

Section 3

Proposed Operations

3.1 INTRODUCTION

This section presents a description of the ongoing operations of Possum Brush Quarry (Stage 2), programmed to occur over the next 30 years together with the proposed modifications to Development Consent DA 283/97 required to ensure PBM is able to provide high quality products to local and regional markets including a number of State significant projects on the NSW North Coast.

Figure 3.1 presents the current layout of the Possum Brush Quarry and the boundary of the extraction area for Stage 2 operations.

3.1.1 Objectives of the Modified Increased Production and Stage 2

PBM's objectives for its ongoing operations and for modifying Development Consent DA 283/97 to increase production are as follows.

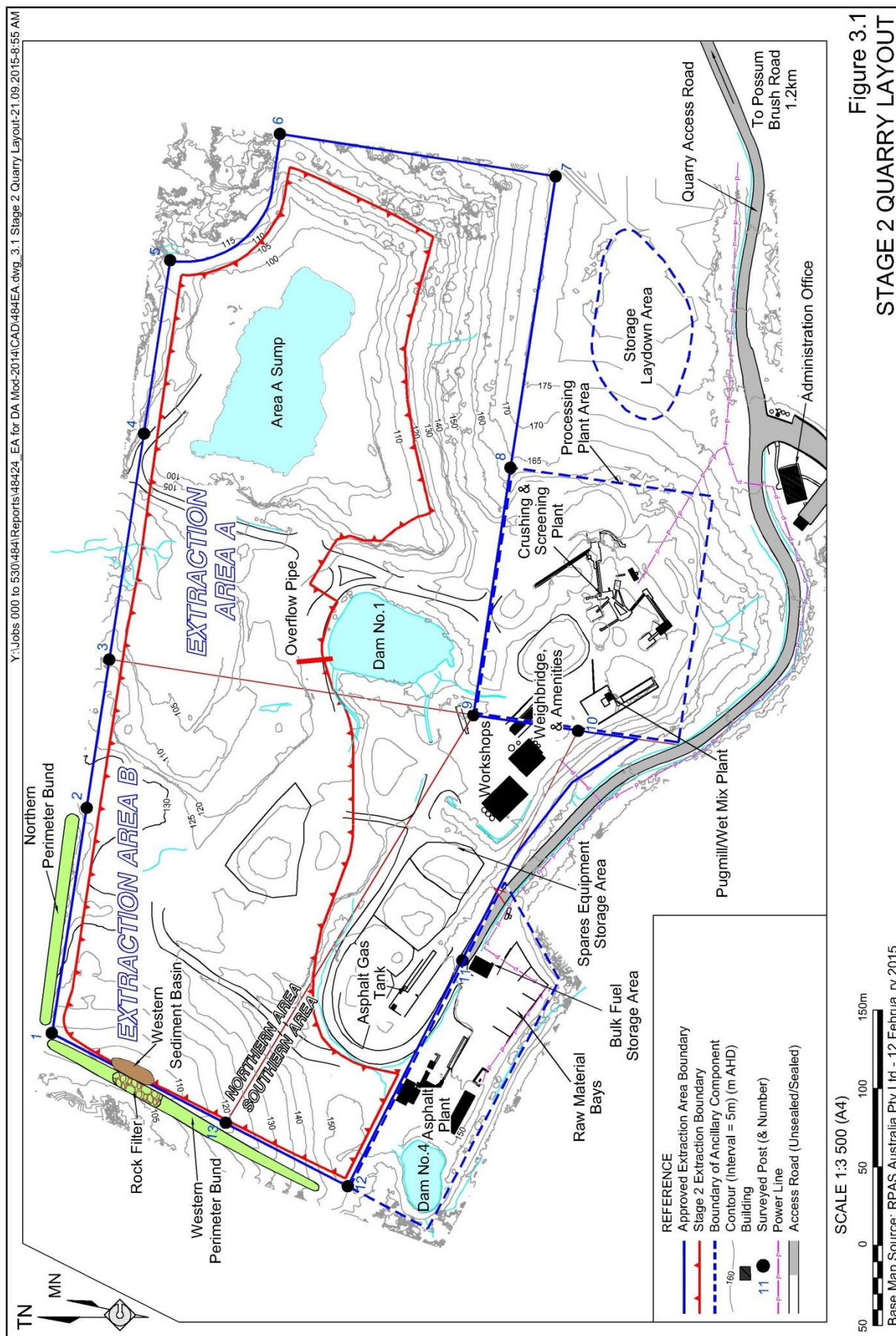
- To continue the current operations of the Quarry to ensure the ongoing supply of high quality products to its customers.
- To maximise the recovery of the identified resources in a manner that is both efficient and practical whilst utilising existing processing infrastructure.
- To ensure that processing and product transport operations are undertaken in the most cost effective manner.
- To ensure that the Quarry is appropriately and progressively rehabilitated, where practicable.
- To minimise, to the maximum extent practicable, the overall environmental impact of the Quarry throughout Stage 2.

3.1.2 Proposed Modifications

3.1.2.1 Introduction

PBM proposes to modify the following conditions within Development Consent DA 283/97 to provide for the ongoing operation of the Quarry throughout Stage 2 and to increase the permitted annual production utilising the existing on-site processing infrastructure.

The requested modification of Development Consent DA 283/97 relates to eight conditions, namely *Conditions 1 to 4, 7, 8, 47 and 53* as described below and include the approval to forfeit the remaining years approved under Stage 1 and to continue all quarry-related operations under Stage 2 of Development Consent DA 283/97.



3.1.2.2 Conditions Requiring Modification

Condition 1

“The development is to be carried out generally in accordance with:

- a) the Development Application 283/97 lodged with Greater Taree City Council on 12 September 1997, and accompanying Environmental Impact Statement prepared by ERM Mitchell McCotter dated September 1997;*
- b) modification application MOD 52-7-2002, dated 18 July 2002;*
- c) modification application MOD 105-8-2006, dated 29 August 2006;*
- d) modification application DA 283/97 MOD 3 and accompanying Environmental Assessment titled “Environmental Assessment for An Additional Minor Area of Extraction at the Possum Brush Quarry”, prepared by R W Corkery and Co Pty Limited and dated November 2012; and*
- e) the conditions of this consent*

It is proposed that the modification of *Condition 1* would reflect the contents of this document with a caveat that the latest document prevails where there is any inconsistency.

Condition 2

“In accordance with section 91AB(1)(c) of the EP&A Act, this consent is issued for Stage 1 of the development. Stage 1 comprises the first 21 years of quarrying activity on the site following the issue of this consent.”

The Possum Brush Quarry has been operating since 1998 in accordance with Development Consent DA 283/97, with *Condition 2* providing an approval to PBM for a period of 21 years (Stage 1), i.e. to 2019.

The opportunity to extend the period of quarry operations for a further 29 years (Stage 2) is subject to a review of the Quarry’s environmental performance over the first 21 years (see Conditions 3 and 4 below).

It will be appropriate to delete this condition as Stage 1 would effectively be completed by the time the Stage 2 development consent is issued.

