

Open File Envelope

No. 12,997

EL 4343 / 5536

EUCLA BASIN AREA 'S'

**FIRST PARTIAL SURRENDER REPORT,
FOR THE PERIOD 19/10/2009 TO 13/4/2017**

Submitted by
Iluka Resources Limited
2017

© 18/5/2017

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 the Premier and Cabinet 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 the Premier and Cabinet Resources and Energy Group
GPO Box 320, Adelaide, SA 5001.

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

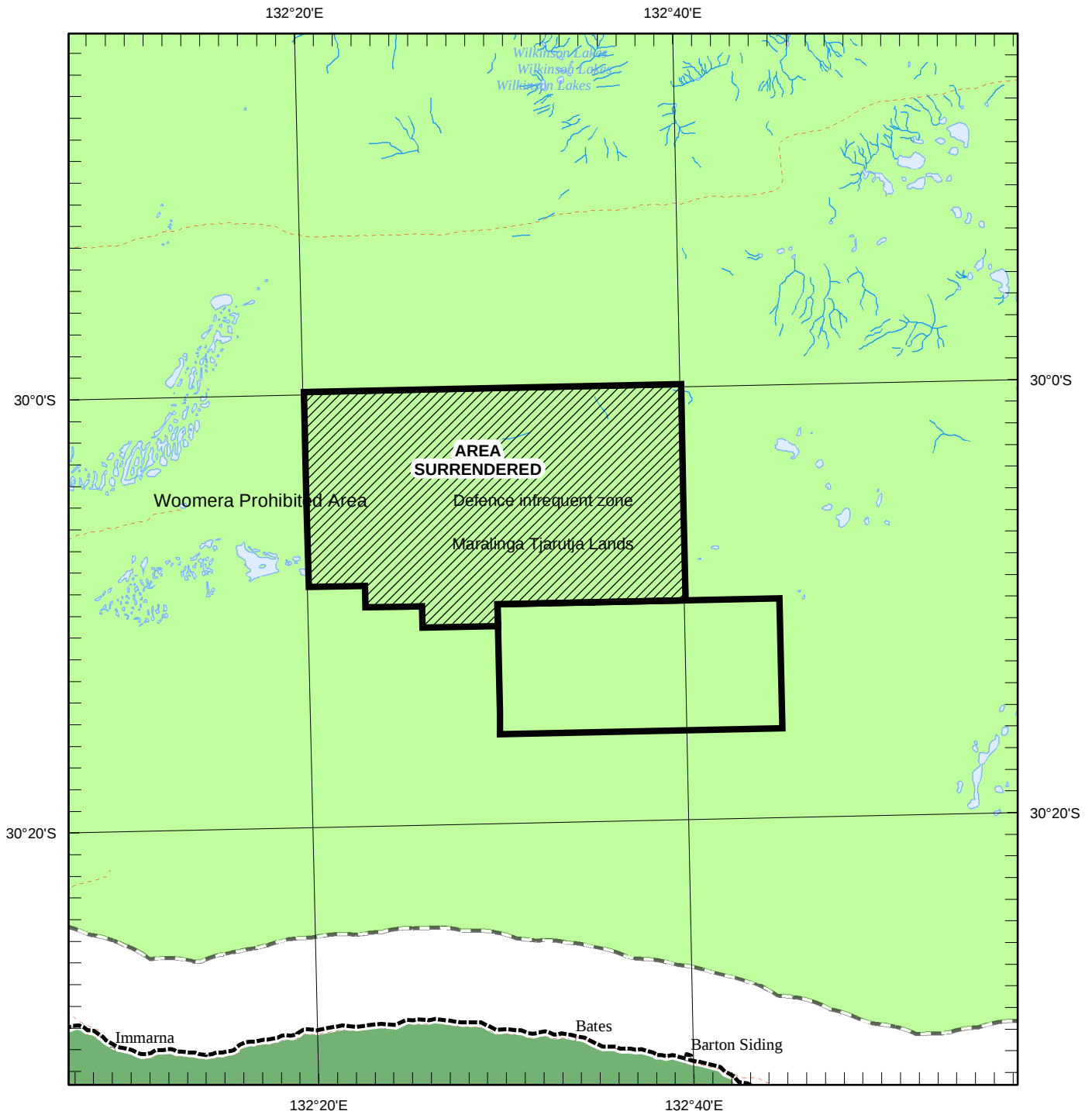
Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880



