



HardRock Coal Mining Pty Ltd  
ACN: 150 741 094

## **ANNUAL REPORT FOR**

### **EXPLORATION LICENCE EL16/2010**

**Period covered:** 1<sup>st</sup> November 2014 to 31<sup>st</sup> October 2015

**Licensee:** Hardrock Investments Pty Ltd  
P.O. Box 3051  
Prahan East. VIC 3181

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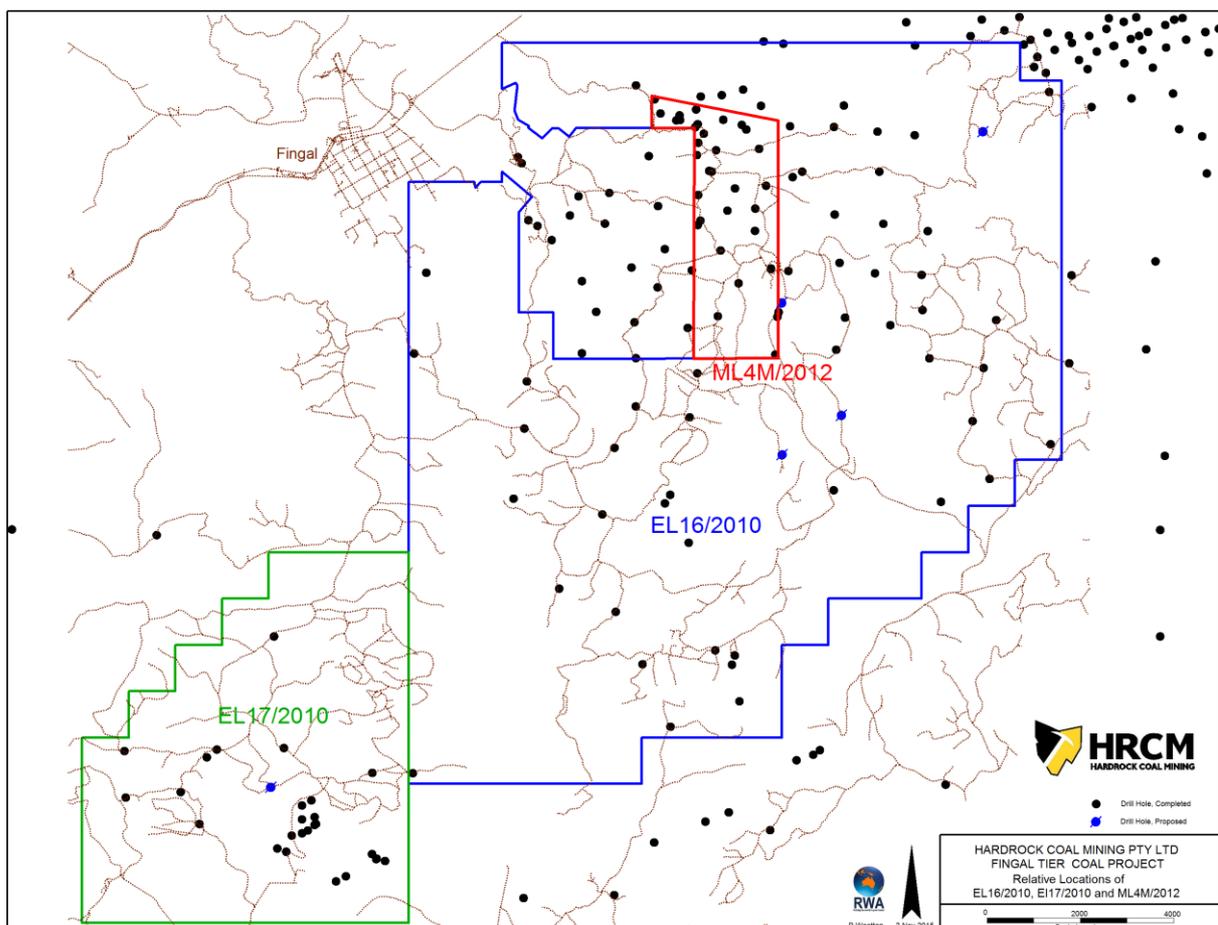
**Publication date:** 8<sup>th</sup> November 2015