Condition 3

“In accordance with section 91AB(2) of the EP&A Act, a further consent shall be obtained for Stage 2 of the development. Stage 2 comprises the subsequent 29 years of quarrying activity on the site.”

It is proposed that *Condition 3* is deleted and replaced by a new condition reflecting the revised expiry date in 2045, that is, 30 years after the date the modified development consent is approved.

Condition 4

“A consent granted in accordance with Condition No. 3 does not require a further development application under section 77 of the EP&A Act. However, any such consent will be subject to the Applicant preparing a report(s) on the environmental performance of Stage 1 of the development and additional information relating to proposed Stage 2 operations. The report(s) is to be prepared to the satisfaction of the Director-General and shall be made publicly available. Any public submissions received in response to the report(s) shall be taken into consideration prior to the granting of a consent for Stage 2 of the development.”

Condition 4 clarifies that the ongoing operation of the quarry for an additional 29 years should be considered after an environmental performance report is prepared and considered appropriate by the Director-General for the initial 21 years of quarrying operations. Section 2 of this document describes the current status of the Quarry and its environmental performance since 1998. It is proposed that Condition 4 is deleted as it would no longer be relevant with the approval of Stage 2.

Condition 7

“During Stage 1 of the development:

- i. extraction shall be confined to Area A and the area known as the Northern Stage in Area B, as shown in Figure 1 attached,*
- ii. extraction sequences shall generally follow Figures 2 and 3 attached or as modified by the EMP referred in Condition No. 27, and*
- iii. the depth of extraction shall be restricted to AHD 90m, unless otherwise approved by the Director-General.*

Nothing in this condition affects extraction sequence and depth during Stage 2 of the development. Any restrictions on extraction sequence and depth during Stage 2 are to be determined prior to the issuing of any consent in accordance with Condition No. 3.

It is proposed that Condition 7 be modified to reflect the defined extraction area and depth (45m AHD) proposed within Stage 2. It is noted that the proposed maximum extraction depth during the period 2015 to 2045 would be approximately 45m AHD, i.e. 5m higher than originally nominated in the 1997 EIS. The resource below 45m AHD would be part of the overall resource available for extraction beyond 2045 (see Section 3.14).

Condition 8

It is proposed that Condition 8 is updated to reflect the names of the relevant government agencies at the time the modified Development Consent DA 283/97 is issued.

Condition 47

“The Applicant shall limit production and transportation of finished quarry products to an average of 200,000 tonnes per annum. Materials provided to Council free of charge for roadworks on Possum Brush Road in accordance with Condition No. 31 shall be excluded from this limit.”

Condition 47 of Development Consent DA 283/97 provides for an average production level from the Quarry of 200 000tpa. This level was set as an average given the recognition at the 1998 Commission of Inquiry which assessed the development application that the production level at the Quarry would likely fluctuate noticeably, particularly in response to the raw material requests for the upgrading works associated with the Pacific Highway.

It is proposed that the current approved average limit of 200 000tpa be increased to ‘an average of 370 000tpa and maximum limit of 500 000tpa’ with the provision that the Secretary (or his or her delegate) will have the sole right to vary the permitted tonnages despatched upwards in the event of State or local government projects of regional or State significance becoming available for tender.

Condition 53

“The Applicant shall continue to provide a bank guarantee in the sum of \$50,000 in favour of the Council being the sum necessary to ensure due completion of the rehabilitation and landscaping works referred to in Condition 27.”

It is proposed to modify *Condition 53* to raise the quantum of the bank guarantee to a total of \$200 000. This figure is more aligned to current expectations.

3.2 RESOURCE REMAINING AND STAGE 2 QUARRY LIFE

3.2.1 Previously Extracted Material

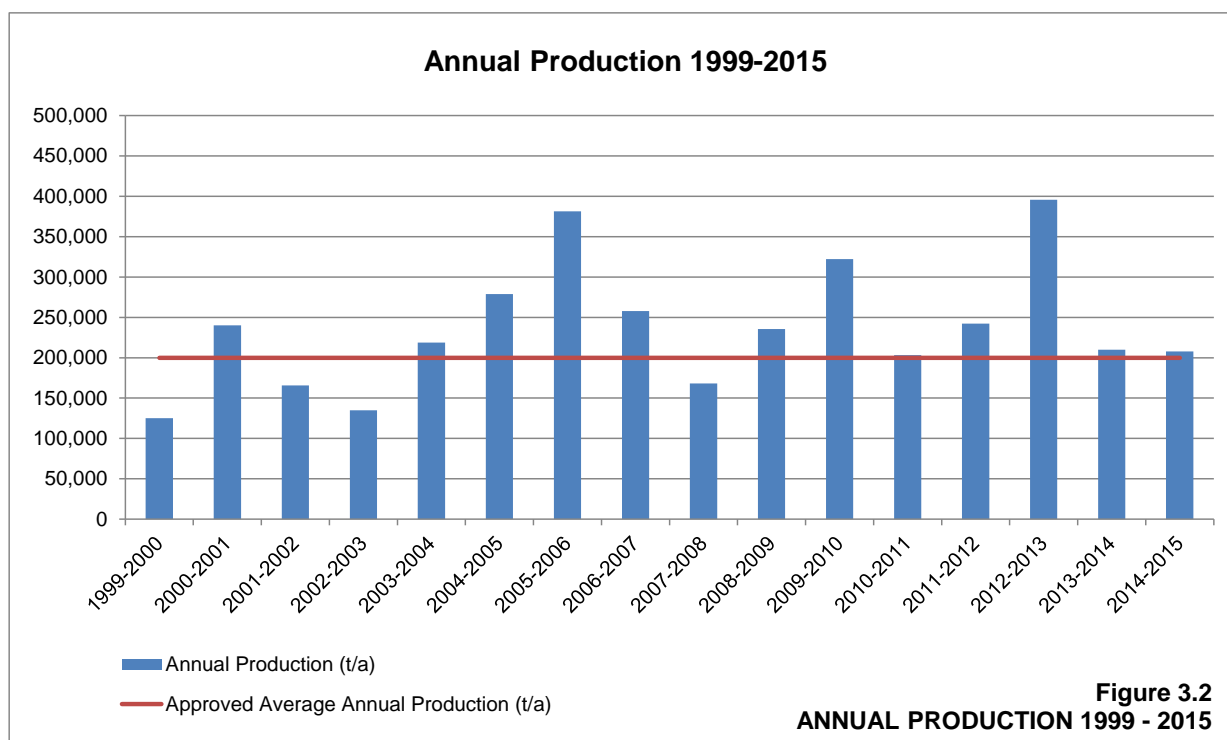
Condition 47 theoretically nominates the production of 4.2 million tonnes of products during the initial 21 years of the Quarry’s life, based upon an average annual extraction rate of 200 000tpa.

Table 3.1 lists the annual production at the Quarry during the period 1999-2015. During that period, a total of 3 787 067 tonnes of products were produced and despatched with the annual production level varying from 134 867 tonnes (2002 – 2003) to 395 662 tonnes (2012 – 2013).

