

Dunmarra Energy

Dunmarra Energy Pty Ltd

ACN 121-564-261

STURT PLATEAU BITUMEN (SPB) PROJECT

BRINGING FORWARD DISCOVERY - GEOPHYSICS AND DRILLING
COLLABORATIONS PROGRAM



Recipient: Dunmarra Energy

Applicable tenement(s): EL's 25596 – 25599

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1 SUMMARY

EL's 25596 – 25599 were applied for by Dunmarra Energy Pty Ltd on the basis of 'coal' being struck during drilling of a water bore. The material was later found to be bitumen, most likely a grahamite (Matthews, I., Evans, P. and James, A., 2007A).

A core drilling program of four holes with a maximum depth of 75 m was originally planned (Matthews, I., Evans, P. and James, A., 2007B). However, lack of available drill rigs and concerns with core recovery using standard diamond drilling methods resulted in the use of reverse circulation down-hole-hammer drilling with large diameter (100 mm) diamond tails being implemented. A total of six holes for 352 m were completed.

Drilling results were disappointing. Multiple, very thin bitumen seams were struck in SPBP No.3, 500 m south-west of discovery water bore, RN 32962. SPBP No.3, 18 m north of the discovery bore struck less than 0.2 m of total bitumen over a 3 – 4 m section of highly fractured and weathered/leached basalt. Due to the poor results, no coring was undertaken.

Although there is evidence that the bitumen within the basalt is widespread, it is likely to be difficult to determine effective targeting techniques.

If the Velkerri Formation is the source rock as is postulated, it follows that bitumen may also have been trapped at the base of the Antrim Plateau Volcanics on the basal unconformity surface. Once again, target generation would be difficult.

Further interpretation of the existing geochemical data sets may assist further in the confirmation of the bitumen source rock.

2 INTRODUCTION

2.1 LOCATION AND ACCESS

The contiguous EL's are located 50 – 100 km west to south-west of Mataranka in an area generally known as the Sturt Plateau. Access is via the NT government maintained Gorrie Road and Western Creek Road and by numerous station tracks. The nominated area is also traversed by the Alice Springs to Darwin railway line. The permits lie on the Larrimah 1:250 000 geological map sheet.

Figure 1 indicates the location of the EL's and the location of the discovery water bore, RN32962.

Small drill pads were completed by Bloodwood Station personnel at two sites, while the other sites were sufficiently clear to enable drilling to proceed with no preparation.

