

# **Open File Envelope**

## **No. 12,637**

**EL 5290**

**ASTON HILL**

### **ANNUAL REPORT AND FINAL REPORT TO LICENCE SURRENDER, FOR THE PERIOD 25/6/2013 TO 4/6/2015**

Submitted by  
Woomera Exploration Ltd  
2015

© 16/7/2015

This report was supplied as part of the requirement to hold a mineral or petroleum exploration tenement in the State of South Australia.

The Department of State Development accepts no responsibility for statements made, or conclusions drawn, in the report or for the quality of text or drawings.

This report is subject to copyright. Apart from fair dealing for the purposes of study, research, criticism or review as permitted under the Copyright Act, no part may be reproduced without written permission of the Executive Director of the Department of State Development Resources and Energy Group, GPO Box 320, Adelaide, SA 5001.

**Enquiries:** Customer Services  
Resources and Energy Group  
7th Floor  
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000  
Facsimile: (08) 8204 1880



**Government of South Australia**  
Department of State Development



Annual Technical Report  
for  
Exploration Licence 5290 – Nawa Domain Project  
25 June 2013 – 24 June 2014

Tenement Holder – Norsa Exploration Pty Ltd

Map Sheets:  
1:250,000 - SG53-14 (Wintinna)  
1:100,000 – 5642 (Ouldburra)

Author: Don Triggs  
Date: 29 September 2014

## Contents

Background.....	2
Location and Access.....	3
Geological Setting.....	4
Previous Exploration .....	6
Proposed Exploration.....	8
Figure 1 – WEX and Norsa combined project areas.....	3
Figure 2 – Nawa Project Location .....	4
Figure 3 – Nawa Project location with TMI .....	5
Figure 4 – Geological setting .....	5
Figure 5 – Arkaringa coal deposits.....	6
Figure 6 – Previous drilling.....	7
Figure 7 – Total Count radiometric image .....	8
Table 1 – Norsa Tenement Holding .....	3

## Background

This is the first Annual Technical Report for EL 5290. It is submitted by Woomera Exploration Limited (WEX) on behalf of its wholly owned subsidiary, Norsa Exploration Pty Ltd (Norsa).

Norsa Exploration Pty Ltd (Norsa) was registered in March 2012 with the explicit aim of exploring for minerals in the Gawler Craton and Musgrave Block. Norsa applied for nine tenements in May 2012. Seven of these were granted in June 2013 and two remain as applications pending access negotiations with the Maralinga Tjarutja. (Table 1)

Tenement ID	Area (Sq. Kms)	Committed Expenditure Yr 1	Grant Date
5286	446	75,000	25-Jun-13
5287	595	90,000	25-Jun-13
5288	937	120,000	25-Jun-13
5289	994	125,000	25-Jun-13
5290	324	60,000	25-Jun-13
5291	438	70,000	25-Jun-13
5292	906	120,000	25-Jun-13
ELA 2012/00119	929		
ELA 2012/00120	848		
<b>Totals</b>	<b>4640</b>	<b>\$660,000</b>	

**Table 1 – Norsa Tenement Holding**

During the first 12 months of holding these tenements the Company has conducted a desktop review of previous exploration activities and Government reports for the areas covered by these tenements. As part of this process it has developed a comprehensive in-house spatial database to assist in identifying and ranking exploration targets on these tenements and planning in-field exploration work.

In June 2014, all of the issued capital in Norsa was purchased by Woomera Exploration Limited (WEX) with the intention that the WEX and Norsa projects be merged.

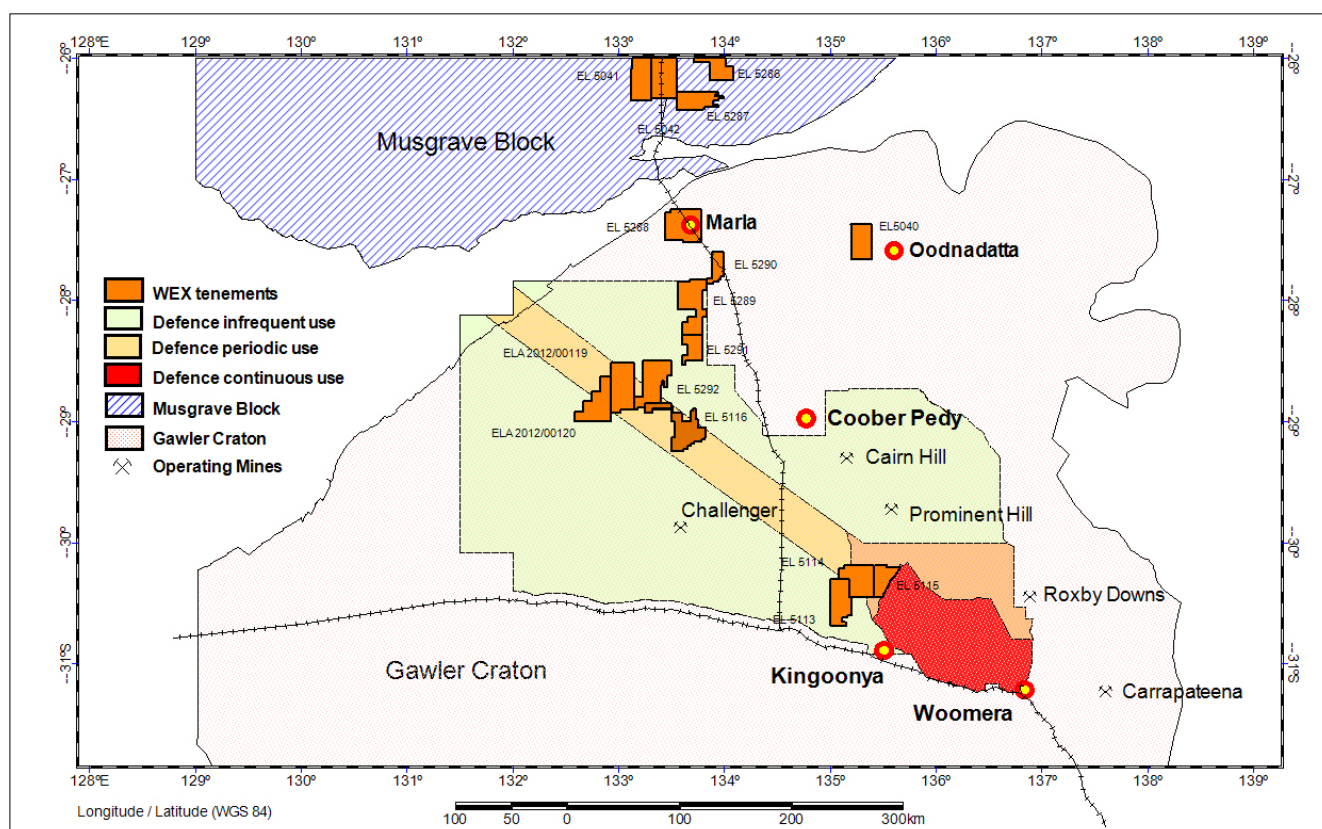
The company's focus in the Gawler Craton area is:

- Olympic Dam style Iron Oxide Copper Gold (IOCG)
- Mississippi Valley style base metal mineralisation in the Observatory Hill beds of the Officer Basin
- The Challenger style gold deposits in the Archaean-Proterozoic Mulgathing Complex

and in the Musgrave Block the focus is:

- Magmatic Ni-Cu-PGE deposits associated with mafic-ultramafic rocks of the Proterozoic Giles Complex
- silver-copper-zinc and rare earth mineralisation that has recently been noted by DMITRE within granites of the Pitjantjatjara Supersuite

The combined project areas are shown in Figure 1.



