EL10/2012
St Marys
Year 1 Annual Exploration Report for the Period 22/10/2012- 22/10/2013

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Abstract

EL10/2012 St Marys lies in the Fingal-Avoca District in North Eastern Tasmania where coal has been mined since the 1880's from both opencut and underground mines exploiting coal seams hosted in the Triassic Upper Parmeener Supergroup of the Tasmanian Basin. Within EL10/2012, Imperial is exploring for modest size open-cut and underground thermal coal resources that are of sufficient quality to meet export coal specifications.

This report summarises the first year exploration program undertaken by geological consultants Global Ore Discovery (Global Ore) on behalf of Imperial. In this reporting year desktop analysis included literature reviews, remote sensing, land access notifications, geological and drillhole data compilation and cross section interpretation. Field work focussed on identification of new coal outcrops and better positioning of historic drillhole collars and coal seam outcrops/adits.

Key findings were

- ASTER mineral mapping did not allow for desktop stratigraphic mapping due to dense vegetation cover, it did however help guide field mapping programs through identification of areas more likely to be outcrop.
- New coal seam outcrops were identified that will add significantly to modelling of coal throughout the licence.
- Preliminary sectional interpretation indicates that there is potential for shallow coal resources to be identified on topographically flat areas in the north and south of the Mt Durham Hill.

Year 2 exploration will focus on further mapping to assist 3D understanding of the distribution of coal within the licence. Given that seams intersected in historic drilling are generally < 2m thick, small topographic inaccuracies may limit the evaluation of the economic viability of any coal, particularly strip ratio. The acquisition of a LIDAR DEM will be investigated to see if it will cost effectively assist in reducing these potential errors. A 3D geological model should be built (using digitally recovered historic seam and detailed lithological data) to assist in choosing locations for drillholes that maximise any potential open-pittable resources and test areas of high geological uncertainty.

Contents

1. Introduction

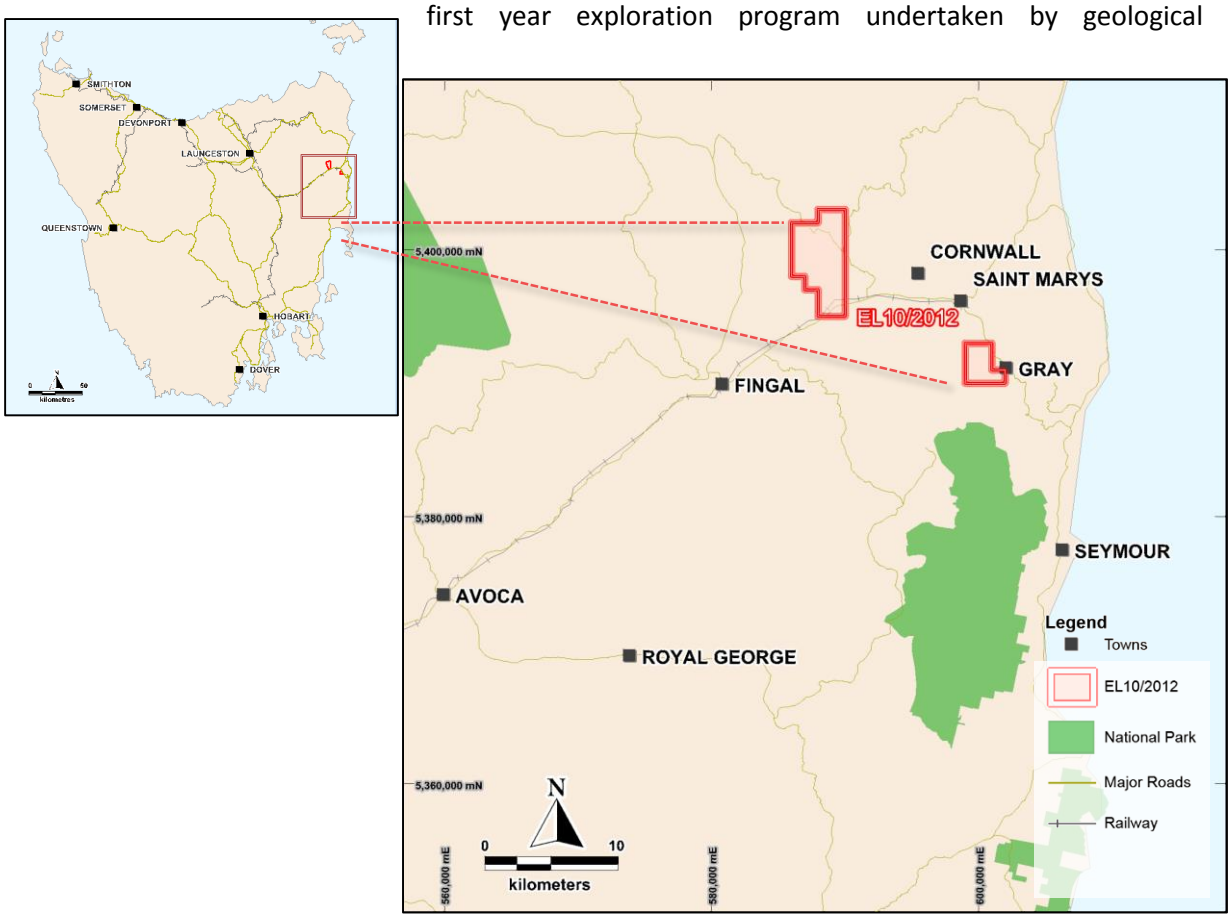
The Fingal-Avoca District in North Eastern Tasmania was identified by Imperial Coal Pty Ltd (Imperial) through an Australian wide evaluation aimed at identifying high quality, under explored coal provinces. Coal has been mined from the Fingal-Avoca District since the 1880's from both opencut and underground mines, exploiting coal seams hosted in the Triassic Upper Parmeener Supergroup of the Tasmanian Basin. Currently, Cornwall Coal Company (a subsidiary of Cement Australia) is mining coal from the district and in September 2013, Hardrock Coal Mining Pty Ltd was granted a mining licence to extract coal from an underground mine development beneath the Fingal Tier.

Imperial's preliminary analysis of the open-file geological and geophysical datasets identified three core areas within the Fingal-Avoca district to undertake further exploration for coal resources. Applications were submitted to Mineral Resources Tasmania in in the first quarter of 2012 for three licences, including EL10/2012 which is the subject of this report.

EL10/2012 covers an area of 32 sq. km and its core area is approximately 13km WNW from St Marys township (

Figure 1). Access to the licence is via the Esk Highway and Mt Nicholas Road. Rail is available approximately 5km to the south of the property via high Mt Nicholas Road. The rail provides a valuable link to the export port of Bell Bay near Launceston, some 180km to the north.

Within EL10/2012 Imperial is exploring for modest size opencut and underground thermal coal resources that are of sufficient quality to meet export coal specifications. This report summarises the first year exploration program undertaken by geological



consultants Global Ore Discovery (Global Ore) on behalf of Imperial during the period 22/10/2012 to 22/10/2013.

Figure 1 - Location overview of EL10/2012

2. Review of Previous Work

No previous work has been undertaken by Imperial on the EL10/2012.

3. Exploration Completed during the reporting period

Literature Review

Regional Geology

Imperial is exploring for coal hosted within the Late Carboniferous to Late Triassic Tasmania Basin. The Tasmania Basin covers much of eastern and southern Tasmania and the current outcrop edge is dominantly erosional, indicating that the basin originally occupied much larger extents then the current >30,000 sq. km (Seymour and Calver, 1995). Sediments within the Tasmania Basin are generally flat lying (Stacey and Berry, 2004) and up to 1.5km thick (Seymour and Calver, 1995) and have been divided into two broad lithological/environmental associations, the Lower and Upper Parmeener Supergroups (Stacey and Berry, 2004). Both supergroups host subordinate coal units (Forsyth et al. 1974). The stratigraphic-tectonic elements for Tasmania is shown in Figure 2.

The Lower Parmeener Supergroup consists of glacial and glaciomarine shallow water sediments. The basal tillite units (which range up to 580m) are absent from the major highs in the Northern Tyennan Element and North East Tasmania Elements (Seymour and Calver, 1995). Subsequent to the deposition of these glacigenic sediments, carbonaceous pyritic siltstone followed by richly fossiliferous siltstones, sandstone and minor limestone up to 400m thick were laid down (Seymour and Calver, 1995). Deposition due to growth faults seems restricted to the Lower Parmeener Supergroup and is only a minor factor in basin development (Stacey and Berry, 2004). Thicker accumulations of the lower Parmeener Supergroup occupy a NNW orientated elongate depocenter which is spatially coincident with the NNW structural zone separating the Western and Eastern Tasmanian Terranes (Stacey and Berry, 2004).