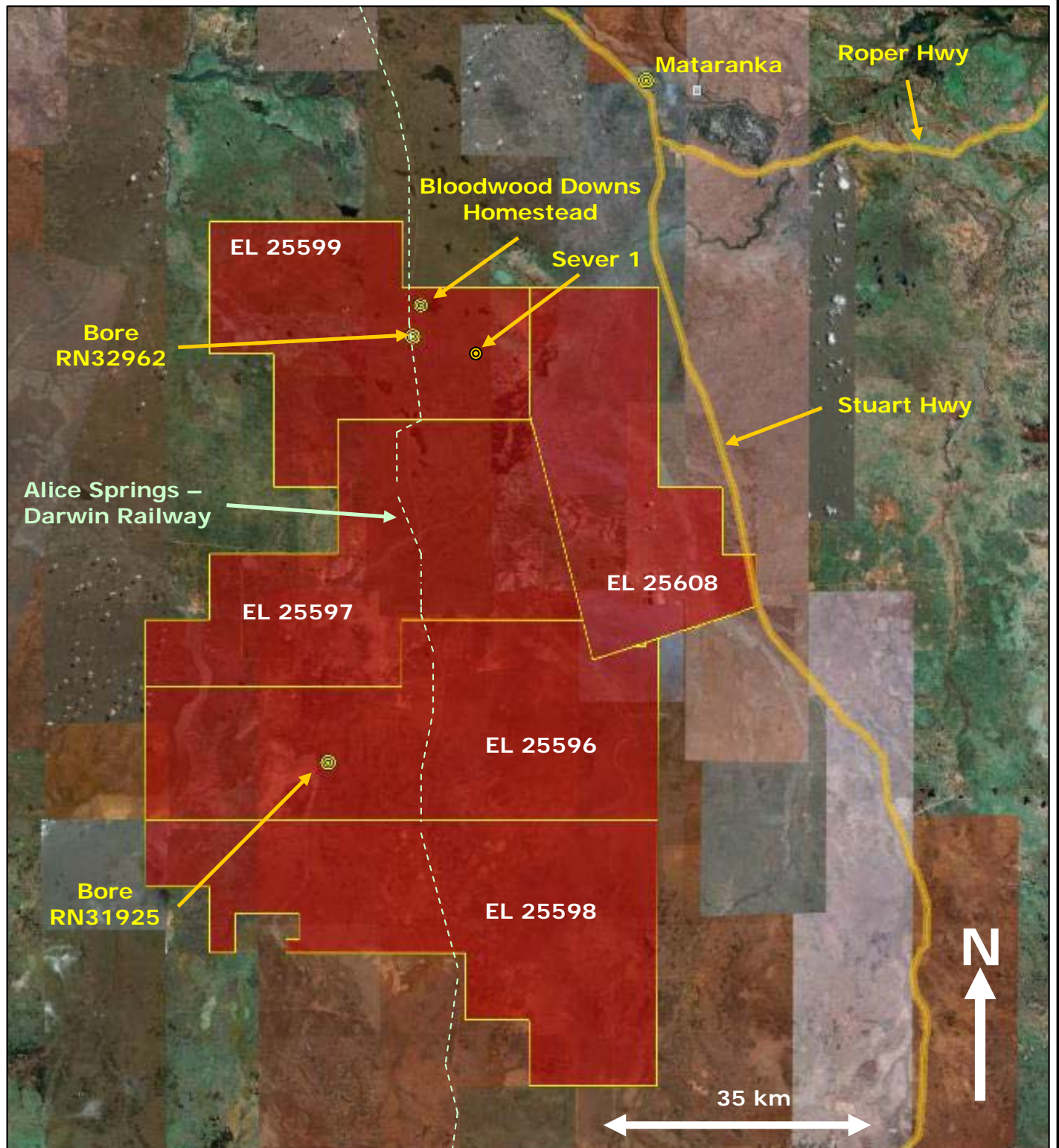


Figure 1
LOCALITY
(base imagery Google Earth)

3 DRILLING METHODOLOGY

Investigations revealed that standard diamond drilling techniques may not be suitable for coring of low-density, very brittle bitumen. Discussions with experienced geologists involved with the central Queensland coal fields suggested that reverse circulation down-hole-hammer drilling with large diameter core tails would be the preferred approach. The advantages included:

- Better ability to cope with possible lost circulation or groundwater inflows;
- Faster penetration rate, particularly through the overlying basalt;
- Core diameters up to 100 mm;
- Reduced meterage rates, and;
- Small, mobile, all-wheel drive equipment.

Dunmarra Energy had initially made arrangements for H2O Mineral Drilling to undertake the initially proposed core drilling during the 2008 field season. As it ultimately transpired, due to mechanical breakdowns H2O Mineral Drilling could not guarantee provision of a suitable drilling rig prior to commencement of the wet season ending the 2008 field season. In response to this issue Wizard Drilling Pty Ltd (Bundaberg, Queensland) was subsequently contracted to provide drilling services. Wizard Drilling was selected in part for its considerable experience in coal drilling at various mines throughout the central Queensland area.

Drilling at the Bloodwood Downs prospect commenced on Friday, 17th October and was completed on Friday, 24th October.

4 RESULTS OF DRILLING

4.1 PROPOSED PROGRAM

With the change in drilling techniques from the initially proposed strategy, it was planned to drill up to 4 holes. The bore hole sites were nominally 500 m north, west, south and south-west of the discovery water bore RN 32962. All holes would be vertical and be subjected to geophysical logging including gamma and SP/SPR.

