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ENVIRONMENTAL IMPACT STATEMENT

FOR THE PROPOSED QUARRY EXPANSION OF

WESTPORT QUARRY
NARRABRI

Lot 21 DP 757083
Parish of Blake
County of White

Proponent: **Narrabri Shire Council**
PO Box 261
Narrabri, NSW 2390

Prepared by: **SMK Consultants**
39 Frome Street
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September 2013

SMK Consultants

Document Control

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Revision History

Revision No.	Date Issued	Reason/Comment
0	September 2013	Initial Issue
1	2 April 2014	Minor Amendments

Contents

CERTIFICATE

Environmental Planning and Assessment Act, 1979 (S.77)

This Environmental Impact Statement has been prepared by SMK CONSULTANTS PTY LTD to accompany a Development Application made in respect of the development described as follows:

Development: **Expansion of Westport Quarry – Jacks Creek State Forest**

Applicant: **Narrabri Shire Council**

Address: P.O. Box 261, Narrabri NSW 2390

Land to be developed:

Part of Lot 21 in DP 757083

Environmental Impact Statement:

The contents of this Statement as required by sections 230 and 231 of the Environmental Planning and Assessment Regulation 2000, are set out on the following pages.

Certificate: I certify that the contents of this Statement have been prepared in accordance with Clauses 230 and 231 of the Environmental Planning and Assessment Regulation 2000.

Signature: ……. **Date: ..…/…../…….**

Jamie Cowell (B.Urb.Reg.Plan)

Executive Summary

SMK Consultants was engaged by Narrabri Shire Council to prepare an Environmental Impact Statement (EIS) to assess the proposed expansion of Westport Quarry, located south of the Narrabri in Jacks Creek State Forest. Council operates the quarry to obtain gravel materials for road maintenance work undertaken mainly in the southern section of the Shire.

The Director-General has provided the requirements for the proposed expansion for the Westport Quarry after a planning focus meeting and consultation with various NSW Departments.

The land included in this proposal comprises Lot 21 DP 757083. The subject land is owned by the State of NSW as part of the Jacks Creek State Forest which is presently managed by the NSW Forestry Corporation. The quarry is located 24 kilometres south of Narrabri via the Newell Highway and Westport Road.

The quarry has been utilised by Council for several decades to repair and maintain various Shire roads, mainly located in the southern and south-western part of the Shire. The gravel extracted at Westport Quarry has been valued by Council for its mixture of sandstone, ironstone and clay. It provides a reasonable hard wearing and maintainable surface for local gravel roads. The material is also accessible after flood events for Narrabri town repairs on occasions where other pits remain affected by flood.

Council wishes to extend the quarry by a distance of approximately 100 m to the south into Jacks Creek State Forest and squaring off the eastern edge. The extension will cover an area of approximately 4.74 hectares. The matter has been discussed with NSW Forestry Corporation representatives and the proposal is agreeable in relation to a legal agreement between Council and the Corporation. Due to demand for road building and construction materials, Council wishes to secure long term access to this quarry.

Trees within the extension area consist of Cyprus Pine, Bloodwood, Iron Bark and Curracabah species. Ground cover and mid-storey species include Tree Awn and Speargrass. The area has been logged on several occasions which has removed many of the larger mature trees. Ground cover is disturbed by old forestry tracks. However, the area is surrounded by an extended forest of similar species to the south and west. Areas to the east and north have been subdivided and presently used for small and medium sized grazing enterprises.

At present, Council extract a maximum of 5,000 tonne of gravel from this site in any one year. The annual average is less than 2000 tonne. In exceptional circumstances including flood damage repairs etc, additional extraction may occur, but this would be limited to less than 30,000 tonne per annum. If council extracts a maximum of 5000 tonnes of gravel each year, the proposal would extend the quarry life by 22.2 years. At 5,000 tonne per year, the additional volume of gravel to be removed from this quarry is estimated to be in the order of 69,566 cubic metres or 111,305 tonnes.

The proposal is Designated development under the provisions of the NSW Environmental Planning and Assessment Act 1979 and requires development consent from the Narrabri Shire Council due to the area to be affected by the extension.

The outcomes of the Environmental Impact Statement have shown that the proposal is unlikely to interfere with surrounding land uses and as the proposed extraction area has been cleared and extensively modified by grazing along with the existing quarry operations over several decades, the proposal is considered to have minimal additional impact on native flora and fauna.

1. Format of the Impact Statement

This EIS has been prepared in accordance with clause 72 and 73 of the Environmental Planning and Assessment Regulation 2000.

The **Executive Summary** provides a brief overview of the proposal. An overview of the layout of the EIS is provided below.

1 INTRODUCTION

Introduces the proposal, gives a brief description of the existing and proposed development, gives an outline of the Company involved, lists the Government agencies consulted about the proposal, and identifies the personnel responsible for preparing the document.