The Upper Parmeener Supergroup consists of four lithological units of non marine sediments deposited in the Late Permian to Late Jurassic (Forsyth, 1989) and described in detail in Seymour and Calver, 1995. The first unit consists of well sorted, cross bedded sandstone and carbonaceous siltstones and mudstone with thin coal seams in the far southwest and in the northwest (Seymour and Calver, 1995). Thickness of the unit varies from an average of 50m to maximum of 108m with the thickest sediments observed in the west (Seymour and Calver, 1995).

Unit two consists of predominantly well sorted quartz arenite between 200-300m thick, and is generally thinner in the northeast of the basin (Seymour and Calver, 1995). Unit three contains quartz granule sandstone with minor conglomerate overlain by interbedded quartz sandstone, lithic sandstone and lutite and concludes with a quartz sandstone interbedded with carbonaceous lutite sandstone and local thin coal seams (Seymour and Calver, 1995).

The fourth unit contains all of Tasmania's economic coal reserves, these being mostly in the northeast (Bacon, 1991) where thickest preserved sections are observed (Seymour and Calver, 1995). This unit consists of lithic sandstone with lesser lutite and coal, with its greatest thickness preserved in the northeast (Seymour and Calver, 1995). Rare felsic tuff horizons are observed in the upper parts of this unit (Bacon and Everard, 1981), while elsewhere at similar levels rare conglomeratic horizons are observed, which include clasts from a calc-alkaline volcanic source (Seymour and Calver, 1995).

These units of the Upper Parmeener Supergroup are intruded by a large volume of tholeiitic dolerite, mainly as sheets and sills. Typically these bodies are 400-500m thick (Seymour and Calver, 1995). Only

limited areas of correlative extrusive rocks are observed in a graben at Lune River where Jurassic mudstones are also preserved (Seymour and Calver, 1995).

In the Cenozoic basalts were extruded throughout parts of northern and eastern Tasmania. Age dating indicates that volcanism ranged from Paleocene to late Miocene (Seymour and Calver, 1995). In North East Tasmanian Element (as defined by Sutherland and Wellman, 1986) a suite of basaltic flows with variable ages filled valleys draining northward to Bass Strait.

Surficial Quaternary-aged deposits throughout Tasmania include glacigenic, slope, coastal, aeolian, fluvial and cave deposits. Colhoun 1989, provides further details on the regional distribution of the sediments.

MINERAL RESOURCES TASMANIA

Tasmania

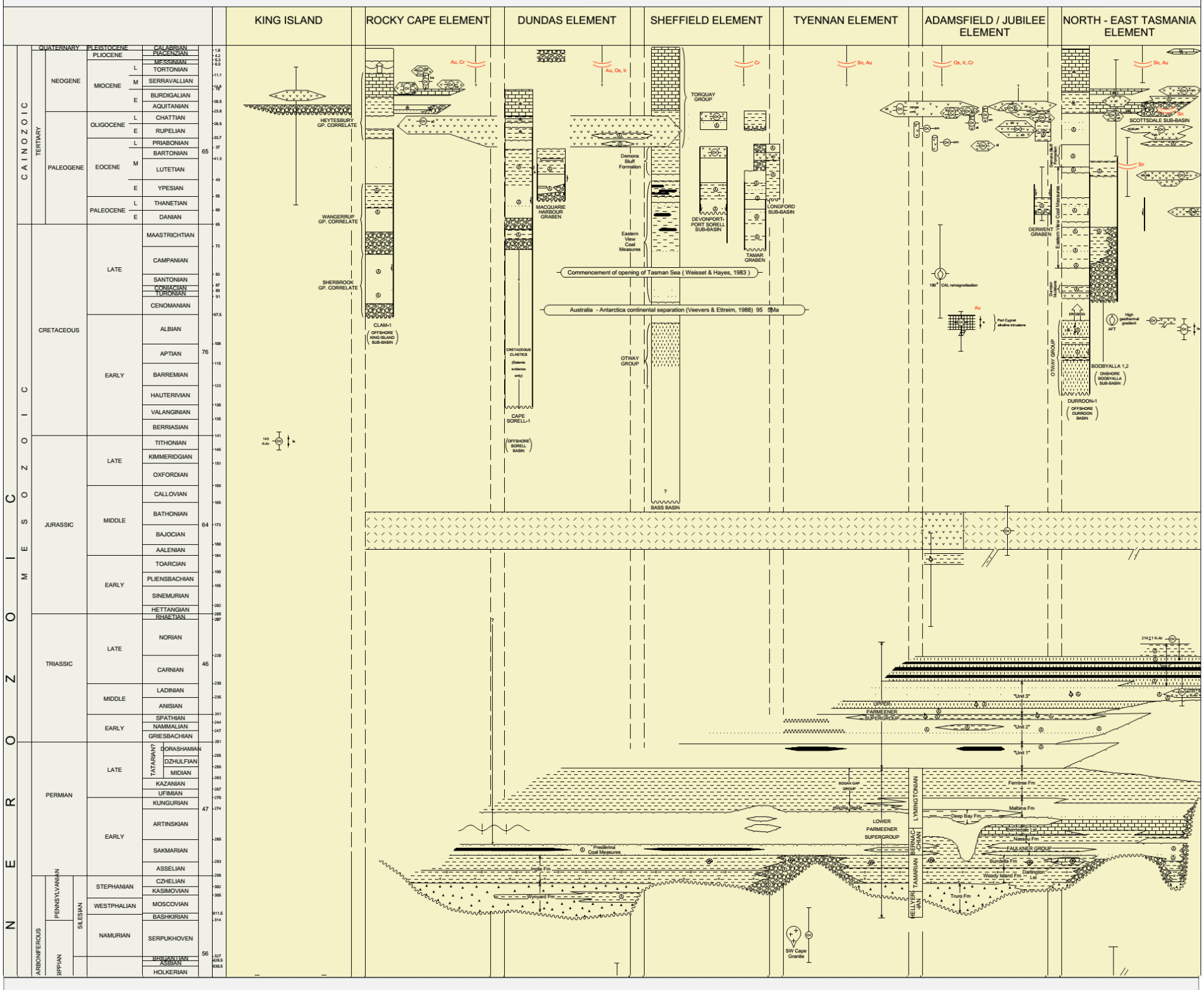
NGMA TASGO PROJECT : Sub-project 1 - Geological Synthesis

TIME - SPACE DIAGRAM FOR TASMANIA

Compiled by: D.B.Seymour and C.R.Calver

VERSION 2 (31-03-1998)

AGSO AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION



DEPOSITIONAL EVENTS

Boundary Types

- Fault
- Unconformity
- Disconformity or low-angle unconformity
- Conformable contact
- "Disjunction" (defined as a boundary along which there is a mismatch of stratigraphy and/or structure, but along which no displacement can be proven.)
- Nature of boundary unknown

Lithological Symbols

- Conglomerate
- Breccia
- Diamictite (t = tillite)
- Quartz sandstone
- Lithic and/or feldspathic sandstone
- Quartz ± lithic wacke, with conglomerate horizons (◦◦◦◦)
- Mudstone (c = carbonaceous)
- Dominantly limestone
- Dominantly dolomite
- Felsic to intermediate volcanic rocks
- Felsic to intermediate volcaniclastic rocks
- Mafic volcanic rocks (t = tholeiitic; a = alkaline; p = picritic; qt = quartz tholeiite; ot = olivine tholeiite; ob = olivine basalt; ab = alkaline basalt; ba = basanite; al = alkaline lava; on = olivine nephelinite; om = olivine melilitite)
- Mafic volcaniclastic rocks
- Chert
- Coal

IGNEOUS INTRUSIVES

Intrusive Structures

- Stock
- Batholith or pluton
- Sill or sheet
- Dyke (f = felsic; m = mafic; la = lamprophyre; s = syenite)

Lithological Symbols

- Granite
- Adamellite
- Granodiorite; diorite
- Quartz-feldspar porphyry
- Dolerite
- Syenite
- Ultramafic rocks

TECTONO - METAMORPHIC EVENTS AND THERMAL HISTORY

Metamorphism

- Contact
- Regional (with letter symbol denoting facies as below) g = greenschist; a = amphibolite; g→a = gradational (greenschist to amphibolite facies in this example)
- Lithological symbol for metamorphic rocks

Folding

- Gentle warping
- Open upright or inclined, with axial plane foliation shown if present (dashed line)
- Tight upright or inclined, with axial plane foliation
- Recumbent tight to isoclinal, with axial plane foliation
- Undifferentiated polyphase deformation; number of regional deformation phases indicated
- Regional kinking
- Chaotic soft-sediment slump folding and brecciation

Thermal Events

- Thermal event (without known significant metamorphism or structural development)
- Thermal event with temperature data, showing age of rock sequence affected, maximum temperature and temperature indicator as follows; CAI = conodont alteration index; VR = vitrinite reflectance; AFT = apatite fission track; RE = Rock-Eval

