

EL8/2012
Mt. St. Johns
Year 2 Annual Exploration Report for the
Period 23/10/2013- 23/10/2014

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Abstract

EL8/2012 Mt. St. Johns lies in the Fingal-Avoca District in North Eastern Tasmania where coal has been mined since the 1880's from both open-cut and underground mines exploiting coal seams hosted in the Triassic Upper Parmeener Supergroup of the Tasmanian Basin. Within EL8/2012, Imperial is exploring for modest size open-cut and larger underground thermal coal resources that are of sufficient quality to meet export coal specifications.

This report summarises the second year exploration program undertaken by geological consultants Global Ore Discovery (Global Ore) on behalf of Imperial. In this reporting year desktop analysis included land access notifications, cross section interpretation, exploration target calculations, financial analysis, legislation reviews and drillhole planning and permitting. Field work focussed on identification and mapping of sites for drilling, land holder liaison and meetings with DPIPWE in regards to Geoconservation sites.

Key findings were:

- Preliminary economic modelling, based on field and desktop research, has indicated that a mine with a 4:1 opencut stripping ratio and a 2Mt annual production may be economic given current conditions.
- Based on these parameters, an exploration target of 0-73 Mt of thermal coal has been identified
- A number of geoconservation sites potentially constrain any development operations that could be undertaken in the Imperial Tenure in the Fingal Valley including in EL8/2012. These issues could directly impact on the potential viability of any discovery within the EL and as such Imperial have not undertaken drilling activities, as originally planned.

Due to the identification of the Geoconservation sites, Imperial have not been able to complete the Program of Works as originally planned. Imperial have applied to the department for a suspension of license conditions, to allow the project and the Geoconservation sites to be re-assessed. If this assessment is favourable, and pending macromarket conditions, Imperial will move the projects forward through resource drilling.

The Year 3 exploration proposal includes nine holes consisting of 1385m of reverse circulation and 530m of diamond drilling, coal quality testing, land access agreements, cultural heritage, resource modelling, and planning and design and permitting of the year four program.

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1. Introduction

The Fingal-Avooca 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-Avooca District since the 1880's from both open-cut 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-Avooca 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 EL8/2012 which is the subject of this report.

EL8/2012 covers an area of 242.5 sq.km and is approximately 18.5km due south of Fingal Township (Figure 1). Access to the northern reaches of the licence is via the Valley Road from the Esk Highway or from the south via Royal George Road, Old Coach Road and McKays road. Rail is available approximately 23km to the north of the property via high quality dual carriage gravel forestry roads. The rail provides a valuable link to the export port of Bell Bay near Launceston some 180km to the north.

Within EL8/2012 Imperial is exploring for modest size open-cut and larger underground thermal coal resources that are of sufficient quality to meet export coal specifications. This report summarises the second year exploration program undertaken by geological consultants Global Ore Discovery (Global Ore) on behalf of Imperial during the period 23/10/2013 to 23/10/2014.

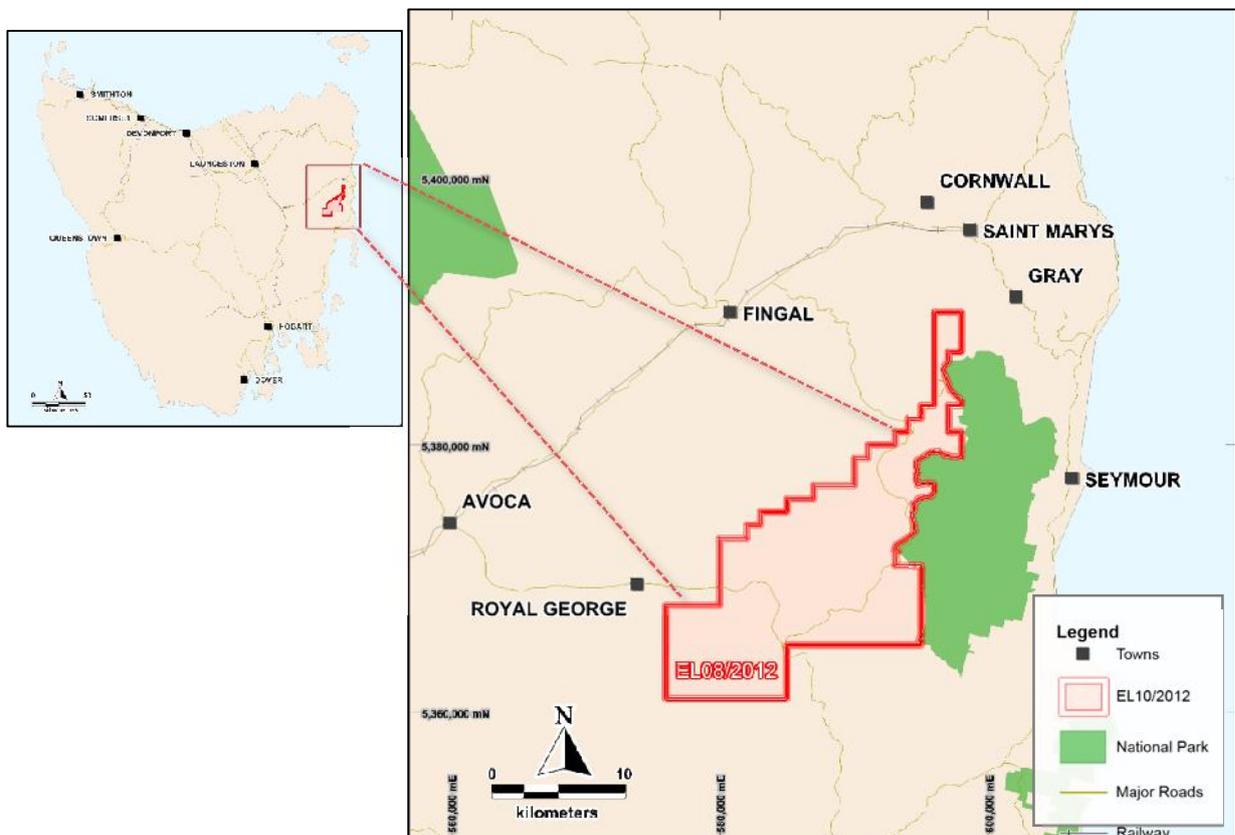


Figure 1 - Location overview of EL8/2012

2. Review of Previous Work

Imperial's first year exploration program, involving remote sensing, historic drillhole review, field mapping, and sectional interpretation, has increased the geological understanding of coal occurrences in EL8/2012. Key aspects of this work included:

- Literature and historic exploration data compilation and review
- ASTER processing and field follow-up program
- Mapping of the Dalmayne conglomerate (a key marker horizon)
- Identification and mapping of new coal outcrops
- New understanding of the potential for shallow coal (potentially open-pittable) through sectional interpretation

Due to significant vegetation cover at the time of acquisition, ASTER imagery 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. The ASTER imagery guided Imperial to areas where outcrop to subcrop of the Parmeener Group could be mapped. Global Ore's field team was able to map a 4km strike length of the Dalmayne Conglomerate, which is a key marker horizon identified by Shell in its resource drilling of the Dalmayne Area (Sansom, 1980). Sediment thickness between the Dalmayne Conglomerate and the first underlying seam is very consistent, and this mapping will therefore help with future 3D modelling of the coal seam and faulting in the area. Given this success, further mapping is required in the second year of the licence to increase the mapped distribution of the horizon.

Mapping by Imperial located 5 new coal outcrops including one seam of >2.5m thickness in EL8/2012. Preliminary analysis of the relationship between this particular seam outcrop and historic drilling indicates that this may potentially be the Dalmayne A seam which was intercepted in FT77B (Seam B) just outside of the licence at ~248m depth.

New outcrops of coal seams provide additional 3D control on the distribution of coal seams at relatively low cost when compared to drilling. 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 in the St Pauls River Valley floor. Initial analysis indicated that small to medium size resources may be identified by further work. It should be noted that Imperial was unable to undertake any field reconnaissance in the key area of interest with known coal outcrops due to landholder access issues.

3. Exploration Completed during the reporting period

Preliminary Economic Modelling

The Triassic Upper Parmeener Supergroup Coal Measures that occur within the licence area have been shown by previous explorers to potentially contain significant resources of thermal coal. There is no known occurrence of metallurgical or PCI coal within the licence area. Thermal coal has the lowest value of the three product types described.

The exploration licence contains a significant area that is overlain by a thick sequence of Jurassic dolerite, which is responsible for the steep topography of the project. As a consequence, the areas covered by dolerite are difficult and expensive to explore and are amenable to underground mining only.

All exploration activities must be dictated by potential economic or strategic outcomes. These potential outcomes vary through time depending on circumstances that are forecast or that prevail at the time. The economic outlook for thermal coal over the foreseeable future does not warrant the level of investment required to define a significant underground resource that can only be recovered via an expensive capital and operating cost underground mine.

Any mining operation is dictated by the quality of the resource, the cost of mining and processing the resource, infrastructure required for providing power, water and transport of product to customers, and most significantly, the value of the commodity when sold. The project area has excellent infrastructure within easy reach, with power and rail within a short distance from potential operational areas, and access to a deep water shipping port at Bell Bay.

A rational decision was made to direct all immediate exploration activities into determining the potential of the licence area to contain an economically viable open-cut thermal coal resource that occurred beyond the base of the Jurassic dolerite. An economic model was developed for a potential open cut mining operation within the Fingal Valley that produced 2 million tonnes per year of washed coal suitable for export to Asian customers for power generation. There are no markets available for coal in Tasmania outside of those already being supplied by Cornwall Coal, which has been operating in Tasmania under various guises for over 100 years.

The economic model was developed over a 15 year mine life, which included all exploration, development and capital expenditure. The model included the construction of a wet coal processing plant and utilisation of the existing TasRail Fingal-Bell Bay rail network and access to TasPorts Berth 2 at the Port of Bell Bay. Local contractor mining rates were used in the model.

To aid in deriving some of the parameters in the economic model collection of important infrastructure data was carried out by an investigative team from Imperial Coal. This investigative team undertook site visits and discussion with key personnel at the TasPorts Bell Bay facility, existing/potential coal mine operators in Tasmania and Melbourne, and desktop research into the potential capacity of the rail system to service any further coal transportation.

The Bell Bay Port is currently a 24hour operation with shipping movements that are tide limited and the largest capacity cargo ships are Panamax (60-80,000 DWT). Given this an estimated maximum potential capacity of a berth supplying a single ship that enters port on a high tide and leaves on the next high tide (1 ship per 24 hours) is around 10-20Mt/annum. At the time of the inspections a paved Berth (Berth 2) was potentially available for use with a stockpile capacity of around 160kt. Further industrial land was available in the port lands for additional stock piles, which would require a conveyor system to the loading docks. An unused woodchip loader could potentially be retrofitted to handle the coal loading, however detailed engineering studies would be required to confirm that this is the case.

Additional rail of approximately 1km would be required to be built for the current rail termination to deliver coal to any loading facilities at Berth 2.

Imperial's Fingal Valley project lies approximately 180km away from Bell Bay Port by Rail. Desktop research undertaken on the Tasrail indicates that currently coal is transported 2-3 days a week from Cornwallis Fingal Operation (~160,000tpa). In 2012-2013, \$100 million was spent on rail upgrades, with another \$120 million expected between 2013 and 2018. In 2013 a new locomotive fleet was purchased and this was expected to increase capacity by up to 90%. Based on the capacity of the rail line to Bell Bay with the current freight amounts from Cornwallis operations at Fingal and expected increase rates of freight from Hardrock's Fingal Tier operation, Imperial estimates if it was to export 2 million tonnes per annum through Bell Bay using the current rail network that 2-3 additional rail sidings would be required to meet the demand.

Using the information gathered Imperial modelled two key metrics for an open-cut mine; the FOB price of the product and the stripping ratio of the operation. Modest price and exchange rate forecasts were used based on information collected from leading International and Australian based trading companies. The maximum stripping ratio that an open-cut mine within the Fingal valley could economically tolerate was 4:1 (4BCM's waste to 1 tonne of ROM coal). The target area for the near-term exploration within the licence was generated based on this stripping ratio.

Sectional Interpretation and Exploration Target Calculations

Global Ore Discovery have completed sectional interpretation on EL8/2012 to assist with the calculation of exploration target sizes. This was divided into two geographical areas: Merrywood Southeast and Merrywood Southwest.

The interpretations used drilling completed by the Department of Mines Tasmania and other explorers from the 1970s to the 1990s. A total of 39 drill holes were included in the model, with an average spacing of 1km along strike and 5km perpendicular to strike. Most drillholes were core, although some were open hole with limited downhole geophysics.

The sectional interpretation also utilised outcrop and prospect locations recovered from Mineral Resources Tasmania and new outcrops identified in the field by Imperial. In Year 1 of the program, Imperial completed preliminary check logging of some drillholes available in the Tasmanian government core library, and attempts were made to verify the locational accuracy of drillholes in the field although most were well rehabilitated. To allow for locational inconsistencies within the historic drillhole dataset, elevations of drillhole collars were tied to a DEM grid created from 25k government topographical data.

