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Proposed Development and Environmental Management Plan
Level 2 Activity
September 2008

- Quarry Site -
Gravel Pit Road
Nook, Tasmania

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Forward

The current Riley Quarry is a valuable source and supplier of a full range of quality, tested and approved products to the local civil, building and construction industries.

A Level 1 land use permit, (DA 02/10), issued by the Kentish Council and Mining Lease 1M/2002 are currently in effect for the present operations.

After initial trials and equipment setup, current market conditions indicate that the resource is increasingly being sought after and hence the need to extend the licensing to a Level 2 activity.

A Notice of Intent was submitted in December 2007 followed by respective departmental site inspections and discussions on the future management of the site.

The function of this DPEMP is to provide information:-

► to seek approval for a Level 2 activity under Section 74 of the Environmental Management and Pollution Control Act 1994

► for assessment by the Board of Environmental Management and Pollution Control

► on planning aspects for assessment by the Kentish Council

► as a management reference to ensue compliance with regulatory requirements.

► on the current workings, activities and impacts.

► as a management tool for future extraction operations
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1.0 Introduction

1.1 Proposal Title: Mining Lease 1M/2002.
Riley Quarry Products,
Gravel Pit Road,
Nook.
Tasmania. 7306

The existing lease is defined by the Gravel Reserve land parcels 0346 and 0347, land parcel 0348, plus a small section of the adjoining State Forest to the east.

1.2 The Proponent

Business Name: AG & BJ Riley
156 Claude Road (PO Box 65)
Sheffield
Tasmania 7306

AG & BJ Riley have successfully operated an earthmoving and plant hire business at Sheffield for the past 30+ years.

The business is experienced in all aspects of the earthmoving industry and has equipment to service small to medium contract work along the North West coast.

- Excavators...3.5 to 22 tonnes
- Graders
- Trucks
- Small plant
- Rollers
- Quarry crushing and screening plant.
- Service vehicles

The business is experienced in subdivision construction, quarrying operations, road construction, earth-wall dam construction and cleaning, forestry operations and general earthworks for the building and construction industry.

Financially, AG & BJ Riley has the capacity to manage the proposed Level 2 quarry activity.

History shows that the business has stood the test of time through all economic phases and has a sound financial base.

AG & BJ Riley have been excellent financial managers with the business owning all plant and quarry equipment.
1.3 Background information

A Level 1 land use permit, (DA 02/10), issued by the Kentish Council, is currently in effect for the present operations.

History shows that the site was recognized as a gravel resource by proclaiming the two land parcels as “Gravel Reserve”.

The current mining lease (1M/2002), footprints over old pit workings abandoned by Kentish, Devonport and Latrobe Councils and the Public Works Department some 25 years ago and the mining leases were demised to the Mineral Resources Tasmania.

In the past, the extraction process(s) was mainly surface ripping, bulldozing and stockpiling over a vast area of the total leases.

The past lessees managed the site poorly by only “chasing” the easily extracted gravels and in doing so, exposed a large footprint for the amount of gravel won.

AG & BJ Riley purchased the current lease in 2002 with the intention of investigating, and possibly developing, a quarry.

Since then, this quarry has proven to be a viable operation, producing high quality products to local industries and community.

The material has been tested and exceeds the DIER R40 specification in its natural, unblended state.

1.4 The need for the proposal / future expansion

With increasing markets and a quality natural product, the old workings have proven to be viable and after initial trials, testing and setting up of a crusher/screening plant to suit the quarry rock, the lessee now proposes the operations be upgraded to a Level 2 Activity.

Current market conditions indicate that the resource is increasingly being sought after and also provides a broader service base and alternative product supply to the local building and construction industries.

1.5 Other Existing Quarries/Proposals

Geographically the proposal lies 1 km east of an existing bluestone quarry on the same access road and 2km distant from similar quartzite-conglomerate pits on the western side of Nook Road along the Barren Hill ridgeline. The bluestone quarry is operated by Boral and is set up with on-site crushing, screening and stockpile facilities. The other pits are smaller operations with minimal activity.

Directly 6km east lies the Australian Cement open cut and SE to Caroline Quarries

A similar quarry operation, as this proposal, is located some 10kms to the south west at Shackley Hill.

Generally this proposal is a higher quality resource, is Phytophthora Cinnamomi (PC) free, has lower environmental impact, much less visual impact and offers less challenging management issues for future sustainable operations.
1.6 Legislation

A Level 1 land use permit, (DA 02/10), issued by the Kentish Council, is currently in effect for the present operations.

For the Level 2 Activity proposal to proceed, assessment is now required under Section 74 of the Environmental Management and Pollution Control Act 1994 plus assessment under the Kentish Council Planning Scheme.

A NOI for the proposal has already been lodged.