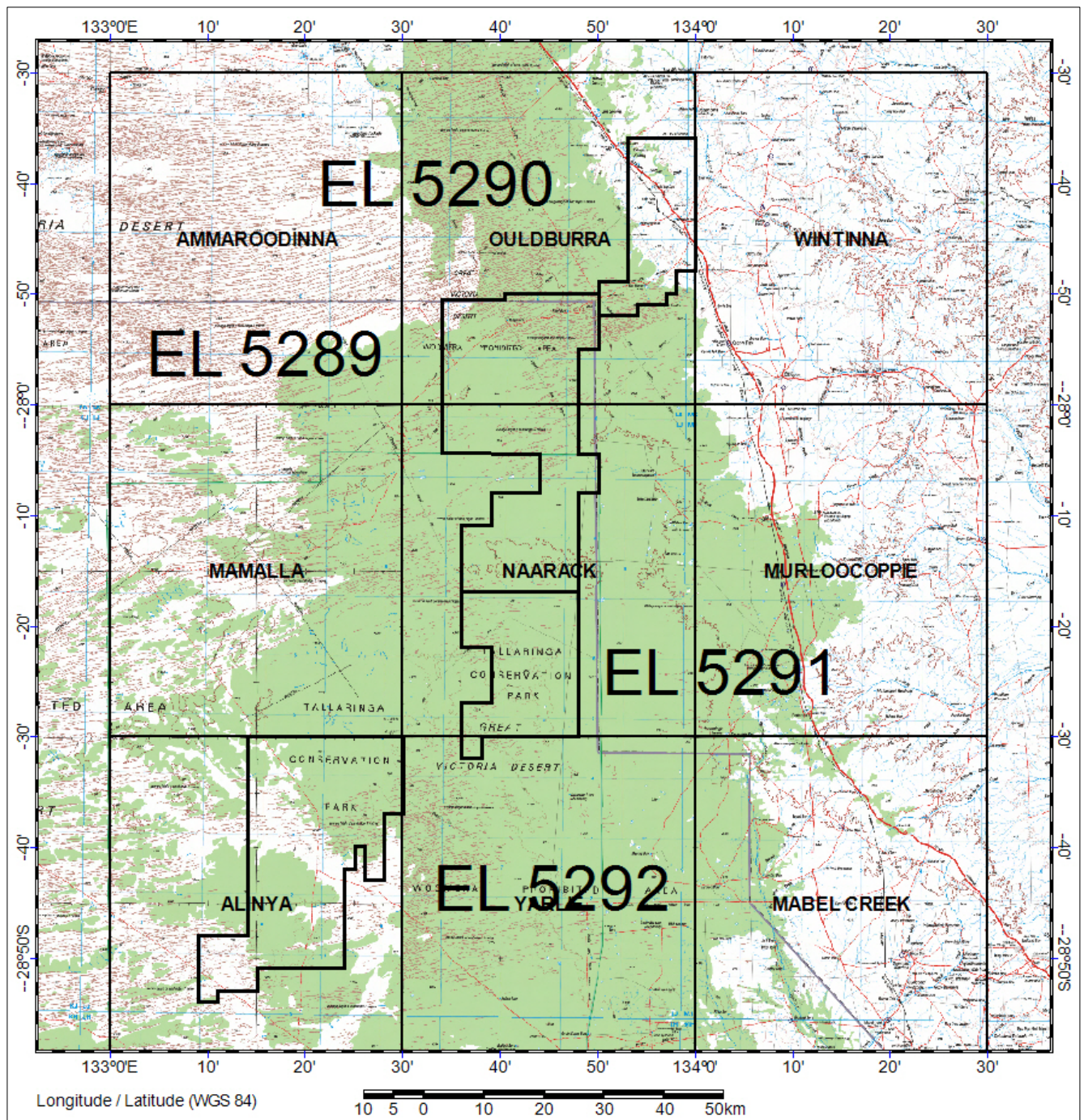
**Figure 1 – WEX and Norsa combined project areas**

## Location and Access

EL 5290 lies within the Ouldurra 1:100,000 sheet in the North-Western Gawler Craton in the area known as the Nawa Domain. This tenement is one of four tenements that constitute the company's Nawa project in the North-West of the Woomera Prohibited Area (WPA). (Figure 2 and Figure 3).



Access is gained via the Stuart Highway which runs through the middle of the tenement.

