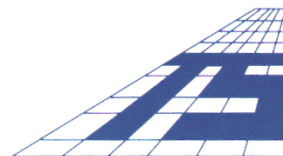


# Terra Search Pty Ltd

A.B.N. 59 011 073 939

Specialists in Mineral Exploration:  
Geology and Computing



Titleholder:	Tellus Holdings Pty Ltd
Operator:	Tellus Holdings Pty Ltd
Tenement Manager / Agent:	Terra Search Pty Ltd
Tenements:	EL27974 Central Railroad
Project Name:	Charlotte Project
Report Title:	Partial Relinquishment Report for EL27974 Central Railroad for the period ending 19 October 2012
Author:	Jaime Livesey
Corporate Author:	Duncan van der Merwe
Company reference number:	TLH2012006
Target Commodity:	Halite (Sodium chloride) and trace minerals
Date of Report:	11 December 2012
Datum/zone:	GDA94 / zone 53
250K map sheet:	SG5302 Rodinga, SG5305 Kulgera, SG5306 Finke
100K map sheet:	5648 Charlotte, 5748 Rodinga, 5547 Erldunda, 5647 Idracowra
Address:	Tellus Holdings Pty Ltd Suite 1, Level 5, 71 Macquarie Street Sydney, NSW, 2000
Telephone:	+61 2 9241 7678
Fax:	+61 2 9241 7691
Email for further Technical details:	jaime.livesey@internode.on.net
Email for Expenditure:	duncan@tellusholdings.com.au

## Townsville

PO Box 981, Hyde Park QLD 4812  
21 Keane Street, Currajong QLD 4812  
Phone: (07) 4728 6851 Fax: (07) 4728 6854

## Perth

PO Box 2016, Carlisle North WA 6101  
12/120 Briggs Street, Welshpool WA 6106  
Phone: (08) 9472 8546 Fax: (08) 9472 8548

## **EXECUTIVE SUMMARY**

EL27974 "Central Railroad" held by Tellus Holdings Pty Ltd ("Tellus") is located in the Amadeus Basin, approximately 130km south of Alice Springs.

Exploration targeting subsurface salt deposits to assess potential evaporitic mineralisation within the Amadeus Basin. Two known salt units are present in the project area, namely the Chandler Formation and the deeper Gillen Salt Member.

Exploration activities over the relinquished area were confined to regional desktop studies and literature review. Tellus have partially relinquished EL27974 to meet tenure requirements and to concentrate future exploration over areas of greater potential.

## TABLE OF CONTENTS

Section	Title	Page #
	<b>EXECUTIVE SUMMARY</b>	i
1	Introduction	1
2	Project description	1
3	Location	1
4	Tenure	1
5	Regional Geology	3
6	Local Geology	5
7	Historic Exploration over the relinquished area	8
8	Exploration Activities Conducted	8
9	Conclusion	9
10	References	9

## LIST OF TABLES

Tab #	Title	Page #
1	Details of Exploration Licence	1
2	Generalised stratigraphy for the Project area	7

## LIST OF FIGURES

Fig #	Title	Page #
1	Project Location and Topography	2
2	Geological Regions of Northern Territory	4
3	Local Geology over the Relinquished Area	5
4	Stratigraphy	6
5	Historic Exploration	8

## 1. INTRODUCTION

EL27974 is located in the Amadeus Basin, approximately 130km south of Alice Springs. Tellus Holdings consider this area to be prospective for evaporitic mineralisation.

## 2. PROJECT DESCRIPTION

The Project is targeting subsurface salt deposits to assess potential evaporitic mineralisation within the Amadeus Basin. Two known salt units are present in the Charlotte project area, namely the Chandler Formation and the deeper Gillen Salt Member. Exploration activities by Tellus included initial assessment of open file geochemical and geophysical data.

## 3. LOCATION

EL27974 is located in the southern part of the Northern Territory. Alice Springs is the nearest major town, situated approximately 130km north along the Stuart Highway. The area can be accessed via graded roads running east from the highway, as well as station tracks to water bores and boundary fences. The Central Australian Railway runs through the middle of EL27974 (Figure 1). The tenement lies on the following 1:250,000 sheet areas; Rodinga SG5302, Kulgera, SG5305; Finke, SG5306 and on the 1:100000 sheet areas; Charlotte (5648), Eralunda (5547) and Idracowra (5647).

