



Boss Energy Limited
Annual report for EL 20/2004
Latrobe Oil Shale Project



Michael Blake, November 2009



Boss Energy: Annual Report, EL 20/2004

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Boss Energy: Annual Report for EL 20/2004, Latrobe Oil Shale Project

Summary

Exploration for the year to 26 November 2009 for EL 20/2004 consisted of a staged review of shallow resources across the tenement, the submission of a laboratory scale sample to Dalmat Engineering in Johannesburg, for testing with the Dalmat Carbonization and Energy System (DCES), and a review of Oil Shale technologies suited to processing of the Latrobe Oil shale. Rehabilitation of the Bulk sample extraction site is considered to have progressed well, and the Bulk sample stockpile site has been monitored.

Introduction and tenement information

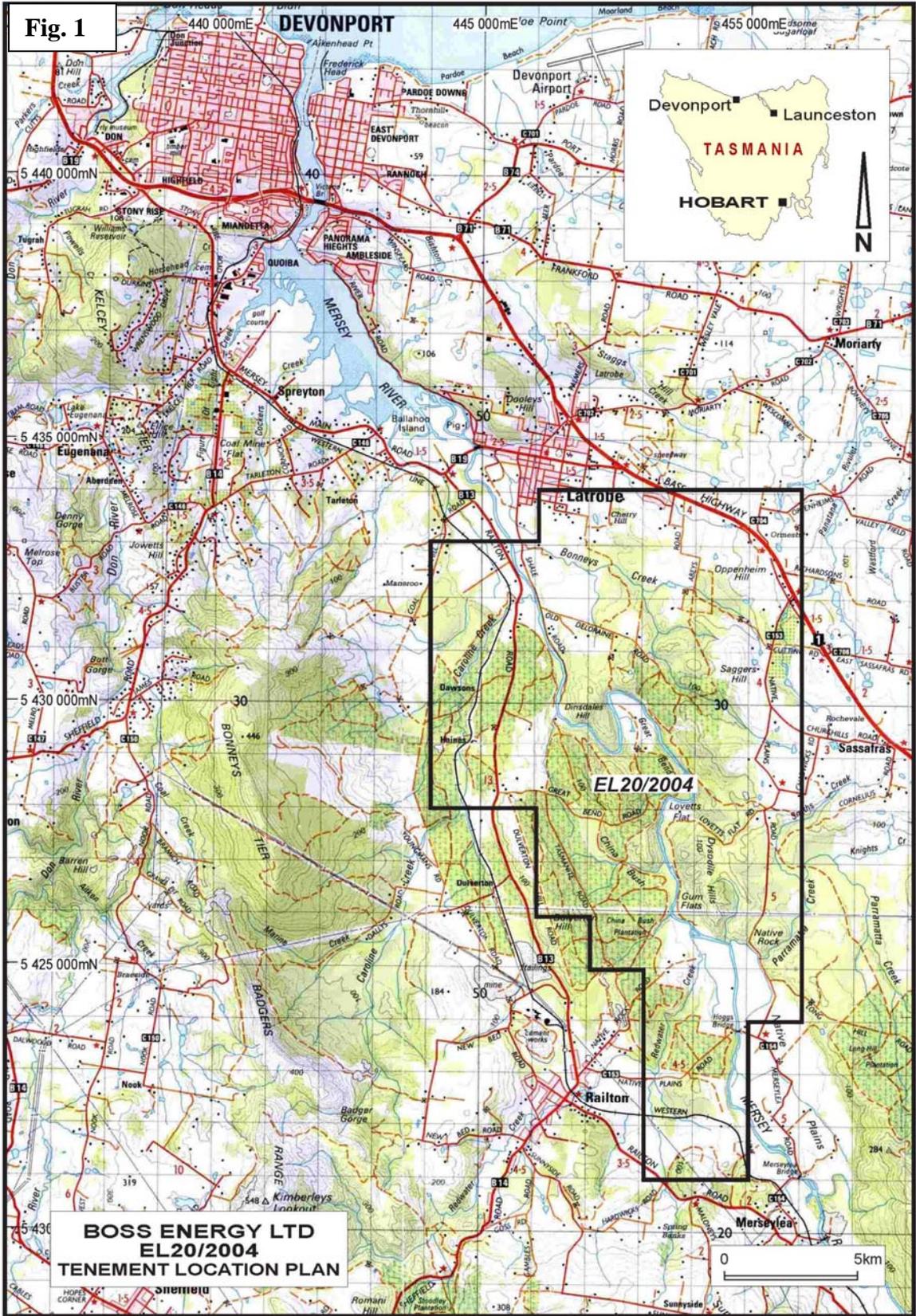
EL 20/2004 is a 61 square kilometre tenement encompassing an area to the east and west of the Mersey River between Railton and Latrobe in North Western Tasmania (figure 1). The tenement was acquired from Daley Resources PTY. LTD. in July 2007. Tenure consists of low density residential areas, freehold agricultural land, forest plantation and forest reserves. Access across the tenement is good with all year round access via established vehicular roads, tracks and short distance walking. The tenement covers the largest area of known shallow oil shale occurrences in Tasmania