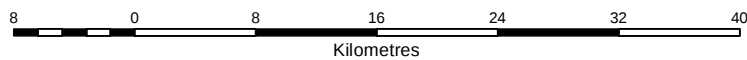
Government of South Australia

Department of the Premier
and Cabinet

SCHEDULE A



SCALE 1 : 500 000



LICENCE BOUNDARIES IN : DATUM AGD66

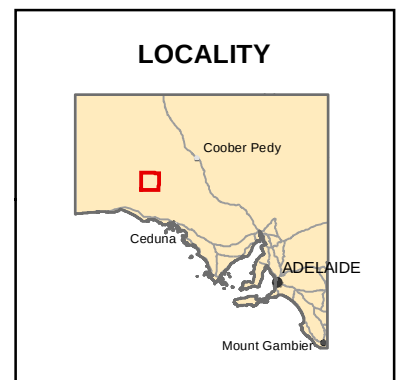
APPLICANT : **ILUKA (EUCLA BASIN) PTY LTD**

FILE REF : **2014/00155** TYPE : **MINERAL ONLY**

AREA : **267** sq km (approx)

1 : 250 000 MAPSHEETS : **BARTON**

LOCALITY : **EUCLA BASIN S AREA -**
Approximately 80 km northeast of Ooldea



DATE GRANTED: **19-Oct-2014** DATE EXPIRED: **18-Oct-2019** EL NO: **5536**



ILUKA

ILUKA RESOURCES LIMITED

TECHNICAL REPORT

PARTIAL SURRENDER REPORT

EL 5536 Maralinga

11th October 2010 - 13th April 2017

BY

Edward Barden

Date: 16 May 2017

AUTHOR KEYWORDS: Eucla Basin, Mineral Sands, Barton Range, Ooldea, Range, Maralinga, Iluka Resources, Exploration

ACN: 34 008 675 018

ORIGINAL GRANT DATE:	EL5536	19/10/2014
-----------------------------	--------	------------

TABLE OF CONTENTS

1.	INTRODUCTION	4
1.1	TENURE	4
1.2	LOCATION	4
1.3	ILUKA'S EXPLORATION HISTORY AND RATIONALE	6
2.	REGIONAL GEOLOGY	6
2.1	LOCAL GEOLOGY	7
3.	NATIVE TITLE AND HERITAGE CLEARANCE.....	8
4.	ENVIRONMENT AND REHABILITATION.....	8
5.	EXPLORATION SUMMARY.....	8
5.1	DRILLING	8
5.2	DORAY MINERALS WORK COMPLETED	10
6.	RESULTS.....	10
7.	CONCLUSION.....	11
8.	REFERENCES	11

LIST of FIGURES

Figure 1: Eucla Basin Tenure	5
Figure 2: Eucla Basin Regional Geology	7
Figure 3: EL 5536 Drilling	9
Figure 4: Relinquished Portions of EL 5536	11

LIST of TABLES

Table 1: Map Sheets Enclosing the Partially Relinquished Tenement	4
Table 2: Summary of Historic Work Completed in the Group 4 Area	6

DIGITAL FILES

EL5536_Partial_201704_P_01_Report.pdf	: Partial Surrender Report
EL5536_Partial_201704_P_02_Location.txt	: Collars
EL5536_Partial_201704_P_03_Lithology.txt	: Geology
EL5536_Partial_201704_P_04_geochemistry.txt	: Assays
EL5536_Partial_201704_P_05_Survey.txt	: Survey File
EL5536_Partial_201704_P_06_qaqc.txt	: QAQC Data

EXECUTIVE SUMMARY

This Partial Surrender report covers all work undertaken by Iluka Resources Limited on Exploration Licence (EL) 5536 (formerly EL 4343) from 19th October 2009 to 23th March 2016. EL 5536 formed part of the Group 4 Maralinga Tenements and is subject to an Amalgamated Expenditure Agreement with the Department of State Development (DSD) in South Australia, covering expenditure and relinquishment requirements. The tenement is also subject to a Farm-in agreement with Doray Minerals Limited (Doray).