## 4. TENURE

Exploration licence EL27974 "Central Railroad" consisting of 285 sub-blocks was granted to Tellus Holdings Pty Ltd on the 20<sup>th</sup> October 2010 for a 6 year term. Tenure details are summarized in table 1. At the end of the second year, Tellus relinquished 142 subblocks (figure 1).

Table 1. Details of Exploration Licence

TENURE	NAME	STATUS	EFFECTIVE_DATE	EXPIRY_DATE	AREA_SQKM	SUBBLOCKS
EL27974	Central railroad	Grant	20/10/2010	19/10/2016	885.30	285

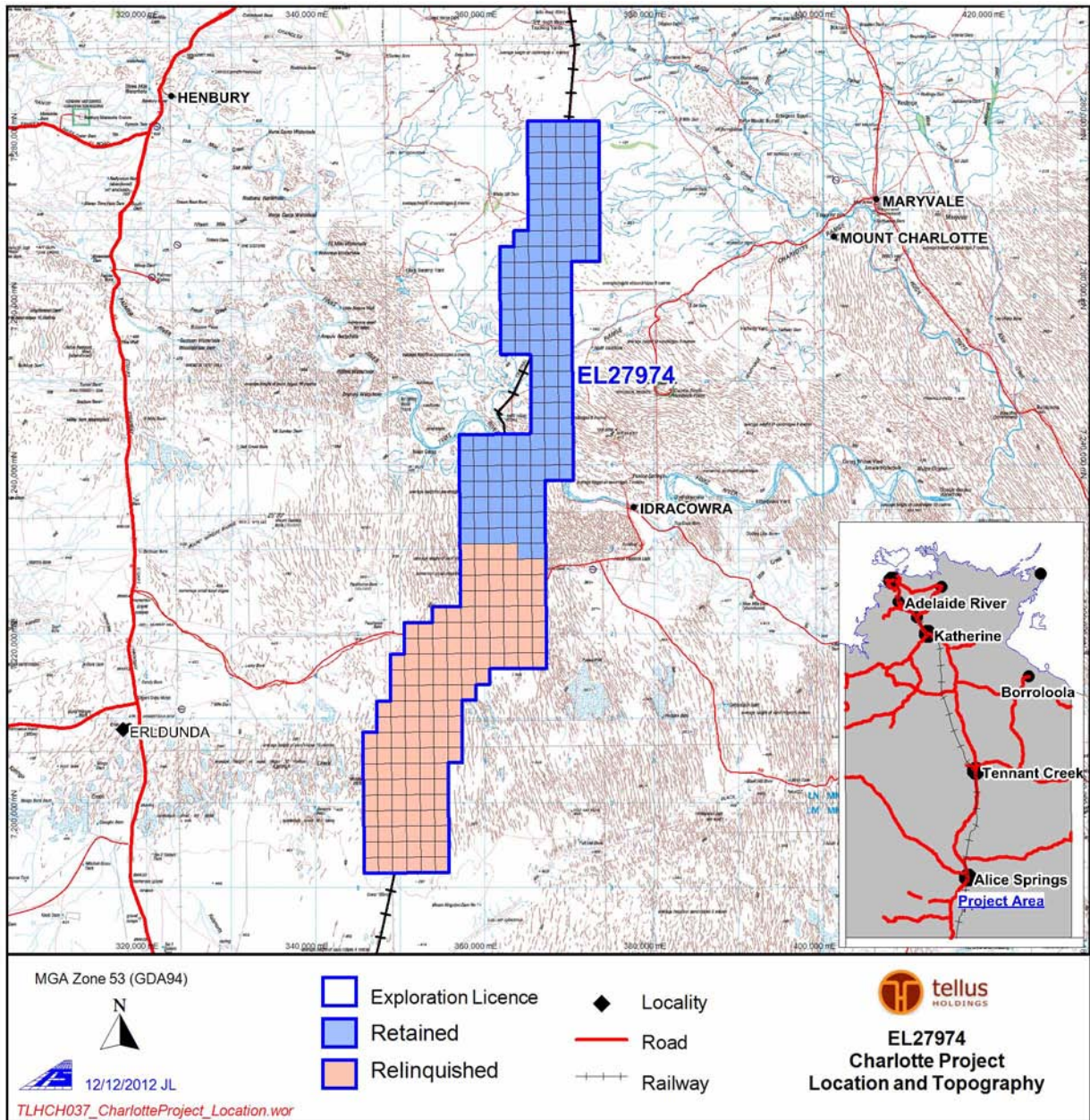


Figure 1. Project Location and Topography

## 5. REGIONAL GEOLOGY (adapted from Wakelin-King, 1992)

The Amadeus Basin is an asymmetrical, east-west trending, intracratonic depression covering 155000 sq km of central Australia (Figure 2).

