
PetraGas Ltd

C/- 169 Fullarton Rd, Dulwich 5065, South Australia

**PARTIAL SURRENDER REPORT
KEMPTON PROJECT
EL3/2013**

5 JANUARY 2015

ABSTRACT

The licence area covers a portion of the southern extent of the onshore Tasmania Basin. Historical work undertaken by exploration companies, government departments and universities have determined the folded lower Palaeozoic succession, the Wurawina Supergroup and the Carboniferous to Triassic succession, the Lower Parmeener Supergroup have hydrocarbon source rocks (e.g. Bacon et. al. 2000). Exploration work aims to test un-conventional shale oil/gas potential. Initial work involves an investigation of potential source rock material for its suitability.

Work completed during the period included:

- Compilation and review of previous exploration
- Compilation and review of open-file regional geophysical datasets; initial target area generation
- Land access discussions with land holders
- Inspection and sampling of drill core
- Reconnaissance road side field visit of tenement area and prospective source rock outcrops
- TOC and SRA analysis of source rock

An independent review of the data acquired by McKirdy Geoscience indicates that source rock intervals analyzed share geochemical similarities with the Upper Paleozoic Woodford and Barnett Shale's, which host major shale oil and gas reserves in the southern Midcontinent USA. Evidence of gas migration may also indicate conventional gas traps may be a viable exploration target.

Further source rock analysis needs to be undertaken to better characterize the potential of the basin. During the early part of the second licence term, in March 2015, a 5 year moratorium on hydraulic fracturing was introduced by the Tasmanian State Government. The moratorium has created great uncertainty with regards to being able to test for unconventional oil and gas resources in the future, a key component of the exploration campaign. Near the end of the current reporting period the Company undertook a partial surrender of the areas where potential basin source rocks were deemed too shallow to be prospective and also with consideration to remove areas with higher settlement densities closer to Hobart.

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1. INTRODUCTION

In February 2013, Petratherm, through its wholly owned subsidiary PetraGas Limited, applied for an oil and gas exploration licence north of Hobart (EL3/2013), exploring for both conventional and unconventional oil and gas. As part of the licence application process, PetraGas responded to 22 written submissions from potentially affected landowners and this resulted in some areas being excised from the licence application. EL3/2013 (Kempton) was formally granted on the 16th January 2014.

The licence area covers a portion of the southern extent of the onshore Tasmania Basin. Historical work undertaken by exploration companies, government departments and universities has determined the folded lower Palaeozoic succession, the Wurawina Supergroup and the Carboniferous to Triassic succession of the Lower Parmeener Supergroup have hydrocarbon source rocks (Bacon et. al. 2000).

Exploration work aims to test un-conventional shale oil/gas potential and initially plans to investigate source rock material for its suitability. All maps and locational data provided in the report uses the GDA 94 reference datum.

1.1 Authority history

The Kempton Project tenure comprises one granted Exploration Licence covering an area of 3840 km² (Figure 1). Exploration Licence EL3/2013 is held by PetraGas Ltd a 100% owned subsidiary of ASX listed geothermal exploration and development company, Petratherm Limited. The tenement has been granted for a period of five years. Tenement details are provided in Table 1. In January 2015 Petragas made a 43 % voluntary reduction in tenement holding, details are provided in Table 1 and the reduced area is shown on Figure 1.

TENEMENT	GRANT DATE	SIZE AT GRANT (km ²)	SIZE AFTER REDUCTION (km ²)	% REDUCTION	MINIMUM EXPENDITURE FIRST 2 YEARS
EL 3/2013	16/01/2013	3840	2200	43%	300,000

