RESULT OF SEARCH

RECORDER OF TITLES 1251

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
166270	1
EDITION	DATE OF ISSUE
3	05-Oct-2015

SEARCH DATE : 23-Feb-2017
SEARCH TIME : 04.56 PM

DESCRIPTION OF LAND

Parish of BREADALBANE Land District of CORNWALL
Lot 1 on Sealed Plan 166270
Derivation : Part of 556 Acres Granted to Thomas Scott
Prior CT 109406/1

SCHEDULE 1

M456962 TRANSFER to RICHARD CHARLES GARDNER and EMILY ALISON GARDNER Registered 09-Sep-2014 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP166270 EASEMENTS in Schedule of Easements
SP166270 FENCING PROVISION in Schedule of Easements
D87392 AGREEMENT pursuant to Section 71 of the Land Use Planning and Approvals Act 1993 Registered 13-Aug-2013 at noon
E8303 MORTGAGE to Rabobank Australia Limited Registered 05-Oct-2015 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

FOLIO PLAN

RECORDER OF TITLES 252

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

OWNER: TARA PROPERTY INVESTMENTS PTY LTD

FOLIO REFERENCE: C.T.109406/1

GRANTEE: PART OF 556 ACRES GRANTED TO THOMAS SCOTT.

PLAN OF TITLE

45

WOOLCOTT SURVEYS

LOCATION: PARISH OF BREADALBANE
LAND DISTRICT OF CORNWALL
CONVERTED BY PLAN No. P.109406
COMPILED BY: WOOLCOTT SURVEYS

NOT TO SCALE LENGTHS IN METRES

Registered Number

P166271

APPROVED 13 AUG 2013

Alice Kawa
Recorder of Titles

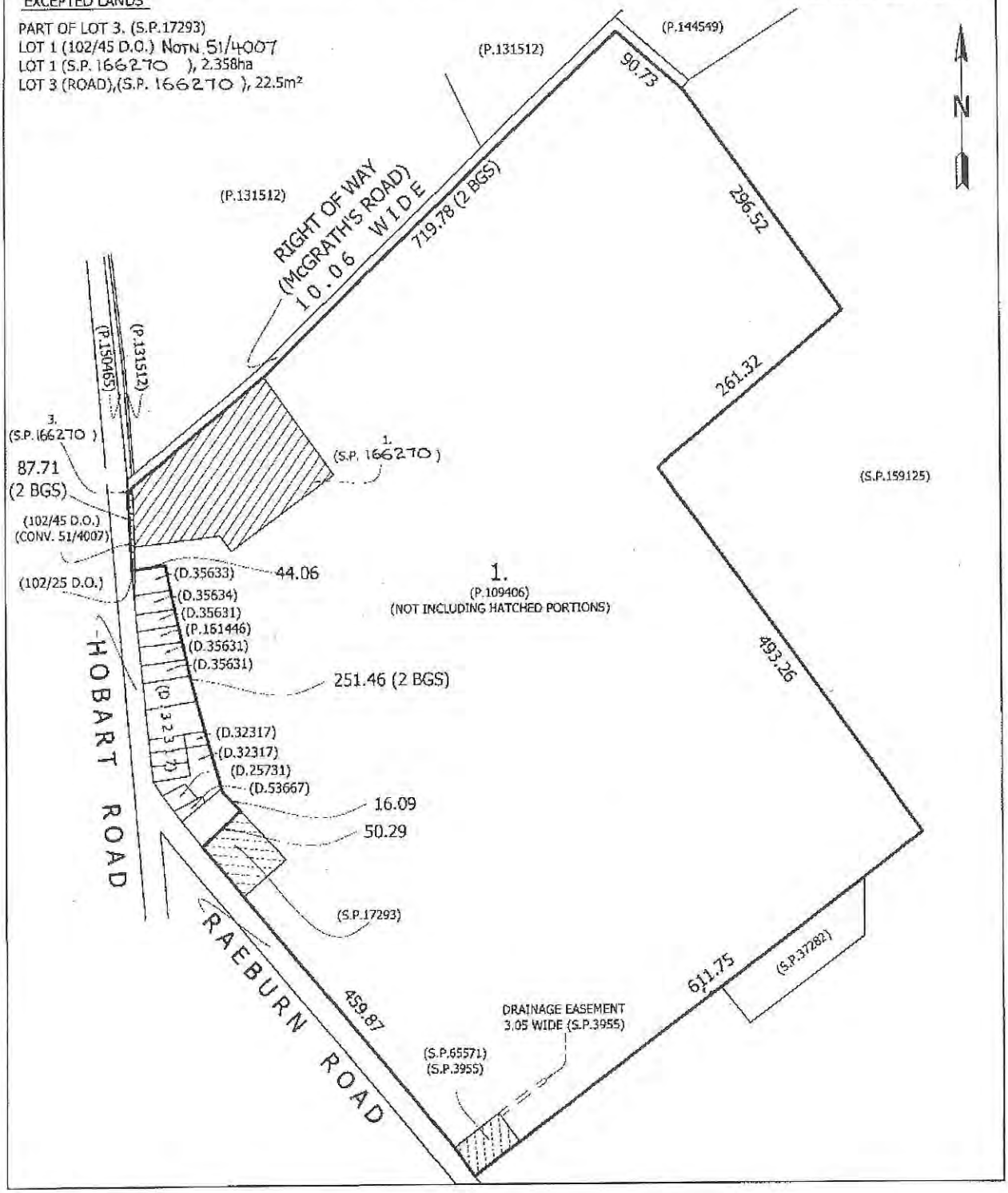
MAPSHEET MUNICIPAL Code No. 123 (5040)	LAST UPI No. 4742213	LAST PLAN No. P.109406	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

SKETCH BY WAY ILLUSTRATION ONLY

BALANCE PLAN

'EXCEPTED LANDS"

PART OF LOT 3. (S.P.17293)
LOT 1 (102/45 D.O.) NOTN 51/4007
LOT 1 (S.P. 166270), 2.358ha
LOT 3 (ROAD),(S.P. 166270), 22.5m²



RESULT OF SEARCH

RECORDER OF TITLES 1253

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
166271	1
EDITION	DATE OF ISSUE
1	13-Aug-2013

SEARCH DATE : 23-Feb-2017
SEARCH TIME : 04.55 PM

DESCRIPTION OF LAND

Parish of BREADALBANE Land District of CORNWALL
Lot 1 on Plan 166271
Being the land firstly described in Conveyance 54/2834
Excepting thereout Part of Lot 3 (SP 17293), Lot 1 (102/45 D. O) NOTN 51/4007, Lot 1 (SP166270) 2.358ha and Lot 3 (ROAD) (SP 166270) 22.5m2
Derivation : Part of 556 acres Granted to Thomas Scott
Prior CT 109406/1

SCHEDULE 1

C983340 TRANSFER to TARA PROPERTY INVESTMENTS PTY LTD Registered 06-Oct-2010 at 12.01 PM

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
11/1075 BENEFITING EASEMENT: a right to pass and repass over the strip of land marked Right of Way 10.06 Wide on Plan 166271
SP3955 BURDENING EASEMENT: a drainage right (appurtenant to Lot 1 on Sealed Plan 3955) over the Drainage Easement 3.05 Wide on Plan 166271
D87392 AGREEMENT pursuant to Section 71 of the Land Use Planning and Approvals Act 1993 Registered 13-Aug-2013 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Attachment 3 Minutes – Northern Midlands Council - September 2010

5 Access

Prior to commencement of cartage from the site, the applicant must contact DIER "Traffic Engineering Department" to obtain advice on whether a concealed entrance sign is required.

Carried unanimously

250/10 DEVELOPMENT APPLICATION P10-147 835 HOBART ROAD (CT157107/1) & RAEBURN ROAD (CT159125/2), BREADALBANE

File: *201800.185*
Responsible Officer: *Duncan Payton, Planning & Development Manager*
Report prepared by: *Paul Godier, Senior Planner*

1 SUMMARY INFORMATION

Applicant:	**Stornoway Projects Pty Ltd**
Project:	**Increase production at Raeburn Quarry to 210,000 cubic metres of product per annum including the use of blasting. It is also proposed to recycle building materials and soils. 835 Hobart Road (ct157107/1) & Raeburn Road (ct159125/2), Breadalbane)**
Zone:	**Rural General**
	Attenuation Special Area
Owner:	**Stornoway Projects Pty Ltd**
Development Category:	**Industry Extractive**
Development Status:	**Discretionary**
Date:	**08-SEP-2010**
Recommendation:	**APPROVAL WITH CONDITIONS**

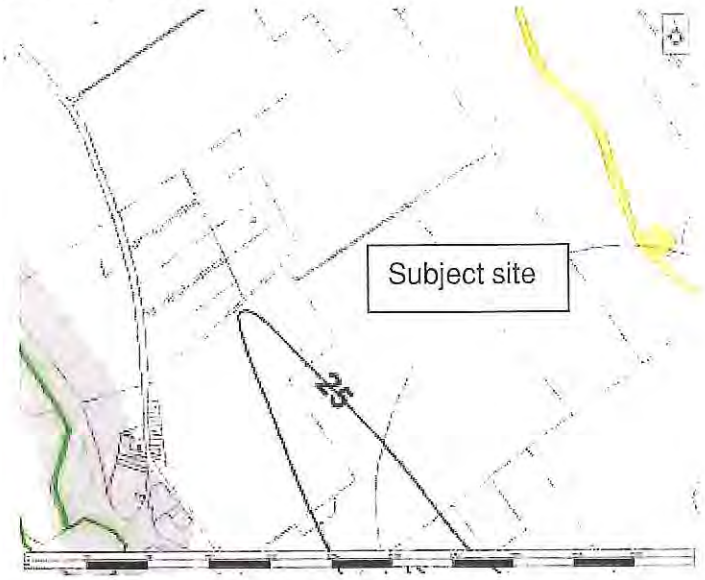
2 PROPOSAL

Stornoway Quarries Pty Ltd seeks approval to increase production at their existing Raeburn Quarry to 210,000 cubic metres of product per annum. The operation will include the use of blasting. It is also proposed to recycle building materials and soils. The plans submitted are included as Attachment A.

3 PLANNING SCHEME CONSIDERATIONS

The subject land is zoned *Rural General* under the Northern Midlands Planning Scheme 1995.

Zoning map



4 SITE AND LOCALITY

The subject site is made up of two titles - CT157107/1 (835 Hobart Road) & CT159125/2 (Raeburn Road). The site is accessed via 831 Hobart Rd, Hollymount & Mt Oriel Right of Ways. CT157107/1 contains the existing Raeburn Quarry and farming land. CT159125/2 contains farming land. Adjacent to the north-western boundary of the property is the Mt Oriel homestead, quarry and farming land. Adjacent to the north eastern boundary is the Josef Chromy vineyard. Adjacent to the south-eastern boundary are Ben Lomond Water sewerage ponds and the farming property "The Springs" which includes the BIS quarry. Towards the south-west of the property is a church building and the original Raeburn homestead. The property to the west is the 'Tara' farming property which contains the 'Tara' homestead and cottage.

5 ADVERTISING

As the use is a level 2 activity under EMPCA, the application was placed on public exhibition in accordance with Section 57 of the *Land Use Planning & Approvals Act 1993.*Representations (see Attachment B) were received from:

1 H Whiffen – 831 Hobart Road
2 TasRail
3 P Rae – Glen Stuart Estates Pty Ltd – 565 Relbia Road
4 Mr K Thomas, 790 Hobart Road, Breadalbane
5 A & J McCallum – 55 Raeburn Road
6 GHD on behalf of residents of Relbia and Breadalbane

The representors' concerns are discussed later in this report.

6 REFERRALS

Environment Protection Authority

The application was referred to the Board of the Environment Protection Authority (EPA) under section 25 of EMPCA. The EPA provided their

determination (copy attached). Section 25(8) of EMPCA states that where the EPA has required conditions or restrictions to be contained in a planning permit, the planning authority must include the conditions or restrictions (if a permit is granted) and must not include any other condition or restriction which is inconsistent with, or which extends the operation of, any of the EPA's conditions or restrictions.

Launceston Airport

Launceston Airport advised that their concerns are addressed by an agreement between Airservices Australia and Stornoway Quarry.

7 ASSESSMENT

Special Areas

The subject site is located partly within the Attenuation Special Area of the BIS quarry, and within the 25 ANEF noise contour. The effect of the special areas is to make applications discretionary that would otherwise be permitted. Otherwise, the provisions of the special areas are not considered to apply to this application as it does not contain a sensitive use.

Visual impact

The proposal has the potential to have an adverse impact on the landscape. A landscape management plan has been requested; if this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

Access and Traffic

Roads and Traffic are addressed in part 4.7 of the DPEMP, with the Traffic Impact Assessment being Appendix C to the DPEMP.

As the TIA was prepared by Terry Eaton, who provides traffic engineering advice to Council, it was referred to Keith Midson of Midson Traffic Pty Ltd.

Mr Midson's advice will be provided to Councillors upon its receipt.

Part 4.7.1.3 of the DPEMP states:

> *Eaton has predicted peak daily two-way flow on the access road relating to the quarry is estimated at some 210 vehicles. With the addition of traffic for the two residences, suggests a total peak daily volume of some 230 vehicles. Taking a worst case for the morning peak hour by providing for heavy vehicles to enter and return from the quarry suggests a peak hour volume of some 45 vehicles. This traffic is quite low relative to the practical capacity of the road at some 3,000 vehicles per day and peak hour at 300 vehicles. Road widening to provide a 6.5 metre pavement would increase the practical capacity to some 385 vehicles per hour and also reduce edge maintenance costs.*

Council's Works and Infrastructure Department undertook a traffic count of the access road (Hollymount Right of Way) from 16 to 27 August 2010. The traffic count categorises vehicles with class 1 and 2 being light vehicles – cars, utes, 4WDs with or without trailers – and classes 4-12 being heavy vehicles.

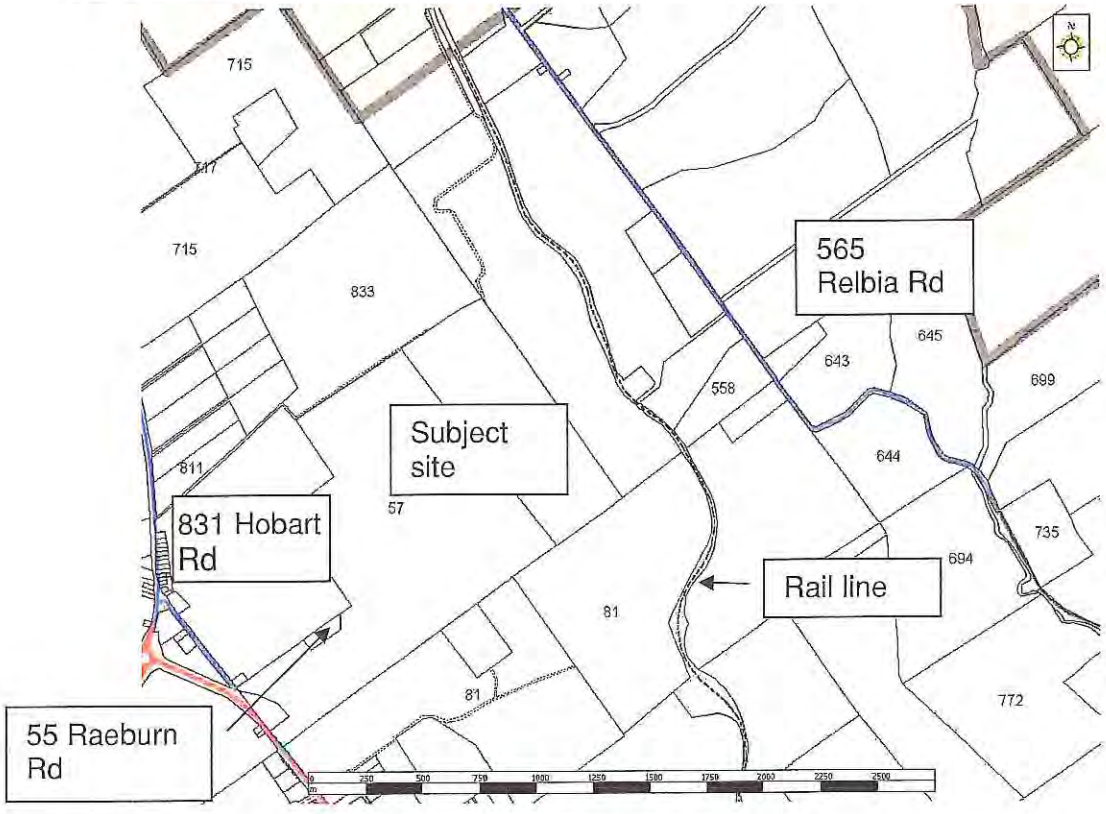
The results for 17 August are shown below - 61 light vehicle movements and 222 heavy vehicle movements were counted.

The earliest that vehicles were counted was 6-7am with 4 light vehicle movements and 7 heavy vehicle movements. The latest that vehicles were counted was 5-6pm with 9 light vehicle movement and 2 heavy vehicle movements. The busiest hour for heavy vehicles was 11-12 with 32 heavy vehicle movements.

Traffic Count - 17 August 2010

Hours	Light vehicle movements	Heavy vehicle movements	Total
6 - 7	4	7	11
7 - 8	10	9	19
8 - 9	2	18	20
9 - 10	4	29	33
10 - 11	8	17	25
11 - 12	1	32	33
12 - 1	8	23	31
1 - 2	6	23	29
2 - 3	5	29	34
3 - 4	3	25	28
4 - 5	1	8	9
5 - 6	9	2	11
Total	**61**	**222**	**283**

Representations



The above plan shows the location of representors in relation to the site. GHD was engaged by residents of Relbia and Breadalbane to prepare a representation, appendix A of which gives those residents and their location.

H Whiffen – 831 Hobart Road ('Tara')

- *Dust from truck movement and blowing from truck load, body and brakes. Requests:*
  - *Sealing of carriageway of Holymount Right of Way approximately 700m from Hobart Road to the first 90 degree right hand turn;*
  - *Speed limit signage of 20kmph;*
  - *Widen and maintain existing speed humps, add extra speed hump 100m from the 90 degree right hand turn;*

These matters are addressed on page 28 of the Environmental Assessment Report. The DPEMP proposes to extend the sealed section 100m past the 'Tara' residence, which is the standard distance required by the EPA. The EPA permit conditions (attachment 2 point 6) require the proponent to increase the road width and seal past the existing ('Tara') residence and upgrade the (Hobart Road) intersection within 3 months of the permit being granted.

- *Roadworks to be contained within the Right of Way;*

The private road has been formed partly over the 'Tara' property, outside the right of way. It is considered that this is a matter between Stornoway and the owner of the 'Tara' property.

- *An automatic sprinkler system to dampen load and truck.*

Condition A1 of the EPA's Permit Conditions is:

> *"Vehicles carrying loads containing material which may blow or spill must be equipped with effective control measures to prevent the escape of materials from the vehicles when they leave The Land or travel on public roads. Effective control measures may include tarpaulins and load dampening".*

TasRail

- *On-going monitoring of blast effects on the rail to be at full cost/expense of the proponent (Stornoway) not TasRail.*
- *The proponent (Stornoway) to notify TasRail of any intention of blasting 48 hours prior to blasting.*

These issues are addressed on page 21 of the Environmental Assessment Report. The EPA Division is of the opinion "that while there is no apparent damage to rail infrastructure from blasting induced landslip to the railway, some precaution is required considering the importance of this infrastructure and the proposed increased blasting in the area. The Division recommends that an

assessment of the potential risk that blasting poses to adjacent rail infrastructure is required. The Blast Monitoring Plan (B4) requires that this assessment is conducted by a suitably qualified person, and that the Plan must include proposed monitoring and/or mitigation measures."

In the Division's opinion "blasting impacts can be managed through compliance with the proposed blasting times, between 1000 hours and 1600 hours Monday to Friday (B1) and the airblast and vibration limits (B2)".

The Division recommends "that the proponent be required to notify residents within a 1,000 metre radius of the quarry at least 24 hours prior to each blast (and Train Control, TasRail at least 48 hours prior to each blast (B3)). It is also recommended that the proponent be required to monitor blasts. This monitoring should be based on a blast monitoring plan, which details methods, locations and timing of blasts, and an assessment of the potential impact of blasting on rail infrastructure, and has been approved by the Director (B4), and be required to report exceedances of the limits for 95% of blasts (5mm/sec vibration and 115 dB for airblast) to the Director within seven days (B5)".