The oldest elements of the Amadeus Basin are Neo-Proterozoic units having a very restricted known extent. These units consist of clastic sedimentary rocks and basalts along the south western margin of the basin (Mount Harris Basalt, Bloods Range Beds, Dixon Range Beds) and an unnamed succession of sedimentary rocks, basalt and dacite near Kintore in the north-west. The units have been interpreted as a rift sequence marking the opening of the Amadeus Basin (Lindsay and Korsch, 1989).

The fluvio-volcanic rift sediments are unconformably overlain by epeirogenic clastics of the Heavitree / Dean quartzites, followed by carbonates and evaporites of the Bitter Springs Formation. The Bitter springs Formation is terminated by an erosional surface upon which shallow marine and glaciogene sediments of the Inindia Beds and its equivalents in the northern Amadeus Basin were deposited. An unconformity surface within the Bitter springs Formation at or near the top of the Gillen Member has wide extent and can be used as a seismic marker.

The top of the Inindia Beds is marked by a flooding surface upon which deeper water pelagic and turbiditic sediments accumulated. This deeper marine sequence is known as the Winnall beds in the south and the Pertatataka Formation in the north. It shallows upward into shallow marine and fluvial clastics in the south west and oolitic platform carbonates of the Julie Formation in the north. The Inindia Beds are thickest in the west and centre of the basin and are absent from the eastern margin of the basin.

The Late Proterozoic phase of deposition was terminated in the south by the Petermann Ranges Orogeny, a period of mountain building, recumbent folding and northward overthrusting (Wells et al. 1970). Molasse sediments were shed north and north-east from uplifted areas and accumulated in a foreland style basin immediately before the rising orogen (Mt Currie Conglomerate, Ayers Rock Arkose), bypassed the middle and eastern fringes of the basin, and accumulated as a prograding deltaic sequence in the north (Arumbera Sandstone).

The Petermann Ranges Orogeny shaped the framework of the Palaeozoic basin, and a northern trough initiated at this time persisted through most of the Palaeozoic. The southern central and south eastern parts of the basin remained uplifted. Palaeozoic sequences in these areas are generally thin with common significant breaks in accumulation.

During the early Cambrian, continental sedimentation persisted in the north-west (Cleland Sandstone), while shallow marine shales, carbonates and evaporites were deposited in the north-east (Shannon, Giles Creek and Chandler Formations). A widespread transgressive cycle in the Late Cambrian resulted in the deposition of the Goyder Formation.

Two transgressive cycles during the Ordovician resulted in the alternating deposition of tidal flat/barrier bar sands and deeper marine, euxinic muds and silts (Pacoota Sandstone, Horn valley Siltstone, Stairway sandstone, Stokes Siltstone). These sediments form the source-reservoir-seal sequence of the Mereenie and Palm valley hydrocarbon fields in the north-western Amadeus Basin. Of this Larapinta Group, only the Stairway Sandstone persists into the centre and southeast of the basin.

Marine deposition was terminated by the Late Ordovician Rodingan Movement. Uplift of the north-eastern basin resulted in the erosion of up to 3000m of Cambro-Ordovician sediments. This area became the source region for the Early Devonian Carmichael and Mereenie Sandstone. Arid climatic conditions prevailed with sediments transported by both aeolian and fluvial action into a shallow sea transgressing from the west.

Major uplift of the Arunta block along the present northern margin of the basin commenced in the Middle Devonian. Continental deposition continued as thick molasse sediments accumulated south of the uplifted area. High depositional loading at this time contributed to movement of the Bitter Springs Formation and Chandler Formation evaporites.



