Cresswells Transport Pty Ltd

EL 1/2011 – Eddy Creek

Year 2 Annual Report

Ken Morrison
July 2013

Contents

Summary

A program of outcrop mapping and the drilling of 14 vertical rotary air blast percussion hole was completed on EL 1/2011 in Year 2. The results delineate a subcropping resource of dolomitic carbonate rock with a footprint area of approximately 300 x 200 metres and a mean thickness of approximately 16 metres. At cutoff grades of maximum SiO_2 10% and minimum LOI 35%, a resource sufficient to sustain a quarry operation for >25 years is likely.

No further exploration work is needed to support developing a quarry on this resource. A Mining Lease Application and a Development Application have been lodged and it is expected that further feasibility and environmental studies will be conducted within the area of a new ML.

Year 2 expenditure was $44,406.

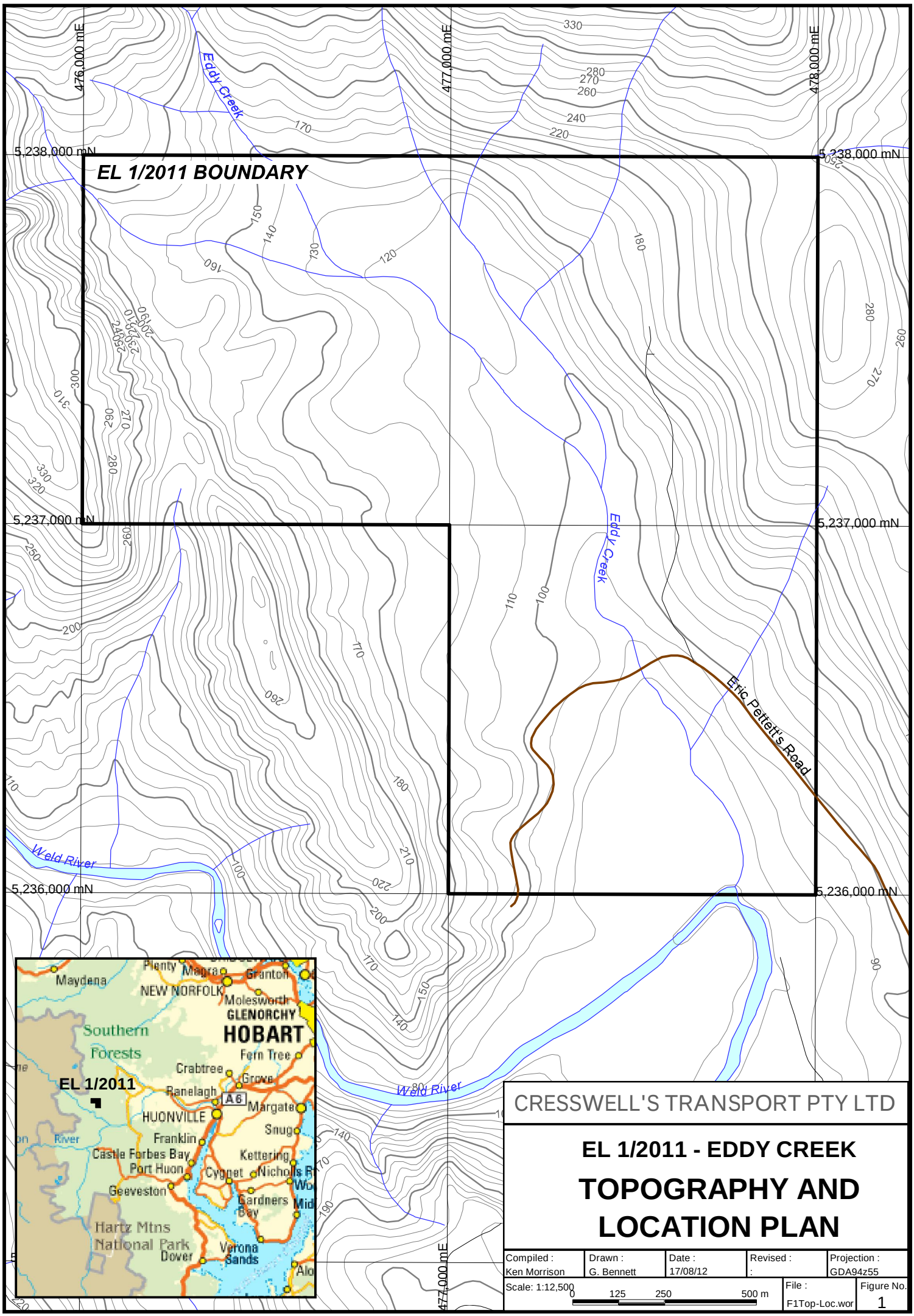
Introduction and Tenement Information

EL 1/2011 is a 3 km^2 Category 3 and 5 exploration licence in the Weld Valley, southern Tasmania (Figure 1). The primary purpose of the EL is to explore for a resource of dolomite suitable for agricultural and metallurgical applications. Licence Year 2 ends on the 13th of August 2013 and this report covers exploration completed in the year ending 13th July 2013.

Land tenure is entirely State Forest and vehicle access to the area is via the all weather gravel logging road, Eric Pettetts Road, which heads north from Eddy Road and enters the southeastern part of EL 1/2011 from the east (Figures 1 & 2). Parts of some recently active logging coupes occur within the EL but the area of active exploration is covered by a relatively low density forest type with a canopy of regrowth stringy bark eucalypts and tall dogwoods.

EL 1/2011 coincides with a portion of the State Forest currently classed as Informal Reserve and which has been subject to the Intergovernmental Agreement relating to Tasmanian forests and forestry industries. Final decisions by State Government on the boundaries of possible new World Heritage areas are currently being finalised, however Mineral Resources Tasmania (MRT) have confirmed that a defined 100 hectare portion of EL 1/2011 (Figure 3) will be excluded from the process and secured for ongoing exploration and potential quarrying.

Figure 3 also shows the 50 hectare mining lease application area (2M/2013) which is currently being assessed by MRT, as part of the permitting required by the Company to progress from exploration to mining, following the results of exploration work to date. It is likely that future exploration and feasibility study will be restricted to the 100 hectare exclusion zone.



CRESSWELL'S TRANSPORT PTY LTD

EL 1/2011 - EDDY CREEK

TOPOGRAPHY AND LOCATION PLAN

Compiled :	Drawn :	Date :	Revised :	Projection :
Ken Morrison	G. Bennett	17/08/12	:	GDA94z55

Scale: 1:12,500 (0, 125, 250, 500 m)

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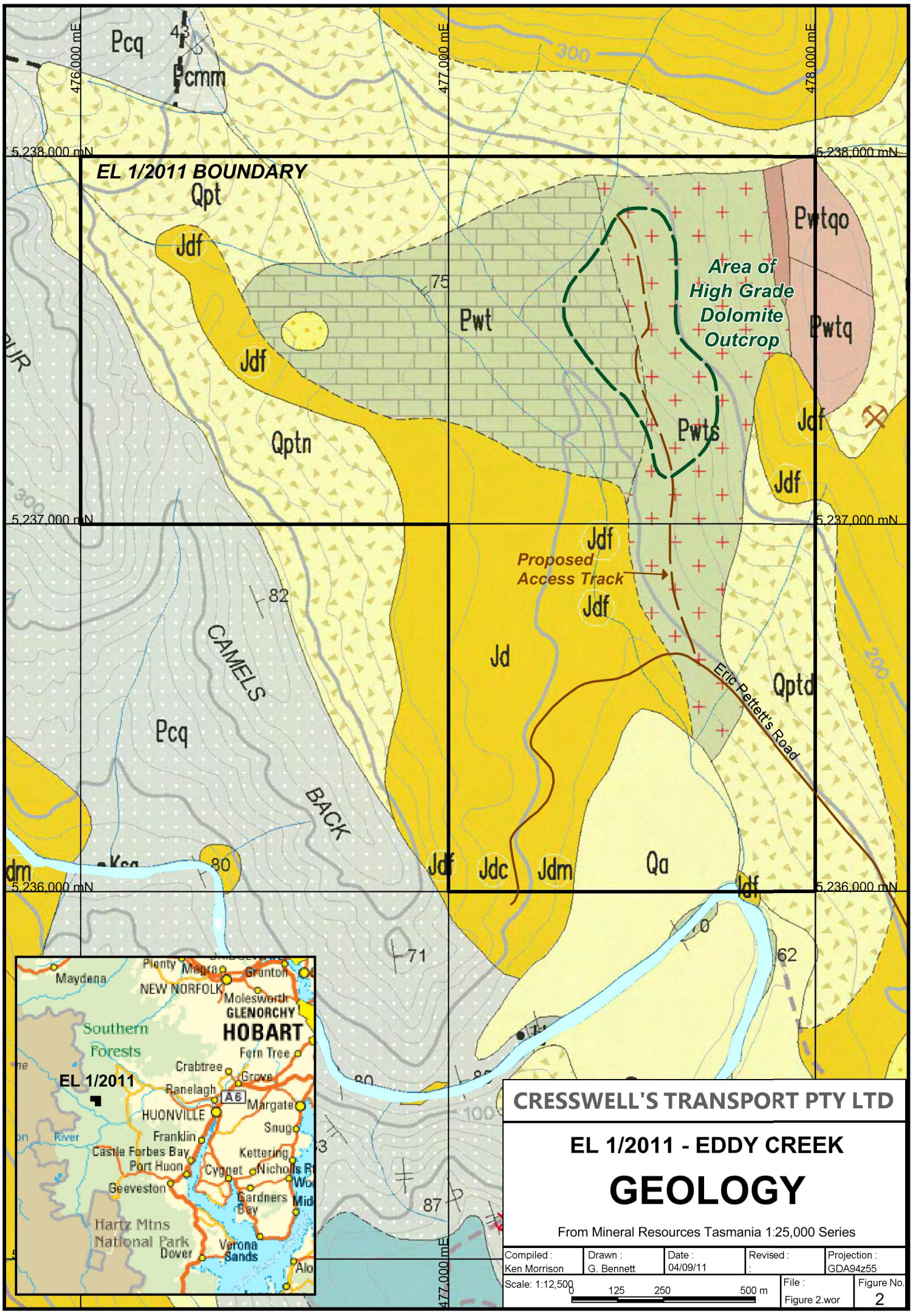
Figure No. 1



CRESSWELL'S TRANSPORT PTY LTD

EL 1/2011 - EDDY CREEK

GEOLOGY

From Mineral Resources Tasmania 1:25,000 Series

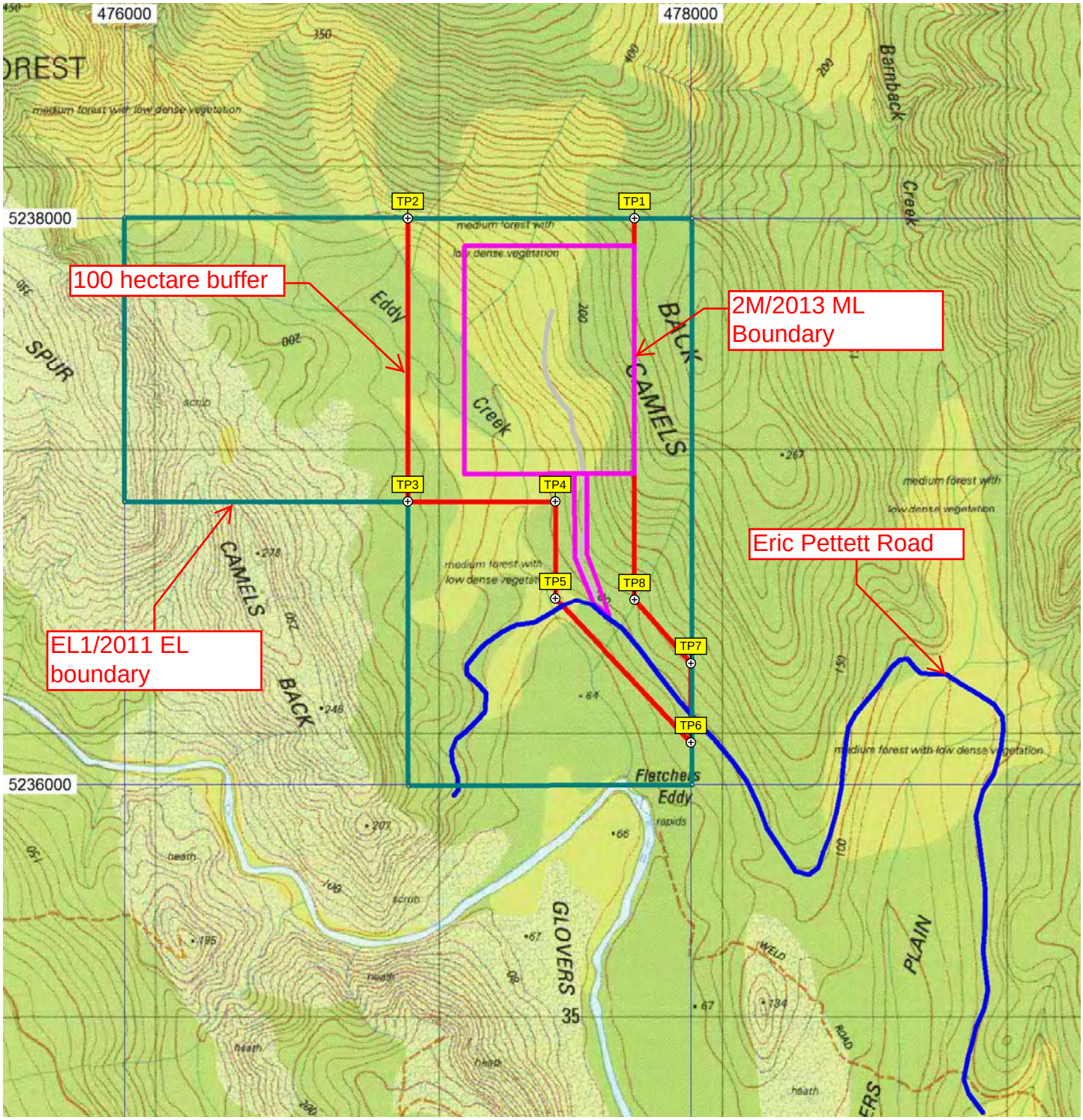
Compiled :	Drawn :	Date :	Revised :	Projection :
Ken Morrison	G. Bennett	04/09/11	:	GDA94z55