- *All runoff from disturbed areas to be diverted to onsite sedimentation dams – no uncontrolled waters to flow across or under the rail corridor.*

This issue is addressed on page 31 of the Environmental Assessment Report which states, "The proponent responded in the Supplement that water collected in the settlement ponds would be used for dust suppression. Therefore less water would be discharged from the site than presently. In the opinion of the Division, impacts from stormwater can be managed through the measures above, and compliance with these proposed conditions and standard conditions E1 (requirement for perimeter drains), E2 (water quality requirements for stormwater discharged from the Land), and E3 (maintenance of settling ponds). When these measures are complied with, there is minimal potential for pollution of groundwater and surface waters. In order to protect rail infrastructure, it is recommended that the proponent be required to prevent stormwater discharging from the Land from impacting the integrity of the railway line (contained within non-standard condition E3). This could be achieved by measures such as pumping water out of the sedimentation ponds when they are becoming full, or placing a culvert under the railway line (with the appropriate approvals)".

P Rae – Glen Stuart Estates Pty Ltd – 565 Relbia Road

- *The representation notes that at the time of writing the outcome of the Commission hearing into the amendment was unknown, and summarises the issues as:*
  - *It is claimed by the applicant that past history establishes*

that the quarry can be operated safely and without damage or danger to surrounding properties without any extension of the attenuation zone.

- *All consideration of the extension of the attenuation zone should form no part of this application and the attenuation zone does not, on the evidence of the applicant itself, need any variation and should not be varied either in the course of this application or at all.*

After holding a hearing into the amendment, the Tasmanian Planning Commission advised on August 24 that it had approved the amendment, requiring it to be modified to exclude that portion of the Attenuation Area shown over the City of Launceston.

K Thomas – 790 Hobart Road

- *Quarry activities would be highly visible as there are no plans for effective screening such as an avenue of trees. Concerns of adverse visual impacts from Old Hobart Road, the Breadalbane roundabout, the southern approaches to the roundabout and Evandale Road.*
- *The avenue through Breadalbane should be screened from mining activities.*

A landscape management plan has been requested. If this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

- *Fig 2.1 of the DPEMP does not show the house at 790 Hobart Road. The line of houses to the west of the quarry will limit the extent of blast noise and ground vibration level. This should limit the extent of the attenuation zone.*

The proposal has been assessed by the EPA Division in terms of its impact on houses closer to the quarry than 790 Hobart Road. Council advised the Tasmanian Planning Commission that it recommended refusal of the attenuation zone amendment pending further consideration of the issues raised. After holding a hearing into the amendment, the Commission advised on August 24 that it had approved the amendment, requiring it to be modified to exclude that portion of the Attenuation Area shown over the City of Launceston.

- *There should not be any increase in current level of dust emitted from the site.*

This issue is addressed on page 25 of the Environmental Assessment Report which states:

> *"Management of dust emissions from extractive industry is generally achieved by maintaining adequate separation distance between these activities and sensitive use sites and compliance with standard permit conditions (see below). Particulate matter generated in the crushing and screening of rock will generally settle out of the atmosphere within*

300 metres of its point of generation. The proposed management methods (Commitment 3) are also considered appropriate. The other methods available to control dust are the requirement to cover vehicles (A1), controlling dust emissions from plant such as crushers and screens (A2) using methods such as water sprays etc and a requirement to control dust emissions from the quarry in general (storage heaps, internal roads etc) (A3). These proposed conditions are standard for quarries, and in the experience of the Division, compliance with these conditions will minimise the likelihood of impacts from dust

It is recommended that the applicant be required to comply with standard permit conditions A1 (covering of vehicles), A2 (control of dust emissions from plant), and A3 (control of dust emissions), and the non-standard condition G5 (commitments)."

- *Hours of operation between 7am and 7pm should include the transportation of quarry material. Trucks currently arrive and leave the quarry access road from 5.30am.*

EPA Permit Condition N2 is:

"Unless otherwise approved by the Director, activities associated with the extraction of rock, gravel, sand, clay or minerals, and loading of product, and screening/crushing must not be undertaken outside the hours of 0700 hours to 1900 hours on weekdays and 0800 hours to 1600 hours on Saturdays".

- *Disputes Fig 4.9 in part 4.7.1.3 of DPEMP which shows a T intersection stating the intersection is at an acute angle.*

Mr Midson's advice will be provided to Councillors upon its receipt.

- *Disagrees with the figures used in the traffic report – has counted six vehicle entries and exits in one minute periods, truck volume rate of up to 300 per hour in peak times based on 6 truck movements per minute. A right turn lane for north bound traffic into the quarry access road is required.*

The results of a traffic count on Holymount Right of Way for 17 August showed 61 light vehicles and 222 heavy vehicles. The TIA recommends a right turn lane within 5 years.

A & J McCallum – 55 Raeburn Road

- *Stornoway or its consultants have not consulted with the owners and residents of Raeburn House, contrary to the statement in the DPEMP that Stornoway and its consultants have consulted widely with local residents in proximity to the quarry.*

The proponent acknowledged on page 1 of the Supplement that no contact was made with the owners of Raeburn House, due to the mistaken belief that the occupants were associated with Josef Chromy Estate.

- *The access road to the quarry is referred to as Raeburn Road.*

An earlier DPEMP incorrectly referred to the private access road to the quarry as Raeburn Road. This has been corrected in the current DPEMP which now refers to Hollymount Right of Way.

- *Noise impact particularly from Stage 3.*

This is discussed on page 12 of the Environmental Assessment Report which notes that the EPA Division noise specialist is of the opinion "that the noise levels from drilling operations can be managed so that they should not exceed the recommended noise limits (see below) for the first thirty years of operation. The modelling predicted noise levels up to 65 dB(A) at Raeburn House under worst case conditions after 30 years. Clearly this will require additional management measures, including acoustic attenuation, choice of drill rig type and quarry development to meet the proposed limits.

> *"The Division noise specialist recommends that the noise limit should be 50 dB(A) during the daytime (between 0700 hours and 1900 hours as per recommended hours in the Quarry Code of Practice). This level (as opposed to 51 or 55 dB(A) as suggested by Vipac) is recommended because the predicted 51 dB(A) is considered worst case and predicted to occur in a 20-30 year timeframe. The Division noise specialist is of the opinion that within the next 20 years there will be sufficient improvements in noise abatement for quarry machinery, and management practices, that 50 dB(A) at the nearest sensitive receptor (which is a typical limit for a quarry of this size in this setting) should be able to be met. The recommended noise limits (N1) are:*
>
> - *50 dB(A) between 0700 hours and 1800 hours (Day time); and*
> - *40 dB(A) between 1800 hours and 2200 hours (Evening time); and*
> - *40 dB(A) between the hours of 0600 and 0700 (early morning period); and*
> - *35 dB(A) between 2200 hours and 0600 hours (Night time)."*

- *The data related to ground vibration and air blast pressure is based on a test blast in a location far from Raeburn House.*
- *The potential for damage to Raeburn homestead (built circa 1840) by blasting in such close proximity has not been specifically assessed.*

These issues are discussed on page 20 of the Environmental Assessment Report. The EPA Division noise specialist recommended

> *"that the proponent be required to monitor blasts at or near Raeburn House and report both peak particle velocity and frequency of the blast. These data can then be used to assess the potential impact against the methods used in DIN 4150. As noted in the Supplement, it will be several decades before the quarry approaches Raeburn House, which provides the proponent with opportunity to obtain data relating to vibration at Raeburn House, and to modify blasting practices and/or the quarry design if required. The results of blast monitoring will be required to be reported on an annual basis under proposed standard*

permit condition G11 (Annual Environmental Review), and any proposed management measures will have to be detailed in the 5 yearly EMP reviews required under proposed standard permit condition G9 (Environmental Management Plan and Review Thereof)".

- *Stage 3 will be visible from Raeburn House with no natural screening.*

A landscape management plan has been requested. If this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

- *The Quarrying Description in the DPEMP fails to mention the location of Raeburn House saying that the quarry will provide a resource base ... in an area that is relatively remote from residences. Stage 3 will be approximately 500m from eastern boundary of 55 Raeburn Road and approximately 530m from the house.*
- *The DPEMP gives the impression that Raeburn House is part of the Raeburn property and owned and used by Stornoway.*
- *At present the quarry is some 920m from Raeburn House behind a hill. As the quarry moves closer and "surfaces" in stage three it seems obvious that environmental effects on residential amenity will be substantially increased.*

The proximity of Stage 3 of the quarry to Raeburn House is noted. The Environmental Assessment Report addresses the issues of noise and vibration, as discussed above.

- *Property valuations*

Devaluation of property is not a matter for consideration under clause 2.12 - Consideration of applications for permit - of the planning scheme.

GHD

- *The Draft SERIES 2 (Attenuation Special Areas) amendment to the Northern Midlands Planning Scheme referred to by the proponents does not represent policy of Council.*

Council advised the Tasmanian Planning Commission that it recommended refusal of the attenuation area amendment pending further consideration of the issues raised. After holding a hearing into the amendment, the Commission advised on August 24 that it had approved the amendment, requiring it to be modified to exclude that portion of the Attenuation Area shown over the City of Launceston.

- *The noise and vibration modelling included at Appendix H of the DPEMPR is inconsistent with previous predictions presented by TERROCK Consulting Engineers to the Resource Planning & Development Commission (2008) with respect to ground vibration and airblast overpressure.*

The Environmental Assessment Report states on page 19 at point 5 that the proponent responded in the Supplement that the differences in data/modelling presented to the RPDC are due to the fact that the predictions presented at the RPDC hearings were based on blasting effects from the BIS quarry, while modelling predictions in the DPEMP were based on the results of the test blast conducted on the Stornoway quarry

- *The modelling of noise and vibration appears to take no account of topography or prevailing winds.*

The Environmental Assessment Report states on page 19 at point 6 that the proponent responded in the Supplement that modelling did not take into account any effects of topography or of prevailing wind effects, as these do not affect low frequency noise and vibration from blasting significantly and that in any case, ignoring these effects will result in the adoption of worst case conditions.

- *The DPEMPR suggests that blasting can be modified to occur within 160 metres of a sensitive use (Mt Oriel) without compromising viability of the operation. Blasting operations should be managed across the site so as to protect amenity with appropriate management of blast size to mitigate amenity issues.*

The Environmental Assessment Report states on page 19 at point 7 that in response to the suggestion that blast charges can also be reduced to allow for future residential development within the locality of the quarrying operation, the proponent stated that this was unacceptable because there must be a clear distinction between existing conditions (and use rights) such as the Mount Oriel homestead and other existing houses, and possible future residential development.

The Environmental Assessment Report states on page 21 that the EPA Division "considers that it is appropriate that proponents must be responsible for ensuring that their operations do not impact on existing residences. However, the Division is also of the opinion that new residential developments should not be allowed within SRADs unless it can be clearly demonstrated by the person proposing the residence that the residence would not be unreasonably impacted by the approved quarry operation. The future use of the surrounding land is ultimately a matter for the planning authority, and should take into account the strategic importance of the rock resource in this area, and the constraints that future residential development in the area may place on its use".

- *The development site is affected by Category V landslip which is not mentioned within the DPEMPR*

The DPEMP discusses landslip in section 3.1.3 on page 23 as follows:

> *"MRT have also mapped this area as landslip hazard. The boundary is shown in Figure 2.3. The area to the east on the steeper slopes on the*

basalt has been classified as Class IV and this land has been avoided. The quarry has been located on Class 1 land. Table 3.1 shows the classification".

Figure 2.3 of the DPEMP shows the edge of the class 5 landslip area. Development is not proposed within the class 5 area. The proponent states on page 5 of the Supplement that "there is no development proposed on Class V land and the development of any quarrying close to this zone will be subject to geotechnical analysis. By definition any land which is liable to landslip, cannot be hard rock and as such would not be a quarry product in any case".

- *The DPEMPR is deficient in its visual analysis of the impact of the operation in that it addresses the issue of view fields (from the south) by proposing mounds of bunded topsoil and overburden and minor vegetation planting around the quarry edge. The bunded material will not fit in with the surrounding landscape characteristics, will be prone to erosion and will result in overhandling of important material needed for rehabilitation.*
- *The DPEMPR is deficient in that it fails to provide a detailed landscape analysis and a landscape management plan for the progressive screening of the site as the development proceeds.*

A landscape management plan has been requested. If this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

- *The site of the operation is within a significant gateway to the state, the region and Launceston however the DPEMPR makes no reference to the potential impacts upon regional tourism particularly when the development is considered in the context of the cumulative effect with existing operations.*

This concerns the visual impact of the development – see the comments above.

- *The DPEMPR provides that no important or threatened flora/fauna species exist on the site, without any indication of how conclusion was drawn.*

This is addressed on page 26 of the Environmental Assessment Report which states, "Previous advice from PCAB, a Branch of DPIWE, is that it is considered unlikely that the proposal would have a significant impact on natural values within the site".

- *The access road to the site should be widened and sealed for its length to the point of entry to the site operations.*

These matters are addressed on page 28 of the Environmental Assessment Report. The DPEMP proposes to extend the sealed section 100m past the 'Tara' residence which is the standard distance required by the EPA. The permit conditions require the proponent to increase the road width and seal past the existing (Tara) residence

and upgrade the (Hobart Road) intersection within 3 months of the permit being granted.

- *The operating hours proposed are 7am to 7pm Monday to Friday and 8am to 4pm on Saturday. The issue which impacts the residents along the private access road is the arrival of heavy vehicles outside these hours and particularly of a morning. In the event that a permit is granted for the extended operation then the operating hours must not extend beyond those stated within the DPEMPR.*

EPA Permit Condition N2 is:

"Unless otherwise approved by the Director, activities associated with the extraction of rock, gravel, sand, clay or minerals, and loading of product, and screening/crushing must not be undertaken outside the hours of 0700 hours to 1900 hours on weekdays and 0800 hours to 1600 hours on Saturdays".

- *Rehabilitation of the site must be adequately managed to ensure that progressive site rehabilitation is successfully achieved.*

This is addressed on page 29 of the Environmental Assessment Report. The proponent would be required to comply with the rehabilitation conditions on R1-R6 of the Environmental permit.

- *It is submitted that a landscape masterplan and landscape management plan be developed for the site.*

A landscape management plan has been requested. If this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

- *Dust emissions must be monitored and controlled, trucks not filled above capacity and cover used in windy conditions.*

The EPA has required the proponent to comply with standard permit conditions A1 (covering of vehicles), A2 (control of dust emissions from plant), and A3 (control of dust emissions), and the non-standard condition G5 (commitments).

- *Monitoring of sound pressure levels should be a requirement*

EPA condition B4 requires the preparation of a blast monitoring plan.

EPA condition N4 requires a noise survey to be undertaken annually.

- *Property valuation*

Devaluation of property is not a matter for consideration under clause 2.12 - Consideration of applications for permit - of the planning scheme.

Intent of the Zone

(i) To identify those areas not classed as Prime Agricultural Land or having the attributes to support more intensive forms of agriculture, but

are still capable of supporting a range of primary industry and other resource development activities.

The land is shown on the DPIWE 1:100,000 land capability mapping as class 4 and 5. This is not classified Prime Agricultural Land under the Protection of Agricultural Land Policy. The proposal to expand a quarry is considered to meet this intent.

(ii) To recognise areas which may also be of particular value in providing:
(a) significant scenic areas;
(b) recreational opportunities;
(c) water catchments; or
(d) significant flora and fauna habitats.

None of these values have been identified through overlays on the land. The proposal is not considered to conflict with this intent.

(iii) To ensure that new development is sympathetic to the existing landscape character of the area.

A landscape management plan has been requested. If this is not received before a decision is to be made on the application, a condition requiring a landscape management plan is recommended.

(iv) To prevent developments in areas subject to natural hazards.

The development is to be located outside the class 5 landslip area, consistent with this intent.

(v) To protect agricultural and other forms of resource development activity from incompatible use and development that could fetter their operations.

The expansion of the quarry is not expected to fetter surrounding agricultural operations.

(vi) To provide for associated activities incidental to agricultural use and development.

Not relevant to this proposal

(vii) To prevent fragmentation of land holdings by subdivision.

Not relevant to this proposal

8 CONCLUSION

EPA

The EPA Division prepared an Environmental Assessment Report which addresses matters such as noise from drilling, crushing, screening and loaders and recommended conditions regarding operating hours, recording of noise generating activities, noise survey report requirements, and noise emission limits. The Division addressed the issue of blasting and recommended conditions regarding blasting times, blasting noise and vibration limits, notification of blasting, a blast monitoring plan and reporting of exceedances of noise and vibration limits. The EPA Division has concluded that the proposal is capable of being managed in an

environmentally acceptable manner provided that certain recommendations are implemented.

Access

A condition requiring the recommendations of the Traffic Impact Assessment to be implemented before the quarry is expanded should be placed on the permit.

Landscape

The proposal has the potential to have an adverse impact on the landscape. A landscape management plan has been requested. If this is not received before a decision is to be made on the application, the following condition is recommended.

- Before the use and development starts, a landscape analysis and landscape management plan, prepared by an appropriately qualified landscape architect and to the satisfaction of the planning authority, must be submitted to the planning authority. When approved, the landscape management plan will be endorsed and will then form part of the permit.
- The landscape analysis and landscape management plan must address viewfields from Relbia Road, Hobart Road, Evandale Road, the Midland Highway and 55 Raeburn Road.
- The landscape management plan must identify:
  - Any works or plantings required to ensure the integration of the quarry into the landscape; and
  - Time frames so that works or plantings are established before opening of a new stage.
- Works must be undertaken in accordance with the landscape management plan to the satisfaction of the planning authority. The works must be completed by the dates specified in the plan.
- The landscape management plan must be reviewed annually by an appropriately-qualified landscape architect and to the satisfaction of the planning authority and any consequential changes to the plan submitted to the planning authority.

Staging

It is noted that the staging shown in Fig 2.3 of the DPEMP differs to that shown in Appendix 1 of the Terrock Report (Appendix H to the DPEMP). This appears due to the area shown as "quarry advance uncertain because of possible geological constraints" in Fig. 2.3 The effect of this is that the if advance is not possible the quarry will move towards Raeburn House within 30 years rather than 45 years.
It is recommended that the following condition be placed on the permit:

- Approval is granted for Stage 1, 2 and 3 shown in Fig 2.3 of the

DPEMP and for Stage A, B, C and D of Appendix 1 .Further approval is required for stage E shown in Appendix 1 of Appendix H – Terrock Blasting report.

It is recommended that the application be approved with the conditions below.

9 ATTACHMENTS

A Proposal plans (DPEMP)
B Representations
C Supplement
D Environmental Assessment Report
E Permit Part B Permit Conditions – Environmental No. 8046

RECOMMENDATION

That land at 835 Hobart Road (CT157107/1) & Raeburn Road (CT159125/2), Breadalbane, (accessed via 831 Hobart Rd; Hollymount & Mt Oriel Right of Ways - CT109406/1, CT144549/1 & CT159125/2 (831, 833 & 835 Hobart Rd), be approved to be developed and used by Stornoway Quarrying to increase production at their existing Raeburn quarry, off Hobart Road Breadalbane, to 210,000 cubic metres of product per annum, including blasting and recycling building materials and soils, in accordance with application P10-147, and subject to the following conditions:

1 Layout not altered
The use and development shall be generally in accordance with the endorsed document numbered **P1.**

2 Environmental Management & Pollution Control Act 1994
The person responsible for the activity must comply with the conditions contained in Schedule 2 of Permit Part B, which the Board of Environmental Protection Authority (EPA) has required the planning authority to include in this permit, pursuant to section 25(5) of the *Environmental Management & Pollution Control Act 1994*. **(D1)**

3 Landscape analysis and plan
3.1 Before the use and development starts, a landscape analysis and landscape management plan, prepared by an appropriately qualified landscape architect and to the satisfaction of the planning authority, must be submitted to the planning authority. When approved, the landscape management plan will be endorsed and will then form part of the permit.
3.2 The landscape analysis and landscape management plan must address viewfields from Relbia Road, Hobart Road, Evandale Road, the Midland Highway and 55 Raeburn Road.
3.3 The landscape management plan must identify:
- Any works or plantings required to ensure the integration of the quarry into the landscape; and
- Time frames so that works or plantings are established before opening of a new stage.

3.4 Works must be undertaken in accordance with the landscape management plan to the satisfaction of the planning authority. The works must be completed by the dates specified in the plan.

3.5 The landscape management plan must be reviewed annually by an appropriately-qualified landscape architect and to the satisfaction of the planning authority and any consequential changes to the plan submitted to the planning authority.

4 Access

4.1 Before the use commences, the sealed section of the existing private access way is to be widened past the two residences adjacent to the road (some 300 metres length) to a width of 6.5 metres to provide for two heavy vehicles to pass, minimise edge maintenance and increase road capacity.

4.2 Before the use commences, the left turn to Hobart Road is to be upgraded to increase the swept path area.

4.3 The Traffic Impact Assessment shall be reviewed every two years to address the need for a right-turn auxiliary lane based on traffic figures at that time. The operator of the permit shall be responsible for changing the existing traffic lane configuration to install the necessary lane markings for the right turn lane. This work is to be completed to the requirements of the Northern Midlands Council and Department of Infrastructure, Energy and Resources.

