Report ARU-16/002

FINAL REPORT
AND
ANNUAL REPORT FOR YEAR ENDING 30 NOVEMBER, 2015
EL24548 (YALYIRIMBI),
NORTHERN TERRITORY, AUSTRALIA

By

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Of

EXPLOREMIN PTY LTD

For

ARAFURA RESOURCES LTD

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SUMMARY

This report summarises exploration activities conducted on Exploration Licence 24548 (“Yalyirimbi”) through its 10 years of grant. The licence was issued to Arafura Resources Limited (Arafura) on the 1st December, 2005, and ultimately surrendered on 30 November, 2015.

The area was originally sought by Arafura to explore for rare earth element (REE) mineralisation to complement Arafura’s nearby Nolans Bore REE-P-U deposit. It was one of six exploration licences surrounding the Nolans Bore deposit which make up Arafura’s Aileron-Reynolds project. With heightened world interest in uranium around 2004-05, Arafura’s attention soon focussed on the uranium potential of the tenement because of the potential for secondary uranium mineralisation, derived from the erosion of adjacent uraniferous basement granites and gneisses, and hosted by unconsolidated Cainozoic basin sediments of the Whitcherry Basin.

Throughout the first year of grant no on-ground exploration was conducted on EL24548 as Arafura sought to separate its uranium interests throughout the Northern Territory from its REE and other interests. This was finally achieved in March 2007 when NuPower Resources Ltd (“NuPower”) was de-merged from Arafura and listed on the Australian Stock Exchange. EL24548 was then transferred to NuPower though Arafura retained the rights to all other minerals.

Uranium exploration by NuPower then commenced.

- Airborne EM surveys designed to locate palaeochannels in Cainozoic basins overlying favourable Proterozoic basement rocks were completed in 2007 and 2008.
- Groundwater sampling (station bores initially but exploration drill holes subsequently) was undertaken in 2007, 2008 and 2009.
- Infill helicopter-supported gravity surveying was financed by NuPower in association with regional wider-spaced surveying conducted by the Northern Territory Geological Survey in 2008.
- 30 ‘mud’ holes totaling 5354 metres were drilled into interpreted palaeochannels in 2008.
- Down-hole geophysical logging was completed in all holes.

Anomalous gamma responses were detected in 9 of the holes though subsequent geochemical results were disappointing.

Apart from some very limited rock chip sampling in 2012, this effectively marked the end of on-ground uranium exploration by NuPower who continued to analysis of drill, groundwater and geophysical through to 2010 when uranium investigations came to a close. NuPower exited the project area in February and the licence was transferred back to Arafura.

Between 2010 and 2014 Arafura farmed out its iron ore rights in the licence area initially to Ngalia Resources Pty Ltd (“Ngalia”) and subsequently to Ferrowest Ltd (“Ferrowest”) who acquired Ngalia’s iron ore rights in early 2013.

Iron ore exploration by these parties included:

- Reconnaissance mapping.
- 6218 metres of RC drilling in three campaigns in 152 holes.
- 357 metres of PQ3 core drilling in 8 holes some of which twinned earlier RC holes.
- Metallurgical investigations focusing on beneficiation to produce high grade concentrates.
- Over 3000 iron ore assays.
• Infill gravity survey with stations spaced 50 metres apart.
• 45 SG determinations on core samples.
• Block modelling and resource estimation.

The final resource estimate by Ferrowest in the Indicated and Inferred categories (JORC 2004) is 13.3 MT at 27.1% Fe, 53.9% SiO2, 4.3% Al2O3, 0.02% P, 0.08% S and 2.3% LOI.

With the collapse of iron ore prices in 2015, Ferrowest withdrew of the project and surrendered its iron ore rights to Arafura.

INTRODUCTION

Background

The Yalyirimbi exploration licence (Figure 1) was initially sought by Arafura Resources Ltd (“Arafura”) in 2005 to assess the potential for additional rare earth element resources in the Arunta region following Arafura’s then recent success in identification of the world class Nolans Bore deposit in the Reynolds Range, 50 kilometres to the east of Yalyirimbi.

With heightened world interest in uranium around that time, Arafura’s attention soon focussed on the uranium potential of the tenement because of the potential for secondary uranium mineralisation, derived from the erosion of adjacent uraniferous basement granites and gneisses, and hosted by unconsolidated Cainozoic basin sediments of the Whitcherry Basin (Fabray, 2005).

In early 2007 Arafura demerged its extensive uranium interests in the Northern Territory into NuPower Resources Ltd (“NuPower”) to whom EL24548 was transferred on 14 March 2007. For the next 6 years all exploration on the tenement was carried out NuPower’s tenure reign though actual uranium exploration by NuPower ceased around 2010.

Subsequent to the demerger of NuPower, Arafura retained the rights to all other metals except uranium on the licence area and on 28th May 2010, Arafura farmed out their iron ore rights to Ngalia Resources Pty Ltd (“Ngalia”) and these rights were subsequently assumed by Ferrowest Limited (“Ferrowest”) in 2013. Ngalia/Ferrowest conducted all the exploration on EL24548 from 2010 through to surrender of the licence in 2015.

NuPower underwent a change of name to Central Australian Phosphate Ltd in 2012 and exited the licence shortly thereafter. The licence was transferred back to Arafura on 20 February, 2013.

As a consequence of the collapse of the iron ore price in 2015, Ferrowest and Arafura signed a Deed of Cancellation whereby Ferrowest withdrew from the project entirely effective 22 September 2015.

NuPower (Rafferty, 2008):

Basement rocks of the Reynolds, Yalyirimbi and Strangways Ranges contain elevated background levels of uranium and thorium and have been explored for gold, base metals, rare earth elements and uranium. Success came with the discovery of elevated levels of rare earth elements hosted by massive fluorapatite in the Nolan’s Bore area by PNC Exploration (Australia) Pty Ltd in 1995 (Thevissen, 1995). This occurred during follow-up of an airborne radiometric anomaly as part of that company’s uranium exploration program along the Reynolds Range.

As far back as 1972 it was recognised that while these rocks may host primary deposits of uranium that they also provided a potential source of uranium for secondary uranium deposits. The products of the weathering and erosion of these rocks since the beginning of the Cainozoic have accumulated in flanking basins as thick sequences of unconsolidated material and provided a host for the precipitation of uranium from solution in meteoric groundwaters sourced from the upstanding ranges and percolating through the basinal sediments.

Arafura Resources, with this target model, also recognised the potential of the Cainozoic basins in the Aileron region on the flanks of the uraniferous basement rocks for secondary sandstone-hosted uranium deposits and applied for
and was granted a number of exploration licenses here, including EL24548, Yalyirimbi that covers part of the eastern limit of the Cainozoic Whitcherry Basin.

**Ferrowest (Johnston, 2012)**

Haematite mineralisation at Napperby is associated with isolated outcrops of Late-Proterozoic quartzites and ferruginous quartzites of the Vaughan Springs Quartzite.

The Yalyirimbi Haematite deposits occur in the late Proterozoic Vaughan Springs formation in the Ngalia Basin. The basin is a lens shaped depression in the Arunta inlier with a faulted northern boundary (Thompson 1995). Sedimentation commenced about 850 to 800 Ma when the area was part of a flat plain inundated by a small sea level rise.

The Vaughan Springs Formation is a bedded to well bedded, quartz sandstone and quartzite, which is locally pebbly; with minor mudstone and shale. The quartz sandstone has generally been compressed to a quartzite that is more resistant to erosion than surrounding rocks and forms well defined ridges.

The primary haematite mineralisation has been deposited within brecciated quartzites of the Vaughan Springs Formation and appears to be strata-bound if not strati-form. There is evidence of haematite layering and preferential replacement as well as remobilisation into breccia and fault zones. The assumption has been made that these are primary, likely hydrothermal deposits. This has been supported by regional airborne magnetometer surveys and an initial ground magnetic survey. These surveys have demonstrated that the hematite deposits are completely non-magnetic.

The reconnaissance work carried out in March 2013 and followed up in October 2013 by the Ferrowest Chief Geologist confirmed that the primary deposits are in fact hydrothermal vein systems, probably associated with regional local faulting along the complexly deformed northern limb of the Ngalia Basin.

**Location and access (Rafferty, 2008)**

The Yalyirimbi Exploration Licence is located 180 kilometres northwest of Alice Springs and 1080 kilometres south-southeast of Darwin by the Stuart Highway in the southern part of the Northern Territory of Australia (Figure 1). Turning westwards from the Stuart Highway south of Aileron, the Napperby Station Road leads into the centre of the tenement (to the community of Laramba), from where a network of station roads and tracks lead to stock waterbores, wells and dams. Access is also possible via roads and tracks leading north from the Tanami Road to the south.

**Topography and drainage (Rafferty, 2008)**

The southern part of the area comprises a flat plain rising gently northwards from around 600 to around 700m ASL, punctuated by Patty Hill and Mt Caroline rising to 748mASL and 751m ASL respectively. The Yalyirimbi Ranges rising to over 880m ASL trend northwestwards along the northern part of the tenement. Drainage from the ranges is mostly southwards including the three most prominent streams; Gidyea, Napperby and Day Creeks.