Table 3.1
Annual Production 1999-2015

Year	Production (t)	Year	Production (t)
1999-2000	125 000	2009-2010	235 506
2000-2001	240 000	2009-2010	322 081
2001-2002	165 622	2010-2011	203 169
2002-2003	134 867	2011-2012	242 229
2003-2004	218 828	2012-2013	395 662
2004-2005	279 010	2013-2014	209 934
2005-2006	381 466	2014-2015	207 780
2006-2007	257 774	Total	3 786 967
2007-2008	168 039	Average	236 685

The annual production levels to date are displayed graphically in **Figure 3.2**.



At present, the average production level between 1999 and 2015 stands at 236 685 tonnes, i.e. 36 685 tonnes above the projected average level for the approved life of the Quarry. It is similarly noted the 3 786 967 tonnes of products sold since 1999, is 413 033 tonnes below the theoretical maximum level relevant to the until 21 year period for Stage 1.

3.2.2 Recoverable Remaining Resource

The previous *Environmental Impact Statement* (ERM, 1997) that accompanied the application for the 1998 Development Consent recorded a total of 16.2 million tonnes of rock being present within Extraction Areas A and B.

In March 2015, PBM engaged Runge Pincock Minarco (RPM) to design extraction stage plans for the Quarry to 40m AHD in which all approved resources would be extracted. Following the completion of the quarry design, RPM estimated that approximately 20Mt of resource remained within Areas A and B, based upon specific gravities of 2.3t/m³ for weathered rock and 2.7t/m³ for fresh rock.

Table 3.2 lists the quantities of fresh and weathered rock estimated by RPM i.e. based upon the production of an average of 370 000t per year. A total of 11.1Mt of resource could be extracted within 30 years (i.e. throughout Stage 2).

Table 3.2
Resource Quantities – 30 Year Period (Stage 2)

Area	Weathered Rock (million tonnes)	Fresh Rock (million tonnes)	Total (million tonnes)
Area A	0.8	5.2	6.0
Area B	0.3	4.8	5.1
Total	1.1	10.0	11.1

Table 3.3 presents the estimated quantities of fresh and weathered rock remaining after the proposed 30 year period, in which an additional 9Mt of resource would remain to a final depth of 40m AHD over both Area A and Area B.

Table 3.3
Resource Quantities – Beyond 30 Year Period (Stage 2)

Area	Weathered Rock (million tonnes)	Fresh Rock (million tonnes)	Total (million tonnes)
Area A	0.1	2.4	2.5
Area B	0.3	6.2	6.5
Total	0.4	8.6	9.0

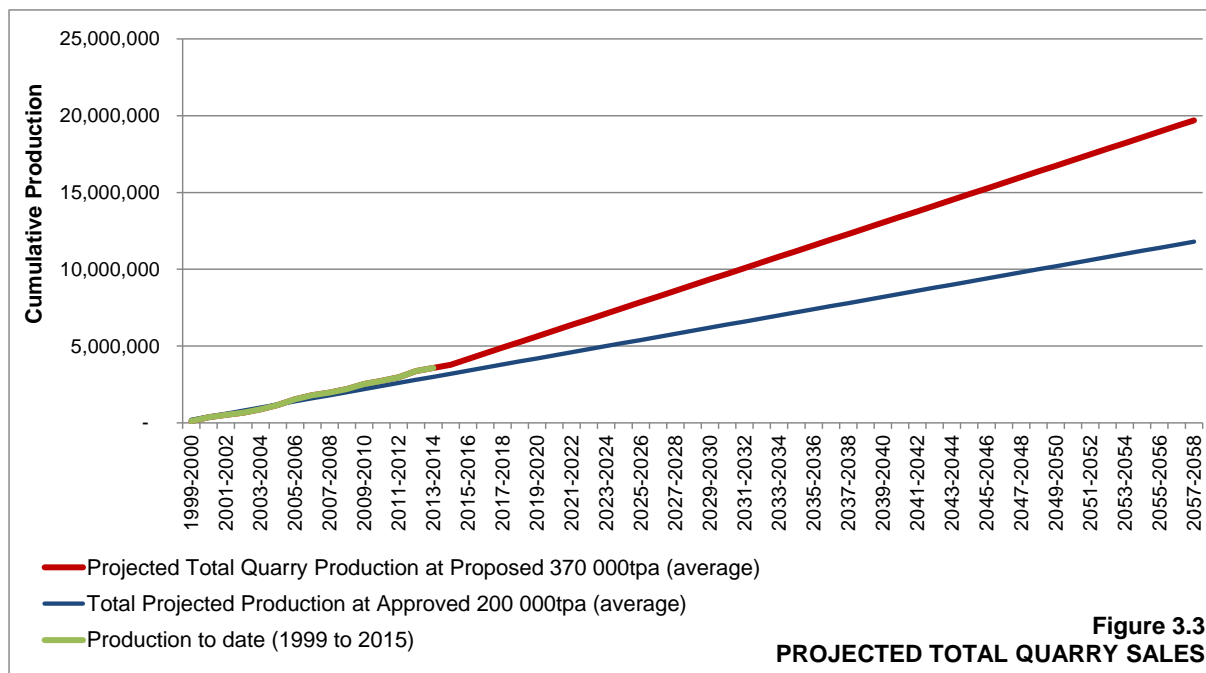
The defined extraction area limit originally outlined in ERM (1997) does not require any modification as the entire 20Mt of remaining rock lies within the approved extraction Areas A and B to the originally nominated extraction depth limit of 40m AHD. It is noted that the extraction plans for the period 2015 to 2045 nominate a depth limit of 45m AHD given the extraction benches in the fresh rock are each 15m. The rock below 45m AHD would be available beyond the end of Stage 2 (see Section 3.14).

3.2.3 Stage 2 Quarry Life

It is proposed that Stage 2 of the Quarry operates for a further 30 years after the issue of the modified Development Consent DA 283/87. This Quarry life is considered appropriate given the recognition of the remaining resources and the high quality of the products from the Quarry, as well as the Quarry's location with respect to the current and proposed markets, particularly projects of State significance. Further to this, and based upon PBM's construction and operation of the on-site asphalt plant, market predictions for the supply of products from the Possum Brush Quarry has further increased, supporting PBM's request for Stage 2 to operate for 30 years, in accordance with *Condition 3* and the proposed amendment to the approved production levels outlined in *Condition 1* (discussed further in Section 3.2.4).

3.2.4 Sales Levels

Figure 3.3 displays PBM's prediction of future sales levels in the context of the remaining resource and market predictions, i.e. in support of its request to modify *Condition 47*.



PBM considers it is both practical and realistic, given the variable markets on the NSW North Coast for the range of State significant projects planned, to propose the average sales of 370 000tpa for the 30 years with a maximum limit of 500 000tpa.

For the purposes of recording annual sales, PBM proposes to include:

- all aggregates and road pavement products despatched from the Quarry;
- all aggregates incorporated within the asphalt products despatched from the Quarry; and
- all recycled products blended with the aggregates and road pavement products.

As is currently the case, sales do not include any aggregates or road pavement materials used in the rehabilitation or maintenance of Possum Brush Road.