A lacustrine siltstone (Parke Siltstone) was laid down conformably on the Meerenie Sandstone, and after uplift, coarser sediments were deposited (Hermannsburg Sandstone, Brewer Conglomerate). These three units, comprising the Pertnjara Group, thin and become finer grained to the south.

Uplift of the Musgrave Province and deformation of the southern Amadeus sequence culminated in the Early-Middle Devonian Finke Movement (Polly Conglomerate), after which fluvial sands of the Langra Formation and estuarine silts of the Horseshoe Bend Shale accumulated. These sediments comprise the Finke Group, which is the southern time equivalent of the Pertnjara Group, although the former sequence fines upward in contrast.

Regional deposition was terminated in the Late Devonian-Early Carboniferous by the Alice Springs Orogeny. Some earlier structures were reactivated during this period of deformation. Substantial uplift of the basement Arunta block along the current northern margin initiated movement of thrust sheets in the Alice Springs and Altunga regions, and resulted in significant structuring of the basin. North over south thrusting and reverse faulting is typical of Alice Springs orogeny deformation.

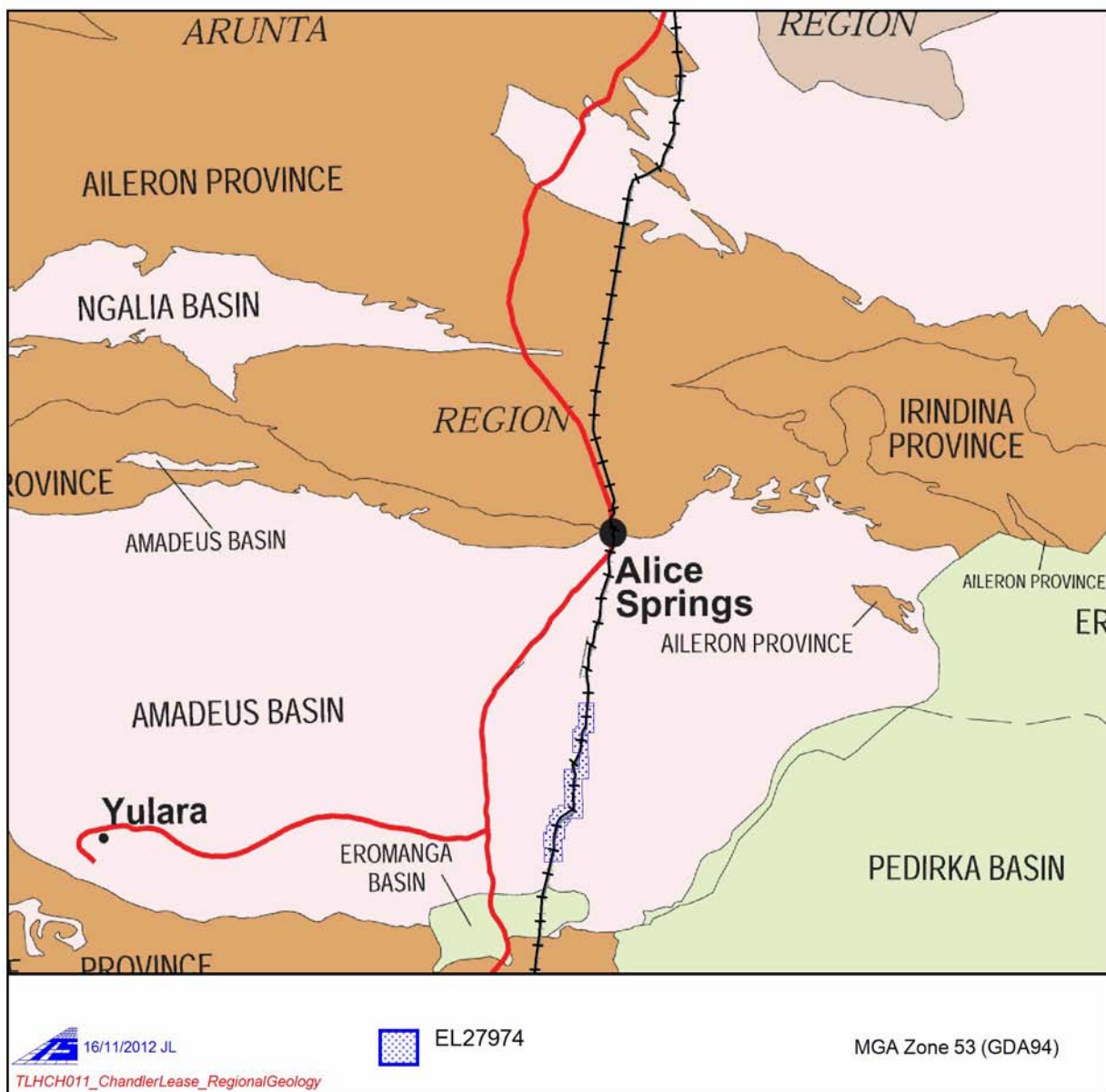


Figure 2. Geological Regions of Northern Territory (adapted from NTGS, 2006)

### 6. LOCAL GEOLOGY

The relinquished area overlies 1:250K map sheets Finke and Kulgera. Surface geology is shown in Figure 3 and stratigraphy is included as figure 4.

The stratigraphy within the area has been well defined from drilling of petroleum wells Mt Charlotte 1 and Magee 1, the generalised local stratigraphy is given in Table 2.