The Exploration Licence is located in the Eucla Basin, South Australia, north of the Trans Australian Railway and approximately 200 km northwest of the town of Ceduna and 75km east of the Maralinga Village.

This report covers work completed on the relinquished portion of the tenement. This tenement and its predecessor has been extensively explored for Heavy Minerals and no longer holds HM prospectivity. Doray Minerals have indicated that the proposed relinquishment area also holds no gold exploration potential.

1. INTRODUCTION

1.1 Tenure

EL 5536 (formerly EL 4343) Maralinga was granted on the 19th October 2014. A partial relinquishment of 597km² is proposed, retaining 267km².

1.2 Location

The tenement is located in the Eucla Basin, South Australia, north of the Trans Australian Railway and approximately 200 km northwest of the town of Ceduna and 75km east of the Maralinga Village (Figure 1).

Table 2 identifies the map sheets that contain the tenement that is being relinquished. Commonly the tenement will span more than one map sheet. The tenement can be located on both the 1:100,000 and 1:250,000 map sheets (Table 2).

TABLE 1: MAP SHEETS ENCLOSING THE PARTIALLY RELINQUISHED TENEMENT

	EL5536
1:100,000 SHEET	
Immarna (5337)	✓
Lake Bring (5437)	✓
1:250,000 SHEET	
Barton (SH5309)	✓