Open-cut exploration targets were calculated based on an average strip ratio of 4:1. This strip ratio assumed a planar topographic surface and may therefore over-estimate tonnes if the surface is convex or under-estimate tonnes if the surface is concave. It additionally did not consider any batter on the highwall.

The density of the seams was assumed to be 1.5g/cc. This is considered conservative as seams prior to wash typically have a higher density due to ash content. Notably, most wash tests use a 1.5g/cc cut-off so calculations using this value will more than likely represent the tonnes of washed product.

Seams with less than an average thickness of 1m were not of interest due to economic considerations and have not been considered in the calculation.

Dip is shallow (between 1-2 degrees) on well-controlled sections, and this was used to extrapolate on less-controlled sections (i.e. with only one hole, or between sections without drilling and no faulting modelled or easily observed due to the scarcity of data).

These exploration targets did not consider losses generated from:

- Oxidation – no information is available to model the losses due to oxidation
- Mining method – no losses are considered for dilution and ability to extract the complete seams.
- Geological intrusion and washouts – dolerite bodies have intruded parts of the sequence in the nearby drilling, however due to lack of data these have not been considered. Washouts have been observed by the Authors to potentially stope out coal seams in the Mt Nicholas Area; losses due to washouts have not be considered in the exploration target.
- Faulting – modelling of seams by Imperial and staff of Hardrock Mining (pers. comm.) indicate that faulting may not be as significant as suggested by previous explorers in the Fingal Tier area, however no losses due to faulting have been used in the calculations of the exploration target size.
- Wash plant processing – Losses at the wash plant additionally have not been estimated in the calculations of the exploration target size.
- In some cases, drill holes failed to intercept the anticipated seams, indicating potential pinching out. This has not been included in the exploration target calculations. Seams were modelled as being laterally continuous between control points, even when not intersected, and this will lead to over-estimation of the target size. Average seam thickness did not account for pinch outs, however in other cases abnormally thick seams have also been ignored.

The exploration targets also did not consider the potential of additional tonnes that could occur in a 4:1 average strip ratio mine scenario due to the reduction of overburden from the mining of the overlying seams where the interburden was sufficiently thin.

Work Approval Programme

The preparation for MRT of the Work Approval Programme for the proposed drilling programme was carried out by Imperial Coal and Donato Environmental Services. Donato Environmental Services carried out all the mandatory searches and analyses of the publicly available databases for matters of ecological and cultural significance. Donato Environmental Services then spent 3 days in the field carrying out a visual inspection of the proposed work areas and noted any relevant observations for inclusion in the proposal.

The final location of the proposed drillholes was a two part process. Initial sites were located close to the planned locations, utilising areas that had been cleared by forestry operations. Considerable time was spent re-establishing suitable access to the proposed drill sites along existing forestry trails. Final drillhole locations were determined following a site inspection of all the proposed drill sites by a representative of Donato Environmental Services. A report by Donato Environmental services is attached to the report in Appendix 1 – Donato Environmental Services Report.

As part of Donato analysis of ecological and cultural significance it was discovered that Imperial's Merrywood project in the Fingal Valley was significantly compromised by a Geoconservation Site (Geosite 2140). This site, known as the Mt St John – Rosemount Flat Mass Movement Complex covers the area of interest identified by Imperial Coal for proposed drilling activities. The geosite is a listed site in the Tasmanian Geoconservation Database (TGD) with the following description provided:

'Mass movement landform complex which is a well examined extension of the Mt Punter complex. It contains numerous large enclosed depressions and slump landforms. Together with Mt Punter this complex forms the largest mass movement landform assemblage identified in the Eastern Tiers'.

Further information on the geosite (report to Forestry Tasmania by C. Sharples, 1995) indicates that additional field examination is required to delimit the area of interest and that the status of knowledge of the site is poor. The report also states that the site is listed separately to the Mt Punter Complex because the presence of block slides has not been determined in the Mt St John – Rosemount Flat Complex.

Information provided by various Departments indicates that this Geoconservation site should not be a significant impact on drilling activities, however it is less clear how this site would impact on any future mining activities in the EL8/2012 given that it overlaps with a significant proportion of the exploration target. In order to give certainty to Imperial moving forward with exploration a suspension of licence conditions has been sought so that Imperial can seek a reassessment of Geosite 2410.

4. Discussion of results

Merrywood South East Exploration Target Calculations

At Merrywood South East a total of 8 seams were modelled in cross sections (Table 1, Figure 2) with seven of these seams tentatively correlated to the Dalmyne seams as defined by Shell (Sansom, 1980) in the 'Gray' drilling to the NW of EL8/2012. The St Mary's Seam is a newly defined seam that was not able to be correlated to other seams defined in the Shell Gray drilling of the Department of Mines Fingal Tier Drilling (Bacon, 1991). Average thickness of these seam ranges between 1.32m and 3.25m with most seams averaging between 1-2m. Opencut exploration target sizes in a 4:1 average strip ratio scenario for the modelled seams are from between 0-3.2Mt and 0-19.2Mt (Table 1) with a total estimate for the Merrywood South East area being 0-67Mt. This area represents the largest opencut exploration target in Imperial Exploration Licences in the Fingal Valley Coal Field calculated to date.

The drill program submitted to the department aimed at converting as much of this exploration target as possible to an inferred resource if drilling intersected seams as anticipated.

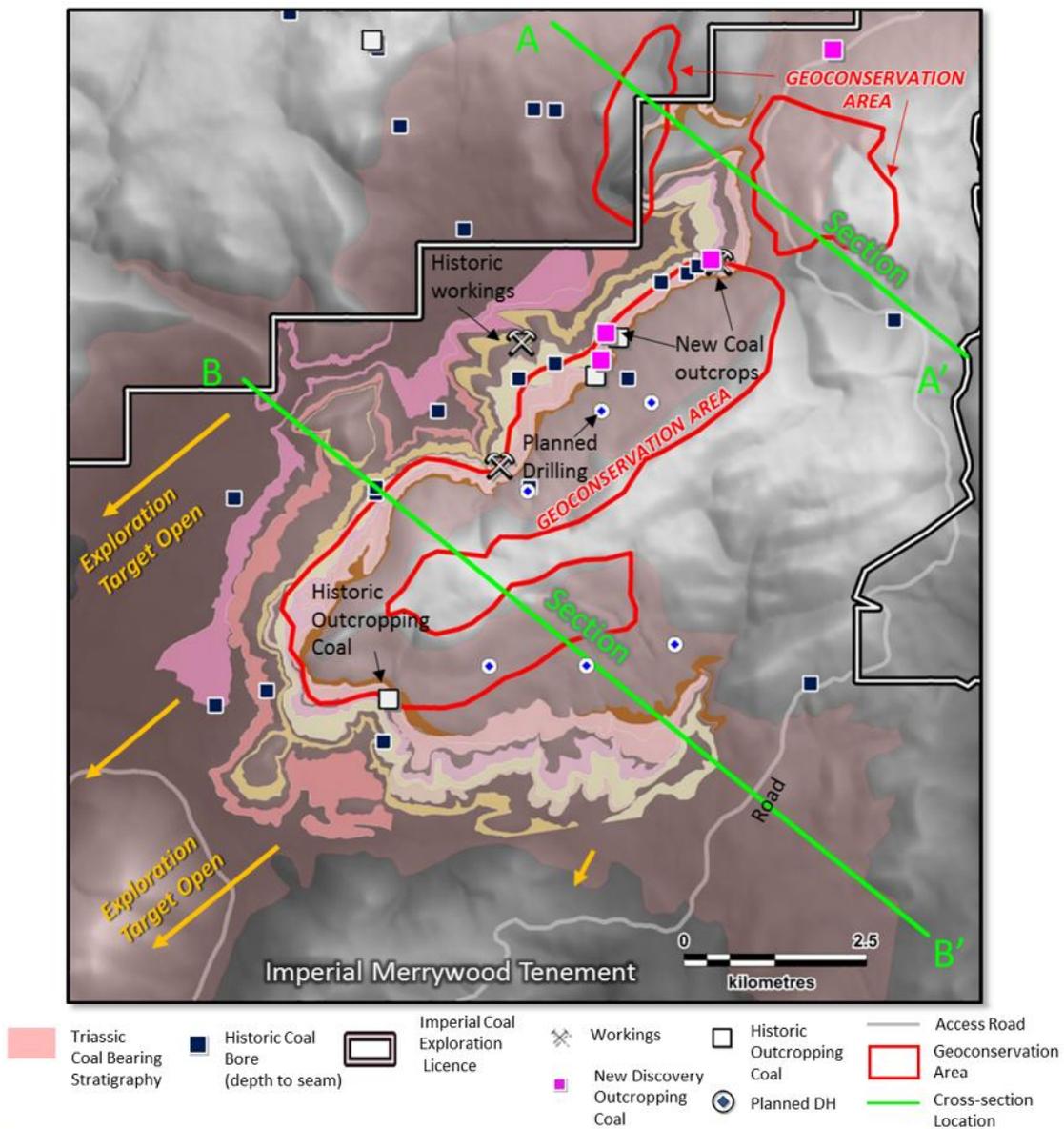


Figure 2 Merry South East, Exploration target Area under a 4:1 strip ratio, points of observation, example section lines and Geoconservation Areas

As discussed earlier a significant proportion of the exploration target lies within a Geoconservation site that was identified during the environmental surveys undertaken as part of the drillhole approval process.

Table 1 Estimated potential size for the main seams modelled in Merry South East target area.

Seam Area 4:1 strip ratio	Avg. Thick. (m)	Opencut Exploration Target (Mt)*
St Mary	1.88	0 - 8
?Dal A Upper	3.25	0 - 19
?Dal A Lower	1.44	0 - 4
?Dal B Upper	2.77	0 - 18
?Dal B Lower	1.32	0 - 3
?Dal C	1.43	0 - 4
?Dal D Upper	1.33	0 - 3
?Dal E	1.93	0 - 8