Scale: 1:12,500 (0 125 250 500 m)

File : Figure 2.wor

Figure No. 2

Tas_topo25.ecw Australian Geocentric 1994 (GDA94) 1:20,000 13/03/2013



	Australian Geocentric 1994 (GDA94)					
	Datum	Point	Zone	East	North	
WP	UTM	TP1	55G	477800	5238000	TP - 13/03/2013 8:03:08 AM
WP	UTM	TP2	55G	477000	5238000	TP - 13/03/2013 8:03:13 AM
WP	UTM	TP3	55G	477000	5237000	TP - 13/03/2013 8:03:18 AM
WP	UTM	TP4	55G	477520	5237000	TP - 13/03/2013 8:03:21 AM
WP	UTM	TP5	55G	477520	5236655	TP - 13/03/2013 8:03:28 AM
WP	UTM	TP6	55G	478000	5236150	TP - 13/03/2013 8:03:34 AM
WP	UTM	TP7	55G	478000	5236430	TP - 13/03/2013 8:03:38 AM
WP	UTM	TP8	55G	477800	5236655	TP - 13/03/2013 8:03:41 AM

2M/2013 - Eddy Creek Dolomite Quarry - Cresswell's Transport Pty Ltd
Proposed 100 hectares to be excised from World Heritage Area nomination.
Date: 13/03/2013 Drawn: BW

Figure 3 Eddy Creek Project Tenure Map

Regional Geology Setting

Figure 2 shows the regional scale geology within the EL, extracted from the Mineral Resources Tasmania 1:25,000 series Weld Sheet. The target rocks are Proterozoic Weld River Group, steeply ENE dipping dolostone and skarn altered dolostone (Bottrill et al, 1999, Calver, et al, 2006), which are exposed in the valley of Eddy Creek, due to a window through the surrounding Jurassic dolerite and derived Quaternary dolerite talus. The main prospect is on the eastern side of the Eddy Creek valley, in the area where unaltered dolostone grades to calc silicate skarn. The results of drilling (to be discussed later in this report) indicate that the carbonates also grade vertically at depth to calc silicate skarn, suggesting that dolerite underlies the prospect.

Exploration Philosophy and Aims

Cresswells Transport Pty Ltd is a Deloraine based family company operating several gravel and rock quarries and trucking bulk commodities around Tasmania, including crushed limestone and dolomite for use as an agricultural soil conditioner and slow release pH moderator. At present all crushed carbonate rock and manufactured lime is sourced from the north and northwest of the State and transport cost to the south of the State is a serious impediment to fully utilizing the benefits of these products in the rapidly increasing high value cropping and horticulture industries.

In 2010 a search commenced for a potential quarry site in southern Tasmania, on combined geological, logistical and environmental criteria. The occurrence of Proterozoic dolostone centered on Eddy Creek in the Weld Valley in an area of logging coupes administered by Forestry Tasmania from Geeveston was prioritised. Exploration Licence 1/2011 was applied for in January 2011 and granted in August 2011. Exploration results to date support the concept and have demonstrated the existence of a resource of dolomitic carbonate rock, with the appropriate specifications required by the market.

Summary of Previous Exploration

No record of exploration specifically for dolomite, dolostone or limestone in the area covered by EL 1/2011 has been found. Skarn facies of the dolostone, altered to calc silicate and chalcedonic/jaspoidal silica rocks in the far northeast corner of the EL (Figure 2), attracted some geochemical sampling as part of a gold exploration program centred on the Forster prospect, south of the Weld River (Bottrill et al, 1999). The Forster prospect was explored between 1984 and 2010, by Metals Exploration Ltd, Pegasus Gold Australia Ltd and Sedimentary Holdings NL and their results are documented in EL annual reports held in the Mineral Resources Tasmania Open File library.

EL 1/2011Year 1 Results

A target area of prospective geology was outlined by mapping and rock chip sampling and a drilling access track was established through the middle of the prospect. The prospective area (Figure 2) was defined by mapping outcrop of acid reactive (15% by

volume HCl) carbonate rock, in a location and topographic setting favourable for quarrying. Assays confirmed that the carbonate concentration and composition of surface exposures at Eddy Creek is equivalent to agricultural dolomite currently commercially available in Tasmania (Morrison, 2012). A Year 2 drilling program was designed to test the resource depth potential.

Year 2 Exploration Results

Mapping

Figure 4 shows the current status of mapping, which was updated during year. The aim has been to define an area of outcropping high carbonate-low silica rock as far as possible away from known karst features, and at a location where the topography is favourable for quarrying, road access development and effective control of ground water and sediment which may result from run of mine activity.

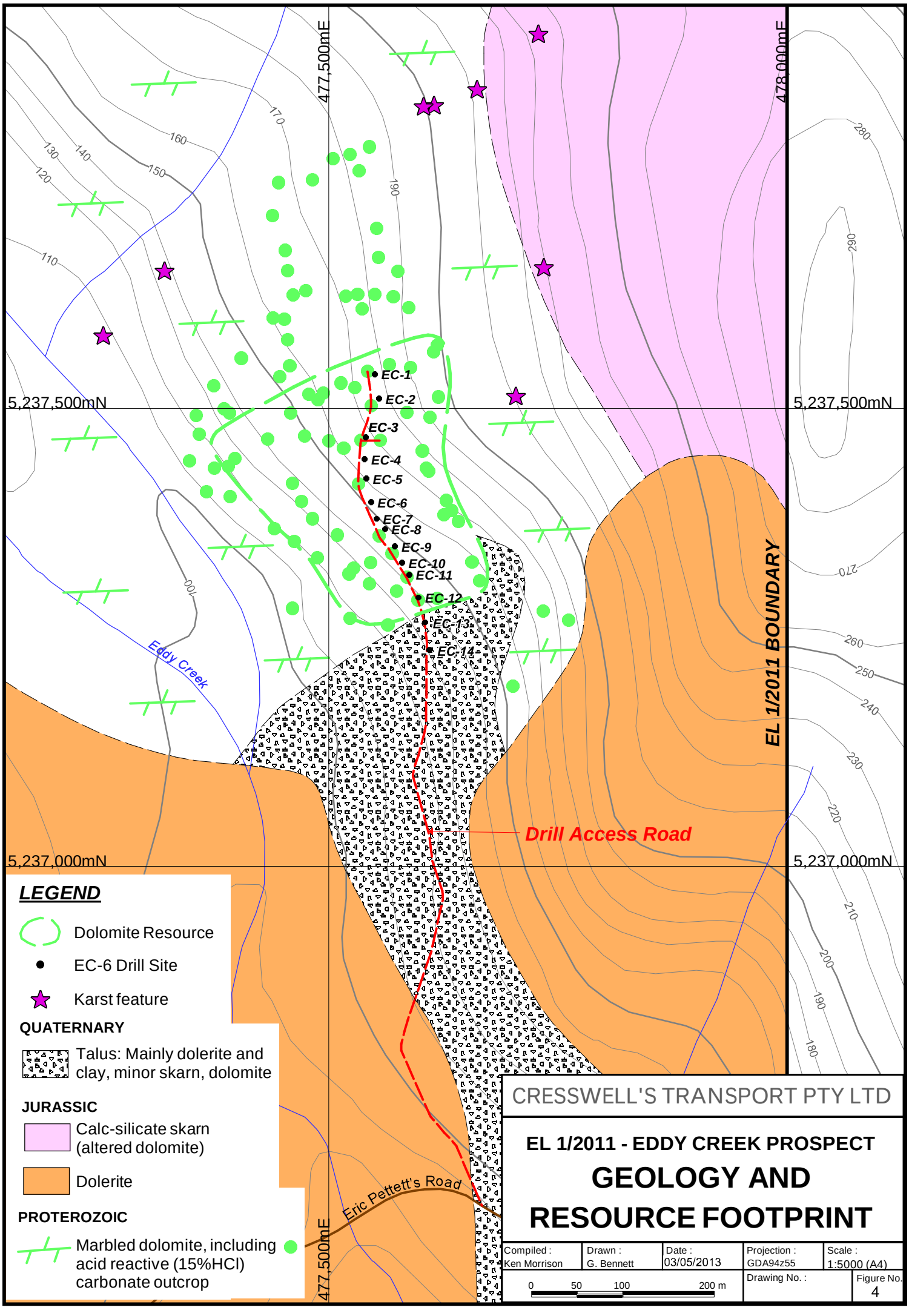
Two simple criteria were applied during mapping to partition outcrop classed as carbonate from outcrop classed as skarn; recognizable primary layering/bedding and acid fizz when 15% HCl is applied to a freshly prepared surface. Assays on rock chip samples taken from outcrop during licence Year1 (Morrison, 2012) had shown that this method is a reliable field indicator for "ore grade" dolomite.

There is very high potential for additional high grade dolomite, to the north and north west of the proposed resources area, but there are environmental issues related to karst features and the Eddy Creek drainage system which add risk to incorporating additional resource definition into the project at this stage. No caves, dolines or any karst features of significance were encountered within the area mapped out as the footprint of the deposit suitable for quarrying. The deposit is closed to the east (upslope) due to increasing skarn contact metamorphism from the Jurassic dolerite, and to the south due to talus overlying a narrowing window for potentially unmetamorphosed dolostone.

The resource footprint on Figure 4 is based on a combination of surface mapping and the drilling results discussed below. The term "resource" is used here in the general sense, based on the mapping and drilling results. The estimation of tonnage and average grade discussed in this report is not JORC compliant but is considered by the Company to be adequate for planning the proposed quarry. The resource footprint is intended to be the minimum coverage of good quality rock needed to sustain a viable quarry operation for at least 25 years and with the minimum potential environmental impact within the constraints of a viable project.

Drilling

Stopford Drilling was engaged by Cresswells in November 2012 to drill a fence of vertical open hole rotary percussion holes through the prospect, along the access track which had been constructed during the previous year (Figure 4). The drilling was done by a track mounted 18 tonne Atlas Copco ROC F7 blast hole rig, which drilled 89mm diameter holes using 3.7m rods racked in a carousel, requiring no manual handling during rod changes. Samples of combined chips and dust were collected in plastic bins under a


477,500mE
478,000mE
5,237,500mN
5,237,000mN
EC-1
EC-2
EC-3
EC-4
EC-5
EC-6
EC-7
EC-8
EC-9
EC-10
EC-11
EC-12
EC-13
EC-14
Eddy Creek
EL 1/2011 BOUNDARY
Drill Access Road
Eric Pettett's Road
LEGEND
Dolomite Resource
EC-6 Drill Site
Karst feature
QUATERNARY
Talus: Mainly dolerite and clay, minor skarn, dolomite
JURASSIC
Calc-silicate skarn (altered dolomite)
Dolerite
PROTEROZOIC
Marbled dolomite, including acid reactive (15%HCl) carbonate outcrop
CRESSWELL'S TRANSPORT PTY LTD
EL 1/2011 - EDDY CREEK PROSPECT
GEOLOGY AND RESOURCE FOOTPRINT
Compiled : Ken Morrison
Drawn : G. Bennett
Date : 03/05/2013
Projection : GDA94z55
Scale : 1:5000 (A4)
0 50 100 200 m
Drawing No. :
Figure No. 4

cyclone outlet, then transferred into pre labeled plastic bags. One composite sample was taken per rod, or part rod if penetration refusal occurred. Estimated sample size was approximately 30 kg per rod. Splits of 2-2.5 kg were taken from each parent sample, using a PVC spear, and sent to ALS/Burnie Research Laboratories for Whole Rock assay by XRF. Assay data are appended in Appendix A and the drilling program and results are summarized on Table 1 and on the long section Figure 5. Fourteen holes (EC-1 to EC-14) were drilled for 301 metres along the north-south track through the centre of the prospect, and 84 composite samples were taken (Figures 5, Table 1). A limitation of the set up was that the rig could only drill to 24 metres, however this was an acceptable trade off for the light weight mobility of the rig, which precluded the construction of more substantial access and drill pads.