For at least the first site, it was planned to drill an investigation hole with RC down-hole-hammer to the base of the bitumen and then twin the hole approximately 10 m away and core from just above to just below the bitumen section.

Due to changes with drilling methods and results, the following holes were completed:

Site Identifier	Easting (m) UTM Zone 53L (GDA 94)	Northing (m) UTM Zone 53L (GDA 94)
SPBP No. 1	259,899	8,312,953
SPBP No. 2	259,761	8,313,927
SPBP No. 3	259,345	8,313,440
SPBP No. 4	260,285	8,313,208
SPBP No. 5	259,707	8,313,657
SPBP NO. 6	259,841	8,313,463
Discovery Water Bore RN 32962	259,844	8,313,447

The following report sections provide a succinct description of each of the exploration bore holes. Schematic geological logs are provided in Appendix A through F of this report. Figure 2 provides a location plan for the exploration boreholes.



Figure 2
BORE LOCATION PLAN
(base imagery Google Earth)

4.2 EXPLORATION BORE HOLE SPBP NO. 1

This bore hole was located 2 m west of the access track along the Alice Springs to Darwin railway (Adrail) corridor fence line, 500 m south of discovery water bore RN 32962.

This bore hole encountered fractured and cavernous silcrete from 18.5 – 23 m and airlifted approximately 5 L/s from this zone. Drilling was temporarily abandoned at 36 m due to the significant water flow. Extra surface casing was obtained and set to a depth of 24 m. Completely weathered basalt was encountered beneath the calcrete and gradually become less weathered with increasing depth. Fresh brown basalt was struck at 53 m and drilling ceased at 59 m. No bitumen was encountered.

4.3 EXPLORATION BORE HOLE SPBP NO.2

This bore hole was located 20 m west of the access track along the Adrail corridor fence line, 520 m north of discovery water bore RN 32962.

This bore hole encountered mixed sands and clay with some hard silcrete bands to 9 m overlying soft, white and cream, sandy clay of the Mullaman Beds through to a total depth of 32 m. This bore hole was abandoned at 32 m due to instability of the unusually thick Cretaceous age sediments at this location.

4.4 EXPLORATION BORE HOLE SPBP NO.3

This bore hole was located 500 m due west of the discovery water bore, along an existing fence line / track (see Plate 1).

Soft sandy clays with minor hard silcrete were encountered to 11 m. Completely weathered basalt was encountered through to 32 m with a gradual lessening of weathering through to 48 m. From 48 m to 52 m, extremely fractured basalt with prominent green and white vein fill was struck. Drilling continued through moderately weathered basalt to a total depth of 81 m. No bitumen was encountered.



4.5 EXPLORATION BORE HOLE SPBP NO. 4

This bore hole was located east of the railway corridor, 500 m south-east of the discovery water bore.

In this bore hole typical white, soft sandy clay and hard silcrete was struck above completely weathered basalt at 16 m. Drilling continued through weather basalt to 48 m. From 48 to 52 m, blue-grey fractured basalt with thinly interbedded bitumen was encountered. A number of very thin seams of bitumen (a few millimetres in thickness) were encountered through this section. The bitumen in this borehole was first noted as thin, black mica-like plates floating on top of the drill cutting returns (see Plate 2).

The thickest bitumen section encountered was at approximately 51.5 m and appeared to be < 5 cm thick. The largest chips of bitumen recovered were less than 10 mm in diameter (see Plate 3).

Towards the base of the bitumen section, minor red / brown, fine to medium grained, meta-sandstone was also encountered (see Plate 4). Drilling was abandoned at 58 m in hard red basalt.







4.6 EXPLORATION BORE HOLE SPBP NO. 5

This bore hole was drilled to replace SPBP 2 and was located 230 m north-west of the discovery water bore.

Typical Cretaceous age sediments were encountered in this bore hole to 24 m above completely weathered basalt. Fresh basalt was encountered at 57 m and drilling ceased at 59 m. No bitumen was encountered.