2 OBJECTIVES

Discusses the background of the proposal, the economic benefits that will flow from the development and the reasons for the need to increase production from the quarry.

3 ANALYSIS OF ALTERNATIVES

Provides an analysis of alternatives and presents the consequences of not proceeding with the development.

4 EXISTING ENVIRONMENT

Describes the existing natural and human environment of the surrounding area.

5 PROJECT DESCRIPTION

Describes the design of the quarry and how it will be managed in terms of resource extraction, water storage, disposal and application on the site; noise and dust control; transport of product within and outside the quarry and workforce.

6 PLANNING INSTRUMENTS

Lists the authorities whose concurrence or approval is required to be obtained, the Environmental Planning Instruments and Development Control Plans that apply to the subject land and/or the development and reviews compliance with those instruments and plans.

7 ENVIRONMENTAL IMPACT

This section addresses the Heads of Consideration set out in section 79C (1) of the Environmental Planning and Assessment Act 1979 and the requirements of the Director General for environmental assessment and the identification of impacts.

8 STATEMENT OF COMMITMENTS

Describes the mitigation measures, broad operational strategies and ongoing environmental monitoring throughout the life of the development.

9 SITE REHABILITATION

Describes the methods to be implemented for the rehabilitation of the site upon cessation of quarry operations

1.1. Study team

The study team involved in the preparation of this Environmental Impact Statement comprise the following personnel:

SMK Consultants PTY LTD

• Sarah Grady	B. Env. Sc. (Biodiversity Conservation)
• Jamie Cowell	B.U.R.P (Planning)
• Richard Clowes	B.A. (Geography) Grad Dip Urb. Reg. Plan, MPIA, CPP Certified Practising Planner
• Peter Taylor	B.Sc. (Aust. Env. Studies) MEIANZ Director, SMK Consultants

2. Introduction

2.1. Proponent and ownership

Narrabri Shire Council is the Proponent. Council has operated Westport quarry in the Narrabri region for several decades. Council extract medium quality clayey gravel from the quarry to maintain and improve Shire roads within mainly southern and south-western parts of the Shire that are under their duty of care and maintenance.

The quarry is located in Jacks Creek State Forest which is crown land presently operated and managed by NSW Forestry Corporation for commercial forestry purposes.

2.2. Existing development – General Background

The Narrabri Shire Council's Westport Quarry is located within Lot 21 DP 757083 which covers an area of approximately 334 Ha. The quarry is located within the Jacks Creek State Forest which is owned by the NSW Forestry Corporation. The Narrabri Shire Council pays royalties to the Forestry Corporation for any material that is removed from the quarry.

To date, the quarry has operated under an agreement with Forestry. No existing development consent exists for the site. Quarrying activity had commenced prior to the requirement for an approval to be obtained for the quarry. The quarry had been relatively in-active until recently as it has only been used by Council. Council had identified that the quarry did not have development approval. On this basis, this application has been made to obtain both the approval for the existing use of the site and an approval to extend the boundaries of the existing excavation to provide Council with a long term source of gravel for the southern part of the Shire.

The Quarry is utilised as a source of between 1,000 to 5,000 tonne of gravel each year. It is also identified by Council to be utilised for flood damage repair work which may involve larger extractions. (To date this has not occurred.)

Quarrying operations consist of an open cut below ground pit. The gravel is won using a dozer which pushes the material into stockpiles. The gravel is then loaded into Council trucks to be hauled to road construction sites.

Topsoil material containing grasses and other seeds is stacked around the edge of the site to form a small levee which prevents local drainage from entering the pit area.

The quarry is nearing its current boundary of disturbed area and the intention is to undertake some additional clearing to extend the footprint of the site. In order to allow this, the Forestry Corporation has requested that an Environmental Impact Assessment be undertaken as the development would extend into the Jacks Creek State Forest area.

Under the NSW EP&A Regulation 2000, the proposed development is considered as designated development on the basis that it would disturb an area of greater than 2 Ha. The quarry does not require an Environment Protection Licence under the POEO Act as the annual extraction rate is less than 30,000 tonne.

To date, the quarry has not received development consent as activity commenced on the site prior to the requirements for such works to be approved by Council. The development would require approval from Narrabri Shire as the consent and be assessed by the Joint Regional Planning Panel as all extractive industries are to be considered by this panel.

2.3. Proposed development

Over the past forty years of more, Narrabri Council has opened and operated more than 15-quarry sites to extract gravel for road construction. The quarry sites are generally small and used

for construction work within a short distance from the quarry. The Westport quarry is located in the southern part of the Shire and provides a medium quality gravel material for local roads only.

Over the past 5-years, Council has extracted as little as 1598 cubic metres to a maximum of 4512 cubic metres of gravel from this quarry. No records are available to provide an extended history of extractions.