By comparison with Proterozoic dolomites commercially available in northern and northwestern Tasmania, the assay data which best demonstrate rock quality are; loss on ignition (a qualitative measure of the carbonate content) and the percents silica and aluminium oxide (an estimate of impurities, including sedimentary sand and clay and metamorphic silicate minerals). Natural breaks in the data, which coincide with partitioning of dolomite and skarn materials, occur at maximum values of approximately 10% SiO2 and minimum values of approximately 35% LOI. Figure 5 shows that the rock quality deteriorates at depth and when combined with the mapped outcrop data the inference is that a basin-shaped body of relatively unaltered dolostone is underlain by calc silicate skarn rocks, which in turn are underlain and surrounded by dolerite. The deposit exists as a surficial layer in a window through the dolerite. The deposit has a thicker keel in the central portion of the drill traverse. The high quality material thins to the south but appears to be open to the north, in an area closer to some of the identified karst features.

The two southern most holes (EC-13 and -14) were collared on talus and although the talus is only about 3 metres thick in that area, the underlying dolomite quality is poor and therefore a position midway between EC-12 and -13 is considered as the southern edge of the resource.

No cavities were encountered in the 14 drill holes. Ground water is common but does not appear to be controlled by a single water table horizon. Fracture permeability is expected to transmit the ground water and it is likely to be variable and erratic in both flow and outlets at the surface. In holes EC-1, -8, -9 and -10 water pressure caused drilling refusal at depths above 24 metres. In holes EC-8 and -10, artesian groundwater temporarily flowed at the surface collars but subsided and remained dry after several hours.

Resource Potential

No attempt is made here to claim anything approaching JORC compliance, however it is clear from the mapping and drilling to date that a substantial resource of agricultural quality dolomite exists inside EL 1/2011 and that the surface footprint shown on Figures 3 and 4 represents an area suitable for a viable long term quarry, in terms of rock quality, topographic setting and low environmental impact. The mean thickness of relatively high grade dolomite encountered in holes EC-1 to EC-12 is approximately 16 metres and

N

S

5,237,500mN

5,237,400mN

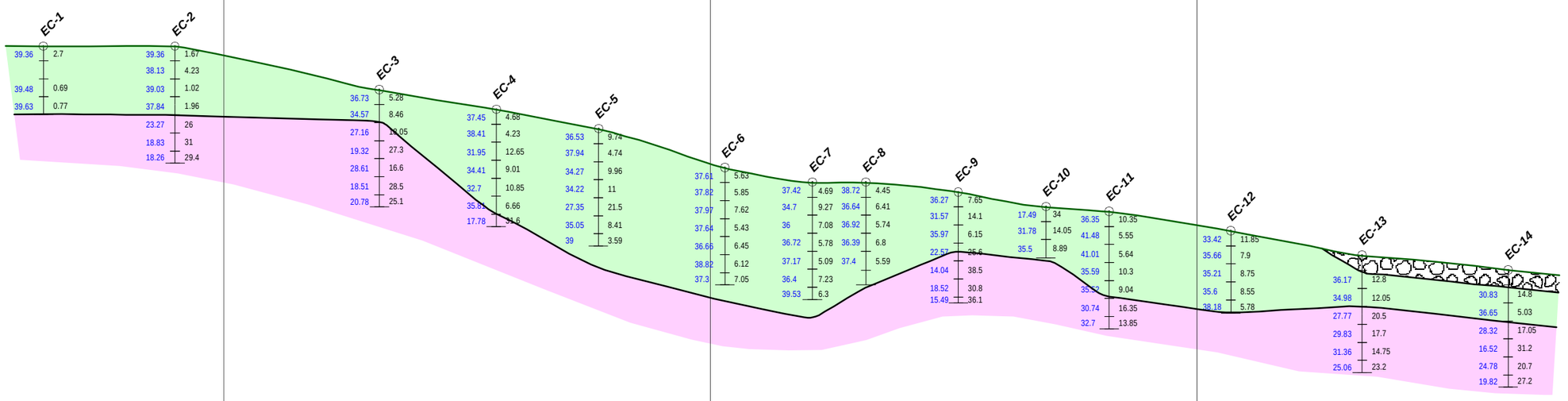
5,237,300mN

5,237,200mN

200mRL

100mRL

0mRL



ASSAY RESULTS

LOI% SiO2%

EC-1

39.36 2.7

LEGEND

- Quaternary Talus
- Jurassic Calc Silicate Skarn
- Proterozoic Dolomite

CRESSWELL'S TRANSPORT PTY LTD

EL 1/2011 - EDDY CREEK PROSPECT

DRILL SECTION

LOOKING EAST

Compiled :	Drawn :	Date :	Projection :	Scale :
Ken Morrison	G. Bennett	21/12/2012	GDA94z55	1:1000

0 10 20 40 m

Drawing No. :

Figure No. 5

Table 1
EL 1/2011 Eddy Creek RAB Drilling Program Nov 2012
Drilling Summary Table
(*GDA94 datum)

Hole ID	Easting*	Northing*	Drill Depth	Sample ID	Sample Depth	Lithology	Comment	CaO+MgO%	LOI%	SiO2%	Ore Thickness
EC-1	477550	5237537	14m	ECD001	0.0-3.0m	White carbonate dust, chips		57.3	39.36	2.7	>14m
					3.0-6.7	White clay	wet clay no sample				
				ECD002	6.7-10.4	White carbonate dust, chips	wet sample	59.2	39.48	0.69	
				ECD003	10.4-14.0	White carbonate dust, chips	hole abandoned 14m-wet	59	39.63	0.77	
EC-2	477555	5237510	24	ECD004	0.0-3.0	White carbonate dust, chips		57.9	39.36	1.67	14.1
				ECD005	3.0-6.7	White carbonate dust, chips		56.7	38.13	4.23	
				ECD006	6.7-10.4	White carbonate dust, chips		59.4	39.03	1.02	
				ECD007	10.4-14.1	White carbonate dust, chips		59.4	37.84	1.96	
				ECD008	14.1-17.8	White carbonate dust, chips		49.5	23.27	26	
				ECD009	17.8-21.5	White carbonate dust, chips		49.9	18.83	31	
				ECD010	21.5-24.0	White carbonate dust, chips		51.4	18.26	29.4	
EC-3	477540	5237468	24	ECD011	0.0-3.0	White carbonate dust, chips		57.3	36.73	5.28	6.7
				ECD012	3.0-6.7	White carbonate dust, chips		55.9	34.57	8.46	
				ECD013	6.7-10.4	White carbonate dust, chips		54.5	27.16	18.05	
				ECD014	10.4-14.1	White carbonate dust, chips		52.75	19.32	27.3	
				ECD015	14.1-17.8	White carbonate dust, chips		53.8	28.61	16.6	
				ECD016	17.8-21.5	White carbonate dust, chips		52.9	18.51	28.5	
				ECD017	21.5-24.0	White carbonate dust, chips		53	20.78	25.1	
EC-4	477539	5237444	24	ECD018	0.0-3.0	White carbonate dust, chips		57.4	37.45	4.68	21.5
				ECD019	3.0-6.7	White carbonate dust, chips		57.3	38.41	4.23	
				ECD020	6.7-10.4	White carbonate dust, chips		54.8	31.95	12.65	
				ECD021	10.4-14.1	White carbonate dust, chips		55.5	34.41	9.01	
				ECD022	14.1-17.8	White carbonate dust, chips		55.8	32.7	10.85	
				ECD023	17.8-21.5	White carbonate dust, chips		56.6	35.81	6.66	
				ECD024	21.5-24.0	White carbonate dust, chips		49.1	17.78	31.6	
EC-5	477541	5237423	24	ECD025	0.0-3.0	White carbonate dust, chips		53.2	36.53	9.74	>24
				ECD026	3.0-6.7	White carbonate dust, chips		57	37.94	4.74	
				ECD027	6.7-10.4	White carbonate dust, chips		55.3	34.27	9.96	
				ECD028	10.4-14.1	White carbonate dust, chips		54.3	34.22	11	
				ECD029	14.1-17.8	White carbonate dust, chips		51.2	27.35	21.5	

				ECD030	17.8-21.5	White carbonate dust, chips		56.8	35.05	8.41	
				ECD031	21.5-24.0	White carbonate dust, chips		57.4	39	3.59	
EC-6	477546	5237397	24	ECD032	0.0-3.0	White carbonate dust, chips		56.3	37.61	5.63	>24
				ECD033	3.0-6.7	White carbonate dust, chips		55.7	37.82	5.85	
				ECD034	6.7-10.4	White carbonate dust, chips		54.3	37.97	7.62	
				ECD035	10.4-14.1	White carbonate dust, chips		56.7	37.64	5.43	
				ECD036	14.1-17.8	White carbonate dust, chips		56.7	36.66	6.45	
				ECD037	17.8-21.5	White carbonate dust, chips		54.4	38.82	6.12	
				ECD038	21.5-24.0	White carbonate dust, chips		54.8	37.3	7.05	
EC-7	477552	5237379		ECD039	0.0-3.0	White carbonate dust, chips		57.4	37.42	4.69	>24
			24	ECD040	3.0-6.7	White carbonate dust, chips		55.2	34.7	9.27	
				ECD041	6.7-10.4	White carbonate dust, chips		56.5	36	7.08	
				ECD042	10.4-14.1	White carbonate dust, chips		57.4	36.72	5.78	
				ECD043	14.1-17.8	White carbonate dust, chips		57.5	37.17	5.09	
				ECD044	17.8-21.5	White carbonate dust, chips		56.4	36.4	7.23	
				ECD045	21.5-24.0	White carbonate dust, chips		53.7	39.53	6.3	
EC-8	477561	5237368	21	ECD046	0.0-3.0	White carbonate dust, chips		56.3	38.72	4.45	>18
				ECD047	3.0-6.7	White carbonate dust, chips		56.3	36.64	6.41	
				ECD048	6.7-10.4	White carbonate dust, chips	hole abandoned 21m-wet	56.9	36.92	5.74	
				ECD049	10.4-14.1	White carbonate dust, chips	temporary water to collar	57.2	36.39	6.8	
				ECD050	14.1-18.0	White carbonate dust, chips	samples to 18.0m	56.6	37.4	5.59	
EC-9	477572	5237349	22.7	ECD051	0.0-3.0	White carbonate dust, chips		55.4	36.27	7.65	10.4
				ECD052	3.0-6.7	White carbonate dust, chips		53.5	31.57	14.1	
				ECD053	6.7-10.4	White carbonate dust, chips		58	35.97	6.15	
				ECD054	10.4-14.1	White carbonate dust, chips		51.6	22.57	25.6	
				ECD055	14.1-17.8	White carbonate dust, chips		46.85	14.04	38.5	
				ECD056	17.8-21.5	White carbonate dust, chips		49.9	18.52	30.8	
				ECD057	21.5-22.7	White carbonate dust, chips	hole abandoned 22.7m-wet	47.4	15.49	36.1	
EC-10	477580	5237331	10.5	ECD058	0.0-3.0	White carbonate dust, chips		47.4	17.49	34	0
				ECD059	3.0-6.7	White carbonate dust, chips	hole abandoned 10.5m-wet	53.5	31.78	14.05	
				ECD060	6.7-10.5	White carbonate dust, chips	temporary water to collar	55.1	35.5	8.89	
EC-11	477588	5237318	24	ECD061	0.0-3.0	White carbonate dust, chips		53.5	36.35	10.35	17.8
				ECD062	3.0-6.7	White carbonate dust, chips		53.9	41.48	5.55	
				ECD063	6.7-10.4	White carbonate dust, chips		53.1	41.01	5.64	
				ECD064	10.4-14.1	White carbonate dust, chips		53.6	35.59	10.3	
				ECD065	14.1-17.8	White carbonate dust, chips		55.5	35.52	9.04	

