL 108. Nine holes with a total of 3,640 ft. (1,110 m) were drilled in EL 104. The drilling results showed that there were no coal measures present within the area. The edge of the area where Permian coal measures are subcropping below Mesozoic sediments follows approximately the northern lease boundary. The lease was subsequently relinquished.

An area covering most of EL 5394 (Exploration Licence 345) was granted to Kennecott Explorations (Australia) Ltd on May 3, 1977 to explore for stratiform copper potential. Interpretation of regional aeromagnetic and gravity data led to the identification of four target areas within all of Kennecott's licences. Subsequent review led to the selection of one of these target areas for detailed aeromagnetic survey to facilitate selection of an initial stratigraphic drill site. The survey area (approximately 1,200 sq. km) covered the southern portion of the Mt. Purvis (EL 345) exploration lease, which covers EL 5394. The survey was flown by Geometries Ltd at a spacing of 500 metres, a flight height of 100 metres, and intervals of 10 km. Navigation was visual with flight paths on E-W flight lines with flight line N-S tie lines were flown at a Geometrix 6803 proton magnetometer. The aeromagnetic data was interpreted to show depths to Carpentarian Basement through analysis of anomalies attributed to iron-formations; mafic and felsic intrusions; and gneisses. In general, depths increase from about 100 to about 2,000 metres from west to east, but the basement topography is irregular due to numerous fault block movements. The exploration target was a body of copper mineralisation similar to that at Olympic Dam, and was presumed to be located on the flanks of a basement topographic high; and adjacent major faults or fault intersection were thought to be of importance. Recognition of basement topography, at the time of deposition of the Adelaidean sediments, was considered virtually impossible because of subsequent fault block movements. However, it was suggested that basement highs may have been associated with intrusive bodies and these can be recognised from the magnetic data. The area of intermediate basement depths (400-700 metres) was considered most likely to contain sufficiently thick sequence of Adelaidean sediments to host a major body of mineralisation at accessible depths. Two priority targets, A1 and A2, indicated possible basement highs associated with basic intrusives, and seismic reflection traverses over each of the targets was recommended for drill planning. It was decided to complete a stratigraphic drill hole over the A1 (Warriner Creek) anomaly. This drill hole did not intersect Adelaidean sediments, and the EL 345 was recommended for relinquishment.

Aquitaine Australia Minerals Pty Ltd had a licence covering most of EL 5394, except for the far east of the licence, from 1980-1981: EL 626. Results of a gravity survey completed in late 1980 over two regional gravity/magnetic anomalies in EL 626 were received in February, 1981. A four milligal residual gravity anomaly was found to exist on the flank of the northern regional gravity/magnetic anomaly. Drill hole SCH001 was drilled – although not on current licence EL 5394 – to test this residual anomaly for Adelaidean sediments and underlying Roxby Downs type Cu-U-Au bearing host rocks. Neither of these rock types was intersected before penetrating basement gneiss. Potential for these types of deposits was therefore considered have diminished, and no further work was planned.

Stockdale Prospecting Ltd explored an area over most of the licence as part of its Painted Hill Project (EL 1013) from mid-1982 to mid-1987. During this time, the company conducted geophysical surveys on the licence, including aeromagnetics, ground magnetics, radiometrics, and EM. The company also conducted heavy mineral sampling, a photographic geological interpretation, and a review of seismic data. The heavy mineral sampling revealed that five out of 65 samples taken on the licence contained kimberlitic indicator grains (garnets, ilmenite and spinel). Interpretation of magnetic data showed broad anomalies, interpreted to be the basement at a depth of over 300 metres, for the main anomaly of interest. Based on this interpretation, Stockdale concluded that the anomaly was of no further interest. The company concluded that the scattered kimberlitic grains recovered from the heavy mineral sampling were probably not from a proximal source, and that a secondary source was likely to be Cretaceous sediments. This conclusion was backed up by the results of the geophysical studies and remote sensing, which failed to recognise any surface expression of kimberlitic emplacement. Stockdale relinquished the licence. Cyprus Australia Coal Company completed exploration for sub-bituminous Permian coal on the licence during this period, in a joint venture with Stockdale. At the time of relinquishment of the licence by Stockdale, Cyprus was compiling data to complete a feasibility study on its Weedina Deposit.