1.7 Relevant Environmental Standards

- Environmental Management and Pollution Control Act 1994
- Kentish Council Planning Scheme
- Quarry Code of Practice

1.8 Public Consultation

To date the only public consultation process would have been during the issue of the Level 1 activity permit….2002 under the Kentish Council Planning Scheme.

Obviously, operational safety requires the site to be secure and any visitors to site are by appointment only.

Since activities began in 2002 there has not been one single complaint from local residents or customers.
The current and future management of the site requires a complaints register to be available at all times.

Future public consultation will be undertaken as part of this proposal's assessment.

2.0 Proposal Description

2.1 Proposal Outline
The proposal is for a Level 2 quarry activity where the rock is blasted, hauled, crushed, screened and stockpiled, all, on-site, within the mining lease.

The quarry products are sold ex-pit or delivered to customers throughout the NW Coast.

2.1.1 The Resource
Geology
The entire Gravel Reserve lease area is a quartzite-conglomerate rock, producing a hard wearing and versatile product for road construction and the general civil construction industry.

Soils
Where undisturbed, the natural topsoil is rather shallow at about 100-150mm and consists mainly of a sandy loam.

Where current operations have commenced, these topsoils have been stockpiled for future rehabilitation use.

Resource Availability
Gravel Reserve 0347 site contours allow for and outline extensive rock reserves from RL 320m to RL 395m, over a final footprint area of some 15ha which will be approximately 45 percent of this reserve area.

*Rough volume estimate of the hill is approx. 2.5M m3 solid ……7.0M tonnes
……..@ a density of 2.80t per cubic metre.*

The anticipated working life of the quarry is difficult to assess, however, based on the above volume at this early stage, an estimate would be in the order of 80 to 100+ years.

Old workings on Gravel Reserve 0346 have not been taken into account for the above estimates.

Extraction Quantities:
Initial Level 1 lease 5,000 bcm
Proposed Level 2 operations 20,000 bcm

2.1.2 Extraction Process(s)

Site and Plant layout
Intentionally, the layout is kept to as small a footprint as practicable by keeping the crushing plant compact, the power generator close and the crib-room facilities near the plant. This results in a more efficient layout, less impact on the ground footprint with easier visual screening and noise control. Product stockpiles are close, which in turn concentrates all truck and loader movements into a small area.
View from north-east….stockpiles and proposed bench work

Refer to appendix C site plan and appendix F…GPS map by W. Grun

Major Plant and Equipment

- On-site plant consists of fixed, primary and secondary jaw crushers leading to various conveyors and screens producing quarry products from 70mm drain rock to FCR’s, sand, plus tested, road sub-base and base gravels.

Crusher and screening plant

- A mobile, 275 kwa diesel generator provides power for the crusher and screens
- Two of, wheeled loaders with bucket scales, relocate screened products to stockpiles and load customer trucks.

- A 20t excavator is used to strip vegetation, topsoil, load quarry rock, maintain drains and general site works.

- Two on-site quarry trucks transport blasted material to the crushing plant.

- A 40 ft, insulated container is used for site amenities…..crib-room, first-aid room, washing and toilet facilities.

Hours of Operation
Weekdays……….7.00am to 7.00pm
Saturdays……….8.00am to 5.00pm
Sundays…………Emergencies only….no operations
Public Holidays…No operations

Truck Movements
During crushing operations there are approximately 50 internal truck loads per day to the crusher for about 4-5 days per week.

On average about 12 truck-trailer loads per day leave the site.
On exception, one-off busy days, up to 40 truck-trailer loads have left the site

Loaded trucks exit the quarry via Gravel Pit Road onto Nook Road then to Sheffield Main Road for distribution along the NW road network.

No complaints have been received regarding over-sized/heavy vehicle, road condition or road failure issues.

Refer to Appendix H…. Traffic Assessment by T Eaton.

Noise Emission
Since quarrying operations recommenced in 2003 there has never been any complaints or representations about noise issues.

The local tree cover and topography act as excellent sound attenuation barriers and the operations are barely audible above the surrounding background noise.

The predominate noise is the fan on the diesel powered generator rather than the quarrying/crushing operations.

Blasting noise and air shock is directed to the SE, away from residential areas, by the prevailing north westerly wind patterns.

Air emissions…gaseous/dust

On-site
The only gaseous emissions from quarry operations will be from the diesel generator, front end loader, excavator and 2 x haul trucks.
No gaseous emissions are produced from the crushing/screening process.
The only onsite air issues will be dust emissions from the quarry operations….blasting of the quarry face does not produce any dust.

Off-site
The only gaseous emission offsite will be from the transport truck exhaust. Dust emissions on Gravel Pit Road will be from the truck engine fan, tyres and the load.

Waste Management
No solid waste is generated from the quarrying operations.

A crib room/storage container is on site complete with animal-proof waste bins for lunch scraps.

