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**ANNUAL TECHNICAL REPORT  
EL27971 FOR PERIOD ENDING  
19<sup>TH</sup> OCTOBER 2015**

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| 12<sup>th</sup> December 2015

Titleholder:	Tellus Holdings Ltd
Operator:	Tellus Holdings Ltd
Tenements:	EL27971 Bluebush
Project Name:	Bluebush Project
Report Title:	Annual Technical Report for EL27971 "Bluebush" for the period 20 October 2014 to 19 October 2015
Author:	Jaime Livesey
Target Commodity:	Halite (Sodium chloride) and trace minerals
Date of Report:	12 December 2015
Datum/zone:	GDA94 / zone 53
250K map sheet:	SG5302 Rodinga
100K map sheet:	5848 Pillar Range
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## Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
<b>1 Introduction .....</b>	<b>2</b>
<b>2 Project Description.....</b>	<b>2</b>
<b>3 Location .....</b>	<b>2</b>
<b>4 Tenure.....</b>	<b>2</b>
<b>5 Regional Geology .....</b>	<b>4</b>
<b>6 Local Geology .....</b>	<b>6</b>
<b>7 EXPLORATION ACTIVITES CONDUCTED DURING 2010-2011.....</b>	<b>10</b>
<b>8 EXPLORATION ACTIVITES CONDUCTED DURING 2011-2012.....</b>	<b>10</b>
8.1 Mine Management Plan for Exploration Operations .....	10
8.2 Prefeasibility Study.....	10
<b>9 EXPLORATION ACTIVITES CONDUCTED DURING 2012-2013.....</b>	<b>10</b>
<b>10 EXPLORATION ACTIVITES CONDUCTED DURING 2013-2014.....</b>	<b>10</b>
10.1 Drilling program on nearby tenement EL29018.....	10
10.2 Exploration Target .....	11
10.3 Review of Target Sites .....	11
<b>11 EXPLORATION ACTIVITES CONDUCTED DURING CURRENT REPORTING PERIOD .....</b>	<b>13</b>
<b>12 PROPOSED EXPLORATION .....</b>	<b>15</b>
<b>13 References .....</b>	<b>16</b>



## EXECUTIVE SUMMARY

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The Bluebush Project is located in the Amadeus Basin, approximately 120km south east of Alice Springs. Tellus Holdings consider this area to be prospective for evaporitic mineralisation. This annual report relates EL27971 Bluebush for the reporting period ending 19th October 2013.

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

In order to assess potential evaporitic mineralisation further; drilling, core sampling and geochemical analysis of samples is required. Additional seismic data acquisition and processing would improve data coverage over the project area giving greater confidence in the salt unit model.

Exploration activities to date indicate a significant thickness of massive to semi massive halite exists in the Bluebush project area within the Chandler Formation at a depth of approximately 808-1478m.

During the reporting period Tellus visited the NTGS core facility in Alice Springs to review available samples from oil well Bluebush1.

In order to assess potential evaporitic mineralisation further; drilling, core sampling and geochemical analysis of samples is required. Additional seismic data acquisition and processing would improve data coverage over the project area giving greater confidence in the salt unit model.



## 1 INTRODUCTION

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EL27971 is located in the Amadeus Basin, approximately 120km south east of Alice Springs. Tellus Holdings consider this area to be prospective for evaporitic mineralisation.

## 2 PROJECT DESCRIPTION

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The Bluebush Project is 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 by Tellus have included initial assessment of open file geochemical and geophysical data, detailed review of petroleum well data, seismic interpretation and modelling, geochemical analysis and mineralogical investigation of core samples from previously drilled petroleum wells and from two drillholes completed by Tellus in 2013-2014.

## 3 LOCATION

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The tenement EL27971 is located in the southern part of the Northern Territory, approximately 120km south east of Alice Springs (Figure 1). The area can be accessed via station tracks and stock routes.

