

Bant's Quarries
Tuff and Scoria Quarry
98-100 Hopkins Falls Road, Panmure

Work Authority 32
Pln 001756



Rev B July 2025

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1 Background

1.1 Site Setting

The site is approximately 3 Km west of Panmure and north of the Princes Hwy. The quarry is on a small scoria cone on the edge of the crater rim of Dwarroon Maar.

Intermittent extraction from the site commenced approximately 100 years ago. In 1969, Davidson's started to extract material for local road works. In 1970, extraction was taken over by Bant's and an Extractive Industry Licence was obtained.

Over the past 40 years Bant's have owned and operated the quarry continuously, supplying a variety of road construction products to the council and local farmers.

1.2 Existing Approvals

The quarry operates under Work Authority 32. A Work Plan Variation was approved in 2013. This 2013 Work Authority Boundary encompasses 24.57ha.

In the 2013 Work Plan variation, quarry activity was limited to Crown Allotment 35. The shire examined the history of the site and ruled that there was no planning permit and that the quarry operated under existing use rights. This ruling will no longer apply when the Work Authority Boundary expands beyond Crown Allotment 35.

A Cultural Heritage Management Plan No. 11336 was approved for the Work Authority for the previous Work Plan Variation. The existing CHMP does not cover any ground beyond Crown Allotment 35.

1.3 Reason for Work Plan Variation

The quarry is approaching the final areas of extraction as delineated on the 2013 Work Plan. This variation proposes secure additional resource by extending extraction limits to the east and to the north.

The operating hours from the 2013 Work Plan have been reduced to line up with the EPA Day Period for the purposes of noise.

A mobile site hut has been installed in the quarry floor.

The 2013 Work Plan indicated an intention to discontinue onsite fuel storage. This did not happen. Rather, fuel storage has been upgraded to comply with AS 1940.

The new Work Authority Boundary will encompass 39.78ha.

1.4 Geology

Reference to the Geological Survey of Victoria Map sheet Port Campbell Embayment 1 : 100 000 indicates that the site is on the rim of the Dwarroon Maar volcanic crater composed of tuff rings, ash, lapilli, scoria, volcanic bombs and calcareous lithic fragments.

(A detailed description of the geology can be found in Geotechnical Assessment by AGR in the appendix.)

1.5 Geotechnical Regime

Even though the open cut faces look highly variable, a simplified description is as follows:

There is 200mm of topsoil occurring over the undisturbed ground. The clay overburden is 1 – 2 metres thick.

The top of the hill adjacent to the haul road reveals a weathered surficial tuff layer 5m thick on average.

There is a thin basalt layer covering the eastern spur.

The next layer down is described as a poorly consolidated volcanic breccia consisting of pyroclastic scoria, lapilli, rock bombs and tuff. The rock mass displays variations in weathering depending on depth.

Extremely weathered (clayey) breccia 5m thick.

Highly weathered breccia 6m-10m thick.

Slightly weathered breccia.

The material below the volcanic breccia is a slightly weathered tuff. The floor of the pit is situated within this tuff layer.

1.6 Adverse Geological Structures

The site has been assessed by an Engineering Geologist. Batter slope stability of weathered tuff and poorly consolidated, weathered breccia was analysed. The assessment made recommendations about extraction face heights and angles to ensure stability.

There are not expected to be any clay seams or unfavourable jointing.

The cut face is dry.

1.7 Resource Assessment

The site yields a variety of volcanic products.

There is a small volume of weathered tuff.

There is a small volume of fresh basalt.

The main resource is the breccia. This rock unit yields scoria, basalt bombs and lapilli. The weathered material closer to the surface is slightly clayey. The clay content in the scoria helps as a binding agent on farm tracks.

Clean scoria in black and red.

Basalt bombs.

The total volume of stone to be extracted excluding topsoil and overburden = 2,800,000 cubic metres.

1.8 Product

The product range from this site is intended to supply the shire and farm customers. The different types of stone are extracted separately. Each product is then screened into various sizes. This results in numerous different product stockpiles on the quarry floor.

The stone is used mostly for road sub-base, unsealed road maintenance, farm tracks, and drainage scoria.

It is expected that the quarry will produce approximately 30,000m³ per year.

2 Quarry Operations

2.1 Operating Hours

The hours of operation are contained within the EPA Day Period. (EPA Day Period – Monday to Saturday 7:00am to 6pm. No work on public holidays.)

Extraction

7:00am to 6pm. Monday – Friday. No work on Saturday, Sunday or public holidays.

Sales

7:00am to 6:00pm. Monday – Friday and 8:00am to 3:00pm Saturday. No work on Sunday or public holidays.

Processing

8:00 to 5:30pm Monday – Friday and 8:00am to 1:00pm Saturday. No work on Sunday or public holidays.