Benching, Slopes and Haul-road Management
Generally the existing and proposed operational benches will be approximately 15m wide x 10m high with a back-slope of 10-15 degrees. Access roads to each bench will be constructed as required and will branch off a road running along the SE edge and the ramp road on the west side.
Final rehabilitation benches will be 6m wide.

Quarry Management
The quarry is to be managed in stages
Based on site discussions (and survey) with Environment Division and MRT in January and February 2008….
Stage1….over the next 2 years
Following on from the initial tidy up of past lessees, the Riley Quarry intends to extract from the SE corner of the lease and progress with a bench layout partly at right angles and partly (on the western side), parallel to the
watershed boundary…this process has commenced with the initial establishment of a floor level and creation of a bench/face layout.

The above workings will set up a bench layout within the footprint of the old workings, not encroach too far up the skyline, provide an extended floor to the quarry and allow for future extractions.

Access to all benches would be via the existing haul roads …
- Access ramp along the western side
- Access road along the south and south-east
- Access road at floor level

Also as stage 1…tidy-up/straighten old faces near the stockpile area and revegetate benches …refer Appendix C & E…Slide 7(Area 2), Wojciech Grun

Stage 2…..within next 4-5 years
Drill the floor at the SE corner for potential rock and develop a lower bench if the tests prove positive.
Long term future...continue with the upper level bench developments and advance the quarry northwards towards the crown of the hill.....OR...as an alternative ......access the crown of the hill and commence quarrying downwards into the resource. The quarry would progress downwards and bench levels would extend out to their respective contour resulting in bench areas that increase in surface area as the quarry is progressed downwards.......an added bonus for operational safety.

Topsoil would be pushed to the sides and as the quarry progressed downwards, further topsoil added and again pushed to the bench edges. The entire process of pushing off the peak and quarrying downwards into the hill would always be below the tree-line and constantly screened. Topsoil would always be close and available for rehabilitation as the quarry progressed.

We understand that this is the preferred method of extraction, page 14, Quarry Code of Practice (1999) and this site lends itself ideally to this method.

Blasting
Drilling and blasting of the conglomerate rock is carried out by contractors Forz Explosives and Orica using emulsion......currently, at approximately 4 times per year and up to 8 times per year under the proposed management plan.

Product Stockpiles
Materials produced, comprises of:
- 19mm Base A to R40 specs
- 40mm Sub-base to R40 specs
- 40 to 80mm drain rock
- 80 to 100 minus crusher run
- Landscape aggregate.....19mm, 24mm, 40mm
- Pit-run gravel
- Oversize armour and retaining wall rock

The floor of the old pit is used to stockpile the crushed products, in various heaps, north of the plant area. Customer access to these products is quick and easy via unobstructed roadways close to the site entrance......eliminating the need for customers to enter the fixed plant/crusher areas and thus reducing site safety risks.

Topsoil and Overburden Management
From past operations, topsoil/overburden was scattered throughout the site and, to a large extent, not replaced over old workings when the site was abandoned. Current operations are to stockpile the soil along the western side......areas that will be easily managed and accessible for future rehabilitation.

The soils will be initially stockpiled, then, local vegetation that is removed during the quarrying progress will be spread over the surface of the stockpile(s) to commence a natural, self-seeding process.

This method has been successfully trialled with the soils being revegetated whilst stored and when redistributed for rehabilitation and revegetation, the soil already contains natural seed for quick regermination.

Riley Quarry is aware of being a PC free quarry and will carry out topsoil and overburden management in accordance with biological principles as outlined in the Forestry report......Appendix G
Final Land Use
Once quarrying operations have ceased, one would hope the land returned to
tree cover and maintained as a public reserve/parkland.
The land is currently government owned and would be the ideal institution for
the above to be set up.

Water Supply
Currently, the operations do not have a purpose made water storage facility
and the extraction, crushing, screening and stockpiling do not require process
water.
All water required for dust suppression is available from the existing
settlement ponds and is applied via a pump equipped water tanker.
Should future operations require process water, a purpose made holding dam
could be constructed and filled with collected rainwater/run-off plus recycled
water from the settlement ponds.

2.2 Site Plan
Location
The existing quarry is located at the eastern end of Gravel Pit Road off Nook Road in
the Kentish Municipality.
Gravel Pit Road also provides access to the existing Boral bluestone quarry
operations.
Geographically the quarry lies:-
  15 kms due south of Devonport
  11 kms SW of Latrobe
  7.5 kms north of Sheffield
  7.5 kms NW of Railton
  5.5 kms from Barrington and Lower Barrington

The existing lease is defined by the Gravel Reserve land parcels 0346 and 0347,
land parcel 0348, plus a small section of the adjoining State Forest to the east.

