

# **GREAT SOUTH LAND MINERALS LIMITED**

ABN 54 068 650 386

## **2003 ANNUAL REPORT**

FOR

### **MINERAL RESOURCES TASMANIA**

### **SPECIAL EXPLORATION LICENCE 13/98**

Dr Clive Burrett – Chief Geologist  
Mr Rod Tabor – Exploration Manager  
Mr David Tanner – Chief Executive Officer

8 May 2003

# 2003 Annual Report

## Contents:

<b>Statutory Declaration</b> .....	4
<b>Executive Summary</b> .....	5
<b>Introduction</b> .....	6
Exploration Objectives	6
Licence Details	6
Joint Venture Details	6
<b>Completed Exploration Work</b> .....	8
Seismic Acquisition – TB01	8
Stratigraphic Well, Hunterston #1	8
Coal Bed Methane Program	9
SPIRT Grant	9
<b>Review of Results</b> .....	10
Interpretation of Seismic	10
Stratigraphic Well, Hunterston #1	12
<b>Planned Exploration Work</b> .....	12
Stratigraphic Drilling Operations	12
Seismic Survey TB02	13
Farm-in Drilling Operations	14
Exploration Budget	14
<b>Expenditure</b> .....	14
<b>Appendices</b> .....	15
<b>CD Contents</b> .....	15

# GREAT SOUTH LAND MINERALS LIMITED

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8 May 2003

Director of Mines  
Mineral Resources Tasmania  
PO Box 56  
ROSNY PARK TAS 7018

**Attention : Dr A.V. Brown**

Dear Dr Brown,

## **2003 Annual Report**

I have pleasure in forwarding Great South Land Mineral Limited's 2003 Annual Report covering work on special exploration licence, SEL 13/98, up to the end of March 2003.

Should you require any further information to meet your specific requirements, please contact me on 6231 9339.

Yours faithfully

David Tanner  
Chief Executive Officer  
Great South Land Minerals Limited

**Statutory Declaration**

I, David Andrew Tanner, Chief Executive Officer

for Great South Land Minerals Limited

of Level 3, 65 Murray Street, Hobart Tasmania.

Declare that the information herein pertaining to the 2003 Annual Report on Oil and Gas Exploration is true and I make this solemn declaration by virtue of Section 132 of the Tasmanian evidence Act 1910.

Declared at Hobart this ..... day of ..... 2003.

.....(signature), before a Justice of the Peace or a

Commissioner of Declarations (signature) .....

## **Executive Summary**

Great South Land Minerals Limited continues to work on the interpretation of the 2D seismic data acquired during 2001. A report on the seismic interpretation and basin analysis of the Longford Sub-basin has been completed.

Approval was obtained from Mineral Resources Tasmania to re-enter and deepen the stratigraphic well, Hunterston #1. The drilling is being carried out as part of the process whereby OME Resources Australia Pty Ltd (OMERA) will earn a 5% interest in the licence SEL 13/98 and the plan is to drill the well to a total depth of 1700 metres or deeper if conditions allow.

The well was deepened by cutting continuous HQ core from 336 to 977 metres. Some lost circulation and permeable zones were encountered from 900 metres. In order to isolate these zones the HQ string was cemented from 977 to approximately 812 metres. The rod string was then changed to NQ and the hole continued by drilling out the cement and the HQ core barrel. Continuous NQ cores were cut from 977 to 1324 metres.

During the coring operations hydrocarbon gas was noted at various depths. Sections of core and gas samples from the well have been sent for analysis to Amdel laboratories in Adelaide. Preliminary results from the core analysis indicate good porosity and permeability in a vuggy formation at around 957 metres. As well the gas samples confirmed the presence of over 1.0% Helium gas (air corrected) from the formations below the Tasmania Basin.

The rig is currently inactive while discussions are being held with OMEIRA.

Great South Land Minerals Limited together with the School of Earth Sciences at the University of Tasmania has continued with the ARC - SPIRT, joint research program.

The interpretation of the seismic data acquired during the TB01 survey is being undertaken by Andrew Stacey (PhD student) and a report on the Longford Sub-basin has been prepared by Paul Lane (honours student).