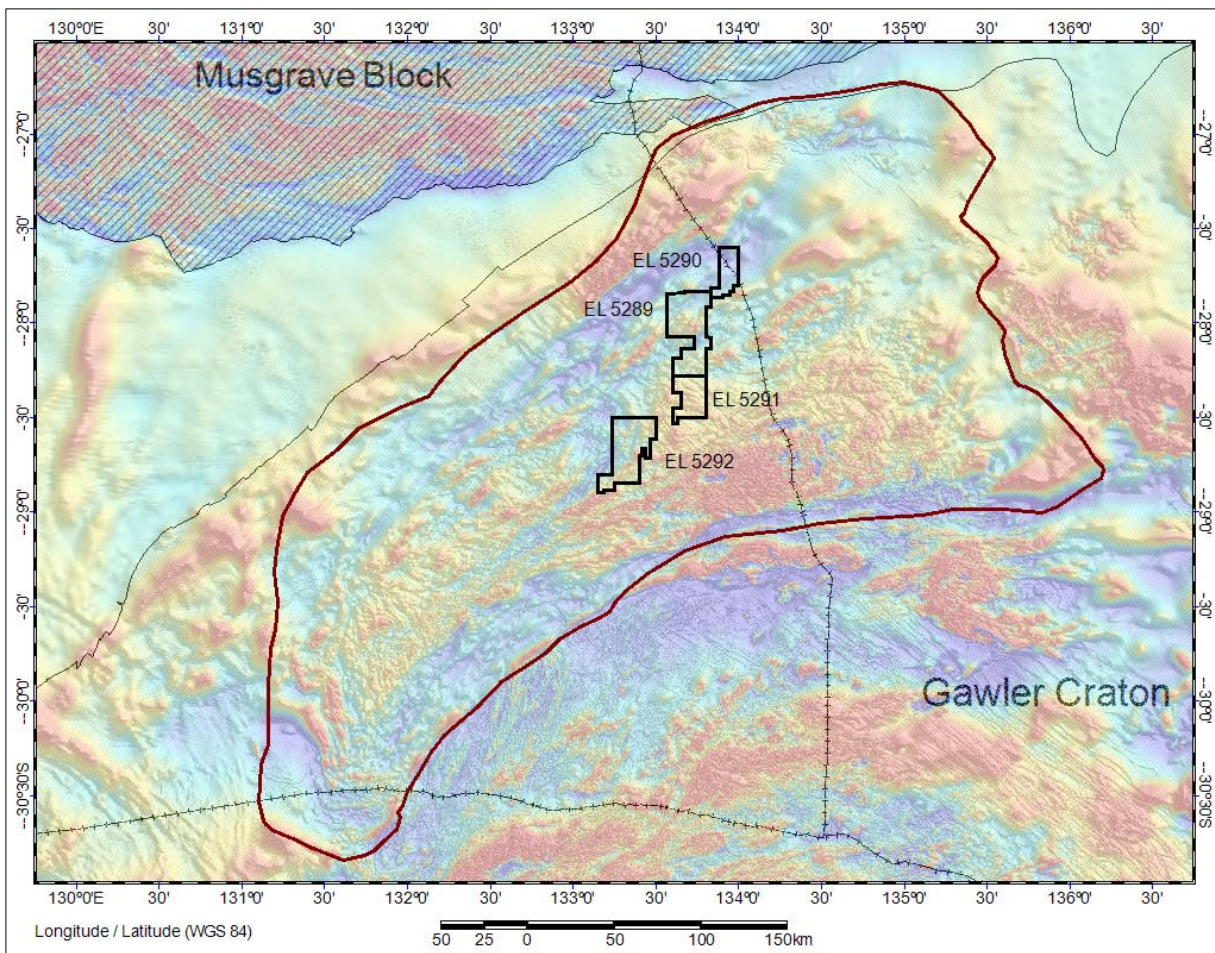


**Figure 2 – Nawa Project Location**

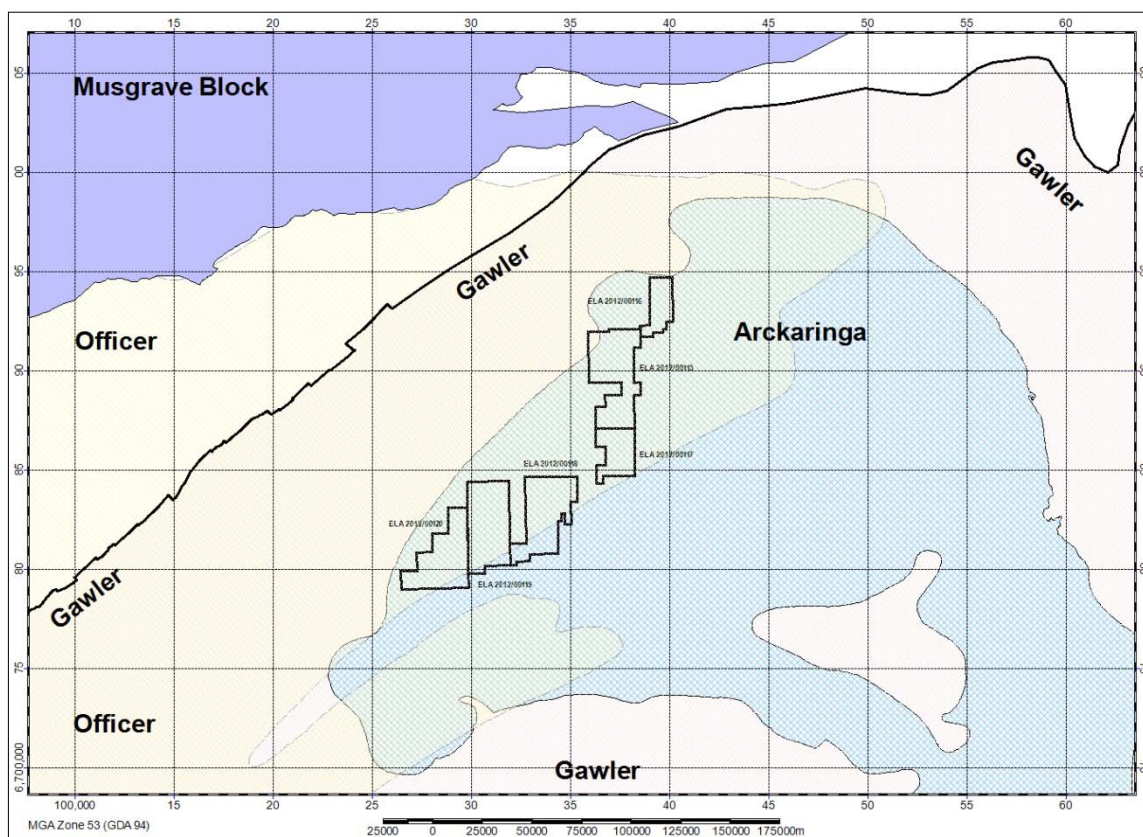
## Geological Setting

The tenements of the Nawa project lie entirely within the Nawa Domain of the North-West rim of the Gawler Craton. The crystalline basement is overlain with sediments of the Officer and Arckaringa basins as shown in Figure 4. Very little is known about the crystalline basement of the Nawa Domain, but the limited information available suggests that it contains a package of variably metamorphosed mudstone and sandstone units aged between 1750 Ma and 1720 Ma.





**Figure 3 – Nawa Project location with TMI**



**Figure 4 – Geological setting**

## Previous Exploration

This region has been lightly explored for a variety of commodities over the last 45 years. The initial focus by DMITRE, Santos, Comalco and others was on the hydrocarbon potential in the overlying sediments of the Officer and Arckaringa basins. The Arckaringa Basin is a Permo-Carboniferous intracratonic basin which covers an area of ~80 000 km<sup>2</sup> overlying the crystalline basement of the Gawler Craton. The thickness of the Permian sediments within the Arckaringa varies from zero to about 1300 metres and significant coal deposits were identified during the mid eighties to the East of the project area (Figure 5). The basement rocks of the project area are virtually untouched.