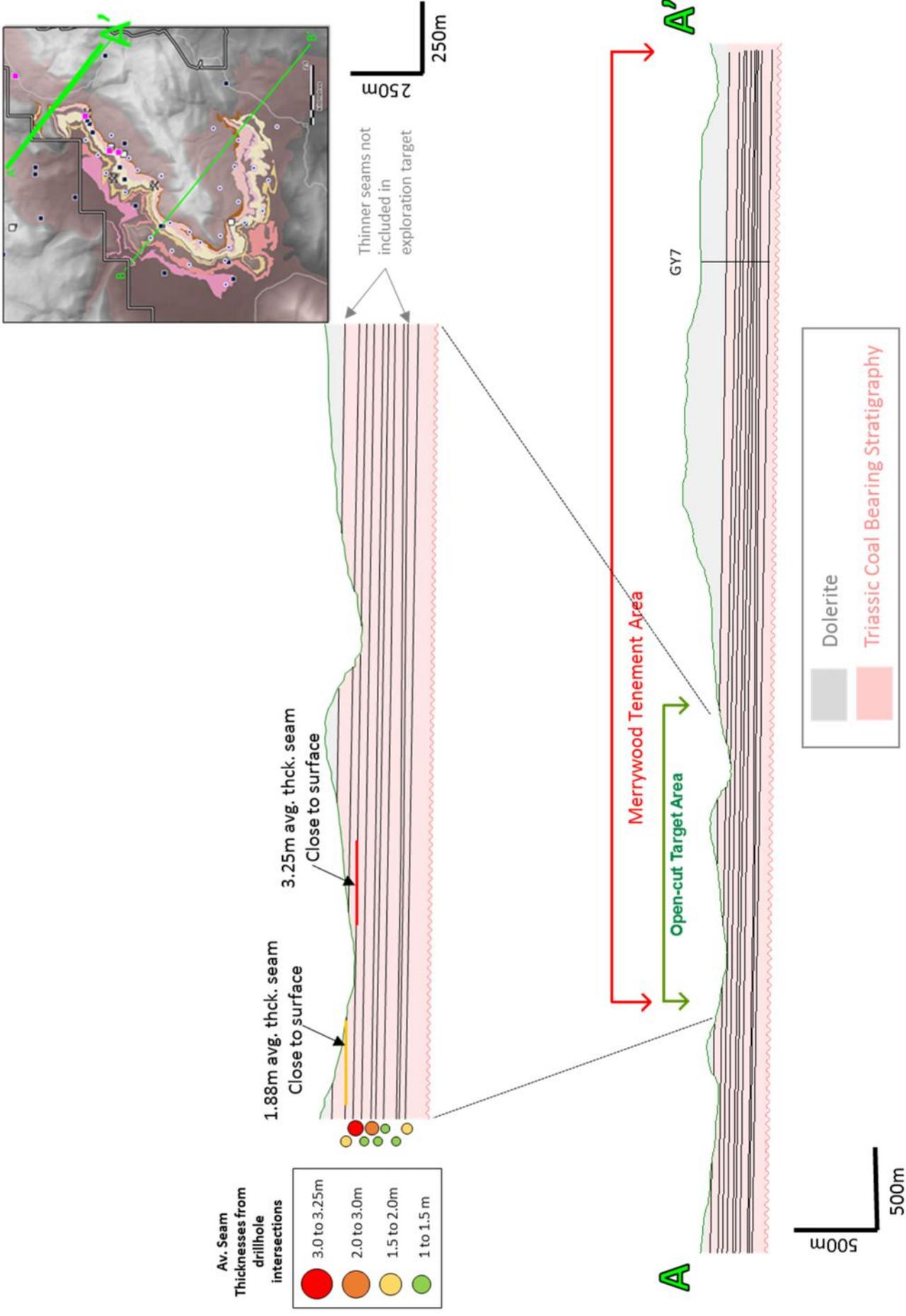


Figure 3 Section A-A' Merrywood South East Exploration Target Area

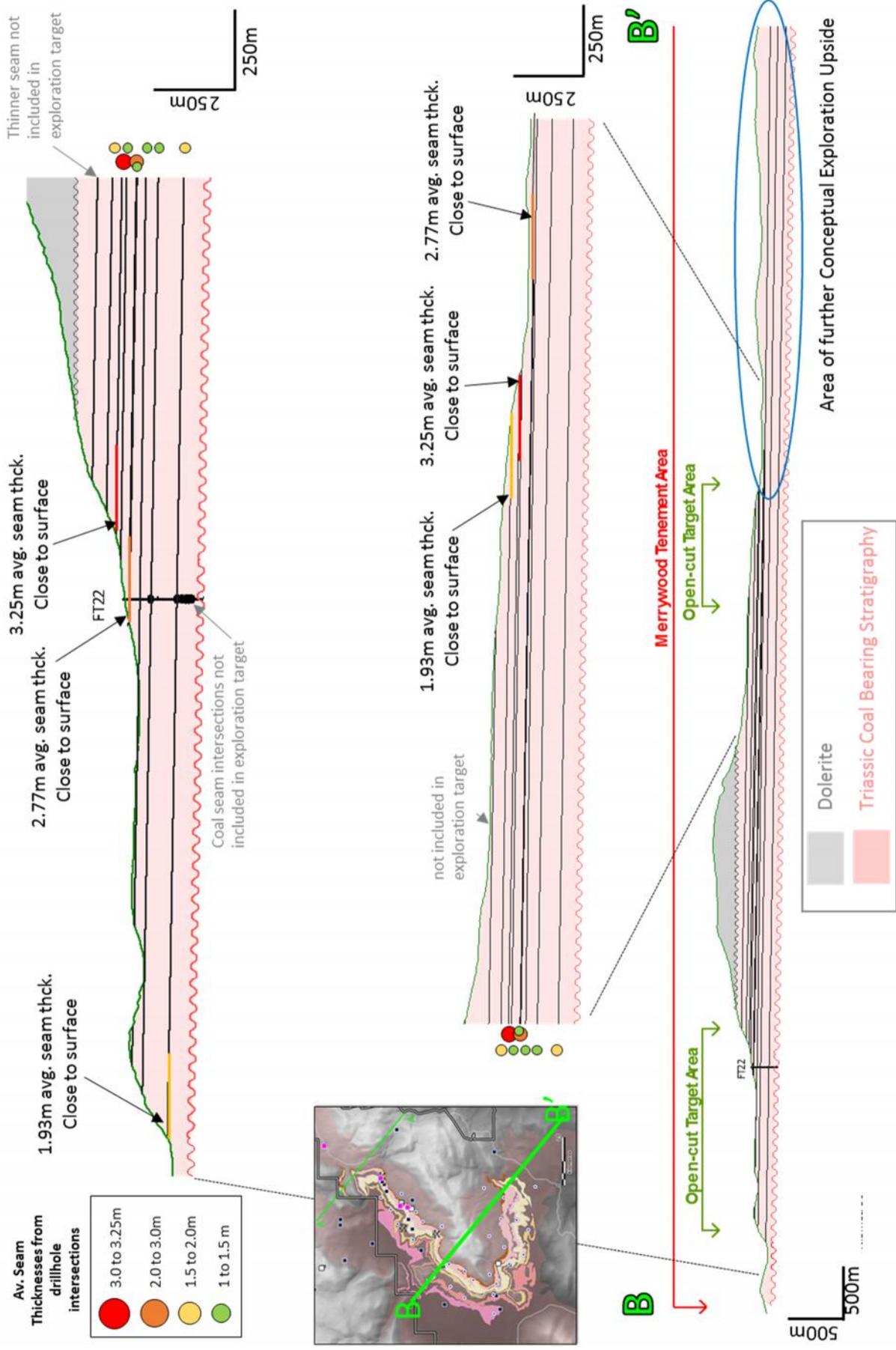


Figure 4 Section B-B1 Merrywood South East Exploration Target Area

Merrywood South West Exploration Target Calculations

At Merrywood South West a total of 7 seams were modelled in 2D Section (Table 2, Figure 5) that were left uncorrelated to the Gray (Sansom, 1980) or Department of Mines drill holes (Bacon, 1991). Average thickness of these seam ranges from between 1.08m and 2.54m, with most seams averaging between 1-1.5m. Exploration target sizes run from between 0-1Mt and 0-3Mt with a total estimate for the Merrywood Southwest area being 0-6Mt at the 4:1 strip ratio.

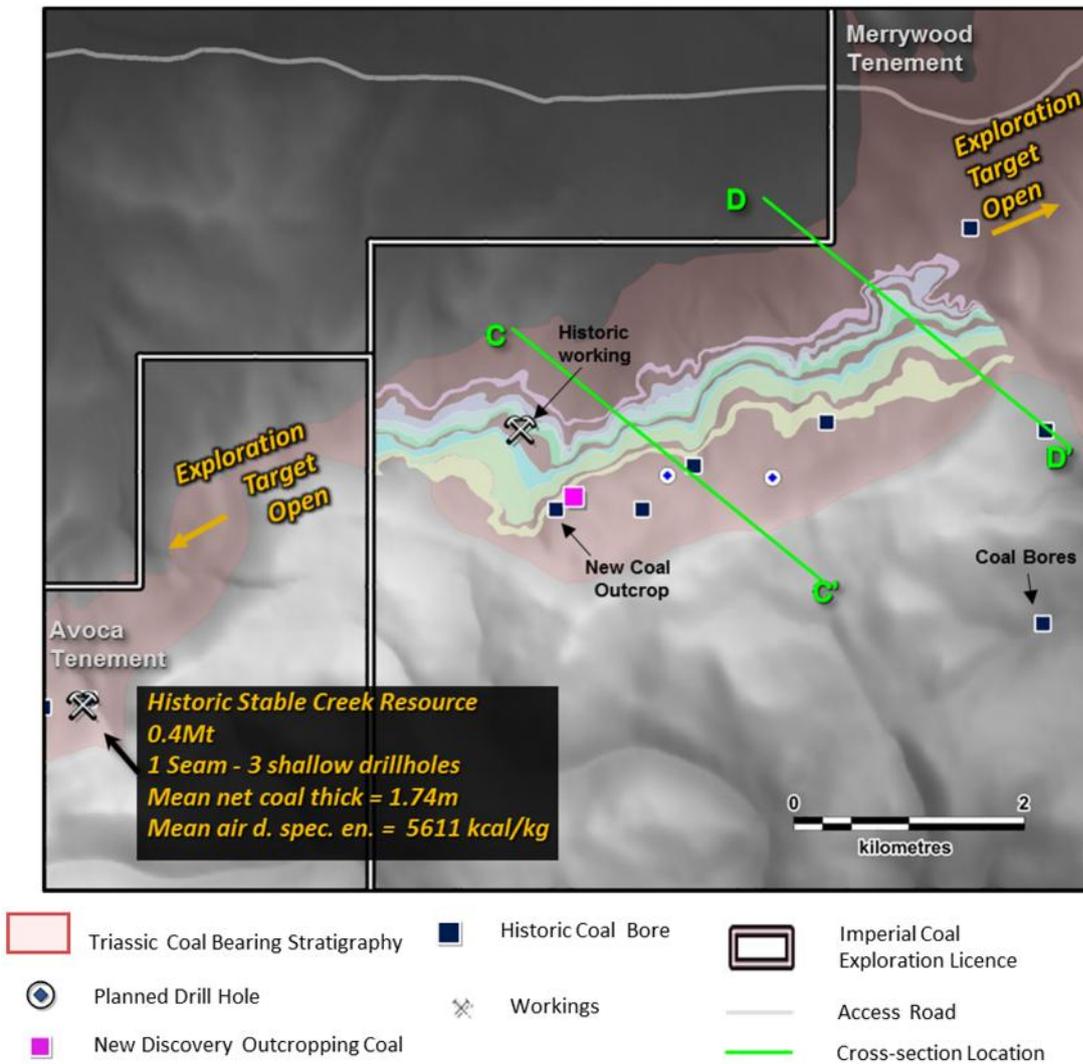


Figure 5 Merrywood South West Target Area, showing area of seam 4:1 strip ratio, example cross section, planned drilling locations.

Although this initial opencut exploration target is small, coal seams are interpreted to extend SW along strike into Imperial Coal's Avoca tenement for at least for 4kms to the Stable Creek area where a small 0.4Mt resource was calculated on a seam averaging 1.74m thickness and average energy of 5611kcal/kg (Morrison 1995). Initially no drilling has been planned in the Merrywood SW target area to allow for exploration to focus on the potentially larger Merrywood SE target areas.

Table 2 Potential exploration target sizes for the seam modelled in Merrywood SW

Seam	Average Thickness (m)	Opencut Exploration Target (Mt)
1	1.24	0 – 1
2	2.54	0 – 3
3	1.5	0 – 1
4	1.15	0 – < 1**
5	1.91	0 – 1
6	1.08	0 - < 1**
7	0.94	0 – < 1**

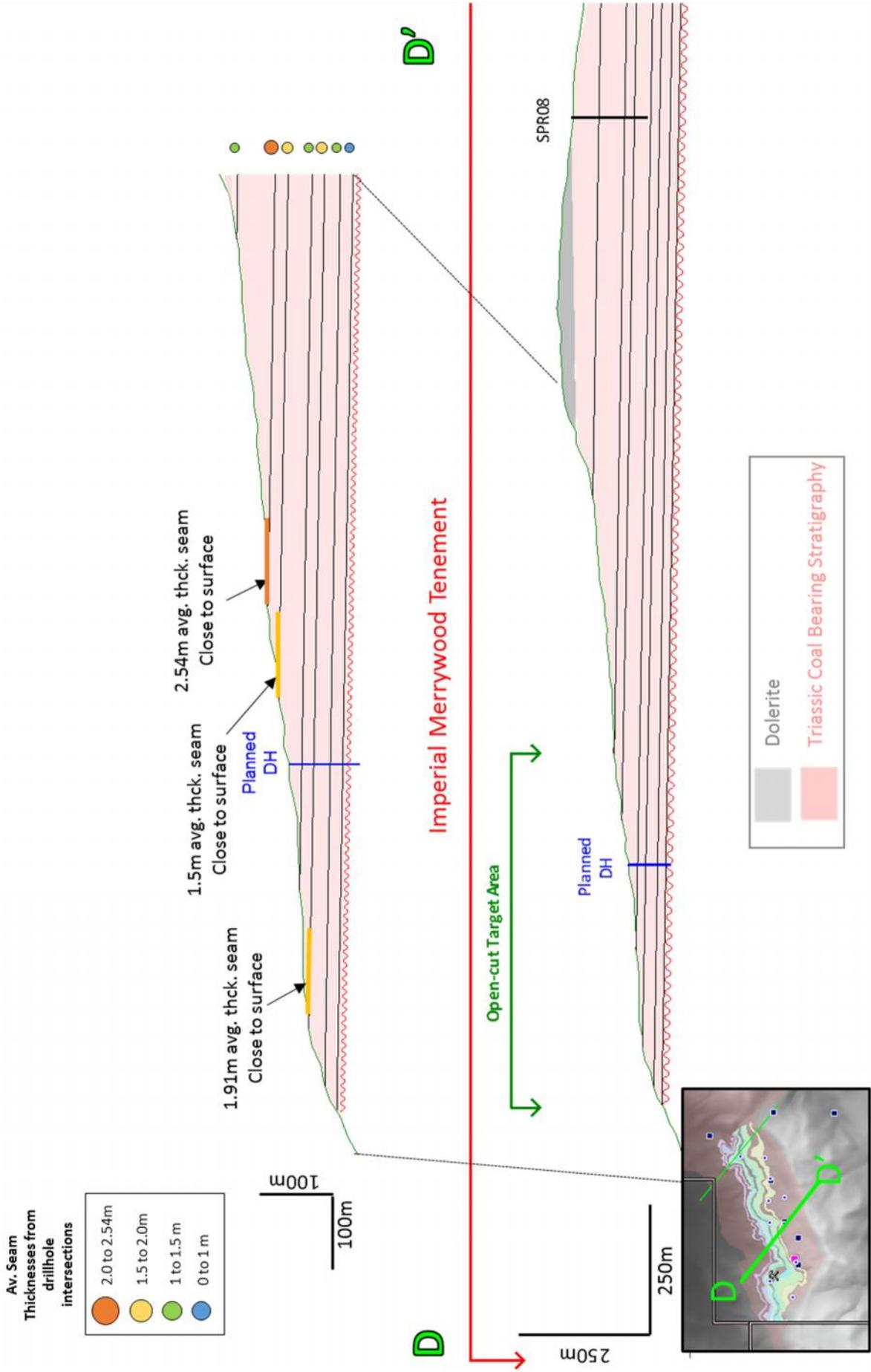


Figure 7 Section D-D' Merrywood South West Exploration Target Area

5. Conclusions

Imperial's second year exploration program built on the first year data compilation and field mapping by completing sectional modelling, exploration target calculations, preliminarily financial modelling, landholder liaison and environmental studies on proposed drill sites.