Numerous thin sections, geochemical assays and porosity-permeability analyses have been carried out on samples from the Parmeener Supergroup, Gordon Group limestones and from Precambrian dolomites by Alan Chester (PhD student) and Dr Catherine Reid (postdoctoral fellow). A litholog of the Hunterston #1 drill hole has been completed and a partial report on the Tasmania Basin released. A palaeogeothermal/maturation model has been developed by Mr Jubo Liu (PhD student).

All work to date has confirmed and enhanced the prospectivity of both the Gondwana and Larapintine Petroleum Systems onshore Tasmania.

A further part of the joint venture with OMEIRA allows OMEIRA to earn 50% of the coal bed methane rights of SEL 13/98 in exchange for a testing program. OMEIRA has prepared and submitted their testing program to Mineral Resources Tasmania.

## **Introduction**

### **Exploration Objectives**

The exploration objective of Great South Land Minerals Limited (GSLM) is to discover commercial quantities of oil and gas onshore Tasmania.

GSLM's current exploration strategy is based on an extensive seismic and drilling program involving the acquisition of at least 2000 line kilometres of seismic data, and is designed to:

- determine the extent of the two petroleum systems that have been outlined;
- define potential petroleum targets;
- test potential targets through a drilling program.

### **Licence Details**

GSLM currently holds Special Exploration Licence SEL 13/98, which covers most of the Tasmania Basin. The licence covers an area of 30,356 square kilometres.

Under Part 2, Division 4 section 44-(1) of the Mineral Resources Development Act 1995, SEL 13/98, was granted for an initial period of 5 years, with the ability to extend the licence for another 5 years at the discretion of the Minister. The initial period expires on 18 May 2004, and the licence may be extended for any period so long as the total term of the licence does not exceed ten years.

The exploration licence may be partially relinquished or converted to a retention or mining lease at any time during the period it remains in force. During the period of the exploration it was a requirement of the licence that GSLM complete at least 600 line kilometres of seismic reflection data acquisition and spend a minimum of \$2,000,000 on on-ground exploration before June 2001, and thereafter a minimum of \$2,000,000 per annum.

The Minister, by letter dated 30 June 2000, has removed the requirement that GSLM must proceed with the public float of Great South Land Minerals Limited before the first anniversary of the issue of the licence.

### **Joint Venture Details**

On 10 May 2002 GSLM entered into a joint venture agreement with OME Resources Australia Pty Ltd (OMERA) by which OMEIRA may earn a joint venture interest in SEL 13/98 by conducting drilling and related work. The agreement between GSLM and OMEIRA set up the Tasmania Exploration Joint Venture (TEJV).

Stage 1 of this work relates to the expenditure of \$1,000,000 to complete the drilling / coring of Hunterston #1 and other activities for a 5% interest in the licence. As at 30 September 2002 GSLM recognised that OMEIRA had expended \$663,536 on on-ground

exploration. OMERA contend that expenditure incurred to 30 September 2002 amounted to approximately \$1,216,956. Management are currently negotiating with OMERA to verify the quantum of expenditure incurred in respect to exploration work undertaken under the contract

The expenditure figure of \$663,536 has been submitted to Mineral Resources Tasmania as partial fulfilment of GSLM's licence obligations.

There is an optional Stage 2 where an expenditure of a further \$2,000,000 on on-ground exploration would earn a further 10% interest in the licence. No decision has yet been taken on granting OMERA this option.

The TEJV agreement also allows OMERA to earn 50% interest in the coal bed methane resources of SEL 13/98 by funding and carrying out an exploration program that includes the drilling of at least six test wells before 1 June 2004.

## **Completed Exploration Work**

### **Seismic Acquisition – TB01**

Trace Energy Services has presented a final Field Acquisition and Operations Report covering their activities during the acquisition of vibroseis seismic data between March and June 2001 on SEL 13/98. A copy of this report is included as Appendix A.

### **Stratigraphic Well, Hunterston #1**

The stratigraphic well, Hunterston #1, was deepened by cutting continuous HQ core from 336 to 977 metres. Some lost circulation and permeable zones were encountered from 900 metres. In order to isolate these zones the HQ string was cemented from 977 to approximately 812 metres. The rod string was then changed to NQ and the hole continued by drilling out the cement and the HQ core barrel. Continuous NQ cores were cut from 977 to 1324 metres. Drilling and coring activities have been suspended and the Hunterston #1 stratigraphic well was shut-in on 28 September 2002.