## ABSTRACT

The original boundary of Exploration Licence EL16/2010 virtually encircled Mining Lease 1653P/M which contains the now closed Duncan Mine. In September 2013 a section of the Exploration Licence on the eastern side of Mining Lease 1653P/M and in the centre of EL16/2010 became Mining Lease 4M/2012 and the exploration objective within the remainder of the licence area became to further define coal resources, particularly those adjacent to Mining Lease 4M/2012.

There has been considerable exploration drilling in the licence area, firstly by the Tasmanian Department of Mines in the 1970's & 1980's and recently by HardRock Coal Mining (HRCM). EL16/2010 is considered by HRCM to be part of a larger exploration area that includes EL17/2010 and 4M/2012 and as such there is a single geological model which covers the area. The model and JORC compliant resource statement are, by agreement with Mineral Resources Tasmania (MRT), confidential at this stage.

The relativity of the three domains is shown below with EL16/2010 outlined in blue. The black dots represent the drillholes that are contained within the HRCM database (214 in total).



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## 1 Introduction

### 1.1 Licence Area, Report Datum, Reporting Period

EL16/2010 originally covered an area of 166 km<sup>2</sup> which has been effectively reduced to 156 km<sup>2</sup> following granting of the mining lease. The original boundary is shown on the appended **Figure 1**, which is the plan contained in the licence document. It is located immediately south east of Fingal township. The Report Datum is GDA94 (MGA Zone 55) and the reporting period is from November 2014 to November 2015.

### 1.2 Exploration Rationale

The aim of exploration on EL16/2010 is to further define the coal resource within the licence area, particularly the resources adjacent to Mining Lease 4M/2012.

### 1.3 Geological Setting

The coal seams of interest lie within the Triassic Upper Parmeener Super Group. The upper limit is defined by outcrop or the overlying Jurassic Dolerite which forms a discordant upper limit to the coal measures. The base of coal bearing strata is defined by a formation highlighted by the presence of white quartz rich sandstone beds.

Large volumes of Jurassic dolerite have intruded the Parmeener Supergroup stratigraphy, and in the project area dolerite outcrop up to >400metres thickness covers most of the coal measures. Cainozoic tectonic rifting and periglacial landscape development processes through the Fingal Valley have produced the escarpment and benched dolerite talus slope morphology which characterizes the landscape of the project area.

Surface geology is shown on the appended **Figure 2**, which is from the MRT 1:25,000 geological map series.

### 1.4 Coal Measures Geology

The coal seams are hosted within an approximate thickness of 250 metres of fluvial lithic sandstones and minor siltstones, argillic and carbonaceous mudstones, and minor air fall volcanoclastics.

There are 8 coal horizons which are identified simply "A" to "H" Seams in descending order. Seams F and G have significant areas of economic thickness and coal quality in EL16. The other coal beds are either removed by the dolerite or are generally represented by minor coal or carbonaceous shale bands. At the regional scale the coal measures show a south easterly dip of 1-2°.

The F Seam is equivalent to the Duncan Seam worked in Duncan Colliery and is the target seam. The G Seam has been identified as the East Fingal Seam from drilling carried out in the early 1980s and there is a short entry into the seam at the old Valley No2 mine.

### 1.5 Other Information

The tenement holder and licence owner is HardRock Investments Pty Ltd of P.O. Box 3051, Prahan East, VIC 3181. There is no joint venture structure and there have been no title transfers during the reporting period.

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## 2 Review of Previous Work

The following review of previous exploration activities have been carried out by HRCM.

### 2.1 Literature Review

Reports and documents relating to previous exploration and mining activities have been reviewed. Drillhole, mining and geological mapping data have been entered into databases established by HRCM for the Fingal Tier coal project. In addition within and immediately adjacent a further 82 holes totaling 7258 metres of drilling have been identified and the reports downloaded from the MRT website. This data has been entered into HRCM Fingal Tier data base and will be used to remodel the Fingal Tier coal geology and reappraise coal resources in the project area.