The quarry is located on the 1:25,000 Railton (4442) map grid reference…….450287.
Refer to Appendix B & D

2.3 Off-site Infrastructure
There is no off-site infrastructure as the entire quarrying process takes place on-site…from
the rock face through to the processing, stock-piling and final product sales.
3.0 The Existing Environment

3.1 Planning Aspects

Land Tenure
Since 2002, AG & BJ Riley have held a mining lease No.1M/2002 over the two Gravel Reserve land parcels 0346, 0347, land parcel 0348 plus a small section of the adjoining State Forest to the east. Refer to Appendix B & D

Land Zoning
Current zoning is Gravel Reserve under the Kentish Council Town Planning Scheme. Land use permit, DA 02/10

Surrounding Areas and Neighbours.
Using the average location of current operations and crusher plant set-up on Gravel Reserve 0347 as the centre of a 1.0 km radius, the following “neighbours” fall within the circle:-

- Off Morgans Road...runs of Marshall Road
- Sheds to the south at 150m distance
- A house to the SSW at 350m distance...site of blast event recordings
- A house to the SSW at 430m distance
- A house to the SW at 600m distance
- A house to the SSE at 650m distance
- A house to the SSE at 690m distance
- Two houses to the SSE at 870m distance
- A house to the SSE at 930m distance
- A house to the SSE at 990m distance

\[
\text{Sheds} \quad \text{Houses} \quad \text{H Blast monitored house}
\]
3.2 **Environmental aspects**

**Current Condition and Use of the Site**

Recommencement of quarrying operations in 2002 and following on from past mining habits of 25 years ago has been a challenge.

Poor or non-existent drainage control, minimal rehabilitation and reshaping old workings have now partially been corrected in the current extraction area on Gravel Reserve 0347.

The old workings have been tidied up and a cleared stockpile area has been formed near the road entrance to the quarry.

Some initial work was completed along the western side of the old face to allow for the crushing and screening plant to be set up.

A further "slice" will be taken off the above western wall at Area 2 as per site discussions on 27th Feb 2008….see Appendix F, slide 3.

All current extraction operations are centred at the SE corner of the lease.

Past workings on Gravel Reserve 0346 have not been interfered with and should be the focus of future and separate discussions with the stakeholders.

**Physical Characteristics**

**Access**

Access to the site is via Gravel Pit Road….off Nook Road.

This site is approximately 1.7 kms in from Nook Road and 1.0 kms past the Boral Quarry complex.

Gravel Pit Road has a gravel surface of approximately 6 to 8m wide up to Boral and approximately 4m wide to the Riley Quarry.

Security gates are located at the Nook Road entrance and another, 900m east of Boral.

The Live Sheep Export holding yards are located between Boral and this eastern gate.

The road geometry is satisfactory and although the road is a Council road, the grading and maintenance is carried out by both Boral and Riley.

**Topography**

The site is dominated by a local hill on Gravel Reserve 0347 with the land falling away in all directions to hilly, undulating country and minor water courses.

The area is part of the northern end of the Badgers Range group.

The hill elevation is approximately 395m (AHD) and the proposed quarry floor is about 320m.

The watershed boundary of the area runs along this hill in an approximate north-south bearing of about 340 /160 degrees.

**Water Courses and Drainage**

Watershed from the site is about evenly distributed to three main catchments….to the east into Marine Creek; to the SW into tributaries of Aitken Creek and to the NW into Ray Creek…. of these, Marine Creek flows into Caroline Creek with Aitken and Ray Creeks flowing into the Don River catchment(s).

These local creeks have seasonal and storm flows.

Since the recommence of quarry operations in 2002, the Riley’s have began water run-off management by installation of various drains and settling ponds.

Previous site runoff to the SW onto the adjoining owners land has been completely redirected via a cut-off drain to a settling pond.
A further two settling ponds have been installed near the entrance to the site to capture run-off from the western and northern western slopes.

Currently all run-off via the settling ponds is directed to Ray Creek

All existing settling ponds are monitored and cleaned out regularly.

**Groundwater**
There is no evidence of groundwater flows to date at the current site operations.
On-site observations indicate that existing and proposed quarry operations will not intersect the water table.

**Vegetation**
Generally the hill slopes are vegetated with tee-tree and a heath understorey. The topsoils are shallow and the trees are not of any large size.
A few gums are scattered in amongst the tee-tree.

The SW corner is wetter and has more substantial gum trees with an understorey of tee-tree and some ferns.
This area lies below the quarry floor footprint and will not be disturbed as it provides visual and noise barriers for the site.
Past extractions have disturbed a large area of the site to the north on Gravel Reserve 0346.
Part of Gravel Reserve 0347 was revegetated successfully on the western slopes, however, the old surface mined areas to the north and NE are still quite bare.
*Refer to Appendix C*

**Geology**
The entire Gravel Reserve lease area is a quartzite-conglomerate rock and although hard wearing are highly erodible.

Where undisturbed, the natural topsoil is rather shallow at about 100-150mm and consists mainly of a sandy loam.

Where current operations have commenced, these topsoils have been stockpiled for future rehabilitation use.