Faulting

- Faulting (arrow pointing upward denotes thrust or reverse movement, downward-pointing arrow indicates normal faulting)
- Low-angle thrust faulting (+/– ramping)
- Thrust faulting synchronous with folding
- Wrench faulting (s = sinistral, d = dextral)
- Disjunction

Uplift

- Uplift

GEOCHRONOLOGY AND BIOSTRATIGRAPHY

Geochronology

- Radiometric date with age, error bars, and method used in dating
- > (age) indicates minimum age (e.g., K-ar date)
- < (age) indicates maximum age (e.g., zircon U-Pb)

Biostratigraphy

- Age based on invertebrate macrofossil
- Age based on microfossil
- Age based on plant fossil
- Age based on spore/pollen assemblage

METALLIC MINERAL DEPOSITS

- Placer deposits
- Stockwork, vein, and shear-zone deposits
- Skarns, replacement deposits
- Massive, exhalative stratiform sulphide-oxide deposits
- Disseminated deposits
- Magmatic deposits

GUIDE MAP TO ELEMENTS

Figure 2 - Time-space diagram for Tasmania. EL10/2012 is situated closest to the North-East Tasmania Element (From Seymour and Calver, 1998)

Local Geology and Historic Coal Exploration

Bacon, 1991 provides an excellent summary on the local geology, coal geology and historic coal exploration of the Mount Nicholas Coalfield of which EL10/2012 is part of. Key aspects of historic coal exploration subsequent to Bacon, 1991 in or adjacent to EL10/2012 is summarised below (Table 1).

Table 1 - Summary of historical coal exploration reports identified in spatial document search MRTas

Report No	Tenements	Companies - Authors	Report Title	Summary of Work
98_4250	RL15/1988	McElroy Bryan and Associates Pty Ltd; The Cornwall Coal Company NL (holder) - Bryan, J.H.	Final Report - RL 8815, Mt Nicholas	4 Open holes 3 cored holes. Intersected up to five seams with one seam 2.01m. Coal quality analysis and Float Sink analysis. Postulated lack of correlation between seams across NS fault in east of area.

4. Regional Exploration Activities

Remote Sensing

Multispectral ASTER satellite image data has been acquired, processed and incorporated into the GIS database for use in the integrated interpretation as a key element to drive Imperial's first year reconnaissance exploration program. Processed ASTER imagery can assist in mapping lithological and mineral composition variations over large areas of outcropping stratigraphy.

Key products and applications of the ASTER processing for coal exploration include:

• Clay occurrence and composition for detailed stratigraphic mapping

• Silica occurrence mapping, to assist quartzose stratigraphy interpretation.

The purpose of utilising ASTER data is to assist in discriminating lithological types within EL10/2012, and to further constrain the extent of the coal-bearing Upper Parmeener Supergroup.

The ASTER sensor has a scene area of 60 x 60km and collects information from the following channels (Figure 3,Table 2, Hewson, 2003):

- Three 15m pixel resolution visible-near-infrared (VNIR) channels (bands 1-3)
- Six 30m pixel resolution shortwave infrared (SWIR) channels (bands 4-9)

- Five 90m pixel resolution infrared (TIR) channels (bands 10-14)

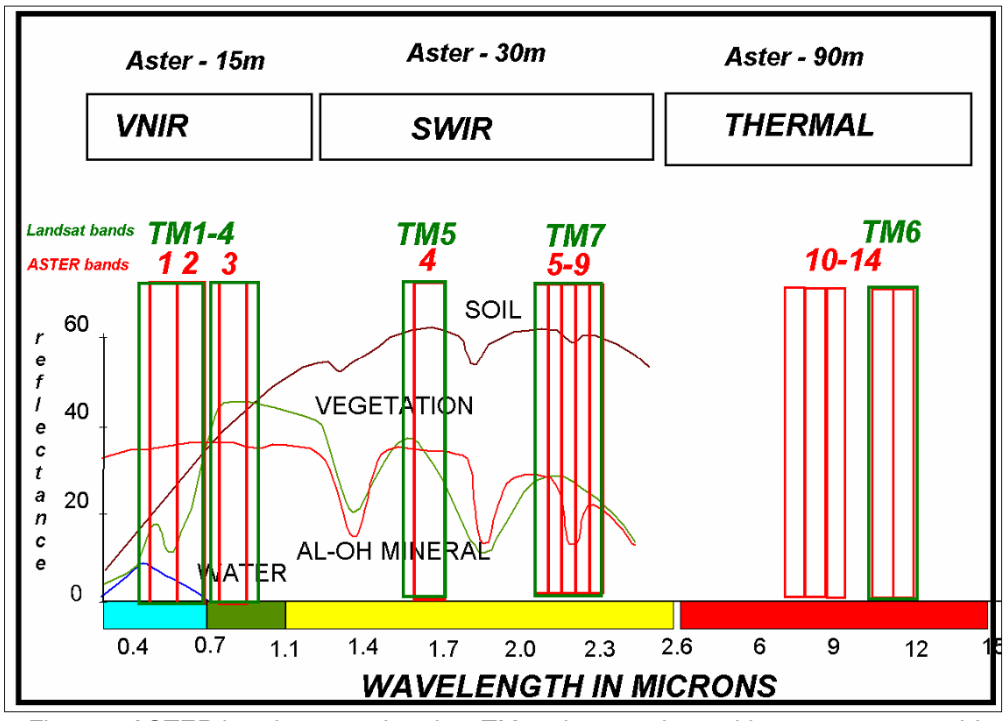


Figure 3 Remotely sensed ASTER versus Landsat TM bands, and overview of common spectral responses (Hewson, 2003)

The VNIR and SWIR modules are arranged as a 5000 element linear array and a 2048 element staggered array respectively, and both have push-broom detectors. The TIR employs a whiskbroom detector with a scan mirror for across track sampling. The VNIR and SWIR are available in 8 bit dynamic range and TIR in 12 bit quantisation (Hewson, 2003). The SWIR bands are accurate to 3m between bands and 50m in overall accuracy. The ASTER sensor has a high signal to noise ratio of minimum 150:1, with most bands around 200:1 (Hewson, 2003).

Table 2 - Summary of ASTER sensor data (Hewson, 2003)

Spectral Range	VNIR µm	SWIR µm	TIR µm
FWHM [Centre λ]	Band 1 0.52 – 0.60 [0.556]	Band 4 1.600 – 1.700 [1.656]	Band 10 8.125 – 8.475 [8.291]
	Band 2 0.63 – 0.69 [0.661]	Band 5 2.145 – 2.185 [2.167]	Band 11 8.475 – 8.825 [8.634]
	Band 3N 0.78 – 0.86 [0.807]	Band 6 2.185 – 2.225 [2.209]	Band 12 8.925 – 9.275 [9.075]
	Band 3B 0.78 – 0.86 [0.804] Backward looking	Band 7 2.235 – 2.285 [2.262]	Band 13 10.25 – 10.95 [10.657]
		Band 8 2.295 – 2.395 [2.336]	Band 14 10.95 – 11.65 [11.318]
		Band 9 2.360 – 2.430 [2.400]	
Ground Resolution (m)	15	30	90
Dynamic Range	8	8	12

Raw ASTER imagery was processed to remove atmospheric, radiometric and geometric effects. A series of false colour images were then created from the data and colour balanced using combinations of the 3 VNIR (visible and near infrared) and 6 SWIR (short-wave infrared) ASTER bands.

These products were (Figure 5):

• Natural Colour stretch; the algorithm applied to the VNIR bands 321 in Red (band 2), Green ((3xband1+band3)/4), Blue ((3xband1-band3)/4), generates an image that simulates natural colour at 15m pixel size.

• 468 RGB stretch; this image uses ASTER's SWIR sensor, which has a 30m pixel size. These bands are highly sensitive to lithological and alteration variations and are in a region of the electromagnetic spectrum that the eye cannot perceive. The 468 RGB image is therefore the recommended image for geological/and mineralogical interpretation.

• 631 RGB stretch; this image uses a combination of bands 3 and 1 from ASTER's VNIR sensor and band 7 from the SWIR sensor. Band 7 is resized from a 30m pixel size to a 15m pixel to match the 15m pixel size of the VNIR bands. This combination of bands is sensitive to lithological variations and may be useful for geological/alteration interpretation. This image is similar to Landsat TM741 images.