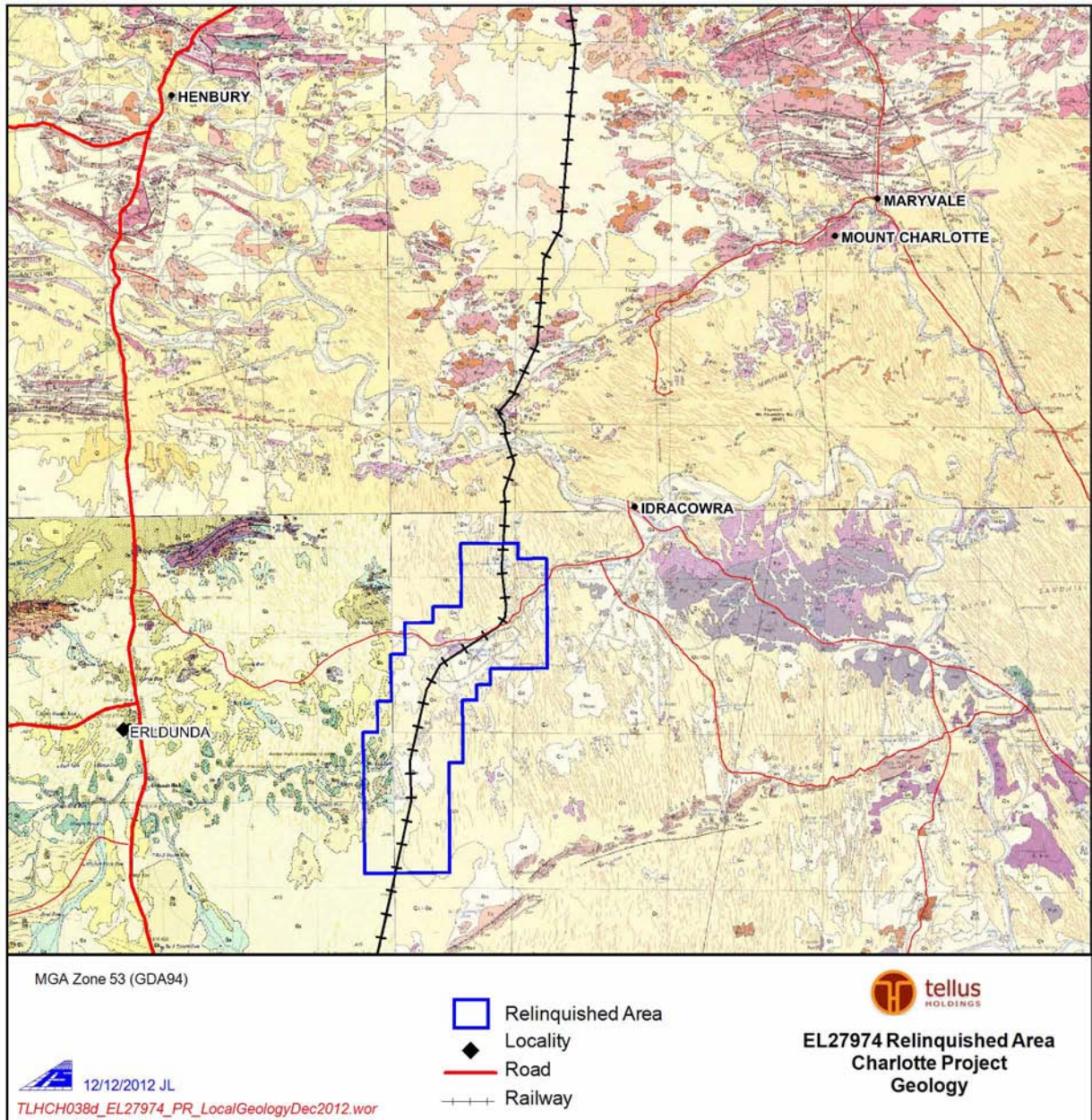


Figure 3. Local Geology over the Relinquished area.



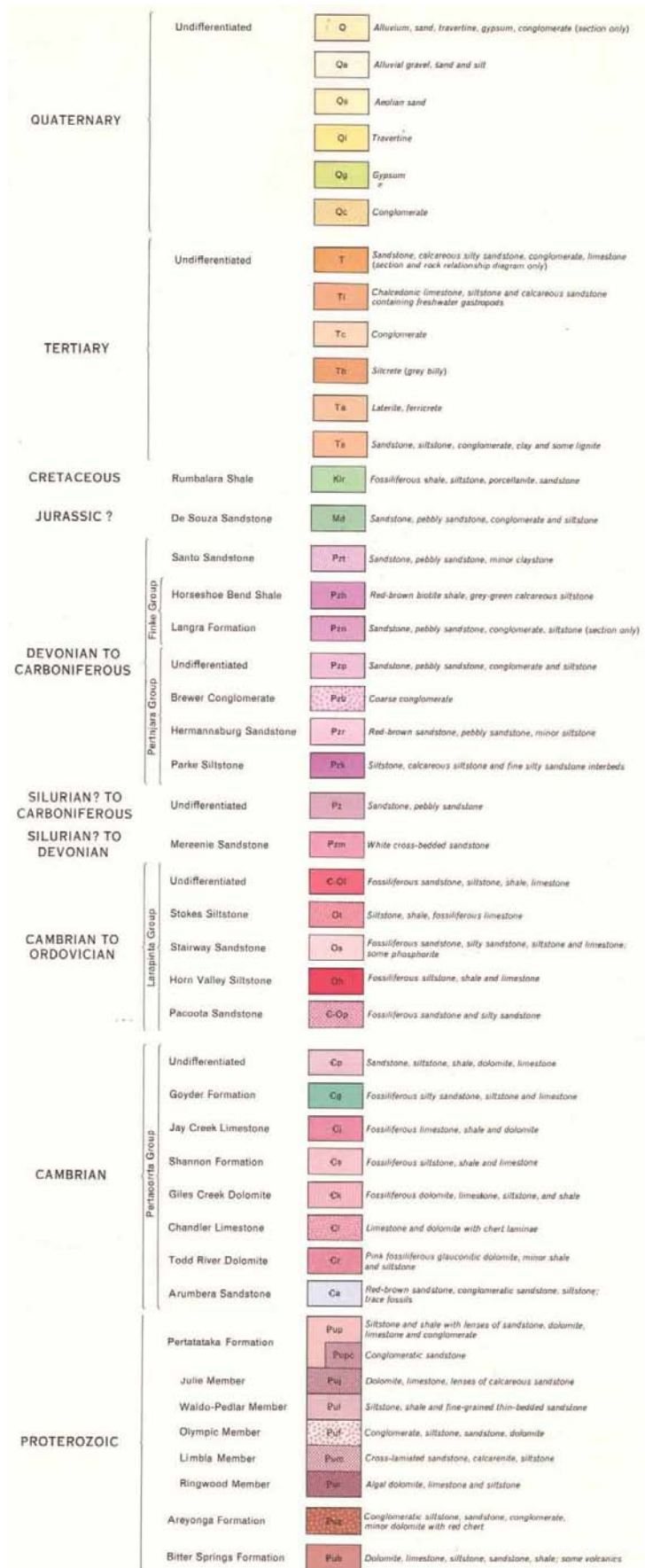


Figure 4. Stratigraphy (from Rodinga SG5302 1:250K map sheet)

Table 2. Generalised stratigraphy for the Project area.