**Climate and Vegetation (Rafferty, 2008)**

The region has a semi-arid continental climate. This following description is drawn from Stewart (1982):

“The climate is characterised by long hot summers when temperatures regularly exceed 40 °C, and short mild winters. The average rainfall is about 280mm, most of which falls between October and March, but both frequency and amount are erratic.” (Stewart, 1982)

Vegetation throughout the southern part of the area consists of hummocky Spinifex grassland with sparse tall Acacia shrubland overstorey. Through the centre this is replaced by tall open mulga shrubland with Cassia and Fuchsia open shrubland understorey. In the north throughout the ranges low open eucalypt woodland and/or sparse Acacia...
shrubland with hummocky Spinifex grassland understorey is prevalent. Bordering the main south-draining creeks low open Coolibah woodland with open grassland understorey is prevalent. (Wilson et. al. 1991).

**Logistics (Davey, 2012)**

Alice Springs (pop. 27,000) is serviced daily by jet aircraft from several Australian capital cities (Sydney, Adelaide, Perth and Darwin) and less regularly from Brisbane, Cairns and Broome. Because of its location mid-way between Adelaide and Darwin the town is also well serviced by road transport and interstate bus services.

The Stuart Highway and Adelaide-Darwin transcontinental railway corridor, passing through Alice Springs, pass to the east of the tenement whilst the Tanami Road passes to the south. The natural gas pipeline from the Amadeus Basin (west of Alice Springs) to Darwin passes within 4 kilometres of the eastern edge of the tenement.

Alice Springs is the closest services centre, 180km by road via the Stuart Highway. Napperby Station homestead lies in the centre of the tenement (Figure 2). Fuel and accommodation for the duration of the drilling program were provided by Napperby Station. The Tilmouth Well Roadhouse, located on the Tanami Road, lies 40km south by road of Napperby Station and offers an alternative source of fuel and accommodation. The nearest medical facilities are located at the Aboriginal community of Laramba (located in the centre of the tenement) or at Alice Springs.
Figure 1: Location of EL24548 (Yalyirimbi).
TENURE

Mining/Mineral Rights

Exploration Licence 24548 (Yalyirimbi), which originally comprises 495 graticular blocks covering 1,567 square kilometres (Error! Reference source not found.), was granted to Arafura Resources NL (ABN 22 080 933 455) on 1 December, 2005 for a period of 6 years. It was transferred to NuPower Resources Ltd (ABN 91 120 787 859) on 14 March 2007 as a result of the demerger of the uranium assets from Arafura to NuPower, but Arafura retained the rights to all other metals, excluding uranium.

Subsequent to the demerger of NuPower, Arafura retained the rights to all other metals except uranium on the licence area and on 28th May 2010, Arafura farmed out their iron ore rights to Ngalia Resources Pty Ltd (“Ngalia”) and these rights were subsequently assumed by Ferrowest Limited (“Ferrowest”) in 2013. Ngalia/Ferrowest conducted all the exploration on EL24548 from 2010 through to surrender of the licence in 2015.

NuPower underwent a change of name to Central Australian Phosphate Ltd in 2012 and exited the licence shortly thereafter. The licence was transferred back to Arafura on 20 February, 2013.

As a consequence of the collapse of the iron ore price in 2015, Ferrowest and Arafura signed a Deed of Cancellation whereby Ferrowest withdrew from the project entirely effective 22 September 2015.

Due to the enactment of the new Minerals Title Act, the Department formally requested that all ELs greater than 250 blocks be reduced to a maximum of 250 blocks. Consequently, EL24548 was reduced to 250 blocks on 23 August 2012, and 125 of these were relinquished with the remainder of the blocks relinquished at the start of the final year of the licence (Figure 2).

In other years at the request of NuPower normal reductions were waived by the relevant statutory authority.

Land Tenure

At the time of the initial grant, the licence encroached upon the following perpetual pastoral leases (Figure 3):

- NT Portion 703 Aileron Station.
- NT Portion 747 Napperby Station
- NT Portion 748 Napperby Station
Figure 2: Tenure variations at end of Years 7 and 9, EL24548, Yalyirimbi.

Figure 3: Pastoral leases impinged by EL24545 at time of grant.
GEOLOGY (Higgins, 2009)

REGIONAL SETTING

The Yalyirimbi license EL24548 is situated in the Aileron Province of the Arunta Region in the southern part of the Northern Territory (Figure 1).

![GEOLOGICAL REGIONS OF THE NORTHERN TERRITORY](image)

Figure 1: Geological Regions of the Northern Territory and EL24548.
Deformed and metamorphosed Palaeoproterozoic orogenic rocks older than 1800 million years outcrop as major tectonic units surrounded by younger rocks and essentially form the recognisable and inferred basement to the North Australian Craton. These Palaeoproterozoic rocks form the Pine Creek Orogen, Tanami Region, northern Arunta Province, and Tennant, Murphy and Arnhem Inliers. They include remnants of Archaean rocks, which have been dated at 2500 million years.

To the south, the rocks of the North Australian Craton pass into the Central Australian Mobile Belts of the Proterozoic Orogens of the Arunta Region and Musgrave Block, consisting of granulite and amphibolite facies, metamorphosed sediments and mafic volcanics intruded by granitoids. In the southern Arunta Province, episodic igneous activity took place between 1880-1050 million years and deformation included a series of major tectonic events, including retrogressive metamorphism in the Proterozoic and Palaeozoic. These basement rocks are exposed in the northeast corner of the license and immediately to the southwest of the area.

A system of major west-northwest trending and north-northeast dipping thrust faults and shear zones affects the Arunta Region. The associated shear zones can be up to hundreds of metres in width and extend for several kilometres, and are thought to have formed during the 400-300 Ma Alice Springs Orogeny (Cartwright et al., 1999).

In central Australia, the geographically isolated Ngalia and Amadeus Basins (along with the Officer Basin in SA & WA) represent the fragmented remnants of the ‘Centralian Superbasin’, and together with the Georgina Basin in the east, form part of the North Australian Platform Cover. Unconformably overlying the Proterozoic Orogenic Belts, their predominantly sedimentary successions are mildly deformed and largely unmetamorphosed. The Yalyirimbi tenement sits astride the northern boundary of the eastern Ngalia Basin where Palaeoproterozoic basement rocks of the Arunta Region have been thrust over the younger sediments of the Ngalia Basin along the Napperby and Yuendumu Thrusts. Thrusting is interpreted to have occurred during the Alice Springs Orogeny and forming an asymmetrical foreland basin south of the thrust belt that was subsequently infilled with Tertiary sediments. Regional geological evidence suggests a significant reactivation of these structures during the Tertiary and may have acted to deepen and rejuvenate the basins.

The airborne EM imagery shows a prominent buried fault (the Patty Hill Thrust, to the south of the Patty Hill Anticline.

The geological setting is very similar to the Four-Mile uranium Deposit in the Lake Frome Embayment, South Australia.

**LOCAL GEOLOGY**

**Pre-Cambrian-Proterozoic**

The Yalyirimbi (EL24548) tenement is underlain by basement rocks of the Aileron Province (Figure 2). According to the web-site of the NTGS (December, 2004) basement rocks in the Aileron region comprise part of:

“… the Arunta Region, a complex basement inlier in central Australia that has undergone a prolonged history of sedimentation, magmatism and tectonism extending from the Palaeoproterozoic to the Palaeozoic. The Arunta Region can be subdivided into the three, largely fault bounded terranes with distinct geological histories: the Aileron, Warumpi and Irindina Provinces.

The Aileron Province comprises greenschist to granulite facies metamorphic rocks with protolith ages in the range 1865-1710 Ma. It forms part of the North Australian Craton and is geologically continuous with the gold-bearing Tanami and Tennant Regions to the north.

In contrast, the Warumpi Province comprises amphibolite to granulite facies rocks with protolith ages in the range 1690-1600 Ma, and is interpreted to be an exotic terrane that accreted to the southern margin of the North Australian Craton at 1640 Ma.

The Irindina Province in the Harts Range region comprises Neoproterozoic to Cambrian metasediments that formed in a major depocentre within the Centralian Superbasin. It underwent high-grade metamorphism and deformation during Ordovician” (480 - 450 Ma)."

The Arunta Basement in this region is further subdivided into the Central and Southern Provinces by the Redbank Thrust Zone, a major north dipping crustal-scale northwest trending structure.
Middle Proterozoic ‘Arunta’ crystalline basement on Yalyirimbi consists of the Napperby Gneiss, a medium even-layered granitic gneiss with minor porphyritic granite (which outcrops as the Yalyirimbi Ranges) and granitic gneisses and granites of the Anmatijira Orthogneiss outcropping within the core of the Patty Hill Syncline.

Cainozoic Regional Geology

The southern NT forms a ‘basin and range’ province with Proterozoic and Palaeozoic rocks forming prominent ranges separated by broad valleys. Cainozoic sedimentary basins are widespread and well-developed within these intervening topographic depressions with at least twenty major basins known (Senior et al., 1995). The Yalyirimbi tenement covers portions of the eastern half of the Whitcherry Basin (Figure 3).

The stratigraphy of the intermontane Cainozoic basins of the southern NT region is generally poorly known. This is attributed to a lack of outcrop, strong weathering overprints, the paucity of drillholes and a lack of attention paid to
the ‘cover’ overlying crystalline basement. Knowledge of the distribution and extent of the Cainozoic has been largely
gained through accidental intersections in water bores or in drillholes seeking mineralisation under cover.

Water bores on Yalyirimbi are typically <50m depth and provide little stratigraphic information. Limited stratigraphic
drilling was undertaken previously in the southern NT region by both the BMR (now Geoscience Australia) and the
NTGS and these drilling programs have provided the majority of the information on the Cainozoic succession.

