# PART 5

# BE08 MARYBOROUGH SEISMIC SURVEY

## SEISMIC SURVEY REPORT

## ATP 613P – QUEENSLAND

**Lines**
**BE08-23**
**BE08-24**
**BE08-25**

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# 1.0 INTRODUCTION

During the period from the 4th to the 16th of November in 2008 Velseis of 83 Jijaws Street Sumner Park qld 4074 acquired 25.26km of seismic data consisting of three lines. The data was recorded using a 10m station interval and 120 live channels. MiniSosie was used as the data source and these conducted between pegs at every second station creating 60 fold data. This seismic was the initial phase of seismic acquired by Blue Energy Limited in ATP 613P.

Surveying, chaining and pegging was conducted by Klau Geomatics Pty Ltd of 2 Weemala Cr, Bawley Point NSW 2539 between the 3rd of and 10th of October. They have provided a report on their operations which is included as Appendix D of this report.

The survey was processed by Fugro Seismic Imaging Pty Ltd., 69 Outram Street, West Perth WA 6005 between November 2008 and January 2009.

# 2.0 LOCATION

The survey is located within 20km to the north of the town of Maryborough and 30km south west from Hervey Bay in south east Queensland. The survey area overlies the Burrum Syncline of the Maryborough Basin

The main objective of the survey is to determine the depth and structure of the coals of the Burrum Coal Measures.

# 3.0 GEOLOGY

The BE08 Maryborough Seismic Survey was conducted in the Burrum Syncline of the Late Triassic to Cretaceous Maryborough Basin. The target was the Cretaceous Burrum Coal Meassures.

## 3.1 MARYBOROUGH BASIN

The Maryborough Basin is a north west to south east oriented basin covering 25,000km2 of which 10,000km2 lies onshore. It is bound in the west by the Electra Fault system and on the eastern offshore margin by basement metamorphic on the Bunker Ridge. The Basin may be continuous in the south with the Nambour Basin and may be contiguous over the Bunker Ridge to the east with the Capricorn Basin. It is considered to be contemporaneous with the Surat Basin (Benbow & Roe 1994).

The Maryborough Basin was initiated in the late Triassic with extension resulting in subsidence to the east of the Electra Fault system. Initital sedimentation was the fluviatile Myrtle Creek

Sandstone followed by the fluvial/deltaic and lacustrine Tiaro Coal Measures.

Early Cretaceous rifting and volcanism, as is evident in the volcanic and tuffs of the Grahams Creek Formation, resulted in a marine incursion of the Maryborough Formation. This was followed by the fluvial/deltaic and lacustrine Burrum Coal Measures (Hill 1991).

Late Cretaceous deformation produced a number of north west trending assymetrical anticlines and synclines, high angle faults and low angle reverse faults in the Susan River area. Uplift associated with this event elevated the basin by more than 5km which has subsequently been peneplaned.

Palaeocene rifting resulting in down warping and faulting preserved the present basin (Hill 1991). It is overlain in areas by Tertiary sandstones and basalts of the Elliot Formation.

### 3.1.1 Burrum Coal Measures

The Burrum Coal Measures contains coals in the fining upward cycles with terrestrial sandstones and siltstones building to about 1700m thickness. The coal seams are mostly found in a 500m interval toward the middle of the unit (Thornton 1995).

The Burrum coals are preserved primarily in the centre of two synclinal areas, the Burrum and PIG Creek Synclines where they extend down to a depth of 600m.

There is no seismic or borehole data within the Burrum Syncline.