Hours clarification.

Crushing is limited to the hours of 8:00am to 5:00pm Monday to Friday and 8:00am to 1:00pm Saturday. No work on Sunday or public holidays.

Essential plant maintenance may be conducted outside these hours. Other activities will not be carried out unless authorised.

Processing is not a continual activity.

2.2 Areas of Disturbance

Quarry Footprint

Existing open quarry footprint = 9.80ha

Design total quarry footprint = 23.52ha

Maximum footprint at given time = 10.00ha

Stockpile areas

Existing topsoil stockpiles = 1.0ha. (all within quarry footprint.)

Existing topsoil stockpile volume = 14,000m³.

New topsoil beyond quarry footprint = 1.10ha

Existing overburden stockpiles = nil ha

Existing overburden stockpile volume = 0m³.

New overburden stockpiles = 0.15ha

New overburden stockpile volume = 3,000m³.

Access Road

Existing access road = 0.26ha. (to be fully rehabilitated.)

New access road 0.20ha. (to be retained as farm access after pit closure.)

Total area of disturbance (Not including retained access road.)

Existing = 10.0ha

Existing plus design = 25.03ha.

Exclusions: Rehabilitated areas.

Topsoil stockpile areas within unrehabilitated quarry footprint.

Access road to be retained.

2.3 Buffer Zone

There is a 20m wide buffer zone around the perimeter of the Work Authority Boundary.

There will not be any alteration to the existing contours within the buffer zone. There will be no product stockpiling in the buffer zone. At times during the life of the quarry there may be topsoil or overburden stockpiles. These stockpiles will be fully retrieved before the conclusion of rehabilitation.

There has been some tree planting within the buffer zone fronting Hopkins Falls Road. There will be further tree planting along the road frontage.

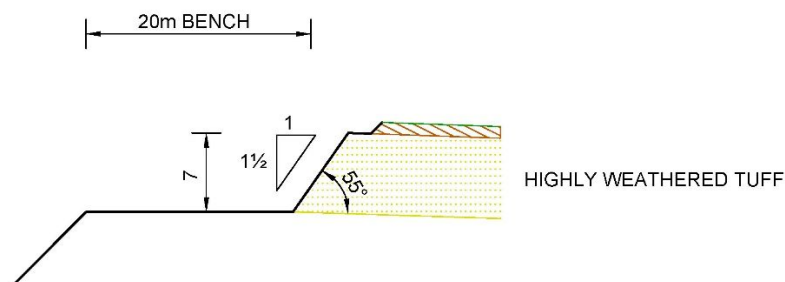
2.4 Extraction Method

Stone is extracted from this site with the use of a dozer, pushing material to the pit floor from working benches. An extraction face angle is formed as the bench is lowered.

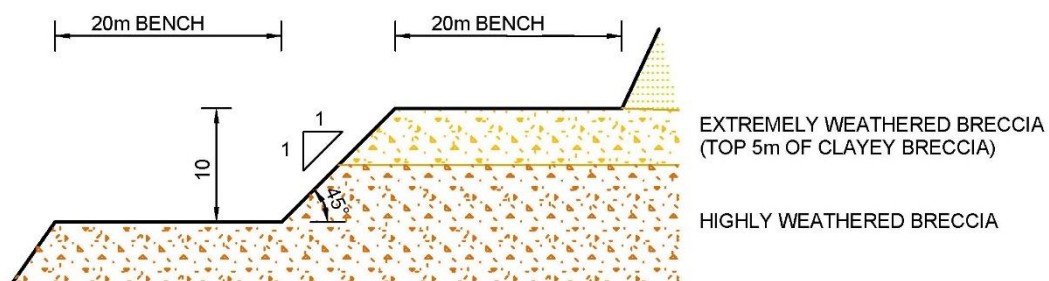
Extraction is also carried out with the use of an excavator removing material from the face.

The site consists of a variety of volcanic materials. The variability of the material and the variability of markets make it difficult to predict an orderly sequence of extraction. The sequence of extraction remains open to change. The main element to be considered in the extraction method is the formation of safe and stable extraction faces.

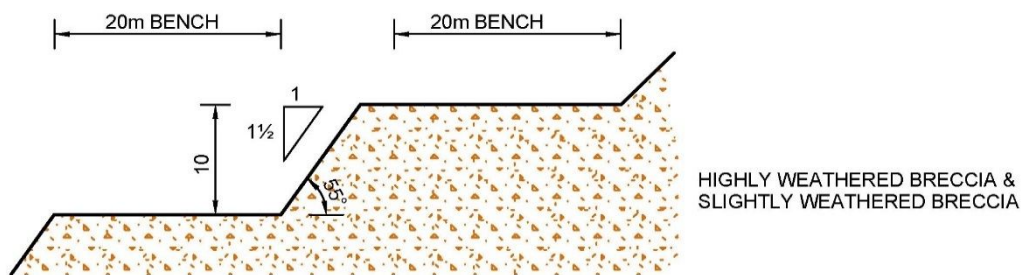
The Geotechnical Assessment has analysed various scenarios for stability. (Contained in the appendix.) The assessment has nominated face angles, face heights and bench widths. Dimensions vary depending on the geology. See diagrams below.