3.3 EXTRACTION AREA AND OPERATIONS

3.3.1 Ongoing Extraction Operations

Extraction operations at the Quarry are not anticipated to change as a result of the modification. In compiling the updated stage plans for the Quarry, RPM ensured that the design of the extraction area would be comparable with the design of the extraction area originally outlined within ERM (1997).

It is noted that no change to the current extraction methods (drill and blast) equipment or internal Quarry earthmoving equipment would be required to extract the remaining resource throughout Stage 2 as all activities would still occur generally as outlined within ERM (1997). However, for completeness and for the use of this document as the primary reference within any future consent modifications or conditions, the extraction operations have been reproduced/paraphrased from ERM (1997) in the following subsections based upon the stage extraction layouts prepared by RPM.

Extraction would continue to proceed in both Area A and Area B concurrently on either 10m or 15m operational benches. Generally, the higher quality rock within Area A would continue to be extracted with Area B planned to be the main source of blends requiring weathered rock content.

Oversize rock breaking would continue to be undertaken on the lowest available and practical operational benches within Areas A and B.

Surface water within Areas A and B would be directed either to a sump on each defined extraction level or to one or more sumps on the lowest active extraction floor. Accumulated water in any of the sumps would continue to be used for dust suppression, pumped to the watercourse feeding Dam 3 or allowed to evaporate.

To ensure minimal impacts upon the surrounding residents, the plans for the ongoing Stage 2 extraction operations have been developed to utilise the existing landform and vegetation to the north of the Quarry as a screen for extraction operations in Area B. The proposed deepening of Area A from the current 90m AHD level to approximately 45m AHD and Area B from 135m AHD to approximately 45m AHD would occur wholly within the approved extraction area, where all vegetation has been removed. Extraction activities below approximately 115m AHD would be fully screened in all directions by natural topography and the quarry void.

3.4 EXTRACTION AREA DESIGN AND SEQUENCE

3.4.1 Extraction Area Design

RPM has designed the ongoing extraction operation relying upon the current design parameters, namely:

Weathered Rock

- Batter Angle – 75°
- Bench Height – 10m
- Bench Width – 3m

Fresh Rock

- Batter Angle – 80°
- Bench Height – 15m
- Bench Width – 3m

All ramps within the extraction area would have a width of approximately 20m (including 3m for safety bunds) and a maximum ramp grade of approximately 10%. Local variations to these design parameters may be necessary in specific areas of the extraction area.

The extraction floor in Areas A and B has been designed at 45m AHD, i.e. 5m above the original approved floor level. The resource remaining below 45m AHD would still be available for extraction beyond 2045 (see Section 3.14).

PBM would maintain sumps up to 5m to 10m deep below the lowest active extraction floor to collect surface water accumulating within the extraction area.

3.4.2 Extraction Sequence

Figures 3.4 and 3.5 display the proposed extraction sequence in 5 yearly stages.

Figure 3.4

- Stage 1 – Year 1 to 5
- Stage 2 – Year 6 to 10
- Stage 3 – Year 11 to 15

Figure 3.5

- Stage 4 – Year 16 to 20
- Stage 5 – Year 21 to 25
- Stage 6 – Year 26 to 30

The 5 yearly staged extraction plans proposed by RPM reflect the concepts outlined in ERM (1997) which have been adopted by PBM to date.

Extraction activities would continue to occur separately within Areas A and B during the first 10 years (Stages 1 and 2) although both areas would have internal road access between them. A single combined extraction area would be created within Stages 3 to 6 as development of Area B would be required to enable extraction activities in Area A to progress below 75m AHD.

Area A

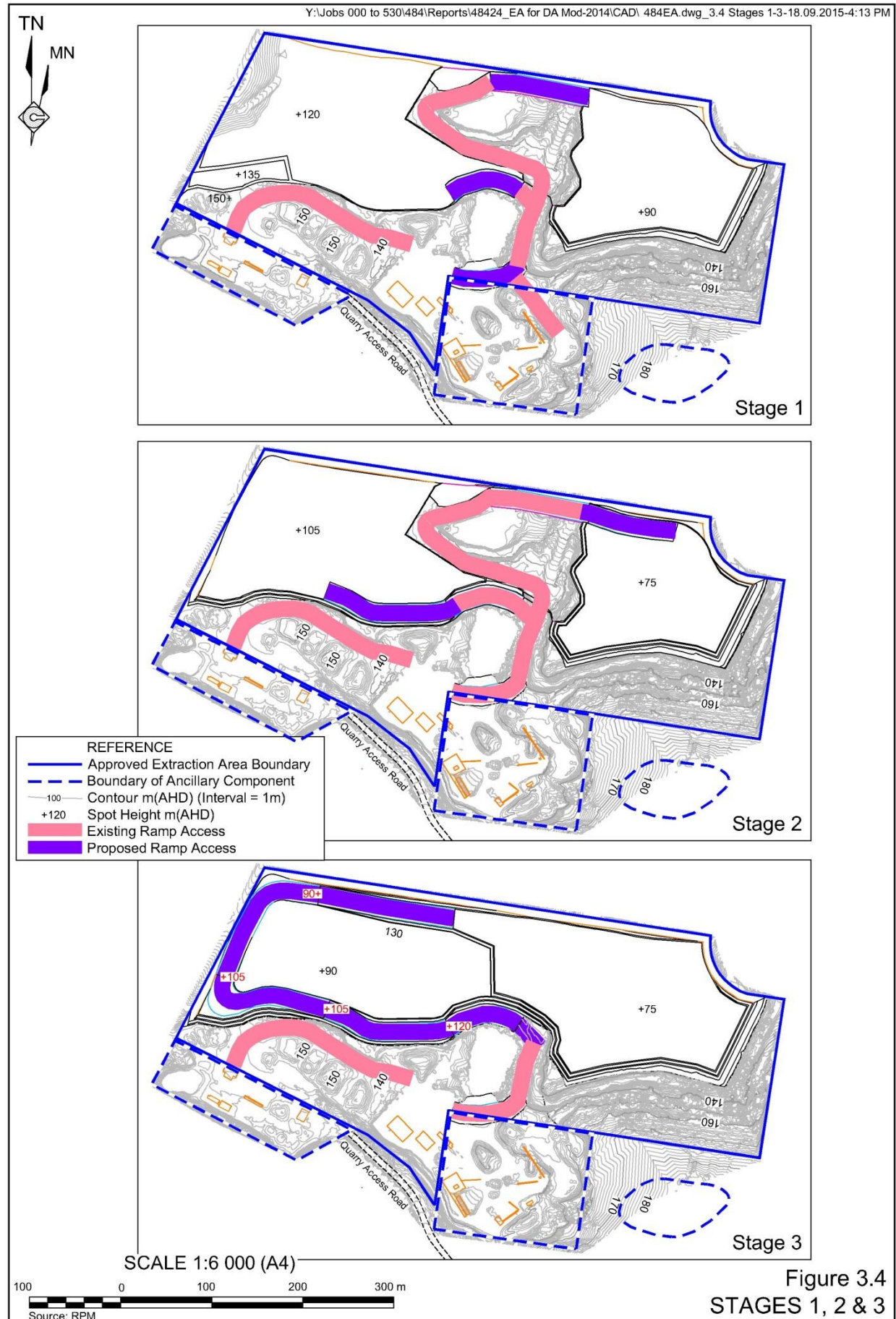
The ongoing extraction of the resource within Area A would involve extraction generally below the current 90m AHD extraction floor to a nominated elevation of 45m AHD with active extraction floors (and benches) created at 75m AHD and 60m AHD.