Preliminary economic modelling, based on field and desktop research, has indicated that a mine with a 4:1 opencut stripping ratio and a 2Mt annual production may be economic given current conditions. Based on these parameters, Imperial has identified the exploration potential for a modest (0-73mt) opencut thermal coal target in two areas within EL8/2012. Proposed drillholes have been sited in highest potential areas, with the aim of maximising size and confidence of a future inferred resource.

Environmental studies of the proposed drillhole locations has identified a Geosite coincident with the opencut exploration target. It is unclear how this Geosite will impact on any future mine if a discovery was made and Imperial is therefore seeking a suspension of licence conditions to allow reassessment of the site.

6. Environment

None – See Donato Environmental Report (Appendix 1 – Donato Environmental Services Report) for additional information on Environmental matters that may be of issue for further exploration in the Licence

7. Expenditure

Imperial has not met the expenditure that was expected on the licence due to not undertaking the drill program. This drill program is anticipated to be undertaken if the Geosite2140 is reassessed and deemed not to be an impediment to any future opencut mining.

Table 3 Expenditure statement for EL8/2012

	Annual Expenditure
1A. Geology	\$14,701.19
1B. Geochemistry	\$-
1C. Geophysics	\$-
1D. Remote Sensing	\$-
2A. Gridding	\$-
2B. Drilling	\$6,697.50
3. Land Access Costs	\$11,245.48
4. Rehabilitation	\$-
5. Feasibility Study	\$4,869.29
6. Other (fees, surveys etc)	\$6,742.83
7. Administration Costs	\$4,358.35
TOTAL	\$48,614.64

References

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Keywords

Coal Black

Coal General

Fingal Coal Field

Dalmayne

Mt St John

Upper Parmeener

Lower Parmeener

Tasmanian Basin

ASTER

EL8/2012

Geosconservation Sites

Geosite 2140

Appendix 1 – Donato Environmental Services Report

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REPORT



Environmental desktop study of exploration lease EL8/2012 – Merrywood, Fingal Valley, Tasmania

Report to:

Imperial Coal

June 2014

V1

DES

Disclaimer

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Citation

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Distribution

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Background

Imperial Coal Pty Ltd (Imperial Coal) holds three tenements for coal in the Fingal Valley in northeast Tasmania. These tenements, Avoca (EL15/2012), Merrywood (EL8/2012) and Silkstone (EL10/2012) cover a combined area of 520 km² and are shown in Figure 1. Historic and active coal mining operations exist in tenure adjacent to Imperial Coal's exploration tenements including the active Duncan Mine. Historic exploration drilling has been conducted within Imperial Coal's leases by previous tenement holders indicating prospective thermal coal resources. Results from these historic drilling programs have been used to help define the currently proposed coal exploration drill program to be conducted by Imperial Coal. One of these tenements, exploration lease (EL) 8/2012, known as Merrywood, is located approximately 6 km south (northern boundary of lease, direct line) of St Marys and covers an area of 243 km². Two areas of interest for the current proposed coal exploration activities have been identified and are located in the south-western portion of the lease (Merrywood south) and in the central-eastern portion of the lease (Merrywood central). Both areas of interest are contained entirely on primary timber production zone land and private freehold land.

Exploration activities in Tasmania are governed by Mineral Resources Tasmania (MRT) under *Mineral Resources Development Act 1995* (MRD Act). A Mineral Exploration Code of Practice has been developed and is approved under section 204 of the MRD Act. Compliance with this Code is a standard licence condition for all explorers. Prior to exploration drilling taking place, a work program must be submitted to MRT for approval. As part of the approval process, land managers and other relevant government bodies are invited to comment on the program. The work program must include details of the activities to be undertaken as well as potential impacts to flora, fauna, archaeological sites and mitigation measures to be implemented to minimise impacts. Proposed rehabilitation methods should also be provided within the work program.

As part of the work program approval process, Imperial Coal engaged Donato Environmental Services (DES) to undertake an environmental desktop study to be submitted as part of the work program approval. Specifically, the desktop study was to include details on:

- land tenure and status of the areas of interest;
- current land use of the areas of interest;
- soil descriptions that may be affected by earthmoving operations;
- vegetation that may be affected;
- rare or threatened species or communities known from within the areas of interest;
- sites of historic or archaeological significance; and
- any other environmental constraints.

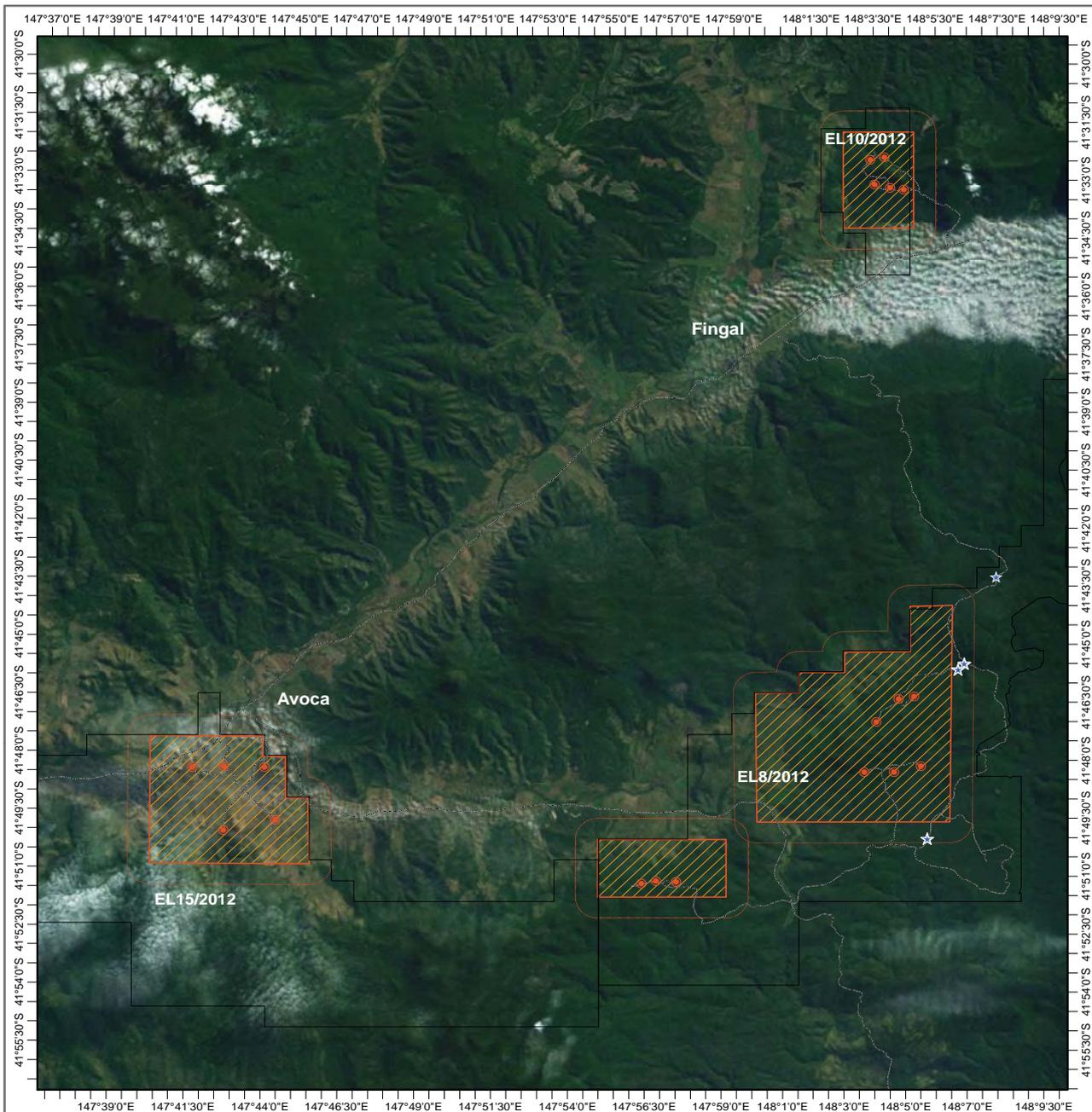
This report provides the findings of this desktop study as well as

Proposed drilling program

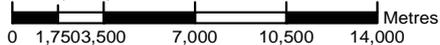
observations of field conditions as reviewed during a site visit in May 2014 by DES. Management and precautions to be taken to limit any potential impacts are provided and recommended methods for rehabilitation are also included. This report covers exploration activities on the Merrywood lease only. Specific reports covering exploration activities on the Silkstone and Avoca leases are provided separately.

Imperial Coal is currently proposing to undertake exploration drilling for coal (thermal) within the Merrywood exploration lease (EL8/2012). Two areas of interest within the lease have been defined and drilling programs developed to target these areas. Figure 2 shows the areas of interest and proposed drill holes. Three drill holes (one diamond drill hole and two open-hole drill holes) are proposed for Merrywood south and are denoted as MWSDDH04 (diamond drill hole), MWDS03 and MWDS12. For Merrywood central, six drill holes (two diamond drill holes and four open-hole drill holes) are proposed and are denoted as MWDD25H and MWDDH04 (diamond drill holes) and MWD01, MWD07, MWD22 and MWD29. All proposed drill sites are shown on Figure 2 and photographs of each site is provided in Appendix A. Specific details of the drilling program are provided in the main work program approval application (provided by Imperial Coal).

Each drill site will encompass a hard-stand area of approximately 25 m by 25 m (excluding access tracks). This area will allow for safe access and operations during drilling activities while limiting disturbance to the extent feasible. Wherever possible, above-ground tanks will be used to contain and re-circulate water encountered during drilling activities. Where it is not possible to locate tanks on site, sumps approximately 2 m long by 1 m wide and 0.5 m deep will be constructed downstream of the drill hole. For open-hole drill sites, one tank or sump will be required while for diamond drill hole sites, three sumps or tanks will be required. Drilling activities will be short term with open-hole drilling completed in approximately one day (depending on conditions encountered during drilling) and approximately ten days for diamond drill holes (again dependent on conditions). Drilling will be conducted during day time only, and no night drilling will be conducted. Drillers will be based in towns close to the site and no camps will be required. Rehabilitation of the sites will be conducted as soon as practical at the completion of drilling activities.