The quarrying process involves winning the material with a dozer which is used to form a stockpile suitable for the intended project. The material is then crushed through a portable primary and secondary crushing plant which is moved to the site prior to the road or infrastructure project commencing. The crushed gravel is then hauled in Council trucks to the construction site. During the loading and hauling, Council utilise a front end loader, various trucks and a water truck to suppress mainly traffic dust on the site and at specific sites along the haul route where houses are located adjacent to the road. The water is obtained from either within the quarry, from Council supplies in Narrabri or other water reserves utilised by Council for road watering.

The proposal will involve continued expansion of the site to the south and east. This expansion will follow the gravel reserve. Expanding to the south would require clearing of some vegetation which would require the approval of the land owner and manager, being the Forestry Corporation of NSW.

The proposed operation would not be continuous. Operations would generally be limited to two separate contractors for the winning and crushing of the gravel. When Council intend to use the site, staff requirements on the site would be limited to 1-person to operate the loader and one person to operate a water truck. The number of trucks used to haul the gravel would vary according to the project size and location in relation to haul distances and work schedules.

2.4. Consultation and Liaison with Government Authorities

A Planning Focus Meeting was held on the 14th May 2013 with staff from Narrabri Shire Council (NSC), Forestry New South Wales and SMK in attendance.

Information, advice and comments from the participants in the Planning Focus Meeting along with the requirements of the Director-General were taken into account in the preparation of this EIS. The requirements of the Director-General, Department of Planning are attached as Appendix ‘1’. Replies received from authorities also consulted are attached as Appendix ‘2’.

The proposal is Designated Development. The quarry does not require an Environmental Protection Licence as annual extraction would not exceed the 30,000 tonne POEO threshold.

The facility would not require onsite water and is in a flood free zone well above the level of any local aquifers. On this basis it would not require a Water Use or Works Approval under the Water Management Act 2000.

A formal public consultation will take place in accordance with the requirements of section 79 of the Environmental Planning and Assessment Act 1979 once the development application is lodged.

3. Objectives

3.1. Background

The quarry is located on Lot 21 in DP757083 which is owned by the State of NSW as part of Jack Creek State Forest. The forest remains an active area for the extraction of mainly Cypress pine for the housing and construction industry.

The quarry has to date extended over an area of approximately 3 Ha. The proposal involves extending the access to the gravel resource to the south and squaring the cleared area along the eastern edge of the pit.

The quarry is located in an area zoned as RU3 – Forestry under the Narrabri Local Environmental Plan 2012.

Sources of gravel are limited in Narrabri Shire. They consist of minor resources of poorer quality clayey gravel in the central and western parts of the Shire and higher quality basalt based gravels extracted from the foothills of the Mount Kaputar area. The Westport site provides reasonable quality gravel suitable for mainly gravel road construction. Council utilise this pit to haul gravels within approximately 40 km radius of the site to maintain existing Council roads.

Westport quarry is only utilised by Council for public infrastructure purposes. No other gravel operators are allowed to remove gravel from the quarry for private use.

3.2. Economic benefits

Council and the residents of the Shire are the sole beneficiaries of the Westport quarry operation. The economic benefits are achieved through the maintenance and upgrading of the local road network with the cost savings from shorter transport distances and smaller costs for road construction materials.

The Crown via Forestry Corporation of NSW may receive some royalty payments from the site operation.

3.3. Site selection

All extractive industries must be co-located with the resource that is to be extracted.

The quarry site contains a substantial deposit of high quality clayey rock that meets the Council requirements for rural road construction and maintenance.

The quarry is existing and infrastructure such as roads and loading areas have been formed to allow operation of the existing site over the past decades. This includes some shaping of the existing quarry floor to capture internal drainage which is then utilised for watering of the entrance road for dust suppression.

The native vegetation to be cleared within the area of extension has been subject to forest extraction. The surrounding forest is actively managed by Forestry Corporation to promote tree growth. This work includes tree pruning and thinning to promote tall straight timber suitable for milling. The timber is then available for the housing and other industries. The area has recently been pruned. The surrounding forest has been logged on four or five occasions at 20-40 year intervals. The forest is also used for cattle grazing on occasions.

The surrounding forest is not considered a pristine wilderness but is considered as medium quality native habitat that has been subject of regular disturbance.

On-going quarry objectives include limiting the impact of the operation on the surrounding forest to the small area to be quarried as proposed.

3.4. Environmental protection

Council is committed to environmental sustainability and the protection of the environment through pursuing industry best practice in environmental performance and seeking to eliminate harm to the environment wherever possible.

Council has adopted the internationally recognised definition of *environmentally sustainable development* as the underlying management principle i.e. development which meets the needs of the present without compromising the ability of future generations to meet their own needs, and is committed to continuous improvement of its environmental performance.