During the 1960’s and 1970’s, the BMR commenced first round regional geological mapping of portions of central
Australia. As part of a larger drilling project, seven drillholes (BMR Napperby 1-4, Evans & Nichols, 1970; BMR
Napperby 5-7, Wells, 1974) were completed on the Napperby 1:250,000 map sheet in order to obtain subsurface
stratigraphic information on the Palaeozoic and Proterozoic sedimentary rocks in the region. BMR Napperby 1 (TD
138m) and BMR Napperby 4 (TD 97m) were drilled in 1968 on Yalyirimbi failed to penetrate basement, instead
intersecting only Tertiary sediments.

In the late 1970’s and early 1980’s, numerous exploration companies drilled a large number of holes (Figure 4) in,
and to the south and west of the tenement (Henstridge, 1976; Uranerz, 1980; Energy Metals, 1983). The majority of
these holes targeted shallow, calcrete hosted uranium mineralisation (Figure 4). Agip (1979; 1980, 1981) targeted
Palaeozoic sediments for Bigryli style mineralisation within the Mt Eclipse Sandstone and frequently drilled through
considerable thicknesses of Tertiary sediments before intersecting the older Ngalia Basin succession. A number of
small uranium prospects were discovered during this phase of exploration but followed up work appears to have
never been undertaken.

Due to the poorly known stratigraphy and the strong weathering overprints on the Tertiary and Palaeozoic
sedimentary rocks, a great deal of confusion and uncertainty over the stratigraphy are evident in Agip’s reports. In
particular, despite a lack of similarity between the reported lithologies at the Bigryli uranium deposit, the term ‘Mt
Eclipse Sandstone’ is widely used as a convenient ‘catch-all’ label applied to any undifferentiated clastic sediment.

Agip reports also frequently record intersecting duricrusts (silcretes) in most drillholes. Standard procedure by AGIP
appears to have been to terminate drilling upon encountering any hard, siliceous rock unit on the assumption that
the hard band was either a silcrete developed at the top of the Mt Eclipse Sandstone, or the basal Vaughan Springs
Quartzite. Agip interpret a basin-wide silcrete horizon to be present at the top of the Ngalia Basin succession yet
occasional drillholes would break through this silcrete and penetrate into what Agip called the ‘pre-silcrete beds’.
However, experience shows that duricrust profiles are characteristically thin (<5m) and, with persistence can usually
be penetrated.

Drilling by NUP indicates that silcretes, whilst regionally widespread, are thin and typically form indurated horizons
marking stratigraphic discontinuities, the most significant of which is associated with Weathering Event C (Figure 5)
and the major stratigraphic break between the Palaeogene and Neogene successions. The majority of the Tertiary
succession on Yalyirimbi lies beneath this ‘Event C’ silcrete and was therefore only rarely penetrated by Agip’s
exploration drilling.
Figure 3: Tertiary Basins in the Yalyirimbii – Alice Springs area.
Figure 4 - Known uranium occurrences and exploration drilling within the Napperby Region.

Note the focus immediately to the north of the E-W trending Stuart Bluff Range, immediately to the north of Lake Lewis.
Figure 5 - Hale Basin composite stratigraphic column (Senior et al., 1994).

During the late 1970’s and early 1980’s the relatively small Hale Basin (Figure 3, Figure 5) was explored extensively for coal (lignite) and sedimentary uranium. The Basin can be considered to be the best known Cainozoic basin in the NT.
Senior et al. (1994) compiled a summary of the available information and defined a two-fold stratigraphic subdivision that broadly corresponds with the observed pattern of Cainozoic sedimentation elsewhere in southern Australia, and comprises a restricted, fluvial palaeochannel dominated Palaeogene succession (Hale Formation) overlain by a more widespread, dominantly lacustrine Neogene succession (Waite Formation).

The stratigraphy of the Hale Basin is summarised in Figure 5. Strong affinities with Eocene palaeochannel sediments in southern Australia suggest that the Hale Formation should be further subdivided into a Upper subdivision (Late Eocene), comprising the Tug Sandstone Member and representing development of a widespread ‘sand sheet’; and a Lower subdivision (Early-Middle Eocene) recording a fining upwards trend from the fluvial Ambalindum Sandstone Member to the paludal Claraville Mudstone and Ulgnamba Lignite Members.

Tertiary sediments in the Whitcherry Basin have been shown to exceed 250m in thickness whilst those in the Ti-Tree Basin to the north regularly exceed 350m in thickness. In comparison, the succession in the Hale Basin is relatively thin (<100m) but it can considered to represent a generalised Tertiary stratigraphy for the southern NT (Figure 5), and despite being initially defined in separate, small and isolated Tertiary Basins, these formations are components of a much larger Tertiary palaeodrainage system, the extent and size of which has until now been vastly underappreciated.

**Deposition and Weathering**

Deposition of Cainozoic sediments was episodic and punctuated by hiatuses during which prolonged periods of weathering resulted in the formation of well-developed weathered profiles (palaeosols and duricrusts). Deep weathering was an ongoing process during the Tertiary but was enhanced at particular times during the time by the combination of periods of warm, humid climates, non-deposition and surface exposure. Senior et al. (1995) defined three Palaeogene weathering events which affected Arunta igneous and metamorphic basement rocks and the overlying Tertiary succession. An additional two weathering events have been recognised from the overlying Neogene succession and appear to correlate with similar periods of weathering and exposure evident in southern Australia.

**Weathering Event A** (Senior et al. 1994, 1995) occurred during the Late Cretaceous to Early Tertiary (Palaeocene). Trizonal weathering profiles were developed in basement rocks over a widespread area of the Arunta Region and at the base of surrounding Tertiary basins. The trizonal profile consists of a basal kaolinitic zone (up to 10 metres thick) that grades into a multicoloured mottled zone (up to 10 metres thick) and is then capped by a ferruginous (or laterite/ferricrete) zone up to 8 metres thick.

Following uplift and partial truncation of the deeply weathered basement rocks, sedimentation in the surrounding Tertiary basins commenced in the Palaeocene with deposition of thick colluvium including fanglomerates flanking the ranges. This was followed by deposition of fluvo-lacustrine sand, silt and clay (locally carbonaceous) and lignite of the Lower Hale Formation in the Ti-Tree and Burt Basins during the Early to Middle Eocene. Locally this includes a basal lacustrine green and grey pyritic mudstone, white mudstone and siltstone, and red iron oxide stained siltstone and siltstone. Fluvial sands of the Ambalindum Sandstone Member fine upwards into the paludal Claraville Mudstone and Ulgnamba Lignite Members.

**Weathering Event B**, recorded in the Hale Basin, occurred prior to the Middle Eocene, although there is little evidence elsewhere for this weathering event (Senior et al., 1995). This resulted in lithification and formation of a second ferricrete profile.

Deposition of sandstones of the Upper Hale Formation took place during the Late Eocene and these sediments were subsequently overprinted by **Weathering Event C** marking widespread exposure and surficial weathering in response to a prolonged period of non-deposition during the Oligocene.

Climatic amelioration during the Early Miocene rejuvenated the palaeodrainage systems and led to the deposition of fluvial sands at the base of the Waite Formation. A change from fluvial to lacustrine...
sedimentation then followed during the Middle to Late Miocene and resulted in the accumulation of over 300 metres of fluviatile and lacustrine limestone, sands, muds, and sandy conglomerate in localised depocentres.

The upper portions of the Waite Formation are regionally extensive and consist largely of clay and dolomitic clays that reflect the widespread development of broad, shallow evaporitic lakes throughout southern Australia as the continent drifted further northwards and became progressively more arid and seasonal. Two cycles grading upwards are commonly observed from clays to dolomitic clays to dolomitic limestones, suggesting that deposition of the Waite Formation occurred in at least two phases. Weathering Event D was responsible for the formation of a silcrete within the Waite Formation at the top of the basal cycle (possibly in the Middle Miocene).

Outcrops of the Waite Formation are frequently capped by calcretised limestones and distinctive chaledonic silcretes that form regionally widespread stratigraphic markers. Development of these more variable duricrusts occurred in response to Weathering Event E.

In proximal locations, the Waite Formation interfingers with, and is conformably overlain by a moderately thick (<60m) succession of oxidised colluvial material shed off the Yalyirimbi and Reynolds Ranges in response to neotectonism during the (?Late) Pliocene. This material can be recognised throughout the region and represents a broadly coarsening upwards alluvial fan which can be subdivided into an Upper, Middle and Lower Members. This unit is informally referred to as the Napperby Formation and comprises a succession of oxidised and haematitic, clayey sands, sandy clays and minor conglomerates. Ferruginised, haematitic alluvial palaeosols (bearing a strong resemblance to modern soils) are a characteristic feature of the Middle Member with palaeosol development potentially corresponding to Weathering Event E (or recording another period of enhanced weathering).

Overlying these sediments are unconsolidated Quaternary sediments including quartz sands, silts, red earths and clayey and sandy soils that record a complex history of deposition, erosion and re-deposition due to climate changes and gentle tilting. Large outwash fans from the northern side of the MacDonnell Ranges have formed alluvial plains and over-bank deposits alongside sandy drainage channels. In more distal locations, the development of aeolian sand plains was widespread. The formation of calcretes, particularly within drainage channels and atop the Waite Formation, was widespread during the Quaternary (Weathering Event E).
GEOLOGY - IRON ORE (Johnston, 2014)

Haematite mineralisation at Napperby is associated with isolated outcrops of Late-Proterozoic quartzites and ferruginous quartzites of the Vaughan Springs Quartzite.

The Yalyirimbi Haematite deposits occur in the late Proterozoic Vaughan Springs formation in the Ngalia Basin (Figure 9). The basin is a lens shaped depression in the Arunta inlier with a faulted northern boundary (Thompson 1995). Sedimentation commenced about 850 to 800 Ma when the area was part of a flat plain inundated by a small sea level rise.