Table 1: Kempton Project tenement particulars

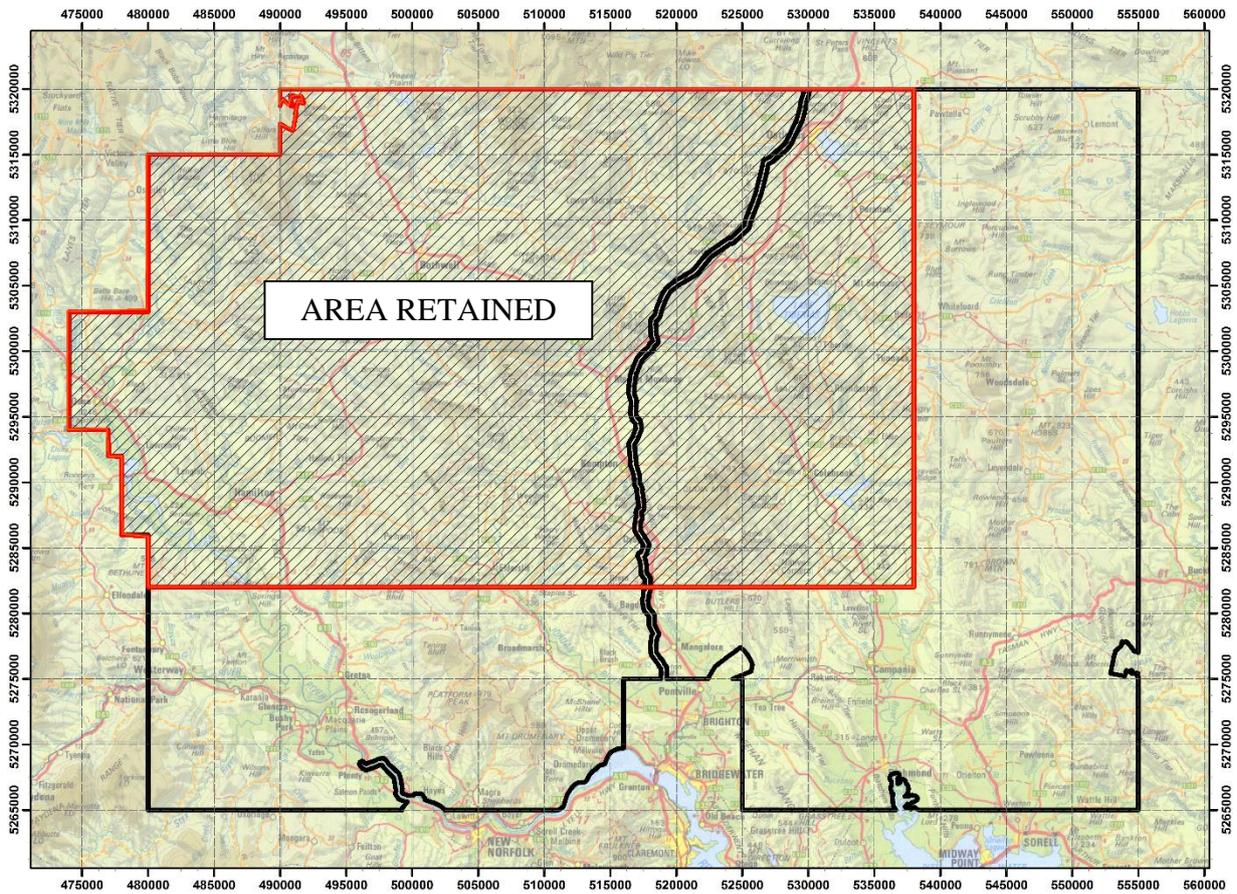


Figure 1: Kempton Project, EL3/2013, location plan showing reduced licence area

1.2 Exploration rationale

The licence area covers a portion of the southern extent of the onshore Tasmania Basin. Notably the area is traversed by the Tasmanian Gas Pipeline which may provide a connection point to market. Historical work has determined the folded lower Palaeozoic succession, the Wurawina Supergroup and the Carboniferous to Triassic succession, the Lower Permian Supergroup, have hydrocarbon source rocks (e.g. Bacon et al, 2000).

One key target sequence is the organic siltstone of the Woody Island Formation, which reaches its thickest developments in excess of 200 metres in a region north of Hobart which is under the licence area. Vitrinite reflectance analyses indicate in this region that the formation is in the oil generation with entry into the gas window (Reid et al, 2004). Similarly the older Ordovician sequences which underlie the Tasmania Basin strata will also be targeted as these have been shown to be organically rich and demonstrate the right thermal maturity to generate oil and gas.

As the exploration model is targeting un-conventional shale oil/gas, the play is less concerned about locating potential reservoirs and trap sites but rather large thicknesses of source rock material that may be amenable to fracture stimulation methods such that commercial rates of oil/gas could potentially be extracted.