Geology Overview

The Tasmanite oil shale occurs in Tasmania within the Parmeener Supergroup, which includes marine and freshwater sedimentary sequences of Upper Carboniferous to Early Triassic age (Burrett and Martin, 1989). The sequence was deposited in the Tasmania basin which has a broad axis stretching from Cygnet in southern Tasmania, to Latrobe in northern Tasmania. The Tasmanite horizon is located within Upper Carboniferous to Early Permian Lower Parmeener Supergroup rocks just above the boundary between basal tillites and overlying glacio-marine pebbly mudstones of the Quamby formation and correlates (Bacon Et al, 2000). At Latrobe, the formation is known locally as the Spreyton Beds. The Quamby Formation is overlain by a sequence of richly fossiliferous siltstone, sandstone and minor limestone known as the Bundella Formation, which is in turn succeeded by a freshwater sequence known locally near Latrobe as the Mersey Coal Measures (Bacon Et al, 2000).

The Tasmanite Oil Shale, comprising accumulations of likely algal spore casings, known as Tasmanites Punctatus, occurs in the Latrobe district as a horizon of 1.5m average thickness, comprising two to three distinct Tasmanite rich horizons. Tasmanite rich horizons (up to 45% kerogen) are separated by silt rich beds (around 5% kerogen) of 10-20cm thickness. (Clementson, 1981).

The oil shale horizon is known to be generally flat lying to dipping gently at 5-6 degrees. At tenement scale the position of the shale horizon is affected by block faulting resulting in displacements of over 75m, and at local scale over tens of meters is commonly displaced 0.3-6m (Bujtor and Waldrum, 1982). Distribution of the shale may be affected by depositional basin morphology, erosional effects, gentle folding, and local dolerite intrusions. Permian Shale bearing lithologies may be concealed locally by Tertiary basalt flows, and Quaternary cover.



Previous Work

There is an extensive history of early work conducted on the Tasmanite oil shale, including historical production of 1.13 ML of oil from mines near the Mersey River's Great Bend . Bacon, 1986, and Bacon et al, 2000, should be referenced for an analysis of early work. Relatively recent exploration work is detailed in Table 1 below.

In 1987 the Tasmanian Hydro Electric Commission conducted extensive research and reported on the production of liquid fuels from oil shale in Tasmania. Their study concluded that it is technically feasible to produce a full range of transport fuels at a production rate of 2MT of shale/year over 20 years, yielding 286 megalitres of shale oil per year.

Table 1: Recent exploration work

| Company | Year | Report | Authors | Work completed | Results/Conclusions |
|--------------------------|---------|---------|-----------------------|--|--|
| Endeavour Oil Co | 1975 | EL 4/74 | Hunt, F.L. | Feasabilisy study oil shale as a bitumen resource | Uneconomic at time Recommend further development work for hotmix usage |
| Endeavour Oil CO | 1975 | EL 4/74 | Nixon, L.G. | drilled 38 holes | possible indication of 42MT of shale |
| Endeavour Oil CO/CRAE | 1981-82 | EL 4/74 | Clementson, I.M. | drilled 135 holes | 42MT of shale indicated |
| CRAE | 1982 | EL 4/74 | Bujtor and Waldrum | Project evaluation mining and bitumen production | Uneconomic Market penetration issues product acceptance time lag 3 yrs |
| Endeavour Oil CO/CRAE | 1983 | EL 4/74 | Clementson et al | Investigation of Tasmanite as Anode Carbon source Investigated use as Bitumen binder | Further work recommendation only if economics improve |