				ECD066	17.8-21.5	White carbonate dust, chips		52.3	30.74	16.35	
				ECD067	21.5-24.0	White carbonate dust, chips		54.4	32.7	13.85	
EC-12	477598	5237293	16.8	ECD068	0.0-3.0	White carbonate dust, chips		53.8	33.42	11.85	>16.8
				ECD069	3.0-6.7	White carbonate dust, chips		55.6	35.66	7.9	
				ECD070	6.7-10.4	White carbonate dust, chips		55.2	35.21	8.75	
				ECD071	10.4-14.1	White carbonate dust, chips		55	35.6	8.55	
				ECD072	14.1-16.8	White carbonate dust, chips	drill refusal 16.8m	55.4	38.18	5.78	
EC-13	477605	5237266	24		0.0-3.0	Dolerite talus, clay	talus- no sample				0
				ECD073	3.0-6.7	White carbonate dust, chips		50.75	36.17	12.8	
				ECD074	6.7-10.4	White carbonate dust, chips		52.1	34.98	12.05	
				ECD075	10.4-14.1	White carbonate dust, chips		50.75	27.77	20.5	
				ECD076	14.1-17.8	White carbonate dust, chips		51.6	29.83	17.7	
				ECD077	17.8-21.5	White carbonate dust, chips		53.7	31.36	14.75	
				ECD078	21.5-24.0	White carbonate dust, chips		51.3	25.06	23.2	
EC-14	477610	5237236	24		0.0-3.0	Dolerite talus, clay	talus- no sample				0
		TOTAL	301m	ECD079	3.0-6.7	White carbonate dust, chips		54.1	30.83	14.8	
				ECD080	6.7-10.4	White carbonate dust, chips		57.7	36.65	5.03	
				ECD081	10.4-14.1	White carbonate dust, chips		53.7	28.32	17.05	
				ECD082	14.1-17.8	White carbonate dust, chips		50.9	16.52	31.2	
				ECD083	17.8-21.5	White carbonate dust, chips		53.4	24.78	20.7	
				ECD084	21.5-24.0	White carbonate dust, chips		52	19.82	27.2	

several holes terminated in high grade material at 24 metres depth. If this central traverse of drill holes is representative of the deposit, and if we assume an average bulk density of 2.3 t/m^3 (allowing for fractures and other voids), then a resource of >2 million tonnes is available, and that is sufficient for at least 25 years production on the basis of expected demand.

Environmental Issues

Natural Values

In April 2013 Philip Milner, Philip Milner Landscape Consultant Pty Ltd, conducted a flora and fauna habitat survey over the area of the resource and the proposed quarry site, including the access road. The survey consisted of a desk top review of threatened and endangered species under State and Commonwealth legislation, and a detailed field survey (Appendix B). No threatened or endangered plant or animal species or active habitat sites were observed. Potential habitat sites for devils, quolls and stag beetles exist in logs and tree butts on the forest floor and recommendations were made to minimise disturbance to these sites and to ensure thorough pre stripping of soil and vegetation litter to enable effective rehabilitation of the forest floor environment (Appendix B).

Information provided to Cresswells by the Southern Tasmanian Caverneers indicated that several mapped karst features considered as significant are hosted in the dolomitic carbonates within EL 1/2011. These features comprise caves, dolines and springs. In response to this information, Cresswells walked detailed traverses across the area of outcropping reactive carbonates and modified the shape and size of the proposed resource and quarry footprint, to ensure that no significant karst features are included within the project area (Figures 3 & 4).

Rehabilitation

Rehabilitation activities associated with the drilling campaign involved removal of all samples, sample bags and all consumables used in drilling and sampling, at the time of drilling. Two holes (ED-8 and -10) produced artesian water at the collars during drilling, but the flow subsided and ceased after several hours. All collars were plugged with plastic octoplugs, inserted to approximately 25 cm below the surface, then covered with rock rubble and soil materials.

The final step in demobilizing the drill rig, excavator and light vehicles was to install a boulder barrier at the entrance to the access track, sufficient to prevent access by all motorised vehicles except trail bikes.

Expenditure

Cumulative exploration expenditure on the EL up to June 30, 2013 was $70,906. Expenditure in the 12 month period ending 30 June, 2013 was $44,406, in the following categories:

Geology	$22,315
Feasibility study	$8,766
Assays	$5,888
Drilling	$5,600
Tenement and office costs	$1,837
TOTAL	**$44,406**

Year 3 Exploration Program

Sufficient mapping and drilling have been completed to be confident that a suitable dolomite resource exists in a location which is economically and environmentally favourable for a viable long term quarry.

Application for a Mining Lease and a Development Application are in progress and it is envisaged that all work on EL 1/2011 during licence Year 3 will be related to feasibility studies, environmental surveys and permitting. It is likely that part of the EL will be converted to an ML during the year and that the status of the remaining EL will depend on the conditions applied to the ground as a consequence of changing land tenure classification.

References

Bottrill, R. S., Taheri, J., Calver, C. R. and Everard, J. L., 1999. The nature and origin of gold mineralisation at the Forster Prospect, Glovers Bluff/Weld River area, Mineral Resources Tasmania, Tasmanian Geological Survey Record 1999/06.

Calver, C. R., Forsyth, S. M. and Everard, J. L., 2006. Geology of the Maydena, Skeleton, Nevada, Weld and Picton 1:25,000 scale map sheets, Mineral Resources Tasmania, Tasmanian Geological Survey Record 2006/04.

Morrison, K. C., 2012. Cresswells Transport Pty Ltd, EL 1/2011 – Eddy Creek, Year 1 Annual Report.

APPENDIX A
Drilling Assays

BU12279261 - Finalized
CLIENT : "CRETRA - Cresswells Transport Pty Ltd"
# of SAMPLES : 84
DATE RECEIVED : 2012-11-28 DATE FINALIZED : 2012-12-20
PROJECT : "Cresswells"
CERTIFICATE COMMENTS : ""
PO NUMBER : " "

	PUL-QC	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-GRA05		
SAMPLE	Pass75um	Al2O3	BaO	CaO	Cr2O3	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	SrO	TiO2	Total	LOI		CaO+MgO
DESCRIPT	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%			
ECD001		0.04	<0.01	35.2	<0.01	0.1	<0.01	22.1	<0.01	<0.01	<0.01	2.7	0.01	0.01	99.54	39.36		57.3
ECD002		0.02	<0.01	36	0.01	0.12	<0.01	23.2	<0.01	<0.01	<0.01	0.69	0.01	0.01	99.54	39.48		59.2
ECD003		0.03	<0.01	35.8	0.02	0.13	<0.01	23.2	<0.01	<0.01	0.01	0.77	0.01	0.01	99.62	39.63		59
ECD004		0.03	<0.01	37.7	<0.01	0.46	<0.01	20.2	0.01	<0.01	0.01	1.67	0.01	0.01	99.48	39.36		57.9
ECD005		0.02	<0.01	34.6	<0.01	0.83	<0.01	22.1	0.02	<0.01	0.01	4.23	0.01	0.01	99.97	38.13		56.7
ECD006		0.04	<0.01	35.8	0.01	0.39	<0.01	23.6	0.01	<0.01	0.01	1.02	0.01	<0.01	99.93	39.03		59.4
ECD007		0.02	<0.01	35.1	<0.01	0.22	<0.01	24.3	0.01	<0.01	<0.01	1.96	0.01	<0.01	99.47	37.84		59.4
ECD008		0.02	<0.01	28.5	<0.01	0.42	<0.01	21	0.01	<0.01	<0.01	26	0.01	0.01	99.25	23.27		49.5
ECD009		0.03	0.01	28.4	<0.01	0.24	<0.01	21.5	0.01	0.02	<0.01	31	0.01	0.01	100.1	18.83		49.9
ECD010		0.02	<0.01	30	<0.01	0.13	<0.01	21.4	<0.01	<0.01	0.01	29.4	0.01	0.01	99.27	18.26		51.4
ECD011		0.01	<0.01	34.1	<0.01	0.08	<0.01	23.2	<0.01	<0.01	<0.01	5.28	0.01	<0.01	99.41	36.73		57.3
ECD012		0.01	<0.01	33	<0.01	0.07	<0.01	22.9	<0.01	<0.01	<0.01	8.46	<0.01	<0.01	99.05	34.57		55.9
ECD013		<0.01	<0.01	32.1	<0.01	0.06	<0.01	22.4	<0.01	<0.01	<0.01	18.05	0.01	<0.01	99.85	27.16		54.5
ECD014		<0.01	<0.01	32.9	<0.01	0.08	<0.01	19.85	<0.01	<0.01	<0.01	27.3	0.01	<0.01	99.51	19.32		52.75
ECD015		<0.01	<0.01	30.8	<0.01	0.06	<0.01	23	<0.01	<0.01	<0.01	16.6	<0.01	<0.01	99.12	28.61		53.8
ECD016		0.01	0.01	31.6	<0.01	0.09	<0.01	21.3	<0.01	0.01	<0.01	28.5	0.01	0.01	100.1	18.51		52.9
ECD017		<0.01	<0.01	31.8	<0.01	0.06	<0.01	21.2	<0.01	<0.01	<0.01	25.1	0.01	<0.01	99.01	20.78		53
ECD018		<0.01	<0.01	34.8	<0.01	0.06	<0.01	22.6	<0.01	<0.01	0.01	4.68	0.01	<0.01	99.61	37.45		57.4
ECD019		0.01	0.01	36	<0.01	0.04	<0.01	21.3	<0.01	<0.01	0.01	4.23	0.01	<0.01	100	38.41		57.3
ECD020	86.8	0.01	<0.01	32.9	<0.01	0.1	<0.01	21.9	<0.01	<0.01	0.01	12.65	0.01	<0.01	99.54	31.95		54.8
ECD021		<0.01	<0.01	32.8	<0.01	0.07	<0.01	22.7	<0.01	<0.01	0.01	9.01	<0.01	<0.01	99.02	34.41		55.5
ECD022		<0.01	<0.01	33.2	<0.01	0.06	<0.01	22.6	<0.01	<0.01	0.01	10.85	0.01	<0.01	99.46	32.7		55.8
ECD023		<0.01	<0.01	34.1	<0.01	0.14	<0.01	22.5	<0.01	<0.01	0.01	6.66	<0.01	<0.01	99.25	35.81		56.6
ECD024		<0.01	<0.01	27.9	0.01	0.22	<0.01	21.2	0.01	<0.01	<0.01	31.6	<0.01	<0.01	98.78	17.78		49.1
ECD025		0.02	<0.01	36.6	0.01	0.07	<0.01	16.6	<0.01	<0.01	0.01	9.74	0.01	<0.01	99.6	36.53		53.2
ECD026		0.01	<0.01	36.5	<0.01	0.05	<0.01	20.5	<0.01	<0.01	0.01	4.74	0.01	<0.01	99.77	37.94		57
ECD027		0.01	<0.01	33.4	<0.01	0.07	<0.01	21.9	<0.01	<0.01	0.01	9.96	0.01	<0.01	99.64	34.27		55.3
ECD028		0.01	<0.01	33.3	<0.01	0.06	<0.01	21	<0.01	<0.01	<0.01	11	0.01	<0.01	99.61	34.22		54.3
ECD029		<0.01	<0.01	30.6	<0.01	0.06	<0.01	20.6	<0.01	0.01	<0.01	21.5	0.01	<0.01	100.15	27.35		51.2
ECD030		<0.01	0.01	35.8	<0.01	0.07	<0.01	21	<0.01	<0.01	0.01	8.41	0.01	<0.01	100.35	35.05		56.8
ECD031		0.03	<0.01	35.1	<0.01	0.05	<0.01	22.3	<0.01	<0.01	0.01	3.59	0.01	<0.01	100.1	39		57.4
ECD032		<0.01	<0.01	35.8	<0.01	0.03	<0.01	20.5	<0.01	<0.01	0.01	5.63	0.01	<0.01	99.6	37.61		56.3
ECD033		0.01	<0.01	33.5	<0.01	0.03	<0.01	22.2	<0.01	<0.01	0.01	5.85	<0.01	<0.01	99.43	37.82		55.7
ECD034		<0.01	<0.01	32.4	<0.01	0.03	<0.01	21.9	<0.01	<0.01	<0.01	7.62	0.01	<0.01	99.94	37.97		54.3
ECD035		<0.01	<0.01	33.8	<0.01	0.04	<0.01	22.9	<0.01	<0.01	0.01	5.43	0.01	<0.01	99.84	37.64		56.7
ECD036		<0.01	<0.01	34	0.01	0.01	<0.01	22.7	<0.01	<0.01	0.01	6.45	0.01	<0.01	99.85	36.66		56.7
ECD037		0.07	<0.01	33	<0.01	0.09	<0.01	21.4	<0.01	<0.01	<0.01	6.12	0.01	0.01	99.53	38.82		54.4
ECD038		<0.01	<0.01	33.1	<0.01	0.03	<0.01	21.7	<0.01	<0.01	0.01	7.05	<0.01	<0.01	99.2	37.3		54.8
ECD039		<0.01	<0.01	34.1	<0.01	0.03	<0.01	23.3	<0.01	<0.01	<0.01	4.69	<0.01	<0.01	99.55	37.42		57.4
ECD040		<0.01	<0.01	31.4	<0.01	0.03	<0.01	23.8	<0.01	<0.01	<0.01	9.27	<0.01	<0.01	99.21	34.7		55.2