Map No.: IC144v1
 Drawn: DMH
 Checked: NDO
 Scale (at A4) 1:248,000



Coordinate System: GDA 1994 MGA Zone 55

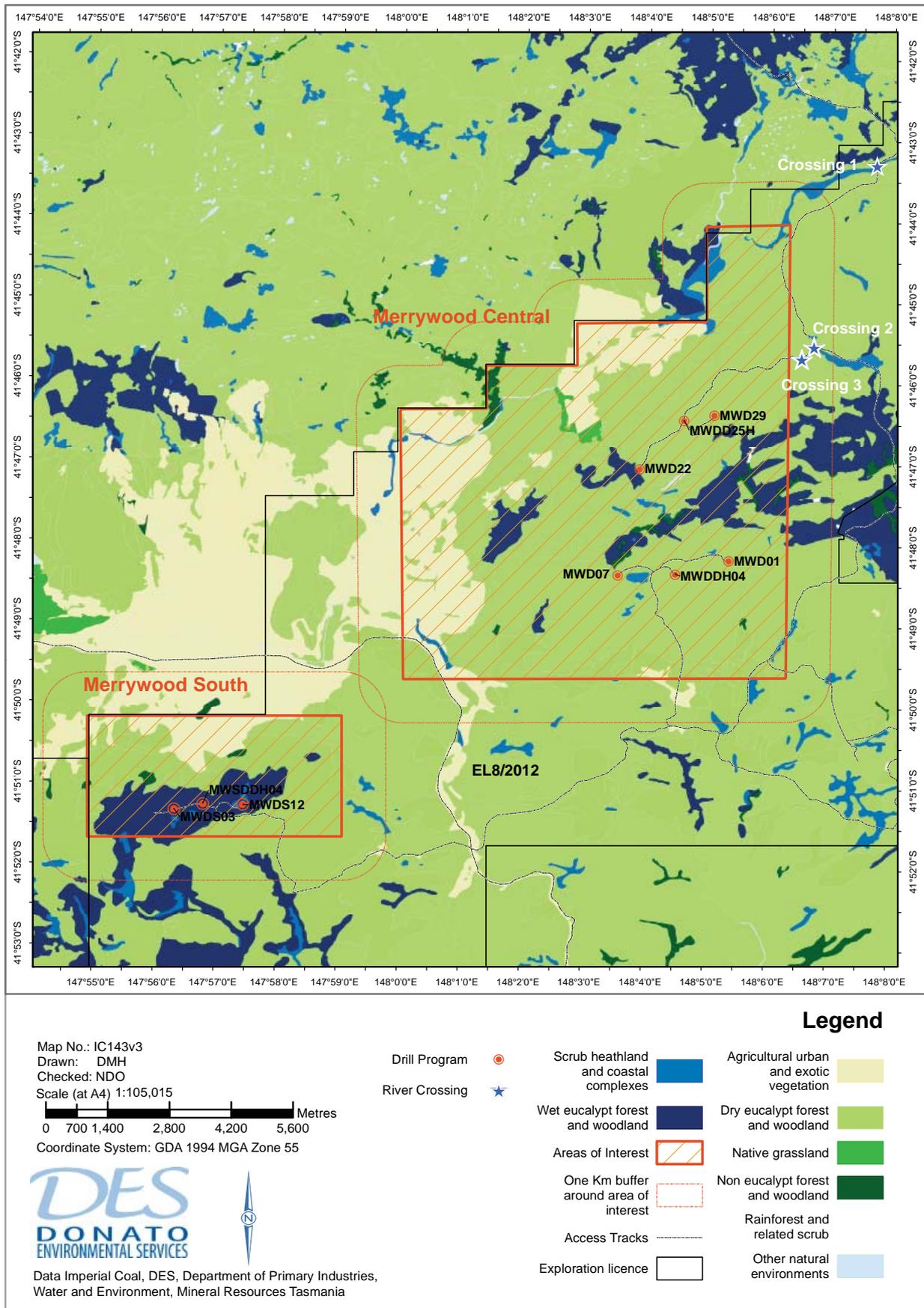


Data source Imperial Coal, DES, Department of Primary Industries, Water and Environment, Mineral Resources Tasmania; Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Areas of Interest
- One Km buffer around area of interest
- Access Tracks
- Exploration licence
- Drill Program
- River Crossing

Figure 1. Imperial Coal Pty Ltd exploration tenements in the Fingal Valley, Tasmania



Document Path: N:\GIS\Databases\Imperial Coal\IC143v3 Merrywood.mxd

Figure 2. Imperial Coal's Merrywood tenement, Exploration Lease 8/2012

Methodology

Information presented in this report is primarily derived through desktop surveys. Database searches were carried out to obtain available information on flora and fauna species, soils, land tenure and any other environmental matters of significance both on a state and federal level in the areas of interest. Searches specific to threatened flora and fauna included:

- Department of Primary Industries Parks, Water and Environment databases (Natural Values Atlas and the land information system Tasmania (List)) within and extending to 1 km beyond the boundary of the areas of interest (as shown on Figure 2);
- other databases such as the Atlas of Living Australia: Tasmania, within and extending to approximately 1 km beyond the boundary of the areas of interest;
- an EPBC protected matters search within and extending to 1 km beyond the boundary of the areas of interest;
- other relevant databases and online publications such as, but not limited to, Natural Resource Management (NRM) North Tasmania.

Searches specific to threatened fauna included:

- Birdlife Australia database – search was performed for the overall tenement areas

Other searches specific to Important Bird Areas; RAMSAR wetlands, vegetation types, heritage, geoconservation, soils, reserves, covenants, private reserves, land status and use included, but not limited to:

- an EPBC protected matters search within and extending to 1 km beyond the boundary of the areas of interest;
- Birdlife Australia database search within and extending to 1 km beyond the boundary of the areas of interest;
- Department of Primary Industries Parks, Water and Environment Natural Values Atlas Tasmanian Vegetation database (Natural Values Atlas and the List) within and extending to 1 km beyond the boundary of the areas of interest; this database was searched for vegetation associations within the area of interest;
- an EPBC protected matters search within and extending to 1 km beyond the boundary of the areas of interest;
- reserves, covenants and private reserves such as those owned by, but not limited to, Tasmanian Land for Conservation and Wildlife Trust were determined via the Natural Values Atlas and personal communication (pers. com. D. Madden-Hallett, DES); and
- general literature and databases such as, but not limited to, the Australian Soils database, Mineral Resources Tasmania database, the Natural Values Atlas database, the List, Australian Heritage database, Tasmanian Heritage Register, National Land and Water Resources Audit Atlas, Environment Protection Agency Tasmania

and Australian Rivers and Natural Resource Management (NRM) North Tasmania.

A field visit of the areas of interest including each proposed drill site was conducted from 19 to 21 May 2014 inclusive by Noëlle Overdeest (DES) and Chris Creagh (Imperial Coal Pty Ltd). The site visit included reviewing accesses to each drill site and identifying any environmental issues associated with drilling activities (including location of sites and access). Opportunistic observations of wildlife and flora within the vicinity of the drill sites and accesses were conducted and documented. Photographs of all sites were taken to show relative location of site, extent of clearing (if required) and environment directly adjacent to the drill sites. All drill site locations were marked with a GPS for later mapping. Specific mitigation measures to avoid and minimise potential environmental impacts were identified as part of site observations and where required, drill sites were adjusted to avoid or minimise any clearing required. No specific flora or fauna surveys were conducted as part of the site visit.

Results

Land tenure, status and current use

The areas of interest for the current work program are shown in Figure 2. The Merrywood central area of interest is located entirely on land classified as permanent timber production zone land while the Merrywood south area of interest is located on permanent timber production zone land (one hole) and private freehold land (two drill holes). The Hardings Falls forest reserve is located approximately 500 m south (direct line) of the nearest proposed drill hole (MWD01). Although access may pass through this reserve, only existing forestry tracks will be used and only clearing associated with maintaining these tracks will be conducted. No further clearing will be necessary. The Douglas-Aspley national park abuts the eastern lease boundary and will not be affected by drilling activities. A number of other small areas of regional reserve and conservation covenants are located within the EL8/2012 boundary (listed in Appendix B), however these are all located away from access tracks and drill sites. No impacts to these sites as a result of the proposed drilling program are expected.

Soils

A review of soil types within the areas of interest was conducted using the Natural Values Atlas and the List database system. Although specific soil testing data of the drill sites and access tracks was not available, soils within the Merrywood south region are classed as dermosols and ferrosols, derived from alluvial gravel, sand and clay and undifferentiated quaternary sediments. Soils within the Merrywood central region are classed as sodosols derived from undifferentiated quaternary sediments; sand, gravel and mud of alluvial, lacustrine and littoral origin; lithic sandstone, siltstone and mudstone with some coal and basal quartz sandstone. The results of the database search indicated that there is a low to extremely low potential for acid sulphate soils to be encountered at the proposed drill sites in both the Merrywood central and Merrywood south areas. Establishment of the drill sites may necessitate levelling

of the drill pad. Soils will be removed and stockpiled (conserved) next to the site prior to levelling and compacting the pad. On completion of drilling activities and as part of rehabilitation activities, these soils will be returned over the disturbed areas and the areas lightly scarified to promote infiltration and revegetation.

Vegetation

A search of vegetation types within the Merrywood exploration lease was conducted over the areas of interest including a 1 km buffer around these areas. The vegetation types identified from this search are provided in Table 1 and shown in Figure 2. During the site visit a review of vegetation types along access tracks and drill sites was also conducted. As shown in the photographs provided in Appendix A, vegetation within the Merrywood areas of interest has been modified through previous forestry practices. Drill sites were selected to minimise the amount of vegetation to be cleared with previously cleared areas chosen where possible. Preparation of the drill sites will require removal of some grasses and small regrowth at some drill pad sites and removal of topsoil. These materials will be stockpiled adjacent to the pad during drilling activities and re-spread over the site on completion of drilling. Care will be taken to minimise the spread of weeds as part of rehabilitation activities.

Table 1. Vegetation types identified for the areas of interest (List)

Vegetation type	Vegetation community	Occurrence at drill sites and/or access tracks (DES field observations)
Wet Eucalyptus forest woodland	<i>Eucalyptus delegatensis</i> forest over <i>Leptospermum</i> ¹ <i>Eucalyptus delegatensis</i> forest with broad-leaf shrubs ² <i>Eucalyptus delegatensis</i> wet forest (undifferentiated) ^{1,2}	Possible
Non eucalypt forest and woodland	<i>Acacia delbata</i> forest ² <i>Bursaria-Acacia</i> woodland and scrub ^{1,2}	Possible
Agricultural, urban and exotic vegetation	Agricultural Land ^{1,2} Weed infestations ² Plantations for silviculture ¹ Regenerating cleared land ²	Likely (regenerating cleared land))

Vegetation type	Vegetation community	Occurrence at drill sites and/or access tracks (DES field observations)
Dry eucalypt forest and woodland	<i>Eucalyptus rodwayi</i> forest and woodland ¹ <i>Eucalyptus amygdalina</i> forest on mudstone ¹ <i>Eucalyptus amygdalina</i> inland forest and woodland on Cainozoic deposits ² <i>Eucalyptus tenuiramis</i> forest and woodland on dolerite ^{1,2} <i>Eucalyptus delegatensis</i> dry forest and woodland ^{1,2} <i>Eucalyptus ovata</i> forest and woodland ² <i>Eucalyptus amygdalina</i> forest and woodland on sandstone ¹ <i>Eucalyptus amygdalina</i> forest and woodland on dolerite ^{1,2} <i>Eucalyptus obliqua</i> dry forest ^{1,2}	Possible
Native Grassland	Wet heathland ^{1,2}	Unlikely
Scrub heathland and coastal complexes	Eastern riparian scrub ² Broad-leaf scrub ^{1,2}	Unlikely
Other natural environments	Lichen lithosere ² Water, sea ²	Unlikely

¹ – Merrywood south

² – Merrywood central

Rare or threatened species or communities

A review of potential rare or threatened species and communities as listed under the Environmental Protection and Biodiversity Conservation (EPBC) Act (federally-listed) and the *Threatened Species Protection (TSP) Act 1995* (state-listed) was conducted. The search was conducted within and extending to 1 km beyond the boundary of the areas of interest (as shown in Figure 2). The findings of this search are summarised in Appendix B.

Under the EPBC Act, three listed threatened ecological communities were recorded as possibly occurring or relating to the defined search areas. These communities, Alpine Sphagnum Bogs and associated fens (endangered under the EPBC Act), Lowland Native Grasslands of Tasmania (critically endangered under the EPBC Act) and *Eucalyptus ovata* – *Callitris oblonga* forest (vulnerable under the EPBC Act) were not observed at any of the drill sites during the site visit. The Merrywood areas of interest have been modified through previous forestry practices

and consequently drill sites could be sited in cleared areas that require very little additional clearing (as shown in photographs in Appendix A). Although a specific flora assessment of the drill sites was not conducted, opportunistic observations found that they are all located in areas dominated by wet or dry eucalypt woodlands (Figure 2) and no native grassland communities (specifically communities that may be Lowland Native Grasslands of Tasmania) were identified or considered likely to occur in the area of the drill sites. *Eucalyptus ovata* - *Callitris oblonga* forests were not identified and are not expected to be impacted by the proposed drilling program.

Under the EPBC Act, 13 avian species and three mammal species were listed as possibly occurring or relating to the defined search areas (Table 2). No fauna species listed under the TSP Act were recorded for the search areas. A search of the Birdlife Australia database was conducted as a combined search of the three Imperial Coal tenements (not specifically Merrywood). This search indicated that 88 avian species had been recorded from surveys for the area. Of the 13 avian species listed under the EPBC Act, six (Australasian Bittern, Swift Parrot, Gould's Petrel, Fork-tailed Swift, Tasmanian Azure Kingfisher and White-throated Needletail) have not been recorded for the area and consequently are considered unlikely to occur within the vicinity of the drill sites. The remaining species are unlikely to be impacted by the proposed drilling activities due to the short-term nature and small scale of drilling activities. Only minor clearing of regrowth on some drill pads and access tracks will take place. All vegetation to be cleared is relatively young regrowth and unlikely to provide suitable habitat or nest sites for any species listed.

The three listed mammal species (Tasmania Devil, Spotted-tail Quoll, and Eastern Barred Bandicoot) are nocturnal species and may occur within the vicinity of the drill sites however they are unlikely to be impacted by drilling activities as no drilling will be conducted at night and all activities will be conducted in a short timeframe. Any sumps will be barricaded to prevent potential wildlife drowning in sumps (falling in and not being able to get out).