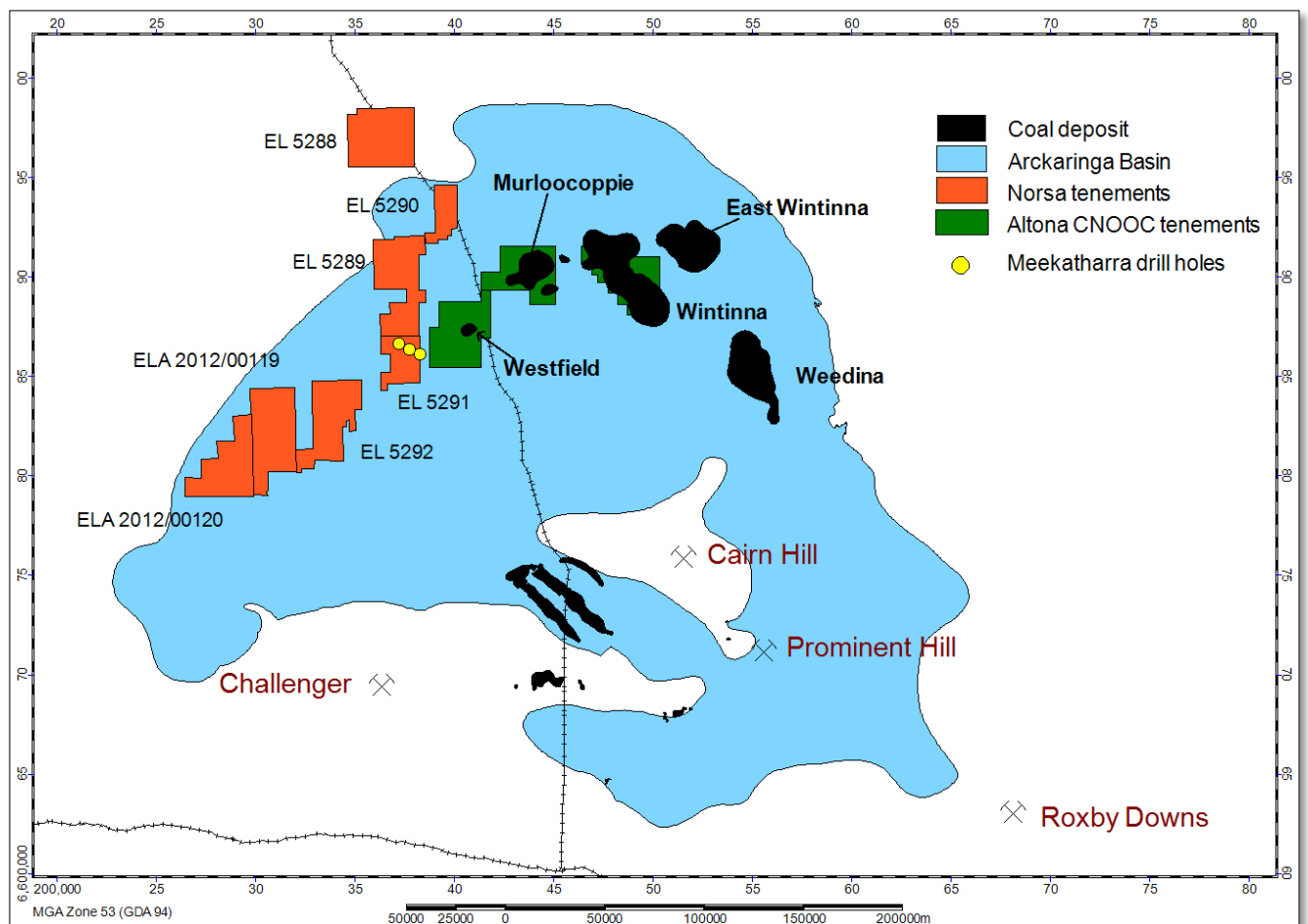


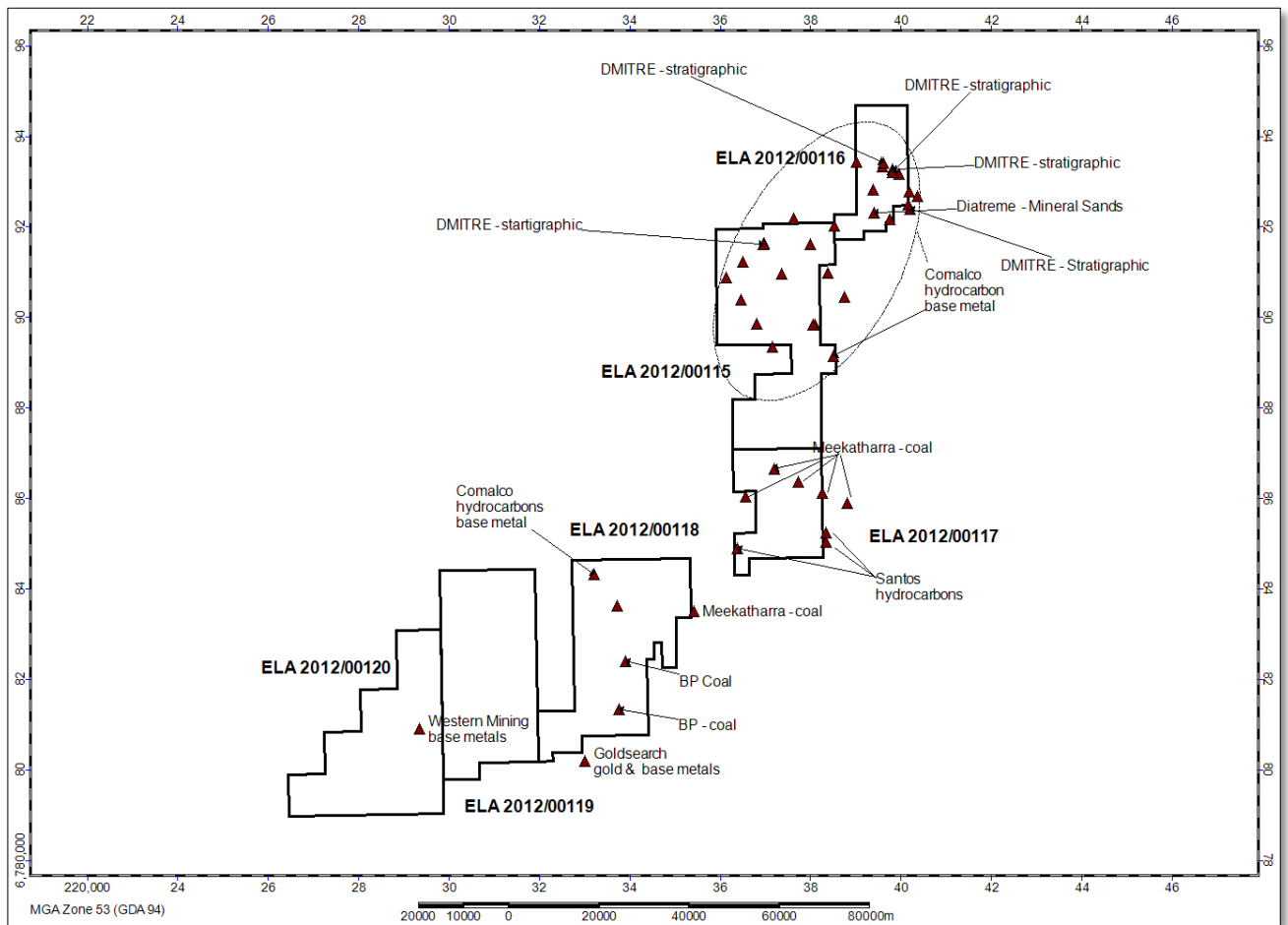
Figure 5 – Arckaringa coal deposits

In the early 1980's Western Mining Corporation (WMC) explored the potential of the Officer Basin Observatory Hill beds for stratiform or Mississippi Valley type base metal mineralisation. WMC conducted ground magnetic and gravity traverses on and south of the project area and subsequent drilling confirmed the existence of shallow basement as inferred from magnetic and gravity data, however, they did not intersect the Observatory Hill beds over the basement ridge. Eight holes drilled on the basement ridge intersected the Archean Mulgathing Complex at depths ranging from 100 to 180 metres. A ninth hole drilled away from the basement ridge (Figure 8) intersected the Observatory Hill beds at around 200 metres and entered the archean basement at 389 metres.

The Mulgathing complex is prospective for a range of commodities including gold, nickel, copper, platinum group elements and iron ore. The nearby, 1 million ounce Challenger gold mine, occurs in the Mulgathing complex.



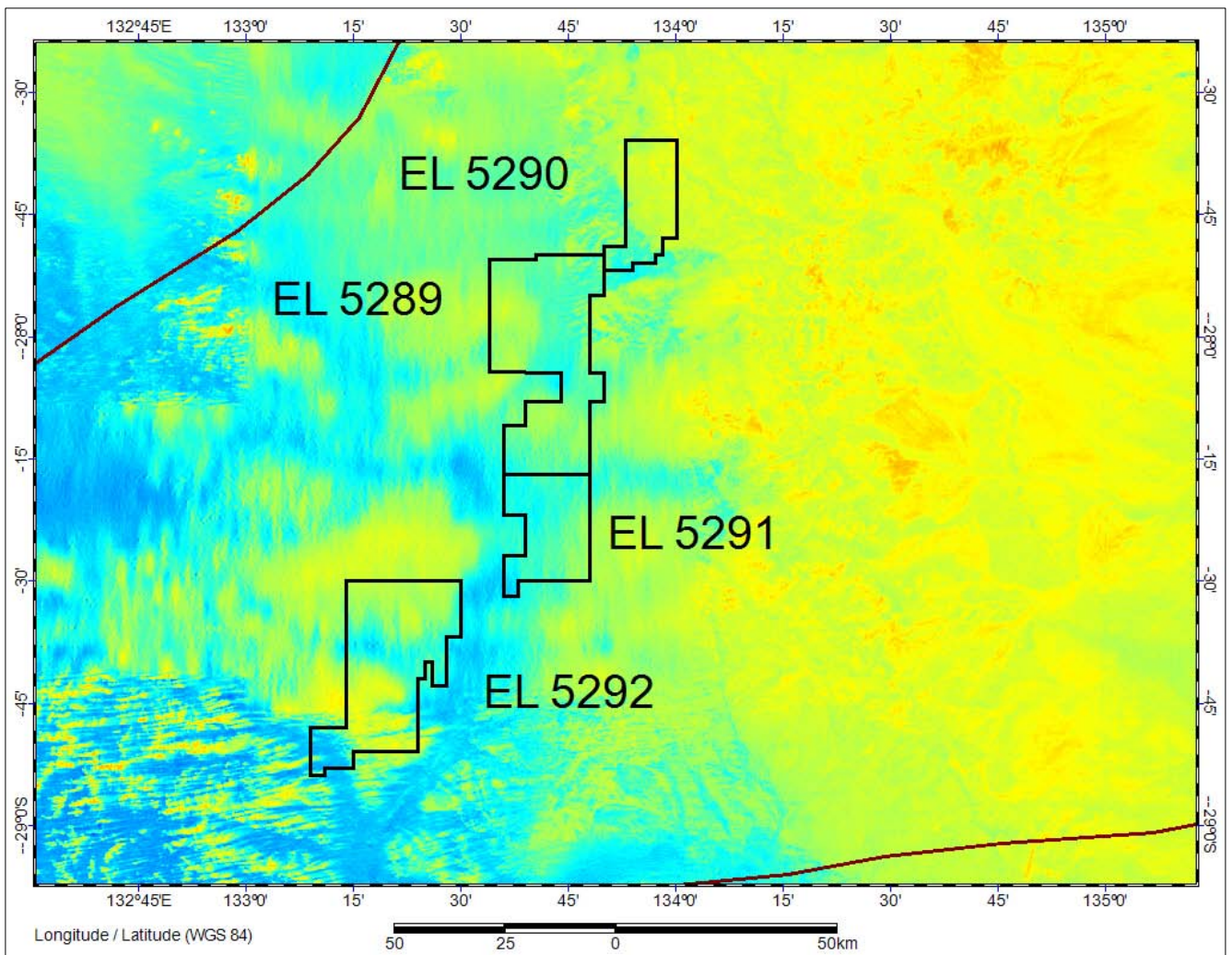
Boreholes drilled in the project area are shown in Figure 6 but most of these targeted the overlying sediments.



**Figure 6 – Previous drilling**

Past explorers do not appear to have targeted uranium deposits in this area. The Tallaringa paleochannel forms part of the drainage pattern in this area and appears to be ideally located to collect uranium rich material from the surrounding basement rocks. Figure 7 shows the total count radiometric data and this appears to be above background level over much of the project area.