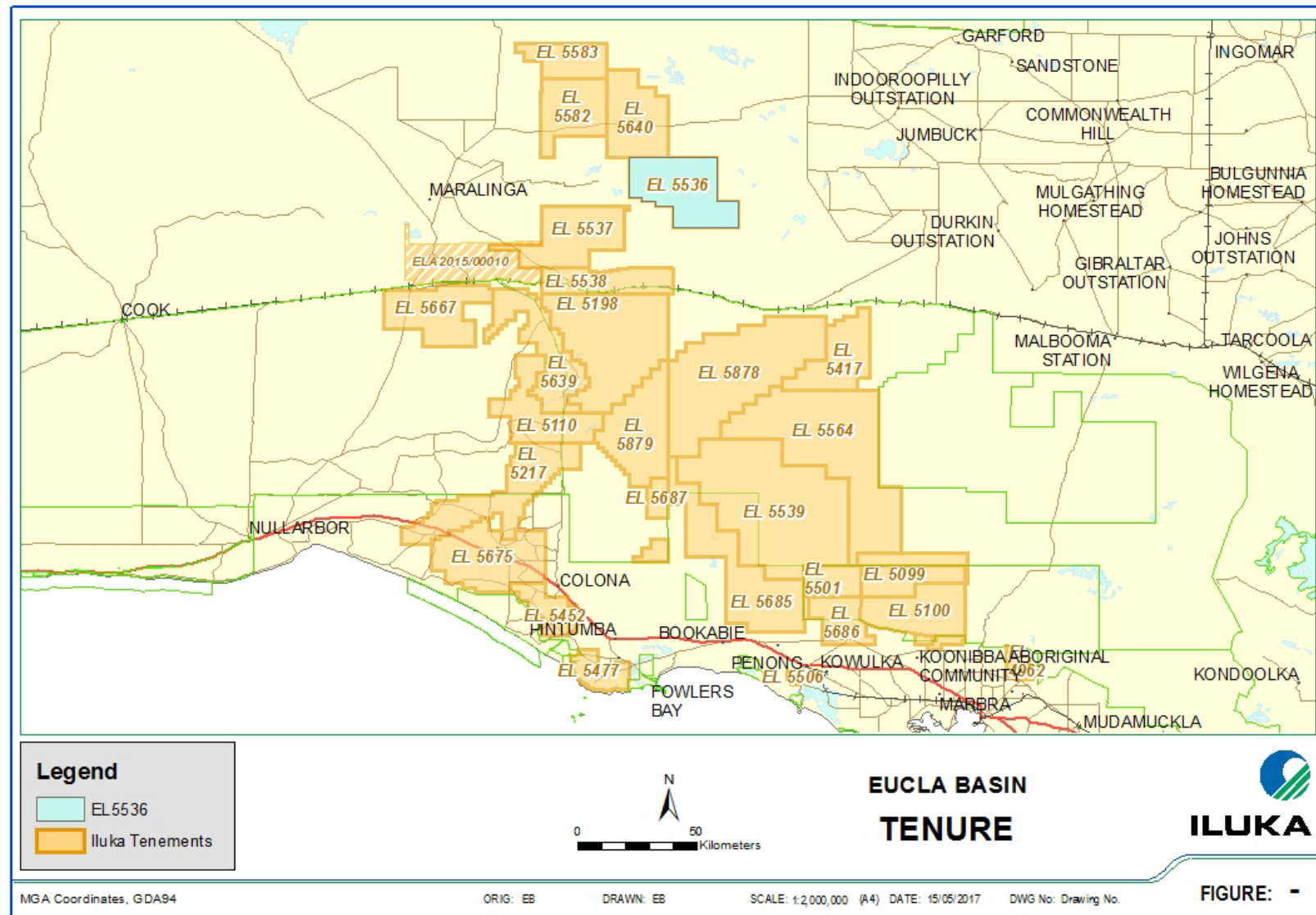


FIGURE 1: TENEMENT LOCATION PLAN FOR EL5536

1.3 Iluka's Exploration History and Rationale

Prior to Iluka being granted the Group 4 tenements on 19 October 2009, the entire area was relatively underexplored with existing infrastructure sparse and not developed. Since the discovery of Jacinth, Ambrosia and Tripitaka by Iluka the Ooldea Range is recognized as a lucrative target for economic HM deposits. Various companies are currently exploring the marine margin of the Tertiary barrier system which extends over 100 kilometres from the Nullabor Plain into the Barton hinterland. Prime commodities are beach placer minerals (zircon), palaeochannel-hosted roll -front uranium as well as estuarine coal and placer gold in channel sediments (i.e. South Hilga, Tarcoola). Previous work in the Group 4 area is detailed in Table 3.

TABLE 2: SUMMARY OF HISTORIC WORK COMPLETED IN THE GROUP 4 AREA

Year	Company	Commodity	Comment
1980-1990	BHP/Geopeko	Mineral sands	-BHP discovered Willy Willy and Maurice HM prospects. Openfile data BHP (ENV08302) -Openfile data Geopeko (ENV08219+ENV08219pt.1)
Early 1980's	Aquitaine	Uranium	-Program was terminated due to lack of funds Openfile data (ENV03816)
2006	Rio Tinto	Mineral sands	-Concentrated on the Paling range -Drilled ~110 holes for 4875m -Radiometric surveys -Iluka acquired tenements in 2009
Ongoing	Diatreme (Lost Sands)	Mineral sands	-Exploration ongoing, tenements contain Willy Willy and Maurice

Iluka has subjected all major target zones of Group 4 to first pass regional exploration drilling with follow-up drilling campaigns in prospective areas. Tenements that have not presented a strong potential for significant HM mineralisation have previously either been relinquished or partially relinquished.

2. REGIONAL GEOLOGY

The Eucla Basin extends for approximately 2,000 km from Western Australia to South Australia. The eastern margin of the basin is dominated by the Ooldea, Paling and Barton Ranges (Figure 3). The Eucla Basin contains sequences up to 300 m thick of Tertiary marine, coastal and palaeochannel sediments.

The eastern Eucla Basin is underlain by Archaean to Middle Proterozoic rocks of the Gawler Craton that include granite, gneiss, and mafic/ultramafic intrusives of the Gawler Range Volcanics. These Gawler Craton rocks, along with the Musgrave Block to the north, are currently held to be the main source of zircon rich mineral sands for this region.