5 Other approvals

The issue of this planning permit does not certify compliance with the *Building Code of Australia*, the *Disability Discrimination Act 1992* or any other applicable legislation. An application for a building permit will be required from Council prior to any works, under the *Building Act 2000*.

DECISION

Cr Goninon/Cr Geeves

That land at 835 Hobart Road (CT157107/1) & Raeburn Road (CT159125/2), Breadalbane, (accessed via 831 Hobart Rd; Hollymount & Mt Oriel Right of Ways - CT109406/1, CT144549/1 & CT159125/2 (831, 833 & 835 Hobart Rd), be approved to be developed and used by Stornoway Quarrying to increase production at their existing Raeburn quarry, off Hobart Road Breadalbane, to 210,000 cubic metres of product per annum, including blasting and recycling building materials and soils, in accordance with application P10-147, and subject to the following conditions:

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4.2 Before the use commences, the left turn to Hobart Road is to be upgraded to increase the swept path area.

4.3 The Traffic Impact Assessment shall be reviewed every two years to address the need for a right-turn auxiliary lane based on traffic figures at that time. The operator of the permit shall be responsible for changing the existing traffic lane configuration to install the necessary lane markings for the right turn lane. This work is to be completed to the requirements of the Northern Midlands Council and Department of Infrastructure, Energy and Resources.

4.4 The use and development shall not commence until the intersection of Hollymount Right of Way and Hobart Road has been modified with channelised right turn and left turn lanes (CHR & CHL) in accordance with Austroads requirements (Guide to Road Design, Part 4A, 2009).

4.5 The use and development shall not commence until the carriageway of the private access road known as Hollymount Right of Way has been increased to 6.5m width from the intersection with Hobart Road to the entrance to the quarry.

5 Removal of topsoil

Topsoil shall be taken from the site in trucks only.

6 Reporting

The proponent shall provide the following information to Council on a quarterly basis:

i) The amount of recycled material brought to the site;
ii) The amount of quarry material taken from the site;
iii) The amount of topsoil taken from site;
iv) The number of vehicles using the site, broken down into vehicle capacity.

Carried unanimously

244/10 COUNCIL ACTING AS A PLANNING AUTHORITY - CESSATION

RECOMMENDATION

That the Council cease to act as a Planning Authority under the *Land Use Planning and Approvals Act 1993*, for the remainder of the meeting.

DECISION

Cr Goss/Cr Knowles

That the Council cease to act as a Planning Authority under the *Land Use Planning and Approvals Act 1993*, for the remainder of the meeting.

Carried unanimously

251/10 REVIEW OF POLICY 52 - FOOTPATH TRADING

Ref Nos: *06/008, 06/009, 06/010*
Responsible Officer: *Duncan Payton – Planning & Development Manager*
Report prepared by: *Paul Godier – Senior Planner*

1 PURPOSE OF THE REPORT

To review the Footpath Trading Policy in light of the approval of the Display of Goods, On-Street Dining and Freestanding Sign By-Laws.

2 PROPOSED ALTERATIONS

The following alterations to Policy 52 **"Application of the Policy"** are listed for consideration, these amendments are highlighted in the policy document which follows this report.

When the Policy was written the names and numbers of the By-Laws were not known. These can now be inserted into the policy as follows:

1 Method of Control

(a) The Footpath Trading Policy is to be implemented through the issue of licences from Council, to be known as Display of Goods and Services on a Highway By-Law No. 1 of 2009 Licence; On

Attachment 4 Draft Blast Management Plan – Cocked Hat Hill Quarry

COCKED HAT HILL QUARRY, BREADALBANE

BLAST MANAGEMENT PLAN

Van Diemen CONSULTING

PO BOX 1 NEW TOWN TAS 7008

CONTENTS

FIGURES

DEFINITION OF TERMS

Blast Exclusion Zone	the area immediately adjacent and surrounding the charging operations. Only personnel involved with firing, charging and tie-up are permitted in this area
EMPCA	*Environmental Management and Pollution Control Act 1994*
EPA	Environment Protection Authority
(the) Land	That area of land shown in Figure 1 which comprises a portion of Mining Lease 1958P/M
ML	Mining Lease
MRT	Mineral Resources Tasmania
(the) Plan	this Blast Management Plan
QCP	Tasmanian *Quarry Code of Practice 1999*
SSAN	Security Sensitive Ammonium Nitrate

1. SCOPE

The objectives of this Blast Management Plan (the Plan) for the Cocked Hat Hill Quarry (Figure 1) are to:

- Achieve best practice management for blasts;
- Notify neighbours and the Launceston Airport operator of impending blasts
- Establish measures to minimise conflict between adjoining and nearby land uses;
- Establish safe systems of work with explosives and blast preparation/implementation; and
- Monitor and record each blast for environmental attributes for compliance requirements.

2. BACKGROUND INFORMATION

2.1 QUARRY OPERATOR

The responsible entity for the quarry operations is Mt Oriel Breadalbane Pty Ltd. The contact details for the company are –

Mt Oriel Breadalbane Pty Ltd

Address: 100 Section Road, Greenvale Victoria 3059 Australia

Phone: +61 3 9333 2400

Fax: +61 3 9 333 1258

2.2 DELEGATED OPERATOR

The delegated operator for the quarry operations is Van Diemen Quarries Pty Ltd. The contact details of the company are:

Van Diemen Quarries Pty Ltd

ACN 607 533 906

Registered Office – CROWE HORWATH, 62-66 PATERSON STREET, LAUNCESTON TAS 7250

Primary Place of Business - 79-81 ST LEONARDS ROAD, ST LEONARDS TAS 7250

Principal Contact for VDQ Pty Ltd

Mr Oliver Diprose, Director

Mobile – 0418 314 438

Phone – (03) 6337 0200

Fax – (03) 6339 2028

Email – odiprose@gradco.com.au

3. ROLES AND RESPONSIBILITIES

It is the responsibility of all management personnel to be aware of and conduct safe work.

For the plan to be successfully and accurately implemented there needs to be clearly defined roles and responsibilities for each and every blast that occurs at the quarry. These roles and responsibilities will apply across various contractors, staff and the owner to ensure that each blast is well planned, managed and executed such that the blasts are safe, effective and within best practice limits.

There are three main entities that have roles in the blast process. These are described below.

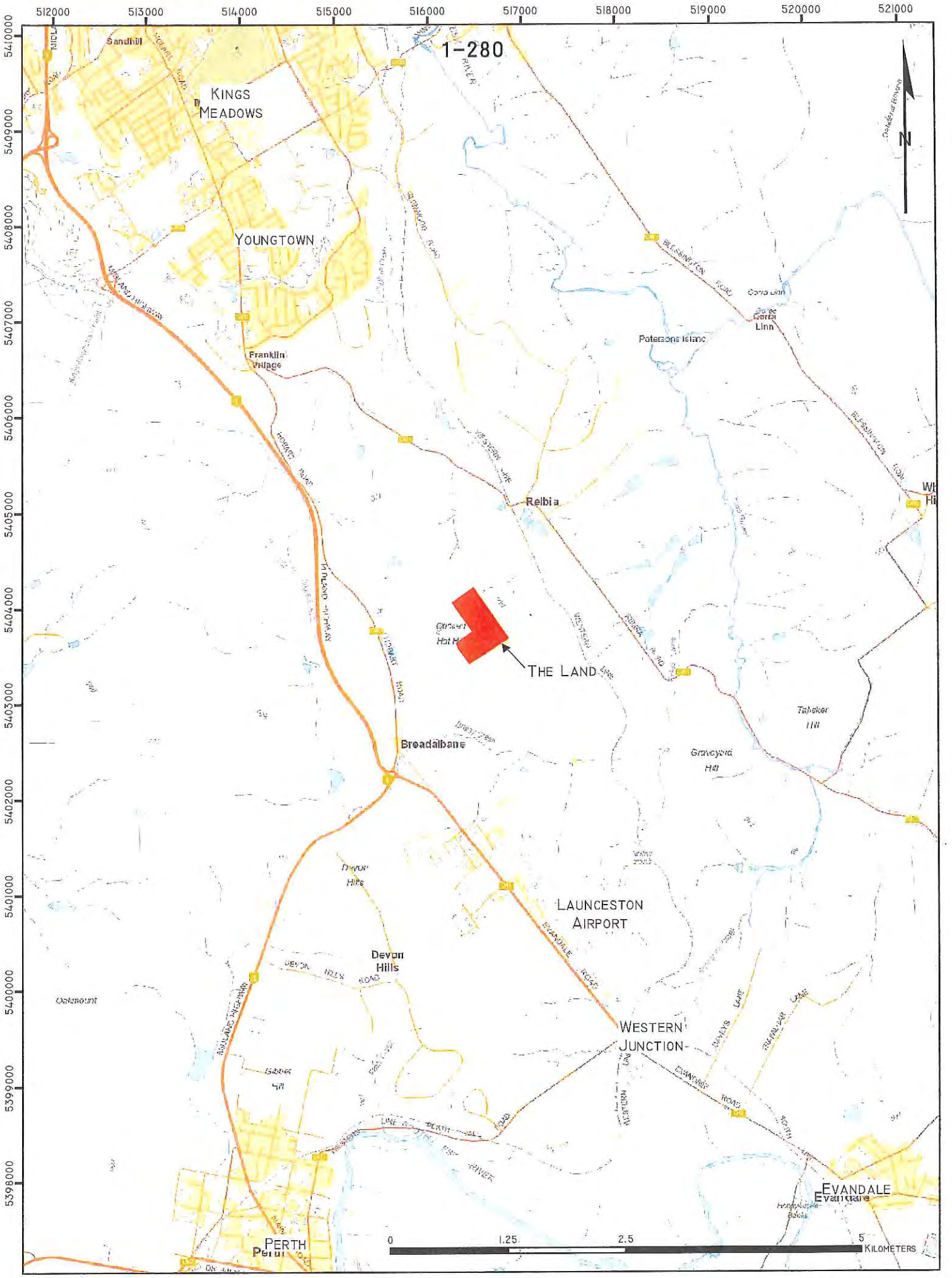
The **Quarry Operator** is the person/entity that has overall responsibility and control of the quarrying activity. They are to ensure that:

- the Blast Contractor (BC) is briefed on the requirements of the Plan and its importance to the worker/landowner safety and production success of the blast; and
- this Plan is complied with through assessments of the quarry and liaison with the BC;
- monitor operational performance of the BC to ensure compliance with license conditions;
- implement and update the Blast Management Plan as required;
- variations to this Plan are developed and provided to the Environment Protection Authority for approval;
- ensure that all notifications are made as required under this Plan;
- ensure all notifications are given in the event of a misfire or incident that would cause the Plan to be enacted for its emergency procedures or notifications to the EPA Director and/or neighbours and the Launceston Airport operator
- respond in a timely manner to any complaints received from the blasting activities at the quarry; and
- that noise/vibration test results are collected by the Contractor and securely held for 5 years from the date of the blast.

The **Blast Contractor** (BC) and their staff/representatives is to ensure:

- this Plan is complied with and appropriately implemented;
- coordination of the work of staff and contractors, including site inductions of sub-contractors and others required to implement the blast;
- advise the Quarry Operator or their delegated representative of any misfires or incidents that would cause the Plan to be enacted for its emergency procedures or notifications to the EPA Director and/or neighbours and the Launceston Airport operator;
- conducting appropriate risk assessments for the blast and mitigating those risks, and the safe and lawful handling and storage of dangerous goods;
- establishment of appropriate noise/vibration monitoring sites to collect data consistent with the requirements of the EPA for blast monitoring;
- conducting noise measurements for each blast consistent with this Plan; and
- timely and effective delivery of noise/vibration test results to the Quarry Operator.

The Blast Contractor is likely to have several staff which will have specified tasks and responsibilities for the pre and post blast process. These may include for example -



COCKED HAT HILL QUARRY - BLAST MANAGEMENT PLAN

FIGURE 1: LOCATION OF THE COCKED HAT HILL QUARRYING ACTIVITY

Van Diemen Consulting

DATUM: GDA94
GRID: MGA ZONE 55

TASMAP: PROSPECT

CLIENT: ADAMS GROUP

DATE: 18TH DECEMBER 2016

Area Manager

The person who has overall responsibility and control over handling, and use of explosives when the BC is on site. The Area Manager is responsible for the scheduling of blast days and compliance related issues in regards to blasting operations.

Technical Services Officer

The BC technical specialists responsible for design and monitoring of blasting operations for the site. They report to the Area Manager.

Drill and Blast Supervisor

The Supervisor responsible for the day to day operations and management of loading and firing operations. Reports to the Area Manager.

Blast Controller

The person given responsibility, control and authority for the safety and coordination of each blast when initiated. Can be the Shotfirer if the task is appointed to him.

Shotfirer

The person in charge of the security, loading and firing of the blast on blast day. The Blast Controller and Shotfirer should not be the same person unless the site can be adequately cleared and the blast exclusion zone maintained concurrently. Reports to the Drill and Blast Supervisor.

Blast Guard(s)

The individual(s) supporting the Blast Controller in ensuring clearance distances are observed and the blast exclusion zone is secure. Generally, will be a site familiar person(s) who reports to the Quarry Operator.

Quarry Operator staff are to ensure that they:

- apply safety measures consistent with this Plan; and
- take reasonable direction from the Blast Contractor and/or the Quarry Operator (subject to their role in the blast process) during site preparation works for the blast and immediately during and after the blast.

4. OPERATIONAL PROCEDURES

4.1 LOCATION AND BLAST SCHEDULING

Blasts will occur on a needs basis.

4.2 BLAST CONTRACTOR

Only Blast Contractors with a valid Category 2 shot-firing permit (surface shot-firing - above-ground quarrying, road construction and open cut mining) issued under the *Explosives Regulations 2012* will be used.

4.3 BLASTING TIMES

Blasting will only take place between the hours of 1000 hours and 1600 hours Monday to Friday. It will not take place on Saturdays, Sundays or public holidays unless prior written approval of the EPA Director has been obtained.

4.4 BLAST PLANNING PROCEDURE

4.4.1 Blast Design

A comprehensive blast design and implementation procedure will be developed by the Blast Contractor to ensure compliance to the designated blast vibration limit.

4.4.2 Blast Procedures

The below task list has been prepared to guide the Blast Contractor.

Blast Set-Up

A Shotfirer shall be nominated in charge of the shot.

Blast Site preparation

All unnecessary tools and equipment shall be removed before bringing explosives to the collar of the blast holes.

Entry into Blast Area

There is to be no unauthorised entry to a blast area.

Any unauthorised person must make contact with the Shotfirer to seek approval to enter a blast area.

Measuring Blast holes

Every blast hole depth should be measured and recorded to nearest 100 mm (0.1 metre).

The Shotfirer shall record the depth of any short blast holes that cannot be re-drilled, anything unusual that may affect the blast performance (short, hot, damaged holes), and the location of such blast holes or features on the blast plan.

Loading and Stemming

Prior to loading activities commencing a preblast risk assessment shall be conducted of the blast area and access.

A Shotfirer shall be nominated as being in charge of the shot.

The load plan and burdens of free face blast holes should be made available before commencing loading.

All persons involved shall be made aware of the plan, hazards, work flow and any particular unique factors in the blast. When loading the blast, progress loading such that firing can be completed early

if necessary and any re-drilling can be conducted before the explosives are loaded in an area. Any damaged or blocked holes shall be reported to the Shotfirer

Priming

Should a booster or down-line be dropped down the hole and is irretrievable, it shall be reported to the Shotfirer.

Only prime enough holes as they are to be loaded. Do not leave explosives accessible to unauthorised persons.

Primers are to be prepared at the hole and lowered in a controlled manner. Accessories shall be inspected prior to ensure they are not damaged. The top primer shall not be made up until required to be inserted into the blast hole.

Avoid unnecessary force when inserting detonators into primers. Insert the detonator completely enclosing it in the primer to protect this sensitive component from impact, friction or bending forces.

Immediately after inserting the detonator into the primer, place the charge in the blast hole. If a primer becomes stuck in a blast hole never push or pull to remove.

Secure the downhole lead and ensure excess lead is coiled neatly.

Loading of Blast holes

Holes shall be loaded in a systematic pre-determined sequence.

Regularly measure the explosive column rise during charging to detect cavities and avoid overcharging blast holes.

All holes shall be dipped after loading to ensure correct column height and/or rise is achieved. This will also assist in control of vibrations due to potential for increase in MIG.

All processes shall be done in a way that minimises the risk of damage to down-lines. Decking of blast holes may need to be considered if loading circumstances require.

Stemming

Good quality stemming shall be used - crushed aggregate sourced from offsite. Only coarse aggregate approved by the Shotfirer may be used as stemming.

Blast holes shall be checked prior to stemming to ensure the blast hole is loaded to the correct column length.

Stem the blast holes carefully to avoid damaging down-lines, and slowly to avoid the material from bridging in the blast hole above the designed stemming height.

4.5 ESTABLISHING AND REMOVING THE BLAST EXCLUSION ZONE

Particular emphasis shall be placed on the safety of personnel. As such exclusion zones shall be established to ensure that the risk of impacting personnel is eliminated.

The procedure used for the establishment and removal of the blast exclusion zones includes:

- A description of the zone and method of implementation;
- Personnel tasks and responsibilities;
- A description of the means of communication;
- The control of radio transmissions that may influence the communication or security of the shot;
- Timings and procedures for notification of personnel on-site and off-site; Identification of the location of, and the method of manning of, control points;

- The method to establish and notify the Shotfirer that the exclusion zones have been cleared; Method for immediate notification of and dealing with trespassers;
- Warning procedures prior to firing;
- What must occur if a misfire occurs during firing;
- The method of notification to return the whole of the exclusion zone to normal;
- Site briefings shall be conducted for personnel involved with the establishment and removal of the exclusion zone.

When a blast cannot be initiated and is to remain loaded overnight, the firing control shall be made safe. When a site requires guarding, personnel shall be engaged to ensure that the Shotfirer has sufficient rest prior to firing the next day. Such personnel shall be briefed on hazards and a procedure for contacting a responsible person in the case of trespass.

The exclusion zone shall not be returned to normal until the 'all clear' for the blasting operation is given by the Shotfirer.

4.6 STORAGE AND HANDLING OF EXPLOSIVES

The transportation, storage and handling of explosives is conducted by the Blast Contractor in accordance with the Australian Explosives Code (1999), the Australian Code for the transport of explosives by road and rail (Third edition - 2009) and Australian Standard 2187 Explosives – Transport, storage and Use (parts 1 and 2).

4.6.1 Procurement of Explosives

The person ordering explosives and SSAN for use at Mt Oriel must be an authorised person.

The person ordering explosive product shall determine quantities from the plan produced by the Blast Contractor.

4.6.2 Storage

There shall be no storage of explosives or explosive precursors at the McGraths Quarry. All explosives or explosive precursors shall be transported to site and any residual removed to Blast Contractor operated and licensed magazine and storage facilities after blasting.

4.6.3 Transport of Explosives to site

All explosive products and precursors shall be under the control of the Blast Contractor at all times. The explosives and precursors will be transported to site in a MSU and an explosives carry vehicle from the Blast Contractor's Depot.

All vehicles used for the transport of explosives shall comply with the AEC (for explosives) and the ADGC (for Dangerous Goods - SSAN). Regular inspections of vehicles shall be conducted to ensure compliance.

Vehicles carrying SSAN or explosives shall be secured from access, including product and vehicle, when left unattended.

All explosives shall be kept in their original boxes and transported in separate lockable receptacles for Class 1.1B, 1.4S and 1.1D explosives.

Any maintenance carried out in secure areas, on SSAN vehicles or equipment that contain residual product shall be authorised to do so and either under constant surveillance or be an authorised secure person.

Towing or extraction of explosive equipment shall only be done under supervision and in compliance with site or Blast Contractor procedures.

4.6.4 Product information

All products delivered shall have TDS, SDS and EPG information available.

4.6.5 Additional Safety Points

There shall be no smoking or naked flames within 10 metres of an explosive vehicle. Explosives are not to be dropped or mishandled.

Only personnel trained and passed out as competent in the use of handling explosives and their transport, may operate an explosives vehicle.

ALL SSAN and explosives must be accounted for including the recording of spills, usage and waste.

No person under the age of 18 years is permitted to work with or handle, charge or fire any explosive or blasting agent.

4.7 BLASTING - NOISE AND VIBRATION LIMITS

Blasting will be carried out in accordance with blasting best practice environmental management (BPEM) principles, and must be carried out such that, when measured at the curtilage of any residence (or other noise sensitive premises) in other occupation or ownership, air blast and ground vibration comply with the following:

- for 95% of blasts, air blast over pressure must not exceed 115dB (Lin Peak);
- air blast over pressure must not exceed 120dB (Lin Peak);
- for 95% of blasts ground vibration must not exceed 5mm/sec peak particle velocity; and
- ground vibration must not exceed 10mm/sec peak particle velocity.