Work Completed for the year to 26 November 2009

Tenement review

During 2009 a staged review of shallow resources across the Latrobe tenement was initiated. The intent was to bring Boss Energy's understanding of shale assets up to date, identify any areas of shale potential previously overlooked, and recommend ongoing work programs. Areas reviewed to date are known from previous literature as Area I (Saggers Hill), Areas II and III (Dinsdales Hill area), and Area V (China Bush Plantation). Three separate reviews are provided as the following appendices to this report:

- Area 1: Appendix 1.
- Areas 2 and 3: Appendix 2.
- Area 5: Appendix 3.

Shallow resources previously quoted by CRA Exploration were checked, and calculations of in ground value of shale resources were made using contained barrels of oil. In general, figures were found to closely match those made by CRAE, however a new, more conservative estimate has been made for shallow resources at the China Bush Plantation site, following Boss Energy drilling in 2007, and extraction of a Bulk sample in 2008. Deep resources calculated by CRAE are unchanged and have not been reviewed.

China Bush Plantation, and the Saggers Hill areas have been identified as having good potential for discovery of further shallow resources. Shallow Oil shale occurrences across the tenement are indicated in figure 2. Resource calculations are shown below in Tables 3-5. Shallow resource potential identified at Saggers Hill and China Bush are shown in figures 3 and 4 respectively

The figures quoted below were calculated using the guidelines of The Australian Standard for Coal Resource Assessment (2003) that has been accepted by NSW and QLD. Under the code, the figures quoted here satisfy the terms of the indicated inventory coal category. It is important to note that these figures are **not a JORC compliant resource** for public reporting purposes, and should not be quoted as such.

Table 2. CRAE resource calculations, from Clementson, 1982¹

| Locality | Av Thickness (m) | Indicated open cut resource (Mt) | Indicated deep resource (Mt) | Possible deep resource (Mt) |
|--|------------------|----------------------------------|------------------------------|-----------------------------|
| Area 1 | | | | |
| W of Saggars H Beneath Saggars Hill | 1.43 | 0.57 | 4.96 | Nil |
| East of saggars Hill | ?1.2 | Nil | Nil | ?1.25 |
| Cherry Hill | 1 | Nil | 1 | ?4.00 |
| | 1.3 | Not tested | 0.78 | ?4.00+ |
| Area 2 | | | | |
| South | 2.05 | ?0.25 | 3.69 | Nil |
| North | 1.7 | ?0.45 | 7.9 | ?7 |
| Area 3 | | | | |
| | 1.82 | 0.73 | 13.8 | ?10 |
| Area 4 Not adequately tested: resource believed to be minimal | | | | |
| Area 5 | | | | |
| North China Flat | 1.3 | 2.2 | Nil | Nil |
| South China Flat | 1.3 | 0.7 | Nil | Nil |
| Southern Extension | 1.13 | ?0.56 | 1.96 | ? |
| Area 6 | | | | |
| | 1.25 | 0.55 | 1.85 | ?0.9 |

Table 3. Boss Energy resource calculation variables

| Variables | Horizon thicknesses(m) | | | |
|-----------------|------------------------|-------------------------------------|---------------|------|
| Horizon Density | 2.1 | Tonnes per cubic metre ² | I | 1.43 |
| Yield | 146 | Litres/Tonne ³ | Area11 North | 1.7 |
| Barrel volume | 159 | Litres | Area 11 South | 2.05 |
| Barrel price | \$80 | Australian Dollars | Area 111 | 1.82 |
| | | | V | 1.25 |

Table 4. Boss Energy shallow resource figures for reviewed areas.