ECD041		<0.01		<0.01		33		<0.01		0.05		<0.01		23.5		<0.01		<0.01		7.08		<0.01		99.64	36	56.5
ECD042		<0.01		<0.01		34		<0.01		0.04		<0.01		23.4		<0.01		<0.01		5.78		0.01		<0.01	99.96	36.72	57.4
ECD043		<0.01		<0.01		34.6		0.01		0.07		<0.01		22.9		<0.01		<0.01		0.02		5.09		0.01		<0.01	99.88	37.17	57.5
ECD044		<0.01		<0.01		33.6		<0.01		0.05		<0.01		22.8		<0.01		<0.01		0.01		7.23		<0.01		<0.01	100.1	36.4	56.4
ECD045		<0.01		<0.01		31.9		<0.01		0.02		<0.01		21.8		<0.01		<0.01		<0.01		6.3		<0.01		<0.01	99.55	39.53	53.7
ECD046		<0.01		<0.01		34		<0.01		0.03		<0.01		22.3		<0.01		<0.01		<0.01		4.45		<0.01		<0.01	99.5	38.72	56.3
ECD047		<0.01		<0.01		33.3		<0.01		0.04		<0.01		23		<0.01		<0.01		0.01		6.41		<0.01		<0.01	99.41	36.64	56.3
ECD048		<0.01		<0.01		34.2		<0.01		0.04		<0.01		22.7		<0.01		<0.01		0.01		5.74		<0.01		<0.01	99.62	36.92	56.9
ECD049		<0.01		<0.01		34.2		<0.01		0.04		<0.01		23		<0.01		<0.01		0.01		6.8		0.01		<0.01	100.45	36.39	57.2
ECD050		<0.01		<0.01		34.3		<0.01		0.03		<0.01		22.3		<0.01		<0.01		0.01		5.59		0.01		<0.01	99.65	37.4	56.6
ECD051		<0.01		<0.01		32.8		<0.01		0.05		<0.01		22.6		<0.01		<0.01		0.01		7.65		<0.01		<0.01	99.38	36.27	55.4
ECD052			0.01	<0.01		29.6		<0.01		0.09		<0.01		23.9		<0.01		0.01		0.01		14.1		<0.01		<0.01	99.41	31.57	53.5
ECD053		<0.01		<0.01		34.8		<0.01		0.03		<0.01		23.2		<0.01		<0.01		<0.01		6.15		0.01		<0.01	100.2	35.97	58
ECD054		<0.01		<0.01		27.7		<0.01		0.04		<0.01		23.9		<0.01		0.02		<0.01		25.6		0.01		<0.01	99.91	22.57	51.6
ECD055			0.01		0.01	27.9		0.01		0.06		<0.01		18.95		<0.01		0.6		0.01		38.5		0.01		<0.01	100.15	14.04	46.85
ECD056		<0.01		<0.01		28.5		<0.01		0.05		<0.01		21.4		<0.01		0.03		0.01		30.8		0.01		<0.01	99.37	18.52	49.9
ECD057		<0.01		<0.01		24.8		<0.01		0.07		<0.01		22.6		<0.01		0.04		<0.01		36.1		<0.01		<0.01	99.17	15.49	47.4
ECD058			0.01	<0.01		25.1		<0.01		0.18		<0.01		22.3		0.01		0.02		0.01		34		<0.01		<0.01	99.14	17.49	47.4
ECD059		<0.01		<0.01		31.7		<0.01		0.12		<0.01		21.8		<0.01		<0.01		0.01		14.05		<0.01		<0.01	99.47	31.78	53.5
ECD060	85.1	<0.01		<0.01		35		<0.01		0.06		<0.01		20.1		<0.01		<0.01		0.01		8.89		<0.01		<0.01	99.58	35.5	55.1
ECD061		<0.01		<0.01		32.2		<0.01		0.06		<0.01		21.3		<0.01		<0.01		<0.01		10.35		0.01		<0.01	100.3	36.35	53.5
ECD062		<0.01		<0.01		32.2		<0.01		0.04		<0.01		21.7		<0.01		<0.01		<0.01		5.55		0.01		0.01	101	41.48	53.9
ECD063		<0.01		<0.01		31.7		<0.01		0.05		<0.01		21.4		<0.01		<0.01		0.01		5.64		<0.01		<0.01	99.82	41.01	53.1
ECD064		<0.01		<0.01		32.8		<0.01		0.1		<0.01		20.8		<0.01		<0.01		0.01		10.3		<0.01		<0.01	99.61	35.59	53.6
ECD065		<0.01		<0.01		34.1		<0.01		0.16		<0.01		21.4		0.01		<0.01		0.01		9.04		0.01		<0.01	100.25	35.52	55.5
ECD066		<0.01		<0.01		30.7		<0.01		0.08		<0.01		21.6		<0.01		<0.01		0.01		16.35		<0.01		<0.01	99.5	30.74	52.3
ECD067		<0.01			0.01	33.1		<0.01		0.12		<0.01		21.3		0.01		<0.01		<0.01		13.85		0.01		0.01	101.15	32.7	54.4
ECD068			0.07	<0.01		31.2		<0.01		0.23		<0.01		22.6		0.01		<0.01		0.02		11.85		<0.01		0.01	99.42	33.42	53.8
ECD069			0.02	<0.01		33.7		<0.01		0.12		<0.01		21.9		0.01		<0.01		0.01		7.9		0.01		<0.01	99.34	35.66	55.6
ECD070			0.01	<0.01		32.8		<0.01		0.05		<0.01		22.4		<0.01		<0.01		0.01		8.75		<0.01		<0.01	99.24	35.21	55.2
ECD071		<0.01		<0.01		32.9		<0.01		0.06		<0.01		22.1		<0.01		<0.01		0.01		8.55		<0.01		<0.01	99.23	35.6	55
ECD072			0.01	<0.01		33.9		<0.01		0.08		<0.01		21.5		<0.01		<0.01		0.01		5.78		<0.01		<0.01	99.47	38.18	55.4
ECD073			0.25	<0.01		31.2		0.01		0.23		0.01		19.55		<0.01		<0.01		<0.01		12.8		0.01		0.02	100.25	36.17	50.75
ECD074			0.13	<0.01		31.8		0.01		0.11		0.01		20.3		<0.01		<0.01		<0.01		12.05		0.01		0.01	99.41	34.98	52.1
ECD075			0.1		0.01	32.2		0.01		0.14		0.01		18.55		<0.01		<0.01		<0.01		20.5		0.01		0.01	99.31	27.77	50.75
ECD076			0.09	<0.01		31.6		0.01		0.11		<0.01		20		<0.01		<0.01		<0.01		17.7		0.01		0.01	99.37	29.83	51.6
ECD077			0.06	<0.01		32.9		0.01		0.12		<0.01		20.8		<0.01		<0.01		<0.01		14.75		0.01		0.01	100.05	31.36	53.7
ECD078			0.04	<0.01		30.7		<0.01		0.11		<0.01		20.6		<0.01		<0.01		<0.01		23.2		0.01		0.01	99.77	25.06	51.3
ECD079			0.25	<0.01		31		0.01		0.19		0.01		23.1		<0.01		0.01		0.01		14.8		0.01		0.02	100.3	30.83	54.1
ECD080			0.11	<0.01		34.1		<0.01		0.11		<0.01		23.6		<0.01		<0.01		<0.01		5.03		0.01		0.01	99.72	36.65	57.7
ECD081			0.06	<0.01		30.2		0.01		0.08		<0.01		23.5		<0.01		0.01		<0.01		17.05		0.01		0.01	99.4	28.32	53.7
ECD082			0.09	<0.01		30.5		0.01		0.11		<0.01		20.4		<0.01		<0.01		<0.01		31.2		0.01		0.01	99.03	16.52	50.9
ECD083			0.03	<0.01		30.7		<0.01		0.06		<0.01		22.7		<0.01		<0.01		<0.01		20.7		0.01		0.01	99.22	24.78	53.4
ECD084	83.5		0.03	<0.01		30.2		<0.01		0.07		<0.01		21.8		<0.01		<0.01		0.01		27.2		0.01		0.01	99.28	19.82	52

APPENDIX B

Flora and Fauna Habitat Survey Report

by Philip Milner

PROPOSED DOLOMITE QUARRY

EDDY CREEK, LONNAVALE

FLORA AND FAUNA HABITAT SURVEY

For CRESSWELLS TRANSPORT PTY LTD

19th May 2013

PHILIP MILNER LANDSCAPE CONSULTANT PTY LTD

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A.B.N.No. 32 068 906 258

CONTENTS

1.0 Introduction:

1.1 Background:

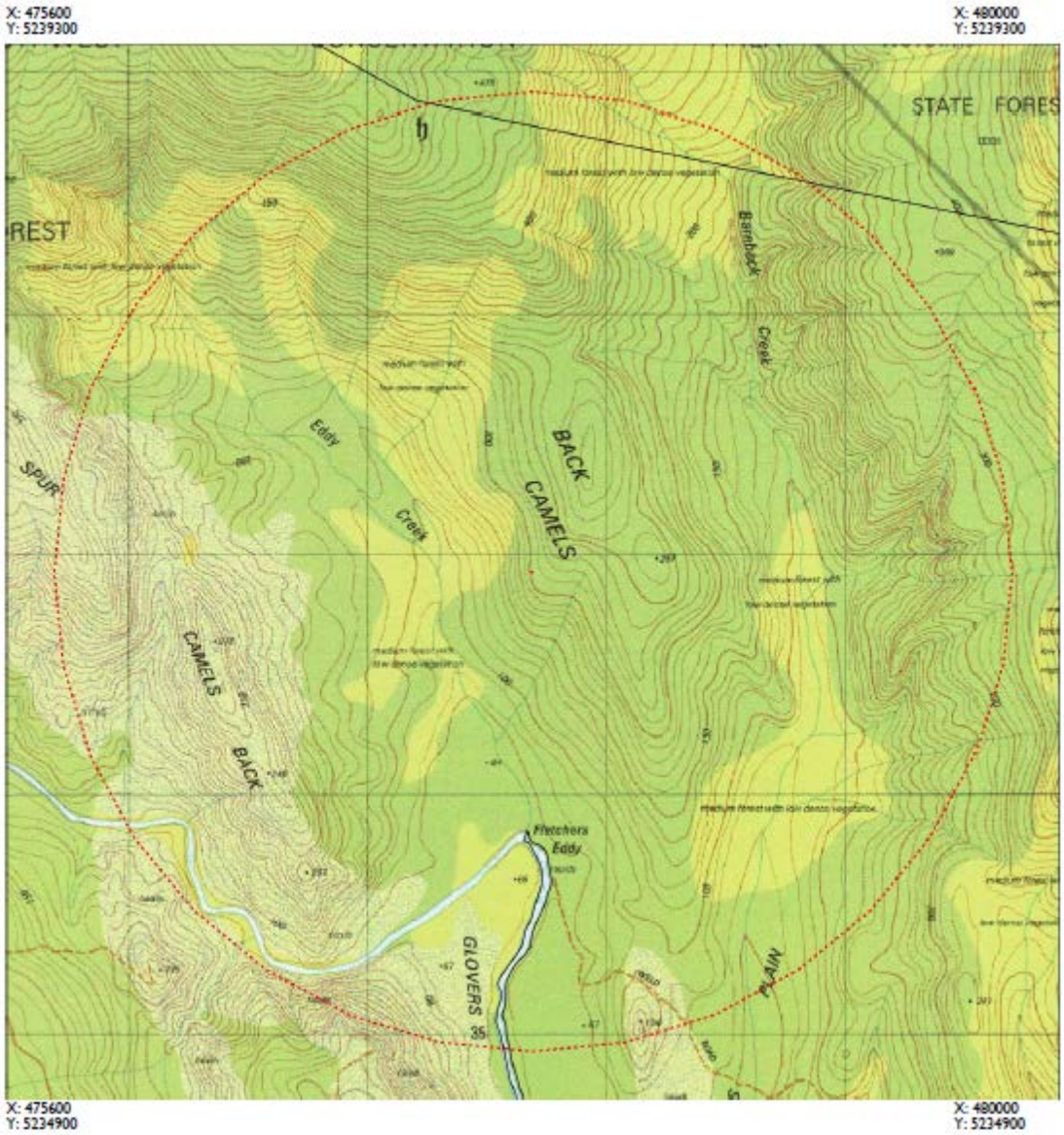
Cresswells Transport is proposing the development of a quarry near Eddy Creek off Southwood Road near Lonnavale for the extraction of dolomite. REF: Development Application No. DA-31/2013. A flora and fauna habitat survey is required as part of the approvals process in order to determine possible impacts on threatened species, threatened vegetation communities, potential threatened fauna habitat and other natural values.