### 2.2 Air-photo Interpretation

The extent of Jurassic dolerite was mapped from aerial photographs and access for geological mapping and drill sites were assessed.

### 2.3 Surface Mapping

The extent of dolerite and surface talus were confirmed as drill site access for the planned holes was checked.

## 3 Exploration

### 3.1 Desktop Studies

Work continued on locating and inputting of historical drill records and associated data into the geological model.

### 3.2 Regional Exploration Activities

No regional exploration was conducted in 2013-2014

### 3.3 Prospect-based Exploration Activities

#### 3.3.1 Drilling

Three drill holes, DR02 in the south west of EL17/2010 and VR11 and VR12A in the Valley Road area were completed during the reporting period. Note that DR02 was originally planned to be within EL17/2010 but operation constraints required the drillhole to be moved just east of the EL17/EL16 boundary. The location of these drillholes is shown on appended **Figure 3**.

DR02 penetrated dolerite to well below the estimated base of coal bearing strata. VR11 and VR12A both encountered economic coal in the F and G seams. These two holes were geophysically logged and the coal core submitted for analysis. VR12A was drilled to verify Seam F thickness and quality in that area of EL16/2010. Information from DoM31 suggested a coal horizon existed but no supporting information was available.

Due to poor ground conditions 85 metres from the end of the original hole, VR12 was abandoned and wedged off at 354m, The deflected section reached target depth below G seam.

The comparison between Dom31 and VR12A is provided in the appended **Figure 4**. The graphic logs of the relevant section of the two drillholes are shown side by side. It clearly

shows that the F Seam has an economic thickness of 2.50 metres in VR12A and confirms that core loss of the F seam occurred in DoM31 for some reason.

Drillhole location and depth is summarised below:

Hole	Easting	Northing	Elevation	Total depth
<b>DR02</b>	582,090	5,376,230	662	399.6
<b>VR11</b>	589,997	5,386,386	759	513.5
<b>VR12A</b>	590,233	5,389,104	833	510.0

### 3.3.2 Geophysical Logging

Where the drillhole penetrated coal seams geophysical logging was run. Up to three sondes were run, namely, Coal Combination (CC) which measures formation density, formation natural gamma radiation which indicates clay content and hence sedimentary rock type and drill hole diameter, Full Wave-form Sonic (FWS) that measures formation P and S wave velocities from which geo-mechanical properties can be estimated, and Acoustic Tele-Viewer (ATV) that produces an oriented 360 image of the drill hole wall enabling oriented structure and defects to be mapped. The Acoustic Scanner provided a down hole survey of the drill hole path.

The table below shows which sonde was used in each drillhole. Note that VR11 was cased due to ground conditions so the CC sonde was the only tool that could be run.

Drillhole	CC	FWS	ATV
<b>DR02</b>	X	X	X
<b>VR11</b>	✓	X	X
<b>VR12A</b>	✓	✓	✓

### 3.4 RFGT Technology

An updated version of the the November 2011 Dexon Technology Resonance Frequency Geological Technology (RFGT) Report was received from Global Geological Group Pty Ltd (GGG) and is attached as file. "**EL162010\_201511\_28\_GGG (RFGT Survey) Report for HRCM**". No data in a useable format was provided. Consequently it is not possible to make a correlation between RFGT technology, traditional exploration drilling and the results of computer modeling.

## 4 Results

There are currently no results to discuss.

## 5 Conclusions

There are further coal resources adjacent to the eastern and southern boundaries of ML4M/2012, in Seam F. Extensive resources are likely in Seam G over a large part of the central, north and east parts of EL16/2010. Remodeling in Vulcan is planned based on drilling results from holes drilled by HRCM in 2015 and from third party drilling recently captured. Coal resources will be estimated using this new 3D model.

## 6 Environment

All drill holes have been rehabilitated with the exception of VR10 site and associated sumps which are required for water monitoring installation in 2015.