4. Analysis of Alternatives

4.1. Alternatives

Narrabri Council operate up to 14 quarry sites. The interval between site operations on these quarries is dependent on Council's budget, road maintenance program and the population and industry needs of the Shire. Other factors affecting quarry operation relate to weather events such as floods where the local unpaved and paved road network can be heavily impacted by flooding.

Over a period of many years, Council has identified and operated from many sources of gravel on the principle that the closer the gravel to the project, the lower the cost of gravel supply. As a result of this principle, the length of road repair or construction for a specific project can be extended by reducing haulage cost for gravel materials.

At present, the Westport quarry is the only quarry that Council operates in the southwest central part of the Shire. Other alternative quarries are available within the Pilliga forest area that had been utilised by RMS and Council. No rocky quarries are available to the west of the Newell Highway.

On this basis, Council has two options. Both options would involve abandoning and remediating this site after the remaining accessible gravel is extracted.

Option 1 would be to open up a new site to extract similar clayey gravel. Any new quarry would require adequate reserves of suitable rock as well as extraction and processing infrastructure and a suitable road network for the transport and delivery of extracted material. A greenfield site, provided suitable extractive resources were proved, would involve clearing and site preparation in addition to costs involved in a development application and the construction of suitable site infrastructure such as roads and fences.

The second option would involve use of other existing quarries in the other parts of the Shire. Other quarries are available; however the use of these quarries would increase haulage costs to the infrastructure that is serviced from Westport quarry. Construction costs would therefore increase resulting in greater expenditure from Council or less annual maintenance and re-gravelling works being undertaken within Council's restricted budget. Gravel costs for road construction are on average approximately 40-percent of the construction costs. Specific project budget could therefore increase by an estimated 10-percent or more.

A review of the alternatives, considering there is an agreement in place with Forestry Corporation, has resulted in Council's preferred option to continue the use of Westport quarry in preference to alternative quarry sources for local road maintenance and development. The use of Westport quarry would provide a fiscal advantage to the size of projects that can be undertaken within a limited budget.

4.2. Consequences of not carrying out the development

If this proposal does not proceed then suitable material will have to be imported into the region to make up the present shortfall. This will mean longer transport distances with the attendant higher transport costs, additional wear on the road network and impacts on residents and road-users along those road networks. It would also mean that the price of this material would rise.

5. Existing Environment

5.1. Regional setting

The subject land is located within the Jacks Creek State Forest, 24 kilometres by road south of the Narrabri CBD. The land surrounding the quarry is operated by Forestry Corporation of NSW as a remnant area that continues to be logged on the edge of the greater Pilliga Scrub. A large part of the Pilliga Scrub has now been declared as National Park. The region is currently going through a mining boom with the discovery and extraction of coal and coal seam gas in the area. Water availability within the Namoi Valley has also seen a spike in agricultural activity within the Shire as compared to approximately 8-years of drought between 2002 and 2010. With increased activity the need for additional infrastructure such as roads and the maintenance of existing Shire roads is placed at a higher emphasis. Narrabri Shire Council needs to extend the Westport Quarry to enable them to adequately service shire roads for the current demand and also for future resource extraction.

5.2. Landform

The property is located on the northern extent of small rises between the Namoi floodplain and the elevated sandstone outcrops associated with Pilliga Scrub. The land on the property does not vary in slope more than 1-2 degrees.

5.3. Geology

The quarry site is located within the Narrabri Basin, a sedimentary basin with a Palaeozoic basement of folded metasedimentary and volcanic rocks that outcrop around the southern and eastern margins. The Westport quarry is located on a deposit of Jurassic quartz sandstones, limited shales, tertiary basalt caps and other sediments derived from these rocks. Jacks Creek State Forest is situated partly on a large sandstone outcrop area.

Other nearby formations consist of Quartzite, sandstone, siltstone and claystone and the alluvial sediments derived from these.

5.4. Soils

Soils in the area consist of shallow sands and sandy loams with some smaller areas of red and grey clayey soil. The shallow topsoil over the site consists of a sandy surface which increases in density at depth to become a more compact weathered material.

The soil have limited fertility and therefore limited agricultural value. The soils are a preferred landscape for species such as Cypress pine, ironbark and numerous wattles. (*Acacia spp.*)

5.5. Hydrology

5.5.1. Surface water

The Narrabri Area receives an average rainfall of 658mm per year. Surface runoff flows to the Namoi River via several intermittent local drainage lines which are collected into Bohena Creek. This creek, when flowing, enters the Namoi River approximately 8 km downstream of Narrabri town area.

Westport quarry is an elevated area and considered as flood free from all local drainage lines. The quarry has been constructed as a below ground excavation surrounded by an elevated bank of topsoil and other material. Minimal local runoff enters the pit area. All rainfall collected in the pit drains to various low points within the floor of the pit.