2.0 PREVIOUS INVESTIGATIONS

Onshore exploration for hydrocarbons has occurred on a small scale for approximately 100 years spurred on largely by reported presence of oil and gas seeps. Very few however of the over 100 historical seeps reported have found to be later valid. These reports along with the occurrence of the Tasmanites oil shale contained within the late Carboniferous, Woody Island Formation has motivated some 13 companies to actively explore for oil in the last 75 years. Exploration however has been crude and almost no modern systematic exploration tools have been used to locate and test potential hydrocarbon trap accumulation sites.

Small deposits of Late Carboniferous oil shale have been investigated on several occasions as a potential source of hydrocarbons or road bitumen. During the 1930's a number of experimental reports which trialed to produce a variety of hydrocarbons but were never successful in being commercialised. A detailed historical summary of the Tasmania Basins seeps, bitumen's and gas shows can be found in Bulletin 71 produced by Mineral Resources Tasmania, compiled by Bacon *et al* in 2000.

Some 38 shallow wells have been drilled in onshore Tasmania, for the purpose of exploring for oil or gas, without any detailed knowledge of structure or stratigraphy. Most wells are drilled to depths of 350 metres or less and most bottomed in Jurassic dolerite. A peak of activity occurred in the 1920s, driven by a Commonwealth Government reward of £10,000 for the discovery of payable oil anywhere in Australia. Most activity occurred in the region between Devonport and Launceston, northern Tasmania. Gas was reported from 335m in the Iles well at Port Sorell in 1923, drilled by The Adelaide Oil and Exploration Company Ltd. The source of the gas, contained in a tertiary sand, has been postulated to be the result of decomposing vegetable matter (peat, lignite) producing a methane gas (*Bacon et al,2000*).

Another phase of activity occurred from 1967-1974, when 7 wells were drilled west and north- west of Launceston. The wells ranged in depths from 50-831 meters and all bottomed in the Jurassic

dolerite. In 1981 Victor Petroleum and Resources Ltd in partnership with the Northwest Bay Co. Pty Ltd, held exploration licences covering a large part of the Midlands for coal and oil. A preliminary report on the potential onshore Tasmania Basin was made and some rock samples maturity analyses showed that the sequence had at one time been through the oil producing window. One sample of Woody Island Siltstone returned 1.2% Carbon.

From 1984, various licenses were taken out over the central and southern Tasmania Basin by Great South Land Minerals (GSLM) and its predecessor companies, Condor Oil Pty Ltd and Conga Oil Pty Ltd. Geochemical analyses using current technologies was carried out on source rocks, seeps, tars and bitumen's. In addition a large amount of infill gravity and magnetic data was captured to try and model the first-order structure of the Tasmania Basin. Work was initially concentrated on the possibility of oil generation from the Gordon Group Limestone but more recent exploration has been premised on sources within the Tasmania Basin, particularly the tasmanite.

Short lines of seismic were acquired in the waters around and on Bruny Island. In the 1990's routine geochemical analyses were carried out on new sample material. In 1994, Condor Oil Pty Ltd commenced drilling 2 stratigraphic wells (Shittim- I, and Gilgal-1). Shittim-I was completed to a depth of 1751m in 1996/7 and encountered around 600m of Permian glaciene sediments intruded by two dolerite sills, and reached metamorphic basement. In 1997, the stratigraphic well campaign was continued by GSLM with the completion of Jericho-1 (640m) on Bruny Island, followed by Lonnavale-1(557m), Hunterston-1 (336m), Bridgewater-1 252m, and Pelham-1 503m. All wells have been suspended in the Permian sequence or in the Jurassic dolerite.

Gas shows have been recorded in wells, Shittim-1, Jericho-1 and Lonnavale-1, with methane and C2-C6 hydrocarbons detected in cuttings gas and trip gas. The gas from Shittim-1 has been analyzed and shown to be a highly mature thermal gas with the presence of methane, carbon dioxide, nitrogen, hydrogen and helium. The latter two gases indicate a source from deep in the basement. Since well locations have not been located on structural features constrained by seismic data, it is not surprising that there are few reports of hydrocarbons.

In 2000, Mineral Resources Tasmania published a detailed review of the petroleum potential of onshore Tasmania (Bacon et al, 2000), which critically looked at potential source rocks, thermal history, potential reservoirs, seals and traps. The study included some source rock analysis to determine hydrocarbon potential across the basin. Most recently the School of Earth Sciences,

University of Tasmania undertook Petroleum System Modelling research for the on-shore Tasmania Basin (Reid, 2002; Reid and Burrett, 2004). This work highlights source rocks and the potential for both oil and gas prone sequences within portions of the basin.