## 7 Expenditure

Expenditure, being the total of four quarterly reports spanning 1 Oct 2014 to 30 Sept 2015, is shown below:

<b>Expenditure EL16/2010</b>	
<b>1/10/14 to 30/09/15</b>	
<b>Expense Category</b>	<b>Value</b>
Geoscientific	
Geology	\$ 60,023
Geochemistry	\$ -
Gephysics	\$ 6,676
Remote Sensing	\$ -
Drilling & Gridding	
Gridding	\$ -
Meters Drilled	1508m
Drilling	\$ 473,375
Land Access	\$ -
Rehabilitation	\$ -
Feasibility	\$ 22,517
Other	\$ 31,405
Admin	\$ 44,524
<b>Total</b>	<b>\$638,519</b>

## 8 References

Bacon, C.A. 1991. The Coal Resources of Tasmania. *Bull. Geol. Surv. Tasm.* 64.

## 9 List of Appended Figures

Figure 1 - Plan of Licence boundary from MRT Approval Document

Figure 2 - Surface Geology Plan from MRT 1:25,000 map series

Figure 3 - Location of Drillholes undertaken in Reporting Period (DR02, VR11 and VR12A)

Figure 4 - Comparison of F seam horizon in DoM31 and VR12

## 10 Listing of Files on Attached CD

Exploration Work Type	Filename	File format
<b>Report</b>	EL162010_201511_01_ANNUAL_REPORT.pdf	pdf
<b>Drilling</b>		
	EL162010_201511_02_SL_1.xls	xls
	EL162010_201511_03_DL_1.xls	xls
	EL162010_201511_04_QAQC_1.xls	xls
	EL162010_201511_06_lithologycodes.xls	xls
<b>Graphic log legend</b>	EL162010_201511_07_BHG SYMB.png	png
<b>Graphic log</b>	EL162010_201511_08_BHG_DR01.png	png
<b>Graphic log</b>	EL162010_201511_09_BHG_VR11.png	png
<b>Graphic log</b>	EL162010_201511_10_BHG_VR12A.png	png
<b>Geophysical log data</b>	EL162010_201511_11_VR011_FDS_RODS.las	las
<b>Geophysical log report</b>	EL162010_201511_12_VR012_BullsEye.bmp	bmp
<b>Geophysical log report</b>	EL162010_201511_13_VR012_Side_View_Looking North_Cylinder.bmp	bmp
<b>Geophysical log report</b>	EL162010_201511_14_VR12_ATV_430-372.pdf	pdf
<b>Geophysical log report</b>	EL162010_201511_15_VR12_ATV_510-445.pdf	pdf
<b>Geophysical log data</b>	EL162010_201511_16_VR12_COMPOSITE.las	las
<b>Geophysical log report</b>	EL162010_201511_17_VR12_COMPOSITE_FANFOLD.pdf	pdf
<b>Geophysical log report</b>	EL162010_201511_18_VR12_COMPOSITE_FANFOLD_100Scale.pdf	pdf
<b>Geophysical log data</b>	EL162010_201511_19_VR12_DEVIATION.las	las
<b>Geophysical log data</b>	EL162010_201511_20_VR12_FDS_RODS.las	las
<b>Geophysical log report</b>	EL162010_201511_21_VR12_FDS_RODS_FANFOLD.pdf	pdf
<b>Geophysical log data</b>	EL162010_201511_22_VR12_FWS.las	las
<b>Geophysical log report</b>	EL162010_201511_23_VR12_FWS_100_Scale_Fanfold.pdf	pdf
<b>Geophysical log data</b>	EL162010_201511_24_VR12_MST.las	las
<b>Geophysical log report</b>	EL162010_201511_25_VR12_MST.pdf	pdf
<b>Geophysical log data</b>	EL162010_201511_26_VR12-FDS_OH.las	las
<b>Geophysical log report</b>	EL162010_201511_27_VR12-FDS_OH_FANFOLD.pdf	pdf
<b>Surface sampling</b>		
<b>Other - Airborne Survey</b>		
	EL162010_201511_28_GGG (RFGT Survey) Report for HRCM	pdf
<b>File Verification Listing</b>	EL162010_201511_05_FILELIST.xls	xls