All measurements of air blast overpressure and peak particle velocity must be carried out in accordance with the methods set down in *Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration,* Australian and New Zealand Environment Council, September 1990.

4.8 NOTIFICATION OF BLASTING

A video/camera system will be used to record each blast with it focused specifically on the creation or otherwise of fly-rock into the adjoining land or other land. This is a means to capture real-time footage of the blast to determine if fly-rock has been created and to which direction it may have been directed.

4.8.1 Residential neighbours

All residents within a 1 km radius of a blast (Figure 2) must be **notified in writing** prior to that blast. This notification must be given at least 48 hours before such blasting is due to occur.

In the event that the blast(s) cannot take place at the time specified, or as a result of blasting misfires, Mt Oriel Breadalbane Pty Ltd or their delegated agent (Van Diemen Quarries) will advise all those residents within 1 km of the Quarry (Figure 2) of the revised time at which blasting will take place.

4.8.2 Business Premises

The two nearby relevant business premises (Josef Chromy Wines and Stornoway Quarries) will be **notified in writing** prior to that blast (see Figure 3).

This notification must be given at least 48 hours before such blasting is due to occur.

In the event that the blast(s) cannot take place at the time specified, or as a result of blasting misfires, Mt Oriel Breadalbane Pty Ltd or their delegated agent (Van Diemen Quarries) will advise the two businesses) of the revised time at which blasting will take place.

4.8.3 Launceston Airport operator

The Launceston Airport is to the south of the quarry (Figure 4).

A letter of agreement will be developed and signed with the Launceston Airport which will outline the way notifications between the parties will be served.

Airport Blasting approval procedure

To ensure the safety of blasting operations (with regard to air traffic) VDQ must adopt the following procedures.

Blasting shall not proceed if contact cannot be made with the Control Tower.

- Shot minus 30 minutes VDQ contacts Tower to negotiate an approximate time for the shot
- Shot minus two minutes VDQ contacts Tower to seek approval for the shot. Dependent upon traffic disposition at the time along with duty runway, Tower will either grant approval or provide a suggested time to call back for approval.
- After Shot as soon as practicable after the shot, VDQ contacts the Tower to advise the shot has been completed and advise 'All Clear'.
- In the event of a misfire VDQ is to contact the tower immediately and advise estimated resolution time.

Blasting procedure – Launceston Tower

Once Launceston Tower has provided approval for a blast, until the time VDQ advise 'All Clear', all aircraft movements shall be kept clear of the affected airspace.

Launceston Tower contact

Contact with the Control Tower is:

Primary 03 6391 6992 (recorded line)

Secondary 03 6391 6993

Van Diemen Quarries contact

Contact with Mt Oriel Quarry is:

Primary - Neil Armstrong 0417 112 090 or 03 6339 2535

Oliver Diprose 0418 314 438 or 03 6339 2535

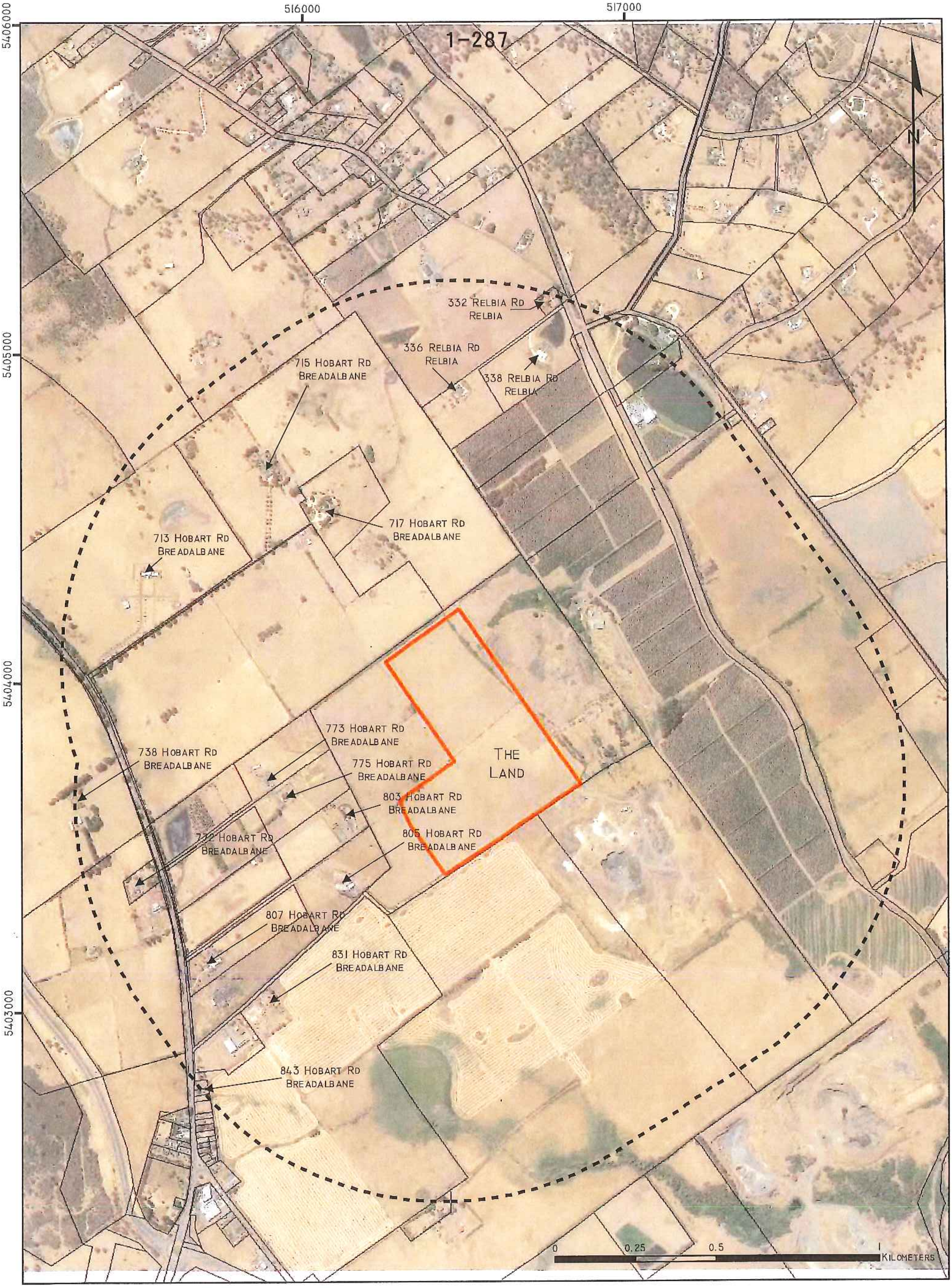
Blasting outside Tower hours of operation

Outside the normal activation hours of Launceston Tower or when it is unmanned, VDQ must contact CASA Office of Airspace Regulation (OAR) on 02 6217 1177 (24-hour line). In these circumstances, no blasting shall be conducted without the approval of CASA OAR.

If VDQ staff are unsure if the Tower is activated or not, or if there is no answer from the Tower, VDQ staff may contact the Melbourne Operations Room Manager on 03 9235 7420 (24-hour line) to ascertain the status of the Tower.

4.8.4 Tasrail

Train Control at Tasrail will be notified at least 48 hours prior to any blasting on The Land.



Cocked Hat Hill Quarry - Blast Management Plan

Figure 2: Residences within 1 km of the e Cocked Hat Hill Quarry

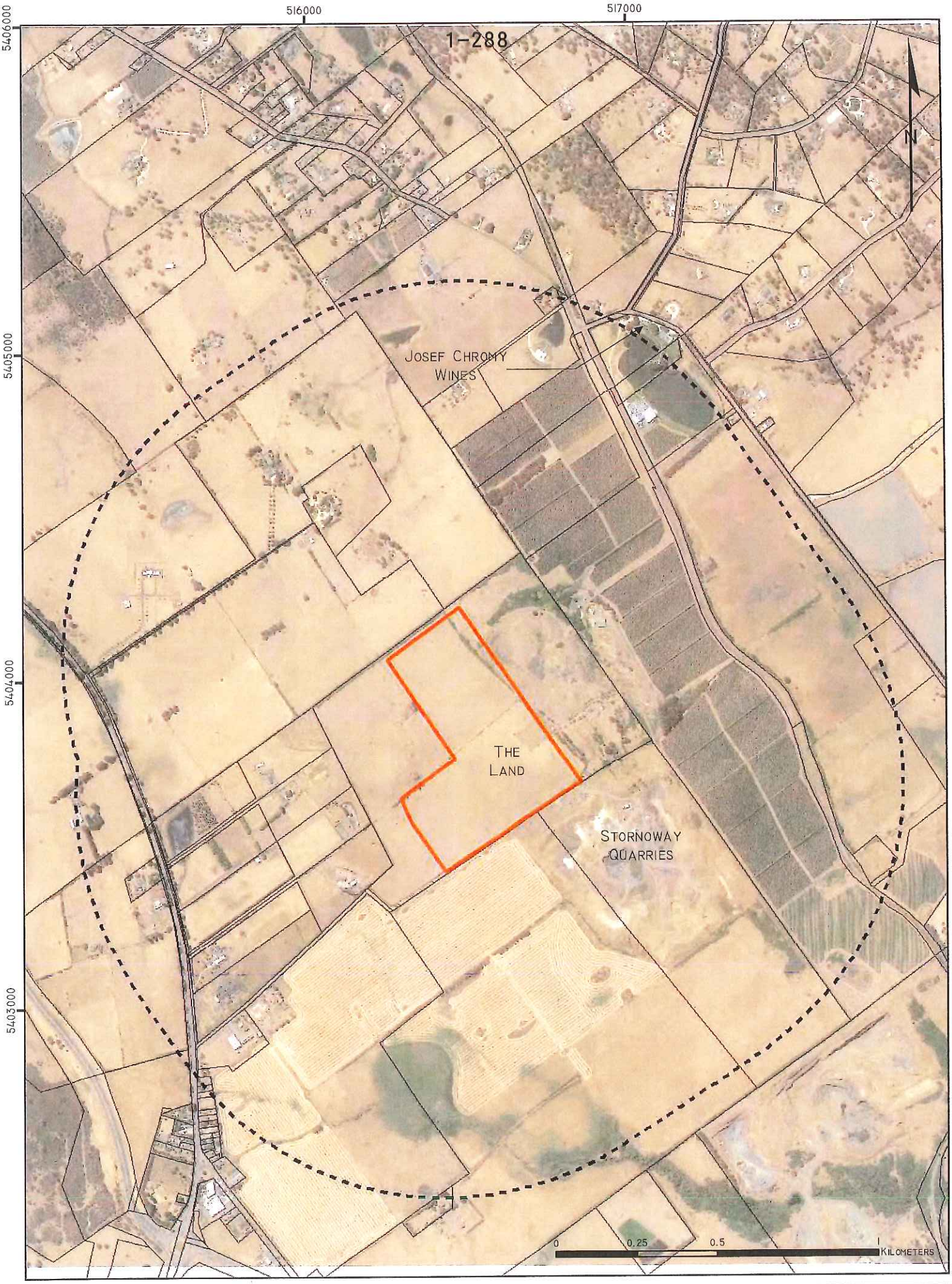
Van Diemen Consulting

Datum: GDA94
Grid: MGA Zone 55

Tasmap: Prospect

Client: Adams Group

Date: 18th December 2016



COCKED HAT HILL QUARRY - BLAST MANAGEMENT PLAN

FIGURE 3: BLAST NOTIFICATION RELEVANT BUSINESSES WITHIN 1 KM OF THE COCKED HAT HILL QUARRY

Van Diemen Consulting

PO Box New Town TAS 7008

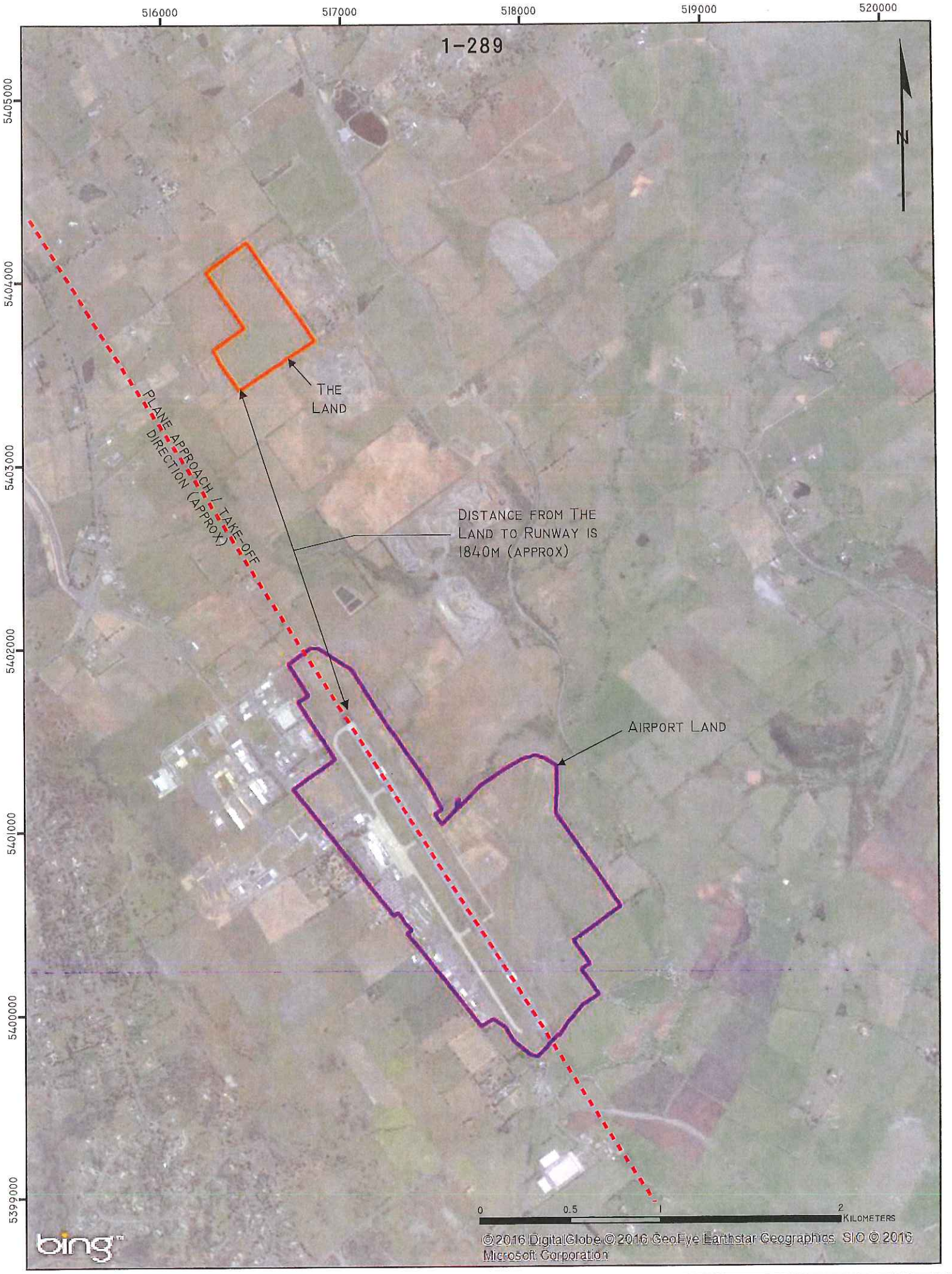
BASE DATA BY TASMAP © STATE OF TASMANIA

DATUM: GDA94
GRID: MGA ZONE 55

TASMAP: PROSPECT

CLIENT: ADAMS GROUP

DATE: 18TH DECEMBER 2016



COCKED HAT HILL QUARRY - BLAST MANAGEMENT PLAN

FIGURE 4: AIRPORT (LAUNCESTON) LAND AND THE COCKED HAT HILL QUARRY

Van Diemen Consulting

DATUM: GDA94
GRID: MGA ZONE 55

TASMAP: PROSPECT

CLIENT: ADAMS GROUP

DATE: 18TH DECEMBER 2016

5. MONITORING AND REVIEW

5.1 RISK ASSESSMENT AND AUDITING

The Blast Contractor is responsible for conducting a risk assessment and safety audit of the Quarry as part of the blast activity. This includes the drilling of the holes for explosives, handling explosives, operation of detonation devices and the safe detonation of the charges.

The following safety precautions will be applied -

- Ensure all persons have exited the quarry prior to any blast being conducted with the exception of blast contractor personnel involved in the detonation of charges.
- Ensure all blast relevant roads surrounding the quarry are free of vehicles and persons.

5.2 NOISE/VIBRATION MONITORING PROGRAM

Blast monitoring locations will be identified by the Blast Contractor and operator of the quarry to suit the location of the blast within the quarry. A noise/vibration monitoring station will be established at the Winery Shed (Josef Chromy Winery) in accordance with the permit.

Other noise/vibration monitoring sites would include -

- 338 and/or 336 Relbia Road or other residence/residential property on Relbia Road; **and**
- 717 and/or 715 Hobart Road or other residence/residential property on Hobart Road (see Figure 2)
- subject to the location of the blast and direct ion of potential impact of that blast.

The site selection would be determined by the Blast Contractor and the quarry operator to suit the blast design.

All measurements of air blast overpressure and peak particle velocity must be carried out in accordance with the methods set down in *Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration,* Australian and New Zealand Environment Council, September 1990.

The noise/vibration test results collected by the Blast Contractor will be securely held by Mt Oriel Breadalbane Pty Ltd for 5 years from the date of the blast.

When the blasting noise limits and/or vibrations as specified in the permit are exceeded, the Director will be notified within 24 hours of the blasting event.

5.3 INCIDENT REPORTING

The Blast Contractor is responsible for reporting to Police/Fire any incidents that require their involvement and/or attendance to the Quarry.

Mt Oriel Breadalbane Pty Ltd or their delegated agent (Van Diemen Quarries) is responsible for reporting any misfires or delayed firings to the EPA Director and surrounding relevant landowners and the Launceston Airport operator: in the event that the blast(s) cannot take place at the time specified, or as a result of blasting misfires, the Mt Oriel Breadalbane Pty Ltd or their delegated agent (Van Diemen Quarries) will advise all those residents within 1 km of the activities on the land of the revised time at which blasting will take place.

5.4 REVIEW OF PLAN

This Plan will be reviewed in the event of an incident, change to the timing/location of the blast within the Quarry or another significant event.

Any variations to this Plan will be made available to the Director EPA for approval before the alteration is made to the Plan. In the event that the Director, by notice in writing to Mt Oriel Breadalbane Pty Ltd,

either approves a minor variation to the approved plan or approves a new plan in substitution for the plan originally approved, Mt Oriel Breadalbane Pty Ltd and its agents will implement and act in accordance with the varied plan or the new plan, as the case may be.

Van Diemen Consulting Pty Ltd

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T: 0438 588 695 E: rwbarnes73@gmail.com

This document has been prepared in accordance with the scope of services agreed upon between Van Diemen Consulting (VDC) and the Client.

To the best of VDC's knowledge, the report presented herein represents the Client's intentions at the time of completing the document. However, the passage of time, manifestation of latent conditions or impacts of future events may result in changes to matters that are otherwise described in this document. In preparing this document VDC has relied upon data, surveys, analysis, designs, plans and other information provided by the client, and other individuals and organisations referenced herein. Except as otherwise stated in this document, VDC has not verified the accuracy or completeness of such data, surveys, analysis, designs, plans and other information.

No responsibility is accepted for use of any part of this document in any other context or for any other purpose by third parties.

This document does not purport to provide legal advice. Readers should engage professional legal advisers for this purpose.

Document Status

Revision	Author	Review/Comments	Date
1	R Barnes, C McCoull	R Barnes, VDC Pty Ltd	16-12-2016
1	R Barnes, C McCoull	Mt Oriel Breadalbane Pty Ltd and Van Diemen Quarries Pty Ltd	19-12-2016

Attachment 5 Traffic Impact Assessment (Traffic Engineering and Road Safety)

MILAN PRODANOVIC B.E. P Eng
TRAFFIC ENGINEERING & ROAD SAFETY

TRAFFIC IMPACT ASSESSMENT

PROPOSED

COCKED HAT HILL

QUARRY DEVELOPMENT

833 HOBART ROAD

BREADALBANE

JANUARY 2017

MILAN PRODANOVIC B.E. PEng
TRAFFIC ENGINEERING & ROAD SAFETY

TRAFFIC IMPACT ASSESSMENT

PROPOSED
COCKED HAT HILL
QUARRY DEVELOPMENT

833 HOBART ROAD
BREADALBANE

JANUARY 2017

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CONTENTS

REFERENCES:

- Australian Standard AS 1742.2-2009 – Manual of uniform traffic control devices Part 2: Traffic control devices for general use
- AUSTROADS – Guide to Road Safety Part 6: Road Safety Audit (2009)
- AUSTROADS – Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (2009)
- Northern Midlands Planning Scheme 2013
- Development Application – supporting information report (author Richard Barnes)

1. INTRODUCTION

A development application has been lodged with the Northern Midlands Council for a basaltic rock quarry development located at 833 Hobart Road in Breadalbane.