3.0 EXPLORATION COMPLETED DURING THE LICENCE PERIOD

Exploration undertaken during the period has included:

- Compilation and review of previous exploration
- Compilation and review of open-file regional geophysical datasets; initial target area generation
- Land access discussions with land holders
- Inspection and sampling of drill core
- Reconnaissance road side field visit of tenement area and prospective source rock outcrops
- Total Organic Carbon (TOC) and Source Rock Analysis (SRA) of potential source rocks

3.1 Data compilation and review

Government databases were interrogated to identify work undertaken by previous explorers, government officers, and researchers. Digital compilation of historical geochemical, geological and geophysical data into ArcGIS format was undertaken. Particular focus was given to historical drilling and identifying of potential source rock material for analysis from core or outcrop. One of the exploration risks identified is that much of the potential source rock material occurs at relatively shallow depths (<800m). Regional geophysical surveys were compiled to identify general basin architecture to try and locate thick source rock accumulations and deeper portions of the basin that would be far more amenable for un-conventional oil/gas exploitation.

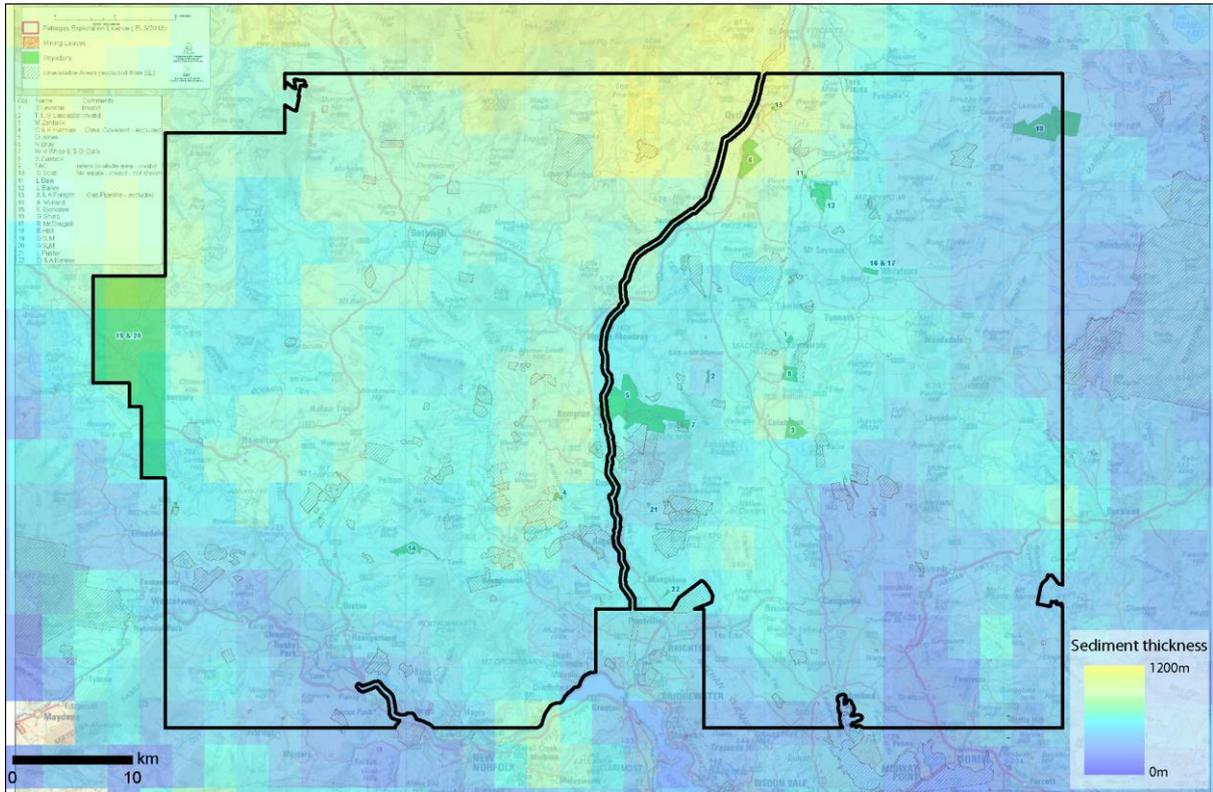


Figure 2: Interpreted Tasmania Basin sediment thickness based on modelling of geophysical data and drill hole information.