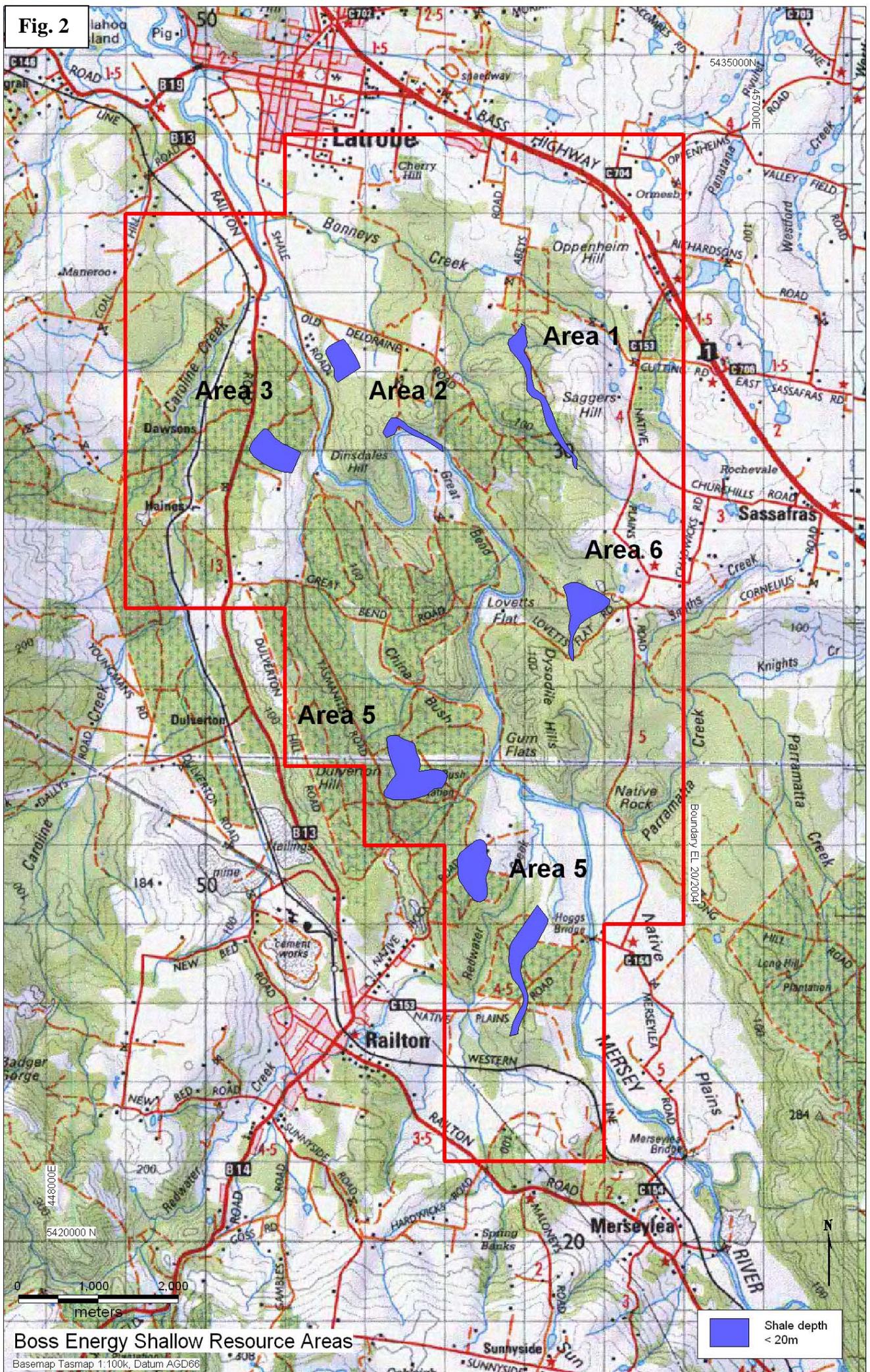
| Area | Location | Category | Area Km ² | Shale Tonnes | Barrels | In Ground Value |
|---------------|----------------|------------|----------------------|--------------|---------|---------------------|
| I | Saggars Hill | <20m depth | 0.1999 | 600,000 | 551,000 | \$44,097,000 |
| Area11 North | Dinsdales Hill | <20m depth | 0.1366 | 488,000 | 448,000 | \$35,823,000 |
| Area 11 South | Dinsdales Hill | <20m depth | 0.07019 | 302,000 | 277,000 | \$22,197,000 |
| Area 111 | Dinsdales Hill | <20m depth | 0.2038 | 779,000 | 715,000 | \$57,219,000 |
| V | China Bush | <20m depth | 0.3688 | 968,000 | 889,000 | \$71,116,000 |
| V | China Bush | <5m depth | 0.08469 | 222,000 | 204,000 | \$16,331,000 |

¹ CRAE resource figures were presented as ‘order of magnitude’ geologically indicated estimates in Clementson, 1982.