PROFILE THROUGH HIGHLY WEATHERED TUFF

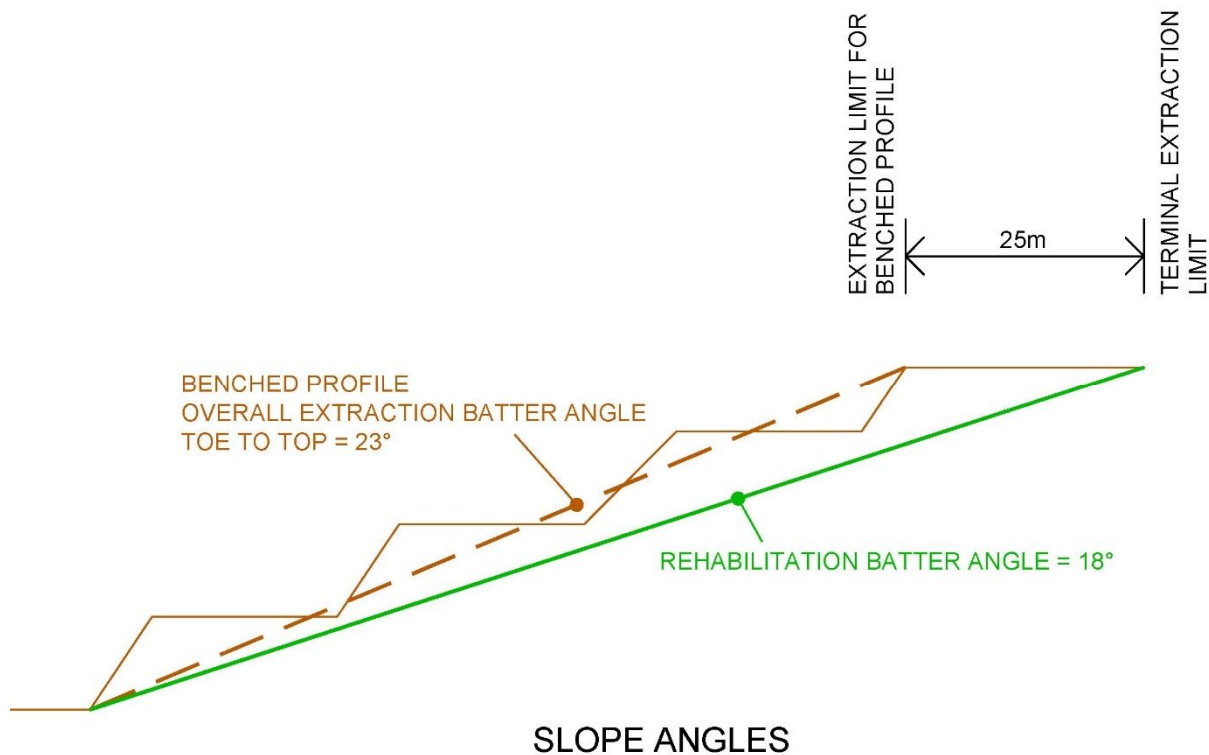


PROFILE THROUGH EXTREMELY WEATHERED CLAYEY BRECCIA



PROFILE THROUGH HIGHLY/SLIGHTLY WEATHERED BRECCIA

The benched profile produces an overall batter slope angle of 23° .



The benched profile will be discontinued when the top of the cut batter is 25m inside the terminal extraction limit. Extraction will then transition to a batter slope angle of 18° (1V:3H). This will ensure that there is no overcut requiring backfill to form the rehabilitation batter. The slope of the terminal extraction batter will be the same as the rehabilitated batter with no reshaping required.

As at June 2024, the extraction faces do not comply with the nominated bench profiles. Conformance will be achieved over time as the extraction faces are further developed. Before these profiles are established, it is possible that some product will be temporary unavailable until the extraction progresses.

There is some scope to deviate from the dimensions in these profiles. The Geotechnical Assessment offers some alternative dimensions. Any alternative extraction profile must conform with the findings of a Geotechnical Assessment.

An extraction batter slope of 1V : 3H batter slope (18°) without benches is also acceptable.