There have been five marine transgressions into the Eucla Basin during the last 50 million years. Currently, four sets of palaeoshorelines are recognised ranging in age from middle Eocene to Pliocene. These shoreline sequences have potential to host heavy mineral deposits.

The Ooldea, Barton and Paling Ranges formed initially as spits and barrier islands during the period of maximum transgression at the end of the Eocene. These dunes contain a core of

marine Eocene Hampton Sandstone, which is overlain by Eocene Ooldea Sandstone (possibly of aeolian origin). To the southwest of these major landform features lies the Nullarbor Limestone which formed in the Pliocene over much of the central basin. The Nullarbor limestone has left a fringe of prospective marine sands around the rim.

Erosion from the last regressive phase has resulted in vast quantities of quartz sand blown inland. This Quaternary sand has blanketed the land surface, covering the area with a series of longitudinal dunes, geographically known as the Great Victoria Desert.

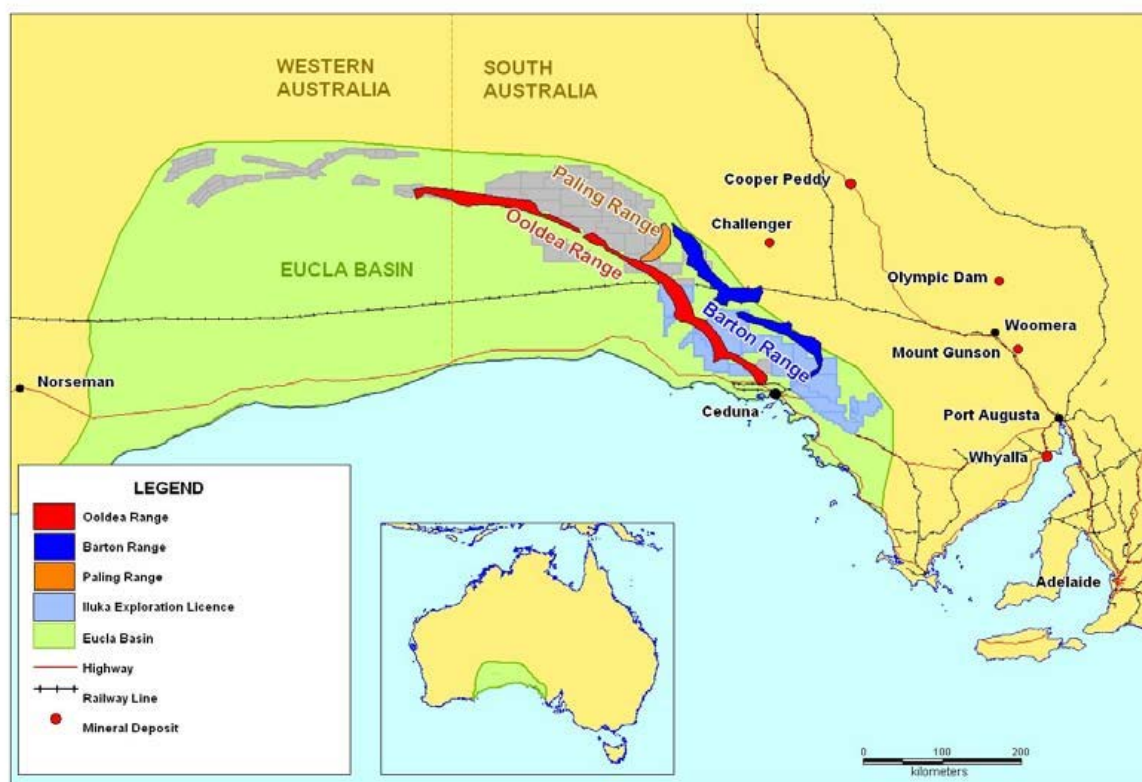


FIGURE 2: EUCLA BASIN REGIONAL GEOLOGY

2.1 Local Geology

The local geology is dominated by the Ooldea Range, Barton Range and Paling Range sediments.