3.2 Target Source Rocks

Source Rocks focused on during the period are contained in the Late Carboniferous to Triassic Tasmania Basin. Here thick basal marine sequences occur, some with relatively high organic content. The Woody Island Shale is up to 250 metres thick in the vicinity of Hobart (Figure 3) and reported Total Organic Carbon ranges between 0.5-2% but includes in places thin Tasmanite Oil Shale at its base, which consists of a number of thin organic-rich bands (typically 30cm) with a recorded TOC ranging between 8 – 30%. Intervening Woody Island shale's between the Tasmanite bands have also been reported to have elevated TOCs ranging between 1-2%. This lower section is a potential target.

The basin is mature through the central and southern portions of the Tasmania Basin over the Licence area. Thermal maturation studies have shown the Woody Island Formation contains gas-prone and oil-prone source rocks in the licence area. In addition late stage dolerites may have provided locally elevated maturation where these intrusives occur. Very little exploration has been carried out – the true potential of the basin is still to be discovered.

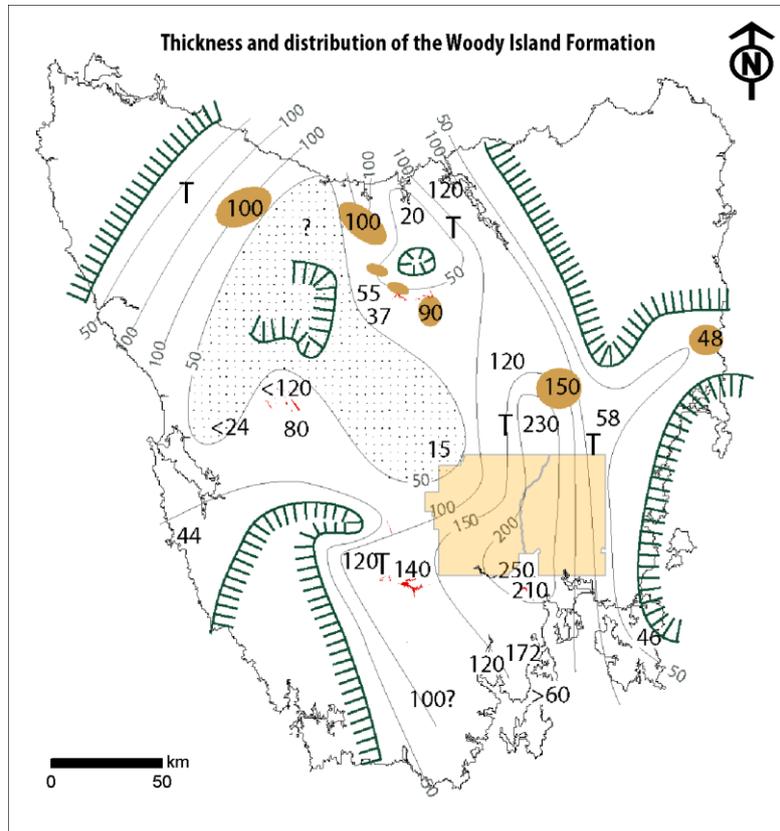


Figure 3: Woody Island Formation Thickness map. (After Reid 2002)

3.3 Exploration Activities

Representative historical core from the southern and central Tasmania Basin were viewed at the Mineral Resources Tasmania Core library in Hobart. 17 quarter core samples were taken of potential source rock material from the Woody Island Formation and black shales from the Liffey Group and Bundella Formation. In addition some samples were analysed from a road quarry in the Styx Valley area where a good exposure of the Lower Woody Island Formation occurs. The quarry samples are very tight and give off a petroliferous odour when fresh rock is broken by a hammer.

The samples were submitted to the University of Adelaide for Source Rock Analysis (SRA) and Total Organic Carbon Measurements (TOC). Pyrograms were also generated from the SRA analysis. Results of these analyses are presented in Appendices 1 to 3 of this report. Following the analyses'

the results were submitted to McKirdy Geoscience to generate an independent professional opinion on the data, and his report is presented as Appendix 4 of this report.