The ASTER investigation comprised processing and mineral mapping as outlined in Figure 4. These mineral maps were generated by combining VNIR, SWIR, and TIR wavelengths in conjunction to specific mineral ratios. This can differentiate mineralogical occurrences in the area of interest. Key mineral ratio products that were processed using ENVI ASTER Mineral Ratio processing tool include:

- Ferric Iron (Band2/Band1) (Rowan and Mars, 2003)
- Ferrous Iron ((Band5/Band3)+(Band1/Band2)) (Rowan and Mars, 2003)
- Epidote/Chlorite/Amphibole (MgOH Bond) (Band6+Band9)/(Band7+Band8) (CSIRO)
- Sericite/Muscovite/Illite/ Smectite (AlOH Bond) ((Band5+Band7)/Band6)) (Rowan and Mars, 2003)
- Alunite/Kaolinite/Pyrophyllite ((Band4 + Band 6)/Band 5) (Rowan and Mars, 2003)
- Quartz rocks (Band14/Band12) (Rowan and Mars, 2003)
- Silica (Band11/Band12) (CSIRO)

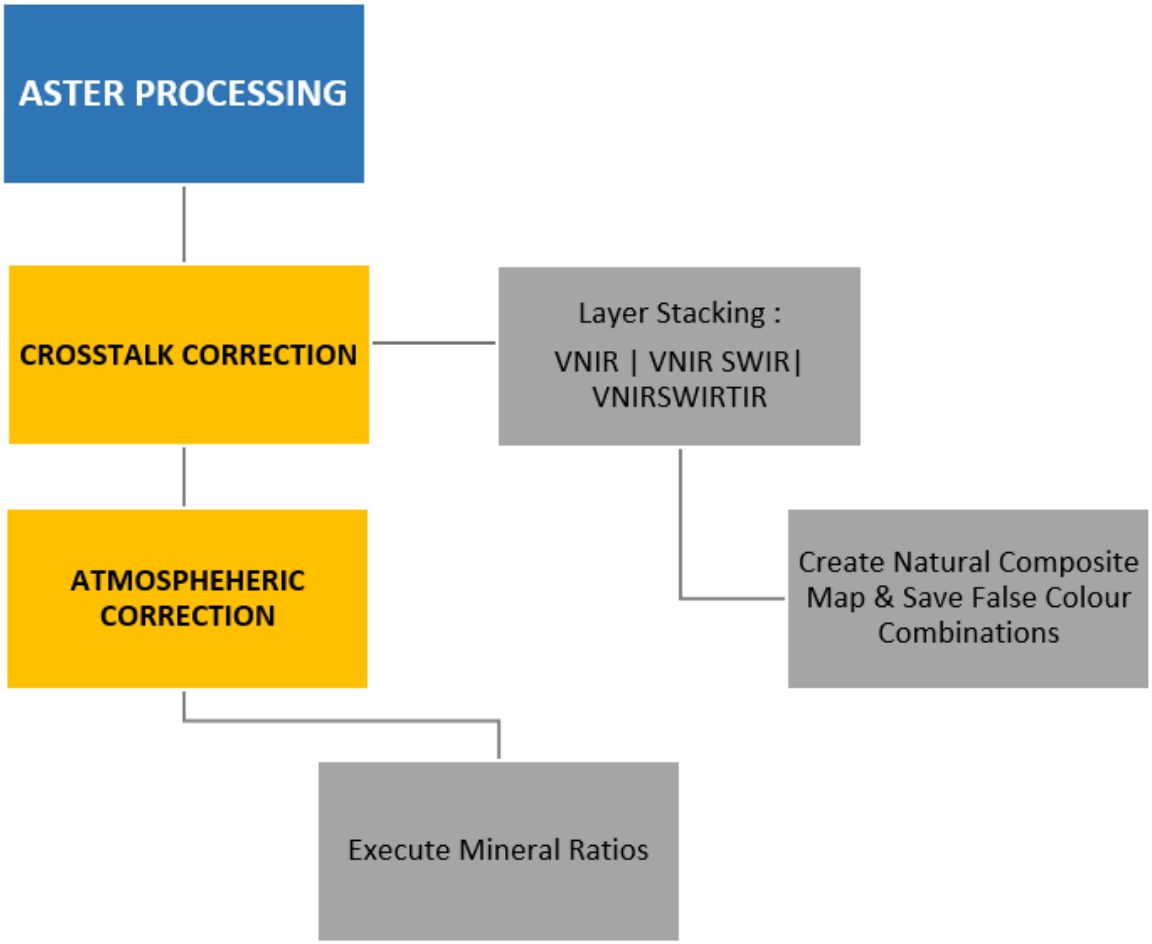


Figure 4: Aster Processing of Mineral Ratios

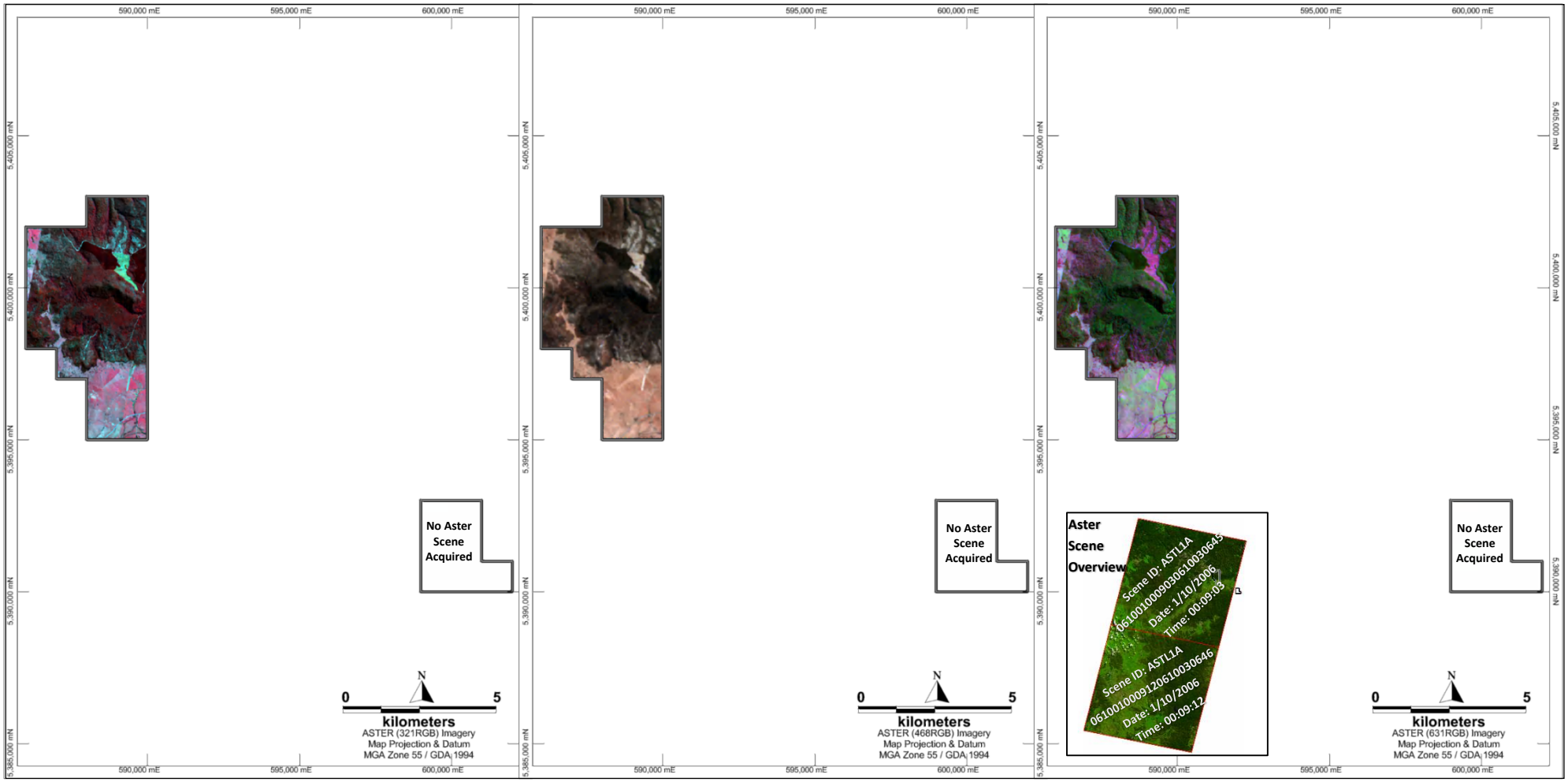


Figure 5: Examples of generated ASTER processing products. From left to right: Natural Colour Composite; 468RGB; 631RGB

ASTER mineral ratio images were integrated with open file radiometrics and mapped outcrop geology to identify priority areas of potential outcropping Upper Parmeener Stratigraphy for field reconnaissance mapping. Due to significant vegetation coverage at the time of imagery acquisition the ASTER imagery was of limited use in mapping the mineralogical variation with the target sedimentary stratigraphy.

5. Prospect Based Exploration Activities

Historic Drillhole Review

A review of a key historical drillhole (Figure 6) at the Mineral Resources Tasmania (MRT) core shed was carried out in order to:

- Understand logging terminology and confirm contact identification
- Confirm coal seam intervals are present and correctly logged, and whether any coal was not recorded
- Identify any new potential marker horizons

A 184m section of MTN12 was reviewed during the core-visit (Table 3). Apart from relogging of the coal seam intervals the following horizons and marker beds were checked against logging reported in the hole for:

- Base of dolerite
- Top of quartzose sandstone
- Top of Permian sediments (top of Lower Parmeener Supergroup)
- Quartz veins/bands
- Tuff beds

Table 3 – Sections of key drillholes reviewed during the core shed visit.