4.7 EXPLORATION BORE HOLE SPBP NO.6

This bore hole was drilled 17 m north of the discovery bore in an effort to obtain a sufficiently thick section of bitumen to make coring worthwhile.

In this bore hole typical Cretaceous age sediments were encountered to 10 m above completely weathered basalt. The bitumen was first encountered at 46 m, with a minor amount of fine black platelets floating on the cutting discharge stream. Weathered and leached basalt (see Plate 5) with a few very thin interbeds of bitumen was encountered to 56 m. From 56 to 58.5 m, fractured and weathered basalt with a vein fill of approximately 5% bitumen was encountered. The largest bitumen veins appeared to be no more than 5 cm thick with individual chips no more than 15 mm in diameter (see Plate 6). Drilling ceased at 63 m in slightly weathered basalt.

Due to the disappointing results, the drilling program was then terminated.

It was not possible to geophysically log any of the holes as the logging equipment road freighted from Brisbane was found to be damaged beyond practical repair at site during forwarding from Dunmarra Energy's Brisbane depot.





4.8 REHABILITATION

The two cleared drill pads have been rehabilitated and four holes have been plugged and abandoned. The PVC surface casing was capped and left in SPBP No.1 as the pastoral landholder (Clayton Dehne) expressed interest in re-constructing the hole for stock use. The casing has also been capped and left on SPBP No. 6 as it is planned to log this bore hole during the 2009 field season. After this proposed logging, this borehole will be plugged and abandoned.

5. CONCLUSIONS

The results of the drilling program were disappointing. It is thought that the total section in the discovery hole was 2 – 3 m thick, while the maximum seam thickness in SPBP No. 6, only 18 metres to the north was probably not more than 0.1 m and the total thickness less than 0.2 m.

It would appear that the bitumen has been emplaced under high pressure. There were numerous very thin bands of bitumen associated with calcite filled fractures within the weathered basalt in SPBP No. 3.

Although there is anecdotal evidence of the bitumen being widespread within the basalt (McMasters, pers com 2002 and Wade, 1924), it will be difficult to generate an exploration targeting method to locate thicker and more laterally extensive emplacements of the bitumen.

If the Velkerri Formation was the source rock for the bitumen, then it is reasonable to assume that a greater proportion of the expelled bitumen would become trapped below the Antrim Plateau Volcanics, rather than intercalated, as identified in this project. Identification of specific drill targets would be extremely difficult. It is noted that despite the presence of the bitumen in the Antrim Plateau Volcanics at the Bloodwood site, the discovery water bore did not encounter bitumen on the unconformity surface between the Antrim Plateau Volcanics and the underlying Precambrian age rocks.

It is considered that the bitumen is a result of vigorous expulsion from the Velkerri Formation. Further interpretation of the geochemical data from the 1980's and 1990's and that undertaken for this project (Fuentes and Volk, 2006 and Gong et al, 2008) would appear to be warranted at this stage. Confirmation of this hypothesis would allow an improved projection of the potential size of economic deposits that could be generated under this model.

The basalts of the Antrim Plateau Volcanics are not typical at the Bloodwood Prospect. In most of the locations where the author has encountered the Antrim Plateau Volcanics away from the Bloodwood Prospect the significantly

weathered zone in this formation has typically been thin (<5 m). In general this basalt is fresh and hard within a few meters of its upper contact and penetration rates with down-hole hammers are usually less than 6 m/hr. The base of weathering at Bloodwood Downs was observed to usually be more than 55 m in this area, and at SPBP No. 3, minor weathering was still evident when drilling ceased at 81 m.

The equipment and personnel supplied by Wizard Drilling performed extremely well during the field program. If the geologic framework as postulated before drilling had ultimately been encountered, the combination of down-hole-hammer with diamond tails would have proved to be an effective exploration strategy.

6. REFERENCES

Fuentes, D., and Volk, H., 2006. Open System Pyrolysis Results of Two Solid Bitumens from the Georgina Basin (2006-9078 and 2006-9079). CSIRO Petroleum Division.