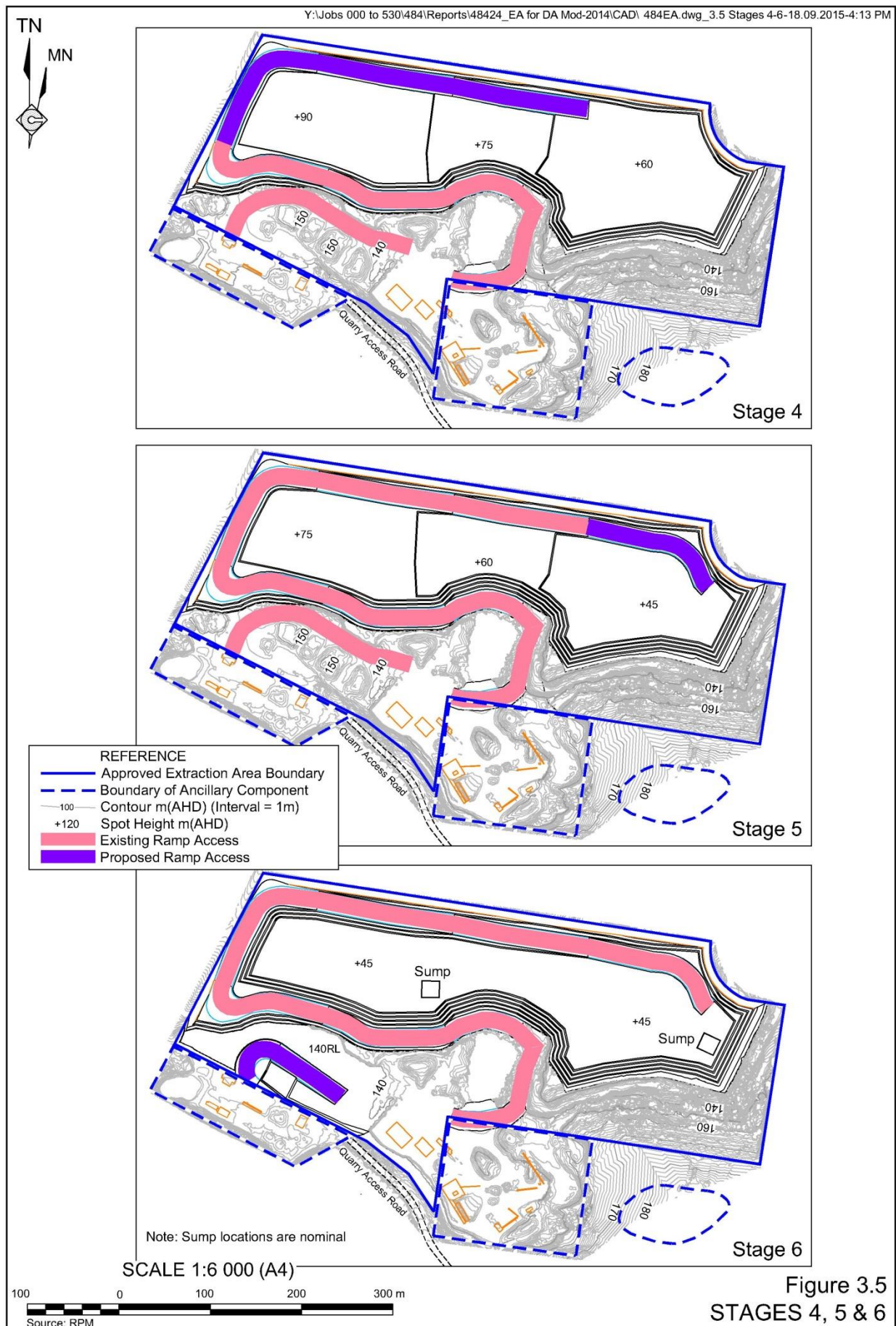
Area B

Area B was nominally split into two separate areas in ERM (1997), namely the northern and southern areas (see **Figure 3.1**), with the southern area now containing a product stockpile area and internal haul road connecting the processing plant area to the external road network via the Quarry Access Road.

To date, extraction operations have been undertaken only in the northern area, with parts of this area also utilised for product stockpiling, as required. The bulk of the extraction to be undertaken in Area B during Stage 2 would occur within the northern area. The fresh rock in Area B typically occurs below approximately the 135m AHD level. Weathered material remaining above this level would continue to be blended as required for road pavement products. Throughout Stage 2, PBM would progressively create active extraction floors (and benches) at 120m AHD, 105m AHD, 90m AHD, 75m AHD, 60m AHD and floor level at 45m AHD.

Area B has been fully stripped of its vegetation and requires no further preparatory works to allow the remaining weathered material to be extracted. It is envisaged that the bulk of the southern area would continue to be used as a stockpiling area and to continue to provide access to the processing plant and active extraction areas. Extraction of materials within the western side of the southern area would commence during Stage 6 near the end of Stage 2 (see **Figure 3.5**).





3.5 EXTRACTION METHOD

The method of extraction for the proposed extension would not vary from those methods currently employed at the quarry. Any remaining topsoil to be stripped would be either placed immediately on rehabilitation areas or windrowed/stockpiled at the periphery of the quarry area and adjacent to future rehabilitation areas.

Where practical, the exposed weathered rock would be extracted by a bulldozer or excavator until refusal. The ripped rock would be pushed by bulldozer into a stockpile from where it would either be loaded into an off-road haul truck for transportation to the processing area or loaded into road trucks for direct sale.

When ripping is no longer feasible, drilling and blasting would continue to be undertaken. Each blast typically involves the fragmentation of between 15 000t and 35 000t of rock although larger blasts may be possible during Stage 2¹. Blasting would continue to be carried out by a suitably qualified and experienced contractor.

Blasted rock would be loaded from the blasted rock pile into off-road haul trucks for transportation to the processing area or loaded onto road-registered trucks for direct sale.

3.6 PROCESSING AND STOCKPILING

3.6.1 Ongoing Processing Operations

Processing at the Quarry would continue to be undertaken principally utilising the current plant and equipment within the processing area shown on **Figure 3.1**. The plant comprises a low profile crushing and screening plant and a state-of-the-art pugmill.

The current crushing and screening plant has operated during previous busy periods with a throughput of up to approximately 250 tonnes per hour, an amount, if annualised equates to approximately 500 000tpa, i.e. with periods for regular maintenance and down-time. Therefore the current crushing and screening plant would not need to be upgraded to process the maximum of 500 000tpa during Stage 2. Throughout Stage 2, PBM would periodically refurbish the plant components to remove any bottlenecks that develop and replace/add any components that re-establish and maintain the desired throughput and product quality.