1.2 Objectives: The objectives of this survey were to:

- Undertake a desktop survey to confirm the known biological records and the natural values which may be present within the area of mining lease and in the vicinity, and in particular records of threatened species and threatened vegetation communities.
- Undertake a field survey of the area of the proposed quarry and access road footprint to observe and record the natural values present including the vegetation types and plant communities, the flora and in particular any threatened plant species, and of potential habitat for threatened species of fauna.
- Determine the possible impacts of the proposed quarry on the natural values present and make recommendations on how those impacts can be minimized.

1.3 Location of Study Area:

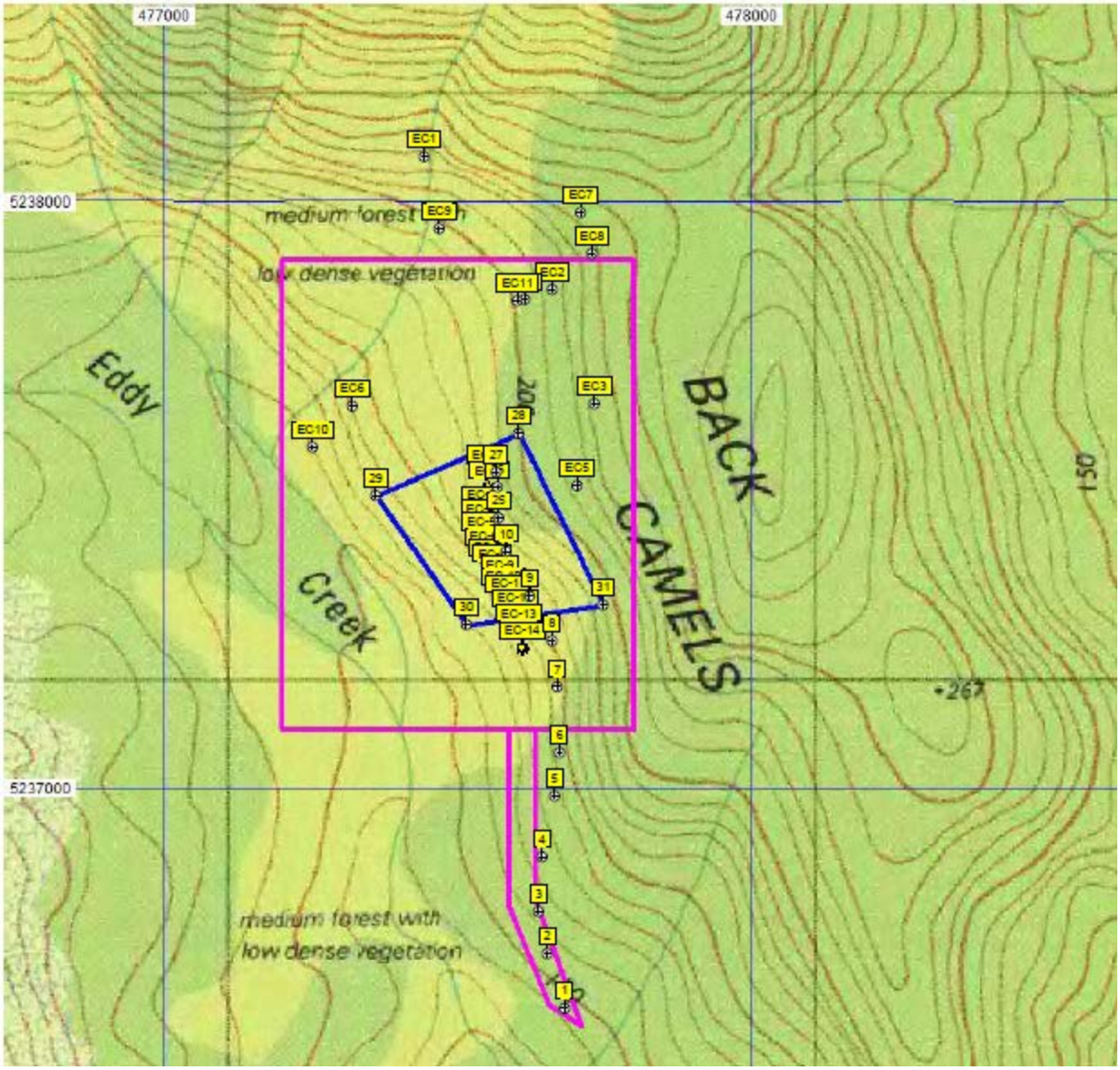
MAP REF: Tasmap 1:25,000 Weld, 4623
BIOREGION: Southern Ranges
Reference Point for the survey: GRID REF: 477800E – 5237100N
DATUM: MGA Zone 55 GDA94.



MAP No.1: Location of study area north of Weld River with the centre point at the proposed quarry.

1.4 Site Description:

The site proposed for the quarry is located within an area of State Forest near Lonnavale in southern Tasmania. The site is located within the catchment of the Weld River and the river is located about one to two kilometers to the south and south-west of the site. The land slopes down towards the west and south-west, and is steepest in the south-east corner of the lease. The boundary of the proposed mining lease is detailed on the following map (pink), and the outline of the proposed quarry footprint is detailed in blue. Eddy Creek itself crosses the south-west corner of the mining lease boundary.



MAP 2. Boundary of the Eddy Creek Mining Lease (pink) and the proposed quarry footprint (blue).

Australian Geocentric 1994 (GDA94)							
Datum		Point	Zone	Easting	Northing	Date	Description
WP	UTM	1	55G	477683	5236624	04/14/2013	Access
WP	UTM	2	55G	477652	5236717	04/14/2013	Access
WP	UTM	3	55G	477639	5236787	04/14/2013	Access
WP	UTM	4	55G	477645	5236881	04/14/2013	Access
WP	UTM	5	55G	477665	5236985	04/14/2013	Access
WP	UTM	6	55G	477674	5237060	04/14/2013	Access
WP	UTM	7	55G	477670	5237170	04/14/2013	Access
WP	UTM	8	55G	477660	5237249	04/14/2013	Access
WP	UTM	9	55G	477624	5237325	04/14/2013	Access
WP	UTM	10	55G	477583	5237402	04/14/2013	Access
WP	UTM	25	55G	477571	5237459	04/14/2013	Access
WP	UTM	26	55G	477568	5237511	04/14/2013	Access
WP	UTM	27	55G	477566	5237538	04/14/2013	Access
WP	UTM	28	55G	477604	5237603	04/14/2013	NE Corner
WP	UTM	29	55G	477361	5237497	04/14/2013	NW Corner
WP	UTM	30	55G	477515	5237277	04/14/2013	SW Corner
WP	UTM	31	55G	477748	5237311	04/14/2013	SE Corner

TABLE 1: Co-ordinates of the proposed quarry footprint and access road, detailed in yellow on the preceding map.

2.0 Desktop Survey of Natural Values: The DPIPWE database "The Natural Values Atlas" was accessed for the known biological records of the locality and environs. Records of threatened species of flora and fauna known to occur within a 5,000 metre radius of the location were also accessed. Data sourced included the vegetation types and plant communities, the occurrence of any threatened vegetation communities, the recorded locations of any threatened species of plants and threatened species of fauna known or with potential to occur in the vicinity. GRID REFERENCE POINT for the study area: 477800E – 5237100N. (GDA94)

2.1 Desktop Survey Results:

VEGETATION COMMUNITIES:

The following vegetation communities are mapped under the TasVeg mapping program as occurring within 1,000 metres of each of the two reference points.

VEGETATION COMMUNITY	TasVeg Code / Map colour	EXTENT IN STUDY AREA
Nothofagus cunninghamii Rainforest (undifferentiated)	RMU / Dark Blue	A small patch about 300m NW of the reference point.
Eucalyptus obliqua Wet Forest (undifferentiated)	WOU / light blue	The predominant community across the study area.
Eucalyptus nitida Wet Forest (undifferentiated)	WNU / aqua-blue with vertical lines	Localised and linear patch 500m to 1,000 m south / SW of the reference point.
Eucalyptus obliqua Dry Forest & Woodland	DOB / medium green	Very small patch about 1,000m south of the reference point.
Buttongrass Moorland (undifferentiated)	MBU / yellow	At the western periphery of study area.

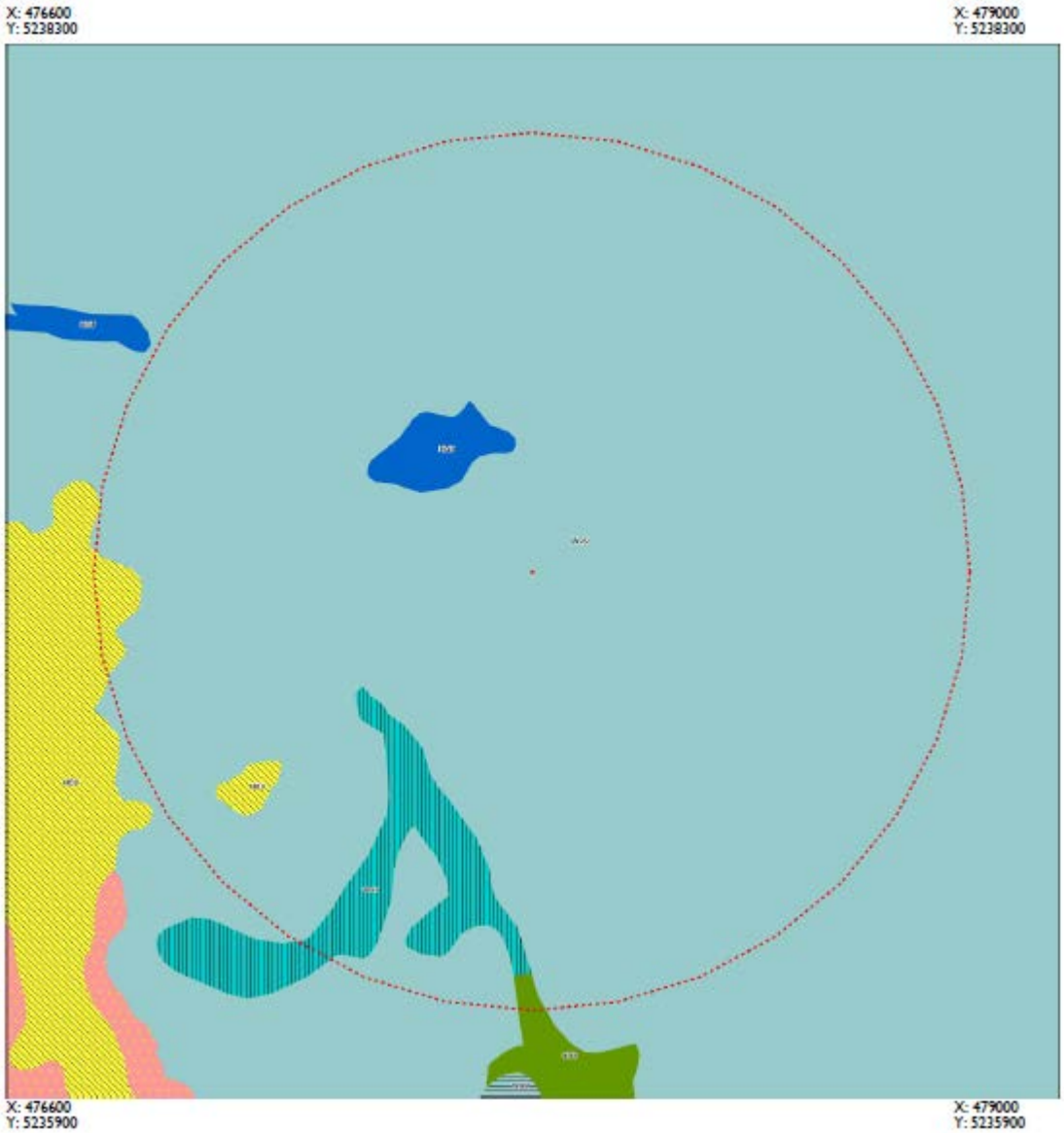


FIGURE 1: Vegetation communities as per TasVeg mapping program within 1,000 metres of reference point: 477800E – 5237100N .