5.5.2. Groundwater

There are no bores located on Lot 21 in DP 757083. Ground water is available on nearby adjoining lots from two registered bores allocated for the purposes of domestic stock supply.

Exploration bores in this area do not have driller's logs available on public data bases. It is estimated that 20 or more metres of basalt overlays a fractured rock aquifer beneath the site. This aquifer is assumed to be present in sandstone materials.

No local seeps or spring are noted to occur within the existing quarry at the current or proposed excavation depth of between 3 and 4 metres below ground level.

5.5.3. Water quality

The existing quarry accumulates some internal runoff which provides a temporary source of water for local fauna utilising the surrounding forest. The water quality is typical of a disturbed area, being turbid for a short period after rain and then settling to clear rainwater after several days.

As the pit does not drain externally, no external water quality investigations were deemed necessary.

5.6. Flora and fauna

5.6.1. Flora

The area proposed for extraction comprises scattered young regrowth Black Cypress Pine, Spotted Gum, White Cypress Pine, Bloodwood, Iron Bark, Curracabah and species of Threeawn grass. Other ground cover consists of various seasonal forbs and weeds. An assessment of this vegetation was undertaken on the 14th of May 2013 by random meander method. A search of the Atlas of NSW Wildlife revealed two threatened flora species within a 10 square kilometre area centred on the quarry. This species is discussed in the Seven Part Assessment included in Appendix 4.

5.6.2. Fauna

The land on which the quarry is situated was medium dense scrub forest under the provisions of NSW State Forest. NSW forest conduct partial clearing throughout Jacks Creek State Forest every 10-15 years to minimise density and the potential for bushfire incidents. This was noted as a preliminary assessment walking through the forest adjacent to the quarry saw that there were consistent amounts of trees that were cut down in the previous clearing. Kangaroo and emu tracks were observed during this assessment and numerous birds were observed transiting the site.

The density of tree hollows is estimated to be in the order of 1 per Ha of woodland. This low level of nest sites may be due to the history of logging of older straight mature trees. The tree hollows were present in more deformed trees considered unsuitable for logging. These hollows would offer refuge for a wide range of species including possum, bats and various birds. The use of the hollows would be seasonal and based on mainly flowering cycles of plants.

A search of the Atlas of NSW Wildlife revealed four species of threatened fauna, one endangered population and seventeen vulnerable species within a 10 square kilometre area centred on the quarry. These species are discussed in the Seven Part Assessment included in Appendix 4.

5.7. Climate

5.7.1. Meteorological data sources

Meteorological data has been obtained from the Narrabri and Moree Meteorological stations.

5.7.2. Temperature and humidity

Temperature and humidity levels in the region are quite mild with the annual average temperatures ranging between 11.7°C to 26.5°C although extremes of -5.6°C and 43.4°C have been recorded at times.

Mean Daily Temperature (°C)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	33.8	33.2	31.2	27.3	22.5	18.7	18.0	19.8	23.4	27.1	30.1	33.0
Min	19.3	19.1	16.4	11.9	8.3	5.2	3.7	4.6	7.6	11.7	14.8	17.7

Mean Daily Humidity (%)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9am	61	65	64	66	78	84	82	73	65	57	59	59
3pm	38	40	39	42	49	52	50	42	39	37	39	37

5.7.3. Rainfall and evaporation

Rainfall averages for Narrabri are 658mm per year and is summer dominant. Evaporation figures are only available from the Moree Bureau of Meteorology station and may be a little higher at the quarry site.

Rainfall (mm)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	79.5	72.6	54	38.5	49	51.4	45.2	37.2	38.5	51.2	58.5	66.8
Highest	296.5	362.8	510.3	216.8	208.5	246.6	165.4	162.4	144.5	205.9	263.1	278.9
Lowest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8

Rainfall Deciles (mm)													
Decile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
1	15	6.1	3.3	0.1	2.8	9	3.8	1.3	2.5	11.3	11.3	13	422
5	51.8	55.8	36.5	27.9	36.3	44.3	39.3	27.5	29.3	41.4	50.2	49.3	633
9	188.8	151.8	125.9	87.8	120.6	101.5	99.5	91.8	89.0	100.9	118.8	144.4	861.4

Evaporation (mm) (Moree comparison)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	291.4	232.4	220.1	147	96.1	69	71.3	99.2	144	210.8	258	300.7

5.7.4. Wind

Winds in the region are moderate with north easterlies predominating in the morning and south westerlies in the afternoon.