4.0 RESULTS

Results from analyses averaged 0.89% TOC for the Woody Island Formation. The quarry samples range between 0.6 and 0.9% and these measurements are likely to take into account the free hydrocarbons responsible for the strong petroliferous smell as only a very small portion may have been lost when crushing the rock. Further characterization is needed to investigate the free hydrocarbons and their implication for shale gas. The Liffey Group shows much higher TOCs (average of 1.5%). This is explained by the carbonaceous rich horizons and presence of coal. The Bundella mudstone sample records the highest value of 4.4% for one sample, a highly carbonaceous shale (Table 2).

The SRA analyses showed (Table 3) that the Hydrogen Indexes (HI) are not high for any of the samples where a remaining hydrocarbon generative potential (S2) was observed. Volatile hydrocarbon (S1- free HC) are also relatively low with the Tunbridge and Woody Island quarry samples showing the highest responses. A number of the samples from the Ross and Granton Wells showed no discernible S2 peak and low S1 – these are likely to have passed through the oil and wet gas windows. There is some potential shown in the shallowest of the Ross Well samples which suggests this section hasn't reached full maturity (Ro calc 0.85).

The data from the Tunbridge samples indicates this has passed into the wet-gas window (most reliable value was Ro calc 1.24) and the Hunterston & Woody Island Quarry samples are at the top of the oil window (Ro calc ~0.9).

There are some interesting features in the pyrograms too (refer to Appendix 4), with a bimodal distribution observed which is commonly associated with migration of Hydrocarbons. This may indicate there may have been generation and mobilization of oil within these sections, though there is no way of quantifying this from these samples.

Sample	X	Y	Depth (m)	Formation	Lithology	Weathering	TOC	RockEval	XRD	Comments	Sample type	Total carbon (%)	Inorganic Carbon (%)	TOC (%)
WI01	465652	5262024	0	Woody Island Fm	Dark siltstone	fresh				strong petroliferous odour, bottom of stratigraphy in the quarry	Quarry			
WI02	465633	5262024	0	Woody Island Fm	Dark siltstone	fresh	1	1		moderate petroliferous odour, middle of stratigraphy in the quarry	Quarry	1.19	0.23	0.96
WI03	465651	5262023	0	Woody Island Fm	Dark siltstone	fresh	1	1		very strong petroliferous odour, bottom of stratigraphy in the quarry	Quarry	1.14	0.24	0.90
WI04	465636	5262002	0	Woody Island Fm	Dark siltstone	fresh				moderate petroliferous odour, top of stratigraphy in the quarry	Quarry			
WI05	465722	5261963	0	Woody Island Fm	Dark siltstone	fresh	1	1		strong petroliferous odour, top of stratigraphy in the quarry	Quarry	0.81	0.12	0.69
WI06	467661	5259169	0	Wynyard tillite	Tillite	moderate				Highly weathered, close to contact with overlying Woody Island Fm	Road side			
WI07	468604	5259549	0	Woody Island Fm	Siltstone	moderate				petroliferous odour	Road side			
WI08	472877	5259719	0	Woody Island Fm	Siltstone	very strong				No sample, top of Woody Island, petroliferous odour	Road side			
WI09	475043	5391865	0	Woody Island Fm	Siltstone	strong				Quamby Mudstone, no carbonaceous trace, no odour	Road side			
Hun1 Hunterston 01	495614	5326590	932.95	Woody Island Fm	Siltstone	fresh	1	1		dark grey mudstone, with rare clasts, gradational transition to sandstone from 950m	Half core	3.23	2.47	0.76
Tunbridge BH2 01	524516	5335035	350.6	Liffey Group	Shale	Fresh	1	1		dark grey, finely laminated, carbonaceous	Half core	0.85	0.05	0.80
Tunbridge BH2 02	524516	5335035	361.4	Liffey Group	Shale	Fresh	1	1		dark grey, finely laminated, carbonaceous	Half core	2.23	0.02	2.21
Tunbridge BH2 03	524516	5335035	390.15	Bundella	Shale	Fresh	1	1		finely laminated, dark grey	Half core	4.37	0.03	4.34
Tunbridge BH2 04	524516	5335035	639.85	Woody Island Fm	Siltstone	Fresh	1	1	1	fine grained, dark grey siltstone	Half core	1.49	0.14	1.35
Tunbridge BH2 05	524516	5335035	679.0	Woody Island Fm	Siltstone	Fresh	1	1	1	fine grained, dark grey siltstone	Half core	0.47	0.13	0.34
GR-DOM1 Granton 01	515727	5266676	132.7	Liffey Group	Shale	Fresh	1	1		carbonaceous shale, finely laminated, with thin sandstone intervals	Half core	1.14	0.03	1.11
GR-DOM1 Granton 02	515727	5266676	157.8	Liffey Group	Shale	Fresh	1	1		carbonaceous shale, finely laminated, with thin sandstone intervals	Half core	2.53	0.05	2.48
ROSS-R1 01	554791	5331369	98.6	Woody Island Fm	Siltstone	fresh	1	1		mudstone, getting gradationally darker with depth	Half core	0.86	0.03	0.83
ROSS-R1 02	554791	5331369	109.9	Woody Island Fm	Siltstone	fresh	1	1		mudstone, getting gradationally darker with depth	Half core	1.05	0.04	1.01
ROSS-R1 03	554791	5331369	120.55	Woody Island Fm	Siltstone	fresh	1	1		mudstone, getting gradationally darker with depth	Half core	1.19	0.04	1.15
ROSS-R1 04	554791	5331369	127.75	Woody Island Fm	Siltstone	fresh	1	1		mudstone, getting gradationally darker with depth	Half core	0.81	0.08	0.73
ROSS-RG 146 01	536395	5347351	133.8	Liffey Group	Siltstone	fresh	1	1		Altered pebbly mudstone, calcareous, carbonate clasts	Half core	1.25	0.50	0.75
ROSS-RG 146 02	536395	5347351	366.45	Woody Island Fm	Siltstone	fresh	1	1		massive mudstone, dark grey with rare debris	Half core	0.94	0.05	0.89
ROSS-RG 146 03	536395	5347351	393.5	Woody Island Fm	Siltstone	fresh	1	1	1	massive mudstone, dark grey with rare debris	Half core	1.37	0.27	1.10
ROSS-RG 146 04	536395	5347351	412.6	Woody Island Fm	Siltstone	fresh	1	1	1	massive mudstone, dark grey with rare debris	Half core	1.26	0.07	1.19
ROSS-RG 146 05	536395	5347351	419.75	Woody Island Fm	Siltstone	fresh	1	1	1	massive mudstone, dark grey with rare debris	Half core	0.61	0.04	0.57