One amphibian (Southern Bell Frog, listed as vulnerable under the EPBC Act) and two fish (Eastern Dwarf Galaxias and Australian Grayling, both listed as vulnerable under the EPBC Act) were recorded from the searches. These species are unlikely to occur in the vicinity of the drill sites due to a lack of nearby water bodies.

As expected, a number of introduced species (listed as key threatening processes under state and national legislation), have been identified as likely to occur or relate to the areas of interest (Domestic Cat, Brown Hare, European Rabbit, Goat and Red Fox). Drilling activities are unlikely to have an impact on these species due to the short-term nature of drilling activities. All rubbish generated on site (for example food wastes) will be disposed of in sealed bins and removed from site as soon as possible to prevent attracting introduced species to the sites.

Flora species of conservation significance listed under the EPBC

Act and TSP Act is provided in Appendix B. Although no specific field surveys were conducted for threatened flora species during the site visit, it is unlikely that the listed species will occur within the vicinity of the Merrywood drill sites. As mentioned, the sites are located on previously cleared areas with little to no additional vegetation clearing required. No impact to any listed flora species is considered likely as a result of the proposed drilling activities.

Table 2. Fauna species listed under the EPBC Act

Species name	Common Name	EPBC Act	EPBC Act migratory	EPBC protected matters species or species habitat	Likelihood of occurrence at drill sites and/or access tracks
<i>Litoria raniformis</i>	Southern Bell Frog	Vu		Likely	Unlikely ³
<i>Galaxiella pusilla</i>	Eastern Dwarf Galaxias	Vu		Likely	Unlikely ³
<i>Prototroctes mareaena</i>	Australian Grayling	Vu		May occur	Unlikely ³
<i>Dasyurus maculatus maculatus</i>	Spotted-tail Quoll	Vu		Known	Likely
<i>Perameles gunni gunnii</i>	Eastern Barred Bandicoot	Vu		Likely	Likely
<i>Sarcophilus harrisii</i>	Tasmanian Devil	En		Likely	Likely
<i>Aquila audax fleayi</i>	Wedge-tailed Eagle	En		Likely ¹	Possible
<i>Ceyx azureus diemenensis</i>	Tasmanian Azure Kingfisher	En		May occur	Unlikely ²
<i>Botaurus poiciloptilus</i>	Australasian Bittern	En		May occur	Unlikely ²
<i>Lathamus discolor</i>	Swift Parrot	En	M	May occur	Possible
<i>Pterodroma leucoptera leucoptera</i>	Gould's Petrel	En		May occur	Unlikely ²
<i>Tyto novaehollandiae castanops</i>	Masked Owl	Vu		Known	Likely
<i>Apus pacificus</i>	Fork-tailed Swift		MM, M	Likely	Unlikely ²
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		MT, M	Known	Possible
<i>Hirundapus caudacutus</i>	White-throated Needletail		MT, M	Known	Unlikely ²
<i>Myiagra cyano-leuca</i>	Satin Flycatcher		MT, M	Known	Possible
<i>Ardea alba</i>	Great Egret		MW, M	Likely	Unlikely ²
<i>Ardea ibis</i>	Cattle Egret		MW, M	Likely	Possible
<i>Gallinago hardwickii</i>	Latham's Snipe		MW, M	May occur	Unlikely ³

¹ – Breeding habitat likely

² – Not recorded from surveys listed in Birdlife Australia database (for combined search areas of all Imperial Coal tenements)

³ – Unlikely based on lack of suitable habitat available in Merrywood areas of interest

Sites of historic or archaeological significance

A desktop assessment for sites of Aboriginal heritage was conducted by Aboriginal Heritage Tasmania (AHT). The results from this assessment indicate there is a low probability of Aboriginal Heritage being present within the Merrywood lease. A copy of the assessment has been provided in Appendix C (including a copy of the Unanticipated Discovery Plan that will be maintained on site during ground disturbance works and all contractors made aware of its requirements).

Other environmental constraints

A search for matters of national environmental significance and other matters protected under the EPBC Act and a search of the Register of the National Estate (RNE) was conducted for the areas of interest of the Merrywood lease. From these searches seven listed sites were recorded for the Merrywood area. Each of these sites is a natural site and listed as indicative places due to their importance for rare flora communities and/or fauna species. These sites include; Mount St John Forest area, Mount Henry, Swan River forest reserve and adjacent areas, Douglas Apsley area, Mount Punter, St Pauls River/Mount Puzzler area and Hardings Falls area. The Mount St John Forest Area, covering 1723 hectares, covers parts of the Merrywood central area of interest and also contains the geoconservation site Mt St John – Rosemount Flat Mass Movement Complex. None of the other sites are located within the direct vicinity of the proposed drill sites and therefore are not expected to be impacted by the proposed drilling program

A review of the Tasmania geoconservation database (TGD) indicated the presence of geosites within the Merrywood exploration lease (Figure 3). One geosite is located directly within the area of interest of Merrywood central. The site, Mt St John – Rosemount Flat Mass Movement Complex (geosite identification number 2140) is a listed site and described as:

'Mass movement landform complex which is a well examined extension of the Mt Punter complex. It contains numerous large enclosed depressions and slump landforms. Together with Mt Punter this complex forms the largest mass movement landform assemblage identified in the Eastern Tiers'.

Further information on the geosite (report to Forestry Tasmania by C. Sharples, 1995) indicates that further field examination is required to delimit the area of interest and that the status of knowledge of the site is poor. The report further states that the site is listed separately to the Mt Punter Complex because the presence of block slides has not been determined in the Mt St John – Rosemount Flat Complex. The entire area defined as the geosite covers an area of approximately 16 km² and four of the proposed Merrywood central drill holes are located within this area. The three remaining drill holes proposed for Merrywood central are located directly adjacent to the geosite boundary.

The TGD is a tool to provide information on features, systems and processes of conservation significance in Tasmania. There are no legislative powers associated with the database. The protection and conservation of geological diversity within Tasmania is governed under the Nature Conservation Act 2002 and applies to reserved land within

the state. The proposed drill sites within the area of the Merrywood lease covered by the geosite are located on land classified as Permanent Timber Production Zone and according to M. Confort, (Department of Primary Industries, Parks, Water and Environment, Hobart) (pers. comm. N. Overdeest, DES 21 May 2014) the legislative powers of the Nature Conservation Act 2002 do not apply.

A review of the Australian Heritage Database (national) shows that the geosite is listed on the Register of the National Estate (RNE) as an indicative place (place ID 102378). Under the register the site is classified under the A.1 and D.1 criteria which are defined as:

A - importance in the course, or pattern, of Australia's natural or cultural history

A.1 - Importance in the evolution of Australian flora, fauna, landscapes or climate.

D - importance in demonstrating the principal characteristics of:

(i) a class of Australia's natural or cultural places; or

(ii) a class of Australia's natural or cultural environments

D.1 - Importance in demonstrating the principal characteristics of the range of landscapes, environments or ecosystems, the attributes of which identify them as being characteristic of their class.

The RNE was closed and phased out over a period of five years from 1997:

Following the 1997 agreement, there was a significant level of overlap between the RNE and heritage lists at the national, state and territory, and local government levels. In line with the 1997 agreement, the Australian Government has phased out the RNE as a statutory list. In 2003 the Australian Parliament passed legislation to repeal the Australian Heritage Commission Act 1975, which established the RNE, and to introduce a new system of heritage protection for nationally significant places under the EPBC Act and the Australian Heritage Council Act 2003. In 2006 the EPBC Act and the Australian Heritage Council Act 2003 were amended to freeze the RNE and to provide for a five-year phasing out of statutory references to the RNE.

The RNE is now maintained on a non-statutory basis as a publicly available information resource. The geosite is not listed as a protected matter under the EPBC Act.

Although no national or state legislation protects the geosite, the listing of the site (particularly at the state level) will require impacts to the site to be minimised. During the site assessment, no evidence of the geosite was noted, however the large scale of the formation may make it difficult to observe on the ground. The proposed drilling program (six drill holes) is unlikely to impact the geosite due to the small scale and localised nature of the drilling program and the limited clearing and earthworks required.

Another geosite (the Mt Punter block side complex, geosite identification number 2139) is located directly north of the Mt St John-Rosemount Flat Complex and away from the areas of interest. This site will not be impacted by the current proposed drilling program. The Puzzler Gorge geosite (geosite identification number 2138) is located on and outside the eastern boundary of the Merrywood exploration lease. This area will not be accessed or impacted upon by the current proposed drilling program.

A number of creek crossings will be required to access the Merrywood central drill sites. Two crossings of the Coal Rivulet will be required and as shown in Appendix A (river crossing plates), defined crossings of this rivulet appear to have been washed out through flood events and have not been reinstated. Minor fill (located nearby both crossing 2 and crossing 3) would be required to enable equipment to pass through. Maintenance of these crossings would be conducted in accordance with the requirements of the Mineral Exploration Code of Practice for river crossings. One further creek crossing will be required and is located on the Dukes River. Similar to crossing 2 and crossing 3, a previous access across this river has been cut, presumably by flood events and has not been reinstated. During the site assessment this river could not be crossed (as shown in photographs of Appendix A). Crossing of this river will require the placement of temporary culverts to enable vehicles and equipment to pass while ensuring river flows are not obstructed. Again, the maintenance of this river crossing will be conducted in accordance with the Mineral Exploration Code of Practice and other relevant guidelines and policies to ensure potential environmental impacts to water ways and aquatic ecosystems are minimised.

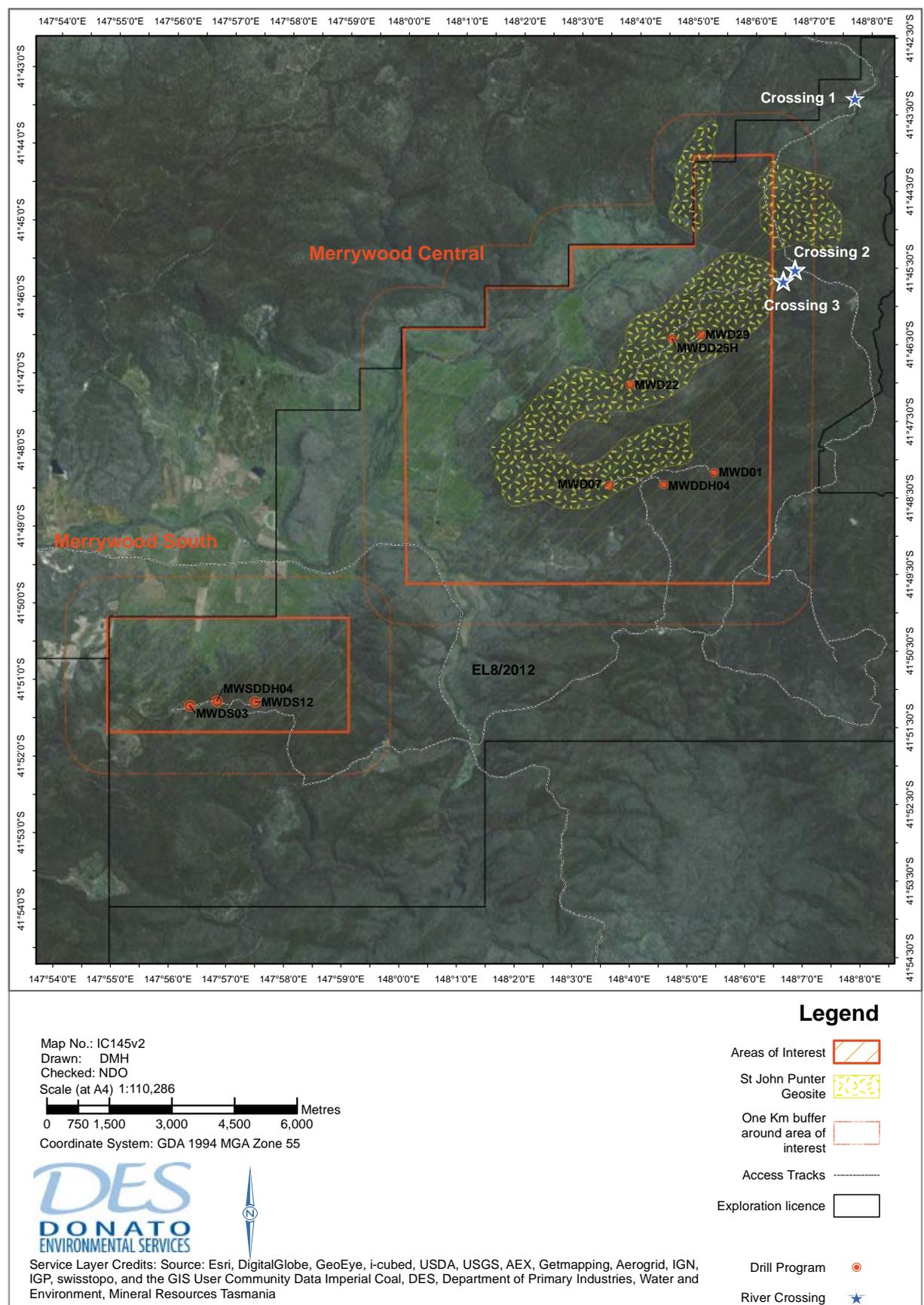


Figure 3. Merrywood exploration lease showing proposed drill holes and location of geoconservation sites

Discussion

Management and mitigation measures

Minimal environmental impacts are considered likely as a result of the proposed drilling program due to the small scale and short-term nature of drilling activities. All drilling activities will be located within land classified as permanent timber production zone and private freehold land with evidence of historic forestry practices noted during the site assessment. The proposed drill sites have all been sited on previously cleared land and access to the sites is via existing forestry tracks. Only minor clearing of some regrowth will be required as part of drill site establishment and maintenance of forestry tracks for access. During the site assessment no significant requirement for vegetation clearing was identified.