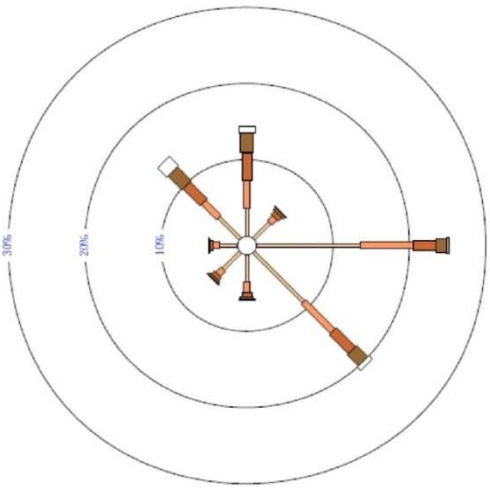
Mean Wind Speed (km/h)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9am	17.1	17.6	17.1	14.7	12.9	12.6	11.7	13.1	16.3	18.5	18.3	18.8
3pm	16.9	17.1	17.4	16.4	15.4	16.8	17.3	18.5	19.7	19.2	19.2	19.0

Wind frequency analysis data from the Moree Bureau of Meteorology suggests that the majority of winds are less than 20 kilometres per hour as shown on the vector diagrams below.

Figure 1: Average Wind-roses for Narrabri

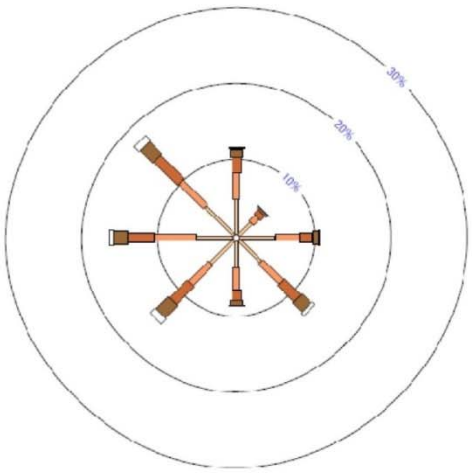
9 am
13975 Total Observations

Calm 6%



3 pm
13859 Total Observations

Calm 2%



5.8. Existing Noise and Vibration

Noise at the site is generated during the brief periods of extraction, crushing and despatch of the quarried materials. The main noise emissions are generated by diesel powered vehicles including a dozer for winning of material, a crusher to prepare and grade the material, a front end loader to handle the material and trucks to remove the gravel from the site. The winning, crushing and despatch of gravel occurs over a period of three to four weeks per project. Council have identified that the gravel may be removed from the site during two to five projects per year. For the remainder of the year, the site is not utilised and therefore no noise emissions occur.

No blasting activities have previously been employed to extract material at Westport quarry and hence minimal effects are incurred on the surrounding vegetation and fauna. A lack of complaints from residences within the vicinity suggests that this quarry operation is considered as acceptable within the surrounding community. This may be in part due to the nature of the work being an essential service for the ongoing maintenance of the local road network which benefits the surrounding community.

5.9. Existing Dust

Dust on the quarry site is generated by excavation, machinery used to extract gravel and from the movement of vehicles on the site. The site utilises portable crushing equipment which generally does not incorporate dust suppression mist sprays. There is no permanent water on this site to provide water for the crushing process. The majority of the dust generated at the site is road dust from moving vehicles. Road dust is controlled by watering the roads and work areas with a water truck using water captured within the quarry area or from other sources utilised by Council for road watering.

5.10. Land ownership and residences

The quarry site is owned by the NSW Crown and utilised by Council under an agreement with Forestry Corporation. This EIS and attached plans are to be utilised as part of the formal agreement to extend the area to be quarried by Council. Forestry would retain the option to utilise small amounts of gravel if required on occasion for their own road formation within the forest or alternatively as a fire control point or clear safety zone in the case of a fire in the forest.

The quarry is located in the north eastern sector of the Jacks Creek State Forest. To the north and east of Westport Road, the land is privately owned and utilised for mainly grazing. Much of the area has an extended history associated with the timber industry as the State Forests had supplied a significant volume of cypress pine timber to numerous saw mills up until the past 20-years when the significance of the environmental value of the State Forests was confirmed and legislation was enacted to convert much of the forests to conservation areas. The freehold land surrounding the forest remained as such and some limited grazing leases were offered within the remaining land managed by Forestry Corporation.

The following figure 2 presents an aerial photo (2003 Google image) with lines drawn to show a 500m, 1000m and 1500m radius around the quarry site. The nearest residence not associated with the proposal is located approximately 350 metres north of the centre of the quarry site. This house consists of a rural residence located on the northern side of Westport Road and is marked as Res 1 in figure 2. The second closest residence marked as Res 2 on Figure 2 is approximately 910 m from the quarry. This is also a rural homestead. A third residence is located to the northeast of the site at a distance of approximately 1600m. A fourth residence is located to the northwest of the quarry at a distance of approximately 1600m. All four adjoining properties are operated as grazing farms within similar woodland to the quarry site and utilise Westport Road as the main access to the Newell Highway and Narrabri.