## 4 TENURE

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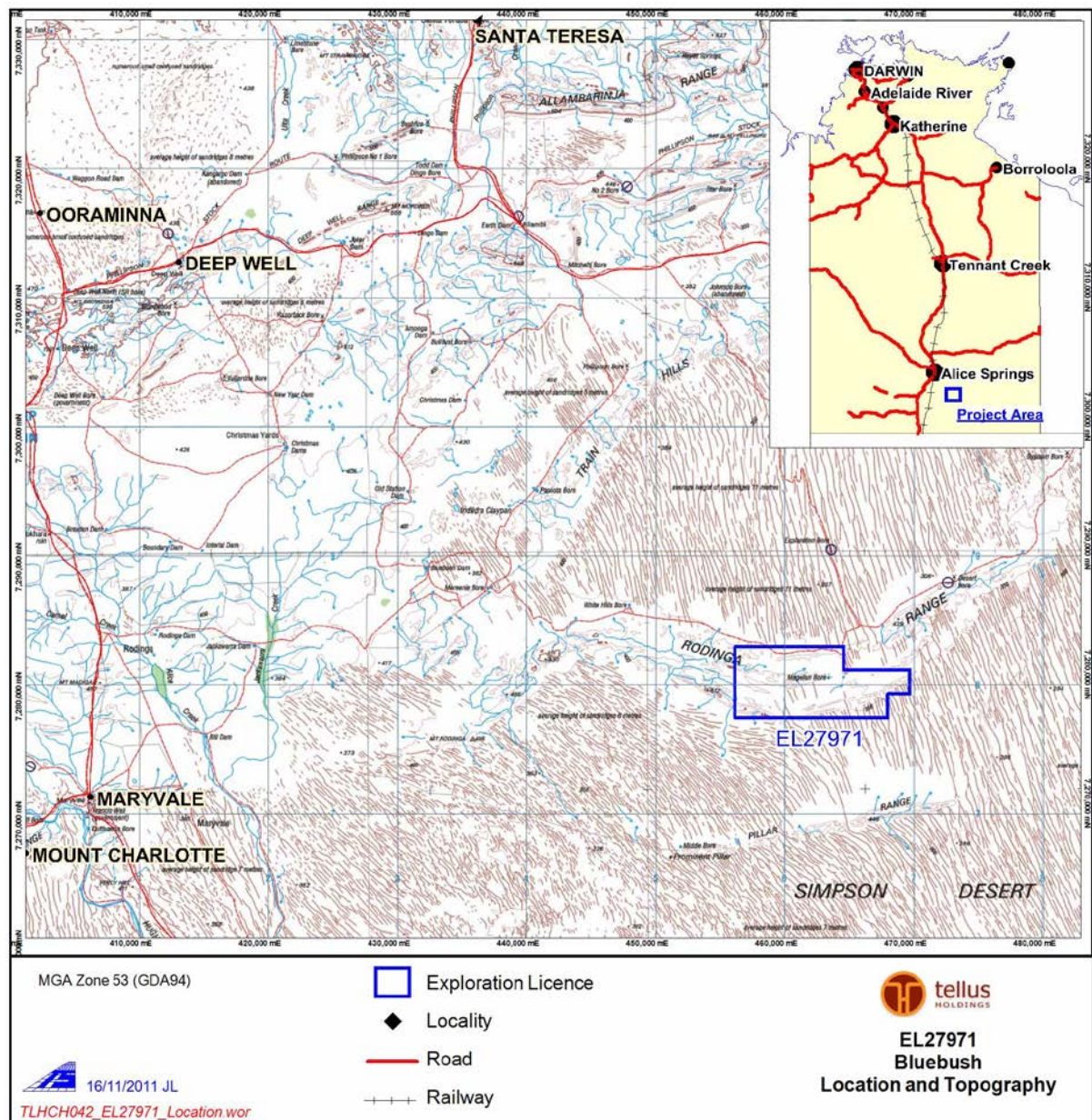
Exploration licences EL27971 “Bluebush” was granted to Tellus Holdings Ltd on the 20th October 2010 for a 6 year term. Tenure details are summarized in table 1.

**Table 1: Details of Exploration Licence EL29017 held by Tellus Holdings**

TENURE	NAME	STATUS	EFFECTIVE_DATE	EXPIRY_DATE	SUBBLOCKS
EL27971	Bluebush	Grant	20/10/2010	19/10/2016	20



Figure 1: Project Location and Topography





## 5 REGIONAL GEOLOGY

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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 glacial 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 Mereenie 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 project area overlies 1:250K map sheets Rodinga, which was geologically mapped in 1964 by the Bureau of Mineral Resources. EL27971 overlies the Rodinga Ranges, marked by Palaeozoic sandstones and Cambrian Pertaoorrt Group outcrop. 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 well Bluebush 1, the generalised local stratigraphy is given in Table 2 and published stratigraphic correlation across the Southern Amadeus basin is shown in figure 5.