DH Tiger ID	Drillhole Name	From (m)	To (m)	Total (m)
6144	MTN-12 Mt Nicholas Coalfield	40	223.93	184

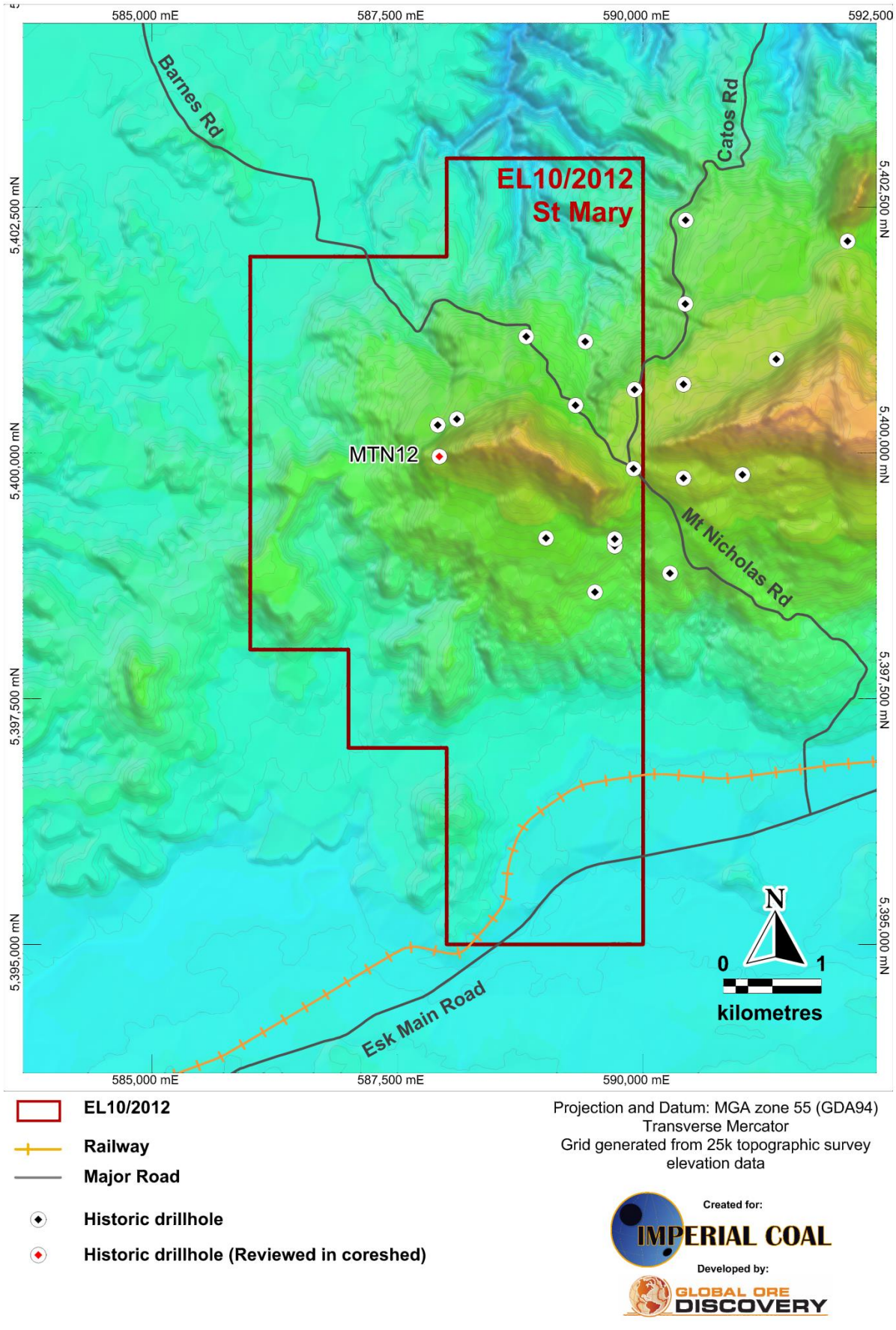


Figure 6 - Location of historical drillholes

Field Mapping

The intention of the field program was to:

- Locate historical drillholes and determine accuracy of collar position using a GPS
- Locate mapped and new coal outcrops
- Collect structural measurements to assist cross-section generation
- Follow-up areas of ASTER mineral anomalies that indicated potential outcropping Upper Parmeener Supergroup

The outcomes and highlights of the field investigation were:

- 6 geologist-day reconnaissance covering over 10km of 4WD tracks and hiked traverses (Figure 7)
- The location of a historical working (Silkstone C; Figure 8) was refined as a result of using MRT database coordinates to locate two drillholes and three historical coal workings (Table 4 and Appendix)
- Discovery of a coal outcrop that was up to 90cm thick and 3m long (Figure 7 and Figure 8). A sample taken, the pending analysis results of which will be reported in year 2. Using seam correlations from Parbury (1979) and the elevation of the outcrop this may be the Pluto Seam.
- Coal float was also found in landslide debris which must have been sourced from seams proximal to the Silkstone C adit.
- Mapped locations of four sediment outcrops, as well as a collection of three structural measurements showing variable dips (between 4 and 28 degrees) within a small distance in the northeastern part of EL10/2012.
- Ground truthing of ASTER mineral anomalies suggests that remote sensing techniques had limited success in identifying potential outcropping Parmeener Supergroup sediments, being affected by strong vegetation interference and forestry disturbances.

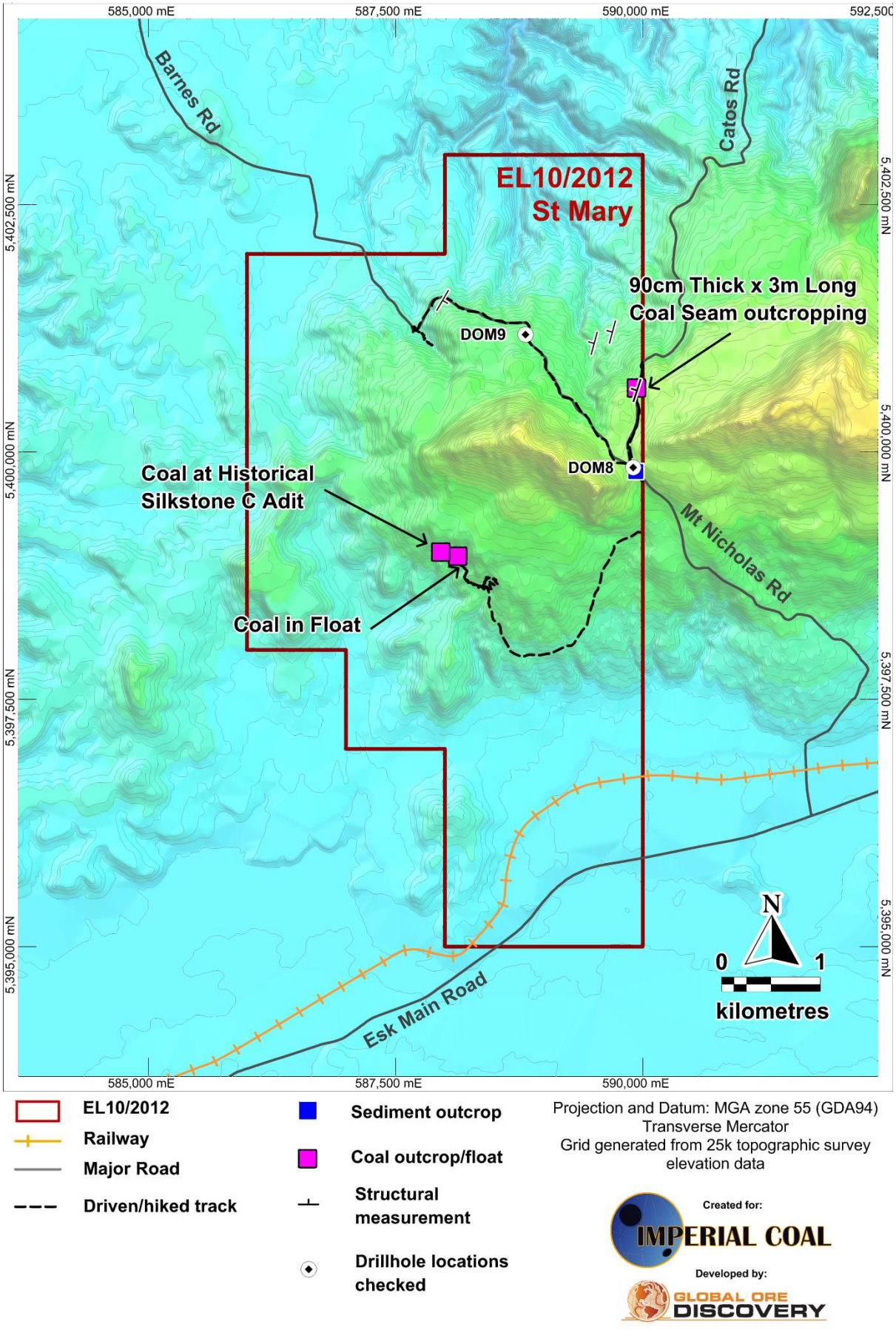


Figure 7 - Overview of data collected during field program

Table 4 - Drillhole collars and historical workings searched for during field investigation