**Figure 7 – Total Count radiometric image**

## Proposed Exploration

WEX/Norsa will employ a multi commodity exploration approach on these tenements with the following targets as priority:

- 1) Stratabound Cu-Pb-Zn
- 2) Uranium
- 3) Mineral sands
- 4) Gold, nickel, copper and platinum group elements in the archean basement.

WEX/Norsa's plan for this tenement is to identify areas where the Observatory Hill beds are close to the surface and in these areas trial ground EM and IP methods for delineating sulphide accumulations in these areas. The electrical results will be tested with RC drilling.

Digital data sets comprising magnetic, gravity, radiometric and geochemical information have already been collected from archived data and integrated into a Graphical Information System. Historical exploration reports have also been collected and scrutinised.



Final Technical Report  
for  
Exploration Licence 5290 – Nawa Domain Project  
25 June 2014 – 4 June 2015

Tenement Holder – Norsa Exploration Pty Ltd

Map Sheets:  
1:250,000 - SG53-14 (Wintinna)  
1:100,000 – 5642 (Ouldburra)

Author: Don Triggs  
Date: 7 September 2015

## Contents

Summary .....	2
Background.....	2
Location and Access.....	4
Geological Setting.....	5
Previous Exploration .....	7
Figure 1 – WEX and Norsa combined project areas.....	4
Figure 2 – Nawa Project Location .....	5
Figure 3 – Nawa Project location with TMI .....	6
Figure 4 – Geological setting .....	6
Figure 5 – Arkaringa coal deposits.....	7
Figure 6 – Previous drilling.....	8
Figure 7 – Total Count radiometric image .....	9
Table 1 – Norsa Tenement Holding .....	3

## Summary

This is the Final Technical Report for EL 5290. It is submitted by Woomera Exploration Limited (WEX) on behalf of its wholly owned subsidiary, Norsa Exploration Pty Ltd (Norsa).

The tenement has been lightly explored for a diverse range of commodities including oil, coal, evaporites, base metals and IOCG style deposits. Although prospective, WEX has not been able to attract investment for this tenement so it was surrendered on 4 June 2015.

## Background

Norsa Exploration Pty Ltd (Norsa) was registered in March 2012 with the explicit aim of exploring for minerals in the Gawler Craton and Musgrave Block. Norsa applied for nine tenements in May 2012. Seven of these were granted in June 2013 and two remain as applications pending access negotiations with the Maralinga Tjarutja. (Table 1)



<b>Tenement ID</b>	<b>Area (Sq. Kms)</b>	<b>Committed Expenditure Yr 1</b>	<b>Grant Date</b>
5286	446	75,000	25-Jun-13
5287	595	90,000	25-Jun-13
5288	937	120,000	25-Jun-13
5289	994	125,000	25-Jun-13
5290	324	60,000	25-Jun-13
5291	438	70,000	25-Jun-13
5292	906	120,000	25-Jun-13
ELA 2012/00119	929		
ELA 2012/00120	848		
<b>Totals</b>	<b>4640</b>	<b>\$660,000</b>	

**Table 1 – Norsa Tenement Holding**

During the first 12 months of holding these tenements the Company has conducted a desktop review of previous exploration activities and Government reports for the areas covered by these tenements. As part of this process it has developed a comprehensive in-house spatial database to assist in identifying and ranking exploration targets on these tenements and planning in-field exploration work.

In June 2014, all of the issued capital in Norsa was purchased by Woomera Exploration Limited (WEX) with the intention that the WEX and Norsa projects be merged.

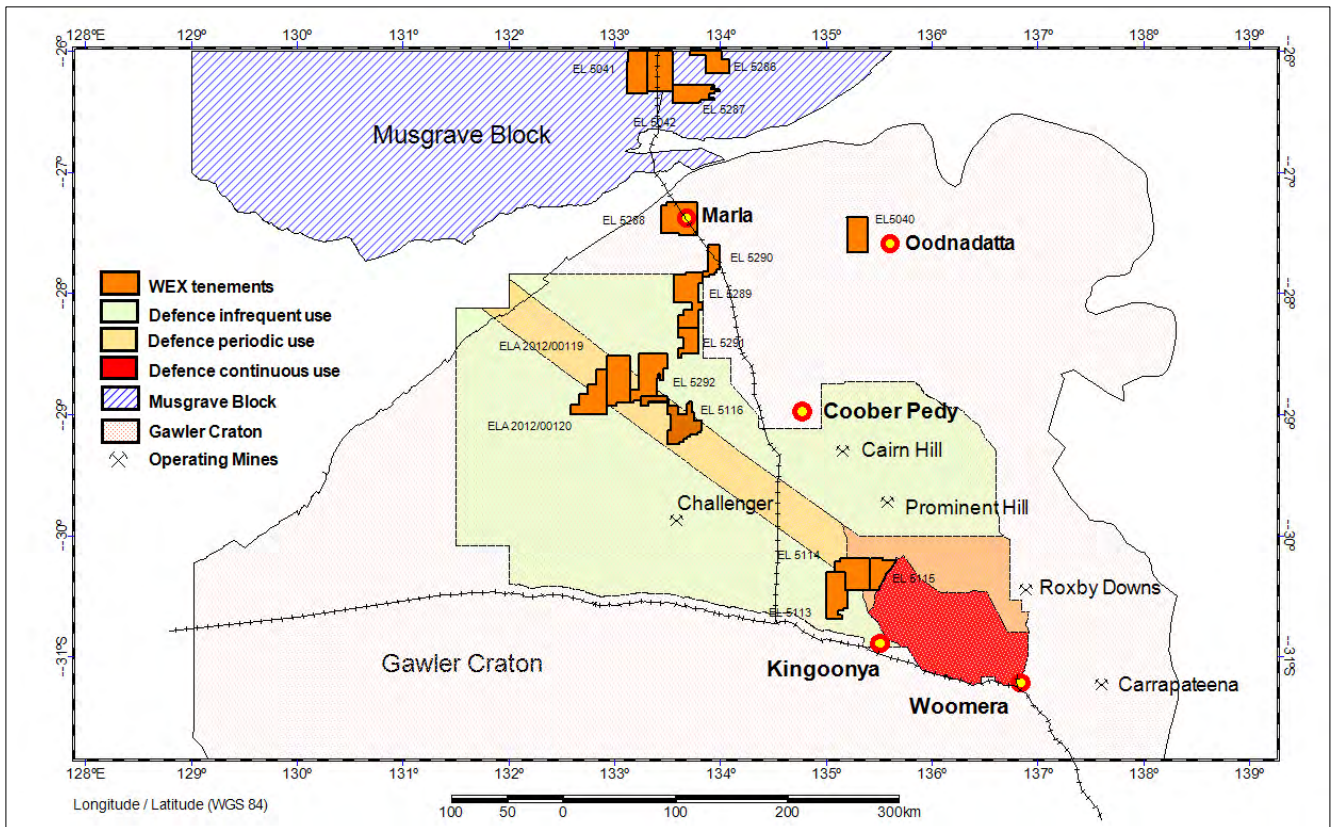
The company's focus in the Gawler Craton area is:

- Olympic Dam style Iron Oxide Copper Gold (IOCG)
- Mississippi Valley style base metal mineralisation in the Observatory Hill beds of the Officer Basin
- The Challenger style gold deposits in the Archaean-Proterozoic Mulgathing Complex

and in the Musgrave Block the focus is:

- Magmatic Ni-Cu-PGE deposits associated with mafic-ultramafic rocks of the Proterozoic Giles Complex
- silver-copper-zinc and rare earth mineralisation that has recently been noted by DMITRE within granites of the Pitjantjatjara Supersuite

The combined project areas are shown in Figure 1.