2.5 Processing

A small percentage of the material will require crushing. Boulders will be stockpiled until there is sufficient volume to bring a mobile crusher onto the site. When stockpiled rocks have all been crushed, the crusher will be taken off site. Crushing will be carried out in an unreclaimed section of the pit floor.

Product will be screened using a mobile screen. This activity will take place in unreclaimed sections of the floor.

2.6 Blasting

There will be no blasting or use of explosives on the site.

2.7 Design of Extraction

The existing quarry footprint will be deepened to the finished floor level. This is about 1m deeper than the prior Work Plan. The quarry footprint will be expanded a short distance to the northern limit of extraction. The main area of expansion is to the east of the existing pit following a spur line. Material will also be extracted eastward from the haul road cutting.

The finished floor level is RL61AHD in the western limit of the quarry and RL65AHD in the southeastern limit. The floor will have a cross grade of 1:100 to 1:200 to daylight on the west side.

The geometry of the quarry expansion results in a reduction in batter heights.

Maximum batter slope height:

	Interim Batter	Terminal Batter
Prior Work Plan	38m height from FL63	29m height from FL63
This Work Plan	34m height from FL63	22m height from FL65

There will be a minor batter slope across the northern extraction limit. The maximum height of the northern batter is 14m, the average height about 7m. The length of the northern batter will be about 350m.

The spur to the east contains emergent rocks providing potential habitat for native flora and fauna. This small area will be left undisturbed. The retention of the end of the spur will also provide some visual screening for the active pit.

The expanded footprint will remove a house, sheds and a farm dam.

Extraction faces are described in Section 2.4 – Extraction Method.

Terminal batter slopes will not exceed 1V : 3H.

There are three small dams situated within the Work Authority. These dams are used for farm purposes only. The dams are not quarry infrastructure. No water is taken from these dams for quarrying purposes.

2.8 Backfill in Pit Floor

Part of the southern terminal batter has been formed and revegetated. The grade is generally 1V:2H. There is a small section of the existing face that has been cut near vertical. This section of overcut will be backfilled to 1V:3H to match the surrounding contours. Backfill will be placed at the toe of the batter and will be about 3m deep. The backfill will be a coarse, dense, site derived rockfill. The backfill method is contained in the described in the Rehabilitation Plan – Rehabilitation Activities.

2.9 Imported Materials

There will not be any imported fill material brought onto the site.

Small quantities of scrap concrete had occasionally been brought onto the site for crushing. There is a small stockpile on the floor of the pit near the processing area. When the mobile crusher is

brought onto the site to crush quarry boulders, it will also be used to crush the concrete. There will not be any concrete crushing within 500m of a residence.

The crushed concrete will be mixed in with product stockpiles and sold.

There will not be any more scrap concrete brought onto the site.

2.10 Water Usage

No water is used during the extraction and processing of the product. No water is used for dust suppression.

2.11 Topsoil and Overburden

There is 14,000m³ of topsoil stored in stockpiles. Some of the topsoil is stored in the floor of the pit. All other topsoil is temporarily stored adjacent to the open pit and on ground delineated for extraction.

As the quarry expands, the topsoil stockpiles will be formed adjacent to the extraction limits. The practice of stockpiling on the quarry floor may continue. Topsoil stripped from new areas will also be used for progressive rehabilitation rather than stockpiling.

Stockpiles will be formed to a maximum height of 2m to protect microbial activity. Stockpile slopes will be around 1V:2H.

Topsoil handling will be avoided in very wet and very dry conditions.

Stockpiling of overburden will only be temporary. It may be piled on the floor of the pit or piled adjacent to the strip area. Temporary stockpiles of overburden will not be stored beyond the quarry footprint.

Overburden will be used for progressive rehabilitation as well as mixing with product.

3 Quarry Infrastructure

3.1 Power Supply

There is power supply to the house for domestic use. There is no electricity supply to quarry plant.

3.2 Access Road

Access to the quarry is via an existing access road from Hopkins Falls Road. Site distances are good. The geometry of the entry does not need to be upgraded. The access road feeds directly onto the haul road.

As the quarry develops eastward, the access road will be relocated to enter Hopkins Falls Road 300m east of the existing location. A farm access currently exists at this location. The new entry will be constructed as per IDM Standard Drawing 265 – Typical Semi or B-Double Vehicle Crossing (Rural Entrance). **The location has been assessed by a traffic engineer and found to be suitable.**

Within 6 months of the opening of the new access road, the old access road will be de-commissioned. This will involve the rehabilitation of the of the driveway crossing in the road reserve to the satisfaction of the shire.

There will only be one access road in use at any given time.

Haul Road

The existing haul road is 7m wide for the two way section and two 3.5m wide carriageways for the one way section. The maximum grade is 1V:8H. It will be decommissioned when the new access road is finished.