Minotaur Operations Pty Ltd explored conducted work over the licence area from 1999 to 2010. Two gravity anomalies (Warriner Creek and Mt Purvis) were identified near the major NE-trending Bulgunnia Fault. The Warriner Creek gravity anomaly had a magnitude of ~3 mGals and was associated with a 600 nT aeromagnetic anomaly, whereas the Mt Purvis gravity anomaly has a greater amplitude of 6 mGals, associated with a weaker aeromagnetic anomaly of only 200 nT. Modelling of the Mount Purvis gravity anomaly indicated a probable depth to top of the source body of ~600 metres. Drilling of the Mt Purvis gravity anomaly was initiated in November 2004 with a pre-collar to 221 metres through succession of Mesozoic and Palaeozoic sediments (WC04R001). An NQ diamond tail was added in June 2005 to a total depth of 849.7 metres (WC05D001). Overlying the crystalline basement in drill hole WC04R001/WC05D001 was a flat-lying, undeformed sequence ~435 metres thick and comprising, in ascending stratigraphic order: a basal sandstone (139 metres thick); dolomite and dolomitic siltstone (244 metres thick); and capped by an amygdaloidal basalt (52 metres thick). The precise age for the sequence(s) was not known and options included equivalence to Pandurra Formation (Mesoproterozoic), basal Adelaidean (Neoproterozoic) sediments, volcanics of the Callanna Group, and Cambrian sediments. Depth to crystalline basement within drill hole WC04R001/WC05D001 was 649 metres. Assumed to be of Palaeoproterozoic age, basement consisted predominantly of garnetiferous quartz-feldspar-biotite paragneiss and quartz-feldspar pegmatite with lesser, foliated granitoid, chlorite-amphibole skarn and biotite-cordierite schist. Apart from some sericitic alteration and minor haematite alteration of feldspar, evidence is lacking for any other pervasive alteration and fluid movement. No significant anomalous Au or base metal results were recorded. The recorded specific gravity values for drill hole WC04R001/WC05D001 were lower than anticipated for the modelled ~5 mGal gravity, prompting re-appraisal of the gravity model and data. It was possible to modify the size and depth extent of the causative body to produce consistent results between observed and computed gravity profiles. Assumptions used were a body of average density of 2.86, extending from 650 metres below ground level to a depth of 1.5 km, width of 3.5 km and strike extent of 5.0 km, which were thought to be reasonable assumptions for a Palaeoproterozoic metasedimentary succession. WC07D01 was drilled to test the modelled broad, deep Trumpeter gravity anomaly which straddles the tenement boundary between EL 3302 and EL 3545. The gravity anomaly was interpreted to reflect the presence of garnetiferous

gneisses (average SG of 2.8) within a palaeo-topographic high in the basement. A similarity between the native copper association in the basalt intersected by WC07D01 and native copper occurrences in prehnite-pumpellyite facies altered basalts in northern Michigan, North America was noted. The basalt was also found to be anomalous in copper with an average grade of ~200 ppm, though maximum recorded was 2,020 ppm Cu over a 1 metre interval. The absence of Mesoproterozoic strata (e.g. Gawler Range Volcanics) and lack of any significant alteration in WC07D01 indicated very low potential for classic Mesoproterozoic IOCG-style mineralisation in the immediate vicinity. Toro Energy withdrew from the Joint Venture with Minotaur Operations to explore for potential uranium mineralisation on the 15th March 2010. Minotaur Operations also withdrew from the Joint Venture with BHP Billiton (all minerals) and elected to transfer all its acquired equity in the project to BHP Billiton. BHP Billiton decided to continue exploration on the tenements; however, it later reassessed its position and relinquished the package.

Straits Exploration (Australia) Pty Ltd conducted exploration for IOCG(U) deposits on the tenement between 2010 and 2013 in a joint venture with Uranium Exploration Australia Ltd (UXA), prior to acquisition of the licence by Fortescue. All available geophysical was reprocessed with UBC inversions carried out on both the gravity and magnetic data, by GeoDiscovery Group. The UBC inversions revealed some interesting gravity and magnetic anomalies; however infill gravity was required. Inversion modelling of the gravity data to assist in target generation, and possibly further drill testing of subsequent drill targets was planned, once infill gravity surveying was completed. However, Straits dropped the project in 2012, and UXA went into administration during 2013.

7. FORTESCUE EXPLORATION 2014-2016

During the reporting period, native title negotiations were conducted for this licence and Fortescue continued its extensive in-house background research and historic data compilation. This compilation included a search of all open file reports through SARIG and an in-house compilation of all historic drilling data.

External geological training to better understand the geological terrain was also accomplished during the period.

8. CONCLUSIONS

After completing a historic data review, Fortescue has deemed that the licence is a low priority target, and has subsequently surrendered the licence.

9. REFERENCES

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10. ATTACHMENTS

Work	File Name	Format
Final report	EL5394_2016F	PDF
Verification	EL5394_2016V	PDF

2: Files submitted in digital format