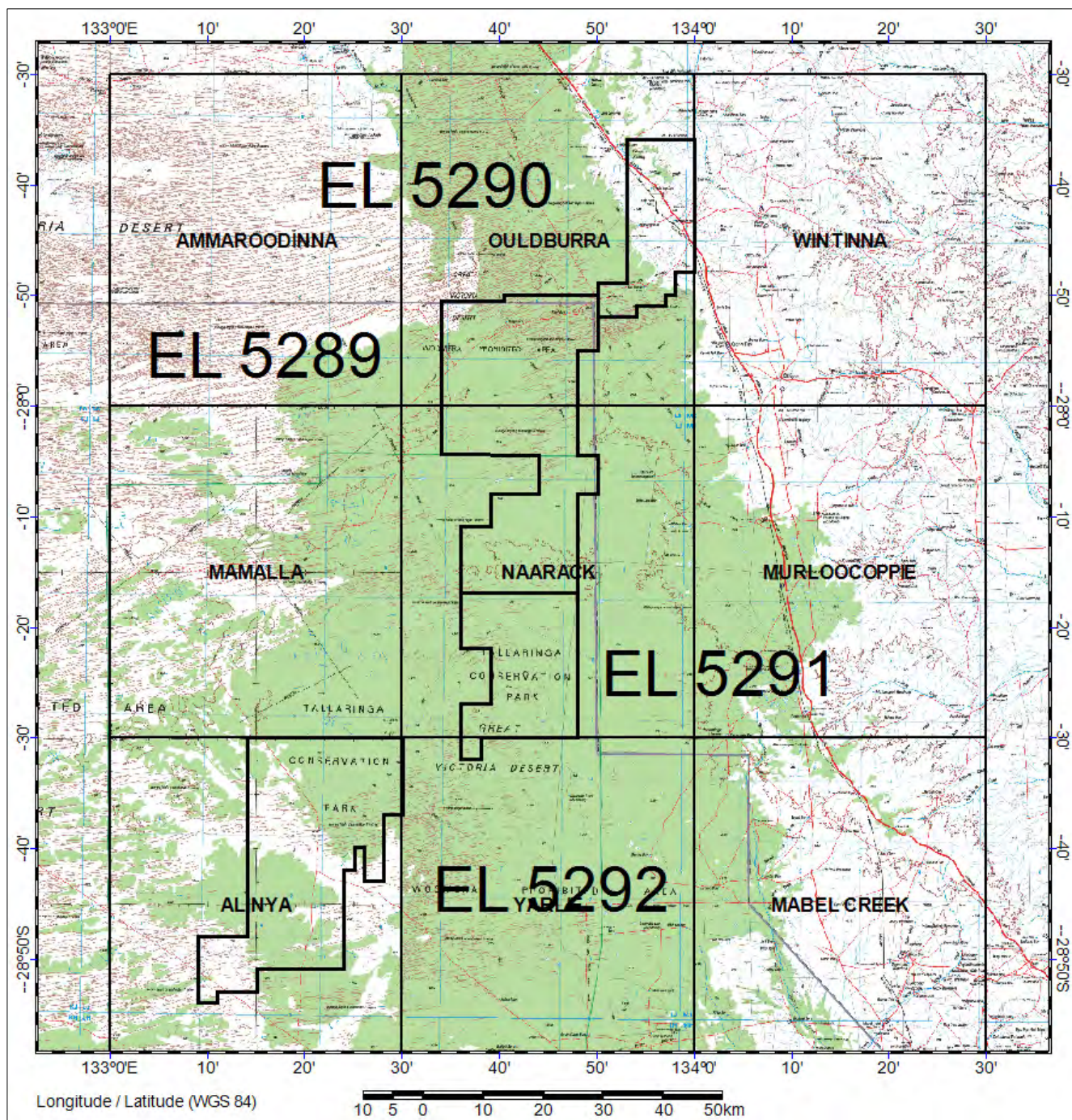
**Figure 1 – WEX and Norsa combined project areas**

## Location and Access

EL 5290 lies within the Ouldburra 1:100,000 sheet in the North-Western Gawler Craton in the area known as the Nawa Domain. This tenement is one of four tenements that constitute the company's Nawa project in the North-West of the Woomera Prohibited Area (WPA). (Figure 2 and Figure 3).

Access is gained via the Stuart Highway which runs through the middle of the tenement.



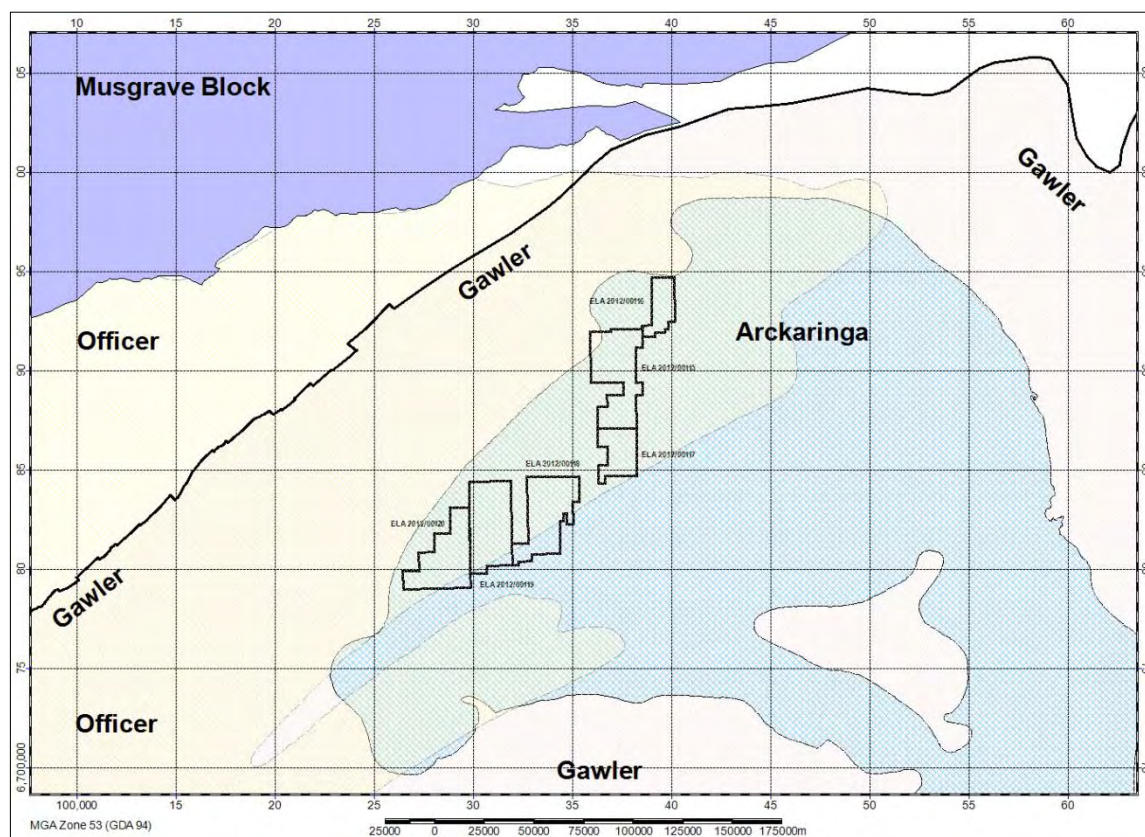
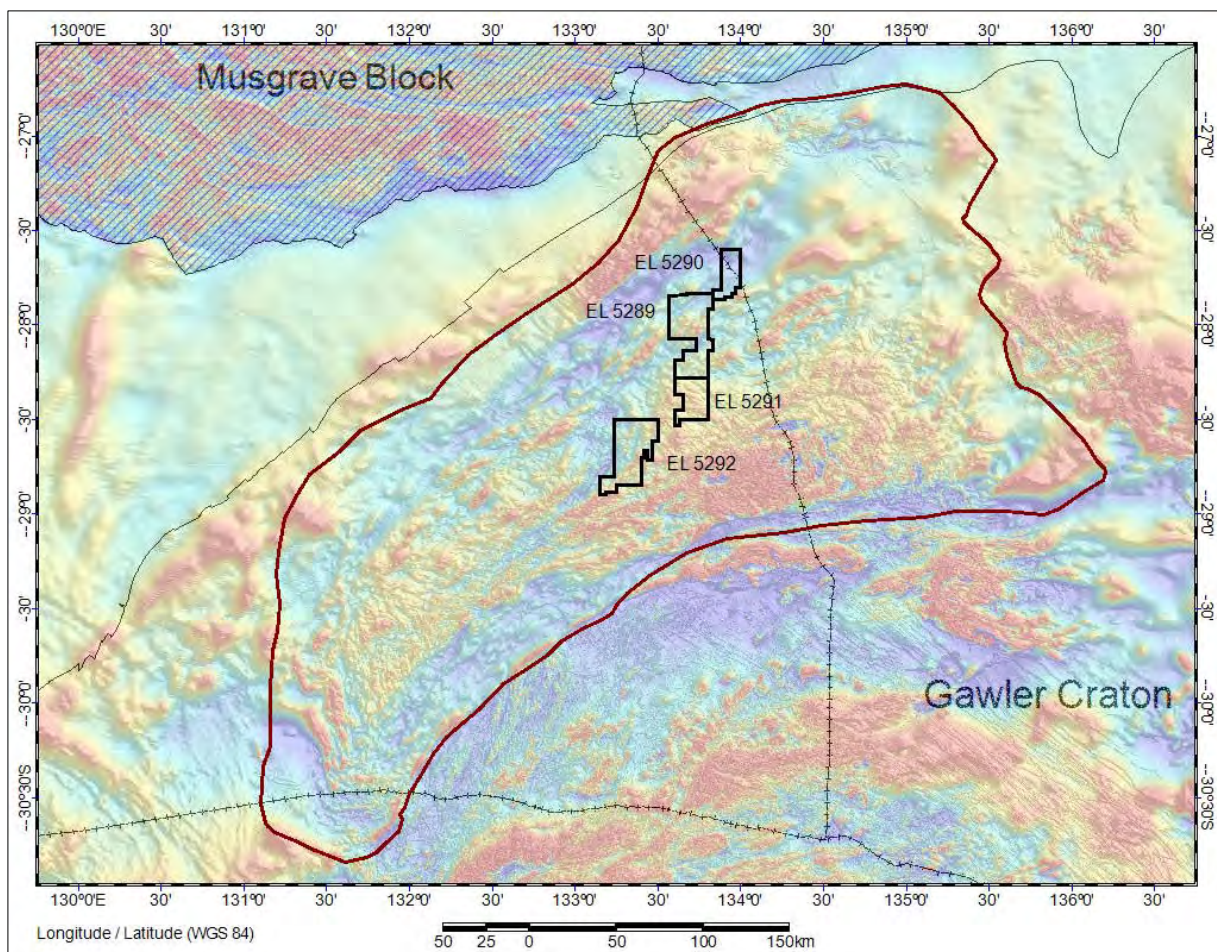