Gong, S., Volk, H., Fuentes, D. and Li, J.J., 2008. Geochemical Evaluation of two solid bitumen abstracts from the McArthur Basin. CSIRO Petroleum Confidential Report No. 08-020.

McMasters, I., 2001. Personal Communication.

Matthews, I., Evans, P. and James, A., 2007A. Sturt Plateau Bitumen (SPB) Project, Annual Report EL's 25596 – 25599. Dunmarra Energy Pty Ltd.

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APPENDIX A

DRILLING LOG SPBP NO.1

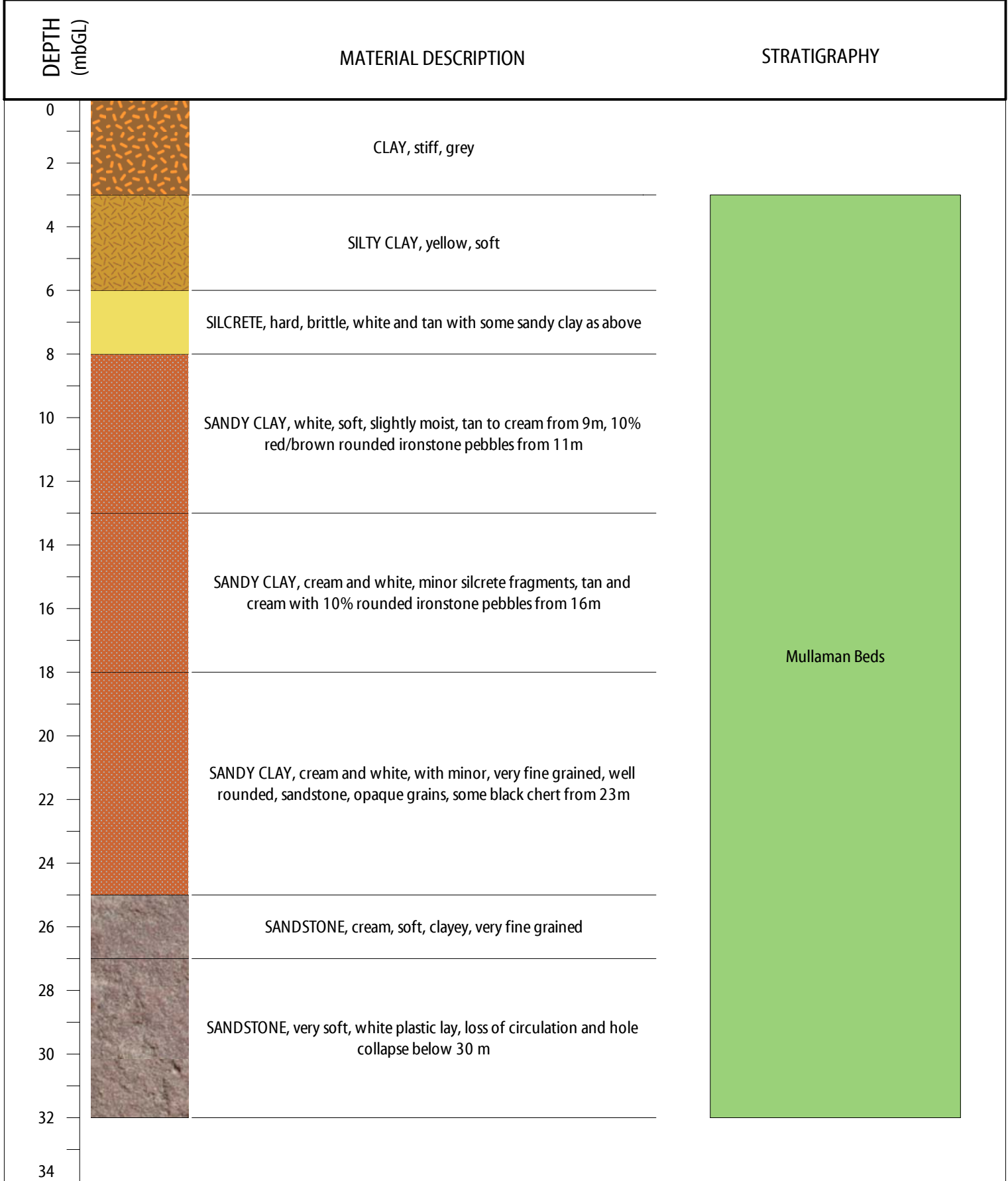
Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.1	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH: 59	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 177	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 259899	NORTHING: 8312953 Coord Sys: MGA94 z53