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

QUATERNARY	Undifferentiated	Q	Alluvium, sand, travertine, gypsum, conglomerate (section only)
		Qa	Alluvial gravel, sand and silt
		Qs	Aeolian sand
		Qi	Travertine
		Qg	Gypsum
		Qc	Conglomerate
TERTIARY	Undifferentiated	T	Sandstone, calcareous silty sandstone, conglomerate, limestone (section and rock relationship diagram only)
		Ti	Chalcedonic limestone, siltstone and calcareous sandstone containing freshwater gastropods
		Tc	Conglomerate
		Tb	Silcrete (grey billy)
		Ta	Laterite, ferricrete
		Ts	Sandstone, siltstone, conglomerate, clay and some lignite
CRETACEOUS	Rumbalara Shale	Klr	Fossiliferous shale, siltstone, porcellanite, sandstone
JURASSIC ?	De Souza Sandstone	Md	Sandstone, pebbly sandstone, conglomerate and siltstone
DEVONIAN TO CARBONIFEROUS	Finke Group	Pzt	Sandstone, pebbly sandstone, minor claystone
		Psh	Red-brown biotite shale, grey-green calcareous siltstone
		Pzn	Sandstone, pebbly sandstone, conglomerate, siltstone (section only)
		Pzp	Sandstone, pebbly sandstone, conglomerate and siltstone
	Perrinara Group	Ptb	Coarse conglomerate
		Pzt	Red-brown sandstone, pebbly sandstone, minor siltstone
		Pzk	Siltstone, calcareous siltstone and fine silty sandstone interbeds
SILURIAN? TO CARBONIFEROUS	Undifferentiated	Pz	Sandstone, pebbly sandstone
SILURIAN? TO DEVONIAN	Mereenie Sandstone	Pzm	White cross-bedded sandstone
CAMBRIAN TO ORDOVICIAN	Langpinta Group	C-Qi	Fossiliferous sandstone, siltstone, shale, limestone
		Ot	Siltstone, shale, fossiliferous limestone
		Os	Fossiliferous sandstone, silty sandstone, siltstone and limestone; some phosphorite
		Oh	Fossiliferous sandstone, shale and limestone
		C-Og	Fossiliferous sandstone and silty sandstone
CAMBRIAN	Perraporta Group	Cp	Sandstone, siltstone, shale, dolomite, limestone
		Cg	Fossiliferous silty sandstone, siltstone and limestone
		Cj	Fossiliferous limestone, shale and dolomite
		Cs	Fossiliferous siltstone, shale and limestone
		Ck	Fossiliferous dolomite, limestone, siltstone, and shale
		Ct	Limestone and dolomite with chert laminae
		Cr	Pink fossiliferous glauconitic dolomite, minor shale and siltstone
		Ca	Red-brown sandstone, conglomeratic sandstone, siltstone; trace fossils
PROTEROZOIC	Pertatataka Formation	Pvp	Siltstone and shale with lenses of sandstone, dolomite, limestone and conglomerate
		Pvpc	Conglomeratic sandstone
	Julie Member	Pvj	Dolomite, limestone, lenses of calcareous sandstone
	Waldo-Pedlar Member	Pul	Siltstone, shale and fine-grained thin-bedded sandstone
	Olympic Member	Puf	Conglomerate, siltstone, sandstone, dolomite
	Limbla Member	Pum	Cross-laminated sandstone, calcarenite, siltstone
	Ringwood Member	Pur	Algal dolomite, limestone and siltstone
	Areyonga Formation	Puz	Conglomeratic siltstone, sandstone, conglomerate, minor dolomite with red chert
	Bitter Springs Formation	Pub	Dolomite, limestone, siltstone, sandstone, shale; some volcanics