The Vaughan Springs Formation is a bedded to well bedded, quartz sandstone and quartzite, which is locally pebbly; with minor mudstone and shale. The quartz sandstone has generally been compressed to a quartzite that is more resistant to erosion than surrounding rocks and forms well defined ridges.

According to Dale (2011) at Yalyirimbi the Vaughan Springs quartzite formations have been mapped as the northern limb of a very broad syncline. Massive and specular haematite outcrops in several areas most notable of which are ‘A’ and ‘M’ deposits. Local warping and reversals of dip do occur. M deposit appears to dip gently to the north with a small (± 3 to 4°) plunge towards the east. A deposit dips gently to the south.

Iron Mineralisation

The primary haematite mineralisation has been deposited within brecciated quartzites of the Vaughan Springs Formation and appears to be strata-bound if not strati-form. There is evidence of haematite layering and preferential replacement as well as remobilisation into breccia and fault zones. The assumption has been made that these are primary, likely hydrothermal deposits. This has been supported by regional airborne magnetometer surveys and an initial ground magnetic survey. These surveys have demonstrated that the hematite deposits are completely non-magnetic.

The reconnaissance work carried out in March 2013 and followed up in October 2013 by the Ferrowest Chief Geologist confirmed that the primary deposits are in fact hydrothermal vein systems, probably associated with regional local faulting along the complexly deformed northern limb of the Ngalia Basin. Diamond drilling at the end of 2013 also confirmed this analysis.

Local Geology (Bruynzeel, 2011)

Hematite occurs on the prospect as massive replacement bodies (>60% Fe) within quartzite units and as variably haematite-veined quartzites with oxidised haematite-stained vein alteration selvages (Figure 2). Over-all the host quartzite sequence appears to be about 60-80m thick in outcrop with the massive hematite body estimated to have a true thickness of about 20m.

Structurally, the quartzite host stratigraphy appears to be shallowly-folded (possibly domal) with compression in a north-south direction. Mapping suggests hematite concentrations increase vertically (upwards) through the quartzite beds from clean unmineralised quartzite at the base of the local sequence culminating in the massive hematite body known as Area A at the top of the locally outcropping sequence.

In addition, hematite also occurs as breccia-matrix in fault zones that cross-cut the quartzite stratigraphy. The brecciated fault zones appear to represent the latest deformation stage in the area.

The Area A hematite body is exposed as a kidney-shaped (350 x 250 m) area of sub-cropping to outcropping massive hematite overlain by quartzite wash to north and Quaternary sands to the south.
The mineralised body appears to be elongated along its north-northeast trend and dipping shallowly to the south (beneath the Quaternary cover) although this is difficult to determine with confidence.

Five hundred metres to the northeast of Area A, a second body of massive hematite was discovered, however, mapping of this area could not be completed due to unseasonal rain and flooding across the prospect area. Early reconnaissance suggests that this body has a similar easterly trend but is noticeably more steeply dipping than the Area A deposit.

Figure 9: Geological Map of the Yalyirimbi Iron Project with Tenement Boundary.
PREVIOUS INVESTIGATIONS (Higgins, 2009)

Records of systematic exploration in the Yalyirimbi Ranges in the northern part of the area and in the Reynolds Range immediately north of the tenement date back as early as 1948 (Thevissen, 1995) but most investigations date from about 1965 (Stewart, 1982). Base metals, tin and tungsten were mainly targeted prior to 1973 when uranium exploration gathered momentum. This commodity dominated the exploration in the area for the next 15 years, both in the metamorphic and granitic rocks of Reynolds Range and also in the sandstones of the Ngalia Basin to the south. Since 1990, with the advent of the BLEG geochemical technique more attention has been directed towards gold exploration though some uranium exploration activity still persisted.

Eighteen former exploration licenses overlay wholly or in part the Yalyirimbi tenement; EL23, EL256, EL257, EL1294, EL1317, EL1348, EL1384, EL1411, EL1678, EL1854, EL2066, EL 2617, EL3488, EL7345, EL8411, EL10246, EL10248, and EL10251. Of this list, thirteen were held for uranium exploration while the remainder were for gold, other base metals and diamonds. Initially, the major uranium exploration targets were the Mt Eclipse Sandstone and calcrete at or near the surface, though later the Tertiary sediments overlying the Mt Eclipse Sandstone received some attention.

Stratigraphic Drilling

Bureau of Mineral Resources, Geology & Geophysics (BMR)

During the 1960’s and 1970’s, the BMR commenced first round regional geological mapping of portions of central Australia. As part of a larger drilling project, seven drillholes were completed on the Napperby 1:250,000 map sheet in order to obtain subsurface stratigraphic information on the Palaeozoic and Proterozoic sedimentary rocks in the region. More by accident than by design, “Cainozoic sediments were…found to be considerably thicker than expected” with over 200m of sediments regularly encountered in drillholes without penetrating the target Palaeozoic or Proterozoic ‘basement’. Two holes were drilled on Yalyirimbi failed to intersect basement instead penetrating only Tertiary sediments.

Uranium Exploration

Central Pacific Minerals EL 23, 1971-1972

This EL overlapped most of the northern half of the NuPower tenement. Central Pacific Minerals sampled water bores and carried out an airborne radiometric survey over the southwest third of the EL, identifying several anomalies. This was followed up with a carborne radiometric survey but none of the anomalies were confirmed. They considered that no potential host rocks for economic mineralisation outcrops in the EL area and the area was surrendered.

Central Pacific Minerals EL 256, 1970-1973

This EL, referred to as Agamba 2, overlapped the southeast corner of Yalyirimbi. Central Pacific targeted uranium in the Mt Eclipse Sandstone and calcrete and undertook geological reconnaissance, airborne, carborne and ground radiometry and bore water sampling. The Mt Eclipse Sandstone does not outcrop in this area and they considered that the possibility of finding sufficient thickness of this formation was unlikely due to rapid thinning of basin sediments toward the east. No anomalous calcrete was observed and the EL was released.
Central Pacific Minerals EL 257, 1970-1976

Known as Agamba 1, this EL overlapped most of the southern half of Yalyirimbi. Central Pacific again targeted the Mt Eclipse Sandstone for uranium mineralisation following the discovery of uranium in this unit some distance to the east of EL 257. They conducted a program of bore water sampling, carborne radiometric traverses, an airborne radiometric survey, a ground resistivity survey, a track etch survey and 14 holes of auger drilling. Seven of these auger holes were drilled within the core of the Patty Hill Anticline adjacent to outcropping granite. Unsurprisingly these holes failed to encounter any tertiary sediments instead intersecting granite at shallow depth.

One anomaly, located with the track etch survey, was percussion drilled with two drill holes to only shallow depths of 48m and 60m that terminated in unconsolidated gravel. No significant radioactivity was observed and the EL was subsequently released.

CSR Minerals & Chemicals Division EL1294, 1976-1979

CSR held this area over the east central portion of Yalyirimbi to explore for uranium and base metals. They carried out an airborne radiometric survey followed by stream sediment, rock chip, soil and heavy mineral concentrate sampling. Forty-nine radiometric anomalies were identified but downgraded using a hand held 4-channel gamma ray spectrometer. There was no drilling and the area was relinquished.

Central Pacific Minerals N L EL 1317, 1978-1979

EL 1317 was located over the very north of Yalyirimbi where Central Pacific intended to explore for vein and disseminated uranium, pegmatitic types in granitoids and secondary calcrete deposits. They identified a number of anomalies from the BMR radiometric surveys, collected rock chip samples and excavated two trenches. The results were generally unsatisfactory; the area was judged to be of low economic potential for uranium mineralisation and relinquished.

Central Pacific Minerals N L EL1348, 1976-1978

This EL largely coincided with EL257 and was considered to be prospective for uranium in Tertiary sediments, the Mt Eclipse Sandstone and the Proterozoic Arunta Complex. Exploration was directed toward the base of the Vaughan Springs Quartzite and the underlying “basement” and to a lesser extent the overlying Cainozoic sediments.

Exploration of the Mt Eclipse Sandstone and Arunta Complex consisted of 184 line kilometres of carborne and 45 line-kilometres of ground radiometrics and geologic mapping. Cainozoic exploration was limited to widely spaced carborne scintillometer traverses. No radioactive mineralisation was detected and the EL was relinquished.

Central Pacific Minerals N L EL1384, 1976-1978

Central Pacific held this area over the southeast corner of Yalyirimbi, primarily for base metals with a minor interest in uranium. Ground radiometrics conducted by the B.M.R. were investigated and followed up with further limited ground radiometrics and stream sediment and rock chip geochemistry. Base metal results were disappointing and no anomalous radioactivity was detected. It was determined that there was little likelihood of surface mineralisation and the EL was relinquished.

Central Pacific Minerals N L EL1411, 1977-1978
This EL overlapped the northern part of Yalyirimbi and was considered prospective for uranium in the crystalline basement and in the Cainozoic sediments overlying the Ngalia Basin. Central Pacific conducted carborne radiometric surveys totalling 242 line-kilometres followed by airborne radiometrics. No anomalies were found, there was no sampling and the area was surrendered.


Most of this area was previously covered by EL257 and overlapped much of the southern half of Yalyirimbi. Exploration was focused on the central northern edge of the EL which appeared to have potential for uranium within the Mt Eclipse Sandstone. Gravity and magnetic surveys indicated a small basin in the central part of the EL containing Mt Eclipse Sandstone and four drill holes were subsequently drilled, the deepest to 220m without intersecting basement. Up to 138m of uncemented sediments and 32m of sandstone were encountered. No uranium mineralisation was intersected and the area was relinquished.