AGE		STRATIGRAPHY		
Cainozoic	Quaternary		undifferentiated	
	Tertiary		undifferentiated	
Palaeozoic	Devonian		Santo Sandstone	
		Finke Group		
		Pertnjara Group	Pertnjara Formation	
	Ordovician	Larapinta Group	Stairway Sandstone	
	Cambrian	Pertaoorra Group		Jay Creek Limestone
				Chandler Formation
			Arumbera Formation	
Precambrian	Upper Proterozoic		Winnall Beds	
			Pertatataka Formation	
			Bitter Springs Formation	
			Loves Creek Member	
		Gillen Member	Upper Gillen	
			Gillen Salt	
		Lower Gillen		
		Heavitree Quartzite		
Middle Proterozoic	Musgrave Block	Arunta Complex		

7. HISTORIC EXPLORATION OVER THE RELINQUISHED AREA

Initial exploration in the area was targeting diamonds and base metals; this was followed by uranium and most recently potash. The location of historic tenements in relation to the relinquished ground is shown in Figure 5.

Wandaroo Mining Corporation / Le Nickel (Australia) Exploration EL747 (Le Nickel, 1974)

Regional exploration program aimed at defining the geological setting of the area, the structure and the potential for uranium mineralisation. A photogeological study, geological mapping and airborne magnetics survey were completed with follow up ground reconnaissance.

Northern Mining EL24503 (Green, 2010)

Part of Northern Mining’s regional Finke Project in Central Australia, considered prospective for massive stratiform manganese and sandstone-hosted and Tertiary remobilised uranium mineralisation. A field visit was undertaken, no evidence of mineralisation was identified and the tenement was relinquished.

Nova Energy / Toro Energy EL25051 (Sullivan, 2009)

Toro Energy and subsidiary Nova Energy targeted sedimentary redox related uranium deposits in the upper Devonian Finke Group sediments. A comprehensive desktop study was completed, followed by helicopter assisted reconnaissance. The company planned to follow up with a RAB drilling program however ongoing access problems with Idracowra Station, led to the tenements being surrendered.

Rum Jungle Uranium Limited EL27046, EL27047 (Doyle, 2010)

Exploration was part of regional project targeting subsurface potash. Research into potential drill targets in the Chandler Formation and Gillen Formation were completed. Thirteen samples of drill cuttings from petroleum well Magee1 were assayed to determine if potash was present in the Chandler Formation or Gillen Formation. Results were not positive, which led to the conclusion

that either the Chandler Formation at this location is not rich in potassium or maybe the potassium was dissolved by drilling fluids and fresh water whilst the well was being drilled.

Rum Jungle Uranium Limited were unsuccessful in attracting a joint venture partner, so they were unable to continue with the seismic and deep drilling required to test the potash potential of the Chandler and Gillen Formations. Rum Jungle Uranium Limited relinquished the tenure in order to concentrate on other projects.