**END OF REPORT**

## Appended Figures

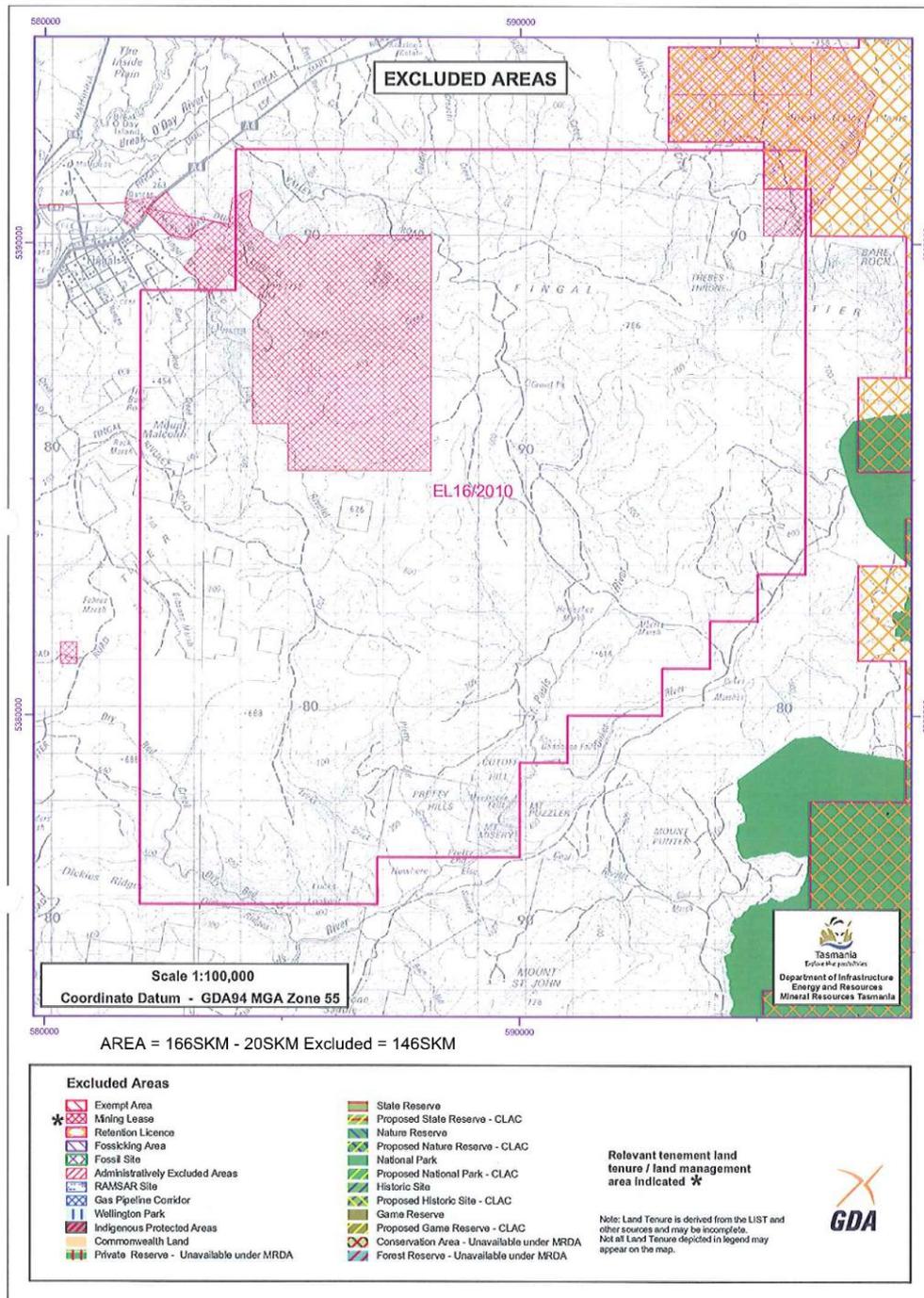


Figure 1 – Location Map for EL16/2010 (Original Boundary)