DEPTH (mbGL)	MATERIAL DESCRIPTION	STRATIGRAPHY	
0			
4	SANDY CLAY, firm, yellow, becomes soft and slightly moist from 4m	Mullaman Beds	
8	SILCRETE, hard, brittle, white and tan with some sandy clay as above		
12	SANDY CLAY, white, gravelly with fragments of coarse white calcrete to 15 mm diameter, soft, slightly moist		
16			
20	SILCRETE, hard, brittle, white, cream and tan, cavernous from 18m with strong water flow (5 L/s)		
24			
28	SANDY CLAY, very light yellow brown with minor light green rock fragments, completely weathered basalt?, minor silcrete fragments		
32	BASALT, HW, red/brown, medium yellow brown to purple brown clay, minor green alteration		Antrim Plateau Volcanics
36			
40	BASALT, HW / MW, dark red brown, fine grained clayey cuttings with chips of weathered basalt that have black staining / mottle		
44	BASALT, HW / MW, blue/green, fine grained clayey cuttings with chips of weathered basalt		
48	BASALT, HW / MW, dark red/brown, fine grained clayey cuttings with chips of weathered basalt, with minor light green amygdales		
52	BASALT, MW, dark red/brown, fresher with depth, larger chips of weathered basalt		
56	BASALT, MW, brown, fine grained clayey cuttings with chips of weathered basalt, common green amygdales		
56	BASALT, red/brown, minor weathering		
60	BASALT, hard, brown, fresh		

APPENDIX B

DRILLING LOG SPBP NO.2

Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.2	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH: 32	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 177	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 259761	NORTHING: 8312927 Coord Sys: MGA94 z53



APPENDIX C

DRILLING LOG SPBP NO.3

Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.3	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH:	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 178	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 259345	NORTHING: 8313440 Coord Sys: MGA94 z53

DEPTH (mbGL)	MATERIAL DESCRIPTION	STRATIGRAPHY	
0	CLAY, grey, hard, stiff, plastic and sticky with depth	Mullaman Beds	
4	SILTY CLAY, light yellow, sandy, hard, stiff and plastic		
8	SILCRETE, cream and tan, hard, brittle		
	SANDY CLAY, white, soft and slightly moist		
	SANDY CLAY, white, medium to coarse grained, minor silcrete fragments, moderately plastic when wetted, slightly moist		
12	CLAY, tan, moist with minor rounded red/brown ironstone pebbles to 10 mm		
16	BASALT, CW, light brown, medium yellow/brown clay		Antrim Plateau Volcanics
20	BASALT, CW, yellow, fine grained sandy cuttings, clayey		
	BASALT, CW, yellow, clayey, bright light green fine grained alteration material		
24	BASALT, HW, dark red brown, fine grained clayey cuttings with chips of weathered basalt		
28			
32	BASALT, MW, tan fine grained clayey cuttings		
36	BASALT, MW/SW, dark brown, with minor white calcite veinfill		
40	BASALT, MW, dark red/brown to dark grey, minor dark grey infill on joint surfaces		
44	BASALT, MW, dark red/brown to dark grey, minor white and dark green infill on joint surfaces		
48	BASALT, MW/SW, dark red/brown to dark grey, minor white and dark green infill on joint surfaces, harder than above		
52	BASALT, MW, dark red/brown, fractured, increased white and green veinfill		
56	BASALT, EW, soft, light grey/green, minor fractures		
60	BASALT, red brown, amygdaloidal with green amygdale infills		
64	BASALT, brown, fresh, hard		
	BASALT, dark grey, fresh, hard		
68	BASALT, SW, red/brown and red, red fracture fill material		
72	BASALT, SW, brown and red		
	BASALT, SW, light brown, with green amygdales		
76	BASALT, grey, hard, fresh with green amygdales		
80	BASALT, SW, red/brown, amygdaloidal		
84			