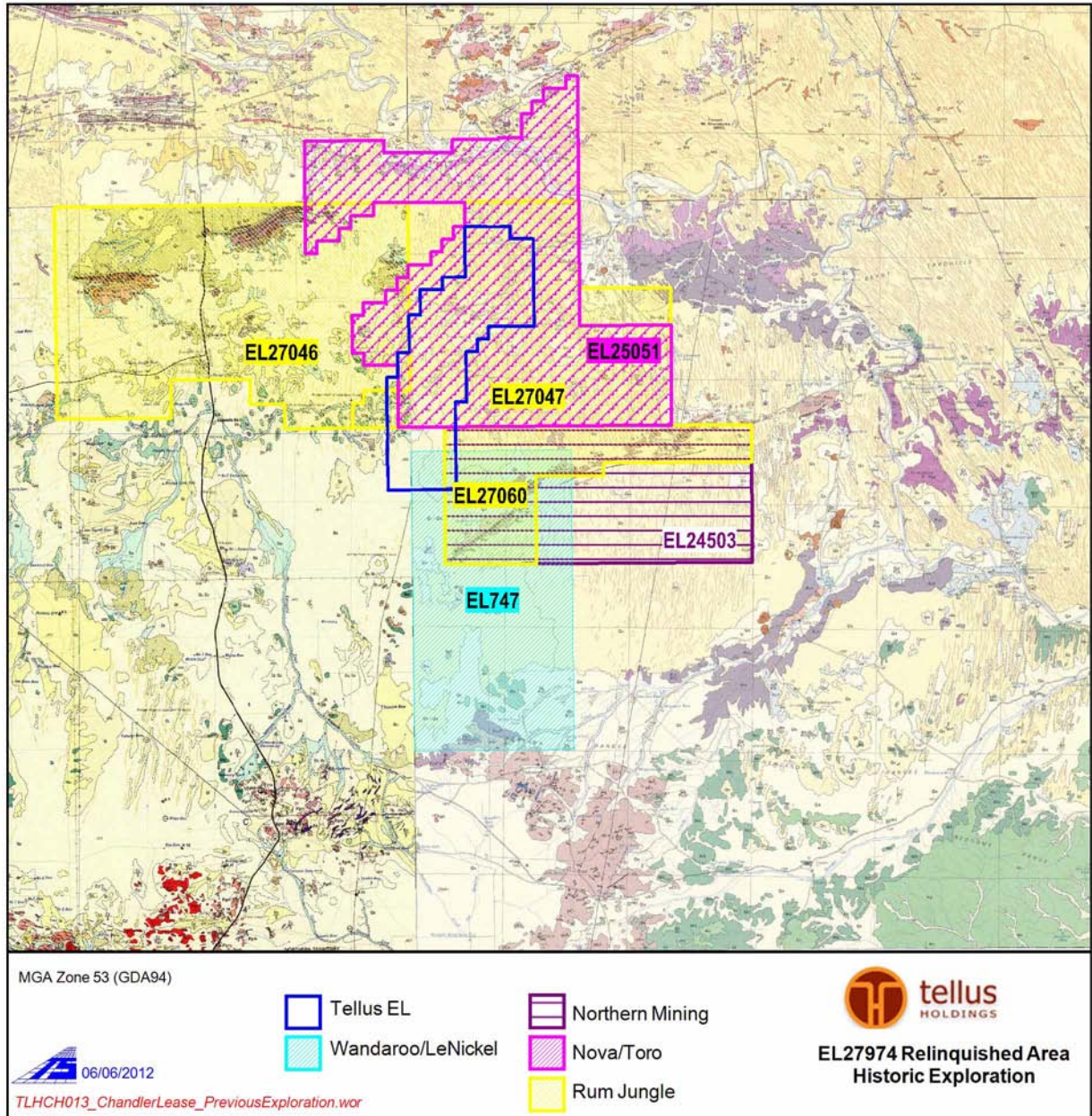


Figure 5. Historic exploration

## 8. EXPLORATION ACTIVITIES CONDUCTED

A regional geological desktop study was carried out by Terra Search Pty Ltd for Tellus to identify areas prospective for evaporite mineralisation. A review of historic work over the area was completed.

## 9. CONCLUSION

Exploration activities to date indicate a significant thickness of massive to semi massive halite exists within the Chandler Formation. Tellus have partially relinquished EL27974 to meet tenure requirements and to concentrate future exploration over areas of greater potential.

## 10. REFERENCES

- Doyle, N. 2010. First annual and final report on EL 27046, period ended 20 January 2010. Rum Jungle. *NTGS Open File Report CR2010-0090*
- Doyle, N. 2010. First annual and final report on EL 27047, period ended 20 January 2010. Rum Jungle. *NTGS Open File Report CR2010-0091*
- Green, M. 2010. Final report for EL 24503 for the period 3 July 2005 to 02 July 2010. Northern Mining. *NTGS Open File Report CR2010-0802*
- Le Nickel. 1974. EL 747, Annual report for 1973. Le Nickel (Australia) Exploration. *NTGS Open File Report CR1974-0184*
- Northern Territory Geological Survey, March 2006. Geological Regions of the Northern Territory map sheet.
- Sullivan, C. 2009. Combined surrender report for EL 25050, EL 25051 and EL 25052 Amadeus Finke Project. Toro Energy. *NTGS Open File Report CR2009-0740*
- Wakelin-King, G. and Austin L., 1992. EP 38, Well Completion Report Magee 1 Northern Territory. *Pacific Oil & Gas. Limited, Report no. 304715. NTGS Open File Petroleum Report PR1992-0121*