	MRT[1] location		Field Location				
DH[2]/Working Code	**Easting**	**Northing**	**Easting**	**Northing**	**MRT[1] location error (m)**	**Comment**	**Photo ID**
DOM8	589,906	5,399,841	N/A		5	No evidence of drill site at GPS location, depression may be a sump pit	FGL-034
DOM9	588,814	5,401,186	N/A		5	No evidence of drill site at GPS location	N/A
Silkstone C	587,962	5,399,033	587,958.23	5,399,007.12	N/A	Definite location of adit, mine buckets and adit structural beams present	20130916_161536

[1] – Mineral Resources Tasmania

[2] – For DH abbreviations see Table 5

Figure 8 – (Top) Coal seam outcropping on roadside (~90cm thick); Silkstone C coal adit historical infrastructure (bottom)

Drillhole Database Compilation

Historic drillhole data was recovered to produce a digital GIS drillhole database from which geological cross sections could be generated. Historic drillhole locations were recovered from the published state wide drillhole dataset, and downhole data was compiled from historical company exploration reports, both of which were downloaded from Mineral Resources Tasmania (www.mrt.tas.gov.au). The drillhole data recovered from reports consisted of:

- Survey details
    - Total drillhole length
    - Collar location
- Depth to base of dolerite
- Coal seam depths, thicknesses and descriptions
- Coal quality results
- And if identified historical coal outcrop locations were compiled

Drillholes were selected primarily for their proximity to EL10/2012, but availability and quality of data were also taken into account. Detailed downhole lithology logs were compiled for five drillholes, and coal seam data has been extracted for 10 drillholes (Figure 9). Drillholes that have detailed downhole lithology logs and/or seam data are listed in Table 5.

Table 5 – Summary of Drillholes for which detailed and/or seam data was recovered

Imperial Collar ID	MRT Name	MRT Drill ID	Length	Easting	Northing	Accuracy	RL (25kTopo)
MtDDDH10	MDUR-10 Mt Durham	19570	65	589714	5399055	.5m	464.4
MtDDDH9	MDUR-9 Mt Durham	19571	119	589916	5400646	.5m	546.1
MNRDH5	MN-RDH5 Mt Nicholas	19572	34	589513	5398584	500m	410.1
MNRDH4	MN-RDH4 Mt Nicholas	19573	88	589313	5400484	500m	501.7
RDH7MtD	RDH7 Mt Durham	18757	40	589413	5401134	50m	379.8
MTN12	MTN-12 Mt Nicholas Coalfield	6144	223.93	587929	5399963	5m	550.1
DOM11	MTN 11 Mt Nicholas Coalfield	6145	139.57	587913	5400283	5m	520.0
DOM9	MTN-9 Mt Nicholas Coalfield	6147	650	588814	5401186	5m	449.7
DOM8	MTN-8 Mt Nicholas Coalfield	6148	250.7	589906	5399841	5m	560.6
MtDDDH8	Mt Durham CC8	15408	137	589013	5399134	5m	516.8

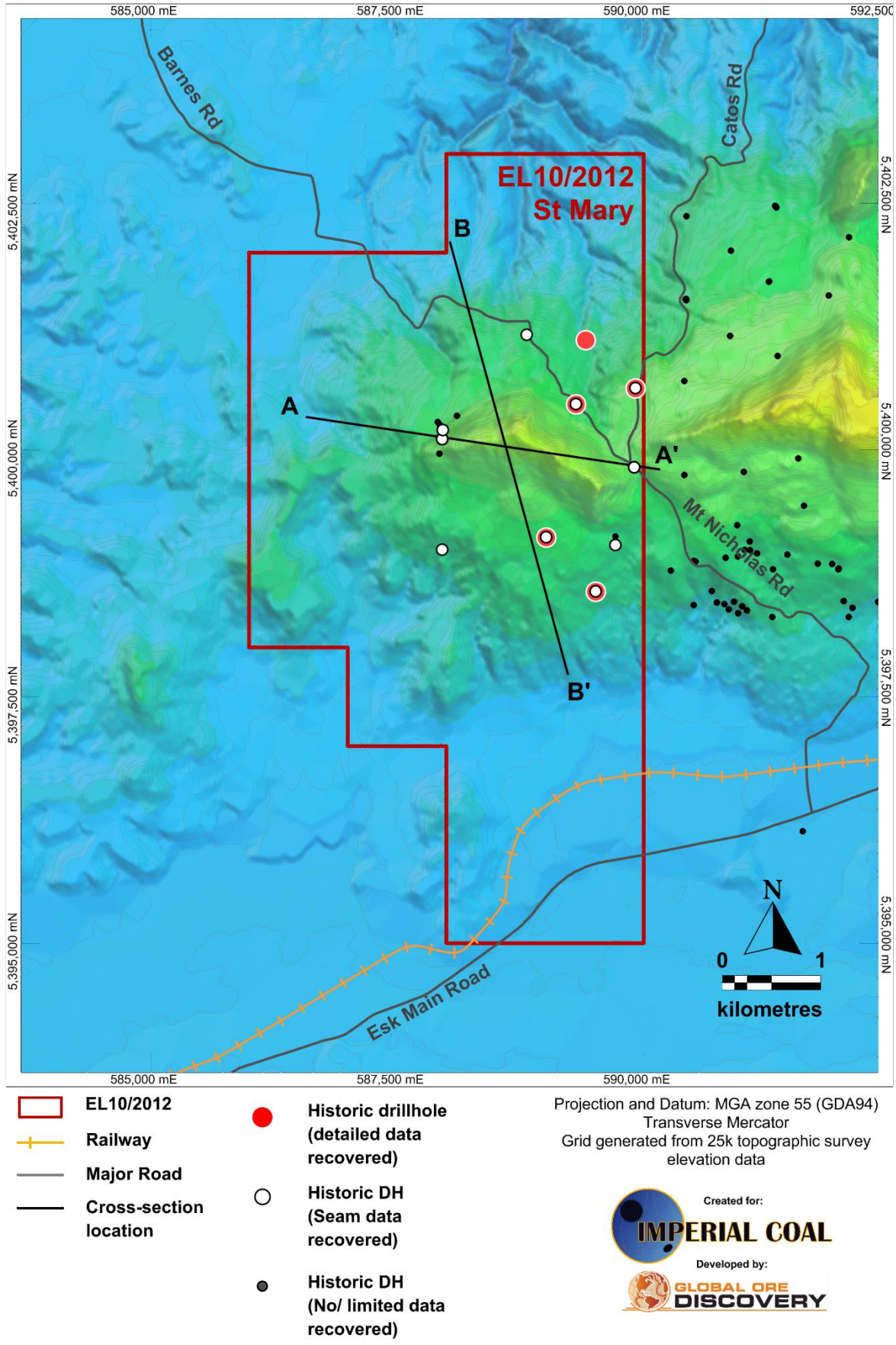


Figure 9 - Showing historic drillholes for which data was compiled

Sectional Interpretation

Two cross sections were generated across the Mt Durham area of EL10/2012 (Figure 10) to understand the potential of the multiple seams intersected in historic drilling to occur at depths potentially amenable to opencut exploitation in areas of flatter topography.

Stratigraphic correlation of seams adjacent to EL10/2012 have also been carried out previously by Parbury (1979; Figure 11). Using the coal seam correlation from Bacon (1983; Figure 12), and extracted seam database by Imperial, three major seam groups are interpreted along the sections. These are (from top to bottom): the Pluto Seam; the upper and lower Cornwall Seams; and the upper and lower Fenton Seams.

The interpretation of the drillhole intercepts suggest that although separate drilling campaigns have used different seam nomenclature, the seams are mostly correlateable with a 1-2° dip to the south. The Fenton and Cornwall Seams are the two most prospective seams and are projected to surface in areas of flatter topography within EL10/2012. The seam at the Silkstone C historical working (the location of which was GPS located during the field investigation) is interpreted to most likely be the Cornwall Seam based on elevation and surrounding drilling data.