The Woody Island Formation and basal tillite are absent and overlie a deformed dolomitic Proterozoic succession. The pre-Liffey Group is represented by breccias (probably terrestrial) with large clasts of Proterozoic dolomites and siltstones. This suggests that this area was a highland during the Early Permian. In 3m of this breccia, the clasts are dissolved leaving an excellent permeability interconnected porosity of commercial significance. A wellsite lithology log was generated from 336 to 1100 metres by geological consultants, GeOvations, and is attached to this report as Appendix B. The wellsite geologist also prepared daily reports that are attached to this report as Appendix C.

During the coring operations hydrocarbon gas was noted at various depths. Sections of core and gas samples from the well have been sent for analysis to Amdel laboratories in Adelaide.

Preliminary results from the core analysis indicate good porosity and permeability in a vuggy formation at around 957 metres. We plan to test this zone once coring has been completed.

All samples had geochemical analysis including saturated and aromatic biomarkers. The oils analysed have similar maturities. Their aromatic hydrocarbon indicate that they were generated and expelled from source rocks with equivalent Vitrinite Reflectance values of 0.85-0.92%. Saturated hydrocarbon ratios are consistent with this information. Gaseous hydrocarbons were analysed from the hole and the gas included 1% (air corrected ) helium.

## **Coal Bed Methane Program**

OME Resources Australia Pty Ltd (OMERA) has prepared a drill program to investigate the potential for occurrences of coal bed methane in the coal formations of the Triassic aged rocks of the Tasmania Basin.

OMERA has submitted this program to Minerals Resources Tasmania (MRT) and intends to undertake the drilling program over the summer months of 2003 - 2004.

The program calls for the drilling of six or seven wells with depths from 60 to 350 metres. The wells will be located at Mt Vernon (close to Melton Mowbray), York Plains (east of Oatlands), Merrywood and Fingal Tier (south of Fingal) and Douglas River (north of Bicheno).

## **SPIRT Grant**

During this period Great South Land Minerals Limited together with the School of Earth Sciences at the University of Tasmania continued to cooperate in the SPIRT joint research program.

The postdoctoral fellow, Dr Catherine Reid, has compiled all relevant data on the petroleum potential of the Tasmania Basin and, after extensive fieldwork, collected numerous samples for rock-eval, petrophysical and palaeontological analysis. The results confirm the petroleum potential of the Tasmania Basin. After a careful and critical consideration of all the data, Dr Reid calculates that the generative potential of the basin is extremely large and that the potential undiscovered resource for the basin may exceed 5 billion BOE. The Tasmania Basin is therefore comparable in size, age, geology, thermal history and potential resource to the Cooper Basin. She has completed a stratigraphic log and palaeontological work on the Hunterston#1 stratigraphic well. She has also prepared a partial report on the Tasmania Basin – Gondwanan System. This report was presented in December 2002 and a copy of the report is attached to this report as Appendix D.

Mr Andrew Stacey (PhD candidate) has made preliminary interpretations of GSLM seismic data concentrating on the central plateau region. Combining critical lithological-depth information from the Hunterston#1 well he has been able to interpret seismic data from all lines across the plateau, and has been able to define structures both within and below the Parmeener Supergroup. He has been able to pick the base of the dolerite on most seismic lines- an achievement of considerable economic significance. A report is in preparation. He has also prepared equipment for a downhole seismic and thermal study that will be deployed at Hunterston #1 when logistics allow.

Mr Alan Chester (PhD candidate) has collected data on the geochemistry and petrophysics of the Larapintine petroleum system. He has discovered in situ wet gas by crushing petroliferous-smelling Gordon Group limestone. These analyses agree with rock eval results and with GSLM's CAI and TAI determinations that the Florentine Valley carbonates are post-mature for oil and are in the gas window. Moderately high TOC values of >0.5 are

only found in the Upper Limestone Member and this unit deposited during an Ordovician marine highstand is now the focus of research on Larapintine source potential in Tasmania. Alan Chester has compiled data from the Appalachians and compared producing parts with the geology of Tasmania. He has constructed an exploration model for the Tasmanian fold-thrust belt based on this analogy. He suggests that exploration in the Larapintine Petroleum System be restricted to a relatively small area of the central plateau centred on the Bellevue Anticline.