**Natural Processes**
The site is not prone to flooding and heavy storm events have had minimal impact on the current site operations due to installed erosion and drainage control.

Old abandoned areas of the lease, north of the current operations, have been subject to erosion of stockpiled soils, gravel and the exposed surfaces.

These areas have been partly revegetated however, still require drainage control......an issue for future discussions by all the stakeholders.
These northern areas have not been disturbed by any recent extraction activities.

The lease has not been subjected to bushfire in recent times even though it lies on the western edge of a State Forest Reserve.
The operations are well protected from starting or being affected by bushfires as the immediate site is barren and non-combustible.....see also Fire Risk section 4.8

Wind erosion and dust are minimal at the site due to effective tree cover and screening.
3.3 Socio-economic aspects
The surrounding area(s) are generally rural, rural-residential, forestry and quarrying activities.
Although the quarry is currently not a large employer, all workers at the site are locals and if the quarry production is increased, there will certainly be more employment opportunities available.

3.4 Alternative sites
Past workings by Kentish, Devonport and Latrobe Councils plus the Public Works Department terminated some 25 years ago and the mining leases were demised to the Mineral Resources Tasmania.

There was no alternative site selection process as this site already existed.
From the above history, the gravel reserves were available, had existing access roads, were geographically central to a market area and therefore were taken up so as to assess the resource viability.
AG & BJ Riley purchased the current lease (1M/2002) in 2002 with the intention of investigating, and possibly developing, a quarry.

Since then, this quarry has proven to be a viable operation, producing high quality products to local industries and community.
The material has been tested and exceeds the DIER R40 specification in its natural, unblended state.

4.0 Potential Effects and Their Management
4.1 Blasting / Noise emissions
Drilling and emulsion blasting of the conglomerate rock is carried out by contractors Forz Explosives and Orica currently, at approximately 4 times per year and up to 8 times per year under the proposed management plan.

Each blasting activity will have an acceptable explosive loading and will be monitored for air blast and vibration so as to not exceed acceptable standards under the Tasmanian Quarry Code of Practice.
Refer also to Section 4.3, page 18.

Noise Emission/Control
Since quarrying operations recommenced in 2003 there has never been any complaints or representations about noise issues.

The local tree cover and topography act as excellent sound attenuation barriers and the operations are barely audible above the surrounding background noise.

The predominate noise is the fan on the diesel powered generator rather than the quarrying/crushing operations.
Blasting noise and air shock is directed to the SE, away from residential areas, by the prevailing north westerly wind patterns.

Measures to be adopted to minimise the risk of noise nuisance to others are:
● Minimise clearing of existing tree cover plus revegetate where possible
● Maintain the diesel motor(s), plant and equipment to the manufacture’s specifications to minimise the emission of engine and exhaust noises.
● Seek a buffer zone that will minimise impact on resident neighbours
● Adopt a 40kph speed limit along the access road
● Ensure transport operators do not use exhaust brakes unnecessarily.
● Blasting only 4 to 8 times per year.
● Monitoring of blasting operations
● Limit crusher use to 4 days per week
4.2 Dust Emissions

Air emissions...gaseous/dust

On-site

The only gaseous emissions from quarry operations will be from the diesel generator, front end loader, excavator and 2 x haul trucks. No gaseous emissions are produced from the crushing/screening process.

The only on-site air issues are from minimal dust emissions from the quarry crushing/screen/stockpiling operations….blasting of the quarry face does not produce any dust.

The following measures are currently in use or to be implemented to reduce the risk of dust generation even though the product’s physical characteristic is not prone to dusting and the site is sheltered from prevailing winds.

- Maximum storage stockpile of approximately 15,000 tonnes
- On-site speed limit of 20kph
- On-site water cart
- Maintain all roads

Off-site

The only gaseous emission offsite will be from the transport truck(s) exhaust. Dust emissions on Gravel Pit Road will be from the truck engine fan, tyres and the load.

The following measures are currently in use to reduce the risk of dust generation along the access road:

- Limit the maximum number of daily truck movements to 20 loads or 40 trips per day.
- Maintain all motors and equipment to manufacture’s specifications
- Wet down or tarpaulin loads.
- A self imposed speed limit of 40pkh will apply to Gravel Pit Road.
- Water the road using a water tanker.
- Lay fresh gravel road surfacing material as required

4.3 Land Use and Development

As seen from the 1:25,000 location map (Appendix E), the site lies within two dedicated gravel reserves and to that effect, land use up to the quarry boundaries has been reasonably restricted.

Activities such as tourism, recreation, commercial and industrial land uses do not exist.

The potential effect on adjoining owners is the blasting….the noise and vibration effect on rural residential housing to the south and southwest of the site.

Under the present Kentish Council planning scheme, an attenuation distance of 300m exists around the two gravel reserves. The closest house is 350m distant.

Recent monitoring and recording of a typical blast event at the above house, showed results within the accepted limits...