Table 6 – Maximum and average thicknesses of the Fenton and Cornwall Seams

	Maximum Thickness (m)	Average Thickness (m)	No. Drillholes used in calculation
Cornwall	3.97	3.14	10
Fenton	~2.0	1.62	6

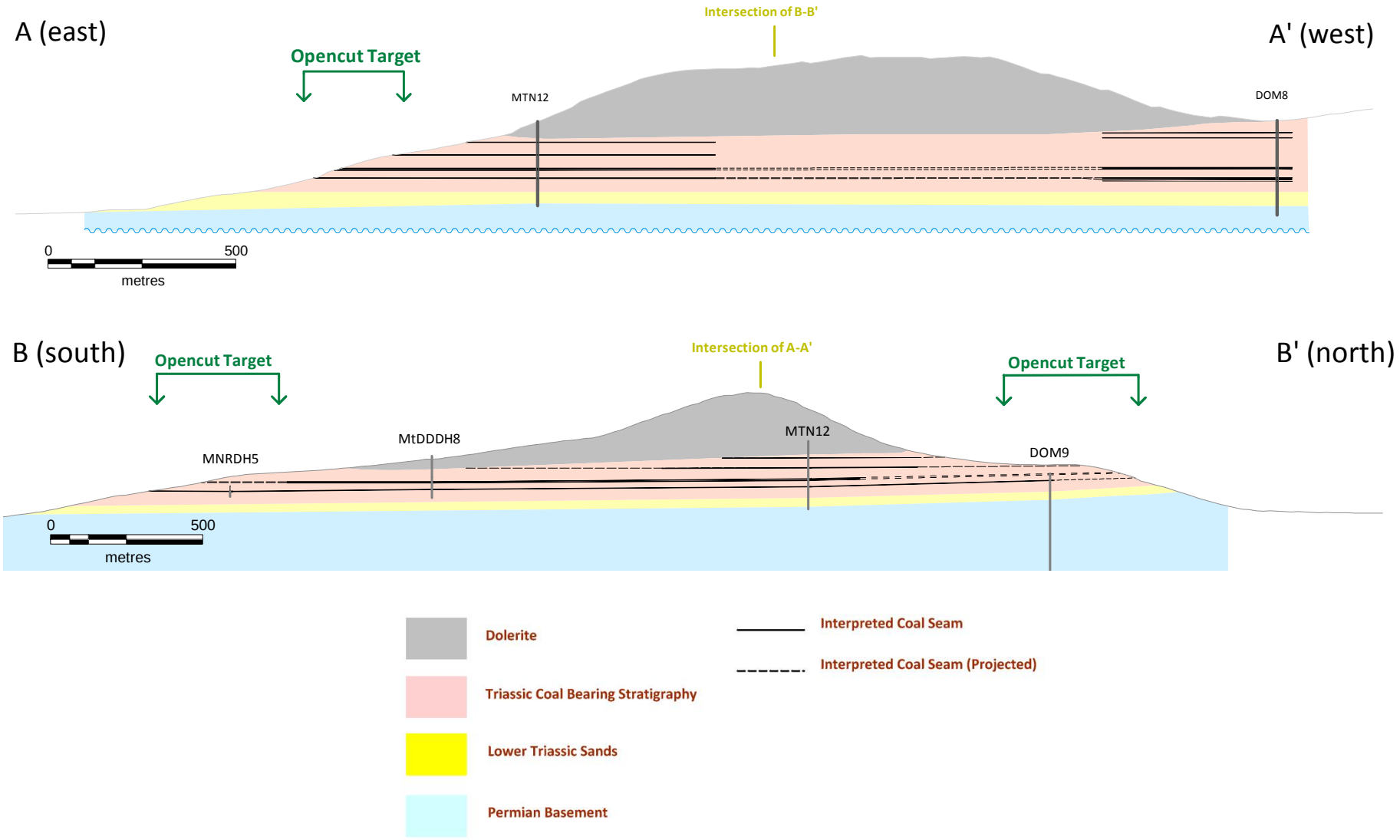


Figure 10 Schematic cross-sections across EL10/2012. Section line locations are shown in Figure 9

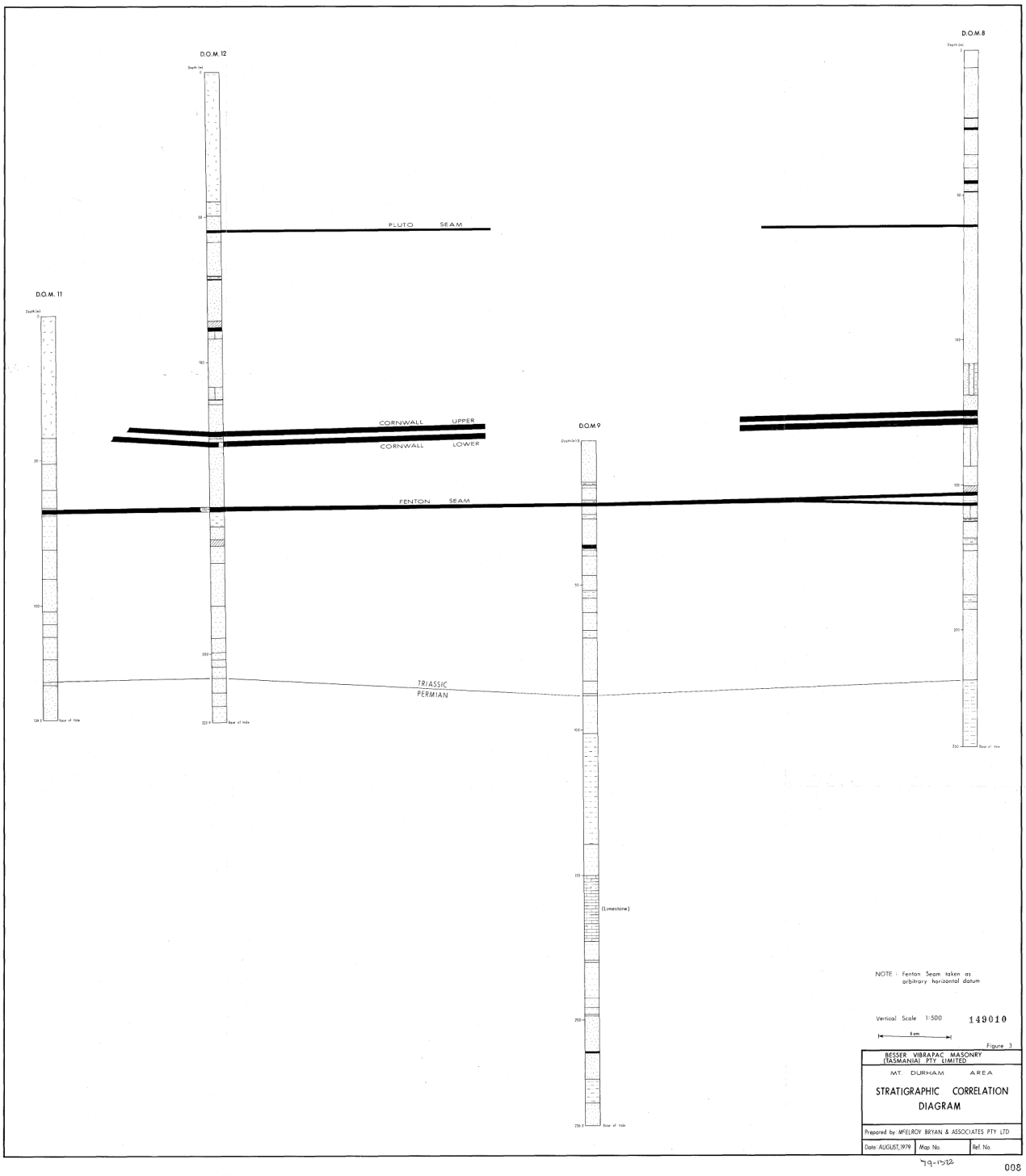


Figure 11 – Stratigraphic correlation between Fingal Tier (FT series) and Dalmayne (GY series) drilling programs. From Bacon (1991).

Table 1. COAL SEAMS ON MT NICHOLAS

Drilling					Mines					
Shell			Department of Mines	Cornwall Coal Co.						
Mt Nicholas	Harefield	Dalmayne	Fingal Tier	Mt Nicholas	Blackwood	Cornwall	Mt Nicholas	Cardiff	Jubilee	Silkstone
			A							
		DA	B							
			C							
		DB	D							
			E							
U8		DC	*F	Rileys						
M1		DDu	*Gu	Blue Upper	Blue	Blue	6'			
M2		DD1	*Gl	Blue Lower			4'			
M3				Cornwall		Hitit	4'9"	Cardiff(?)	Jubilee(?)	
Minor				Cullenswood						
L1	DE	)	)	Fenton		Fenton	8'			No name given
		)	)							
L2	E2	)	)Ha,Hb	Millbrook						
Minor	E3	)	)	Malahide						
Minor	DF	)	)	Webber Falls						

* F = Duncan seam
Gu = East Fingal seam, Upper Split
Gl = East Fingal seam, Lower Split

Figure 12 – Correlation of seam nomenclature used by separate drilling companies in the Mount Nicholas coalfield (From Bacon, 1983)

6. Discussion of results

Imperial's first year exploration involving remote sensing, historic drillhole review, field mapping, and sectional interpretation has increased the geological understanding of coal occurrences in EL10/2012. Key aspects of this work include

- ASTER processing and field follow-up program
- Identification and mapping new coal outcrops
- New understanding of the potential for shallow coal (potentially open pittable) through sectional interpretation

ASTER imagery due to significant vegetation coverage at the time of imagery acquisition was of limited use in remote mapping of the stratigraphy but was useful in determining the potential windows of outcropping sediments in large heavily vegetated expanses.