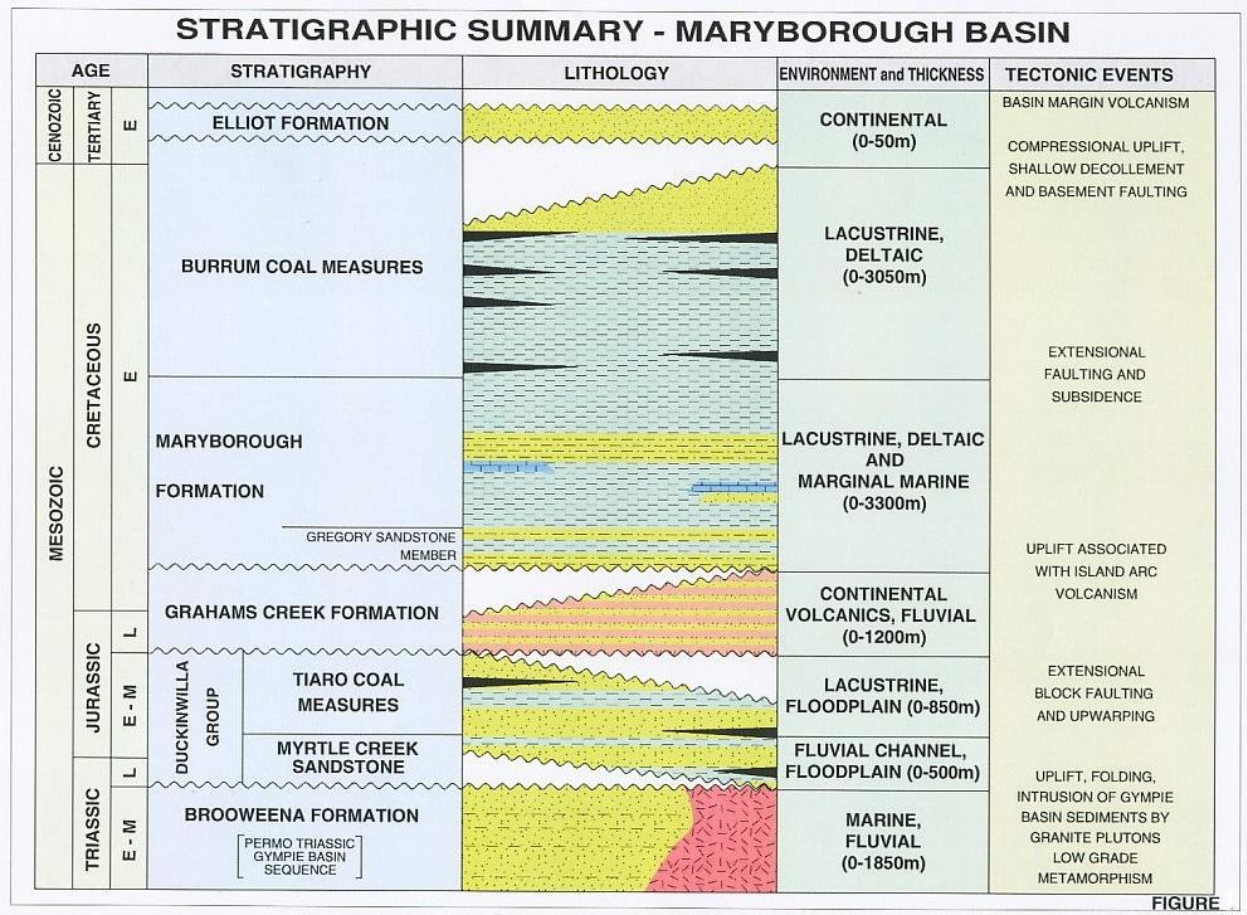


**Figure 1 Stratigraphy of the Maryborough Basin**

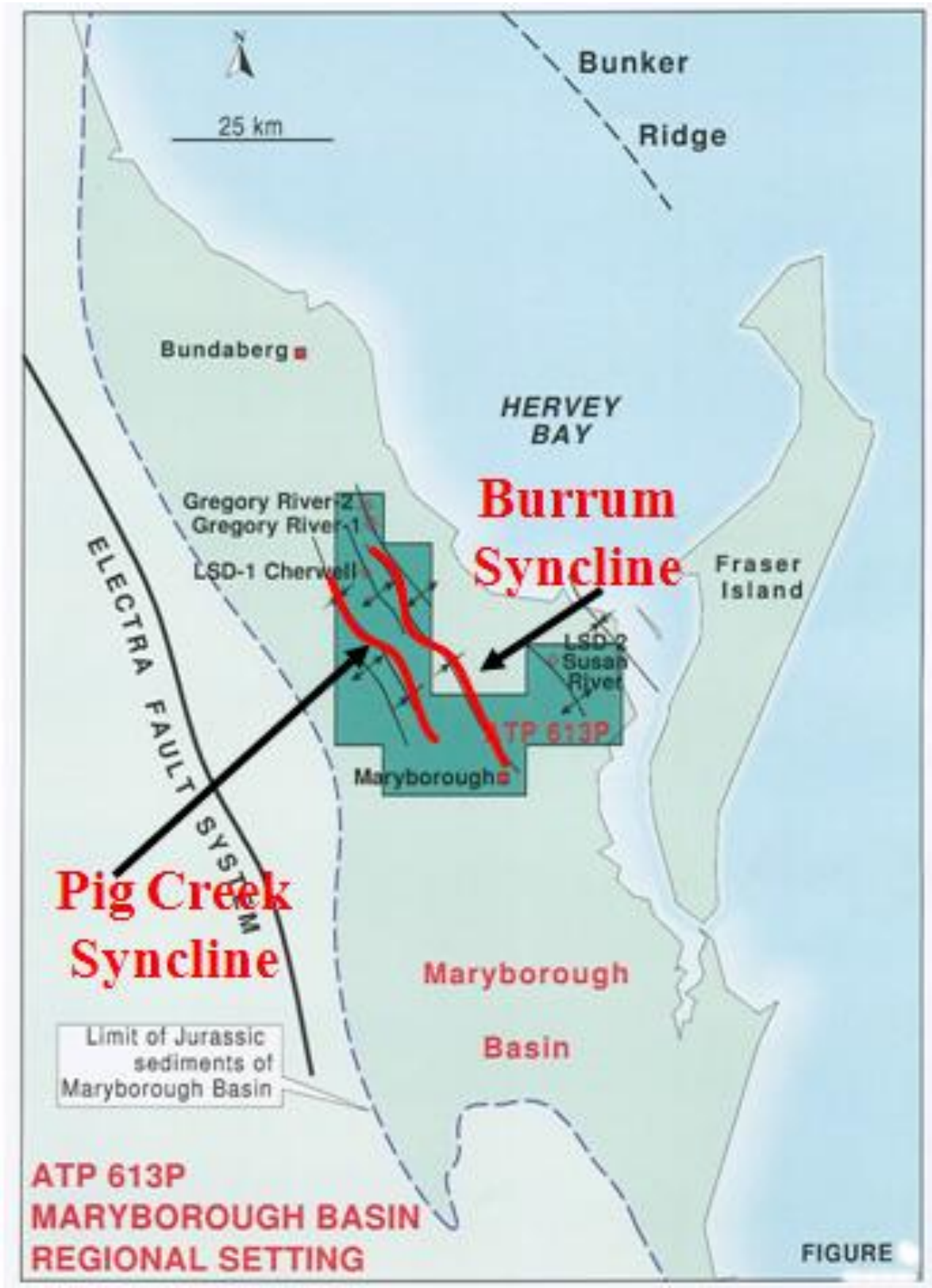


**Figure 2 Structural setting of the Maryborough Basin**

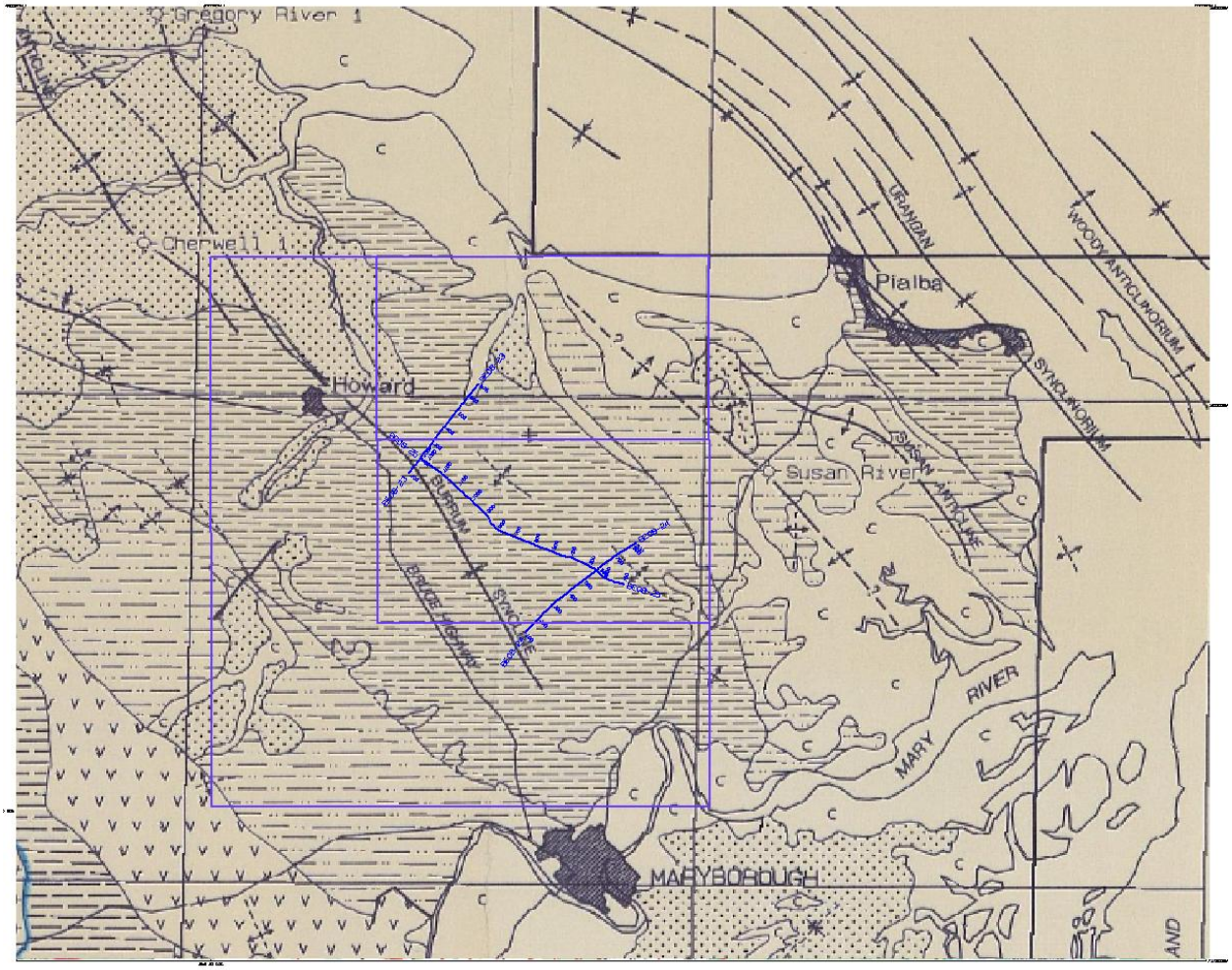


**Figure 3 BE08 Maryborough seismic survey on the structural elements of the Maryborough Basin**

## 4.0 ATP 613P

The BE08 Maryborough Seismic Survey consisted of three lines and was conducted within the Burrum Syncline

Blue Energy has entered into ATP 613P as a farmin with Magellan petroleum. It has been recently announced that subject to fulfilling certain requirements, Blue Energy may hold a 75% interest in ATP 613P, 674P and 733P an area totaling 3,514km2.

The acquisition of the BE08 Maryborough survey complies with a work commitment made under ATP613P to the Queensland Department of Mines and Energy to undertake 100km of seismic survey.