The new haul road will be formed in the eastern side of the quarry. It will have a minimum width of 9m and maximum grade of 1V:10H.

The decommissioned haul road will be extracted out to match the southern terminal batter.

3.3 Site Security

The existing network of farm fences will remain in place throughout the operation phase of the quarry. Gates will remain closed and locked when there is nobody on the site. The fence will be monitored and maintained by the landowner. Any damage to the fence will be promptly repaired.

The quarry manager lives next to the quarry, within the Work Authority boundary. Any unauthorised entry to the site is likely to be detected due to the visual exposure of the site. Quarry staff, farm staff and family moving around the property all raise the level of surveillance.

3.4 Carparking

Visitor and staff carparking will be located in the floor of the pit and in the vicinity of the site hut. The location may move around as the quarry develops. The carpark will be signposted. A phone number will be displayed so that contact can be made with staff if the site hut is unattended.

3.5 Site Buildings

A mobile site hut is located on the quarry floor.

The toilet is situated onsite at the house. The toilet drains into a septic tank.

3.6 Water Storage

There will be no storage dams or slimes dams on the site. There will not be any stormwater ponding on the site.

There are three dams within the Work Authority Boundary. All three dams are farm dams. Water in the dams is only used for farm purposes. The quarry does not impact the dams and the dams do not impact the quarry. The dams are downslope.

The western dam will have an increased catchment area post rehabilitation. This is of no consequence. The dam is merely a basin dug into low lying ground. There is no dam structure. When the dam fills it rises to up natural surface and water enters the downstream drain line.

The central dam has a very small catchment. This dam sits inside the quarry footprint and will be removed as the quarry expands.

The eastern dam will have a smaller catchment post rehabilitation. This means that the final landform reduces any risks to the western dam.

The performance characteristics of the dams are not relevant to this Work Authority.

There is no water used for production or dust control.

3.7 Fuel Tanks

Fuel is stored in a 4000ltr tank and a 2000 ltr tank which are located on the floor of the pit. (Refer to Site Plan drawing 21-112 sht 2.) The tanks are bunded.

Fuel will be stored and handled in accordance with AS1940 – Storage and Handling of Flammable and Combustible Liquids.

4 Environmental Management

4.1 Noise

Noise generated from the site will comply with the limits in "Noise Limit and Assessment Protocol" EPA publication 1826. The hours of operation are contained within the EPA Day Period. (EPA Day Period – Monday to Saturday 7:00am to 6pm. No work on public holidays.) (See Section 2.1 - Operating Hours for specified times.)

There are two houses situated within the Work Authority Boundary. One is an old farmhouse which is derelict and not habitable. The other house is owned and occupied by the operator. The house will be impacted by noise. At some point, noise will be generated 25m from the sensitive receptor. The worst noise impact will be during topsoil stripping and storage in the immediate area as well as extraction in the immediate area. Given the relationship between the occupants and the operator, any noise generating activities in close proximity to the house can be scheduled to take place when there is nobody home.

The two houses in Fearnley Lane are both derelict and have been vacant for so long that they have lost their planning status of dwelling. They are excluded from consideration.

There is a 640m separation distance between quarrying activities to the nearest offsite, occupied house; 500m for the access road. The separation distance for the 2013 Work Plan is 690m.

There is a 720m separation distance from the nearest activity to the house at 261 Farys Road, Panmure.

The houses beyond 500m are not regarded as sensitive receptors. There is a low level of activity on the site. Only very rarely will there be the accumulative affect of having multiple machines operating simultaneously.

Most activity will occur in the floor of the pit including all of the processing. This means that there will be an earthen barrier between the noise source and sensitive receptors.

Noise levels will be controlled by maintaining equipment in good order.

The rattle of empty trucks will be reduced by ensuring that the access road is maintained in smooth condition.

4.2 Dust

The Work Authority holder has a general environmental duty to minimise risks to human health and the environment.

Source

Dust from the quarry is generated by topsoil stripping, topsoil stockpiling, stone extraction, processing, loading and vehicle movements. This has the potential to generate nuisance dust.

Processing, loading and carting of product is an existing activity in the floor of the pit. These activities at this location do not create a new or elevated risk introduced by this Work Plan Variation.

Whilst extraction

Receptors

There are two houses situated within the Work Authority Boundary. One is an old farmhouse which is derelict and uninhabitable. This house will be demolished within two months of final approval of the Work Plan Variation. The other house is owned and occupied by the operator. The house may be impacted by dust. At some point in time, there will be disturbed earth within 25m from the sensitive receptor and 50m from the house. (The sensitive receptor includes the backyard.) The worst dust impact will be during topsoil stripping and storage in the immediate area as well as extraction in the immediate area. Dust generating activities close to the house can be scheduled to occur when the soil is damp and when the wind is in a favourable direction. There is a limited amount of work to be done this close to the sensitive receptor.