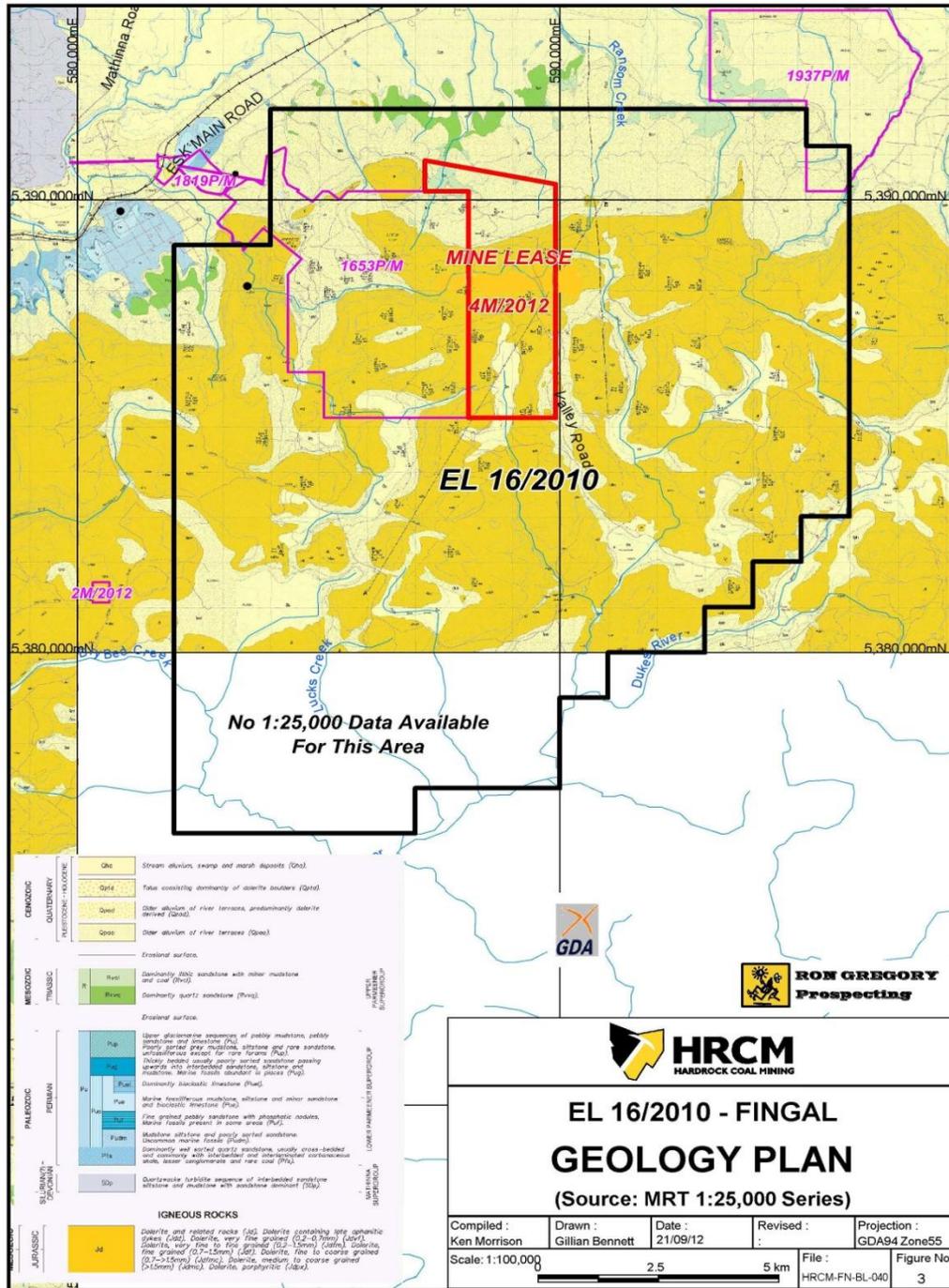


Figure 2 - Surface Geology Plan from MRT 1:25,000 map series