Agip Nucleare Australia Pty Ltd EL 1854, 1978-1981

EL 1854 overlapped the southwest corner of Yalyirimbi. Agip completed a gravity program and limited drilling in their search for uranium mineralisation in both the Mt Eclipse Sandstone and the overlying Tertiary sediments. The drilling intersected up to 80m of Mt Eclipse Sandstone and more than 100m of Tertiary sediments. Although weak uranium mineralisation was encountered the thickness of Mt Eclipse Sandstone was considered insufficient and the EL was relinquished.

Agip Nucleare Australia Pty Ltd EL 2066, 1981-1982

EL 2066 was located in the south central part of Yalyirimbi and extended slightly to the south of the current license. Following a gravity survey they concluded that there was little prospect of uranium mineralisation from the lack of evidence for a sub-basin which could contain Mt. Eclipse Sandstone beneath the Tertiary sediments. The area was relinquished.

C.R.A. Exploration Pty. Ltd. EL 2617, 1970-1971

This EL paralleled the east boundary of Yalyirimbi, barely overlapping its southeast corner. CRAE carried out geological traversing, stream sediment sampling, water bore sampling and an auger drilling program. This identified five uranium anomalies but follow up work was disappointing and no significant mineralisation was found. The EL was relinquished.

PNC Exploration (Australia) Pty Ltd EL 8411, 1994-1996

EL8411 overlapped most of the eastern boundary of Yalyirimbi where PNC concentrated their search on identifying chemical-pelitic metasedimentary sequences near the base of the Proterozoic for Mary Kathleen-style uranium mineralisation in metasomatised calc-silicate gneiss. Airborne radiometric surveys combined with semi-detailed geological mapping, magnetics and radiometrics, rock chip sampling and petrology located numerous secondary uranium occurrences. One hundred and eighty radiometric anomalies were investigated of which 30 contained visible secondary uranium minerals, 22 occurring within the Napperby Gneiss. They discovered the Nolan’s Bore rare earths-uranium-phosphorous prospect and explored in some detail important uranium prospects at Mt Dunkin 22 kilometres west-northwest of Nolan’s Bore, calcrete hosted uranium in Gidyea and Napperby Creeks 50 and 60 kilometres west of Nolan’s Bore, and uranium in metasomatised quartz-tourmaline rocks of the Wickstead Creek Beds at Mt Freeling 15 kilometres west of Nolan’s Bore. Secondary uranium mineralisation was also located in Napperby Gneiss adjacent to a major WNW shear some 5km from the Napperby Creek Prospect. PNC also sampled a minor occurrence of ‘apatite’ (reportedly similar to the Nolan’s Bore apatite) hosted by orthogneiss at their MB05 anomaly, 7 kilometres north of Nolan’s
Bore. The sample assayed 3.9% P, 1.9% Ba, 2.1% La, 4.6% Ce, and 1.8% Nd but only 1.0% Ca which suggests that monazite rather than apatite hosts the rare earths. They withdrew from the area in early 1996.

NTDME Geophysical Surveys, 1997

Detailed aeromagnetic and radiometric surveys were completed over the Reynolds Range area in 1997 as part of a more extensive survey which included all of the Napperby 1:250,000 Sheet area as well as the northern half of the adjacent Hermannsburg 1:250,000 Sheet to the south. The survey was flown at a line spacing of 400 metres and a mean terrain clearance of 60 metres. All primary data and gridded data as well as some plotted products from this survey are available freely from the Department.
Non-Uranium Exploration

BHP Minerals Limited EL3488, 1982-1983

EL 3488 was taken up primarily to explore for diamonds and base metals. B.M.R. aeromagnetic data was examined for possible kimberlitic type anomalies and reconnaissance loam sampling was undertaken. Results of this work were negative and the area was relinquished.

Colchis Mining Corporation Pty Ltd EL 5511, 1987-1990

Colchis held this EL that overlapped the southeast part of Yalyirimbi targeting gold, base metals and uranium. Known mineral occurrences were investigated, the area was geologically mapped to a scale of 1:25,000 and a program of rock chip sampling was completed. Landsat imagery was used to assist in structural interpretation. Results were not considered encouraging and the area was relinquished.

Poseidon Gold Limited EL 7345, 1991-1993

The EL overlapped the eastern part of Yalyirimbi and was explored for gold and base metals. Rock chip and stream sediment sampling provided no encouraging results and the area was relinquished.

Homestake Gold of Australia Limited, EL9672, 1996-1998

Homestake explored for gold in various parts of the Reynolds Range. Their work comprised mainly regional BLEG stream sediment sampling with some limited geological reconnaissance to follow up one elevated gold value which was not replicated by later sampling.

Gutnick Resources N.L. EL10246, EL10248 and EL10251, 2001-2003

Twenty two ELs were included in the gold and base metals Rand Project. Three of these, EL10246, EL10248, and EL10251 overlapped most of Yalyirimbi. The Rand Project was a joint venture between Gutnick Resources N.L. (manager) and Johnson's Well Mining N.L., based on a new genetic interpretation for the Witwatersrand mineralisation in South Africa. These new hydrothermal models suggested that similar and related styles of mineralisation may be present in other sedimentary basins with similar structural and stratigraphic styles to the Witwatersrand. Following a literature and field based review of potential target basins around the world, the Amadeus and Ngalia Basins were selected.

Open file government data was researched, compiled with the results of previous exploration and interpreted. Previous exploration techniques were assessed and results evaluated according to the Witwatersrand exploration model. Geophysical data including Landsat7 TM was reprocessed and modelled to address structural and stratigraphic features within the region and to help identify alteration systems. However the results of geochemical surveys were not satisfactorily encouraging and the ELs' were relinquished.
INVESTIGATIONS CONDUCTED UNDER EL24548

ARAFURA EXPLORATION ACTIVITIES, YEAR 1, 2006

On-ground activities were restricted to consulting services and helicopter cost associated with preparation of the Independent Consulting Geologist report for the impending demerger of NuPower.

NUPOWER EXPLORATION ACTIVITIES, YEAR 2, 2007 (Davey, 2012)

AIRBORNE ELECTROMAGNETIC (AEM) SURVEY

Recent exploration in South Australia has shown that airborne electromagnetic survey (AEM) systems have been successful in identifying palaeochannel systems as potential host rocks for secondary uranium deposits.

The Fugro Tempest system maps the palaeo-topography of the crystalline basement due to the significant electrical contrast between the younger overlying unconsolidated sediments (conductors) and the crystalline basement units (resistors). Undertaking 1D layered earth inversions of the observed data along a traverse enables an electrical cross section of the earth to be constructed. From this, the thickness of the overlying sediments and conversely the palaeo-topography of the basement are interpreted. Additionally the stratigraphy of the overlying sediments is inferable from its variable conductive nature.

Fugro Airborne Surveys was therefore contracted to fly an extensive Tempest AEM survey covering significant parts of 6 ELs, 24641, 24955, 24956, 25325, 23671 and 24548, Yalyirimbi in mid-2007, preliminary results of which have been reported previously (Rafferty, 2007) and final results were reported subsequently, (Higgins, 2008).

The results of the 2007 survey, combined with results of adjacent surveys in 2008 show that palaeochannels discovered under EL24548 form part of a much more extensive regional palaeodrainage system.

The survey was also excellent at defining the resistive Proterozoic crystalline basement, as well as the quartzites of the Neoproterozoic Vaughan Springs Quartzite. The Patty Hill anticline was also well defined by the AEM showing that the southern limb has been considerably displaced by faulting.

STATION BORE WATER SAMPLING

Groundwaters are appropriate as geochemical exploration sample media in regions where the products of deep weathering or post-ore successions cover exploration targets to depths such that they are invisible to traditional geochemical and geophysical exploration technologies. An exploration role for groundwaters results from their chemical reactivity with these concealed exploration targets and their physical mobility. Outcomes from these interactions with relevance to exploration include changes to groundwater compositions due to additions or removal of dissolved substances (solutcs).

Since groundwater-rock contact times in groundwaters are greater than in streams or other surface waters groundwaters have a better chance of accumulating solutes up to analytically detectable levels than do most surface waters. In particular, slowly seeping groundwaters are optimal for characterising large volumes of rocks that surround and underlie a sample collection site. Groundwaters also penetrate further into the crust than surface waters, an attribute that is uniquely useful for the geochemical detention of mineral deposits which lack a surface or near-surface expression.

They are interpreted from comprehensive field and laboratory chemical analyses of samples collected, using standardised procedures, from groundwater sources. Field measurements include pH, Eh,
salinity, temperature and reduced Fe. Exploration indicators in groundwaters are not restricted to the ore elements. Strategic analytes include major constituents (Ca, Mg, Na, K, Cl, S, and carbonate species), and trace elements that occur at low and sub ppb concentrations” (Giblin, 2001).

Groundwater samples were collected from 7 bores during the period, results and details for which have been reported previously, (Rafferty, 2007). Standard Operating Procedures were developed for this work that have been reported previously, (Rafferty, 2007).

**NUPOWER EXPLORATION ACTIVITIES YEAR 3, 2008 (Davey, 2012)**

**AIRBORNE REGIONAL GRAVITY SURVEY**

During 2008 the NTGS conducted a helicopter-borne regional gravity survey over the central Arunta Region with survey points spaced 4km apart. NuPower contributed to the program in order to obtain more detailed, 2km spaced data, over its Aileron Project tenements. The logistics report and data have been reported previously, (Higgins, 2008).