Processing, loading and carting of product occurs in the pit floor. This dust source is at a level more than 20m downslope from the operator's house with some shielding by topography, trees and a shed in the backyard.

The two houses in Fearnley Lane are 450m and 470m from the nearest area of activity. Both of these houses are derelict. They have been vacant for so long that they no longer enjoy the planning status of a dwelling. They are excluded from consideration. There is a 640m separation distance between quarrying activities to the nearest offsite, occupied house; 500m for the access road.

The house at 261 Farys Road, Panmure is not regarded as a sensitive receptor due to the small production levels and 720m separation distance.

Controls

Surrounding sensitive receptors outside the Work Authority Boundary are not expected to be affected by dust due to separation distance. Offsite sensitive receptors are more than 600m away from activity areas.

Extraction, processing and rehabilitation activities will cease during dry windy conditions. Product stockpiles can easily absorb interruption to production. Delivery truck movements and loading will continue.

The area of exposed earth will be kept to a minimum through progressive rehabilitation and vegetating topsoil and overburden stockpiles.

Dust on the access road will be reduced by capping the road with coarse granular material.

Monitoring

Dust will be monitored by seeing if there is any visible dust transported beyond the Work Authority Boundary. Formal dust measuring will only be conducted if there is an impact on an offsite sensitive receptor.

The site will be inspected to confirm that revegetation has been carried out where possible.

4.3 Vermin and Noxious Weeds.

Inspections will be carried out in autumn and spring. Weeds will be destroyed by spray or mechanical methods. Spot treatments will occur at other times.

Topsoil and overburden stockpiles will be sown with grass seed to reduce opportunistic colonisation by weeds.

Machines must be cleaned before they are transported onto the site.

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Rabbit warrens will be removed. Foxes will be hunted.

(Refer to Weed and Pest Animal Control Plan in appendix.)

4.4 Fire

The risk of igniting a fire will be reduced through hot works procedures. There will not be any hot work carried out on Total Fire Ban days.

All machinery will be kept in good working order. Fire extinguishers will be kept on all mobile plant and in the site hut.

Fire fuel load will be kept to a minimum on site.

(Refer also to Fire Response and Readiness Plan in appendix.)

4.5 Flora and Fauna

Vegetation on the expanded quarry footprint is pasture grass. There is an area of emergent rocks at the end of the eastern spur about halfway up the hill. There are native raspberries growing amongst the rocks. The area of emergent rocks has been mapped and excluded from the quarry footprint. The area is in close proximity to the extraction limit and a topsoil storage area. (Refer to Site Plan drawing 21-112 sheet 2)



EMERGENT ROCKS ON HILLSIDE

In order to protect against accidental damage, a vegetation protection fence will be installed on the uphill side of the feature. The fence will be installed before works are within 200m on the sensitive site. The fence will consist of high visibility plastic flagging, star pickets and one wire support.

The emergent rocks may also be habitat for lizards. The vegetation protection fence will also serve to protect this habitat. (Refer to DEECA advice to the initial site meeting contained in the appendix.)

Peregrine Falcons have been seen on the site but there are no known roosting locations. Because they are not nesting on the site, no ecological study is required. (DEECA advice to initial site meeting in the appendix.)

The Southern Bent Winged Bat is known to live in the area. It is critically endangered. It lives in caves. There have not been any caves uncovered by quarrying on this site. The geology of the site makes it highly unlikely that there will be any caves on the balance of the site. If a cave is uncovered

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through the excavation, work in the area will cease, a flagging fence will be erected, and DEECA-PEA will be contacted for further advice.

At the initial site meeting DEECA stated: “Further advice will be needed from a DEECA biodiversity officer to determine the ecological values and if an assessment is warranted.” Requests were made for further advice, multiple times over several months. No advice was offered and it was therefore assumed that DEECA did not have any additional interest in the proposal. (Refer “DEECA advice” in the appendix.)

4.6 Historic Heritage

There are no known historic sites or objects on the site.

(Refer to letter of advice from Heritage Victoria in the appendix.)

4.7 Visual Impact

The site has a high level of visual exposure, mostly from Hopkins Falls Road. There is a direct line of sight into the quarry floor and quarry faces from the road. The visual impact stems from historic workings and the existing Work Plan.

At the frontage of the quarry there is an earth mound to block view lines into the quarry. Tree planting has commenced across the road frontage of the quarry for visual screening. Tree planting will be expanded along the road frontage. However, even with the earth mound and trees in place, the visual impact remains very high.

Topography makes the quarry difficult to screen effectively. The variety of stone being removed makes it difficult to reduce the size of the quarry footprint through progressive rehabilitation; multiple parts of the quarry are worked simultaneously. These are visual elements of the existing approved quarry.