² Reported average for entire Tasmanite horizon, Clementson, 1981

³ Overall weighted average oil yield from CRAE drillcore analyses, Clementson, 1981.

Fig. 2

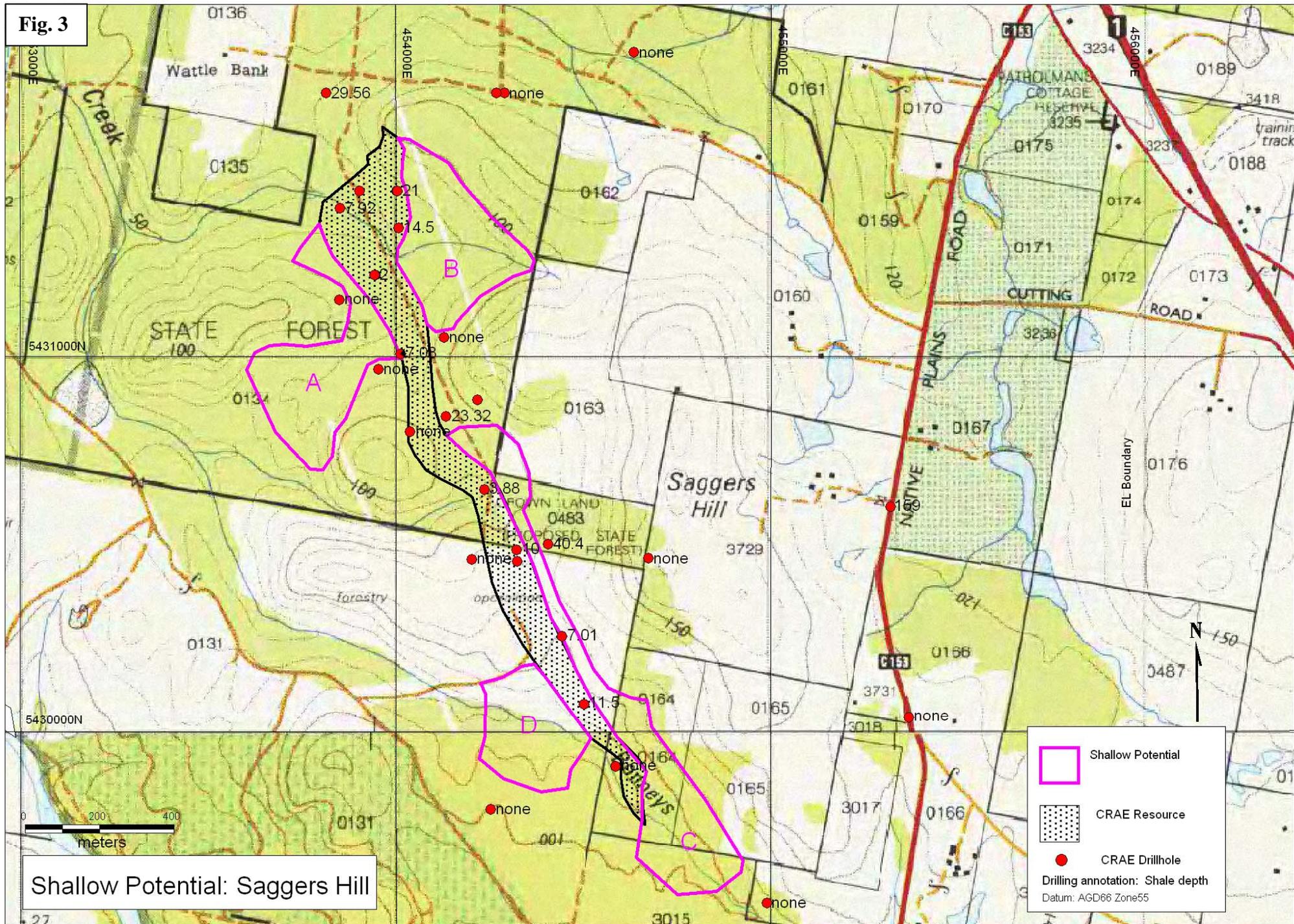


Boss Energy Shallow Resource Areas