In considering the application, the Council has requested further information related to traffic matters as follows:

> *A traffic impact assessment is required to demonstrate compliance with clause 26.3.1 P4 (c) and with the road & railway Assets Code. The TIA that must demonstrate the capacity of the local road network can accommodate the traffic generated by the use, effects of the increased movements on the road network for safety, efficiency and amenity. It includes recommendations on measures to be taken to maintain the safety and efficiency of the road or railway networks. A TIA for roads must be undertaken in accordance with Traffic Impact Assessment Guidelines, Department of Infrastructure, Energy and Resources September 2007. Australian Guidelines and Australian Standards are to be used as the basis for any required road or junction design.*

This Traffic Impact Assessment (TIA) report considers the existing road and traffic characteristics along Hobart Road and the private access road leading to the quarry site in the area of the development site. An assessment is made of the traffic activity that the proposed quarry development will generate and the effect that this traffic will have on Hobart Road as well as other affected roads and intersections.

Consideration is given to the required intersection management and available sight distances along Hobart Road at the junction of the private access road and along the private access road to the development site.

The report is based on current Department of State Growth (DSG) - Traffic Impact Assessment Guidelines. The techniques used in the investigation and assessment incorporate best practice road safety and traffic management principles.

2. SITE DESCRIPTION

The proposed development site is located on the eastern side of Hobart Road along a private road (McGraths Road) that junctions with Hobart Road some 0.6km to the north of the roundabout controlled Midland Highway/Evandale Main Road/Hobart Road intersection.

The proposed quarry location is located in a rural area where the predominant activity is farming, but where there also is some mixed industrial businesses, residential dwellings and other quarry activities.

The location of the development site has been highlighted on the extract from the street atlas as seen in Figure 2.1.

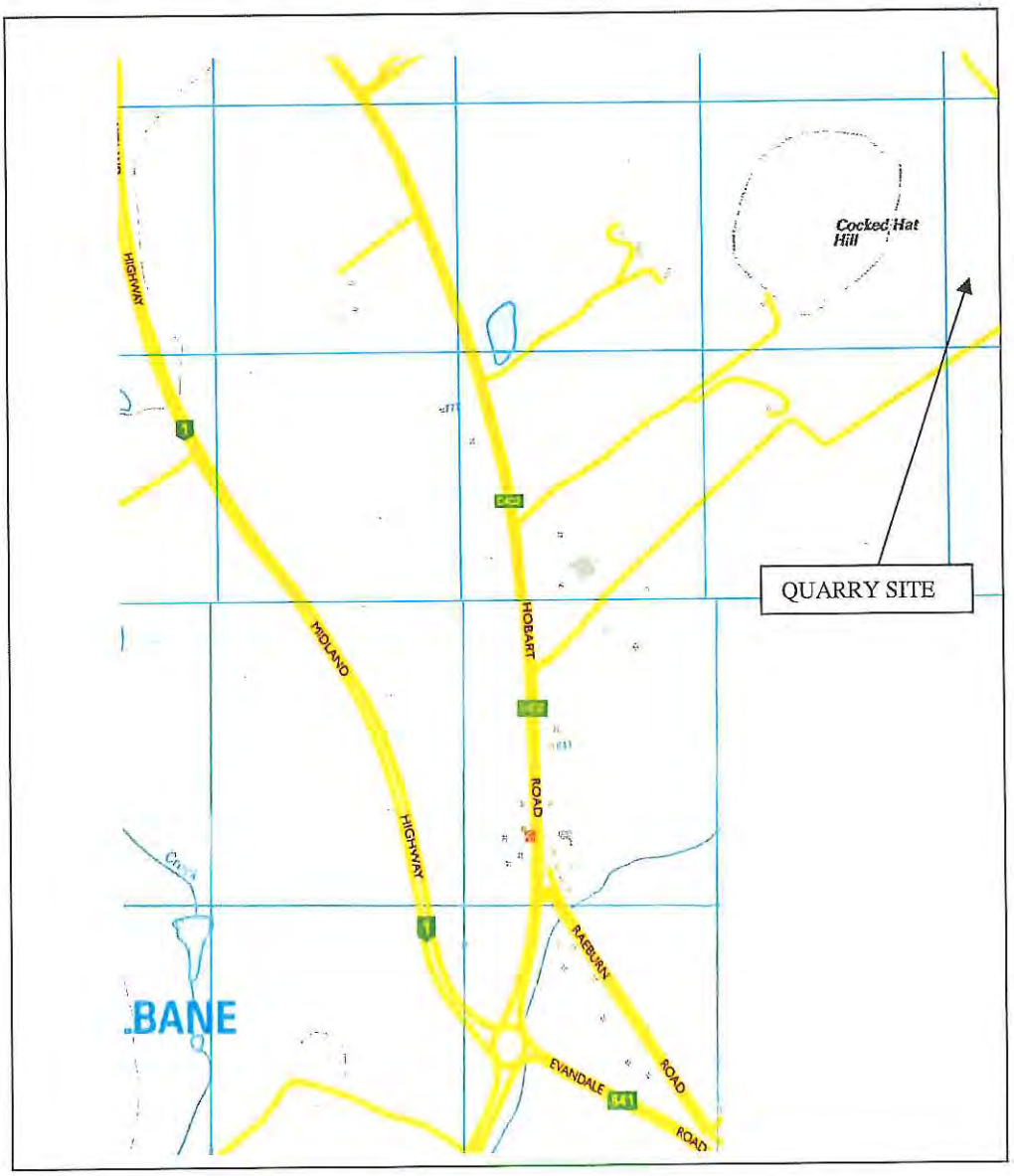


Figure 2.1: Location of proposed quarry development site

3. DEVELOPMENT PROPOSAL

The proposed development is the establishment and operation of the Cocked Hat Hill quarry which will have a maximum permitted production level of 200,000 cubic metres produced per annum.

Access to the quarry will be via a private road (McGraths Road on Google Earth) which junctions with Hobart Road. A new site access road will be constructed off the northern side of McGraths Road at its eastern end, which is around 1.5km to the east of Hobart Road.

The extracted product will be basaltic rock and the quarry is expected to have a life of at least two decades.

When operating at full capacity it will employ 6 people on the site, not including truck drivers transporting the product from the quarry.

Operating hours for the quarry will be 6:00am -7:00pm Monday to Friday and 8:00am to 4:00pm on Saturday.

4. EXISTING ROAD AND TRAFFIC ENVIRONMENT

4.1 Road Characteristics

The one public road of relevance to the proposed quarry development under consideration is Hobart Road. Access to the quarry site will be via private road (McGraths Road) which junctions with the eastern side of Hobart Road.

As seen in Figure 2.1, McGraths Road follows a generally eastward direction from Hobart Road and currently terminates around 1.5km from Hobart Road where the access to the quarry site will be located as well as where the access to the Stornoway Quarry is located.

In the area of the McGraths Road junction, Hobart Road is sealed to a width of around 12.0m with around 0.8m wide gravel shoulder along the eastern side and 2.2m wide gravel shoulder along the western side of the road. There is a barrier line marking along the middle of Hobart Road and edgelines along both sides of the road, but not along the western side of the road for a distance of around 225m (it seems this edgeline has not been maintained for a considerable period of time).

There are two traffic lanes for southbound traffic with the transitional merge markings to one lane through the junction and one lane for northbound traffic. As a result, at the junction the markings define 3.2m and 3.4m wide lanes for southbound travel and a 5.0m wide lane (to edge of seal) for northbound travel.

Views of Hobart Road at the McGraths Road junction are seen in Photographs 4.1 and 4.2.

The speed limit along this section of Hobart Road is 80km/h.

McGraths Road is a private road serving a number of businesses. It follows an east north-east direction and has a generally straight horizontal alignment over its whole length apart from a reverse turn around midway along its length.

McGraths Road is sealed to a width of around 7.3m just east of the Hobart Road junction. The sealed width reduces to around 2.8m within an overall trafficable road width of around 4m (seal section along middle of the road) where the seal more or less ends some 350m from Hobart Road. Beyond this it is a gravel road to its eastern end, around another 1.15km further east.

Most of the road length is one lane in width and there are a series of passing bays for this full length. There are also several road humps over a distance of around 150m from the western end of the one lane section and signs to warn drivers of the existence of the passing bays.

Photographs 4.3 to 4.8 provide views along McGraths Road.

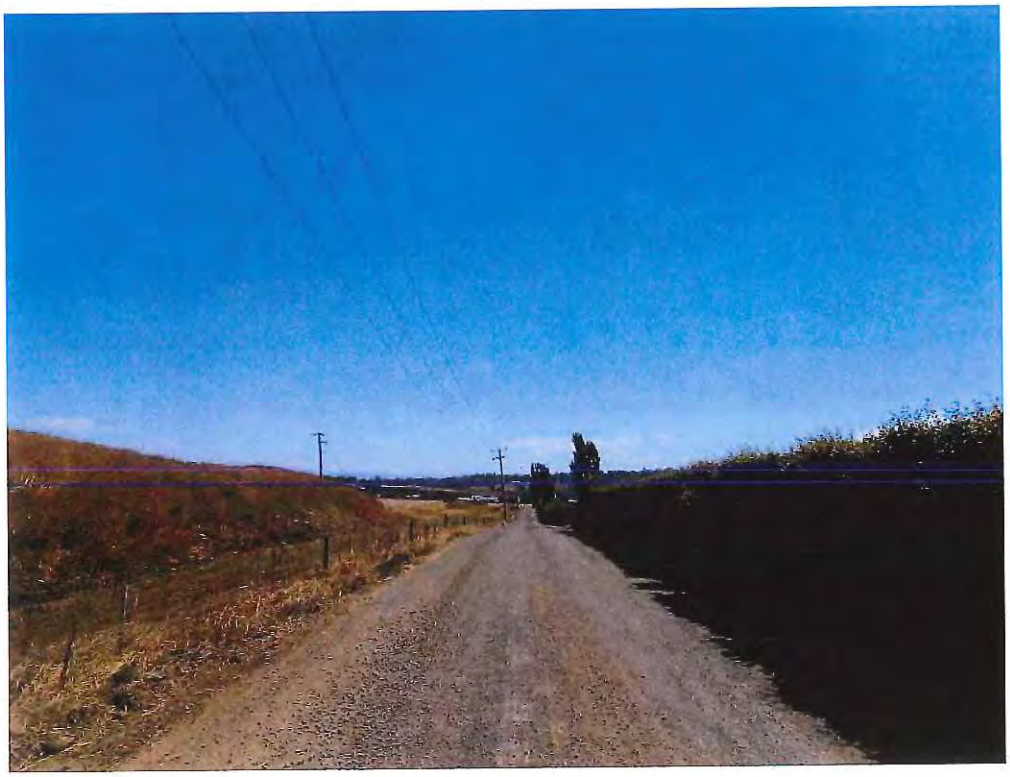
Photograph 4.1: View to north along Hobart Road with junction of McGraths Road on right

Photograph 4.2: View to south along Hobart Road with junction of McGraths Road on left

Photograph 4.3: View to east along McGrath Road around 200m east of Hobart Road

Photograph 4.4: View to east along McGrath Road around 260m east of Hobart Road

Photograph 4.5: View to east along McGrath Road around one kilometre east of Hobart Road



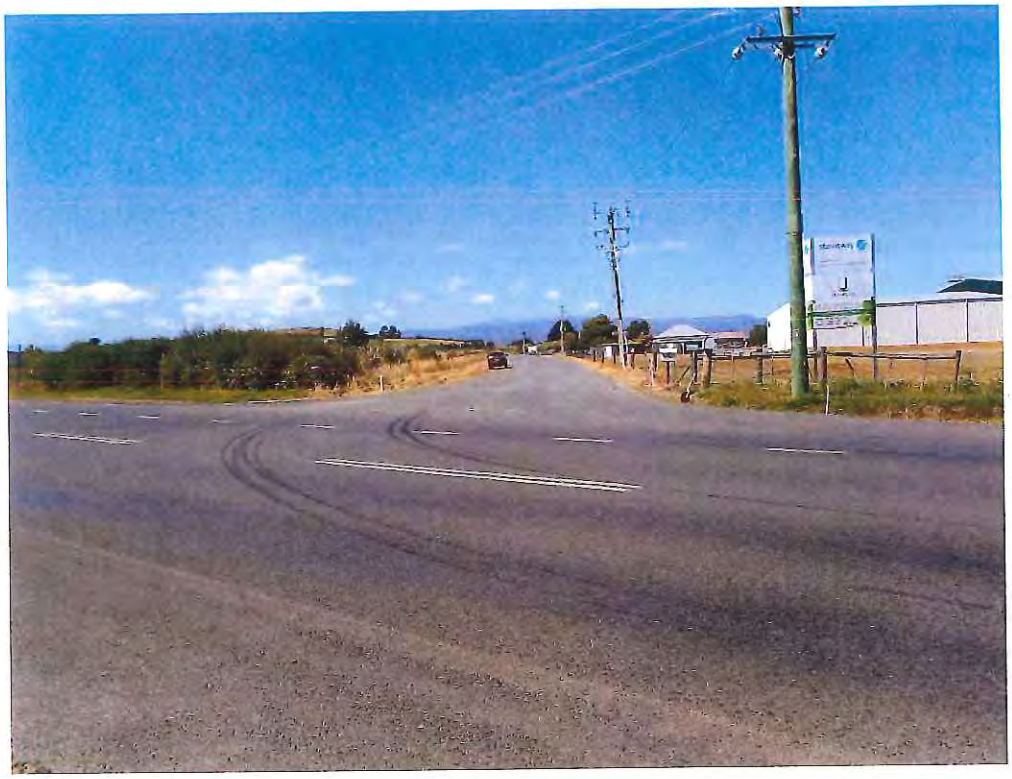
Photograph 4.6: View to west along McGrath Road around 1.3km east of Hobart Road

Photograph 4.7: View to west along McGrath Road at start of approach to reverse turn

Photograph 4.8: View to west along McGrath Road at reverse turn

McGraths Road approaches Hobart Road at an angle of around 55 degrees, squaring up with Hobart Road over the last 10m, as may be appreciated from the view in Photograph 4.9.

It can be seen in Photographs 4.9 and 4.10 that there is a worn holding line at the junction but no 'give way' sign facing approaching McGrath Road motorists.



Photograph 4.9: View to east along McGraths Road from Hobart Road

Photograph 4.10: View to west along McGraths Road towards Hobart Road

4.2 Traffic Activity

Enquires with the Northern Midlands Council regarding available traffic data for Hobart Road resulted in traffic volume data being obtained for a site around 3.5km to the north of McGraths Road. The traffic survey was undertaken in October 2008.

The following average traffic volumes were recorded over three weekdays:

Average weekday traffic - 4,890 vehicles/day;

Morning weekday peak hour traffic (8-9am) - 343 vehicles/hour two way;

Afternoon weekday peak hour traffic (4-5pm) - 450 vehicles/hour two way.

The hourly distribution of traffic volumes for the three day average weekday in October 2008 has been presented graphically in Figure 4.1.

The traffic volume would be quite representative of the traffic passing the McGraths Road junction as there are not many accesses along Hobart Road between the survey site and McGraths Road.

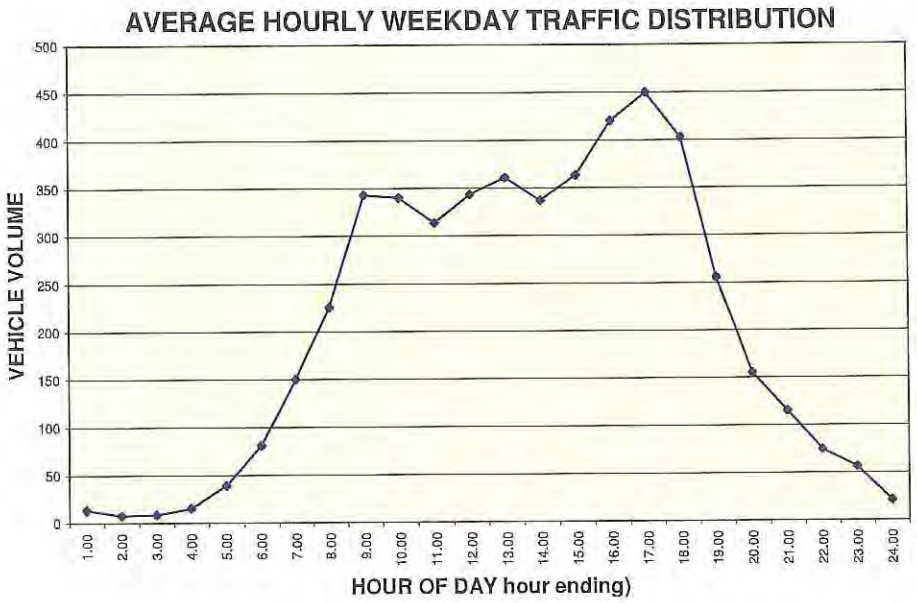


Figure 4.1: Average Hourly Weekday Traffic Volume on Hobart Road to north of Breadalbane – October 2008

Due to the age of the above data, a turning traffic volume survey was undertaken at the Hobart Road/McGraths Road junction during the 4:00 – 5:00pm period on Thursday 12 January 2017. This hour of the day was selected as it was the peak hour during the afternoon and also the highest traffic hour of the day for Hobart Road, based on the Council survey data.

The results from this survey have been summarised in Figure 4.2.

As can be seen from this survey data, the recorded traffic volume along Hobart Road to the north of the junction was 497 vehicles/hour, which is some 47 vehicles/hour more than recorded by council some nine years ago, at its survey site. It represents a 1% p.a. growth in the traffic volume.

The turning movement survey during the afternoon peak hour recorded 25 vehicle movements to and from McGraths Road. Some 60% of these vehicles were trucks.

If this hourly traffic volume is 10% of the daily traffic, as is normally found in suburban areas, the daily traffic along McGraths road would be around 250 vehicles/day.

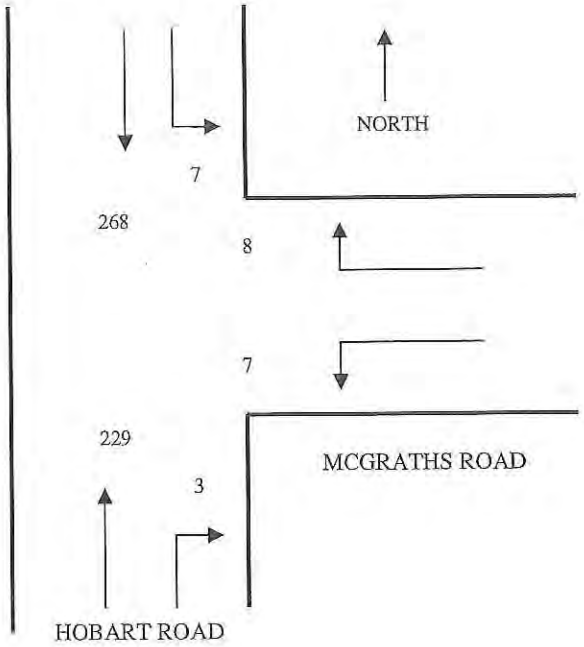


Figure 4.2: Turning traffic volumes at Hobart Road/McGraths Road junction - 4:00 to 5:00pm

4.3 Crash Record

All crashes that result in personal injury are required to be reported to Tasmania Police. Tasmania Police record all crashes that they attend. Any crashes that result in property damage only, which are reported to Tasmania Police, are also recorded even though they may not visit the site.

Details of reported crashes are collated and recorded on a computerised database that is maintained by DSG.

Information was requested from DSG about any reported crashes along Hobart Road between the Midland Highway and Marchington Drive. Advice has been received that for the last five years since January 2012, the database has record of 16 reported crashes at the Midland Highway intersection and six link crashes along this section of Hobart Road.

The Midland Highway/Hobart Road/Evandale Road intersection area is currently under reconstruction which will change traffic patterns and improve safety.

The link crashes along Hobart Road all occurred to the north of the McGraths Road junction with three crashes resulting from loss of vehicle control and the others due to different incidents. One of the loss of control crashes (in 2013) resulted in injury.

Overall the crash record is not of significant concern.

5. TRAFFIC GENERATION BY THE QUARRY DEVELOPMENT

As outlined in Section 3 of this report, the development being proposed is a quarry at the end of McGraths Road from which basaltic rock will be extracted.

The maximum production will be 200,000 cubic metres per year, which is around 320,000 tonnes of product to be transported from the site each year.

The material will be transported using a truck and trailer combination of 30 tonne payload capacity. This translates to around 10,667 truck/trailer vehicle movements per year.