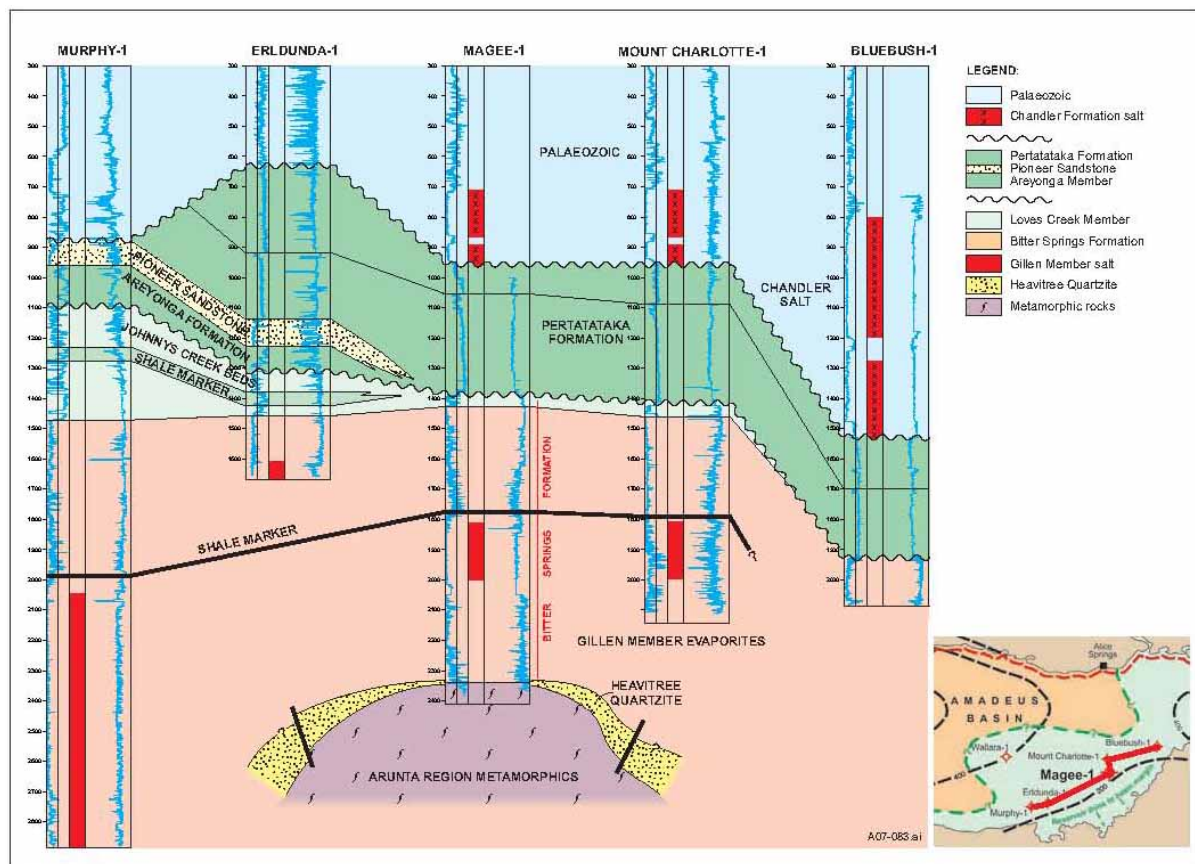




**Table 2: Generalised stratigraphy for the Chandler Project area**

AGE		STRATIGRAPHY		
Cainozoic	Quaternary		undifferentiated	
	Tertiary		undifferentiated	
Palaeozoic	Devonian		Santo Sandstone	
		Finke Group		
		Pertnjara Group	Pertnjara Formation	
	Ordovician	Larapinta Group	Stairway Sandstone	
	Cambrian	Pertaoorrt 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
	Middle Proterozoic		Heavitree Quartzite	
		Musgrave Block	Arunta Complex	

**Figure 5: Correlation between wells (from Young and Ambrose, 2007)**





## **7 EXPLORATION ACTIVITES CONDUCTED DURING 2010-2011**

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Exploration by Tellus within this reporting period was limited to literature reviews.

## **8 EXPLORATION ACTIVITES CONDUCTED DURING 2011-2012**

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### **8.1 Mine Management Plan for Exploration Operations**

Tellus completed the requirements for the Mine Management Plan (“MMP”) for exploration operations for the Chandler Project. The MMP was approved in August 2012 for proposed seismic and drilling over target areas within the Bluebush sub-project (EL27971) and within the Charlotte sub-project (EL27972 and EL29018).