**Figure 2 – Nawa Project Location**

## Geological Setting

The tenements of the Nawa project lie entirely within the Nawa Domain of the North-West rim of the Gawler Craton. The crystalline basement is overlain with sediments of the Officer and Arckaringa basins as shown in Figure 4. Very little is known about the crystalline basement of the Nawa Domain, but the limited information available suggests that it contains a package of variably metamorphosed mudstone and sandstone units aged between 1750 Ma and 1720 Ma.







## Previous Exploration

This region has been lightly explored for a variety of commodities over the last 45 years. The initial focus by DMITRE, Santos, Comalco and others was on the hydrocarbon potential in the overlying sediments of the Officer and Arckaringa basins. The Arckaringa Basin is a Permo-Carboniferous intracratonic basin which covers an area of ~80 000 km<sup>2</sup> overlying the crystalline basement of the Gawler Craton. The thickness of the Permian sediments within the Arckaringa varies from zero to about 1300 metres and significant coal deposits were identified during the mid eighties to the East of the project area (Figure 5). The basement rocks of the project area are virtually untouched.

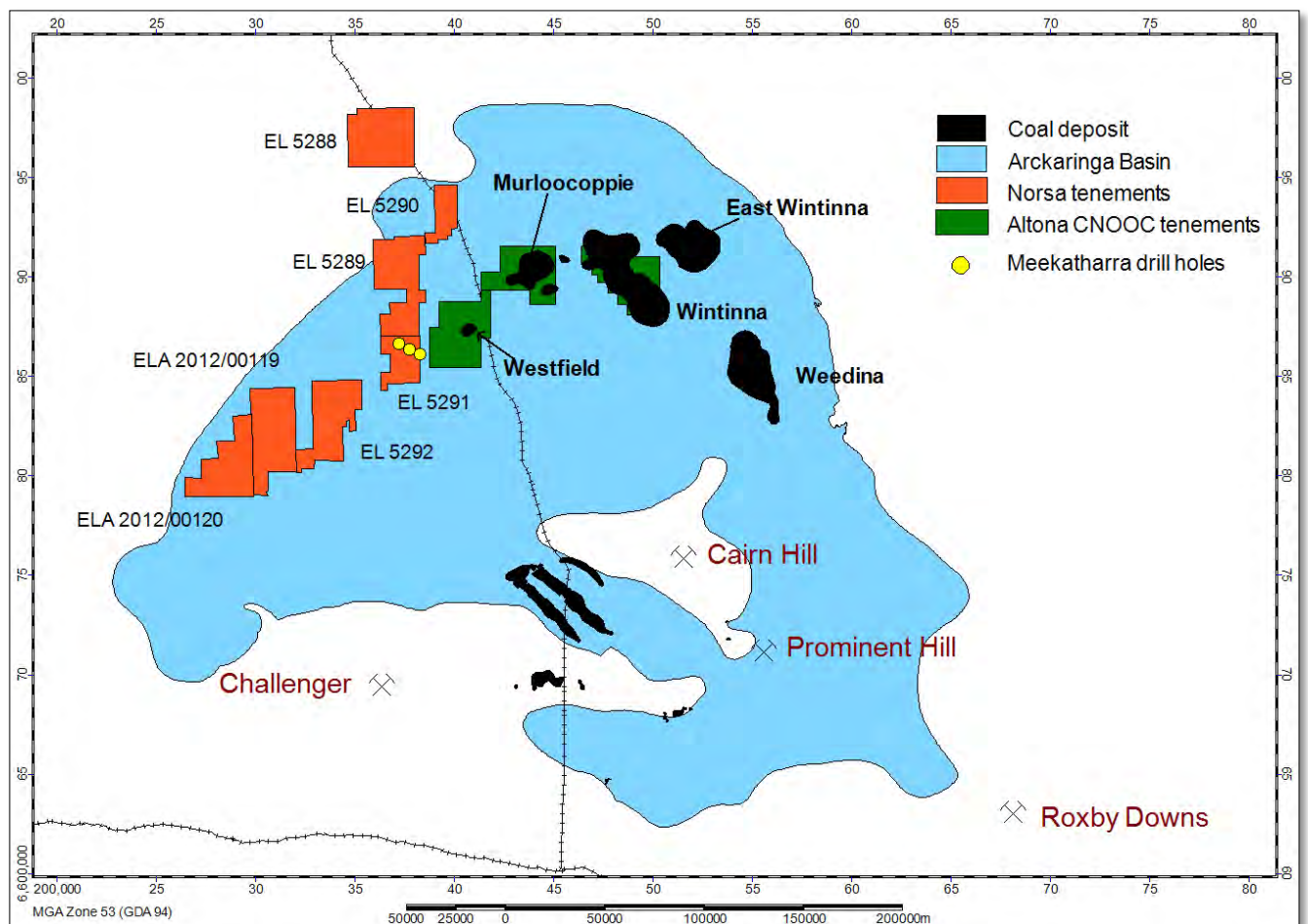
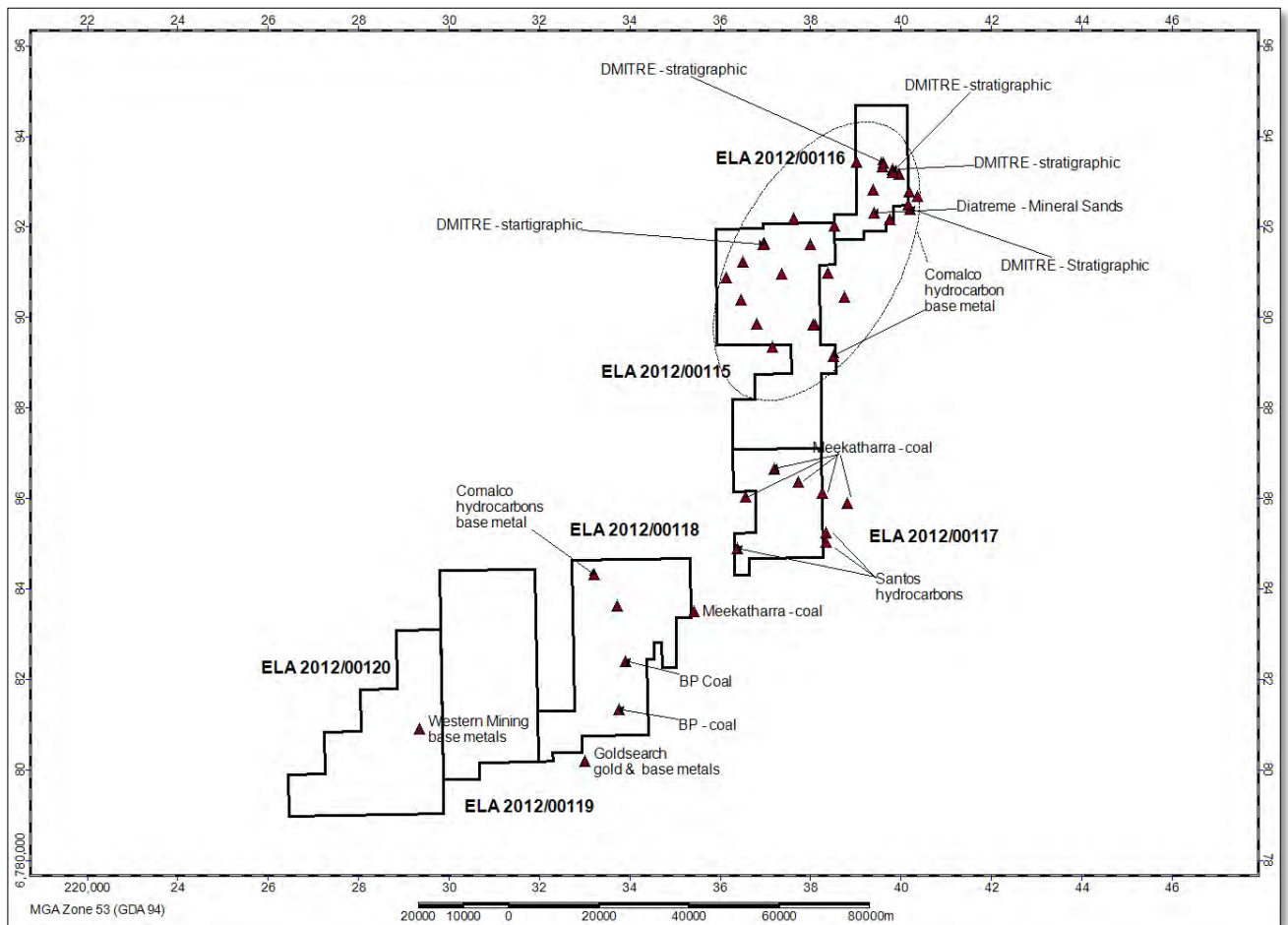