Mapping by Imperial located 1 new outcropping coal seam outcrop of 0.9m thickness in EL10/2012 (Figure 7). Preliminary analysis of the relationship between this particular seam outcrop and historic drilling indicates that this may potentially be the Pluto Seam (Parbury, 1979), which was intercepted in drillhole DOM 12 in the licence at 54.8m depth.

New outcrops of coal seams provide additional 3D control on the distribution of coal seams at relatively low cost when compared to drilling. Given that new outcrops were identified through reconnaissance mapping over an initial relatively small area, further systematic mapping over a wider area in Year 2 of this licence is warranted. Dip measurements indicate that Mt Durham maybe separated structurally along a north-south fault from Mt Nicholas as postulated by previous works in the area.

The first pass sectional interpretation of the historic drilling integrated with new field geological and structural mapping suggests that many of the seams are potentially shallowly covered on the southern and northern flanks of Mt Durham where flatter topography may reduce strip ratios of any coal resource discovery. Initial analysis indicates that small size resources maybe identified by further work.

7. Conclusions

EL10/2012 is prospective for export thermal coal resources within the Upper Parmeener of the Tasmania Basin. Little to no exploration has been conducted for coal in the area since the 1990's with the bulk of exploration being shallow drilling in the 1980's. Imperial is exploring EL10/2012 for shallow modest size open-cut and larger export thermal coal resources. Imperials Year 1 exploration program on EL10/2012 consisted of:

Desktop Work including

- Remote sensing - Acquisition and processing of ASTER imagery
- Literature review
- Land access
- Cross section interpretation

Field Work including

- Landowner meetings
- Historical drillcore review
- Mapping of new marker horizons and new coal outcrops
- Locating drillholes and historic outcrops

Key findings were

- ASTER mineral mapping did not allow for desktop stratigraphic mapping due to dense vegetation cover, it did however help guide field mapping programs through identification of area more likely to have outcrop.
- Historic Resources adjacent to EL10/2012 are potentially of export quality coal after washing. These resources trend into EL10/2012.
- A New coal seam outcrops were identified that will add significantly to modelling of coal throughout the licence. Preliminary sectional interpretation indicates that there is potential for shallow coal resources to be identified on the Northern and southern flanks of Mt Durham.

Recommendations

Year 2 works will focus on further mapping of the Upper Parmeener and on exploring for new coal outcrops. Both of these pieces of information will add significantly to the 3D understanding of the distribution of coal within the licence.

Given that seams are generally < 3m thick, small topographic inaccuracies may limit the evaluation of the economic viability of any coal, particularly the potential strip ratio. Therefore Imperial will consider the acquisition of a LIDAR DEM.

A preliminary 3D model using digitally recovered historic seam and detailed lithological data should be built prior to any further drilling. This will assist in choosing locations for drillholes planned in year 2 to maximise any potential open-pittable resource and test areas of high geological uncertainty.

8. Environment

Prior to conducing field work in EL10/2012 Imperial submitted a work program to the environmental division of MRT. This program outlined the low impact nature of the investigation, which involved driving on established tracks and roads, hiking to points of interest, and collecting small rock samples. The work program was communicated to Imperial to be accepted on August 9th 2013. No environmental concerns were raised, except to be aware of possible eagles nesting.

In accordance with Tasmanian legislation, Imperial sent out letters to advise landholders within EL10/2012 at least 14 days in advance of entry. These letters, sent to both private landowners and Forestry Tasmania (Figure 13), outlined the nature of the exploration activities and provided contact details should the landowners have any queries.

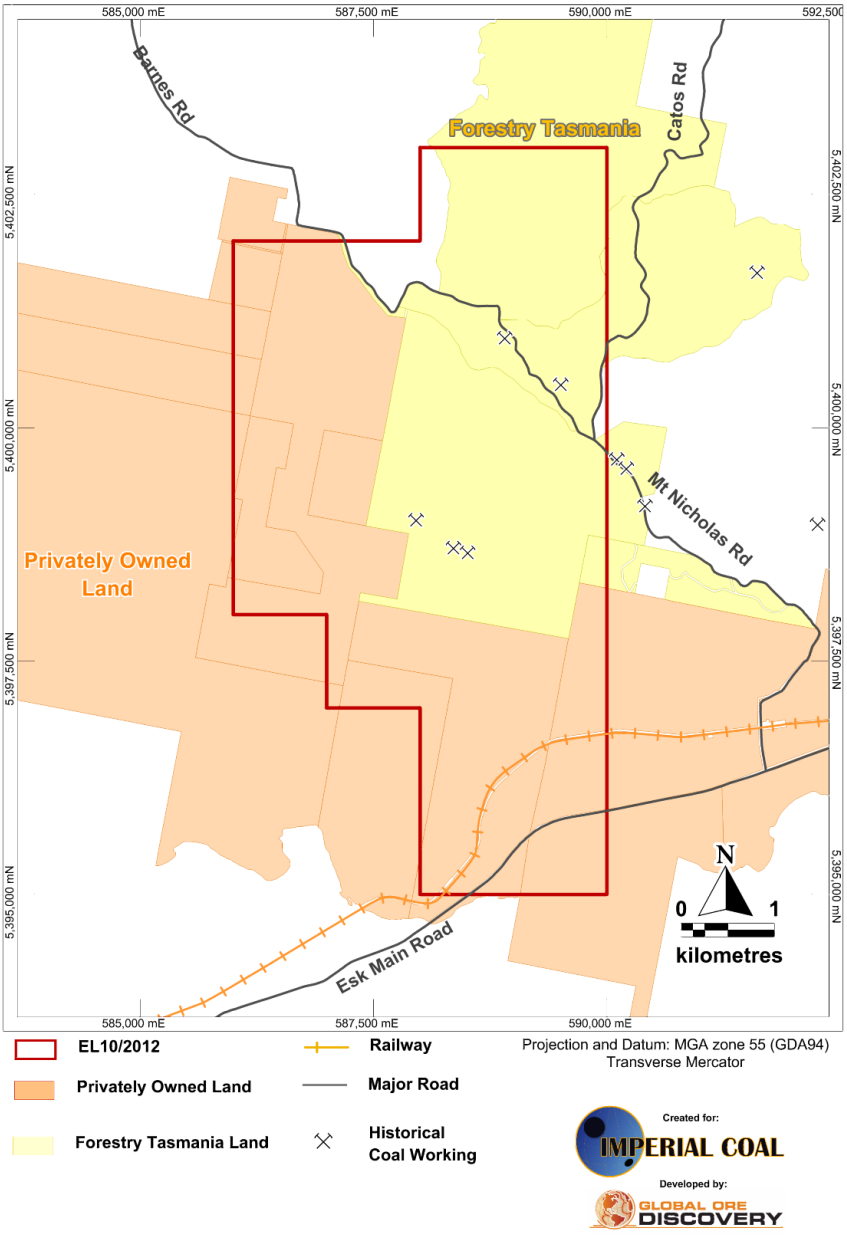


Figure 13 – Location of private- and government-owned (Forestry Tasmania) land parcels within EL10/2012

9. Expenditure

	Annual Expenditure	
1A. Geology	$	30,488.40
1B. Geochemistry	$	-
1C. Geophysics	$	-
1D. Remote Sensing	$	1,082.13
2A. Gridding	$	-
2B. Drilling	$	-
3. Land Access Costs	$	6,480.96
4. Rehabilitation	$	-
5. Feasability Study	$	4,999.93
6. Other (fees, surveys etc)	$	-
7. Administration Costs	$	2,291.28
TOTAL	$	45,342.70

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11. Keywords

Coal Coal Black

Coal General

Fingal Coal Field

Upper Parmeener

Lower Parmeener

Tasmanian Basin

ASTER

EL10/2012

Mt Nicholas

Mt Durham

Silkstone

Cornwall

Fenton

Pluto

12. Appendix – Drillhole and historical working locating photos

Photo: FGL-034. Department location of drillhole DOM8, no evidence of drilling activities observed

Photo: 20130916_161536. Historical Silkstone C Adit. Actual GPS position different to department location.