### **8.2 Prefeasibility Study**

Tellus completed a prefeasibility study for the Chandler Salt Project. The definitive feasibility study commenced during 2013 to look at all aspects of the project, such as; best mining method, logistics, costs and technical aspects of the project.

## **9 EXPLORATION ACTIVITES CONDUCTED DURING 2012-2013**

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Exploration during the current reporting period were focussed on Tellus’ Charlotte sub-project area. Seismic review and geotechnical studies were completed. The results providing information for project advancement. Drilling commenced within the Charlotte sub-project.

## **10 EXPLORATION ACTIVITES CONDUCTED DURING 2013-2014**

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### **10.1 Drilling program on nearby tenement EL29018**

To confirm the depth and thickness of the Chandler salt Formation over the project area, two deep diamond drillholes (CH001A, CH003) were completed on nearby tenement EL29018 (Figure 6). The locations were selected based on combination of factors included proximity to existing seismic lines, interpreted depth and thickness of Chandler Formation. The drilling program took place from



November 2013 to January 2014. The Chandler Formation was intersected in both drillholes, with high recovery of core achieved. Samples were sent for chemical and mineralogical analysis, results were positive confirming high grade halite.

## **10.2 Exploration Target**

Tellus commissioned Ercosplan to complete a JORC Technical Report for the Chandler Salt deposit, which included an exploration target estimation for Bluebush Project within EL27971 (Ercosplan, 2014).

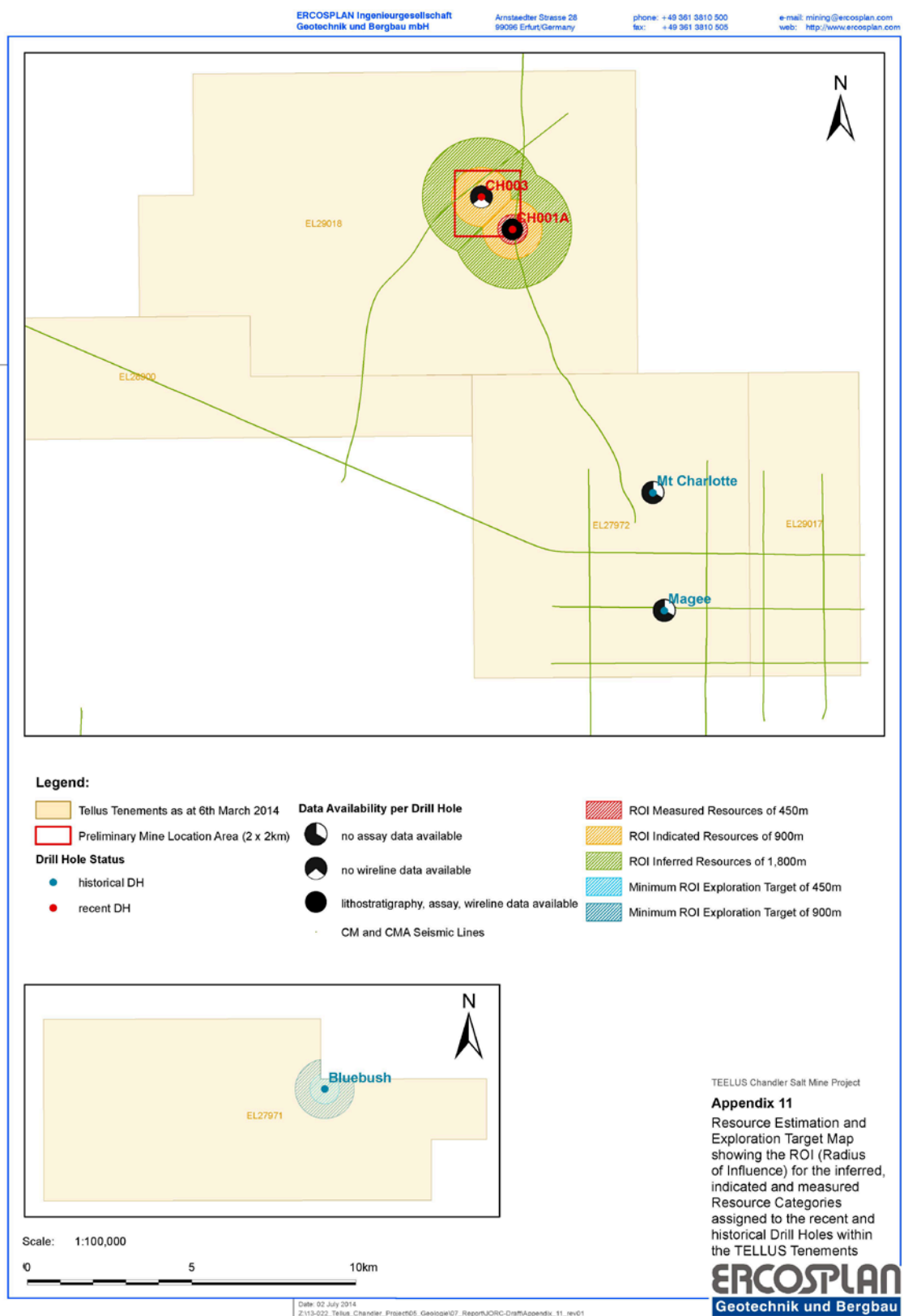
The exploration target estimation was calculated using a radius of influence of 450m (minimum) and 900m (maximum) around petroleum well Bluebush 1 (Figure 6). Using a density of 2.22 g/cm<sup>3</sup> and a NaCl grade of 93.64%, provided a target estimation of 812-2921 million tonnes of NaCl.