Allowed vibration…5mm/sec…..Measured vibration….0.685 & 1.12mm/sec
Allowed noise level…115dbl…..Measured noise……112.0 & 114.2 dbl.

Past blasting events since 2002 have never reported any complaints and blast effects have fallen within the allowable limits.

As an ongoing management strategy, all future blasting will be designed so as to have minimal effect on all neighbours as well as be within the accepted standards. Looking to the long term, it would be beneficial to all stakeholders that the existing attenuation distances be increased to 500m or 750m as an added measure of risk management.

All blasts will be monitored and data stored for historical evidence.
4.4 Visual Effects
Natural screening by native trees and topography predominately reduce the quarry visual impact from nearly all directions. The current operations are not visible to any surrounding areas however the old workings have minimal sighting from Sheffield Main Road, south of Jowett's Hill and (the northern end) from Railton Road, south of Dulverton.

As the quarry operations progress…
● a screen of trees will be left along the eastern side to protect the Railton aspect.
● will be screened from the north by the hill summit and trees
● minimal sightings from the west and south as the quarry progress.

Alternatively…should quarrying relocate to the crown of the hill….
● a screen of trees will be left along the eastern side to protect the Railton aspect.
● will be screened from the north and west by the trees
● minimal sightings of the peak haul road and workings from the south as the top bench is established and quarry progress downwards.

4.5 Water Emissions
Surface water and Drainage Control
The on-site quarrying process does not use any process water.

There are several ephemeral drainage lines that exist on the quarry site. Predominately, the water quality issue(s) are associated with surface run-off and entrained particulate matter.
There is no evidence of sulphide material on site that would lead to acid quarry drainage and associated pollution problems.
There is no storage of fuels, oils or chemicals on site, now or in any future operations.
All maintenance of on-site plant will be serviced in a clay-lined, bunded service area so as to contain any spills and prevent surface water wash.
Currently, the existing measures to prevent sediment and particulate pollution entering drainage systems, creeks and ultimately rivers, can be summarised as follows:-
► since the occupying the site in 2002, the Riley Quarry has installed new settling ponds and cut-off drains to capture site surface/runoff water……
Cut-off drain just south of the crushing plant

► a settlement pond is planned at the start of the new face operations in the SE corner
► all drains are monitored and cleaned as required.
► no fuel, oils or chemicals are stored on site and all maintenance will be within a bunded service area.
► a portable chemical toilet with vanity basin will be provided on site in the short term followed by a septic system should the demand be necessary.

4.6 Biodiversity and Nature Conservation Value
All current operations fall within the footprint of the old abandoned gravel pits.

Clearing of land to date has been restricted to follow the old footprint and hence reduce any new impact on biodiversity.

So as to control weed introduction/migration and maintain a PC free status, all stockpiled topsoil is from this site only and no imported soils will be carted to the site.

It is difficult to assess any negative impact on wildlife, however, if animal tracks are an indicator….the site has many active tracks criss-crossing the entire lease area. Wallabies are often seen at early and late times of the day.

Should future operations advance towards the undisturbed biodiversity areas, appropriate surveys would be carried out in conjunction with DPIW.

Refer to Appendix G….PC site survey by Forestry Department

4.7 Dangerous Goods
Hazardous Material / Liquid wastes
There will be no hazardous material or liquid wastes associated with the quarrying activity.
• there is, and will not be, any chemicals, explosives, fuels or oils stored on site.
• all vehicles are maintained off site.
• re-fuelling and plant maintenance is provided by a service vehicle within a bunded service area.
• the portable chemical toilet will be disposed of off site to a Council provided dump facility at Sheffield.

4.8 Fire Risk
The operations are well protected from escaping fire or being affected by bushfires as the immediate quarry site is barren and non-combustible.

Fuels are not stored on site, and due to location, any plant and machinery welding or grinding is carried out well clear of any combustible material.
The existing diesel powered generator has the manufacturer’s exhaust system. As a mitigating measure this generator will be shortly relocated further away from the tree line and closer to the crusher….this will also reduce the plant footprint.

Fire extinguishers are on all plant items. Should a bushfire be in the area, fire response plan would be...

- Assemble all on-site personal at the stockpile area and notify Fire Department……site has mobile phone coverage.
- Co-ordinate with Fire Department
- Make use of on-site bulldozer and/or excavators, water tanker as required.
- OR….safely wait for the fire to pass.

4.9 Hazard Analysis and Risk Assessment

Emergency Procedures

There are no dangerous goods stored on site.

Procedures are in place for small oil spills that are likely to occur during refuelling and plant maintenance is provided by a service vehicle within a bunded, service area.

All spills will be recorded and reported as required.

Currently spill kits are in the service trucks and it is intended to place extra kits in all other on-site plant.