Table 2: Total Organic Carbon (TOC) results from core and outcrop

Client ID	Top Depth (m)	Sample Type	Sample Prep	* SRA TOC	S1	S2	S3	Tmax (°C)	** Calc. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Checks	Pyrogram	Lab ID
ROSS-RG 146 05	419.75	Siltstone	Woody Island Fm	0.57	0.03				1.00				5	1.00			SRA STD
ROSS-RG 146 04	412.6	Siltstone	Woody Island Fm	1.19	0.10				1.00				8	1.00			SRA STD
ROSS-RG 146 03	393.5	Siltstone	Woody Island Fm	1.10	0.10				1.00				9	1.00			SRA STD
ROSS-RG 146 02	366.45	Siltstone	Woody Island Fm	0.89	0.16				1.00				18	1.00			SRA STD
ROSS-RG 146 01	133.8	Siltstone	Liffey Group	0.75	0.03	0.43		445	0.85	57			4	0.07			SRA STD
ROSS-R1 04	127.75	Siltstone	Woody Island Fm	0.73	0.02				1.00				3	1.00			SRA STD
ROSS-R1 03	120.55	Siltstone	Woody Island Fm	1.15	0.05				1.00				4	1.00			SRA STD
ROSS-R1 02	109.9	Siltstone	Woody Island Fm	1.01	0.05				1.00				5	1.00			SRA STD
ROSS-R1 01	98.6	Siltstone	Woody Island Fm	0.83	0.05				1.00				6	1.00			SRA STD
GR-DOM1 Granton 02	157.8	Shale	Liffey Group	2.48	0.04				1.00				2	1.00			SRA STD
GR-DOM1 Granton 01	132.7	Shale	Liffey Group	1.11	0.02				1.00				2	1.00			SRA STD
Tunbridge BH2 05	679	Siltstone	Woody Island Fm	0.34	0.08	0.06		458	x 1.09	18			24	0.57			SRA STD
Tunbridge BH2 04	639.85	Siltstone	Woody Island Fm	1.35	0.54	0.31		440	x 0.76	23			40	0.64			SRA STD
Tunbridge BH2 03	390.15	Shale	Bundella	4.34	0.53	2.55		468	1.27	59			12	0.17			SRA STD
Tunbridge BH2 02	361.4	Shale	Liffey Group	2.21	0.12	0.34		436	x 0.69	15			5	0.26			SRA STD
Tunbridge BH2 01	350.6	Shale	Liffey Group	0.80	0.09	0.10		467	x 1.24	12			11	0.47			SRA STD
Hun1 Hunterston 01	932.95	Siltstone	Woody Island Fm	0.76	0.28	0.48		450	0.94	63			37	0.37			SRA STD
WI05		Dark siltstone	Woody Island Fm	0.69	0.37	0.45		447	0.89	65			53	0.45			SRA STD
WI03		Dark siltstone	Woody Island Fm	0.90	0.59	0.61		449	0.93	68			65	0.49			SRA STD
WI02		Dark siltstone	Woody Island Fm	0.96	0.42	0.37		432	x 0.62	39			44	0.53			SRA STD