A brief overview of the operation of the current crushing and screening plant is as follows.

1. Blasted rock is placed into a hopper/apron feeder and then passed over the initial scalping screen. Rock falls into the jaw crusher, for initial primary crushing, set to produce material less than 250mm.
2. Primary-crushed rock is then conveyed to primary screens that separate crushed rock and scalps, with the scalps typically <40mm. Primary crushed rock is conveyed to a gyrosphere crusher for secondary crushing and then conveyed to the product screens which direct material to either stockpile or the tertiary impact and gyrosphere crushers.

¹ All blasts, irrespective of size, would continue to be designed to satisfy all relevant conditional requirements and criteria.

3. Screened oversize material is returned to the gyrosphere crushers or the vertical shaft impactor for closed circuit re-crushing before final screening. Water sprays are strategically placed to aid in dust suppression at the gyrosphere, vertical shaft impactor, screens, transfer points and relevant discharge points.

The crushing and screening plant is complemented by a state-of-the-art, electronically controlled pugmill/wetmix plant used to blend a wide range of materials produced within the quarry, i.e. with additives such as cement or lime. The plant would continue to be operated during normal operating hours producing products used principally in the construction of stabilised road pavements. The pugmill/wetmix plant has a high throughput of 450tph to provide the large quantities of road pavement products required by road contractors over comparatively short periods.

All components of the crushing and screening plant and pugmill/wetmix plant would continue to be maintained and refurbished, if required, to retain the optimum production level and product quality. At times, minor items of portable plant would continue to be brought on site for short periods of time for special projects and operated within the processing area, such as a mobile horizontal impactor.

Periodically, PBM uses a mobile heavy duty reclaimer screen for screening coarse/oversize products. This screen would continue to be used within the active extraction area, typically in areas well shielded by extraction faces.

3.6.2 Ongoing Stockpiling Operations

Six or more products (typically 20mm, 14mm, 10mm, 7mm, scalps and <5mm), are typically produced from processing operations and are stockpiled separately for direct sale or subsequent blending. The capacity of the stockpiles beneath the plant conveyors is up to 6 000 tonnes and up to 6m in height. Excess products are transferred to the secondary stockpiles around the plant and within the extraction area.

3.7 WASTE MANAGEMENT

Small quantities of waste would continue to be generated throughout the quarry's operational life, including:

- domestic type refuse and workshop wastes that would be stored in approved containers and transported regularly to an approved waste disposal facility;
- sullage wastes and septic wastes from staff amenities would be discharged into an approved septic tank with pump-out facilities; and
- stormwater potentially contaminated with petroleum products would continue to drain to a proprietary oil/water separator in the workshop from which clarified water would be allowed to drain to the sedimentation pond system. Oil-contaminated fluids would continue to be collected by a licensed recycling contractor for disposal.

3.8 EXTRACTION EQUIPMENT

Table 3.4 outlines the current extraction equipment used at the Quarry and their typical functions. It is envisaged that no additional equipment would be required to operate at a maximum production rate of 500 000tpa, with any new equipment purchased the result of upgrading machinery.

Table 3.4
Operational Equipment

Equipment	No.	Function	Frequency of Use
Bulldozer (Cat D9 to D10 size or similar)	2	Stripping topsoil, pushing subsoil, ripping weathered rock and stockpiling.	Continuous
Hydraulic Drill Rig	1	Drilling blast holes.	Weekly
Excavator (30t - 85t)	1	Loading ripped and blasted rock into haul trucks.	Continuous
Excavator (30t to 50t)	2	Hammering and loading oversize rock	As required
Haul Truck (40t)	3	Transporting ripped and blasted rock to the processing area.	Continuous
Front-end Loader (Cat 980 size or similar)	4	Loading product trucks & stockpiling. Feeding crushing plant and pugmill/wetmix plant	Continuous
Water Cart	1	Watering of haul roads.	As required

3.9 PRODUCT TRANSPORTATION

3.9.1 Quarry Access and Public Road Network

Access to the Quarry is provided via the Quarry Access Road (see **Figure 3.1**) that connects the internal road network to the external road network, namely Possum Brush Road and the Pacific Highway.

The Quarry Access Road is a two lane 1.4km long, asphalt road with a 40km/h speed limit which has been designed and constructed by the Applicant to accommodate up to 19m long truck and dog configurations, with a load capacity of up to 38t. PBM maintains the Quarry Access Road to a high standard, with adequate sight lines, established safety berms/barriers and signposted along the length of the road, highlighting to drivers the speed limit, upcoming corners and limiting of compression brake signage. PBM would continue to maintain the Quarry Access Road for the remainder of the Quarry life.

The Quarry Access Road extends to the local Possum Brush Road with a lockable gate positioned approximately 50m along the Quarry Access Road. The gate is locked outside approved operational hours to ensure that no product trucks access the Quarry outside of the prescribed hours and to ensure no members of the public can access the Quarry Site after hours.

The intersection of the Quarry Access Road with Possum Brush Road provides good visibility for drivers in both directions with two stop signs placed to direct all vehicles leaving the Quarry to stop before entering onto Possum Brush Road. All product trucks would continue to turn right from the Quarry Access Road onto Possum Brush Road and travel in an easterly direction towards the Pacific Highway, where product trucks either travel north or south to their

destinations. No product trucks are permitted to turn left when exiting the Quarry Access Road and travel west along Possum Brush Road unless deliveries are required at destinations west of the intersection of the Quarry Access Road and Possum Brush Road.

3.9.2 Traffic Levels

Traffic levels associated with product deliveries from the Possum Brush Quarry currently reflect sales of the various products produced at the Quarry. On a busy day when the asphalt plant, pugmill/wetmix plant and crushing and screening plant are all operating concurrently, up to 18 loads of product trucks are despatched hourly, i.e. after 7:00am² and occasionally in excess of 200 loads are despatched daily. Conversely, on days of limited sales, less than 30 truck loads are despatched daily. For the purposes of various assessments in this document relating to traffic, PBM would limit the hourly number of truck movements to 36 per hour in order to satisfy the Noise Assessment (see **Appendix 6**). **Table 3.5** lists the average daily traffic levels for average annual sales (370 000tpa) and maximum annual sales (500 000tpa) together with the maximum daily traffic levels on any day.

The daily traffic movements listed in **Table 3.5** have been based upon a payload of either 22 tonnes or 26 tonnes based upon PBM's review of weighbridge records on an average and busy day. On an average day, there is invariably a higher number of rigid trucks with a payload capacity in the order of 15 tonnes (thereby reducing the average payload), whereas, on a busy day there is a higher proportion of truck and dog trailers which have a payload capacity of 32.5 tonnes (thereby increasing the average payload).

The equal split of traffic movements north and south displayed in **Table 3.5** has been compiled following PBM's review of project and customer destinations. The annual split typically varies, however, PBM expects, based on its experience, that the split would vary from in the order of 60% north / 40% south to 40% north / 60% south. Therefore an equal split is considered appropriate.