Mr Jubo Liu (PhD candidate) has purchased new basin modelling software from Germany (PETROMODE) which, with PETROSYS, will be used to enter all geological and geophysical data on the lease area with a basin model emerging late in 2003. The problem of entering seismic data into PETROMODE is currently being assessed. Both Alan Chester and Jubo Liu are considering using geophysical 'worms' and FRACVIEW to help in the delineation/planning of new seismic lines.

Mr Paul Lane has completed his detailed assessment of the seismic from the Longford basin and has submitted his Honours Thesis. Several seismic sequences are recognisable and traceable across the sub-basin, these sequences are correlated with downhole geophysical logs in holes previously drilled within the Tertiary. A domal structure has been mapped seismically within the Tertiary and acoustic turbidity within its crestal region may be of economic interest.

## **Review of Results**

### **Interpretation of Seismic**

Mr Paul Lane has submitted his Honours Thesis entitled "Seismic Interpretation and Basin Analysis of the Longford Sub-basin".

The most important outcomes of this study are presented following a detailed basin analysis of the area using seismic, well logs and potential field datasets.

- The stratigraphy of the Longford Sub-basin can be subdivided relatively easily from seismic stacking patterns:
  - Palaeocene coal-rich lacustrine facies (S6 and S5)
  - Early to mid Eocene lacustrine facies (S4, S3 & S2)
  - Late Eocene fluvio-lacustrine facies (S1)
- Basin infill began in the north under conditions of closely matched rates of deposition and subsidence along the Bracknell Fault. As the basin continued to fill up, sedimentation extended southward. By the Middle Eocene, deposition was occurring in both the eastern and western sub-basins that were within a large lake. A depositional hiatus occurred during the late Eocene, marked by a regional unconformity. Finally fluvial-lacustrine deposition covered the entire Longford Sub-basin.

- Major NW-SE faulting along a pre-existing fabric initiated basin formation during the Late Cretaceous-early Palaeocene. The major basin forming faults are the Bracknell Fault and newly identified Faults A and B. All these structures dip between  $60^{\circ}$  and  $70^{\circ}$  towards the NE with displacements decreasing to the south. The normal faults may also have a degree of oblique slip towards the NW.
- Gravity data indicate a NE-SW structural trend. This zone is interpreted as a transfer fault. Faults with this orientation are important in distributing stress and across major faults. Extension along the Bracknell Fault dies out to the south, and is transferred along a NE structure to Fault B. Increased extension along Fault B initiated increased deposition into the eastern sub-basin
- The gross structural form of the basin is a graben and half graben separated by a central horst. The central horst is offset along strike due to differential extension. The half-graben geometry involves a series of tilt blocks bound by growth faults.

The Longford Sub-basin contains approximately 800m of Tertiary sediments. The burial of organic material beneath such cover would not bring about catagenesis, so in the case of the Longford Sub-basin migration of hydrocarbon from underlying mature rocks is the most probable play in this environment. From this study, several potential structural traps can be identified within the Longford Sub-basin.

The most obvious structural trap is the dome identified in the north of the basin. From the seismic this structure is interpreted to have formed as a result of mid to late Eocene transpression or uplift. The structure has a four-way closure with a cross section width of 2km and a height of 0.4 TWT (sec) or 300m. Although this structure is not huge in terms of its size, it does offer multiple targets. Within the dome a seismic facies change has been identified. Gas accumulations produce increased contrast (enhanced reflection) at the gas-sediment interface. Below the contact reflections are masked, and the low amplitude reflections of the seismic facies change could be the effect of masking.