The Ooldea Sands shore facies gain great thicknesses towards the crest of the Ooldea Range. Deposits of heavy mineral accumulations can occur in the lower shoreface unit. It is noted that this depositional environment has been below the water surface and hence would not have been able to form large heavy mineral concentrations.

The terrain behind the Ooldea Range may be a large lagoonal environment, which has been subject to aeolio-fluvial erosion. The landscape is predominated by numerous playa lakes with vast surrounding lunette features.

The largest of those lunettes, the Paling Range, hosts the Sherrin prospect. The ancient lagoon stretches up to 60 kilometres between the Ooldea and Barton Ranges. The prospective sand unit is less than 20 metres thick, underlain by lignitic sediments.

The Paling Range is an easily identified topographic feature that lies along the Karari Fault Zone which defines the northwest margin of the Gawler Craton.

The down thrust region of the Karari Fault Zone is accommodated by the Cambrian Officer Basin. Geological units pertaining to this domain outcrop along

the scarps of the Barton Range and various other high features in the intermediate area between the Ooldea and Barton Ranges.

3. NATIVE TITLE AND HERITAGE CLEARANCE

Iluka's Group 4 Tenements are entirely located within the Maralinga Tjarutja Lands and a Land Access and Mineral Exploration Agreement was signed by both parties on the 3rd of August, 2009.

An initial clearance survey for the Group 4 tenements was undertaken in August 2009. The survey was undertaken using a helicopter to fly the survey team along proposed traverses and assess routes. It was conducted in two phases with separate phases for male and female representatives.

Additional tenement acquisition to the Group 4 tenements led to the revision of access routes in the eastern area of Group 4. In February 2010 another survey was done, using helicopter support, to assess the changes to access routes.

Further helicopter supported heritage survey inspections with the Maralinga people were also undertaken prior to any field activities to ensure the work areas did not take place in areas of cultural significance.

All exploration personnel submitted an *Application to Enter the Maralinga Tjarutja Lands* either individually or collectively in order to receive a permit to enter the Maralinga Tjarutja Lands. The permit had to be granted before the applicant(s) could undertake any exploration activities.