Table 3.5
Forecast Average and Maximum Quarry-related Daily Traffic Movements

	Average 370 000tpa		Average 500 000tpa		Maximum Any Day	
	Average LV	Average HV	LV	HV	LV	HV
Possum Brush Road	42	140	88	140	88	420
Pacific Highway (northbound)	21	70	44	70	44	210
Pacific Highway (southbound)	21	70	44	70	44	210

PBM anticipates that the existing substantial variations in hourly and daily truck movements would continue throughout Stage 2. The upper limits of truck movements presented in this document also reflect the limitations relating to:

- a) noise generated by trucks travelling along Possum Brush Road, i.e. to be compliant with the NSW Road Noise Policy; and

² PBM restricts heavy vehicle movements between 6:30am and 7:00am to 10 movements principally by despatching the PBM-based trucks based at the Quarry during that first half hour and restricting incoming heavy vehicles until after 7:00am.

- b) the safety and level of service considerations relating to trucks entering and exiting the Pacific Highway at Possum Brush Road.

It is noted that no grade-separated intersection is currently present at the intersection of Possum Brush Road and the Pacific Highway. The planned upgrade of the Pacific Highway near Possum Brush will result in the current northbound lanes becoming a local service road for the local community and the Quarry and providing a more efficient entrance/exit onto the highway. Further discussions relating to the surrounding road network is provided in Section 5.2.

3.10 INFRASTRUCTURE AND SERVICES

The Applicant would continue to utilise the established administration office, car parks, workshops, weighbridge and amenities. During Stage 2, PBM proposes to formalise an already partially cleared area to be used as a hard stand area and store on the northern side of the Quarry Access Road near the administration office. The area displayed on **Figure 3.1** for this component is indicative only as site specific survey work has not yet commenced. PBM would lodge the necessary applications for building approval, etc. with Greater Taree City Council.

Mains power would continue to be used to operate the crushing and screening plant, pugmill/wetmix plant, the asphalt plant and lighting across the Quarry Site. Power is obtained via an overhead service located adjacent to the Quarry Access Road.

Water for all on-site uses is drawn principally from Dam 1 although water is occasionally piped from Dam 3 and/or the sump(s) within the active area (e.g. Area A sump – **Figure 3.1**). Drinking water is captured in tanks from the buildings on site.

PBM maintains underground and overhead communication lines for telephone and data transfer and has both mobile telephones/UHF two-way radios on site.

A 116 tonne capacity LPG tank is positioned near the asphalt plant to supply the gas requirements for heating the bitumen for the manufacture of asphalt.

Diesel fuel would continue to be stored on site within the covered bulk fuel storage area displayed on **Figure 3.1** that has the capacity to store up to 87 000L of diesel fuel.

No explosives are kept on site.

3.11 HOURS OF OPERATION

The hours of operation would not change as a result of the Proposal, with the quarry operations outlined in *Condition 9a – 9d* and *10* of Development Consent DA 283/97, being:

- Monday to Friday – 6:30am to 6:00pm;
- Saturdays – 7:00am to 3:00pm; and
- No work is proposed on Sundays or public holidays.

Further to this, no product trucks are permitted to enter the Quarry Site prior to 6:15am Monday to Friday and 6:45am Saturday.

3.12 EMPLOYMENT

The ongoing operation of the Quarry at average sales levels would continue to provide full-time equivalent (FTE) employment for approximately 17 persons on site. During periods of above-average production and sales, up to an additional 23 persons would be employed on site. A further 10 FTE persons would continue to be directly or indirectly employed off site for the supply of services and equipment, maintenance and support.

3.13 REHABILITATION

3.13.1 Land Use Objectives

In the short term, PBM's objective is to stabilise all earthworks, drainage lines and disturbed areas during activities associated with the ongoing operation of the quarry in order to minimise erosion and sedimentation and visibility impacts.

In the longer term, i.e. by the end of Stage 2, PBM's objectives for the rehabilitation of the completed areas of the Quarry are to vegetate those areas that are visible from areas beyond the Company's property and to stabilise all final slopes and to leave all disturbed areas that are safe.

PBM does, however, envisage that the Quarry would continue to operate beyond Stage 2 and therefore a number of components would remain operational. This subsection focuses on those rehabilitation activities that PBM would be committed to during Stage 2.