APPENDIX D

DRILLING LOG SPBP NO.4

Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.4	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH:	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 178	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 260285	NORTHING: 8313208 Coord Sys: MGA94 z53

DEPTH (mbGL)	MATERIAL DESCRIPTION	STRATIGRAPHY
0	CLAY, black, hard when dry	Mullaman Beds
4	SILTY CLAY, light yellow brown, sandy, hard / stiff, plastic & sticky when wetted, fine	
8	SANDY CLAY, white, medium - coarse grained, coarse massive silcrete fragments, moderately plastic when wetted, very slightly moist	
12	SANDY CLAY, white, soft, slightly moist	
14	SILCRETE, tan and cream, hard, brittle	
15	SANDSTONE, white, very fine grained, very soft with soft, white plastic clay	
16	SANDSTONE, white, very fine grained, firm, sticky, yellow sandy clay	
18	CLAY, CW basalt?, very light yellow brown, soft, plastic, numerous fragments of bright light green coloured rock, gravelly	
20	BASALT, CW, light brown, medium yellow brown to purple brown sandy clay, minor green alteration	
22	CLAY, CW basalt?, very light yellow brown, soft, plastic, numerous fragments of bright light green coloured rock, gravelly	
24	BASALT, CW, dark brown, clayey, with minor hard brown chert	
28	BASALT, EW, dark brown, clayey, minor limonite on fracture planes and some light green fine grained alteration material	
32	BASALT, CW, tan, fine grained clayey cuttings with chips of weathered basalt and minor silcrete	
36	BASALT, HW / MW, dark brown, some light green fine grained alteration	
40	BASALT, HW / MW, grey/blue, with minor green amygdales	
44	BASALT, HW / MW, grey/blue, with minor green amygdales, minor pyrite	
48	CLAY, white, soft	Antrim Plateau Volcanics
49	BASALT, HW / MW, grey/blue, with minor green amygdales	
50	BASALT, HW / MW, grey/blue, with minor green amygdales, with minor black, brittle bitumen floating on discharge plume	
51	BASALT, grey/green, minor fractures, with bitumen and calcite on fracture planes up to a few centimetres thick?	
52	BASALT, red/brown, with minor red, fine to medium grained, well rounded and sorted meta-sandstone	
56	BASALT, red/brown,	
60	BASALT, red, fresh, hard	

APPENDIX E

DRILLING LOG SPBP NO.5

Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.5	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH:	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 177	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 259707	NORTHING: 8313657 Coord Sys: MGA94 z53

DEPTH (mbGL)	MATERIAL DESCRIPTION	STRATIGRAPHY	
0	SILTY CLAY, light yellow brown, hard / stiff, dry	Mullaman Beds	
4	SILTY / SANDY CLAY, yellow, hard / stiff		
8	SANDY CLAY, white, gravelly with fragments of coarse white silcrete to 15 mm diameter, soft, slightly moist		
12	SILCRETE, tan, yellow and cream, hard and brittle		
16	SANDY CLAY, very light yellow and cream, with minor red/brown, rounded, ironstone pebbles to 5 mm		
20	SILCRETE, tan, yellow and cream, hard and brittle		
24	SANDY CLAY, very light yellow and cream, with minor red/brown, rounded, ironstone pebbles to 5 mm		
28	BASALT, CW, light brown, medium yellow brown to purple brown clay, minor green alteration		Antrim Plateau Volcanics
32	BASALT, CW, light brown, medium yellow/brown to brown sandy clay, minor bright, light green alteration		
36	BASALT, HW / MW, dark red brown, fine grained clayey cuttings with chips of weathered basalt that have black staining / mottle		
40	BASALT, HW / MW, dark grey, minor amygdales, minor fractures		
44	BASALT, MW, dark grey and minor red/brown, minor black staining on fracture planes		
48	BASALT, SW, dark red/brown, minor green amygdales		
52			
56			
60			