Based on 290 days of operations over one year, there would be on average 74 loaded trucks/day or 148 truck movements per day.

Furthermore, based on a 10-hour working day, there will be some 15 truck movements/hour; (say) 8 trucks to and 8 trucks from the quarry site.

The above calculations are based on the maximum possible production levels. It is understood this is not achieved at most quarries as production levels are dependant on the demand for the product and contracts being secured.

The quarry will employ 6 people who will generate up to 12 car movements each day.

It is understood all of the truck traffic movements to and from the proposed quarry site will be along McGraths Road and then Hobart Road to the south of the McGraths Road junction; i.e. to and from the Midland Highway.

Based on the above truck traffic generation by the quarry (employee traffic will occur at other times of the day), the expected future traffic activity at the Hobart Road/ McGraths Road junction in 10 years' time during the peak hour of the day with the quarry in full operation is as shown in Figure 5.1.

The Hobart Road traffic volumes are those in Figure 4.2 but increased to allow for a 1% p.a. growth over the next decade as well as some increase in other traffic along McGrath Road from possible increased activity at other businesses along the road.

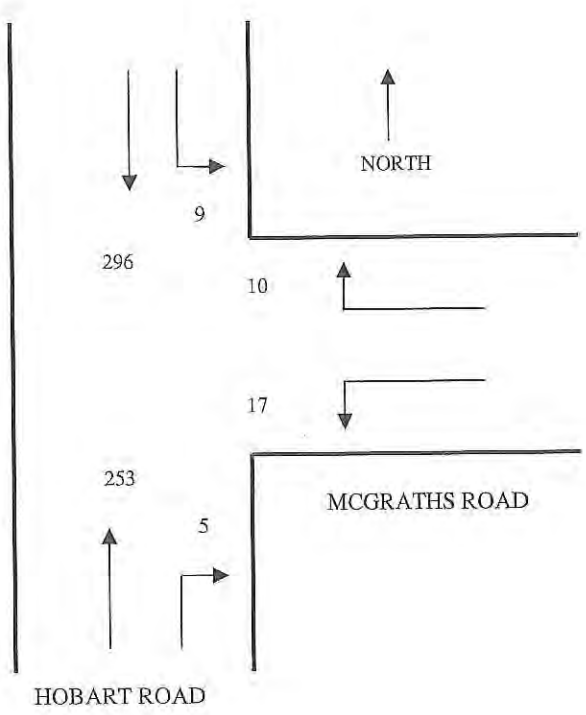


Figure 5.1: Expected hourly turning traffic volumes at Hobart Road/ McGraths Road junction - January 2027

6. TRAFFIC ASSESSMENT AND IMPACT

This section of the report evaluates the impact that the expected traffic from the proposed quarry development will have on Hobart Road and McGrath Road leading to the quarry.

An assessment has also been made of the adequacy of available intersection sight distances along Hobart Road at McGrath Road junction, traffic management at the junction and other relevant factors.

6.1 Operational Impact of Increased Traffic Activity

The total future traffic activity at the Hobart Road/McGraths Road junction with the quarry at full production will be as indicated in Figure 5.1.

The traffic conflict volume during the peak hour of the day is expected to be approaching 600 vehicles/hour.

Traffic volumes of up to 1,500 vehicles/hour can generally be accommodated between conflicting traffic streams at intersections or junctions before traffic problems can begin to arise.

There clearly will not be any traffic flow efficiency issues at this junction and therefore also along McGraths Road with the traffic flow continuing to operate efficiently at acceptable Level of Service A well into the future.

With the current changes that are being made to the Midland Highway and connection to the Evandale Min Road/Hobart Road intersection, the additional traffic generated by the quarry will have a minimal effect on the future traffic operations in this area.

6.2 Hobart Road/McGraths Road Junction Layout

As well as the consideration of sight distances which are addressed below, junctions also need to be considered in terms of the safe movement of vehicles through the junction and in particular whether any passing or auxiliary lanes may be required.

In order to determine what junction treatment is required for Hobart Road/McGraths Road Junction with the expected future level of traffic activity, consideration is normally given to the advice given in the Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections.

Reference is made to Figure 6.1 which is an extract from the Guide that gives advice on the turn lane requirements at sign controlled road intersections and junctions.

The expected future traffic volumes at the McGraths Road junction, as detailed in Figure 5.1 have been applied to the graph in Figure 6.1.

From Figure 6.1 it can be seen that the McGraths Road junction should have at least a BAR type treatment for northbound traffic. It can also be seen from Figure 6.1 that the junction should have such a treatment with current traffic movements. The junction has a BAL treatment.

It may be likely that, while the passing traffic volumes along Hobart Road are somewhat less than in Figure 5.1 at other times of the day, turning traffic volumes into McGraths Road are higher so that there is a high requirement for a BAR treatment through the day.

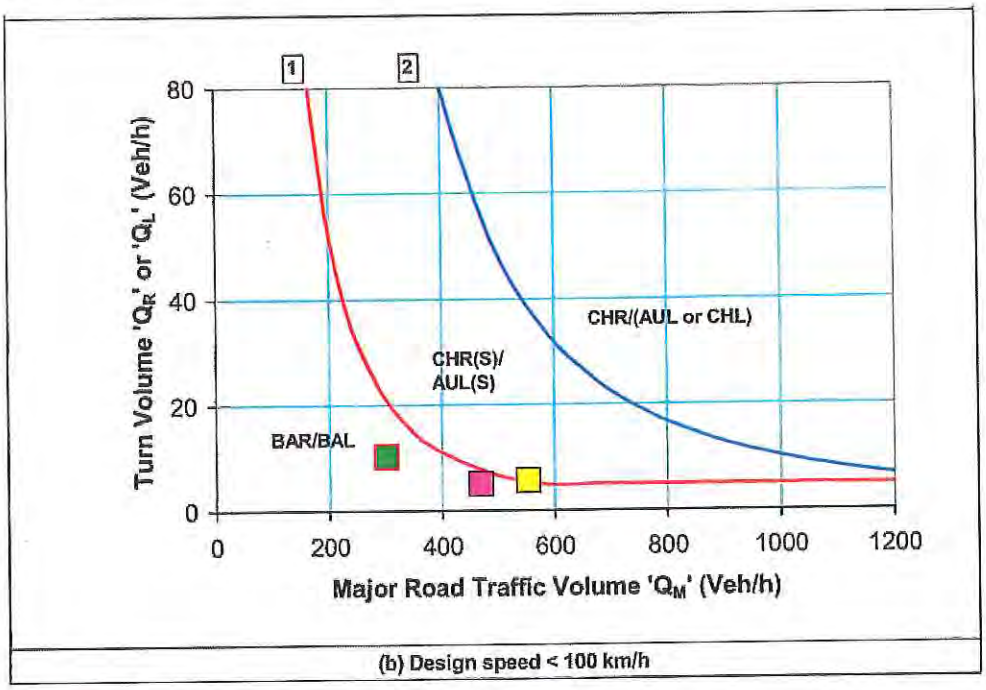


Figure 6.1: Warrant for turn treatments at sign controlled junctions McGraths Road junction – 2027

As seen in Photograph 6.1 and described in Section 4.1, the northbound traffic lane has a sealed width of 5.0m and an adjacent 2.2m wide gravel shoulder along the western side of the road (total of 7.2m).

It is therefore recommended the seal along the western side of the road be widened to create a standard sealed BAR treatment with a 6.0m width opposite the McGraths Road junction plus 0.6m wide sealed shoulder and an edge line installed along the sealed shoulder for the length of the BAR treatment.

Photograph 6.1: View of sealed and gravel sections on northbound section of Hobart Road

6.3 Assessment of Available Sight Distances

The only junction of relevance for this development is the McGraths Road junction with Hobart Road.

The available sight distances between vehicles turning at the Hobart Road/McGraths Road junction and approaching vehicles along Hobart Road have been measured to be over 300m to the north and to the south (for eye heights of 1.1m to 1.25m).

Views along Hobart Road at this junction are seen in Photographs 6.2 to 6.5.

While the speed limit along Hobart Road is 80km/h, a radar speed gun survey of approach vehicle speeds during a one hour period of the turning movement survey found the 85th percentile approach vehicle speeds are 78km/h for northbound traffic and 89.5km/h for southbound traffic.

The required safe intersection sight distances for these 85th percentile approach speeds, based on current Austroads Guidelines, are 213m to the north and 176m to the south. The available sight distances exceed these minimum requirements.

The Austroads sight distance requirements are generally more demanding than the sight distances in the current interim planning scheme.

Photograph 6.2: View to north along Hobart Road from McGraths Road

Photograph 6.3: View to south along Hobart Road from McGraths Road

Photograph 6.4: View to north along Hobart Road from vehicle turning right into McGraths Road

Photograph 6.5: View to south along Hobart Road from rear of vehicle turning right into McGraths Road

6.4 Other Considerations

Additional Traffic along McGraths Road

As indicated earlier in this report, McGraths Road carries some 25 vehicles/hour during the afternoon peak hour at the Hobart Road junction. This would progressively reduce along the road beyond each access driveway to businesses that operate along McGraths Road.

The quarry will increase the traffic by up to 16 vehicles/hour so that in the future the hourly traffic volume will be around 40 – 50 vehicles/hour allowing for some additional traffic to and from existing businesses.

The additional traffic will not adversely impact on the efficient movement of vehicles along the road.

There clearly will not be any issue where the road is wide enough to accommodate two lanes of traffic.

Where the road is wide enough for only one lane of traffic, there are regular passing areas along the road (every 100m or less on initial section and up to 200m or less beyond the reverse turn) of sufficient length to allow trucks to pass one another without incurring any significant delay or queuing with the expected future traffic flow along the road.

Car Parking

The Development Application report outlines that the necessary parking arrangements for employees and other traffic will be provided on-site in accordance with the Northern Midlands Interim Planning Scheme.

Normally sites such as this have much more open space for vehicle parking and manoeuvring than required to meet all such requirements.

Amenity Considerations

The previous sections of this TIA report have considered the safety and efficiency of the road network that will be affected by traffic from the development site. The Council has requested consideration also be given to potential amenity issues.

The location of the quarry site is within a non-residential area with other industrial activity nearby and McGraths Road is a private road servicing industrial sites along this road.

Hobart Road is a collector road; it passes a small number of mixed commercial and residential developments to the south of McGraths Road, around Raeburn Road.

Due to the function of Hobart Road, the low number and setback of the dwellings in the Raeburn Road area, the quarry traffic will not have any adverse amenity impact in the area.

Planning Scheme Requirements

The relevant clauses of E4 Road and Railway Assets Code as well as Clause 26.3.1 P4 (c) of the Northern Midlands Interim Planning Scheme (2013) have been addressed in this report.

7. SUMMARY AND RECOMMENDATIONS

This Traffic Impact Assessment has been prepared in support of the development application to the Northern Midlands Council for the construction of a basaltic rock quarry at the end of McGraths Road.

The assessment has reviewed the existing road and traffic environment along Hobart Road in the area of the development site and the local private road (McGraths Road) that will provide access to the quarry site. No traffic issues have been identified in the area around Hobart Road or McGraths Road, where the quarry traffic will pass.

In the area of the McGraths Road junction, Hobart Road is sealed to a width of around 12.0m with around 0.8m wide gravel shoulder along the eastern side and 2.2m wide gravel shoulder along the western side. There are two traffic lanes for southbound traffic with the transition merge markings to one lane through the junction and one lane for northbound traffic.

McGraths Road is sealed to a width of around 7.3m just east of the Hobart Road junction. The sealed road ends some 350m east of Hobart Road and the gravel road continues around another 1.15km further east. Most of the road length is one lane in width and there are a series of passing bays for the full length of this one lane section.

The average weekday traffic volume on Hobart Road past McGraths Road is around 5,000 vehicles/day. It has been estimated the daily traffic along McGraths road would currently be around 150 vehicles/day.

The DSG crash database has record of 16 reported crashes at the Midland Highway intersection and six link crashes along the section of Hobart Road between the Midland Highway and Marchington Drive for the last five years since January 2012.

The Midland Highway/Hobart Road/Evandale Road intersection area is currently under reconstruction which will result in changed traffic patterns and improved safety.

All the link crashes along Hobart Road occurred to the north of the McGraths Road junction with three crashes due to loss of control, one resulting in injury.

Overall the crash record is not of significant concern.

It has been estimated that the proposed quarry development will generate on average some 148 trucks/day and (say) up to 16 trucks/hour over a 10-hour working day.

The origin and destination for these vehicles will be via McGraths Road and along Hobart Road between the McGraths Road junction and the Midland Highway/Evandale Main Road intersection i.e. to south of McGraths Road.

The traffic conflict volume at the junction of McGraths Road with Hobart Road in ten years' time with the quarry at full production will be approaching 600 vehicles/hour.

Traffic volumes of up to 1,500 vehicles/hour can generally be accommodated between conflicting traffic streams at intersections or junctions before traffic problems can begin to arise.

There clearly will not be any traffic flow efficiency issues at this junction or at any other junction in the immediate area that will be used by quarry traffic.

Overall the traffic in the area will continue to operate efficiently well into the future.

Consideration has also been given to the safe movement of vehicles through the junction and in particular whether any passing or auxiliary lanes may be required.

Based on the current and future conflicting through and turning traffic volumes at the McGraths Road/Hobart Road junction, there should be at least a BAR type treatment on Hobart Road for northbound traffic. Such a treatment is justified with current traffic movements.

It is therefore recommended the seal along the western side of the road be widened to create a standard sealed BAR treatment with a 6.0m width opposite the McGraths Road junction plus 0.6m wide sealed shoulder and an edge line installed along the sealed shoulder for the length of the BAR treatment.

An assessment has been undertaken of the available sight distances at the junction of McGraths Road with Hobart Road. The available sight distances were found to exceed these minimum requirements.

The quarry will increase the traffic volume along McGraths Road by up to 16 vehicles/hour so that in the future the hourly traffic volume will be around 40 – 50 vehicles/hour, allowing for some additional traffic to and from existing businesses.

The additional traffic will not adversely impact on the efficient movement of vehicles along the road. There clearly will not be any issue where the road is wide enough to accommodate two lanes of traffic. Where the road is wide enough for only one lane of traffic, there are regular passing areas along the road to allow trucks to pass one another without incurring any significant delay or queuing with the expected future traffic flow along the road.

Overall requirements of the planning scheme have been addressed in this report and it has been concluded that the proposed quarry development can be supported on traffic grounds as it will not give rise to any adverse safety or operational traffic issues

Attachment 6 Erosion control assessment and sediment basin concept design

EROSION CONTROL ASSESSMENT & SEDIMENT BASIN CONCEPT DESIGN

FOR VAN DIEMEN CONSULTING

COCKED HAT HILL QUARRY

Breadalbane

May 2017

HYDRODYNAMICA
44 PENQUITE ROAD LAUNCESTON TAS 7250
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HYDRODYNAMICA

Project: Cocked Hat Hill Quarry Rainfall Runoff Volume & Sediment Capture Assessment

Authors: Cameron Oakley
Consulting Engineer
BEng (Hons), BTech (Env.), MBA

HYDRODYNAMICA

DATE	NATURE OF REVISION	REVISION NUMBER
15/05/2017	Draft for Review	0
17/05/2017	Final	1

1. INTRODUCTION

The Cocked Hat Hill Quarry is proposed to be located on private freehold land at 833 Hobart Road Breadalbane, in the Northern Midlands municipality. The Mining Lease supports the existing McGraths Pit from which it is permitted to extract up to 50,000 m^3 per annum. The Cocked Hat Hill Quarry will occur to the west of McGraths Pit with the proposed maximum extents shown in Figure 1.

The Cocked Hat Hill quarrying operation will include the following activities:

- surface site preparation by soil removal and stockpiling;
- excavation and ripping of rock and gravel material;
- blasting to liberate rock;
- crushing of material into various size classes;
- stockpiling of material in quarry area;
- loading trucks with wheel loader from stockpile area in quarry; and the
- transport of materials by truck with/without trailer.

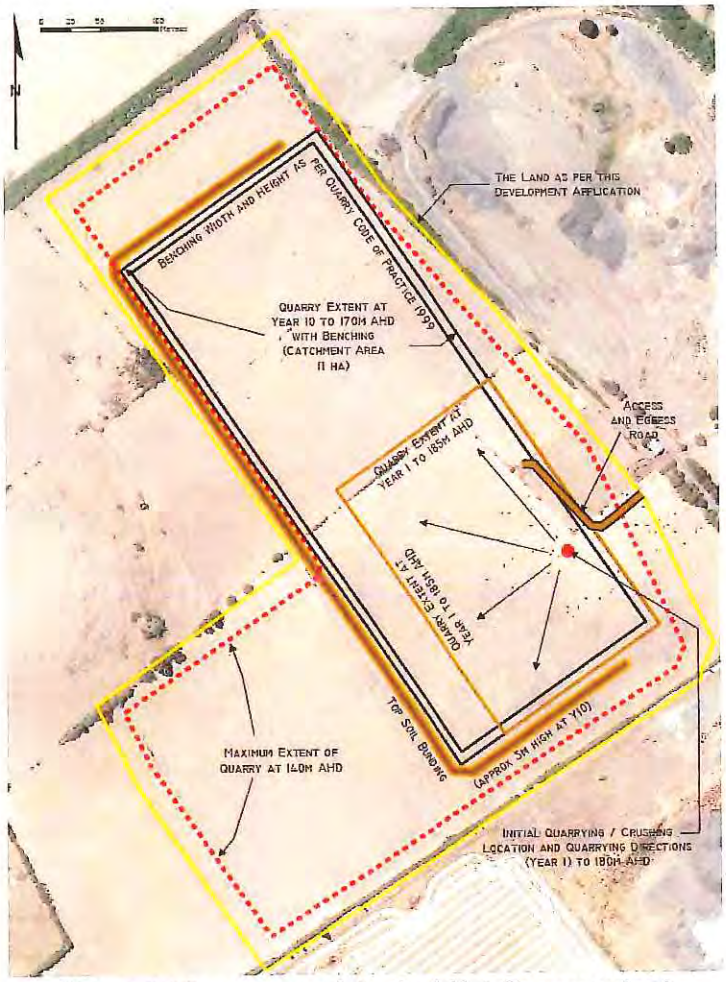


Figure 1. The proposed Cocked Hat Quarry extent

The quarry 'catchment' will peak at 11 hectares when at full maximum extent.

While the quarry is less than 2 hectares in area it is proposed that runoff will be controlled by directing it to a defined but *temporary* area within the quarry floor/void, thus preventing any eroded material from reaching the receiving environment in an uncontrolled manner. This water will then be pumped to a sediment basin for treatment before discharge. Measures would need to be established in the pit to avoid tracking machinery through the water storage area.

When the quarry area is between 2 hectares and its maximum 11 hectare footprint, it is foreseen that sediment removal will occur via a well-defined sediment basin within the pit itself, with pit-treated water pumped into another pond located outside the bunded area which then discharges to the receiving environment. This provides a double-treatment of water for sediment removal and also enables additional fines to be captured and re-used in the activity (eg for blending with the crushed material or for rehabilitation works).

This report describes an assessment of potential sediment-laden stormwater runoff from the site and provides indicative sediment basin capacities suitable for a 2 and 11 hectare quarry catchment area. The assessment was conducted using methodology contained in Landcom's Blue Book: *Volume 1 Managing Urban Stormwater- Soils and Construction - 4th Ed* (2004) and *Volume 2E Managing Urban Stormwater- Soils and Construction – Soils and Construction – Mines and Quarries* (2008).

2. DATA & ASSUMPTIONS

The methodology contained in the *Blue Book* is based on the Revised Universal Soil Loss Equation (RUSLE) to predict the long term, average, annual soil loss from sheet and rill flow under specified management conditions (Landcom, 2004). This enables sedimentation basins to be designed to effectively mitigate sediment pollution to downstream lands and waterways.

The methodology takes into account the ability of rainfall to cause erosion which has been found to be a function of the 2 year ARI (0.5EY) 6-hour rainfall intensity. This site specific rainfall intensity was obtained from the Bureau of Meteorology's (BOM) rainfall Intensity-Frequency-Duration (IFD) for the site. Table 1 shows a total rainfall depth of 29.6 mm which has been divided by the 6-hour event duration to provide an average intensity of 4.88 mm/hr.