Basemap Tasmap 1:100k, Datum AGD66

Shale depth < 20m

Fig. 3



Shallow Potential: Saggers Hill

Fig. 4

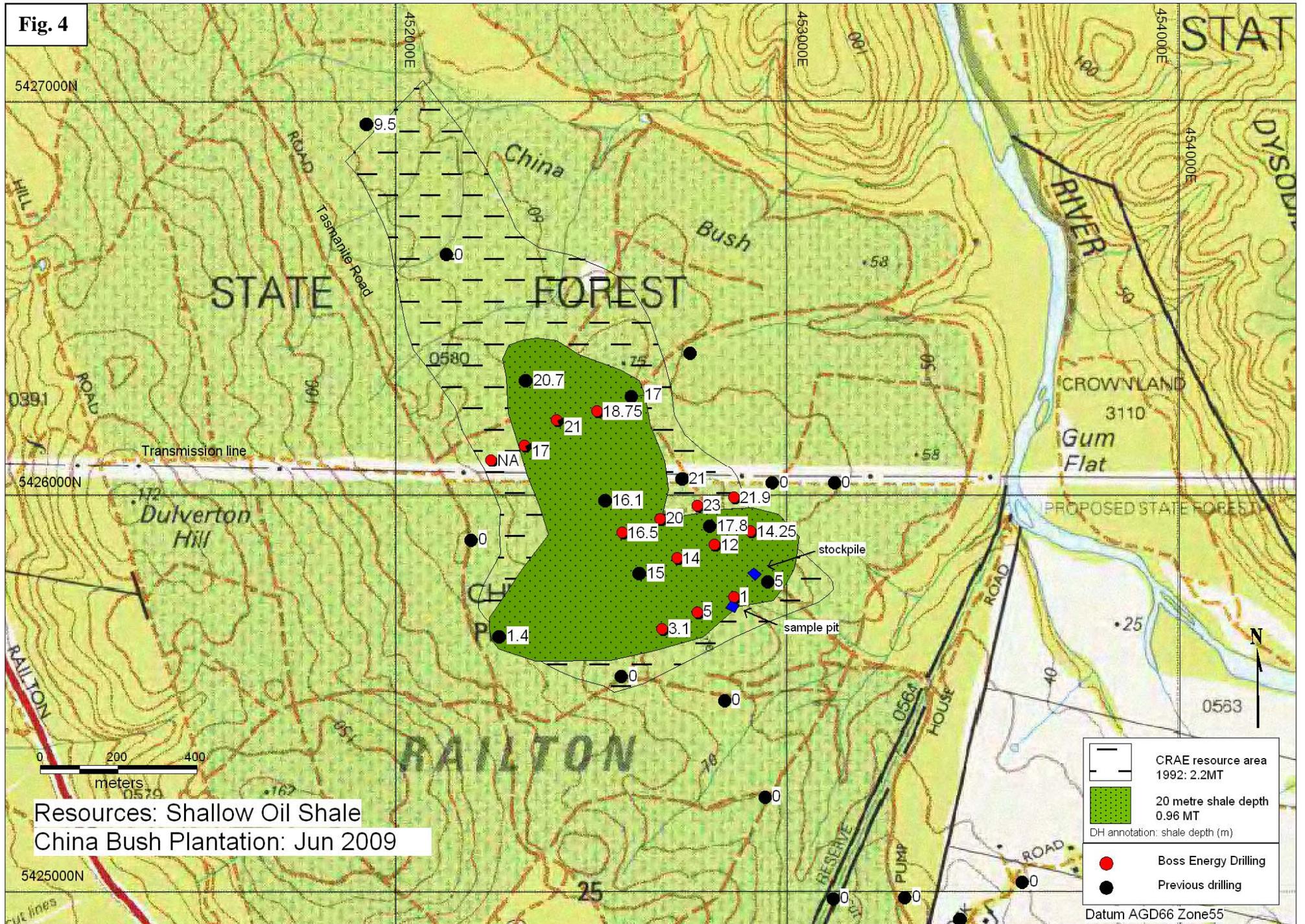
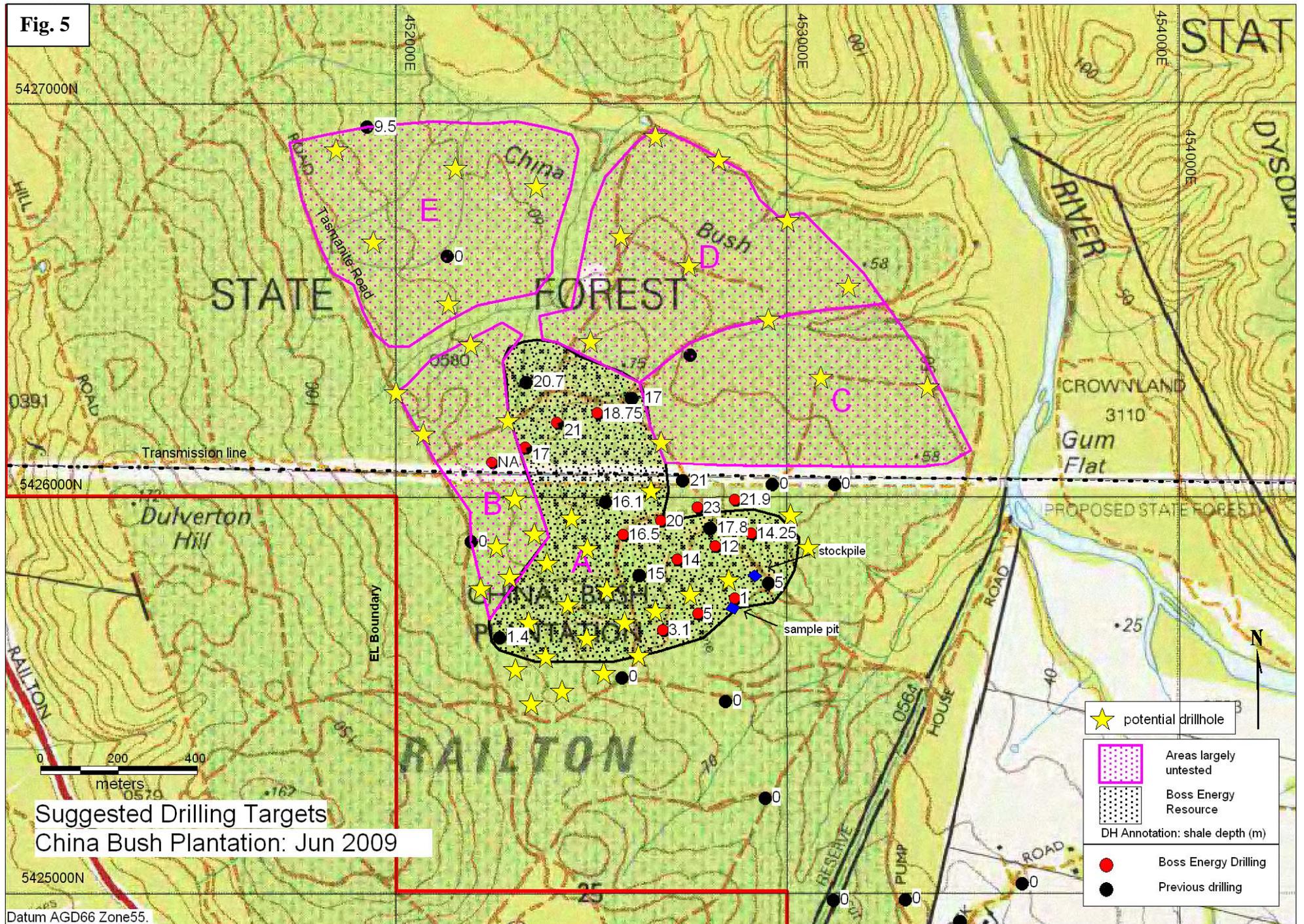


Fig. 5



**Suggested Drilling Targets
China Bush Plantation: Jun 2009**

| | |
|--------------------------------|------------------------|
| | potential drillhole |
| | Areas largely untested |
| | Boss Energy Resource |
| DH Annotation: shale depth (m) | |
| | Boss Energy Drilling |
| | Previous drilling |

Datum AGD66 Zone55.