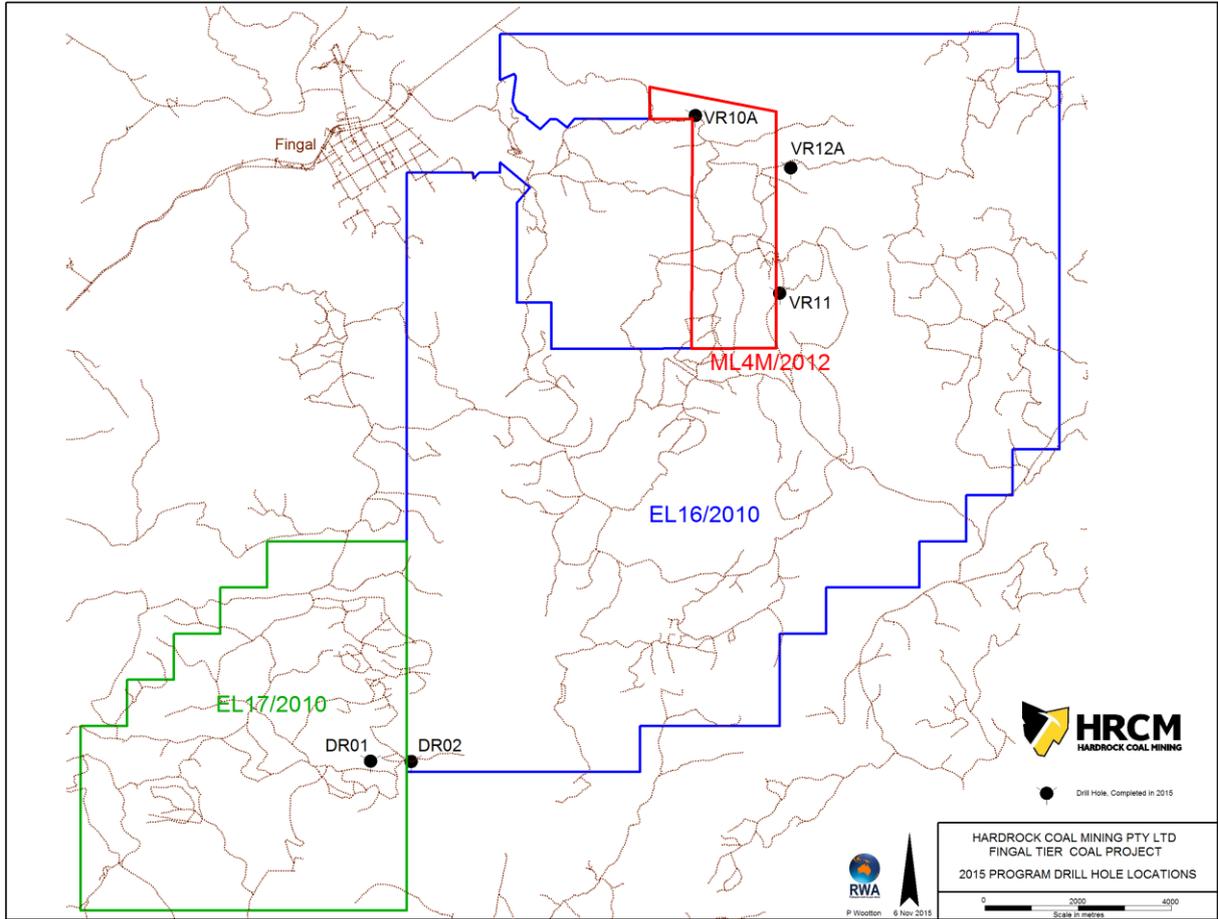


Figure 3 - Location of Drillholes undertaken in Reporting Period showing DR02, VR11 and VR12A