Mitigation measures such as face orientation, progressive rehabilitation and taking out highly visible faces will all be steps towards reducing visual impact over time.

The quarry expansion does not introduce any new detrimental visual impacts. The main visual change will be the view from the east. A hillside in the foreground will partially disappear to reveal the far side of the Dwarroon Maar crater.

The shape of the rehabilitated quarry is also considered. The finished form of the quarry expansion will blend better topography with the surrounding contours than would be if the existing quarry only were to be rehabilitated. Rehabilitation of the existing quarry would produce finished slopes that look obviously artificial within a broader landscape.

The rehabilitated form of the expanded quarry after the Work Plan Variation will sit more sympathetically into the surrounding landscape. The largest artificial face will be the southern batter slope. This can only be viewed from a distance from the north and will not look much different to the adjacent crater slope.

Finished batters in other parts of the expanded quarry will be relatively small and are distant from vantage points.

Visual impact is described in more detail in the Visual Impact Assessment and Management Plan contained in the appendix.

4.8 Ground Water

All operations will be above the water table. There will not be any de-watering.

There are no seepages from any existing quarry face. There are no seepages from any of the natural ground within the new extraction area. There are no seepages from the faces of the quarry situated 750m to the west of this site.

The creek flood plain is around RL50. With reference to the website “Visualising Victoria’s Groundwater, the ground water level is less than 5m below this level. Groundwater is not expected to be any higher than RL49. The quarry floor level is RL61.

The quarry floor consists of porous volcanic tuff. There will not be any perched water in the floor.

There is no intention to use any ground water for the quarry. No ground water will be taken and used without a license from Southern Rural Water.

4.9 Surface Water

Rainwater falling onto exposed surfaces of the quarry footprint is trapped within the quarry. The containment is achieved by a retained outer lip. Where the floor breaks out to daylight, the grade of the floor slopes back to a sump in the floor.

The extraction site is situated over porous volcanic material. Rainwater discharges by soaking. The floor consists of moderately cemented tuff. In some circumstances, there is ponding in the quarry floor. This may last for a few days after a rain event, but eventually all water soaks away.

There is no surface water from undisturbed ground that flows overland into the pit. The contours fall away from pit extents in all directions.

It is possible that surface water will shed from rehabilitated surfaces into the floor of the pit. If this generates surplus water in the pit sump, a drain will be constructed to collect water that has shed from vegetated surfaces.

The flood in 2010 was the highest flood on record. The water rose to 53.7m AHD. There is 7m of freeboard between the highest flood and the pit floor.

4.10 Hazardous Substances

No chemicals are used in the extraction process. There has not been a history of chemical use for extraction on this site.

Due to the well drained and elevated topography of the land it is not expected to find any acid sulphate soils.

4.11 Fuel

Fuel is stored in bunded tanks. Fuel will be stored and handled in accordance with AS1940 – Storage and Handling of Flammable and Combustible Liquids.

A fuel spill kit will be maintained in the vicinity of the refuelling area. Accidental fuel spills will be soaked up using the spill kit.

For major repairs machinery will be taken offsite. On some occasions, broken down machinery will be repaired on site. A spill kit and drip tray will be on hand during the work.

Waste oils will be emptied into canisters and sealed. The canisters will be taken to an approved disposal facility. Waste oils will not be stored or accumulated on site.

If a clean-up is required, the contaminated ground along with absorption material will be taken away to an EPA approved dump for this category of waste.

4.12 Waste Removal

Waste material will not be permitted to accumulate on site. Litter such as packaging will be returned to a vehicle and taken home to be disposed of in the garbage. Oils from servicing will be removed from the site by the person doing the work.

4.13 Erosion and Sedimentation

The Glenelg Hopkins CMA have instructed that careful consideration must be given to the management of sedimentation due to the proximity of the quarry to Mount Emu Creek and drainage lines.

DEECA noted the proximity of the quarry to Mount Emu Creek. DEECA indicated that “the Work Plan will need to demonstrate how the creek will be protected from impacts such as runoff.”

There has not been any history of downslope sedimentation outside the quarry footprint. Also, there is little evidence of erosion within the quarry. The only steep grades are working faces where the stone resists erosion.

Surface water runoff from exposed quarry surfaces will be contained within the quarry. If there is any sedimentation it will be on the quarry floor.

There is some risk of erosion and sedimentation from the freshly formed topsoil stockpiles around the pit perimeter. Creek and drain lines are located downslope.

To control the risk, exposed soil surfaces will be stabilised by establishing a grass cover. But until the grass cover has sufficiently taken, a sediment fence will be formed on the downslope side to catch sediments.