The high incident of Tertiary and pre-Tertiary faulting in the basin increases the possibility of migration paths and structural pinchouts. Faulting within the eastern sub-basin is more complex with synthetic tilt blocks ideal for hydrocarbon migration into the basin and structural traps beneath the basin. The NE trending sub-basin is interpreted as a transfer zone. Transfer zones also have increased structural complexity. The economic benefits of exploring for hydrocarbons in this identified NE trending transfer zone is the reduced cost in drilling by avoiding Jurassic dolerite.

The study concluded by making a number of recommendations for future seismic data acquisition and further processing of the current data. The complete report by Paul Lane entitled "Seismic Interpretation and Basin Analysis of the Longford Sub-basin" is attached as Appendix E.

## **Stratigraphic Well, Hunterston #1**

An interim report has been prepared by Dr Catherine Reid, Dr Clive Burrett and Alan Chester on the stratigraphic results of the drilling at Hunterston #1.

The report noted that the typical fossiliferous lower Bundella Mudstone facies and Woody Island Siltstone are absent from the drillcore and that below the Permian section there is an unconformable contact to Precambrian dolomite. The dolomite exhibits complex minor faulting and intersecting veining patterns indicative of a complex tectonic history. The extremely contorted bedding near the bottom of the hole may indicate proximity to a thrust plane, contortions being due to drag folding. Permo-Carboniferous glacial erosion and retreat has produced conglomeratic beds of rounded pebbles of Precambrian dolomite immediately on top of the massive Precambrian dolomite. The report states that, as there is evidence of thousands of metres of deposition from Cambrian to Carboniferous nearby, it is likely that the Permian deposits lie over the end of a thrust sheet of Precambrian dolomite.

The report also states that measured vitrinite reflectances within the Liffey Group show background maturity of organic matter and thus concludes that the central Tasmania Basin is mature for hydrocarbons

The full report entitled “Stratigraphic results of diamond drilling of the Hunterston Dome, Tasmania: implications for hydrocarbon potential.” is attached as Appendix F.

## **Planned Exploration Work**

### **Stratigraphic Drilling Operations**

Hunterston #1 stratigraphic well has been deepened to 1,324 metres. Due a requirement to release some of the wellhead control equipment, the well has been suspended. The plan is rig up new equipment and to continue the coring of this well to approximately 1,700 metres if conditions allow. Seismic velocity and other geophysical measurements are then planned before testing the formation fluids from the highly permeable and porous zone encountered at approximately 950 metres.

Well plans have been developed and submitted to Mineral Resources Tasmania for two additional stratigraphic wells.

A stratigraphic well, to be named Lachish #1, is planned at a location near the Valleyfield Road approximately 9 km west of Conara on a property named “Stockwell”. The well Lachish #1 is situated close to the intersection of two seismic lines TB01-PT and TB01-TE and is planned to be drilled and cored to a depth of 2,000 metres. The location is believed to be approximately 14 kilometres from the centre of the Hummocky Hills structure. Full details are included in the Lachish #1 well program submitted to Mineral Resources Tasmania on 9 October 2002.

A second stratigraphic well, to be named Gezer #1, is planned at a location approximately 5 kilometres off-structure on the Bellevue anticline and near to the Marlborough Highway. Full details are included in the Gezer #1 well program submitted to Mineral Resources Tasmania on 18 May 2001.

Conditional approval has been granted by Mineral Resources Tasmania for the drilling / coring of both wells.

An additional two stratigraphic wells are planned before December 2004. Depending on the results of the stratigraphic wells Hunterston #1, Lachish #1 and Gezer #1 it is planned to drill two of the three locations that were initially drilled and cased in 1997. The locations will be picked from Lonnvale #1, Pelham #1 and Bridgewater #1.

The timing of the stratigraphic drilling work described above will depend on the time spent on each of the preceding wells. At the moment the plan is to remove the rig currently rigged up on Hunterston #1 and to source a new rig to complete Hunterston #1 before moving to Lachish #1 and Gezer #1, however this may change depending on the exploration results.

## **Seismic Survey TB02**

The results of the interpretation of TB01 were used to plan the line locations for the next regional seismic survey, TB02. A total of 1075 line kilometres of seismic data acquisition is planned. As was the case with the survey TB01, the lines have been located wherever possible along public roads in order to minimise the impact of the survey on private land and environmentally sensitive areas.