## **10.3 Review of Target Sites**

Tellus conducted a thorough review of all target sites, short listing the most prospective sites for future exploration and recommending the least prospective for relinquishment. It was recommended that EL27971 be retained.



Figure 6: JORC estimation







## 11 EXPLORATION ACTIVITIES CONDUCTED DURING CURRENT REPORTING PERIOD

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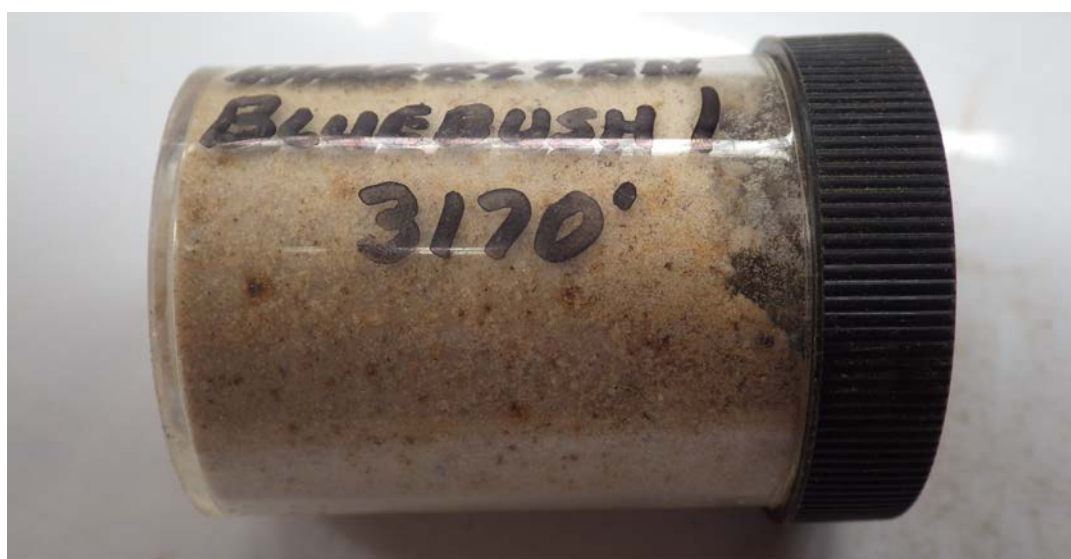
During the reporting period Tellus visited the NTGS core facility in Alice Springs to review available samples from oil well Bluebush 1.

Samples were photographed and lithology compared to recorded stratigraphy (Figure 9). Sample intervals of interpreted Chandler salt formation generally consisted of fine sediments, it is likely that any halite present in the formation was dissolved during the drilling process and therefore not representative of the in-situ conditions.