Dalmat technologies testing

Two 200 litre drums containing crushed oil shale were shipped to Dalmat engineering in Johannesburg for laboratory testing using the Dalmat Carbonization and Energy System scaled vertical retort processing (VRT) technology. A description of Dalmat technologies is provided in Appendix 4. Results are expected to be available in the first quarter of 2010.

Review of oil shale processing technologies

A review of processing technologies which may be suitable for processing the Tasmanite Oil Shale was commissioned with GHD consulting by Boss Energy. The resulting report and description of technologies is provided as Appendix 5

Bitumen sample

Two bitumen samples from old barrels located at the the ruins of the Southern Cross Motor Fuel company processing plant near Latrobe were submitted to Dr John Volkmann at CSIRO in Hobart for analysis, to establish if the samples were from a Tasmanite source. Dr Volkmann (pers comm.) indicated that GCMS analysis of one of the samples did not indicate the Tricyclic compounds that are unique to the Tasmanite oil shale, and that it was possible that the indicative compounds may have been volatilized from the bitumen product. Results were thus inconclusive, and the second sample was not analysed. No formal report was given on the analysis, and due to time constraints and conflicting research focus, further work at the CSIRO facility was ruled out. Bitumen remaining in the rusted drum shown in figure 6 was retrieved with permission from Mineral Resources Tasmania, and Forestry Tasmania, and transferred into a new drum to be held for further analysis.



Figures 6-7 Rusted bitumen barrels in the vicinity of the old shale processing plant at the Warawee reserve near Latrobe.

Analytical results

Results of hydrocarbon fingerprinting analysis of bitumen samples by CSIRO mentioned above were inconclusive, and no formal report was given. No further analytical work was completed during the 2008-2009 period, however results are awaited from a scale test of bulk sample material using the Dalmat Carbonization and Energy System (DCES) process at Dalmat Engineering's test labs in Johannesburg, South Africa (see Appendix 4).

Environment

An inspection of the rehabilitated bulk sample site was made during winter 2008 to assess the progress of natural revegetation. The site was found to be progressing well with re-stocking of dominantly native vegetation within a pine plantation. No re-seeding was carried out, and the area is scheduled to be re-planted with pines by managers Timberlands Pacific.

Periods through the winter of 2008 were subject to much higher rainfall than recent years across Tasmania, resulting in excessive runoff and standing water in many areas. Increased runoff revealed that some improvement might be made to drainage on the access track to the bulk sample site (previously used as a logging access road) Further track work will be considered during summer 2010.



Fig. 8. view across bulk sample pit rehabilitation site



Fig 9. native plants, bulk sample rehabilitation site

Expenditure

The breakdown of expenditure for EL 20/2004 is shown in Table 5 below.

Table 5: Expenditure

| Category | Expenditure |
|-----------------|--------------------|
| Geology | \$18,000.00 |
| Feasibility | \$54,500.00 |
| Administration | \$7,500.00 |
| Other | \$2,642.37 |
| Total | \$82,642.37 |

Proposed Exploration

The standard period for holding of an exploration license expires for EL20/2004 in November 2009. An extension of the exploration license period by 2 years is sought to allow for exploration for further shallow resources, and further testing of the already obtained bulk sample material to identify a potential economic process.

Targeted reviews to identify shallow oil shale in the southern part of the tenement will be concluded in 2010. A drilling program will be carried out at the China Bush site to increase the certainty of the resource in preparation for JORC compliance. Further drilling to test for shallow shale extensions at Sagers Hill and in the southern part of the tenement will be proposed.

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Appendix 1

Report for Boss Energy on Sagers Hill shallow resource area

Appendix 2

Report for Boss Energy on Dinsdales Hill (Areas 2 and 3) shallow resource areas

Appendix 3

Report on Preliminary resource calculations and suggested work program, Area
5, China Bush Plantation site

Appendix 4

Dalmat technologies overview

Appendix 5

GHD Consulting technology screening study, Report for Latrobe Oil Shale
Resource