CODE OF VEGETATION COMMUNITIES:

RMU ……. *Nothofagus cunninghamii* Rainforest (undifferentiated) (dark blue)
WOU ……. *Eucalyptus obliqua* Wet Forest (undifferentiated) (light blue)
WNU ……. *Eucalyptus nitida* Wet Forest (undifferentiated) (aqua blue)
DOB …….. *Eucalyptus obliqua* Dry Forest & Woodland (green)
MBU ……. Buttongrass Moorland (undifferentiated) (yellow)

THREATENED VEGETATION COMMUNITIES:
None of the vegetation communities as mapped within the study area is listed as threatened under the *Nature Conservation Act 2002.*

VEGETATION COMMUNITIES:

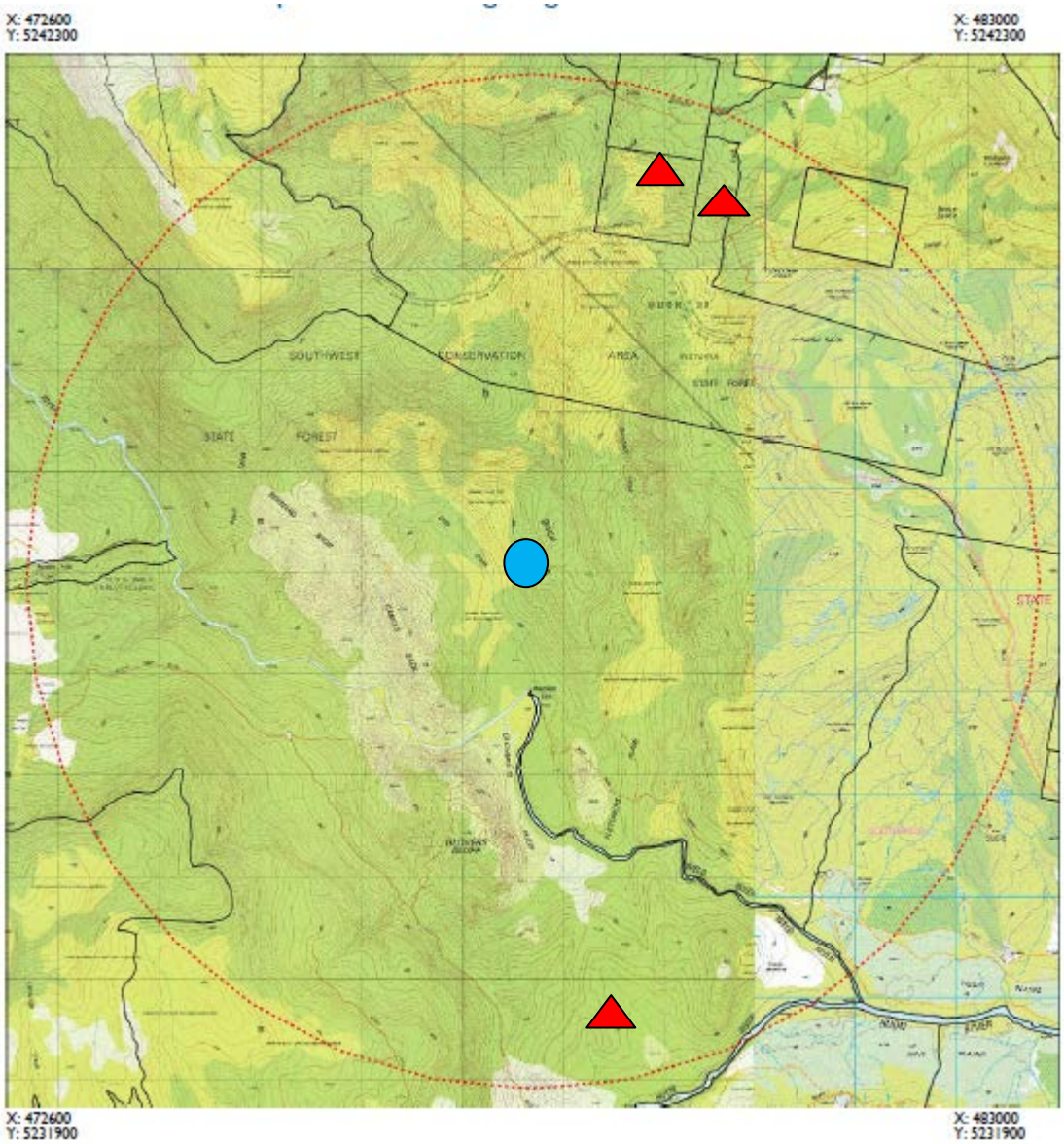
- *Nothofagus cunninghamii* Rainforest (RMU) is usually dominated by Myrtle particularly in western Tasmania and can be either callidendrous in form with tall trees and an open understorey or thamnic of medium height and with a more shrubby understorey. Sassafras can sometimes be codominant in the canopy and Leatherwood can also be common. Horizontal is a common component of the understorey in western Tasmania. This rainforest is generally well reserved in western and south-western Tasmania, with old-growth forest having high conservation value.
- *Eucalyptus obliqua* Wet Forest (WOU) is found throughout the state in areas of relatively high rainfall. The community is targeted by the forestry industries and remaining old-growth stands are of high conservation value.

THREATENED FLORA:
The following single species of threatened flora which is listed under the Tasmanian *Threatened Species Protection Act 1995* and /or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is recorded on the Natural Values Atlas database as occurring within 5,000 metres.
No species of threatened flora are recorded on the database within 4,000 metres of reference point DDH1.

- *Senecio velleoides* the Forest Groundsel is listed as a rare species under the Tasmanian Act. There is one record dated from 2005. The plant is a large herb which could occur in wet forests across much of the state but is most likely to be present in post fire or post disturbance forest re-growth.

THREATENED FAUNA:
Five species of threatened fauna are recorded on the database as occurring within 5,000 metres of the study area reference point.

- The Tasmanian Devil *Sarcophilus harrisii.* The Tasmanian Devil is now listed as endangered under both State and Commonwealth Acts due to the severe decline of the species as a result of the disease DFT, with the disease front now extending into western Tasmania. There are four records on the database, located from between 3,000 and 5,000 metres from the reference point, two are dated from 1996 and two from 2004.
- The Wedge-tailed Eagle *Aquila audax* subsp *fleayi.* The Tasmanian subspecies is listed as endangered under both State and Commonwealth Acts. The bird requires large Eucalypts within tracts of old-growth forest for nesting and is extremely sensitive to disturbance during the nesting season.
  There is a known nest tree recorded on the database about 4,500 metres due south of the site and two nest trees in close proximity to each other about 4,000 metre to the north north-east of the site. All three nest sites were last surveyed in 2010 however there is no information on the database in regard to recent useage or productivity of any of the three nest sites.



MAP No.3: Recorded nest trees x3 of the Wedge-tailed Eagle from the NVA database within 5,000m of the proposed quarry site at the centre in blue.

- The White (Grey) Goshawk *Accipiter novaehollandiae* is listed as being endangered in Tasmania. The bird requires mature wet forest as habitat and often nests within dense riparian canopy vegetation and trees such as mature Blackwoods *Acacia melanoxylon*, Myrtle *Nothofagus cunninghamii* or Sassafras *Atherosperma moschatum.*
  There is a single 1992 sighting record on the database. No nesting records are known from the locality.
- The Mount Mangana Stag Beetle *Lissotes menalcas*,is listed as being a vulnerable species under the Tasmanian Act. There are 3 records on the database from 2003 and 2004 (x2) located between 4,000 and 5,000 metres from the study area. The beetle requires partially decayed logs on the forest floor as habitat, with a preference for Eucalypt logs.

- The Ouse River Caddis Fly *Oxyethira mienica.* The larval stage of this insect is aquatic and occurs in rivers in the south of the state. It is listed as being rare under the Tasmanian Act.

The following five species of threatened fauna have the potential to occur in the locality based on habitat mapping within the known geographical range of each species.

- The Spotted-tailed Quoll, *Dasyurus maculatus* subsp *maculatus* is listed as a rare species under the Tasmanian Act and vulnerable under the Commonwealth Act. It inhabits a range of forest types and will also hunt and forage on farmland and pasture, travelling up to 20km at night. The animal will shelter in dens located in rocks, logs or thick vegetation.
- The Swift Parrot *Lathamus discolor* is listed as being endangered under both State and Commonwealth Acts. The bird requires mature flowering Eucalypts as a food source and hollows within old-growth Eucalypts for nesting. The species migrates between Tasmania and the mainland, however it only breeds in this state.
- The Tussock Skink, *Pseudemoia pagenstecheri* is a grassland species which is listed as being vulnerable under the Tasmanian Act. The lizard inhabits some types of native grasslands.
- Australian Grayling *Prototroctes mareana* is a fish which moves between fresh and salt water localities. The species is listed as being vulnerable both in Tasmania and nationally and has been impacted by dams and impoundments which prevents its upstream movements.
- The Green and Gold Frog *Litoria raniformis* is listed as being vulnerable under both the Tasmanian and the Commonwealth Acts. This frog inhabits deep pools, ponds and dams with aquatic vegetation and often basks in the sun at the water's edge. It is more prevalent in the north and east of the state and is not found in forested environments.

ENVIRONMENTAL WEEDS:

No environmental weeds are recorded on the database as occurring within 5,000 metres of study area.

RESERVE ESTATE:

The current South-west National Park boundary is located about 3,000 metres to the north-west from the study area reference point.

3.0 Field Survey:

3.1 Background:

The survey focused on the proposed footprint of the quarry as detailed on Map No.2 included with this report. Each corner of the footprint was located and the approximate boundary line followed. It also included the route proposed for the access to the quarry.
Vascular plant species were recorded, vegetation communities were observed and cross-referenced with the TasVeg map sourced from the Natural Values Atlas database. Potential den sites for Tasmanian Devils were included in the survey as well as the presence of fallen decayed logs which may be potential habitat for the Mt Mangana Stag Beetle.
The field survey was conducted on the Tuesday 16th April 2013.

3.2 Limitations: This survey was conducted in autumn when few species are in flower. No botanical survey can guarantee that all flora will be observed and recorded in a single survey in one year due to seasonal and annual variation in abundance and the possible absence of flowers and fertile material for identification. Ephemeral species which may have been present includes species of orchids, lilies, herbs grasses and other graminoids. However all significant species known to occur in the study areas and their environs have been considered in this report.

3.3 Field Survey Results:

VEGETATION COMMUNITIES:
The vegetation over the footprint of the proposed quarry site is in accordance with that mapped under the TasVeg vegetation mapping program as *Eucalyptus obliqua* Wet Forest (WOU) but could be further defined as *Eucalyptus obliqua* Forest with Broad-leafed Shrubs on the basis of the understorey species present. Some mature and old-growth Eucalypts were present however they tended to be widely spaced with heights estimated to be over 30 metres and there was some evidence of past selective logging of trees. Large dead standing trees were also present and are most likely the result of a previous wild fire event. Regrowth Eucalypts of varying ages were also present which most likely indicate more than one fire event over the last 40 years or so. The nature of the understorey vegetation defines the community and distinguishes it from other forms of *E. obliqua* Wet Forest. The composition of the understorey also varied between the two substrates present, dolomite over the actual footprint of the proposed quarry and dolerite adjacent to the proposed access road. The understorey vegetation over the dolomite was composed of tall broad-leafed shrubs in densely wooded thickets with up to 20 stems in a $10m^2$ area of Dogwood *Pomaderris apetala* and Pinkwood *Beyeria viscosa* with other species being less frequent. The ground layer was quite open due to the degree of shading and composed mainly of patches of ferns, lower plants such as mosses and a thin layer of detritus such as leaf litter and other fallen debris.
On the adjacent dolerite substrate the understorey vegetation tended to be more diverse in species composition, with more shrubby species present and with less well defined stratum, although the tree canopy composition was much the same. The route proposed for the quarry access road will extend through this vegetation and over the dolerite substrate.

THREATENED VEGETATION COMMUNITIES:
No vegetation community listed as threatened under the Tasmanian *Nature Conservation Act 2002* was present in the areas surveyed.

THREATENED FLORA:
No species of flora listed under the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* were observed during the survey.

- *Senecio velleoides* the Forest Groundsel which has been previously recorded from the wider area was not observed in the area surveyed.

THREATENED FAUNA:
No species of threatened fauna listed under the above Acts was observed during the survey and no evidence of the presence of threatened species such as scats of Tasmanian Devils or Spotted-tailed Quolls was observed.