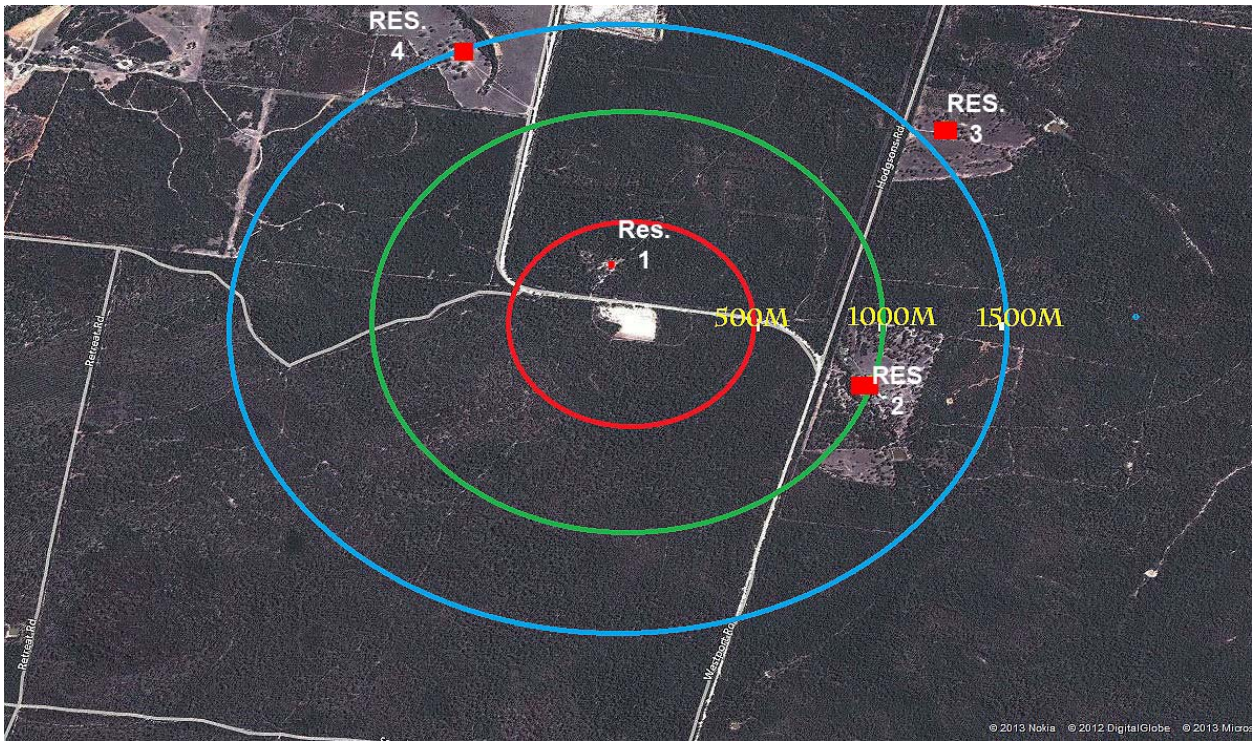


Figure 2: Aerial photo of Westport Quarry showing 500m, 1000m and 1500m buffer zones and nearby farm residences.

5.11. Land capability

The Jacks Creek State Forest has been selectively logged for several decades. The aerial imagery below from 1983 and 1998 show the same amount of vegetation and clearings as present day imagery. Westport Quarry is easily identifiable in both of the images.

Figure 3: Aerial Imagery 1983

Figure 4: Aerial Imagery 1998

The surrounding forest area includes areas of relatively dense woodland with some areas of more open woodland. Tree canopy cover remains similar across the remaining forest area. Some disturbed areas are occupied by denser regrowth of various wattle species (*Acacia spp*.) Other areas of open woodland generally indicate the presence of sandstone outcrops.

The presence of cleared land in adjoining areas is mainly freehold land which was cleared prior to 1996 vegetation legislation being introduced. The clearing was generally undertaken to improve pasture production for grazing enterprises in addition to creating some fire buffers around infrastructure such as homesteads.

Soil type within the area consists of mostly sandy topsoil with some dense clayey sand subsoil. The agricultural potential for grazing of these areas is limited as a result of the soil and the tree canopy cover. Grasses are considered as sparse. The surrounding land would be classified as Class 5 land under the "*Rural Lands Evaluation Manual (RLEM) (NSW, Department of Planning, 1988)"* which is a basic descriptive method of classifying land on the basis of production capability. The following paragraph presents the description of Class 5 land:

"Land generally unsuitable for agriculture or at best suitable for occasional light grazing or supporting activities related to agriculture (for example, shelter for livestock, and forestry). Agricultural production is low as a result of severe biophysical, social and economic constraints, which preclude land improvements"

5.12. Land use

5.12.1. Quarry site

The area from which the resource will be extracted is undisturbed land and is presently under forestry protection within the Jacks Creek State Forest. The current site has a cleared open active quarry including stockpiles of various quarried materials. Areas that have not been actively quarried now support mainly Acacia regrowth.