Location

Label: Breadalbane

Latitude: -41.522000 [Nearest grid cell: 41.5125 (S)]

Longitude: 147.197341 [Nearest grid cell: 147.1875 (E)]

Very Frequent Design Rainfall Depth (mm)

Issued: 15 May 2017

Rainfall depth for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

Table | Chart

Unit: mm

	Exceedance per Year (EY)							
Duration	**12EY**	**6EY**	**4EY**	**3EY**	**2EY**	**1EY**	**0.5EY#**	**0.2EY***
1 min	0.494	0.558	0.676	0.765	0.900	1.16	1.42	1.73
2 min	0.903	1.03	1.24	1.40	1.63	2.02	2.48	2.97
3 min	1.19	1.35	1.64	1.85	2.15	2.68	3.28	3.93
4 min	1.42	1.61	1.95	2.20	2.56	3.21	3.93	4.74
5 min	1.61	1.83	2.22	2.50	2.91	3.67	4.49	5.43
10 min	2.37	2.67	3.21	3.61	4.21	5.33	6.54	7.97
15 min	2.95	3.31	3.95	4.43	5.15	6.50	7.98	9.75
30 min	4.27	4.73	5.57	6.21	7.15	8.94	11.0	13.3
1 hour	6.05	6.66	7.77	8.59	9.80	12.0	14.7	17.7
2 hour	8.30	9.12	10.6	11.7	13.2	16.0	19.5	23.1
3 hour	9.81	10.8	12.5	13.8	15.6	18.8	22.9	26.8
6 hour	12.7	14.0	16.3	17.9	20.3	24.4	29.6	34.4
12 hour	15.8	17.5	20.5	22.7	25.8	31.2	37.8	43.8

Note:
The 0.5 EY design rainfall corresponds to the 2 year Average Recurrence Interval (ARI) IFD **not** the 50% AEP IFD.
* The 0.2 EY design rainfall corresponds to the 5 year Average Recurrence Interval (ARI) IFD **not** the 20% AEP IFD.

Table 1. BOM IFD Data for Breadalbane
http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016)

For developments which are ongoing for more than 3 years and which discharge to sensitive receiving environments the Blue Book *Volume 2E - Managing Urban Stormwater- Mines and Quarries* (Landcom, 2008) recommends designing sediment basins to provide adequate volume to retain the 5-day, 95th-percentile rainfall event. That means that the basin will have

the capacity to retain the volume of water generated by 95% of all 5-day rainfall accumulations.

There are several BOM stations in the vicinity of Breadalbane which have historically collected daily rainfall accumulations. Some of these were closer to the quarry site but have a limited amount of data:

Station No.	Station Name	Distance from the quarry (Km)	Years of data	Completeness
91317	Relbia	1.03	16.4	94%
91222	Breadalbane	1.43	27.7	98%
91104	Launceston Airport	2.02	77.8	99%

Table 2. Daily rainfall data for stations in the vicinity of the Cocked Hat Quarry

Station number 91104 has the longest and most complete data set near the quarry. The data produced a 5-day (95th percentile) rainfall accumulation of 36 mm. A metadata summary for the station is included in Appendix B.

In addition to rainfall data the RUSLE considers the combined effect of slope length and gradient on soil loss. To inform these calculations the average site slope was determined along with the maximum flow path from the top of the catchment to the low point where all runoff would be diverted.

Finally, Table F3 in Volume 1 of the Blue Book recommends volumetric runoff coefficients (C_v) based on design rainfall depth and the site soil hydrologic group. From discussions with Dr Richard Barnes (VDC) it was determined that soil hydrologic group B defined by Landcom (2004) best described the soil:

> *Low to moderate runoff potential. Water moves into and through these soil materials at a moderate rate when thoroughly wetted. Usually, they consist of moderately deep (>0.5 metres), well-drained soils with medium, loamy textures or clay loams with moderate structure. They shed runoff only infrequently.*

This gives a recommended C_v coefficient of 0.34 (34%).

3. SOIL LOSS CALCULATIONS

The following tables show the assumptions and calculations used to determine the minimum basin capacity required to effectively remove sediment. It determines the sediment zone volume of the basin, which is the volume needed to hold captured sediment, and the settling zone volume, which is the volume required to facilitate efficient settling.

Table 3 calculates the total volume of detention required to facilitate the collection of sediment over the duration of a maintenance period for maximum disturbed catchment size of 2 hectares.

Table 4 calculates the total volume of detention required to facilitate the settlement of sediment based on the total volume of the design storm depth.

Table 5 aggregates the total of sediment zone and settling zone. The first part shows the basin size recommended utilising an annual cleanout, the second utilising a biannual cleanout.

Catchment Area	Value	Remarks
Total catchment area (ha)	2	Data provided by VDC
Disturbed catchment area (ha)	2	Assume 100% disturbed
Rainfall data		
Design rainfall depth (days)	5	Ref Vol.2E Table 6.1
Design rainfall depth (percentile)	95	Assumed 'sensitive' receiving environment and operations for > 3 years
5-day, 95th-percentile rainfall event (mm)	36	Launceston Airport rainfall record, BOM station 91104
Rainfall intensity: 2-year, 6-hour storm (mm/hr)	4.88	See IFD data for the site
RUSLE Factors		
Rainfall erosivity (*R*-factor)	790	Automatic calculation from above data
Soil erodibility (*K*-factor)	0.05	RUSLE data can be obtained from Vol 1, Appendixes A, B and C
Slope length (m)	300	Provided by VDC
Slope gradient (%)	5.24	Based on an average slope of 3 degrees
Length/gradient (*LS*-factor)	3.25	Vol. 1 Table A 1
Erosion control practice (*P*-factor)	1.3	Default
Ground cover (*C*-factor)	1	Default
Calculations (Sediment Zone Volume)		
Soil loss (t/ha/yr)	167	
Soil Loss Class	2	See Section 4.4.2(b)
Soil loss (m^3/ha/yr)	128	
Soil Loss Volume (Sediment Zone Volume) (m^3)	257	Based on an annual cleanout period
Soil Loss Volume (Sediment Zone Volume) (m^3)	128	Based on an 6 month cleanout period

Table 3. Detention basin sediment collection zone sizing (2 ha catchment)

		Remarks
Disturbed catchment area, A (ha)	2	
Volumetric runoff coefficient, C_v	0.34	Vol.1 F-3, Soil Hydrologic Group B
5-day, 95th-percentile rainfall event	36	Launceston Airport rainfall record, BOM station 91104
Settling Zone Volume (m3)	245	Automatic calculation from above data

Table 4. Detention basin sediment settling zone sizing (2 ha catchment)

Total Basin Volume = Settling Zone Volume + Sediment Zone Volume (based on annual cleanout)

Scenario	1
Sediment Zone Volume (m^3)	257
Settling Zone Volume (m^3)	245
Total Required Capacity (m^3)	502

Total Basin Volume = Settling Zone Volume + Sediment Zone Volume (based on 6 month cleanout)

Scenario	2
Sediment Zone Volume (m^3)	128
Settling Zone Volume (m^3)	245
Total Required Capacity (m^3)	373

Table 5. Total sediment basin capacity requirements (2 ha catchment)

Table 6 aggregates the total of sediment zone and settling zone for the maximum 11 hectare catchment size:

Total Basin Volume = Settling Zone Volume + Sediment Zone Volume (based on annual cleanout)

Scenario	1
Sediment Zone Volume (m^3)	1412
Settling Zone Volume (m^3)	1346
Total Required Capacity (m^3)	2759

Total Basin Volume = Settling Zone Volume + Sediment Zone Volume (based on 6 month cleanout)

Scenario	2
Sediment Zone Volume (m^3)	706
Settling Zone Volume (m^3)	1346
Total Required Capacity (m^3)	2052

Table 6. Total sediment basin capacity requirements (11 ha catchment)

Table 7 shows the staged volume requirements for a sediment removal basin (or a series of smaller basin that total to the required volume amount) as the disturbed catchment created by the expansion of the quarry increases over time, up to a maximum of 11 hectares.

Catchment Size (ha)	Total Basin Capacity (biannual cleanout) (m^3)	Total Basin Capacity (annual cleanout) (m^3)
2	373	502
3	591	784
4	746	1003
5	933	1254
6	1120	1505
7	1306	1755
8	1493	2006
9	1679	2257
10	1866	2508
11	2052	2759

Table 7. Recommended basin sizes relative to contributing catchment area

4. CONCLUDING STATEMENTS

A sediment basin (or series of basins) is required to treat sediment-laden runoff from the quarry. While the development is 2 hectares in size all stormwater will initially drain to a defined but *temporary* area within the quarry floor before being pumped to the sediment basin that sits outside the pit/void – likely to be built on pasture adjacent to the pit. The basin needs to be 502 KL in volume and requires an annual cleanout of collected sediment. The size could be reduced to 373 KL under a biannual cleanout regime. Appendix A shows three potential basin concept design examples which are appropriate.

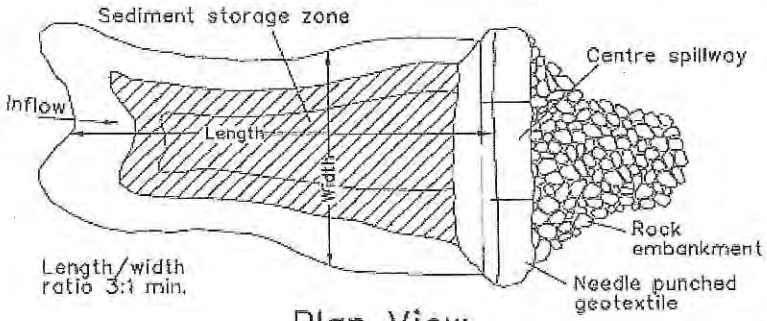
Treated water may drain from the sediment basin direct to the receiving environment or via a secondary holding basin before being pumped away or used in the activity or for agricultural irrigation on the property or other use.

After the quarry footprint reaches approximately 2 hectares it is anticipated that there will be sufficient space to provide treatment within the pit. The peak developed quarry catchment will be 11 hectares, which will require a basin of between 2.05 and 2.75 ML, depending on the cleanout frequency. The volume needing to be captured and treated within the pit increases over time as illustrated by Table 7. The operator could achieve the volume required by establishing the in-pit defined water storage area **and** utilising the basin outside the pit that was established when the pit was smaller than approximately 2 hectares. It is recommended that machinery and other vehicles be managed such that they do not track through the sediment basin system.

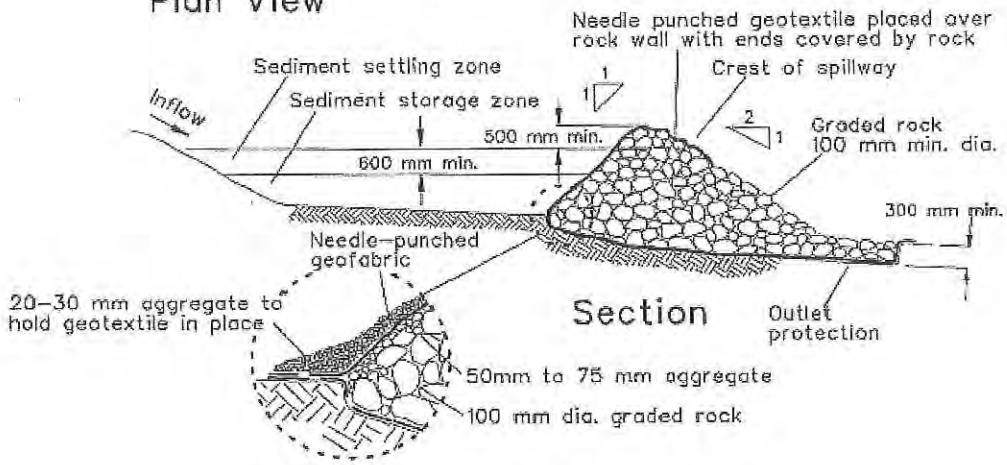
Sediment accumulation rates should be monitored and the maintenance program revised as required.

APPENDIX A

SEDIMENT BASIN CONCEPT DESIGNS

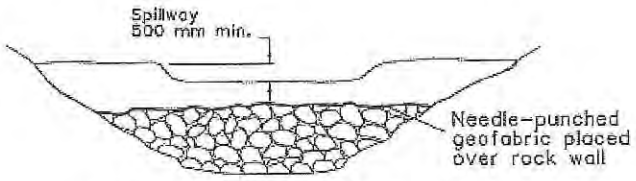


Plan View



Section

NOTE:
Spillway width and depth, wall crest width and downstream outlet protection measures to be specified on SWMP.

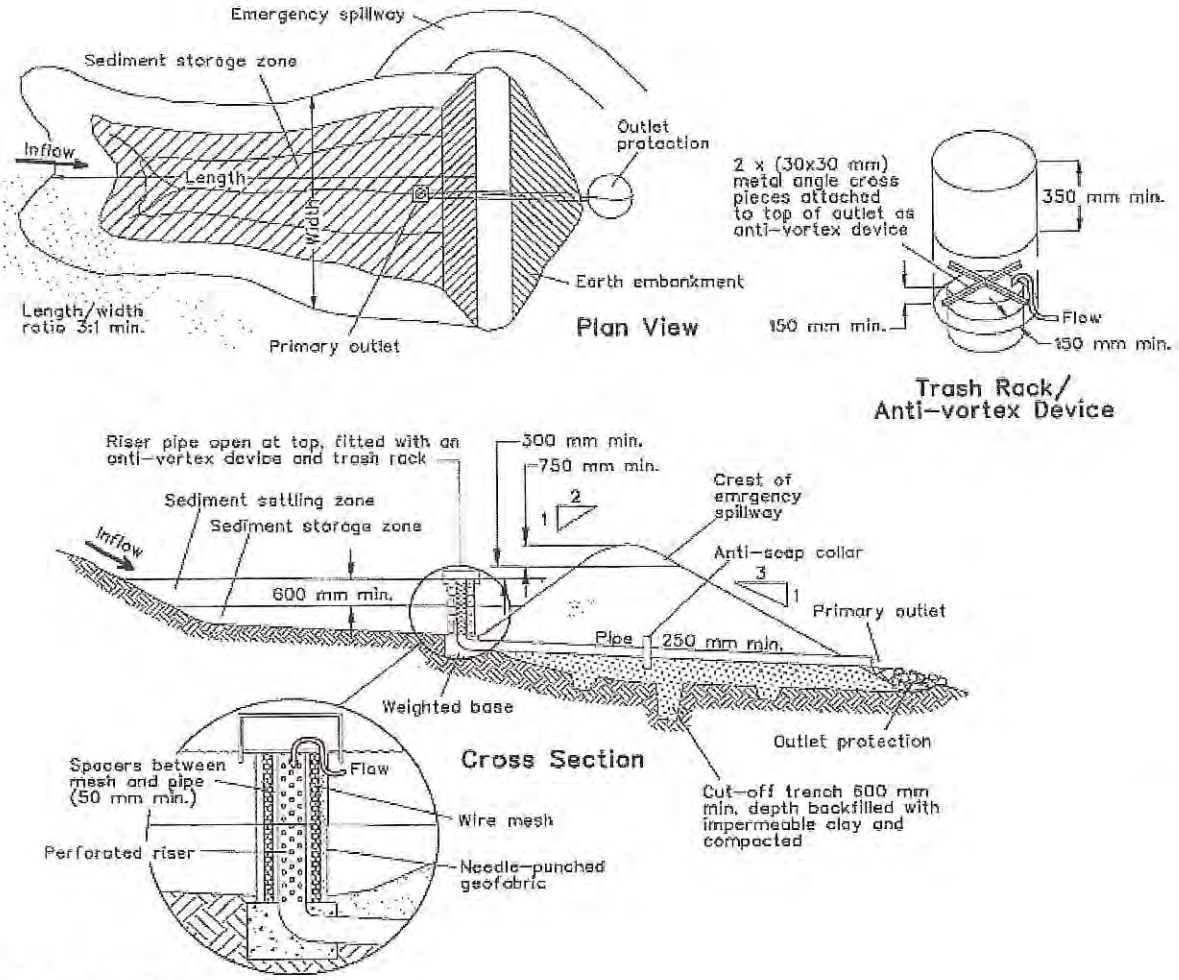


Downstream Elevation

Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Excavate to 300 mm depth for base of the dam wall.
3. Line the excavation with a needle-punched geotextile allowing sufficient to line below the wall, and over the upstream rock and the spillway to 500 mm below the spillway exit on the downstream face.
4. Make up the wall profile and outlet protection with100 mm (min.) diameter graded rock. Spread a layer of 50 mm to 75 mm diameter aggregate over the upstream batter for a more even surface, and add 100 mm to 150 mm of 20 mm to 30 mm gravel over the 50 mm to 75 mm diameter aggregate.
5. Lay geotextile over the upstream batter and through the spillway, fixing in place with 100 mm rock.
6. Place a "Full of Sediment" marker to show when less than design capacity occurs and sediment removal is required.
7. Replace the upstream geotextile layer each time sediment is removed

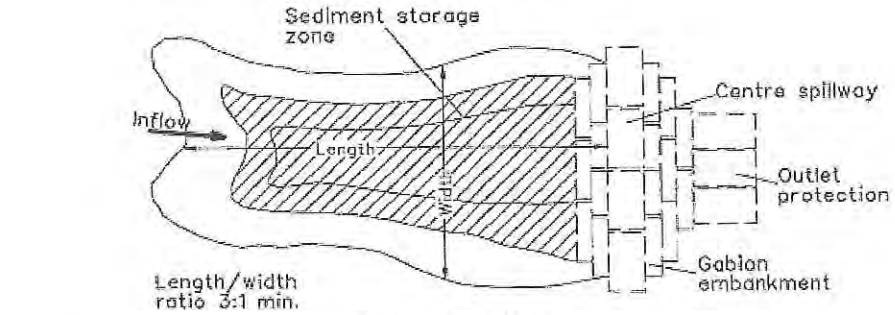
Reference: Blue Book, Volume 1.



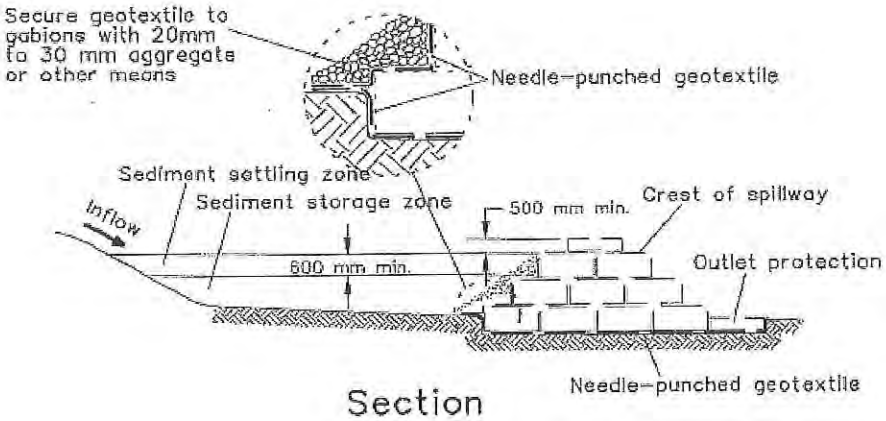
Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Form a cut off trench under the centreline of the embankment 600 mm deep and 1,200 mm wide, extending to a point on the watercourse wall above the riser sill level.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill according to the SWMP that is free from roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond the compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Install the pipe outlet with seepage collars as specified in the SWMP and Standard Drawing 6-3b.
8. Form batter grades at 2(H):1(V) upstream and 3(H):1(V) downstream or as specified in the SWMP

Reference: Blue Book, Volume 1.



Plan View



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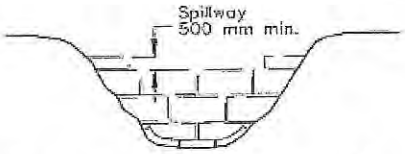


Downstream Elevation

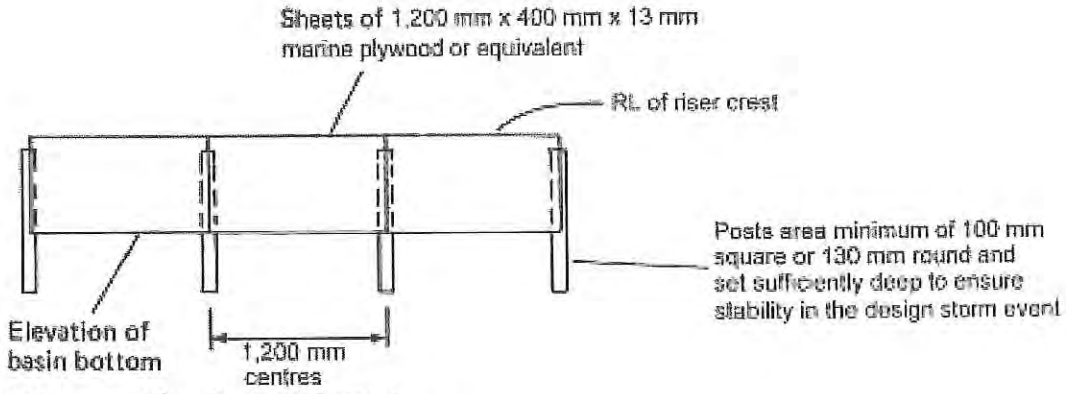
NOTE: Spillway width and depth, wall crest width and downstream outlet protection measures to be specified on SWMP.