Notes:
 "--" - not measured or invalid value for Tmax
 TOC - Total Organic Carbon, wt. %
 S1 - volatile hydrocarbon (HC) content, mg HC/ g rock
 S2 - remaining HC generative potential, mg HC/ g rock
 S3 - carbon dioxide content, mg CO₂/ g rock
 * - comments regarding contamination
 ** - low S2, Tmax is unreliable
 Meas. %Ro - measured vitrinite reflectance
 HI - Hydrogen index = S2 x 100/ TOC, mg HC/ g TOC
 OI - Oxygen Index = S3 x 100/ TOC, mg CO₂/ g TOC
 PI - Production Index = S1/ (S1+S2)
 Pyrogram:
 f - flat S2 peak
 n - normal
 hS2sh - low temperature S2 shoulder
 hS2p - low temperature S2 peak
 hS2h - high temperature S2 peak
 Calculated%VRo = 0.0180 x Tmax - 7.16 (Jarvie et al., 2001)
 LECO - TOC on Leco Instrument
 RE - Programmed pyrolysis or
 TOC on Rock-Eval instrument
 EXT - Extracted Rock
 NOPR - Normal Preparation

Table 3: Source Rock Analysis Results

5.0 CONCLUSIONS

In summary, the first analysis of potential source rock TOC indicate the Woody Island Formation is a marginal source rock. Recent studies however working on the relationship between TOC and productivity on the north American shale gas play have shown that lower TOCs (between 1 and 2%) have a better productivity than some higher TOC shale's, so some potential may still exist for the Lower Woody Island Formation where the Tasmanites may be present.

The independent review of data by McKirdy Geoscience, indicates that all three source rock intervals analyzed share geochemical similarities with the Upper Paleozoic Woodford and Barnett Shale's, which host major shale oil and gas reserves in the southern Midcontinent USA. Evidence of gas migration may also indicate conventional gas traps may be a viable exploration target.

Further source rock analysis needs to be undertaken to better characterize the potential of the basin. Near the end of the reporting period, areas where the basin depths are likely to be too shallow for hydrocarbon development and testing, based on geophysical modelling and historical drilling were recommended for relinquishment.

6.0 ENVIRONMENT

No ground disturbing activities were undertaken on the surrender portions. During the licence application process there was a high level of concern raised from stake holders regarding petroleum exploration processes and potential later developments in the region. The number one concern relates to use of ground water and or potential contamination of these water sources which could jeopardise land holders farming viability and the green image marketed to consumers. The Company is in the early stages of evaluating the prospectivity of the licence area and prior to any ground activities extensive stakeholder consultation and an agreed program of works will be required to address these issues appropriately.

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APPENDICES

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Appendix 2: SRA Data (digital file only)

Appendix 3: SRA Pyrograms (digital file only)

Appendix 4: Organic Richness and Thermal Maturity of Potential Source Rocks, Review Report

APPENDIX 4

Organic Richness and Thermal Maturity of Potential Source Rocks, Review Report