4. ENVIRONMENT AND REHABILITATION

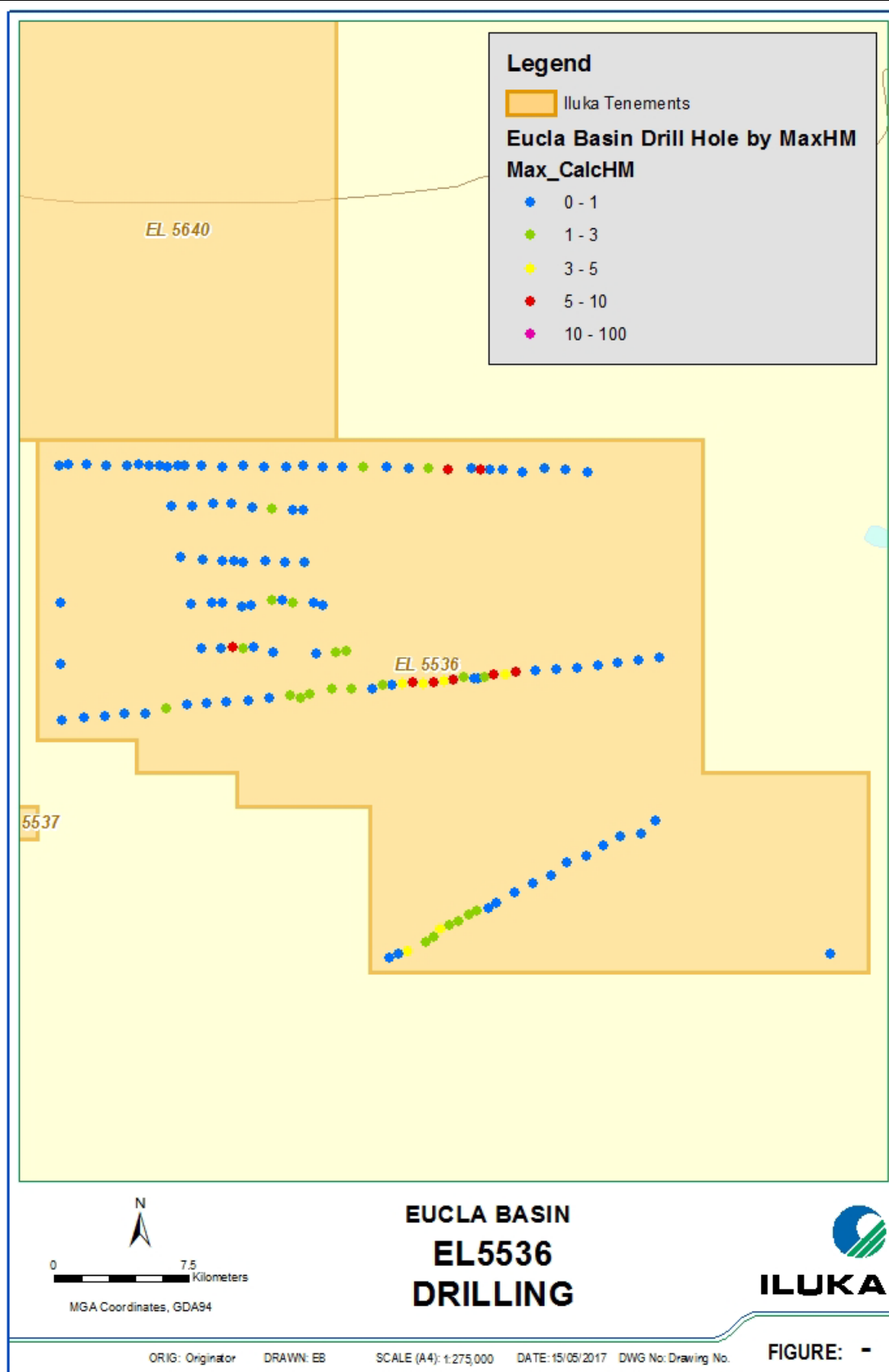
Full details of environmental and rehabilitation activities are reported separately in Iluka Environmental Compliance Report, 2017, Iluka Resources Limited, Eucla Basin.

5. EXPLORATION SUMMARY

5.1 Drilling

EL 5536 (formerly EL 4343) has been extensively explored. The relinquished portion contains 111 drill holes for a total of 6,141m (see Figure 3). All digital data is attached with this report.

The drilling was designed to test the Barton Range and the interpreted position of the Barton scarp.



Document Path: L:\working files\EB\Reports\EL5536\EL5536.mxd

FIGURE 3: EL 5536 DRILLING

5.2 Doray Minerals Work Completed

An overview reconnaissance trip, sampling and assays from chip samples from previously drilled holes were taken and analysis completed on these. Geological interpretation of these results was then completed.

6. RESULTS

The drilling intersected localised HM at depth along the Barton scarp. The HM is hosted in poorly sorted sands. The majority of sands drilled were barren of HM or had low levels of <1% HM estimates. The best intersections were returned in hole MAR0071 with 1m @ 7.1% HM from 45m and hole MAR0127 with 1.5m @ 6.4% HM from 69m. The majority of the tenement is at >200mRL, requiring deep drilling to reach the prospective depth.

Two phases of drilling were completed to follow up the higher grade intersections that can be seen in the middle of the tenure and these did not yield any major intersections.

Doray Minerals have indicated from their analysis and desktop review that the southern portion of the tenement still poses gold potential.