Photographs provided in Appendix A show the extent of clearing required. In all instances, clearing will be minimised to the extent possible and only small/young vegetation will be removed from areas previously cleared. Areas to be cleared will be marked out and cleared in accordance with the Mineral Exploration Code of Practice. Wherever possible, vegetation will be trimmed rather than cut completely to minimise impacts. Where fill is required (for example at drill site MWD01 and for the three river crossings) local nearby materials will be sourced and only those deemed to be suitable and of minimal environmental impact used. All works will be undertaken in accordance with the Mineral Exploration Code of Practice.

Bunding and diversion drains may be required to protect existing drainages from potential contamination (for example MWDS03) and prevent inundation of the pad (MWDDH04) should wet conditions occur during drilling activities. Although additional bunding or drainage is not considered necessary for most sites due to their locations on relatively level ground with minimal catchment areas, they will be used where necessary. Sumps (or tanks) will be used to contain all drill fluids and water encountered during drilling.

Drilling activities will be coordinated to avoid wet periods, however in the event that rainfall events are encountered during drilling, temporary diversion drains and/or bunding around the sites will be implemented to ensure no off-site releases of water and divert clean water around the site. Adequate freeboard on all sumps (or tanks) will be maintained to ensure adequate capacity is available during rain events. Water required for drilling activities will be imported to site or obtained via agreement with the landholder.

All exploration activities, including preparation and rehabilitation of drill sites will be conducted in accordance with the MRT's Mineral Exploration Code of Practice and is considered adequate for the works proposed. All contractors will be provided with a copy of the approved work program and maps showing where activities are to occur. Contractors will be made aware of their obligations to comply with the Code of Practice and adopt standard industry practices to minimise environmental impacts. Standard industry practices for exploration drilling will be conducted and include, but is not limited to:

- limiting vehicle movements during wet conditions to minimise

damage to access tracks;

- on-going liaison with landholders to discuss site access, drilling activities and appropriate rehabilitation criteria;
- washing down of vehicles prior to access site to prevent the introduction and spread of weeds;
- minimising the volume of hydrocarbons and chemicals held at the drill site. Any hydrocarbons and chemicals will be stored and handled in accordance with material safety data sheets and appropriate bunding provided (taking into consideration rainfall);
- maintaining spill clean-up materials on the drill site and used in the event of spills;
- all wastes generated through drilling and ancillary activities will be contained in closed bins (to prevent attracting introduced animals) and removed from site. Wastes will be recycled to the extent possible and wastes not able to be recycled will removed and disposed of appropriately;
- drilling will occur during daytime periods only to minimise potential impacts (for example noise) to landholders;
- inspections of drill sites and operations will be conducted by senior personnel (contract or Imperial Coal) throughout the drilling program to ensure compliance with the approved work program and Mineral Explorations Code of Practice; and
- drill sites will be sited on flat areas, on slight elevations where possible to limit catchment areas and inundation during heavy rainfall.

Rehabilitation

All drilling activities will be short-term with most open-holes completed within a day and diamond drill holes completed within ten days (site conditions dependent). Given the short-term nature of drilling activities and the location of sites in previously cleared areas, impacts to the environment will be minimised and rehabilitation conducted as soon as possible following completion of drilling. Following drilling activities, the land will continue to be used for timber production and therefore this land use will form the objectives of the rehabilitation criteria.

Rehabilitation will be conducted in accordance with the Mineral Explorations Code of Practice and as a minimum will include:

- removing all sample bags, drill core and other waste materials at completion of drilling activities;
- all drill collars will be secured and drill holes no longer required for future exploration activities will be sealed. Temporary caps will be used where holes are required for future activities;
- any sumps constructed will be emptied and backfilled with excavated materials;

- any topsoil removed from the drill pads as part of site preparation works will be spread over the site and scarified to promote regrowth; and
- inspections will be conducted following rehabilitation to ascertain that the sites are stable and no further works (for example maintenance) is required.

Conclusion

All proposed drilling activities will occur on previously cleared land within land zoned for permanent timber production and private freehold land. Access will be via existing forestry tracks with some maintenance works required to remove vegetation regrowth for access by drill rigs. Overall, minimal impact to the environment is considered likely as a consequence of the proposed drilling activities. No listed species are expected to be impacted by the proposed activities due to the short-term and small scale of activities.

The listed reserves and geosites within the exploration lease are not expected to be impacted by the proposed drilling program. Conducting all activities in accordance with the Mineral Explorations Code of Practice and best practice and the approved work program are considered adequate to minimise potential environmental impacts.

Appendices

Appendix A. Drill site photographs



Plate 1. Location of proposed MWD01 drill site. Small eucalypt tree in centre of photo will need to be cleared. No other clearing required



Plate 2. Access track adjacent to MWD01 drill site. Some material from track may need to be placed on pad to firm-up ground

APPENDIX A

APPENDIX A



Plate 3. Access track to MWD01 drill site. Note regrowth on track will need to be cleared (approximately 700 m, although not entire track requires clearing)



Plate 4. Location of proposed MWD07 drill site. Smaller vegetation in fore- and mid-ground will need to be cleared. Note banksia on left hand side of photo will need to be trimmed to allow safe access

APPENDIX A



Plate 5. Vegetation that will need to be removed during preparation of MWD07 drill site. Only lower vegetation in foreground will require clearing



Plate 6. Access track to MWD07

APPENDIX A



Plate 7. Location of proposed MWD22 drill site. No addition clearing required. Small regrowth in foreground of drill pad may need to be cut to ensure safe operating conditions



Plate 8. Location of proposed MWD29 drill site (foreground). Small vegetation regrowth will need to be cut/removed for safe operating and allow ground to be levelled

APPENDIX A



Plate 9. Location of proposed MWDD25H drill site (diamond drill hole). Site to be located on forestry track to minimise clearing required



Plate 10. Location of proposed sumps/tanks for MWDD25H pad (located downstream of pad). Site follows natural drainage line to minimise ground disturbance works. Minor vegetation will need to be removed (as seen in foreground, right hand side)

APPENDIX A



Plate 11. Access tracked to MWDD25H



Plate 12. Location of proposed MWDHH04 drill pad. No major clearing of pad required

APPENDIX A



Plate 13. Natural soak adjacent to drill pad MWDHH04. Additional drainage of pad may be required



Plate 14. Access track to MWDDH04 site. Some clearing of track will be required to remove regrowth. Approximately 300 m of track will require some level of clearing. Vegetation to be cleared consists of tea tree and eucalypt species, all less than or equal to 5cm dbh

APPENDIX A



Plate 15. Location of proposed drill site MWDS03. Note central vegetation to be cleared as part of drill pad preparations



Plate 16. Vegetation (regrowth) on MWDS03 drill pad that will need to be cleared. Mix of eucalyptus species, up to 2 m high

APPENDIX A



Plate 17. Natural drainage channel on left hand side of MWDS03 drill pad. Bunding to be used to prevent contamination of drainage



Plate 18. View of access track from proposed drill pad MWDS03

APPENDIX A



Plate 19. Location of proposed MWDS12 drill site (cleared area in foreground). No clearing of vegetation shown in background will be required



Plate 20. Drill site MWDS12. Clearing of one banksia tree (approximately 3 m in height - as shown in centre of photo) will need to be removed (including the dead tree on right of banksia)

APPENDIX A



Plate 21. View from proposed drill pad MWDS12 showing access track



Plate 22. Location of proposed drill site MWSDDH04 (on access track)

APPENDIX A



Plate 23. Location of proposed MWSDDH04 showing minor vegetation (ground cover) that may need to be removed for safe access



Plate 24. Access track to proposed MWSDDH04 showing some minor maintenance works required to remove debris and overhanging vegetation

APPENDIX A



Plate 24. Location of river crossing 1 (Dukes River) showing where crossing was previously. Temporary culverts will need to be placed to allow for safe passage and to prevent water flow obstructions



Plate 25. Access track to crossing 1

APPENDIX A

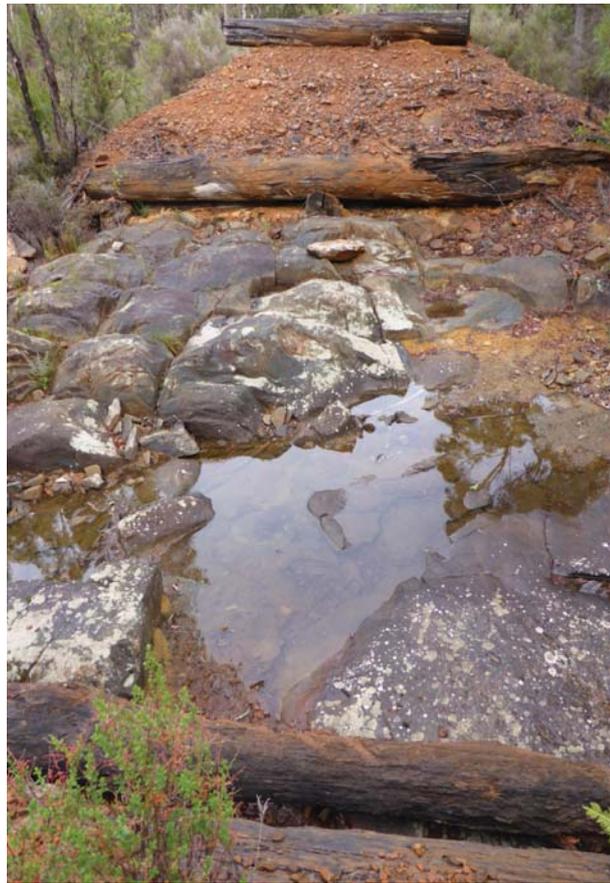


Plate 25. Location of river crossing 2 (Coal rivulet) showing location of previous crossing (presumably washed out during flood events)



Plate 26. Potential new crossing site for crossing 2. Minor amount of additional fill required to enable safe passage of vehicles

APPENDIX A



Plate 27. Location of river crossing 3 (Coal rivulet). Minor amount of fill required to enable safe passage of vehicles



Plate 28. Crossing 3 in current condition showing access track in background

Appendix B. Desktop Study Results

Table 1. Protected Matters

Common Name	EPBC Act	EPBC protected matters species or species habitat	Nature conservation Act 2002 (Schedule 3A)	Threatened Ecological Communities	Register of the National Estate (RNE)	State and Territory reserves	Natural Values Atlas (NVA)	DW-PIPE: List	Geoconservation Site
Mount Henry					Indicative				x
Swan River Forest Reserve and adjacent areas					Indicative				x
Royal George						x			
Douglas Apsley area					Indicative	x			x
Mount Punter					Indicative				x
Mt St John forest area					Indicative				x
St Pauls river - Mount Puzzler area					Indicative				x
Hardings Falls area					Indicative				x
Hardings Falls						x			
Dickies Ridge						x			
Lewis Hills #2						x			
Mount Puzzler						x			
Swan River						x			
Informal reserve on state forest or Forestry Tas managed land						x			
Permanent timber production zone (central north) (Public land)									
<i>Eucalyptus ovata</i> - <i>Callitris oblonga</i> forest	v	Likely	x	yes			x		
Alpine Sphagnum Bogs and Associated Fens	e	May occur	x	yes					
Lowland Native Grasslands of Tasmania	cr			yes			x	x	

e = endangered
v = vulnerable
cr = critically endangered
x = listed

Appendix B. Desktop Study Results

Table 2. Fauna species of conservation significance

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Antipodia chaostola leucophaea</i>	Tasmanian Chaostola Skipper	e		Likely							Unlikely
<i>Litoria raniformis</i>	Southern Bell Frog	v		Likely						x	Unlikely
<i>Galaxiella pusilla</i>	Eastern Dwarf Galaxias	v		Likely							Unlikely
<i>Prototroctes maraena</i>	Australian Grayling	v		May occur, Likely ¹							Unlikely
<i>Dasyurus maculatus maculatus</i>	Spotted-tail Quoll	v		Known, Likely ¹				x	x	x	Possible
<i>Perameles gunni gunnii</i>	Eastern Barred Bandicoot	v		Likely							Possible
<i>Sarcophilus harrisii</i>	Tasmanian Devil	e		Likely				x	x	x	Possible
<i>Felis catus</i>	Domestic Cat			Likely			x				Possible
<i>Canis lupus familiaris</i>	Domestic Dog			Likely			x				Possible
<i>Capra hircus</i>	Goat			Likely			x				Possible
<i>Lepus capensis</i>	Brown Hare			Likely			x				Likely
<i>Mus musculus</i>	House Mouse			Likely			x				Likely
<i>Oryctolagus cuniculus</i>	European rabbit			Likely			x				Possible
<i>Vulpes vulpes</i>	Red Fox			Likely			x				Possible

e = endangered
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cr = critically endangered
x = listed
¹ = in Merrywood Central