**STATION BORE WATER SAMPLING**

NuPower continued the groundwater sampling program during 2008 and a further 13 water samples including 1 control sample, 4 repeats from bores samples in 2007 and 5 abandoned drill holes were reported previously (Higgins, 2008), (Figure 10).

Ninety-four water samples (including 2 control samples) were taken during the latter part of Year 3 from all 30 the NuPower exploration drill holes, for which assay results (Figure 10), have been reported previously, (Higgins, 2008).

It was thought that whilst initially contaminated by the drilling mud, settling and degradation of the mud, combined with the natural influx of groundwater into the drillhole means that, over a period of time, ground water is expected to gradually revert back to the original ‘formation water’. Therefore ongoing water sampling of the drillholes at approximately one, two, four and eight month intervals was aimed to document this change, with the ultimate aim of obtaining uncontaminated samples of formation water from within the Tertiary sediments as a vector to mineralisation. Temporary PVC casing was installed in these holes to keep them open for this purpose.

**EXPLORATION DRILLING**

NuPower completed 30 rotary mud drillholes for a total of 5,354m on Yalyirimbi during 2008 (Figure 11), geological, geochemical and drill hole geophysical log details of which have been reported previously, (Higgins, 2008). Drilling was based on 3D modelling of the 2007 AEM data and drillholes were designed to explore for the presence of buried palaeodrainage systems and therefore targeted the deeper regions of the interpreted Tertiary sediments in order to determine their thickness and character.

Nine holes intersected zones of weakly anomalous gamma from the down-hole logs. Geochemical assays from the anomalous zones were generally disappointing, attributed to poor sampling methodology.

Reconnaissance work located 11 drillhole collars on Yalyirimbi from previous exploration drilling in the region. Several of these holes were found to be open and NuPower was able to obtain both water samples and gamma logs from these holes as reported previously. One hole reported anomalous uranium.

Reconnaissance mapping of hematite outcrops and of uranium anomalies in the Yalyirimbi Ranges was also done in Year 3.
Figure 10: EL24548, Yalyirimbi Bore Holes and Abandoned Drill Holes.

Figure 11: EL24548, Yalyirimbi, NuPower Drill Holes.
NUPOWER EXPLORATION ACTIVITIES YEAR 4, 2009 (Davey, 2012)

There was little on-ground exploration during the period

DRILL HOLE WATER SAMPLING

A further 28 groundwater samples were collected from accessible Yalyirimbi drill holes in late 2009, before the holes were finally rehabilitated. These samples are considered nearest to re-equilibrated natural groundwater and were reported previously, (Rafferty, 2009).

REHABILITATION

Rehabilitation of access tracks, drill sites and drill holes was completed in accordance with the NuPower Mining (Exploration) Management Plan Aileron Project – Part 2, June 2008 – June 2009, Reference Number 0425-02, and reported previously, (Rafferty, 2009).

NUPOWER EXPLORATION ACTIVITIES YEAR 5, 2010 (Davey, 2012)

Assays of groundwaters by Actlabs from bores and NuPower drill holes reported previously (Rafferty 2007, Higgins 2008, Rafferty 2009), were erroneous due to laboratory problems. Samples have been re-assayed, this was reported in the 2010 annual report. Fluorine and bicarbonate assays were acceptable and are unchanged.

NGALIA EXPLORATION ACTIVITIES YEAR 5, 2010 (Bruynzeel, 2011)

Ngalia has targeted the EL for high grade DSO hematite iron deposits following the discovery of hematite bodies replacing quartzites on Napperby Station, northwest of Alice Springs. Exploration work by Ngalia for the period includes prospect geological mapping and the drilling of 96 RC drill holes for 3,643 m and 1334 samples. In addition, metallurgical test work was completed by Nagrom (Perth) using RC samples and outcrop samples to evaluate the beneficiation characteristics of the hematite mineralisation.

DRILLING

The Area A massive hematite bodies were targeted with RC drilling designed to attempt to define a JORC inferred resource. A total of 96 holes were drilled by McKay Drilling Pty Limited (Perth) for a total of 3,643 m. RC chips were collected at 1m intervals down-hole, however, only mineralised intervals (visual estimate) were sampled for assay for a total of 1,334 samples.

Iron ore standard reference materials, sourced from Geostats Pty Limited (WA), were inserted at approximately 20-sample intervals together with silica blanks. Three levels of standards were used to test against low, medium and high grade hematite.

All holes have been surveyed, collared, capped and labelled with a unique ID code.

The RC samples were despatched to ALS Mineral Services Pty Limited (Brisbane, QLD) for sample preparation and assaying. Upon receipt the samples were weighed, dried, crushed, pulverised and split. The split samples are each assayed for a range of 25 iron ore-related elements using ALS’s XRF method ME-XRF11b plus ME-GRA05 to measure for water/LOI.
METALLURGY

Whilst the potential for economic scale DSO Fe grades (>60% Fe) for the Area A deposits appears limited from the current drilling, the opportunity to up-grade or beneficiate the low grade ores was investigated by submitting samples of Area A hematite to the Nagrom metallurgical testing laboratory in Western Australia.

Two outcrop samples (M1 and M2) assaying 47.84% Fe and 34.82% Fe respectively were submitted for trial beneficiation test work involving crushing and dense media separation. The results of these tests show that the two samples were up-gradable to produce concentrates grading 62.81% Fe and 63.49% Fe respectively.

NUPOWER EXPLORATION ACTIVITIES YEAR 6, 2011 (Davey, 2012)

No field exploration was undertaken by NuPower in 2011. Only a small amount of office data compilation was done.

NGALIA EXPLORATION ACTIVITIES YEAR 6, 2011 (Davey, 2012)

DRILLING AND SAMPLING

In three campaigns, 6,637m of RC drilling in 152 holes (Figure 6) have been completed with 2,866 one metre (1m) samples submitted to ALS Chemex in Perth for standard iron ore analyses. With the exception of the results from the 2011 drill samples, most of this data has already been reported (Davey, 2012).
Figure 6: Satellite image showing the locations of Ngalia Resources RC drill collars into the Yalyirimbi haematite deposits

Figure 7 Gravity anomaly image showing drill hole collar locations in the vicinity of the A Deposits.
GEOPHYSICAL SURVEYS

Regional airborne magnetometer surveys and an initial ground magnetic survey show that the hematite deposits are completely non-magnetic, supporting the assumption that they are primary, probably hydrothermal, deposits.

A detailed gravity survey involving the acquisition of 1,851 gravity measurements, mostly on 100m line spacing with 50m stations, clearly defined all known and some unknown hematite mineralisation. Subsequent drilling has shown that the majority of mineralisation is contained within the areas defined by gravity results.
GEOLOGY

Primary hematite has been deposited within brecciated quartzites of the Vaughan Springs formation. Hematite mineralisation appears to be strata-bound if not strata-form.

There is evidence of hematite layering and preferential replacement as well as remobilisation into breccia and fault zones.

Massive and specular hematite outcrops in several areas, most notable of which are ‘A’ and ‘M’ deposits, the only deposits to have been RC drilled. These two areas appear to be remnants of a much larger area of hematite mineralisation.

Structurally this section of the quartzite formations have been mapped as the northern limb of a very broad syncline with local warping and reversals of dip. M deposit appears to dip gently north and A deposit, gently south.
NUPOWER EXPLORATION ACTIVITIES YEAR 7, 2012 (Hussey, 2013)

The information reported in this section was provided by Grant Davey of NuPower Resources and is reproduced below with minor modifications.

Eight days were spent following up rock chip uranium anomalies (samples taken by PNC in 1993 - 1995 – CR19950266, CR19960187) and airborne radiometric anomalies (Figure 9). In the 2012 phase of work most of the highly uranium-anomalous PNC rock sample locations were visited and most of the radiometric anomalies were traversed to some degree. Twenty five rock chip samples were taken. Several days were also spent inspecting the rehabilitation of drill pads and tracks made in 2008 for NuPower drilling. Results of this work have previously been submitted.

The northern part of the EL is underlain mainly by rocks of the Napperby Gneiss which form the Yalyirimbi Range (Figure 10). The Napperby Gneiss is described as medium even-layered granitic gneiss with minor porphyritic granite. At the western edge of the EL, west of the Yalyirimbi Range, there are outcrops of the Ngalurbindi Orthogneiss and to the north of the range there is minor outcrop of calc-silicate and quartz-rich meta-sediment of the Wicket Creek beds. South of the range there are outcrops of granite and granodiorite.

There are radiometric (uranium and thorium) anomalies which correlate with all of the above rock types. The mapped geology, mainly granite and gneiss, is not generally prospective for uranium mineralization – unless Rossing-Alaskite style mineralization is suspected. However samples taken by PNC with high grade uranium results suggest that the radiometric anomalies may be prospective. These samples generally plot just north of the strike-parallel radiometric anomalies – it was also found in the Aileron area to the east and northeast that the radiometric anomalies are several hundred metres north of where they are shown on the maps. Examples of PNC results:

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Rock Unit</th>
<th>U (ppm)</th>
<th>Th (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA02761</td>
<td>Carnotite bearing Pgn</td>
<td>Pgn</td>
<td>1,700</td>
<td>22.0</td>
</tr>
<tr>
<td>NA02738</td>
<td>bearing mg bio Pgn</td>
<td>Pgn</td>
<td>1,500</td>
<td>33.0</td>
</tr>
<tr>
<td>NA02762</td>
<td>Carnotite bearing Pgn</td>
<td>Pgn</td>
<td>1,500</td>
<td>18.0</td>
</tr>
</tbody>
</table>

Most of these highly anomalous results were described by PNC as: secondary uranium minerals within surface exfoliation layers over high background radiometric zones; typically these corresponded to the finer grained weakly migmatised phase of the Napperby Gneiss. None of these occurrences were considered worthy of follow-up. They are not well-described in the reports, it is not clear how selective the samples were, and it does not appear that the “high background radiometric zones” which appear to have weathered to produce the high grade secondary uranium mineralization were sampled.