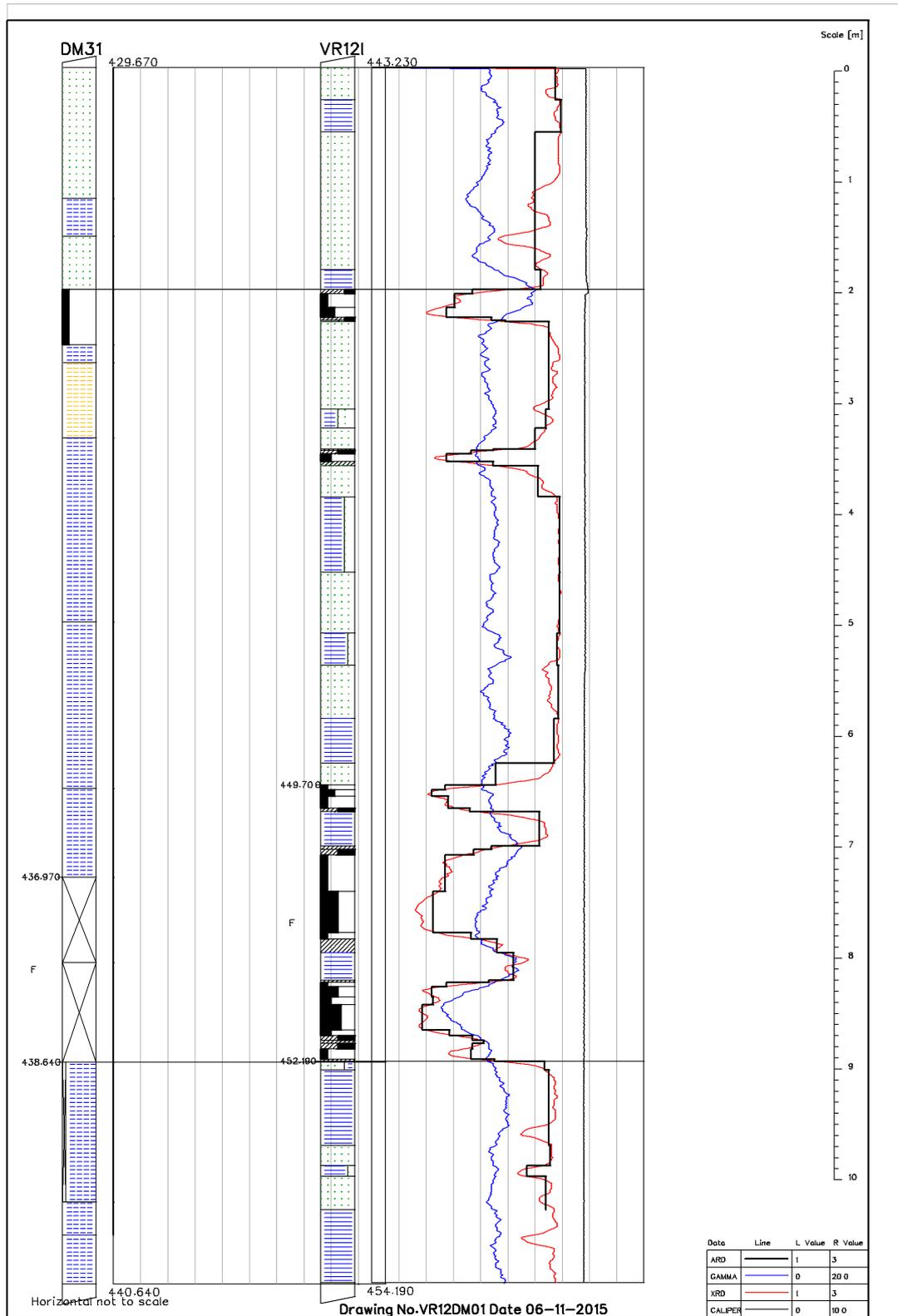


Figure 4 – Comparison of F seam horizon in DoM31 and VR12