## 4.1 PREVIOUS SURVEYS

The Maryborough Basin was initially explored by the Isis Petroleum Company in the 1920's. This was followed by the Lucky Strike Drilling Company in the 1950's which acquired 108km of seismic in 1958, followed by the Pacific American oil Company which acquired 69km of single fold data principally in the Pialba and Susan River Regions. In 1964 Shell acquired 522km of single fold data.

In the modern era Magellan Petroleum have held this block since 1991 and have conducted five separate seismic surveys in areas adjacent to but not intersecting the BE08-Maryborough survey:

| Year | Survey | Prefix | Operator |
|---|---|---|---|
| 1993 | Susan River | M93-SR | Magellan Petroleum |
| 1996 | Harwood Creek | M96HC | Magellan Petroleum |
| 1998 | Maryborororoug | M98-MB | Magellan Petroleum |
| 2000 | Susan River | M00-SR | Magellan Petroleum |

**Table 1 previous seismic surveys**

## 4.2 WELL CORRELATION

POG Gregory River 1 a conventional petroleum well, was drilled to 3160m depth to intersect Graham Creek Volcanics at 3136m. The Burrum Coal Meassures was encountered from 20m to 689m.

MGN Burrum 1 is a coal seam methane exploration well drilled to a total depth of 438m into the Burrum Coal Measure sequence. It is not situated on or near any seismic line. A Density log has been run. The well is situated 4.5km north west from the end of seismic line BE08-25.

MGN Burrum 2 is a coal seam methane exploration well drilled to a depth of 545m within the Burrum Coal Measure sequence. A Density log has been run over most of the hole depth. The well is situated 4.2km north west from the end of line BE08-25.

# 5.0 OPERATIONS

## 5.1 ACQUISITION

The data was acquired between the 4th and 14th of November 2008 by Velseis Pty Ltd, 83 Jijaws St Sumner Park Queensland. They have provided an operations report which is included as Appendix H of this report.

| Line | Start VP | End VP | Km | Dates Shot |
|---|---|---|---|---|
| BE08-23 | 100 | 676 | 5.76 | 12th-14th- |
| BE08-24 | 100 | 822 | 7.22 | 4th 7th |
| BE08-25 | 100 | 1328 | 12.28 | 7th-12th |
| **TOTAL** | | | **25.26** | |

**Table 2 line statistics**

## 5.2 PROCESSING

The data was processed by Fugro Seismic Imaging Pty Ltd., 69 Outram Street, West Perth WA They have provided a processing report which is included as Appendix K of this report.

## 5.3 INTERPRETATION

The coaly section of the Burrum Coal Measures lies in the middle 500m of the unit. The coaly sequence appears as a higher amplitude subparrallel bifurcating seismic facies reflecting the discontinuous nature of the coal seams. The top of the coal measure sequence is apparent as a high amplitude reflector.

# 6.0 PROSPECTS AND LEADS

The survey is based on Coal Bed Methane exploration requirements where potential closures with potential for free flowing gas are not the targets. What is required is to determine the structural nature of the top coal surface.

The top coal surface of the Burrum Coal Measures forms an assymetrical syncline with steeper western limbs. At the centre of the syncline the top of the coal measures is at almost 500m depth. The coal seam interval is up to 500m thick.