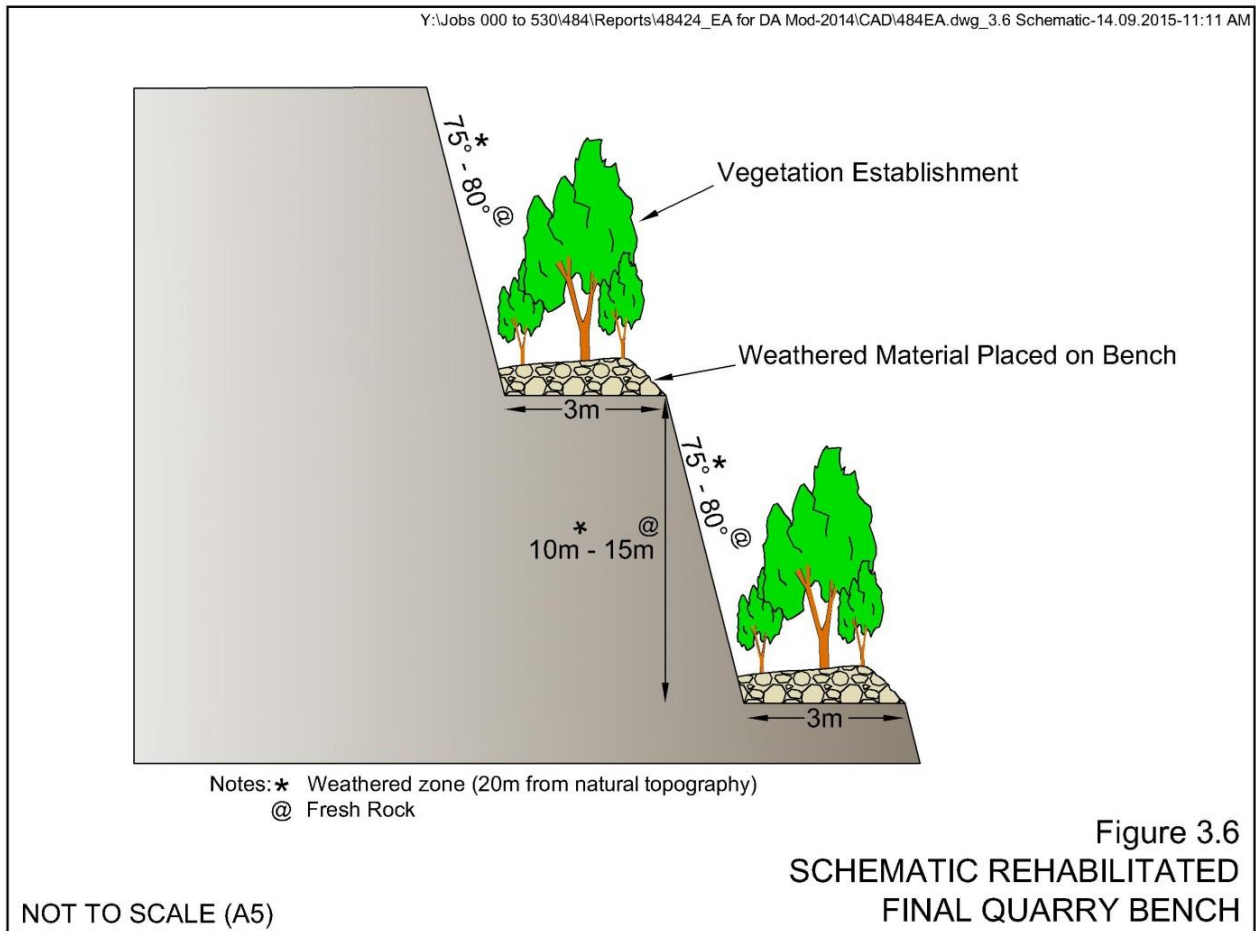
3.13.2 Landform at end of Stage 2

Figure 3.5 (Stage 6) displays the landform within the extraction area proposed at the end of Stage 2. The only areas requiring rehabilitation by that time would be the final benches above approximately 120m AHD to 135m AHD. The actual benches to be rehabilitated would be established during the first two stages (10 years) within the Stage 2 quarry life.

3.13.3 Rehabilitation Activities

The final benches within the extraction area above 120m AHD/135m AHD would be progressively revegetated to minimise the visual impact of the exposed rock faces. Approximately 1m to 3m of overburden would be placed on the completed benches with emphasis placed on creating a roughened surface to locally contain the bulk of rainfall. The overburden would be placed on each bench once extraction and haulage activities cease in that area and prior to the creation of the adjoining extraction face. The overburden would form a substrate for the subsequent growth of trees and shrubs which would be planted either through direct seeding or tubestock. PBM would adopt methods similar to those used to revegetate the elevated benches in the southeastern side of Area A.

Figure 3.6 schematically displays the profile of two final benches and the placement of the weathered rock and establishment vegetation.



3.13.4 Rehabilitation Bond

The current rehabilitation bond of \$50 000 is held by Greater Taree Shire Council. It is envisaged that the rehabilitation bond for the Stage 2 operations would be held by the Secretary of the Department of Planning and Environment.

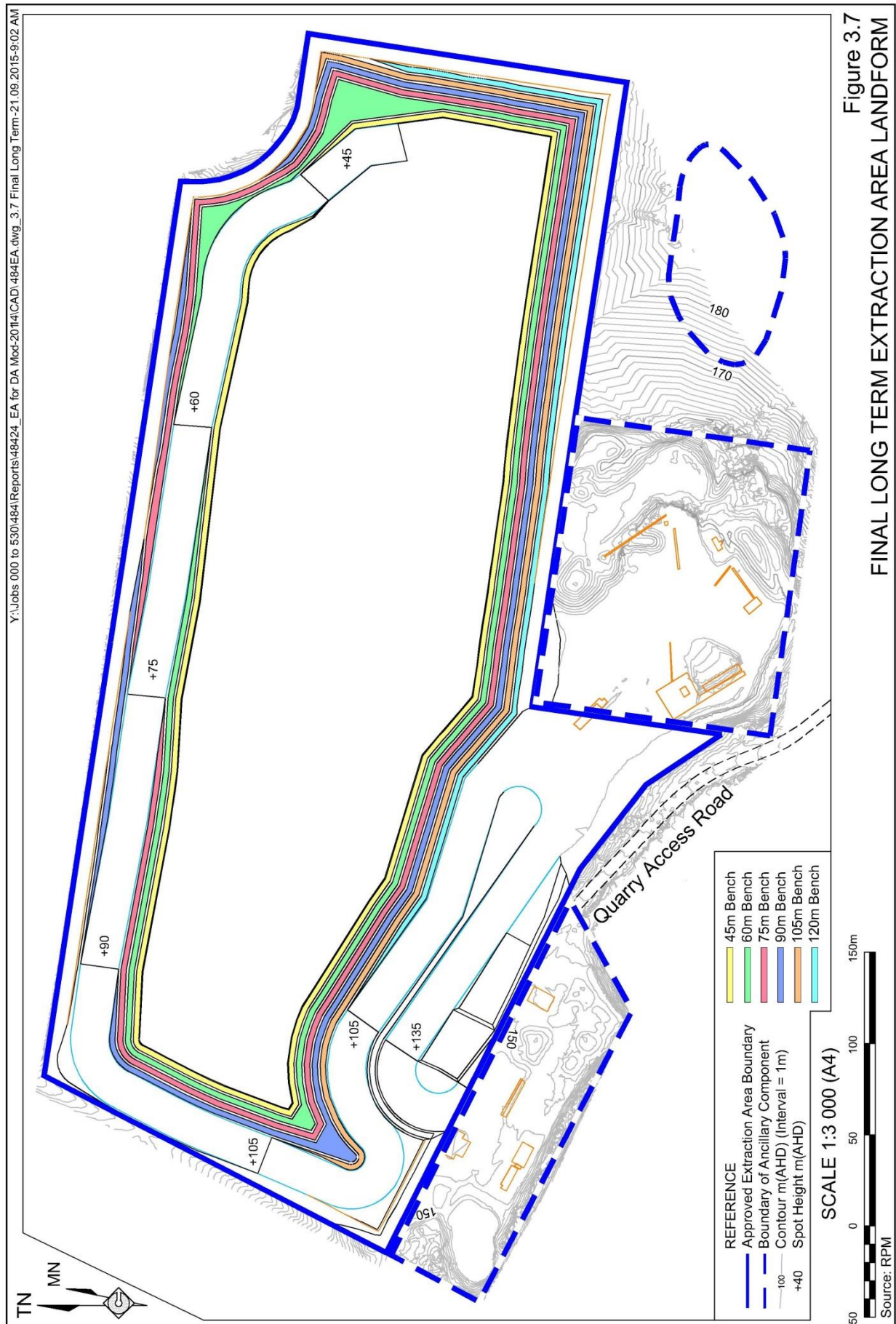
3.14 FUTURE EXTRACTION OPERATIONS

Following the extraction of the proposed 11.1Mt of rock as part of Stage 2, at least 8.9Mt of rock would remain within:

- the southern and southeastern sides of Area A (in the area of the interim vegetation);
- the southern area within Area B; and
- the floor of Areas A and B.

Figure 3.7 reproduces the optimum final plan for the extraction area to a level of 40m AHD, including the final internal access roads, the Quarry Access Road and the haul road to the processing area. Final remnant benches would be consistent with those developed in Stage 2. Where appropriate, near the surface and in unstable ground, bench widths may be widened and/or the depth reduced and angle varied. All final benches above 120m AHD would be covered with 1m to 3m of overburden and allowed to naturally revegetate from seed blown from surrounding trees and shrubs or seed-laden branches collected within PBM's property.

It is currently envisaged that additional detailed extraction plans would be created towards the end of Stage 2 and submitted with a new application to remove the remaining resources within Areas A and B and potentially to depths greater than 40m AHD.



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