APPENDIX F

DRILLING LOG SPBP NO.6

Dunmarra Energy	Dunmarra Energy	BLOODWOOD DOWNS PROSPECT	
LOG OF BORE NO.:	SPBP No.6	CHIP LOGGED BY: Ian Mathews	CHECKED BY: Peter Evans
REGISTERED NO:	NA	DATE STARTED:	DATE COMPLETED:
DRILLING CONTRACTOR:	Wizard Drilling	TOTAL DEPTH:	REFERENCE POINT: Ground Surface
DRILLING METHOD:	Rotary - Air	NATURAL SURFACE ELEVATION (mAHD): 177	
DRILLING EQUIPMENT:	Modified Jacro 500 - Top drive	SWL (mbGL): NA	Measurement Date: NA
SAMPLING METHOD:	Disturbed	EASTING: 259841	NORTHING: 8313463 Coord Sys: MGA94 z53

DEPTH (mbGL)	MATERIAL DESCRIPTION	STRATIGRAPHY
0	SILTY CLAY, light yellow brown, hard / stiff, dry	Mullaman Beds
4	SILTY CLAY, light yellow brown, hard / stiff, dry, with a few thin bands of grey silty clay and a few thin bands of white silcrete SILCRETE, white, tan and yellow, hard, brittle, with thin bands of grey and yellow clay	
8	SANDY CLAY, white, gravelly with red/brown, rounded ironstone pebbles, soft, slightly moist	
12	GRAVELLY CLAY = CW basalt?, light yellow brown sandy clay with numerous fragments of bright light green coloured rock	
16	SANDY CLAY, very light yellow brown with minor light green rock fragments = CW basalt, minor and ironstone chert fragments	
20	GRAVELLY CLAY = CW basalt, light yellow brown with numerous fragments of bright light green coloured rock BASALT, CW light brown, medium yellow brown to purple brown sandy clay, minor green alteration	
24	BASALT, CW, light brown, yellow/brown to purple brown clay, minor green alteration	
28	BASALT, EW, dark red brown, clayey, some light green fine grained alteration material	
32	BASALT, EW, dark red brown, clayey, some light green fine grained alteration material, slightly less weathered	
36	BASALT, EW, dark red brown, clayey, some light green fine grained alteration material, slightly less weathered	
40	BASALT, HW, dark blue/grey, fine grained clayey cuttings with chips of weathered basalt BASALT, HW / MW, dark red brown, fine grained clayey cuttings with chips of weathered basalt, with minor & thin light grey green infill on joint surfaces	
44	BASALT, MW, dark grey/green, with minor & thin light grey green infill on joint surfaces, very minor black floating bitumen flakes	
48	BASALT, MW, dark red brown, with minor green amygdales BASALT, grey/green/brown, fresh, hard, finer grained than above	
52	BASALT, MW, firm, light tan basalt with prominent feldspar, minor black mineralisation on fracture planes BASALT, MW, firm, light tan, leached?, common black mineralisation on fracture planes	
56	BASALT, MW, firm, light tan, leached?, common black mineralisation on fracture planes, with a few floating bitumen plates BASALT, MW, firm, light tan, leached?, common black mineralisation on fracture planes	
60	BASALT, MW, heavily leached?, firm, heavily fractured with black mineralisation on fracture planes, moderate amount of bitumen, chips to 15 mm BASALT, dark red/brown, firm, with green amygdales	
64	BASALT, red/brown, hard, with minor green amygdales BASALT, red brown, fresh, hard	