5 Sensitive Receptors

5.1 Nearby Houses

The nearest house to the quarry sits within the future extraction footprint. The house is derelict and will be demolished.

The second nearest house to the quarry sits within the Work Authority boundary but beyond the quarry footprint. The nearest extraction will be 55m from the house. The house is owned and occupied by the operator.

There are two houses in Fearnleys Road, 425m and 460m south of the Work Authority boundary. Both houses are owned by the operator, are not occupied, are uninhabitable and have lost their planning status of a dwelling through disuse.

There is one other house within 500m of the Work Authority boundary. It is located to the east on Hopkins Falls Road. The nearest corner of the house is 490m away from the nearest corner of the Work Authority boundary. This house has a separation distance of more than 500m between the activity boundary and the sensitive use area in accordance with the EPA's "Separation Distance Guideline."

There are nine houses located 500-1000m from the Work Authority boundary. One house 700m north of the Work Authority across the Mount Emu Creek valley. The other houses are to the southeast of the site.

There are 20 houses located 1000-2000m from the Work Authority boundary. Eight of these are along Princes Hwy to the east of the site.

5.2 Mount Emu Creek

Mount Emu Creek is a sensitive receptor. The creek bed and creek banks are Crown Land. The creek is habitat for fish, fauna and flora. The creek contains surface water.

Mount Emu Creek is located north of the Work Authority. The nearest disturbed earth is a topsoil stockpile setback 90m. The pit is setback 105m from creek.

There is an unnamed drain line that crosses the western boundary of the Work Authority. The drain line takes overflow water from the farm dam. The drain is a 1900m long grass lined channel with flat grade to the creek. Water will not discharge into the channel from the pit area until after full rehabilitation.

There is a drain line that crosses the eastern boundary of the Work Authority. The drain line takes overflow water from the farm dam. The drain is 600m of grass lined channel with flat grade to the creek. Nearest disturbed earth is a topsoil stockpile 80m upslope. The pit is 100m away, but surface water runoff from disturbed earth in the pit will be contained within the pit.

The land partly overlaps the floodplain of Mount Emu Creek. The CMA advised that parts of the site may become inundated during a 1% AEP flood. The agency will insert a condition requiring a Flood Response Plan.

The CMA also advised: "Careful consideration should be given to management of sediment from the quarry and access routes, especially given the numerous drainage lines and proximity to Mount Emu Creek." (CMA advice is contained in the appendix.)

DEECA noted the proximity of the quarry to Mount Emu Creek. DEECA indicated that “the Work Plan will need to demonstrate how the creek will be protected from impacts such as runoff.” (DEECA advice to initial site meeting in the appendix.)

5.3 Flora and Fauna

Peregrine falcons have been observed on the site but there is no known nesting site. The birds do not seem to be disturbed by quarrying activities.

Emergent rock on the eastern side of the hill could potentially be habitat for lizards. There are native raspberries growing amongst the rocks.

5.4 Roads

Hopkins Falls Road is a sensitive receptor. The road is classified as a Class 3 rural link road administered by Moyne Shire Council.

The quarry will contribute to the traffic count. Based on the current output, there will be 3- 5 loaded trucks per day leaving the site. Staff traffic will be minimal with staff likely to arrive at the start of the shift and leave at the end of the shift.

Traffic volumes and size of trucks are considered to be appropriate and within normal expectations for a rural link road.

Vecroads have requested that Dwarroon Road not be used as a delivery route due to the poor intersection with Princes Hwy.

The main delivery route is eastwards from the quarry 1.2km to Princes Hwy, unless there is a local delivery to the west, such as Wangoom or Purnim. Deliveries westward on Hopkins Falls Road will cross the Hopkins Falls Bridge.

5.5 Shire Owned Bridges

The shire had previously instructed that the Hopkins River bridge at Hopkins Fall not be used by loaded trucks. This advice has been updated by the shire, and loaded trucks are now permitted to use the bridge.

6 Planning Controls

6.1 Aboriginal Cultural Heritage

The extraction site is within an area of cultural heritage sensitivity. A Cultural Heritage Management Plan was prepared in 2012. Refer CHMP 11336 in the appendix. An archaeological survey was conducted on the site. No Aboriginal cultural heritage material was identified.

CHMP 11336 does not cover the area of expansion. This Work Plan Variation triggers the need for a new Cultural Heritage Management Plan to cover the areas to be disturbed in the expansion.

Fieldwork for the new Cultural Heritage Management Plan has been completed under the supervision of the Registered Aboriginal Party. No cultural heritage material was found.

6.2 Moyne Shire Planning Scheme

The site is Zoned FZ Farm Zoned. Quarrying is not a prohibited use in Farm Zone.

The site is within the BPA overlay. (Bushfire Prone Area.) The controls of the BMP do not relate to the quarry.