**Figure 7: Samples from Bluebush1 at NTGS Core storage facility**

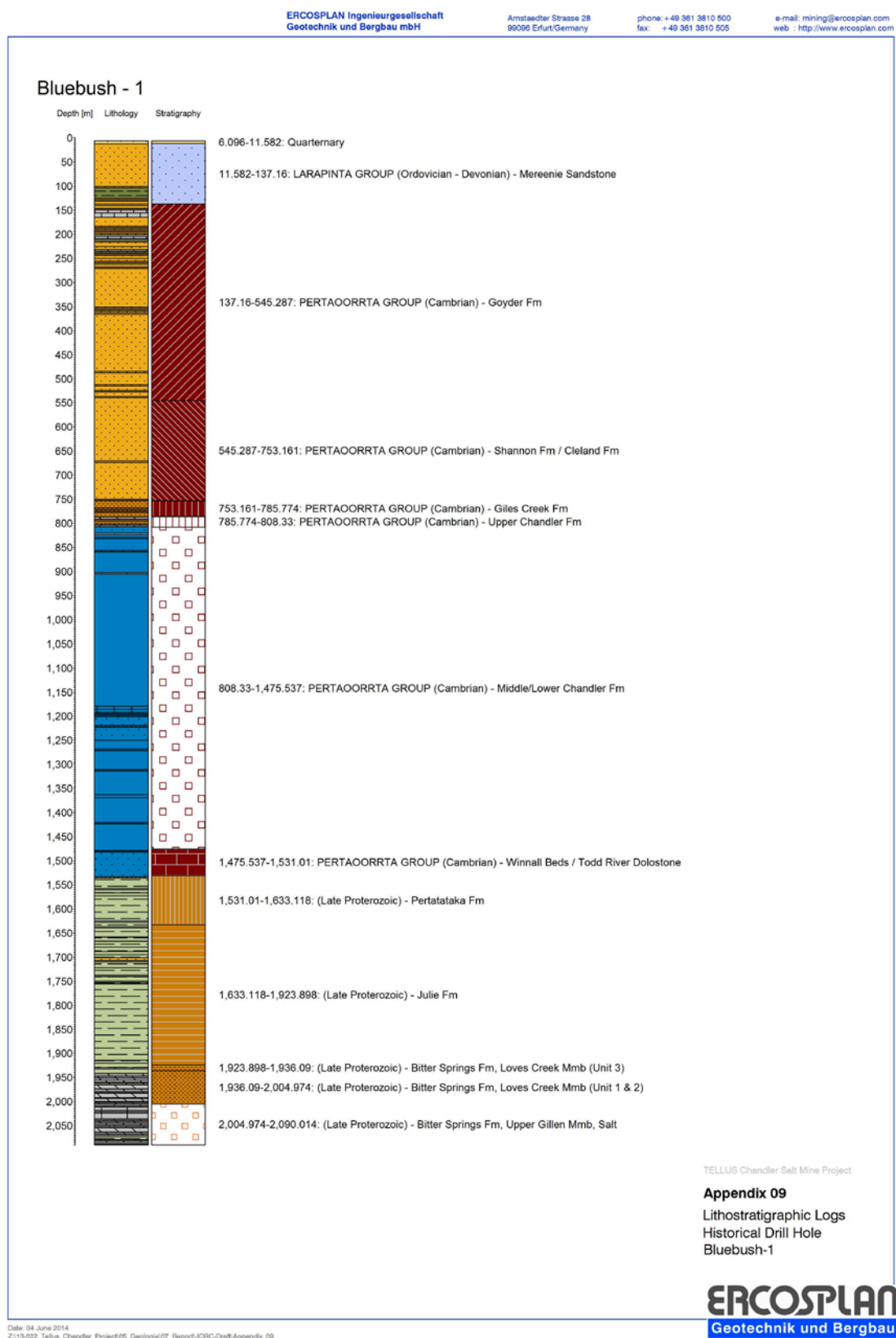


**Figure 8: Sample from 3170'**





**Figure 8: Lithostratigraphic log Bluebush1**





## 12 PROPOSED EXPLORATION

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Exploration activities to date indicate a significant thickness of massive to semi massive halite exists within the Chandler Formation. In order to assess potential evaporitic mineralisation further; drilling, core sampling and geochemical analysis of samples is required. During 2016 Tellus will review all held tenure and make recommendations for future exploration.



## 13 REFERENCES

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