RESULTS

Napperby Gneiss Anomalies

The Napperby Gneiss was found to consist of two main rock types –

- A quartz-feldspar-biotite gneiss with well-developed gneissosity and some migmatite.
A finer grained less well foliated rock with similar composition to the above. This lithology generally occurs as units of several tens of metres thickness within the more abundant more foliated and generally coarser grained gneiss.

Distinction between these rock types is not always clear, contacts often appear gradational.

Radiometric background of the former rock type is generally high, often in the 500 – 750cps range, but the latter rock type is responsible for the radiometric anomalies where Napperby Gneiss is mapped on the 1:250,000 sheet. Scintillometer readings are often >1000cps over this unit. It is by no means clear what the precursor lithology of this unit was, but it may have been fine-grained granite. However it does not look like other granites/orthogneisses in the area which are generally much coarser grained, porphyritic and have obviously intrusive texture. The more strongly foliated gneiss may be meta-sediment.

No secondary uranium minerals were observed and it appears that the very high uranium grades found by PNC were due to very selective sampling. These grades are not properly indicative of the uranium content of the rocks in this area. Assays for selected elements for NuPower representative chip samples from radiometrically anomalous Napperby Gneiss (and two calcrete samples) are tabulated below. Uranium grades are elevated, with maximum assay being 90.1ppm. Th values generally exceed those of uranium with maximum 173.5ppm.

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>Description</th>
<th>U ppm</th>
<th>Th ppm</th>
<th>La ppm</th>
<th>Ce ppm</th>
<th>Nd ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>20343</td>
<td>Aplite? Within foliated granite, 30cm wide?</td>
<td>0.5</td>
<td>26.2</td>
<td>230</td>
<td>448</td>
<td>172.5</td>
</tr>
<tr>
<td>20344</td>
<td>Granite/granodior, qtz-flds-bi</td>
<td>68.8</td>
<td>128.5</td>
<td>129</td>
<td>290</td>
<td>118</td>
</tr>
<tr>
<td>20349</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi</td>
<td>27.7</td>
<td>117</td>
<td>77.9</td>
<td>165</td>
<td>50.3</td>
</tr>
<tr>
<td>20350</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi</td>
<td>13.5</td>
<td>133.5</td>
<td>86.6</td>
<td>187.5</td>
<td>52.5</td>
</tr>
<tr>
<td>20707</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi</td>
<td>10.3</td>
<td>98.4</td>
<td>86.4</td>
<td>186.5</td>
<td>59.4</td>
</tr>
<tr>
<td>20708</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi</td>
<td>21.9</td>
<td>115.5</td>
<td>97.5</td>
<td>205</td>
<td>63.7</td>
</tr>
<tr>
<td>20709</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi</td>
<td>34.3</td>
<td>168.5</td>
<td>104</td>
<td>251</td>
<td>64.5</td>
</tr>
<tr>
<td>20710</td>
<td>Calcrete</td>
<td>16.2</td>
<td>6</td>
<td>8.1</td>
<td>22.6</td>
<td>8.7</td>
</tr>
<tr>
<td>20711</td>
<td>Calcrete</td>
<td>28.4</td>
<td>3.3</td>
<td>5</td>
<td>10.25</td>
<td>4.1</td>
</tr>
<tr>
<td>20712</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi, poss meta grt</td>
<td>73.8</td>
<td>118.5</td>
<td>71.3</td>
<td>146.5</td>
<td>43.3</td>
</tr>
<tr>
<td>20713</td>
<td>Granulite, poor fol, mssv, qtz-plag-bi, poss meta grt</td>
<td>27.9</td>
<td>113.5</td>
<td>69.9</td>
<td>147.5</td>
<td>44.6</td>
</tr>
<tr>
<td>20714</td>
<td>Meta granite? Mssv qtz-flds-bi</td>
<td>37.1</td>
<td>125.5</td>
<td>81.7</td>
<td>163</td>
<td>59.3</td>
</tr>
<tr>
<td>20716</td>
<td>Mssv rk, qtz-flds-bi-px?</td>
<td>35.8</td>
<td>112.5</td>
<td>110</td>
<td>217</td>
<td>90.5</td>
</tr>
<tr>
<td>20717</td>
<td>Mssv rk, qtz-flds-bi-px?, meta granite?</td>
<td>35</td>
<td>130</td>
<td>117.5</td>
<td>233</td>
<td>82.9</td>
</tr>
<tr>
<td>20718</td>
<td>Mssv rk, qtz-flds-bi-px?, meta granite?</td>
<td>22.7</td>
<td>173.5</td>
<td>115</td>
<td>231</td>
<td>84.2</td>
</tr>
<tr>
<td>20722</td>
<td>Fol porph grt, flds to 1cm+</td>
<td>90.1</td>
<td>38.2</td>
<td>35.8</td>
<td>76.4</td>
<td>31.2</td>
</tr>
<tr>
<td>20723</td>
<td>Fol porph grt, flds to 1cm+</td>
<td>28.8</td>
<td>54.2</td>
<td>52.2</td>
<td>115.5</td>
<td>50</td>
</tr>
</tbody>
</table>

Granite-Associated Anomalies

Strong uranium and thorium radiometric anomalies occur over mapped granites south of the Yalyirimbi Range in the central part of the EL, and in the Ngalurbindi Hills west of the Yalyirimbi Range and near the NW corner of the EL.
In the former area highly anomalous radiation (750 - >1000cps) was found to be associated with foliated porphyritic granite. Quartz veins are common in this area. Such rocks throughout the Aileron Province tend to have high levels of Th and U. Results from samples from here are tabulated below, highest uranium assay was 45.9ppm, thorium values were higher – up to 114.5ppm.

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>Description</th>
<th>U (ppm)</th>
<th>Th (ppm)</th>
<th>La (ppm)</th>
<th>Ce (ppm)</th>
<th>Nd (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20345</td>
<td>Grt, qtz-flds-mica, qv</td>
<td>28.2</td>
<td>66.4</td>
<td>57</td>
<td>134.5</td>
<td>44.3</td>
</tr>
<tr>
<td>20346</td>
<td>Grt, qtz-flds-mica, qv, poss greisen?</td>
<td>35.8</td>
<td>73.1</td>
<td>96.6</td>
<td>194.5</td>
<td>65.6</td>
</tr>
<tr>
<td>20347</td>
<td>Grt, qtz-flds-mica, qv, poss greisen?</td>
<td>45.9</td>
<td>79.6</td>
<td>69.3</td>
<td>158.5</td>
<td>52.6</td>
</tr>
<tr>
<td>20348</td>
<td>Grt, porph</td>
<td>11.5</td>
<td>114.5</td>
<td>71.4</td>
<td>159.5</td>
<td>56.9</td>
</tr>
</tbody>
</table>

In the eastern part of the Ngalurbindi Hills prominent outcrops of porphyritic granite with common pegmatite veins correlate with the radiometric anomaly. Again high background but sub-economic), levels of uranium (up to 155ppm U) and of thorium are the cause of the anomaly. Uranium values here are elevated with respect to thorium with two of the three samples having more U than Th. These samples were representative chip samples from areas with above average radiometrics – thus they are representative of the higher grading parts of the outcrop. The sample with 155ppm U was from a 2m wide particularly radiometrically anomalous zone within meta-granite. Lithologically this zone appeared the same as the rocks either side of it.

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>Description</th>
<th>U (ppm)</th>
<th>Th (ppm)</th>
<th>La (ppm)</th>
<th>Ce (ppm)</th>
<th>Nd (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20719</td>
<td>Granite, qtz-flds-bi</td>
<td>83.2</td>
<td>62.2</td>
<td>64.4</td>
<td>129.5</td>
<td>52.6</td>
</tr>
<tr>
<td>20720</td>
<td>Granite, porph, qtz-flds-bi</td>
<td>42.4</td>
<td>56.7</td>
<td>56</td>
<td>115</td>
<td>44.9</td>
</tr>
<tr>
<td>20721</td>
<td>Granite, porph, qtz-flds-bi</td>
<td>155</td>
<td>44.5</td>
<td>45.6</td>
<td>94.4</td>
<td>38.5</td>
</tr>
</tbody>
</table>

Napperby Creek Prospect

PNC designated one of the uranium anomalies in the area as a prospect – the Napperby Creek Prospect. This is north of the Yalyirimbi Range and in an area of outcropping Wickstead Creek Beds. PNC stated that the uranium anomaly here is associated with recrystallised-metasomatised calc-silicate rock associated with the uraninite mineralization and is spatially associated with zones of “pegmatoid” character.

In this area calc-silicate gneiss (epidote – quartz) and quartzo-feldspathic gneiss outcrop. There are commonly quartz veins and a few scattered and tiny pegmatite blows. The largest seen of these (approximately 3 x 1m) unaccountably had been blasted. Fractures in this pegmatite are lined with carnottite, and the outcrop gave 770cps when background is generally <400cps. A PNC sample from here assayed 830ppm uranium. Radiometric background is quite low, with anomalies being associated with the tiny pegmatite bodies. A representative chip sample taken from here assayed only 21.9ppm U.