Figure 5 – Arckaringa coal deposits

In the early 1980's Western Mining Corporation (WMC) explored the potential of the Officer Basin Observatory Hill beds for stratiform or Mississippi Valley type base metal mineralisation. WMC conducted ground magnetic and gravity traverses on and south of the project area and subsequent drilling confirmed the existence of shallow basement as inferred from magnetic and gravity data, however, they did not intersect the Observatory Hill beds over the basement ridge. Eight holes drilled on the basement ridge intersected the Archean Mulgathing Complex at depths ranging from 100 to 180 metres. A ninth hole drilled away from the basement ridge (Figure 8) intersected the Observatory Hill beds at around 200 metres and entered the archean basement at 389 metres.

The Mulgathing complex is prospective for a range of commodities including gold, nickel, copper, platinum group elements and iron ore. The nearby, 1 million ounce Challenger gold mine, occurs in the Mulgathing complex.

Boreholes drilled in the project area are shown in Figure 6 but most of these targeted the overlying sediments.



**Figure 6 – Previous drilling**

Past explorers do not appear to have targeted uranium deposits in this area. The Tallaringa paleochannel forms part of the drainage pattern in this area and appears to be ideally located to collect uranium rich material from the surrounding basement rocks. Figure 7 shows the total count radiometric data and this appears to be above background level over much of the project area.



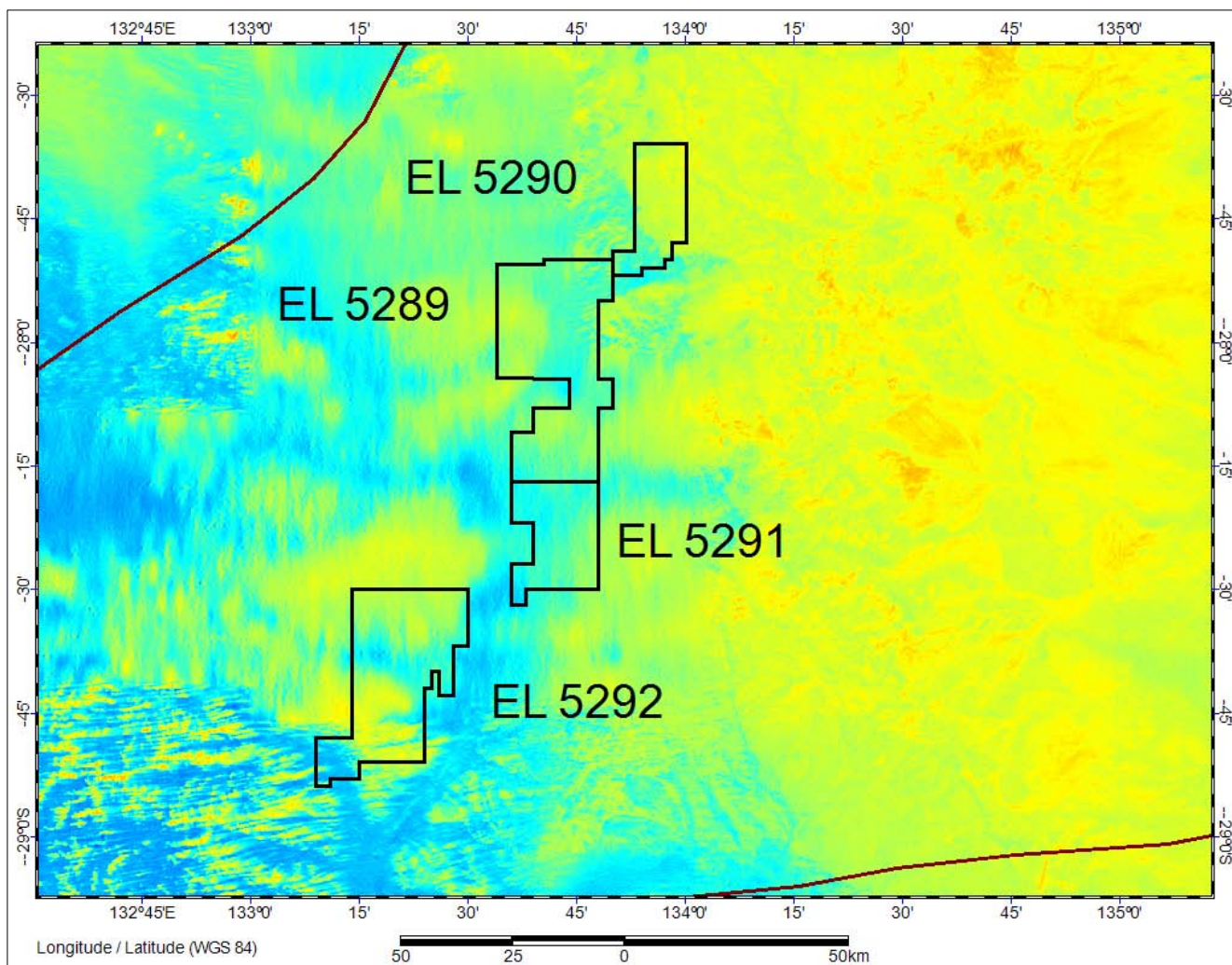


Figure 7 – Total Count radiometric image