THREATENED FAUNA HABITAT:
TASMANIAN DEVIL: No direct evidence of the species presence such as scats was observed during the survey however there was an occasional large hollow log observed which were considered to be potential den sites, although there was no evidence of useage at any of the recorded sites at the time of the survey. None of the old-growth trees observed possessed basal hollows which may have provided potential den sites, and there were no significant log heaps or large debris heaps observed which may have provided den opportunities for devils (or quolls).
Potential den sites were recorded at the following locations:

1. 477644E – 5237343N (8m +/-) very large hollow log, no evidence of recent use.
2. 477575E – 5237508n (4m +/-) large hollow log, no evidence of recent use.
3. 477495E – 5237523N (7m +/-) large hollow log, no evidence of recent use.

The main potential impact from the proposed project on the Tasmanian Devil is considered to be the risk of road-kill from increased vehicular traffic on the roads which lead in to the site and therefore the operations of the proposed quarry may need to be limited to daylight hours.

SPOTTED-TAILED QUOLL: No direct evidence of this species presence such as scats was observed during the survey. The hollow logs referenced above under the Tasmanian Devil would also provide potential habitat for quolls however there was no evidence of use and no other potential habitat was observed in the area surveyed.
Again the main potential impact on any Spotted-tailed Quolls which may be present in the area is the risk of road-kill in the wider area from increased vehicle movements.

WEDGE-TAILED EAGLE: No eagles were observed during the survey and the location was not considered to be potential nesting habitat because of the landform and the proximity of previous forest harvesting activities.

There are three known nest trees located between 4,000 and 5,000 metres of the locality. The main potential disturbance risk to the eagles with the operation of the quarry would be from blasting during the breeding season. As blasting is proposed to be an infrequent event (annually) in the operations of the quarry it should be scheduled for periods outside of the recognized nesting season for the birds. No blasting should occur on the site between July and February each year.

WHITE (GREY) GOSHAWK: No potential nesting habitat was observed for this raptor in the areas surveyed. The bird prefers dense canopied trees such as mature Blackwoods, particularly along streams and rivers for nesting and such vegetation may be present in the riparian zone of waterways within the wider area. The species if present could utilize the locality for hunting however the proposed quarry would have minimal impact on this activity.

MT MANGANA STAG BEETLE: As the beetle has been recorded within 5,000 metres of the site the location is considered to be potential habitat for the species under the guidelines detailed in the FPA Fauna Technical Note No.5. “Protocol for conducting Mt Mangana Stag beetle surveys”. The species occurs in wet eucalypt (mixed) forest where it lives within rotting logs of intermediate decay stage, and have a preference for eucalypt logs and particularly those containing a particular moist-red rot type. Eucalypt logs of an intermediate decay stage were present in the survey area although they were infrequent. A general assessment of the habitat on the basis of the fauna technical note referred to above concluded that the potential for the beetle to be present within the proposed quarry footprint was relatively low. A targeted search for the species in the location would be necessary however for conclusive evidence of absence or presence. Such surveys are required to be undertaken by certified personnel under permit from the Conservation Branch of DPIPWE.

OUSE RIVER CADDIS FLY: The larva of this insect is aquatic and lives in rivers and streams in this area of the state. The proposed quarry will not directly impact on any aquatic habitat and so will not impact on potential habitat for the Caddis Fly however the careful management of drainage from the quarry will be important in preventing siltation or contamination of nearby creeks and waterways.

OTHER HABITAT:
Mature and old-growth trees were present in the location including dead standing trees. Some trees possessed upper trunk and branch hollows which would provide potential habitat for a range of species, including some threatened fauna. No tree observed possessed a basal hollow.
No specific habitat was observed during the field survey for other threatened species of fauna which are known from the wider locality or have the potential to be present based on their specific habitat range and geographical distributions such as the Swift Parrot, Australian Grayling, Tussock Skink and the Green and Gold Frog.

ENVIRONMENTAL WEEDS:

No species of declared or environmental weed was observed during the field survey.

PHYTOPTHORA:

There was no symptomatic field evidence observed of the root pathogen *Phytophthora cinnamomi* during this field survey.

4.0 Survey Conclusions:

The proposed quarry site is located within an area of relatively undisturbed *Eucalyptus obliqua* Wet Forest which has an understorey of tall broad-leafed shrubs.

A number of logging coupes were observed in the wider area approaching the proposed quarry site.

No threatened vegetation communities were observed during the field survey.

No threatened species of flora were observed during the survey.

No threatened species of fauna were observed during the survey.

Some potential habitat, but no confirmed or optimum habitat was observed for the threatened species of fauna, Tasmanian Devil, Spotted-tailed Quoll and the Mt Mangana Stag Beetle.

5.0 Recommendations:

- Limit clearing to the proposed quarry footprint. Windrows of cleared materials should be contained around the perimeter of the quarry footprint and any large, fallen, partially rotted logs located within the quarry footprint area should be carefully moved and placed in contact with the ground surface and under some retained canopy vegetation around the periphery also.
- Ensure the adequate containment of all silt, sediment and other contaminants resulting from the clearing operation to avoid impacting on adjacent and nearby creeks, and creek-side vegetation.
- Topsoil should be carefully stripped and stockpiled in windrows for future use in the progressive rehabilitation of the site.

THREATENED VEGETATION COMMUNITIES:

- No threatened vegetation community was observed during the field survey and no specific action is required in addition to the recommendations detailed above.

THREATENED FLORA:

- No species of threatened flora was observed or recorded during the field survey and no specific action is required.

THREATENED FAUNA:

- No species of threatened fauna were observed during the field survey. Recommendations related to the management of potential habitat for threatened species of fauna are detailed below.

THREATENED FAUNA HABITAT:

TASMANIAN DEVIL:

- In order to limit the risk of road-kill the operations of the quarry may need to be restricted to daylight hours.
- With the progressive clearance of the quarry site any large partially rotted and hollow logs should be relocated, intact if possible to the periphery of the site and placed in contact with the ground surface, and where there is some retained understorey vegetation.
- With the progressive clearance of the quarry site the branches, tree heads and other debris should be formed into windrows at the periphery of the site.

SPOTTED-TAILED QUOLL:

- In order to limit the risk of road-kill the operations of the quarry may need to be restricted to daylight hours.
- With the progressive clearance of the quarry site any large partially rotted and hollow logs should be relocated, intact if possible to the periphery of the site and placed in contact with the ground surface, and where there is some retained understorey vegetation.
- With the progressive clearance of the quarry site the branches, tree heads and other debris should be formed into windrows at the periphery of the site.

WEDGE-TAILED EAGLE:

- No blasting should be undertaken in the quarry during the Eagle's nesting and breeding season between July and February each year.

MT MANGANA STAG BEETLE:

- With the progressive clearance of the quarry site any large partially rotted logs should be relocated, intact if possible to the periphery of the site and placed in contact with the ground surface. Logs should also be placed where there is some retained understorey canopy vegetation for shading purposes.
- A targeted survey of the site may be needed by an accredited specialist in order to conclusively confirm the species absence or presence on the site.

OUSE RIVER CADDIS FLY:

- An effective management plan for the drainage and run-off from the site will be essential in order to prevent sedimentation, siltation or possible contamination of nearby creeks and waterways, and should form part of the operational plan for the quarry.

ENVIRONMENTAL WEEDS:

- Prepare and implement a weed management and hygiene plan covering the initial opening of the quarry and for the operational life of the quarry.
- No environmental weeds were observed during the survey, however in order to limit the risk of the introduction of weeds into this weed free area all vehicles, equipment and machinery should be subject to a wash-down procedure to remove any soil or mud which could contain weed seeds before being transported into the quarry site.
- The quarry development plan should include specifications for a washdown area which includes facilities for the containment and management of effluent.

- Ensure that no materials such as gravels likely to be contaminated with weed seeds or other weed propagules are introduced to the quarry site. Any gravels or soils etc should be sourced only from certified clean sites.

PHYTOPHTHORA:

- Accepted protocols in regard to hygiene and wash-down procedures for all machinery, equipment, tools and work boots should be followed during the initial opening of the quarry and throughout the operational life of the quarry, to ensure that the pathogen is not inadvertently introduced into this disease free location by way of extraneous soil, mud and gravel adhered to vehicles, machinery and equipment.
- The quarry development plan should include specifications for a washdown area which has the capacity to contain material infected with the pathogen.

Philip Milner

Vegetation Consultant

Appendix 1: Vegetation Communities and Species Recorded

1. *Eucalyptus obliqua* Wet Forest with Broad-leafed Shrubs (TasVeg Code WOB)

The vegetation over the footprint area of the proposed quarry is dominated by *Eucalyptus obliqua* Wet Forest and is relatively undisturbed although there was evidence of previous selective logging and periodic bushfires. Some mature and old-growth Eucalypts were present along with regrowth trees of varying ages which most likely indicates more than one fire event over the last 40 years or so. The nature of the understorey vegetation defines the community and distinguishes it from other forms of *E. obliqua* Wet Forest being composed of tall broad leafed shrubs such as Dogwood *Pomaderris apetala* in densely wooded thickets. The composition of the understorey also varied between the two substrates present, dolomite over the actual footprint of the proposed quarry and dolerite adjacent to the proposed access road. The Dogwood and Pinkwood *Beyeria viscosa* dominated the understorey over the dolomite whereas there was greater diversity of species and more layers of vegetation over the dolerite.

DOMINANT TREES	COMMON NAME	FREQUENCY
Eucalyptus obliqua	Stringybark	common
SECONDARY TREES		
Acacia melanoxylon	Blackwood	occasional
UNDERSTOREY TREES AND TALL SHRUBS		
Acacia verticillata	Prickly Moses	occasional
Bedfordia salicina	Blanketleaf	occasional on dolerite
Beyeria viscosa	Pinkwood	common on dolomite
Callistemon pallidus	Lemon Bottlebrush	occasional on dolomite
Hakea lissosperma	Mountain Needlebush	localized on dolomite
Leptospermum lanigerum	Woolly Teatree	uncommon on dolerite
Nelatolepis squameum	Satinwood	occasional
Notelaea ligustrina	Native Olive	localized on dolomite
Olearia argophylla	Musk	occasional on dolerite
Pittosporum bicolor	Cheesewood	occasional on dolerite
Pomaderris apetala	Dogwood	common
Tasmannia lanceolata	Mountain Pepper	localized
MEDIUM SHRUBS		
Anopterus glandulosus	Tasmanian Laurel	uncommon
Cassinia aculeata	Dollybush	occasional
Coprosma quadrifida	Native Currant	uncommon
Correa lawrenceana	Mountain Correa	uncommon
Cyathodea glauca	Purple Cheeseberry	occasional
Monotoca glauca	Goldeywood	occasional
SMALL SHRUBS		
Lomatia tinctoria	Guitarplant	occasional on dolerite
Pimelea cinerea	Grey Riceflower	occasional

APPENDIX 1 (cont)
Eucalyptus obliqua Wet Forest with Broad-leafed Shrubs (cont)

HERBS & HERB-LIKE PLANTS		
Oxalis perennans	Grassland Woodsorrel	uncommon
GRASSES & GRAMINOIDS		
Dianella tasmanica	Tasman Flaxlily	occasional
Drymophila cyanocarpa	Turquoise Berry	uncommon
Gahnia grandis	Cutting Grass	common
Lepidosperma elatius	Tall Swordsedge	occasional
ORCHIDS		
Pterostylis pedunculata	Maroonhood	occasional
FERNS & ALLIED PLANTS		
Asplenium trichomanes subsp *quadrivalens*	Limestone Spleenwort,	localised on limestone outcrops
Blechnum nudum	Fishbone Waterfern	uncommon
Crepidomanes venosum	Bristle Filmyfern	occasional
Cystopteris tasmanica	Brittle Bladderfern	occasional
Dicksonia antarctica	Soft Treefern	occasional
Grammitis billardierei	Common Fingerfern	occasional
Polystichum proliferum	Mother Shieldfern	occasional
Pteridium esculentum	Bracken	occasional on dolerite

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2. DPIPWE Website ……..www.dpipwe.tas.gov.au/threatenedflora(and fauna)
3. Harris s, & Kitchener A, (2005), *From Forest to Fjaeldmark,* DPIW Tasmania
4. Wapstra H, A & M, Gilfedder L, *The Little Book of Common Names for Tasmanian Plants*
5. FPA Tasmania (2011), *Fauna Technical Note No.5. Protocol for conducting Mt Mangana Stag Beetle* Lissoetes menalcas *Surveys.*

PHOTO No.1: *Eucalyptus obliqua* Wet Forest and approach to the quarry site (dolerite substrate).

PHOTO No.2: Vehicular access track within the footprint of the proposed quarry (dolomite substate)

PHOTO No.3: Hollow partially decayed hollow log within the proposed quarry site.

PHOTO No.4: Understorey of densely wooded Dogwood *Pomaderris apetala* in quarry site.

PHOTO No.5: Understorey of Dogwood *Pomaderris apetala* and Pinkwood *Beyeria viscosa.* Note clear ground layer.

PHOTO No.6: Extent of fallen partially decayed logs within proposed quarry site.