Construction Notes

(Applies to Type C soils only)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Excavate to 300 mm depth for the base of the dam wall and form a level platform for the gabions.
3. Line the excavation with a needle-punched geotextile allowing sufficient to line below the wall, and over the upstream gabions and spillway to 500 mm below the spillway exit on the downstream face.
4. Make up the wall profile and outlet protection with gabion units filled with graded rock as specified on the SWMP.
5. Construct a spillway 500 mm below the crest of the dam and for the width specified on the SWMP.
6. Lap the geotextile over the upstream face and through the spillway and fix it in place with the top row of gabions.
7. Cover the upstream face of the wall with 20 mm to 30 mm gravel and geotextile (Standard Drawing 6-2b)
8. Place a "Full of Sediment' marker to show when less than design capacity occurs and sediment removal is required.
9. Replace the upstream geotextile layer when sediment is removed if a dry basin is required.

Reference: Blue Book, Volume 1.



Reference: Blue Book, Volume 1.

APPENDIX B

BOM METEOROLOGICAL STATION METATDATA

Australian Government
Bureau of Meteorology

1-338

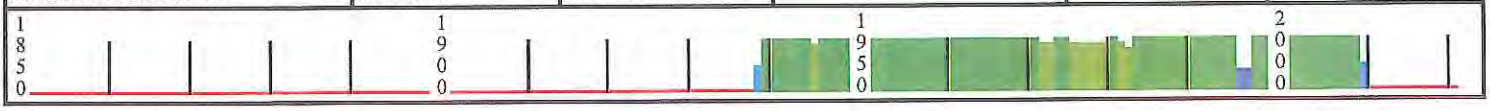
Basic Climatological Station Metadata

Current status

Station:	LAUNCESTON AIRPORT COMPARISON			**Location:**	LAUNCESTON AIRPORT COMPARISON			**State:**	TAS
Bureau No.:	091104	**WMO No.:**	?	**Aviation ID:**	NO ID	**Opened:**	01 Jan 1931	**Current Status:**	Closed
Latitude:	-41.5397	**Longitude:**	147.2033	**Elevation:**	166 m	**Barometer Elev:**	178 m	**Metadata compiled:**	28 JUL 2016

RAINFALL INTENSITY DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	SINGLE DAYS MISSED	FULL MONTHS MISSED
RAINFALL INTENSITY	JUL 1938	JUN 2009	93.3	1204	17



ONE-MINUTE DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	FREQUENCY average daily	SINGLE DAYS MISSED	FULL MONTHS MISSED
ALL ELEMENTS	DEC 2001	JUL 2004	98.4	1417.0	N/A	1

HALF-HOURLY DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	FREQUENCY average daily	SINGLE DAYS MISSED	FULL MONTHS MISSED
ALL ELEMENTS	OCT 1990	JUN 2009	84.4	40.5	N/A	0

THERE ARE NO UPPER-AIR EDT DATA HOLDINGS

Holdings calculated up to 01 Jul 2016

The % complete figure is the completeness of observations averaged over all months of record, for the given station and observation type, taking gaps into account. For hourly holdings, the completeness is relative to the maximum number of daily observations for the site each month, and is therefore an estimate. For daily holdings, the completeness figure shown is exact.

The single days missed figure is the total number of days for which no observation was received, not including full missed months. The full months missed figure is the total of full month gaps over the period of record. Where an element is not included assumptions can generally be made about availability, and the list to use has been suggested below.

Unlisted element	Listed element to use
Minimum air temperature	Maximum air temperature
Wet bulb temperature	Dew point
Soil temperature at 20, 50 & 100cm	10cm soil temperature
Relative humidity	Dew point
Minimum temp. of water in evaporimeter	Evaporimeter - max water temp
Visual observations eg. weather, visibility	Total cloud amount
Sea related observations	Sea state

Prepared by the Bureau of Meteorology.
Contact us by phone on (03) 9669 4082, by fax on (03) 9669 4515, or by email on climatedata@bom.gov.au

Attachment 7	Cocked Hat Hill quarry - environmental noise, ground vibration and air blast overpressure assessment

Van Diemen Consulting

Cocked Hat Hill quarry environmental noise, ground vibration and air blast overpressure assessment

Report No. 5014_AC_R

TARKARRI ENGINEERING PTY LTD
PO Box 506
Kings Meadows TAS 7249

May 2017

Tarkarri Engineering

Air Quality • Acoustics • Environment • Vibration

DOCUMENT CONTROL

VAN DIEMEN CONSULTING
COCKED HAT HILL QUARRY
ENVIRONMENTAL NOISE, GROUND VIBRATION AND AIR BLAST OVERPRESSURE ASSESSMENT

Report No.
5014_AC_R
Prepared for
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Revision History

Revision No.	Date Issued	Reason/Comments
0	18/5/2017	Comments from VDC

Distribution

Copy No._____	Revision No.	Location
1	1	Project/Client File
2	1	Client
3	1	Tarkarri Engineering Library

Keywords environmental noise, ground vibration, air blast overpressure

Table of Contents

List of figures

List of tables

References

1] Office of Surface Mining Reclamation and Enforcement (http://www.osmre.gov/).

[2] Dept. of Primary Industries, Water and Environment (1999) Quarry Code of Practice.

[3] SoundPLAN Acoustic modelling software - Braunstein & Berndt GmbH.

[4] CONCAWE The oil companies' international study group for conservation of clean air and water – Europe (est. 1963) report 4/81.

Executive Summary

Tarkarri Engineering was commissioned to undertake an environmental noise, ground vibration and air blast overpressure assessment of operations of a proposed quarry at Cocked Hat Hill, Breadalbane, as part of a DPEMP.

Conservative noise emission criteria were adopted as follows:-

- $L_{Aeq,10min}$ **46 dBA**: Day (**0700 to 1800 hrs**).
- $L_{Aeq,10min}$ **40 dBA**: Evening (**1800 to 1900 hrs**).

Predicted noise emission levels from operations within the quarry boundary and haulage activity between Hobart Rd and the quarry were below the project noise emission criteria. Bunding along the pit edge and north-east boundary of the property at 805 Hobart Rd provides necessary shielding from noise emissions generated on the mine lease, particularly during early development phases.

Predicted ground vibration and air blast overpressure levels with a charge mass/ delay of 50 kg exceed human comfort criteria at critical receiver locations when blasting at certain locations within the lease. Recommendations are provided to meet human comfort criteria with a focus on blast design and orientation, and development of site specific scaled regressions to improve prediction.

1 Introduction

Tarkarri Engineering was commissioned by Van Diemen Consulting (VDC) on behalf of Mt Oriel Breadalbane to conduct an environmental noise, ground vibration and air blast overpressure assessment for a proposed quarry on the southern and eastern slopes of Cocked Hat Hill, Breadalbane. The assessment forms part of a Development Proposal and Environmental Management Plan (DPEMP). VDC have requested 'In addition to the matters stipulated in section 4.4 of the DPEMP General Guidelines the DPEMP must contain the following:-

- Location of all significant noise sources.
- All major sources of noise and vibration must be identified and described. Potential noise sources include drilling, blasting, materials handling (including sorting material, loading of material and transportation of the material within the land), materials processing, reversing alarms on mobile equipment, and transportation off the land.
- A description of land use and ownership in the vicinity of the site and those areas which may be affected by the proposal including any residential premises and subdivisions.
- A report on estimated air blast overpressure and ground vibration at nearby residences, structures and other premises (including tourism facilities), for typical proposed blasting.
- Proposed measures to mitigate noise and blasting impacts.

The relevant section in the DPEMP General Guidelines in relation to noise emissions is provided below:-

6.4 Noise emissions

Discuss impacts of the proposal on ambient (surrounding) noise levels (during both the construction and operational phases), including:-

- Identifying and describing all major sources of noise.
- A map of the location of all major sources of noise.
- Considering the potential for noise emissions (during both the construction and operational phases) to cause nuisance for nearby land users.
- The potential for noise emissions to affect terrestrial, marine and freshwater wildlife and livestock.

To address the above Tarkarri Engineering proposed the following approach:-

Environmental noise

- Ambient noise monitoring to establish typical ambient noise conditions in the area.
- Develop source sound power spectra for the major noise emitting equipment on site.
- Construct an environmental noise model of quarry operations using SoundPLAN.
- Predict noise levels at residential locations within 2 km of the quarry and assess against ambient noise levels and relevant regulations and guidelines including Quarry Code of Practice

Ground vibration and air blast overpressure

- Develop square root and cube root scaled regressions for the production of ground vibration and air blast overpressure.
- Predict potential ground vibration and air blast overpressure levels at residential locations within 1 km of the mine and assess against limits for human comfort.
- Provide charge mass limits and mitigation strategies to maintain levels at residences within limits for human comfort.

Ground vibration and air blast overpressure prediction is typically conducted using site specific scaled regression equations developed from monitored data from multiple blasts measured at multiple locations. Such data is not available and given this Tarkarri Engineering has sourced regression equations developed by the *Office of Surface Mining Reclamation and Enforcement*[1] in the USA from their extensive data sets. Some recent data from blasting at the adjacent McGraths Pit which operates in the same geologic formation has been provided to Tarkarri Engineering and will be considered in this assessment.

2 Site description

The Cocked Hat Hill quarry lease is located in Breadalbane approximately 10 km south south-east of the centre of Launceston and 3 km north of the Launceston Airport. The lease is located on the southern and western slopes of Cocked Hat Hill. The hill itself is near the top of a generally north north-west to south south-east trending ridgeline that separates the Midlands Highway and Relbia area.

Two locations within the lease, the northern and south-western boundaries, were selected for the monitoring of ambient environmental noise.

Nine noise sensitive receiver locations were identified and these locations form the basis for the prediction of environmental noise emission, ground vibration and air blast overpressure levels from quarry operations.

Table 1 provides location information for each of the nine receivers along with the two position at which a logging sound level meter (SLM) was located for the measurement of ambient noise levels. Figure 1 shows an aerial view of the lease with the nine receiver locations and two SLM locations marked.

Environmental noise receiver and measurement positions		
Number	Location	Coordinates (MGA94, Zone 55 G)
1	803 Hobart Rd	516132 / 5403591
2	775 Hobart Rd	515951 / 5403663
3	713 Marchington Dr	515554 / 5404334
4	717 Marchington Dr	516093 / 5404519
5	336 Relbia Rd	516467 / 5404872
6	Josef Chromy Wines	517114 / 5405054
7	567 Relbia Rd	518370 / 5403536
8	843 Hobart Rd	515671 / 5402755
9	805 Hobart Rd (proposed dwelling yet to receive planning approval)	516193 / 5403495
SLM_1	Mine lease south	516233 / 5403493
SLM_2	Mine lease north	516286 / 5404110

Noise sensitive locations.

Table 1 – Environmental noise receiver and measurement positions.

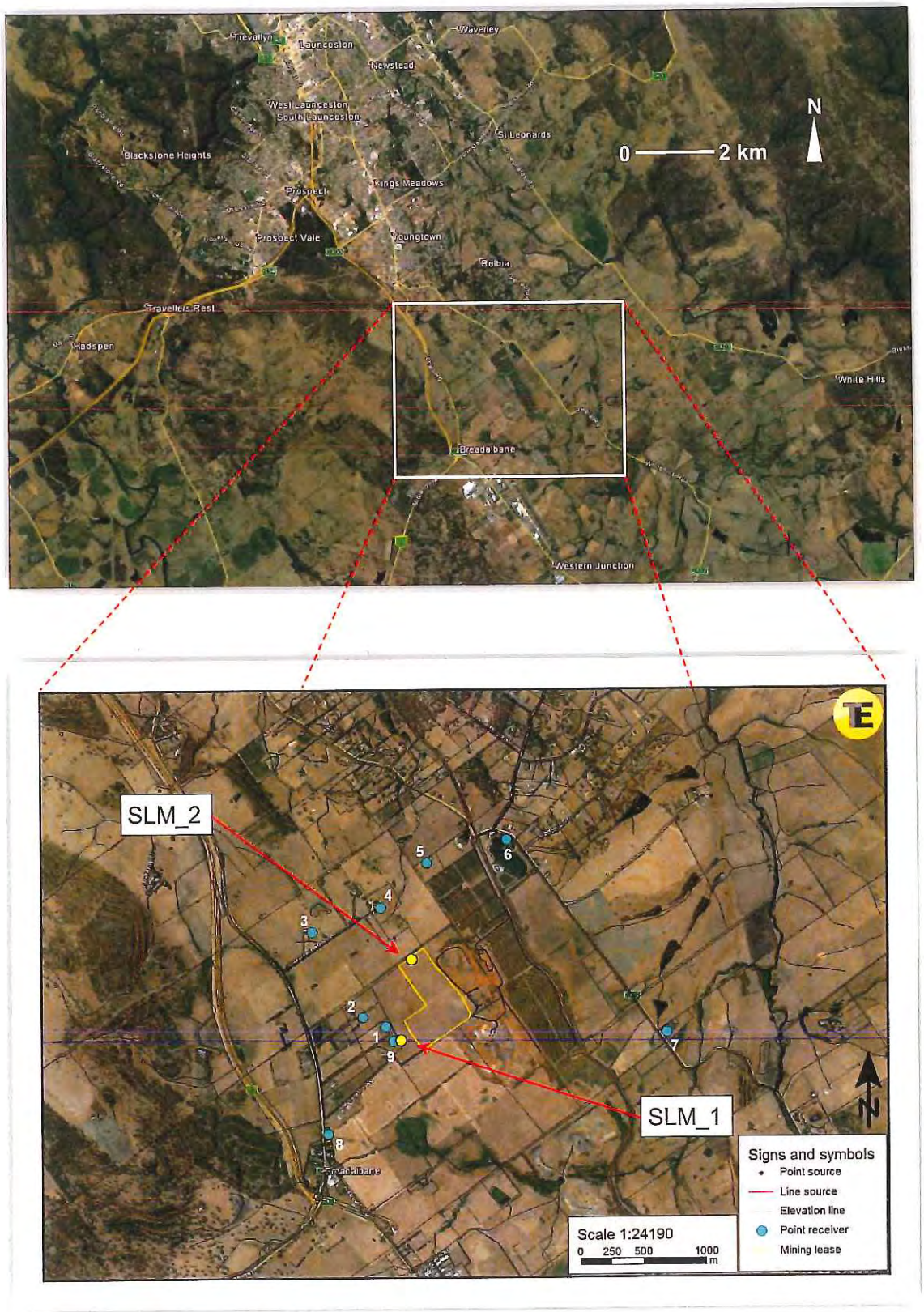

Figure 1 – Aerial view of the mine lease with environmental noise receiver and measurement positions marked.

The following information, provided in the VDC's Development Application (DA) supporting information, provides the proposed operating hours for the quarry; a list of mobile equipment to be used; and proposed extraction volumes and haul truck movements.

Table 1. Operating hours and times for blasting and crushing within the quarry

Operating Hours	Drilling and blasting	Crushing	Haulage
0600 to 1900 hrs Monday to Friday; 0800 to 1600 hrs on Saturday; and closed on Sunday and public holidays (those gazetted Statewide).	0800 and 1700 hrs Monday to Friday but closed on Sunday and public holidays (those gazetted Statewide).	0700 to 1700 hrs Monday to Friday but closed on Sunday and public holidays (those gazetted Statewide).	0700 to 1900 hrs Monday to Friday; 0800 to 1600 hrs on Saturday; and closed on Sunday and public holidays (those gazetted Statewide).

Excavators

- Komatsu Pc300-8 (30ton exc)
- Caterpillar 320DL (20 ton exc)
- Komatsu Pc200-8 (20 ton exc)

Crusher equipment

- Powerscreen 1400 chieftan twin deck screen
- Powerscreen metrotrac jaw crusher

Loader

- Volvo L150E Loader – loadrite scales
- Komatsu WA380 loader – loadrite scales

Bulldozer

- Caterpillar D9R with SU Blade and ripper
- Caterpillar D8R II with SU Blade and ripper

Other

- Trucks for haulage
- 15,000L capacity water cart truck
- Light vehicles for worker transport

Table 2. Examples of gravel supplies and associated truck generation

Type of Supply	Size of Supply	Period of Supply and Truck Movements
Campaign	20,000 tonnes using 30 t trucks (667 truckloads)	40 days = 17 trucks/day = 34 truck movements/day
Campaign	80,000 tonnes using 39.5 t trucks (2,025 truckloads)	60 days = 34 trucks/day = 68 truck movements/day

3 Environmental noise

3.1 Ambient noise environment

3.1.1 Ambient noise monitoring

A logging sound level meter (Larson Davis 824) was located at the SLM_1 position (see table 1 and figure 1) for a approx. 6 days measuring L_{eq} and L_{max}, L_{min}, L_1, L_{10}, L_{50}, L_{90} and L_{99} A-weighted sound pressure levels on a 10-minute basis between 24 February 2017 and 2 March 2017.

At the SLM_2 position (see table 1 and figure 1) a logging sound level meter (Larson Davis 831) was located for a approx. 9 hours measuring L_{eq} and L_{max}, L_{min}, L_1, L_{10}, L_{50}, L_{90} and L_{99} A-weighted sound pressure levels on a 10-minute basis on 2 March 2017.

Figures 2 and 3 provide photographs of the sound level meters at each of the measurement positions.

Figure 2 – Sound level meter at the SLM_1 position, view to the south.

Figure 3 - Sound level meter at the SLM_2 position, view to the north.

3.1.1.1 Monitoring results and discussion

Figures 3 and 4 present graphs of the main 10-minute statistical data logged at the two SLM position as follows:-

- L_{Aeq}: Ambient noise level
- L_{A10}: Represents transient noise levels
- L_{A90}: Considered the background noise level.
- L_{Amax}: Maximum fast response noise level.

For sake of clarity the other 5 data sets are not shown in these graphs. For the extended monitoring period at the SLM_1 position only data covering from one hour before the proposed commencement of operations (0600 hrs and 0800 hrs on Saturdays) to one hour after the proposed cessation of hauling (1900 hrs and 1600 hrs on Saturdays) is presented.

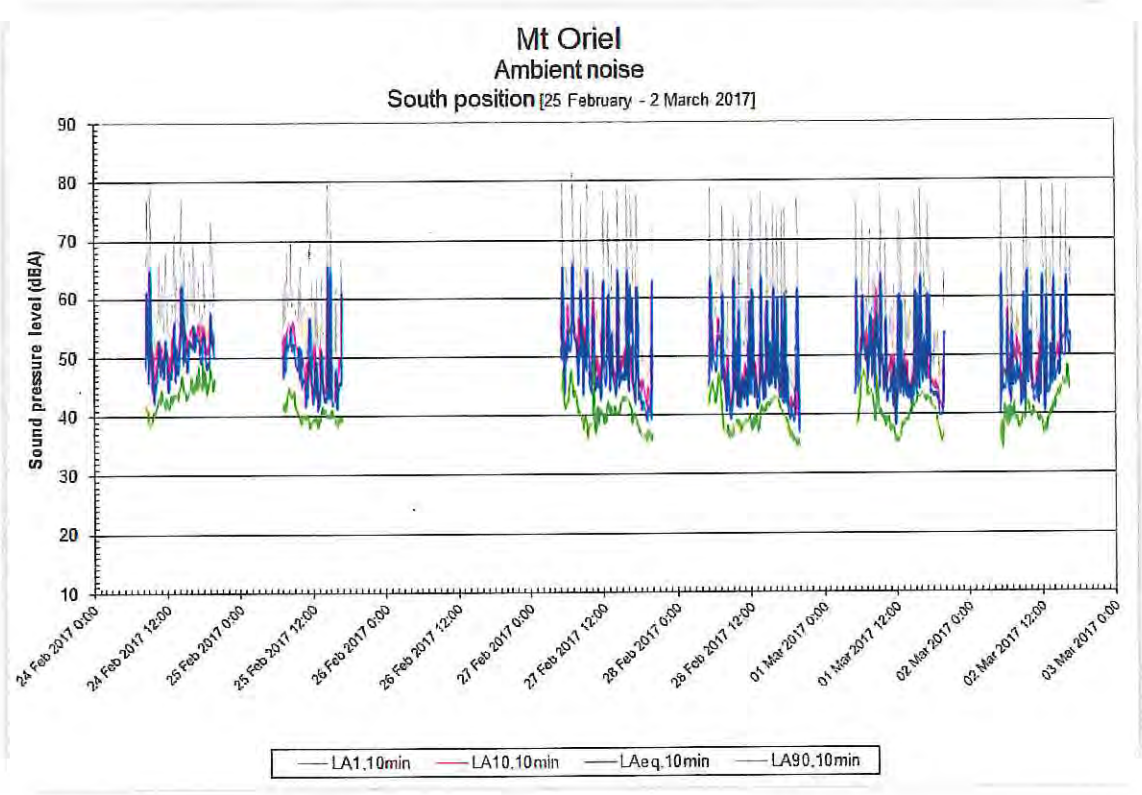

Figure 4 – Monitored Ln-statistics, position SLM_1.