Appendix B. Desktop Study Results

Table 2. Fauna species of conservation significance (continued)

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Aquila audax fleayi</i>	Wedge-tailed Eagle	e			Likely			x	x	x	Possible
<i>Ceyx azureus diemenensis</i>	Tasmanian Azure Kingfisher	e		May occur							Unlikely
<i>Botaurus poiciloptilus</i>	Australasian Bittern	e		Likely							Unlikely
<i>Lathamus discolor</i>	Swift Parrot	e	M	May occur, Likely ¹							Possible
<i>Pterodroma leucoptera leucoptera</i>	Gould's Petrel	e		May occur							Unlikely
<i>Tyto novaehollandiae castanops</i>	Masked Owl	v		Known				x	x		Possible
<i>Apus pacificus</i>	Fork-tailed Swift		MM, M	Likely							Unlikely
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		MT, M	Likely				x	x	x	Possible
<i>Hirundapus caudacutus</i>	White-throated Needletail		MT, M	May occur							Unlikely
<i>Myiagra cyano-leuca</i>	Satin Flycatcher		MT, M	Known							Possible
<i>Ardea alba</i>	Great Egret		MW, M	Likely							Unlikely
<i>Ardea ibis</i>	Cattle Egret		MW, M	Likely							Unlikely
<i>Gallinago hardwickii</i>	Latham's Snipe		MW, M	May Occur							Unlikely

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x = listed

¹ = in Merrywood Central

MT = migratory terrestrial

MW = migratory wetlands

M = migratory

x = listed

Appendix B. Desktop Study Results

Table 2. Fauna species of conservation significance (continued)

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Alauda arvensis</i>	Skylark			Likely			x				Possible
<i>Anas platyrhynchos</i>	Mallard			Likely			x				Unlikely
<i>Carduelis carduelis</i>	European Goldfinch			Likely			x				Unlikely
<i>Carduelis chloris</i>	European Greenfinch			Likely			x				Unlikely
<i>Columba livia</i>	Rock Pigeon			Likely			x				Possible
<i>Passer domesticus</i>	House Sparrow			Likely			x				Unlikely
<i>Streptopelia chinensis</i>	Spotted Turtle-Dove			Likely			x				Unlikely
<i>Stumus vulgaris</i>	Common Starling			Likely			x				Unlikely
<i>Turdus merula</i>	Common Blackbird			Likely			x				Possible

x = listed

Appendix B. Desktop Study Results

Table 3. Flora species of conservation significance

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Barbarea australis</i>	Native Winter- cress	e		Likely		r					Unlikely
<i>Lepidium hyssopifolium</i>	Basalt Pepper- cress	e		Likely		r					Unlikely
<i>Colobanthus curtisiae</i>	Curtis Colobanth	v		Likely		r					Possible
<i>Epacris apsleyensis</i>	Apsley Heath	e		Likely							Unlikely
<i>Epacris exserta</i>	South Esk Heath	e		Likely		e					Unlikely
<i>Epacris grandis</i>	Grand Heath	e		Likely							Possible
<i>Epacris limbata</i>	Border Heath	e		Likely							Possible
<i>Epacris moscaliana</i>		e				r					Possible
<i>Bertya tasmanica</i> <i>ssp. tasmanica</i>	Tasmanian Bertya	e		Likely		e					Unlikely
<i>Stonesiella selaginoides</i>	Clubmoss Bush- pea	e		Likely		r					Unlikely
<i>Acacia axillaris</i>	Midlands Mimosa	v		Likely		v					Unlikely
<i>Acacia pataczekii</i>						r					Possible
<i>Melaleuca pustulata</i>						r					Possible
<i>Spyridium lawrencei</i>	Small-leaf Spyr- idium	e		Likely		v					Possible

e = endangered
r = rare
v = vulnerable

Appendix B. Desktop Study Results

Table 3. Flora species of conservation significance

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Stenanthemum pimeleoides</i>	Spreading Stenanthemum	v?		May occur		v					Unlikely
<i>Boronia gunnii</i>	Gunn's Boronia	v		May occur		r					Possible
<i>Boronia hemichiton</i>	Mt Arthur Boronia	v		May occur							Possible
<i>Boronia hippopala</i>	Velvet Boronia	v		May occur, Likely ¹		v					Possible
<i>Carex tasmanica</i>	Curly Sedge	v		Likely							Unlikely
<i>Caladenia caudata</i>	Tailed Spider-orchid	v		May occur							Unlikely
<i>Callitris oblonga</i>	Pygmy Cypress-pine	v		Likely							Unlikely
<i>Callitris oblonga ssp. oblonga</i>	South Esk Pine	e		Known		v					Unlikely
<i>Prasophyllum apoxychilum</i>	Tapered Leek-orchid	e		May occur							Unlikely
<i>Prasophyllum incorrectum</i>	Golfers Leek-orchid	cr		May occur							Unlikely
<i>Pterostylis commutata</i>	Midland Greenhood	cr		Likely							Possible

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 r = rare
 v = vulnerable
¹ = Merrywood Central

Appendix B. Desktop Study Results

Table 3. Flora species of conservation significance

Species Name	Common Name	EPBC Act	EPBC protected matters species or species habitat	EPBC protected matters species or species habitat	EPBC protected matters Breeding	Threatened Species Protection Act 1995	Invasive species	Natural Values Atlas (NVA)	DW-PIPE: List	Other Databases and literature	DES Likelihood of occurrence within Merrywood proposed drill sites
<i>Chrysanthemoides monilifera</i>	Bitou Bush			Likely			x				Unlikely
<i>Genista monspesulana</i>	Montpellier Broom			Likely			x				Unlikely
<i>Lycium ferocissimum</i>	African Boxthorn			Likely			x				Unlikely
<i>Rubus fruticosus aggregate</i>	European Blackberry			Likely			x				Unlikely
<i>Salix spp.</i>	Willows except weeping, pussy and Sterile Pussy Willow			Likely			x				Unlikely
<i>Ulex europaeus</i>	Gorse			Likely			x				Unlikely
<i>Asparagus asparagoides</i>	Bridal Creeper			Likely			x				Unlikely

x = listed

Appendix C. Aboriginal Heritage Assessment

APPENDIX C

N Overdevest

From: Marshall, Adam (Heritage) <Adam.Marshall@heritage.tas.gov.au>
Sent: Wednesday, 11 June 2014 12:49 PM
To: noverdevest@tpg.com.au
Subject: AHTP1028 - Aboriginal Heritage Desktop Assessment - Exploration Drilling - Donato Environmental Services
Attachments: Unanticipated Discovery Plan official (SeptemberV2).pdf

RE: ABORIGINAL HERITAGE DESKTOP ASSESSMENT
Merrywood Exploration Drilling - Donato Environmental Services

Dear Noelle

Aboriginal Heritage Tasmania (AHT) has completed a search of the Tasmanian Aboriginal Site Index (TASI) regarding the proposed drilling program south of Fingal and can advise that there are no Aboriginal heritage sites recorded close to the proposed works areas. Due to a review of previous reports and the nature of the proposed works it is believed that the area has a low probability of Aboriginal heritage being present.

Accordingly there is no requirement for an Aboriginal heritage investigation and AHT have no objection to the project proceeding.

Please be aware that all Aboriginal heritage is protected under the *Aboriginal Relics Act 1975*. If at any time during works you suspect Aboriginal heritage, cease works immediately and contact AHT for advice. Attached is an Unanticipated Discovery Plan, which you should have on hand during ground disturbing works, to aid you in meeting your requirements under the Act should Aboriginal Heritage be uncovered.

If you have any queries please do not hesitate to contact AHT.

Kind Regards,

Adam Marshall
Aboriginal Heritage Advisor

Aboriginal Heritage Tasmania

Department of Primary Industries, Parks, Water and Environment
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Unanticipated Discovery Plan

For proponents and consultants dealing with Aboriginal Heritage in Tasmania

This paper provides a Plan that should be followed when dealing with unanticipated discoveries of Aboriginal Cultural Heritage such as sites and objects. The plan provides guidance to project personnel so that they may meet their obligations with respect to Aboriginal heritage in accordance with the *Aboriginal Relics Act 1975* and the *Coroners Act 1995*.

The Unanticipated Discovery Plan is in two sections. The first section primarily explains mitigation strategies that should be employed when any Aboriginal Cultural Heritage sites or items are discovered excluding skeletal remains (burials), while the second process deals specifically with skeletal remains (burials).

Discovery of Cultural Heritage Items

- Step 1: Any person who believes they have uncovered Aboriginal Cultural Heritage material should notify all employees or contractors that are working in the immediate area that all earth disturbance works must cease immediately.
- Step 2: A temporary 'no-go' or buffer zone of at least 10m x 10m should be implemented to protect the suspected Aboriginal Cultural Heritage site or relics. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected Aboriginal Cultural Heritage relics have been assessed by a recognised Aboriginal Heritage Officer or Archaeologist.
- Step 3: Aboriginal Heritage Tasmania (AHT) in Hobart (ph 6233 6613) needs to be notified and consulted as soon as possible and informed of the discovery. AHT will then provide further advice in accordance with the *Aboriginal Relics Act 1975*.

Discovery of Skeletal Material

- Step 1: Call the Police immediately. Under no circumstances should the suspected skeletal remains be touched or disturbed. The area must now be considered a crime scene. It is a criminal offence to interfere with a crime scene.
- Step 2: Any person who believes they have uncovered skeletal material should notify all employees or contractors that are working in the immediate area that all earth disturbance works must cease immediately.
- Step 3: A temporary 'no-go' or buffer zone of at least 50m x 50m should be implemented to protect the suspected skeletal remains. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected skeletal remains have been assessed by the Police and or Coroner.
- Step 4: Should the skeletal remains be determined to be of Aboriginal origin, the Coroner will contact the Tasmanian Aboriginal Land and Sea Council (TALSC) to arrange for repatriation of the remains, as per the *Coroners Act 1995*.



Guide to the most common sites of Aboriginal Significance

Stone Artefact Scatters

Stone artefacts are the tangible evidence found in regard to past Aboriginal lifeways. Stone artefacts indicate areas that were used by Aboriginal People, either for camping, hunting or other activities such as the manufacture of stone tools. Archaeologists can also determine the duration a site may have been occupied, the amount of times that the site may have been occupied, and the number of people that the area may have supported at any given time.

Some stone artefacts are the result of Aboriginal People fracturing or 'flaking' fine-grained rocks to produce sharp cutting or scraping implements. These were then used, for example, for cutting up animals and then scraping the hides. Volcanic rocks such as basalt were flaked and then ground down to form axes for a number of chopping and cutting tasks. The results of such activities can be seen in the archaeological record (i.e. scatters) in the form of modified stones such as cores, retouched flakes, hammerstones and flaked pieces. From these scatters, by understanding site density and frequency patterns, inferences can be made in relation to past Aboriginal lifeways.

Shell Middens

Shell middens by definition are prehistoric refuse pits. They are the leftover waste of resources exploited which formed the basis of Aboriginal diet. Midden sites can range in size from large mounds to small scatters of shell. Middens usually also contain as well as shell, the remains of animals exploited for food as well as artefacts of stone, bone and shell. These sites are usually found near waterways and coastal areas.

Rockshelters

Rockshelters can either be shelters which contain archaeological deposits from living floors or art rock shelters, and may occur in any area of rocky terrain. Sediments on the floor of the rockshelter can contain preserved stratified deposits of archaeological material. Art types found in rockshelters can vary greatly. It can be in the form of painting, stencils of body parts, tools and equipment, or engravings. Style variations in painting can cover animal or human figurines, supernatural beings, and geometric patterns. Engravings can have similar variations as they can depict tools, humans, human parts, animals and birds and their tracks, geometric patterns and supernatural beings. Pecking is also a form of engraving.

Quarries or Stone Procurement Sites

Quarry sites occur where outliers of suitable tool-making stone appear. A quarry can be generally recognised by evidence of human manipulation and extraction of suitable material and the debris left by the processing of the suitable material. Some quarries can cover vast areas with extremely high amounts of lithic discard. Ochre or pigment was also quarried.

Burials

Burials can occur anywhere, though they are generally found close to areas where there was a high population concentration. Burials can occur where there are soft sediments such as sand hills, they can be found in caves and rockshelters and sometimes they can be associated with hollow trees.