Hazard identification

- Land slip/rock fall….all dangerous rock is visually checked and removed
- Blasting….complete safety check by contractors
- Machine roll-over….all plant is ROP equipped

4.10 Health and Safety Issues

Public and Employee Safety/Emergency Procedures

The general public’s safety will be achieved by appropriate signage at the quarry and locked gate(s) along the access road.

The Riley Quarry currently operates with a site speed limit of 20kph and controlled by signage at the quarry entrance.

Further to the above, Riley Quarry will install a red light at the gate (which can be controlled from the crusher office) so as to restrict entry into the site during operations. The crusher office/control room has an exclusive view of the entrance area.

Employee safety currently involves:

- Implementation of a Site Safety Management Plan….AG and BJ Riley currently implements an OH & S Manual (2006) for its contracting operations….this manual includes quarrying operations, however will be extended to include a Quarry Site Safety Plan.
- Incorporated in the above, a Quarry Plan to ensure a safe, level and stable work areas plus haul-road condition and stability inspections.
- Appropriate site signage…to be added to as required
- Compliance with Workplace Standards Tasmania (WST) requirements.
- Employment of appropriately qualified and skilled operators.
- Wearing of appropriate PPE ….hi-vis clothing, safety boots, and sun smart protection, plus as required……hard hats, dust respirators, hearing protection and gloves.
- Mobile phone issue/use for emergency contact…reception is satisfactory at the site.
- Use of UHF radios
- Vehicle safety checks and maintenance
Maintain vehicle access to all working areas for emergency response vehicles
Designated assembly point
Fire evacuation plan

4.11 Greenhouse Gases and Ozone Depleting Substances
All equipment is, and will be, maintained to manufacturer’s specifications to minimise exhaust emissions.

4.12 Groundwater
There is no activity that impacts on groundwater quality or level.
On-site observations indicate that existing and proposed quarry operations will not intersect the water table.

4.13 Solid and controlled Waste Management
No solid waste is generated from the quarrying operations.
A crib room/storage container is on site complete with animal-proof waste bins for lunch scraps.

4.14 Heritage
All existing and future operations are within the existing dedicated gravel reserves.
From past and present local knowledge, AG & BJ Riley are unaware of any heritage values listings within the lease area.

4.15 Infrastructure and Off-site Facilities
There is no off-site infrastructure as the entire quarrying process takes place on-site...from the rock face through to the processing, stock-piling and final product sales.

4.16 Environmental Management Systems
As outlined in section 4, the principle environmental issues are surface run-off, fuel/oil spills, damage to flora, waste management and air emissions. In addition to the O H & S Manual, all personnel on site are aware of, and are active in environmental protection on a daily basis.

Having only small employee numbers on site (3 to 4), allows effective communication of issues and action such as monitoring and cleaning out of settlement ponds etc.
Any faulty equipment is able to be addressed quickly, reporting is direct, and can be actioned by any member of the staff.

Contractors are aware of the site rules, policies and procedures and are site inducted in accordance with the OH & S Manual.

5.0 Monitoring and Review
Monitoring and review is ongoing and part of the present and future operational procedures.
- Existing and future settling ponds are/will be, regularly inspected and cleaned out.
- Gravel Pit Road access is /will be monitored, and, as required, graded, rolled, watered or re-sheeted.....this maintenance is currently carried out jointly by Boral and Riley.
- Riley Quarries will keep and make available, a complaints register
- Monitor and keep a record of truck movements to and from the pit.
- Monitor and keep a record of truck movements from the face to the crusher.
- Monitor blasting operations.
- Review this Management plan annually.
6.0 Decommissioning and Rehabilitation

To be read in conjunction with the PC report by Biology & Conservation Branch, Forestry Tasmania….Appendix G

The intention is that the quarry will continue into the future, working the benches to the bottom floor and then back to the northern lease boundary. Once at floor level, and if rock reserves, demand and quality continues, there is potential for the quarry floor to be open-cut mined and so extend the life of the site.

With the above as a possible scenario, final rehabilitation could be a long time into the future, however, the intention is rehabilitate and revegetate as the quarrying progresses.

Riley Quarry is aware of being a PC free quarry and will carry out rehabilitation in accordance with biological principles as outlined in the Forestry report (Appendix G)

Trial work on natural seeding has already been in progress since 2003 after Riley took up the lease in 2002,………… a small section of, bare ground from past workings, was covered with natural topsoil from the site and native shrubs cleared from the site, were thrown over and left to decay….the results were excellent with minimal care, high seed germination, healthy regrowth and no destruction from native animals.

Sample of natural rehabilitation

Existing topsoil stockpiles

Through out the quarry site, it is encouraging to see numerous examples of self sown seedlings of a variety of local species.

Once Stage 2 of the benches are set up in the SE corner of the site, it is planned to rehabilitate in the immediate area and progress this forward as the faces progress.