Initial scouting of the terrain on the Bellevue structure and near to the wells at Lonnvale, Bridgewater and Pelham indicate that the least environmentally disruptive and most cost effective way to acquire quality seismic will be by using dynamite as the source. This dynamite seismic survey is planned to start in Q2 '03 and will cover approximately 160 line kilometres. Costs are expected to be of the order of \$8,000 per kilometre.

Approximately 108 line kilometres of vibroseis seismic survey are located in the Central Highlands to more closely define structures identified during the TB01 survey. The remaining 770 line kilometres of vibroseis seismic survey have been located along roads to extend the regional coverage to the East Coast, the Florentine Valley and Cockle Creek.

Conditional approval to carry out the planned seismic lines has been obtained from Mineral Resources Tasmania, the relevant Councils and the concerned Government Departments.

The timing of the seismic work described above is dependant on the availability of funding. At the moment the plan is to mobilise the dynamite seismic crew in Q2 '03.

## **Farm-in Drilling Operations**

Negotiations are currently underway with two different potential farminees.

A British based oil exploration company is interested in acquiring an interest over a portion of the special exploration licence, SEL 13/98, near the town of Epping Forest.

A group of investors based in Melbourne are interested in acquiring options to drill wells on three portions of SEL 13/98 in the Longford Basin.

Should negotiations be successful GSLM's exploration plans would be adjusted to include the drilling of additional wells in the Longford Basin.

## **Exploration Budget**

The cost of the planned drilling and seismic work for the period 1 July 2003 to 30 June 2004 has been estimated at \$6,050,000. A copy of our 2003-2004 Exploration Programme and associated Gantt charts has been attached as Appendix G.

## **Expenditure**

For the period from 1 July 2000 to 31 March 2002 details of exploration expenditure are as follows:-

Geology	\$ 37,834.74
Geochemistry	\$ 1,480.00
Geophysics – gravity	\$ 90,507.53
Geophysics – magnetics	\$ 352.81
Geophysics – land seismic (line kilometres = 659.125)	\$ 3,082,970.04
Drilling	\$ 1,156,362.01
Licence fee	\$ 113,313.43
SPIRT	\$ 188,180.00
Other	\$ 26,332.04
Administration	\$ 469,733.26
<b>TOTAL</b>	<b>\$ 5,167,065.86</b>

At the end of the financial year ending 30 June 2003 our figures will be audited. The audit report will be forwarded to your office as soon as it is completed.

## **Appendices**

- A. Field Acquisition and Operations Report, March - June 2001 by Trace Energy Services
- B. Wellsite lithology log from 336 to 1100 metres prepared by geological consultants GeOvations.
- C. Daily geological reports from 404.5 to 1306 metres prepared by Eric Espiritu.
- D. The Tasmania Basin – Gondwanan Petroleum System, December 2002 by Dr Catherine Reid, University of Tasmania.
- E. Seismic Interpretation and Basin Analysis of the Longford Sub-basin, November 2002 by Paul Lane of the University of Tasmania.
- F. Stratigraphic results of diamond drilling of the Hunterston Dome, Tasmania: implications for hydrocarbon potential, April 2003 by Reid C.M., Chester A. and Burrett C.F.
- G. 2003-2004 Exploration Programme and associated Gantt charts.

## **CD Contents**

CD containing the following files;

SEL1398\_200305\_01\_report  
SEL1398\_200305\_02\_appendixA\_part1  
SEL1398\_200305\_03\_appendixA\_part2  
SEL1398\_200305\_04\_appendixA\_part3  
SEL1398\_200305\_05\_appendixA\_part4  
SEL1398\_200305\_06\_appendixB  
SEL1398\_200305\_07\_appendixC  
SEL1398\_200305\_08\_appendixD  
SEL1398\_200305\_09\_appendixE\_part1  
SEL1398\_200305\_10\_appendixE\_part2  
SEL1398\_200305\_11\_appendixE\_part3  
SEL1398\_200305\_12\_appendixE\_part4  
SEL1398\_200305\_13\_appendixE\_part5  
SEL1398\_200305\_14\_appendixE\_part6  
SEL1398\_200305\_15\_appendixF  
SEL1398\_200305\_16\_appendixG