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>Description</th>
<th>U (ppm)</th>
<th>Th (ppm)</th>
<th>La (ppm)</th>
<th>Ce (ppm)</th>
<th>Nd (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20715</td>
<td>Pegm blow 3x1m qtz-flds, carnottite on fx</td>
<td>21.9</td>
<td>3.2</td>
<td>9.6</td>
<td>16.95</td>
<td>21.2</td>
</tr>
</tbody>
</table>

PNC explored this prospect with rock sampling, trenching, ground magnetics and radiometrics. Results did not warrant further work. The uranium occurrence here is unusual, but seems clearly associated with tiny pegmatite bodies, and is obviously not of significance.
Figure 9 Uranium radiometrics and previous rock chip uranium results.

Figure 10: Yalyirimbi geology and sample locations.
NGALIA EXPLORATION ACTIVITIES YEAR 7, 2012 (Hussey, 2013)

Ngalia Resources drilled a total of 56 RC holes for 2,575m at the Yalyirimbi haematite deposits in 2011. The RC drill samples from this program were assayed in the current reporting period. The assay samples for 2011 drill program were submitted to ALS Chemex in Alice Springs for sample preparation and then forwarded to ALS Chemex Perth for standard ore-grade Fe scheme using fused disk XRF analysis and LOI determinations.

CSA Global Pty Ltd (Perth) were commissioned to provide a Mineral Resource estimate for haematite iron mineralisation at the Yalyirimbi haematite (Yalyirimbi) A and M deposits.

The CSA Mineral Resource estimate is based on the assayed sample results obtained from 115 vertical RC holes totalling 4,917 metres, out of the total drill database containing 152 RC holes for 6,218 metres. Drill hole geology logging, assay result data and gravitational anomaly data formed the primary sources of information used to generate the geological model. CSA estimated the resources in the Yalyirimbi haematite deposits by completing and digitising a cross sectional interpretation using a nominal 15% Fe cut-off, based on RC drilling results. Wireframe solids were then created from these, using Datamine Studio 3 software. A block model was then constructed, constrained by the wireframe solids and topographic surface digital terrain model provided by Ngalia.

The grade estimate was completed using Ordinary Kriging (OK) with an Inverse Distance to the power of 2 (IDS) estimate concurrently carried out as an additional check. As there is currently no density data available, CSA calculated a model value resulting in density value of 3.1 t/m³ for all interpreted mineralised material. CSA assigned all waste material a density value of 2.7 t/m³.

The stated Mineral Resource estimate by Grant Louw of CSA is reproduced in the below table.

| Ngalia Resources Pty Ltd – Yalyirimbi Haematite deposits – Inferred Mineral Resource as at February 2012 |
|-------------------------------------------------|-------|---|---|---|---|---|---|
| Deposit | Category | Tonnes | Fe % | SiO₂ % | P % | Al₂O₃ % | S % | LOI |
| A | Inferred | 4,500,000 | 31.9 | 46.0 | 0.02 | 6.1 | 0.03 | 3.6 |
| M | Inferred | 9,600,000 | 24.9 | 58.0 | 0.03 | 3.5 | 0.14 | 1.8 |
| Combined | Inferred | 14,100,000 | 27.1 | 54.2 | 0.02 | 4.3 | 0.10 | 2.4 |

Note: The CSA Mineral Resource was estimated within constraining wireframe solids based on a nominal lower cut-off grade of 15% Fe. The Mineral Resource is quoted from blocks above a 15% Fe cut-off grade. Differences may occur due to rounding.

FERROWEST EXPLORATION ACTIVITIES YEAR 8, 2013 (Johnston, 2014)

Ferrowest Limited carried out a due diligence process on a potential iron project on EL24548 in March and April of 2013 and as a result of positive findings decided to acquire the Farm-in agreement for the iron rights with the tenement owners, Arafura Resources Limited, from the previous owner of these iron rights, Ngalia Resources Pty Ltd (“Ngalia”).

Prior to a formal handover by Ngalia, that company completed a rehabilitation programme over the old drill pads and access tracks that were established for its Reverse Circulation drilling campaign in the previous reporting periods.

Early in the reporting period Arafura Resources conducted a desktop study of all regional information, including borehole results from the tenement, to explore for water in the vicinity as part of their ongoing mining studies for nearby Nolan’s Bore rare earth project.

Subsequent to the settlement of the acquisition of the Farm-in Right to the iron from Ngalia and the assumption of all legal rights and associated obligations, Ferrowest applied to the Department of Mines and Energy to...
become the operator of the tenement by lodging a new Mine Management Plan. This approval was received at the end of September 2013. Concurrently, in September 2013 Ferrowest representatives met with the Central Land Council (“CLC”) and the local indigenous community at Laramba on country at Napperby Station to brief them on Ferrowest’s plans for the exploration of the tenement. Ferrowest assumed responsibility for an Exploration Agreement with the CLC and received approval from the local indigenous community following this meeting to allow exploration to proceed.

In consultation with CSA Global, the Perth based geological consulting company that carried out the initial mineral resource estimate for Ngalia (Louw, 2012), Ferrowest targeted a number of the original Reverse Circulation (RC) drill holes for twinning (drilled within two metres of the original RC hole) as well as some holes within the existing digital geological and cell block model that required infilling.

A total of eight diamond drill holes were drilled for a total of 356.8 metres advanced from the 17th to the 27th October 2013. Three of them were located on the “M” deposit (Drill holes M2001 to M2003) and five on the “A” deposit (Drill holes A2001 to A2005). The drilling was carried out by McKay Drilling from Perth using a Sandvik UDR 1200 diamond drilling rig. The core was drilled at PQ 3 (triple tube) diameter to provide large enough core samples to carry out meaningful density testwork on it. All holes were drilled vertically to twin existing RC holes so no structural information was recorded.

Type rock samples were extracted for Specific Gravity test work and the remainder of the core was sampled for a suite of 24 elements and a single point LOI.

YIP samples were submitted to the ALS Minerals laboratory in Alice Springs on the 22nd October for a 24 element Robe Iron Suite and 1 Point LOI (Loss on Ignition) for analysis. The samples were crushed to minus 3mm and then split using a riffle splitter to obtain a representative fraction of greater than 500g. This fraction was then dried to constant mass at 105 degrees C. The representative fraction was then ground to 90% passing 75 microns using a laboratory mill. After preparation the sample pulps were flown to the ALS assay facility in Perth and only these were retained. The samples have been weighed and mixed with a 12.22 Lithium Metaborate/Lithium Tetraborate Flux containing 4% Lithium nitrate as an oxidising agent. The flux/sample mixture was then fused at 105 degrees Centigrade.

All elements have been determined by X-ray Fluorescence Spectrometry (XRF).

The Loss on Ignition data (LOI 1000) has been determined gravimetrically in a muffle furnace at 1000 degrees C.

Forty-five samples of PQ core were sent to the Nagrom Laboratory in Perth for SG determination in early November 2013. The core was picked to represent all rock types so far encountered on site from high Fe, low silica value end members through to Fe poor, high silica vein material.

During the various site visits 9 surface grab samples were taken from the various iron prospects and the results from the assays of this surface material are reported on in this report.

FERROWEST EXPLORATION ACTIVITIES YEAR 9, 2014 (Johnstone, 2015)

At the end of the previous Reporting Period (end of 2013) Ferrowest had just completed a diamond drilling programme that was designed to augment the extensive RC drilling completed previously (Figure 18). This resulted in the Inferred Resource Estimate being lifted to a mix of Inferred and Indicated in December 2013. Work in the initial part of the Reporting Period centred on wrapping up post-drilling activities such as site rehabilitation. The new Resource modelling was also completed by CSA Global and is reported here.

At the end of 2013, following the completion of the diamond drilling programme, the determination of typical densities for iron bearing rocks allowed the assignment of real densities to the existing ore block model by CSA Global. This allowed an upgrade of the original mineral resource estimate under the JORC Code (2004) version.

The new Resource Estimate is as follows:
Ferrowest Limited

Yalyirimbi Haematite deposits - Mineral Resource estimate as at November 2013

<table>
<thead>
<tr>
<th>Deposit</th>
<th>Category</th>
<th>Million Tonnes</th>
<th>Fe %</th>
<th>SiO2 %</th>
<th>Al2O3 %</th>
<th>P %</th>
<th>S %</th>
<th>LOI %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Indicated</td>
<td>3.2</td>
<td>33.4</td>
<td>42.4</td>
<td>3.6</td>
<td>0.02</td>
<td>0.03</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>Inferred</td>
<td>1.3</td>
<td>29.4</td>
<td>45.8</td>
<td>7.2</td>
<td>0.02</td>
<td>0.02</td>
<td>3.7</td>
</tr>
<tr>
<td>M</td>
<td>Indicated</td>
<td>4.1</td>
<td>25.1</td>
<td>58.8</td>
<td>3</td>
<td>0.02</td>
<td>0.14</td>
<td>1.6</td>
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Figure 18: Yalyirimbi Iron Project, drill hole location plan.

FERROWEST EXPLORATION ACTIVITIES YEAR 10, 2015 (Manning, 2015)

No further on ground exploration or investigations of any significance were undertaken by Ferrowest in the final year of the licence. Ferrowest’s main activity during the year comprised of preparation of the Mine Management Plan Closure Report and lodgement of that report with the appropriate statutory authority.
REFERENCES

Refer to original reports for references quoted in acknowledged sections.