When rehabilitation is required on the steeper slopes and benches, the rehabilitation format will be as per Section 6.6 of the Quarry COP 1999 relating to bench height and widths.
Native, endemic species may be the most economical and effective method on slopes over 30 degrees.
Native species mulch may also be spread to protect the slopes from rilling until seedlings establishment.

All stormwater control will be retained with all run-off water passing through settling ponds.
All topsoils used in rehabilitation will be local and no imported materials will be carted to the site. ... to ensure the quarry remains PC free. Rehabilitation will be in approximately this sequence:

1. The SE corner and high western benches to reduce the footprint of the site operations.
2. Area 2 as outlined in the GPS pick-up. ... Appendix F
3. Progressively as the quarry advances northwards along the watershed line (option 1) ... OR ... downwards from the peak (option 2)
4. Finally when the floor level is reached, the rehabilitation of the plant and equipment areas and access roads by deep ripping, topsoiling and seeding and/or planting following the quarry closure.
5. Ongoing monitoring at initially 12 monthly intervals for the first 5 years, thereafter 3 yearly, to ensure the success of the rehabilitation programme.

7.0 Commitments
The quarry will be operated in compliance with the Environment Division’s Quarry Code of Practice, Tasmanian State Policies and legislative and regulatory requirements.
It will also be operated in accordance with the planning and environmental conditions of the land use permit issued by the Kentish Council.

- Maintain access road in safe and satisfactory condition
- Upgrade Gravel Pit/Nook roads in accordance with Traffic Assessment
- Maintain drainage systems
- Construct a bunded service area
- Maintain PC free status and manage weeds
- Commence a complaints register
- Register of all trucks movements
- Monitor all blasting operations when equipment available
- Install chemical toilet and wash basin facilities
- Carry out site inductions for new employees

8.0 Conclusion
This development proposal and environmental management plan (DPEMP) has identified and assessed the potential impacts associated with the proposed volume increase in accordance with DPIWE and MRT guidelines.
This DPEMP demonstrates that appropriate operational and management measures have been identified and proposed to mitigate the potential impacts and to ensure minimal risk to the environment and human health.
This DPEMP demonstrates that the quarrying operations will be compliant with Tasmanian Policies, Legislation and Regulations.
The initial issuing of a Level 1 activity permit has proven to be a positive outcome for these old gravel reserve workings.
This DPEMP demonstrates that with new and fresh quarrying operation methods, the old abandoned site has been revitalised into a viable quarry, producing high quality, natural, unblended and tested quarry products that are sought after by the construction industry.

9.0 References
Since 2002 there has been many site visits, inspections and correspondence by various representatives of Environment Division and Mineral Resources Tasmania.

End of Report
Appendices

Appendix A....1:100,000 Location Map
Appendix B....Current Lease Plan
Appendix C....Approximate Current Lease Outline
Appendix D....Site Map
Appendix E....1:25,000 Location Map
Appendix F....GPS Pick-up
Appendix G....PC Site Survey Report
Appendix H....Traffic Assessment
Appendix A. 1:100,000 Location Map
Appendix B...Current Lease Plan
Appendix C: Approximate Current Lease Outline

- Old Workings
- Tee-tree cover
- Good tree cover
- Originally old workings, now present day operations
- Gravel Pit Road
- Very Approximate Lease Boundary...subject to survey
- Sheds

Image © 2008 DigitalGlobe
Appendix D: Site Map
Appendix E....1:25,000 Location Map
Appendix F: GPS Pick-up

W. Grun…Feb 2008

Slide 1

W Grun GPS pick up

Slide 2

Faces
Areas of uncertainty No Pick up Broken Rock

Slide 3

Area 2 of discussion 27 Feb  Area 1 of discussion 21 Jan & 27 Feb
Appendix F: GPS Pick-up

W Grun...Feb 2008

Slide 4

Slide 5

Slide 6

Face from Cordrey pick up
Disturbance from aerial and pick up
Face hidden by rock
Natural Revet
Soil stockpile

Extent of Faces
Top Face 6m Bench 6m
Middle face 6m

Extent of current main face and floor of pit
Floors to be drilled
And potential bench in floor

Revegetation required ASAP
1
2
Please advise if these pictures do not comply with the discussions we have held on site on 21 Jan & 27 Feb.

One small hitch please check the areas of pick up marked on slide 2. There were sections of face I could not access by broken rock etc, and I did not pick up one area.

There should be enough information in the pictures to develop the mining plan we discussed.

1. Extend the western section of the upper face to the tree line. Height and bench width 6 meters to provide for access and rehabilitation.

2. Extend middle bench to within 6 metres of the top bench to provide for access and rehabilitation.

3. The floor of the quarry can be extended to within 6 metres of the middle bench to provide for access and rehabilitation. This will leave an extended floor of the quarry which can be drilled to test for the extent of a potential lower bench.

4. In area 2 there is potential for some minor extraction along the lower bench. The mid bench and access track require rehabilitation.
Appendix H....Traffic Assessment