**Figure 4 shoptpoint basemap of the BE08 Maryborough seismic Survey**

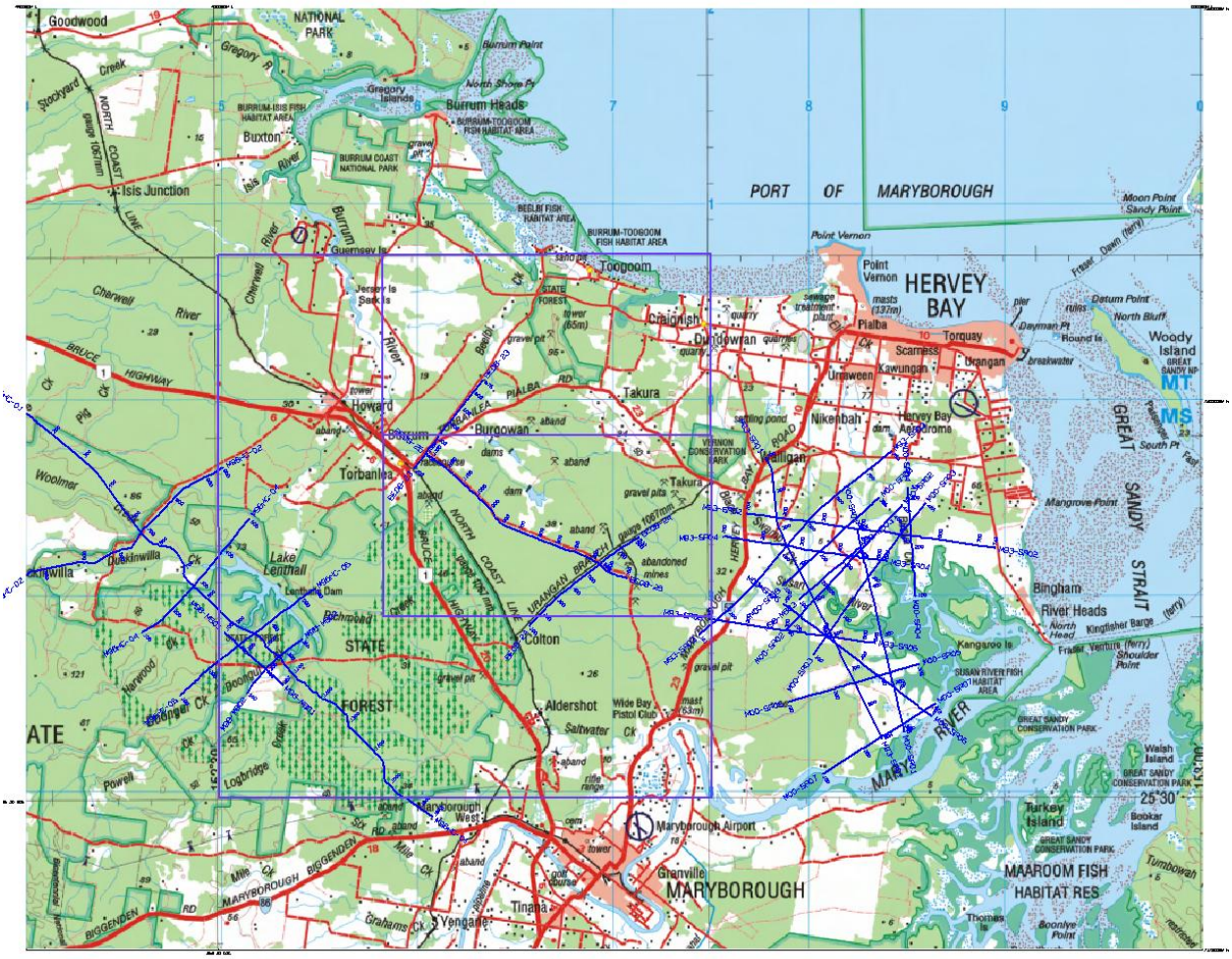


**Figure 5 Shotpoint basemap showing BE08 Maryborough and existing seismic surveys within and adjacent to ATP 613P**

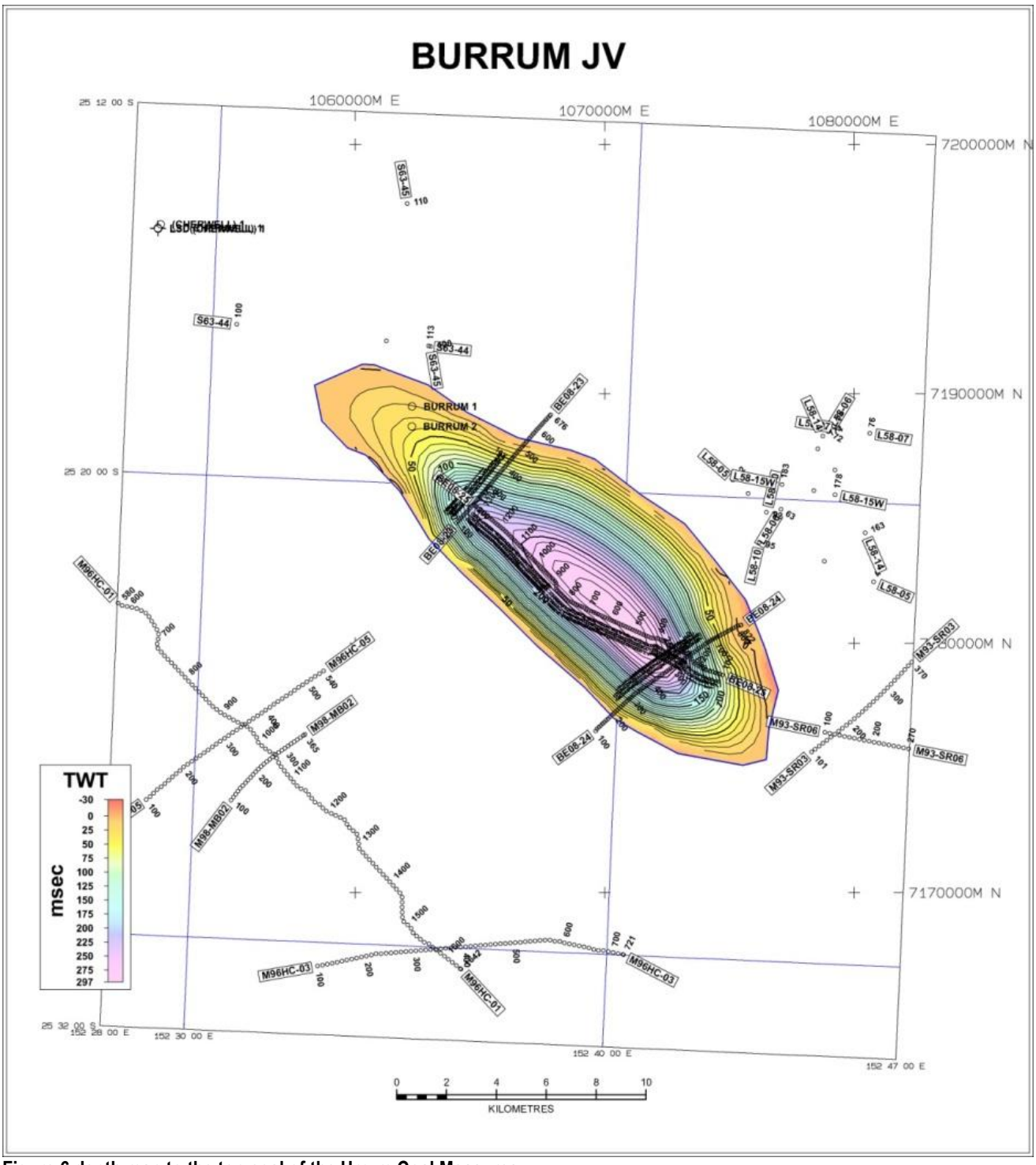


**Figure 6 depth map to the top coal of the Urrum Coal Measures**

# 7.0 REFERENCES


BENBOW, D.D. & ROE L., 1994: Susan River Prospect, Maryborough Basin, Queensland, Australia for Magellan Petroleum Australia Ltd: *Queensland Department of Mines Open File*, CR28318B.

HILL, P.J. 1991: Maryborough and Capricorn Basins – New Geophysical Data. In Draper J.J. editor *Proceedings of the 13th annual PESA(Qld)-ODCAA-SPE Petroleum Symposium*, 70-82.

THORNTON, M.P., 1995: Maryborough Basin, Queensland. *In*: Ward, C.R., Harrington, H.J., Mallett, C.W. & Beeston, J.W. (editor): *Geology of Australian Coal Basins*, Special Publication, **1**.

# 8.0 INTERPRETED SECTIONS