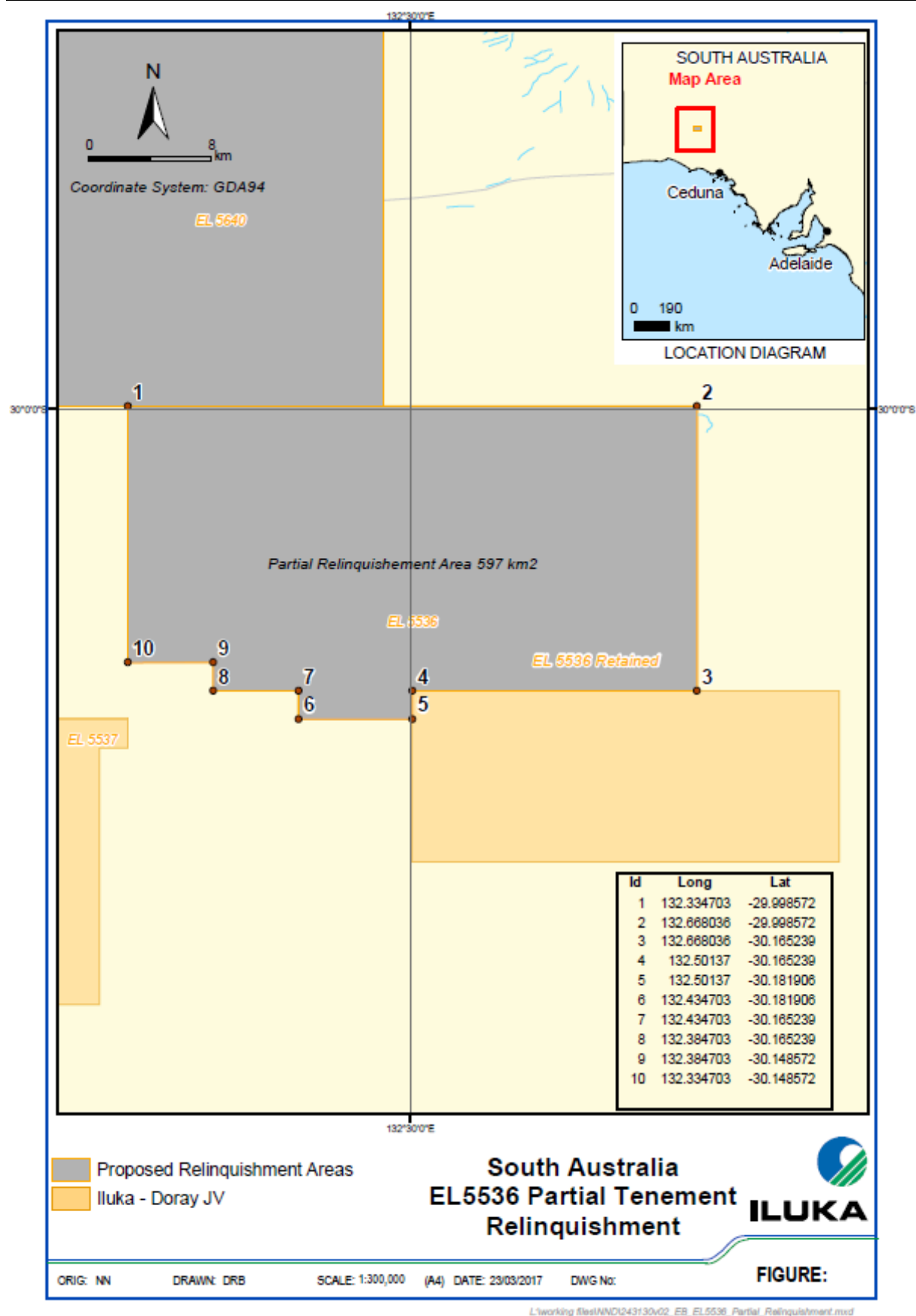


FIGURE 3: RELINQUISHED PORTIONS OF EL 5536

7. CONCLUSION

From a HM point of view EL 5536 has been sufficiently explored and no longer has HM prospectivity.

Doray Minerals have indicated that the proposed relinquishment area does not hold potential for further gold exploration. From their analysis and desktop review (re-assessment and modelling) southern portion of the tenement still poses gold potential and this is the grounds for retaining this area.

8. REFERENCES

Pugh, D., 2011. Group Four Combined Annual Technical Report. Iluka Resources Ltd Technical Report, Iluka-TR-T17599.

Taylor, M., 2016. Group Four Combined Annual Technical Report. Iluka Resources Ltd Technical Report, Iluka-TR-T18615.