There is no permanent machinery left on the site. All machinery used in the gravel removal process is portable and therefore only on site when required.

The active sections of the quarry consist of mainly south and eastern faces from which the gravel is obtained at present.

5.12.2. Study area

The quarry is located on Lot 21 in DP 757083. The study area extends to a distance of approximately 1600 m around the site to include the local homesteads in addition to the length of Westport Road back to the Newell highway.

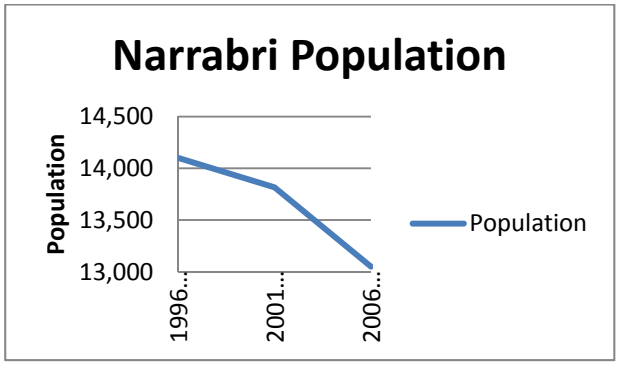
5.13. Socio-economic conditions

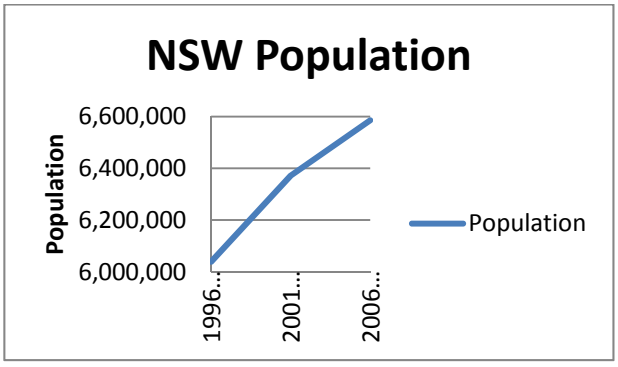
5.13.1. Population

Time series profiles for the Narrabri Local Government Area and New South Wales between 1996 and 2006 have been used to develop a picture of the socio-economic characteristics of Narrabri LGA and its comparison with the state.

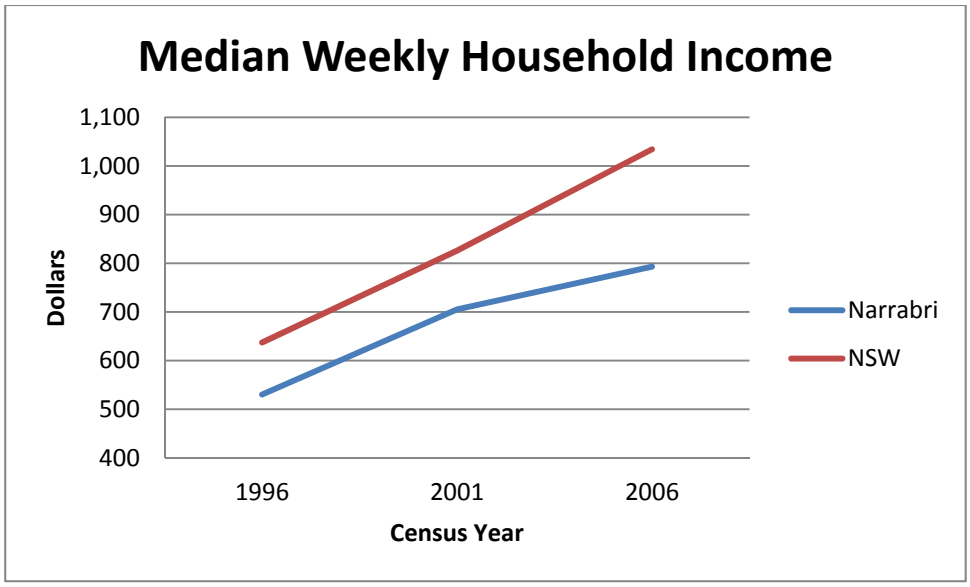
Over this period the population of the state has grown by approximately 8% while that of Narrabri has declined by 7%.

The population decline in Narrabri has not been even with a disproportionate number of young people moving from the area. The following graphs compare the Narrabri population structure with that of NSW as a whole.

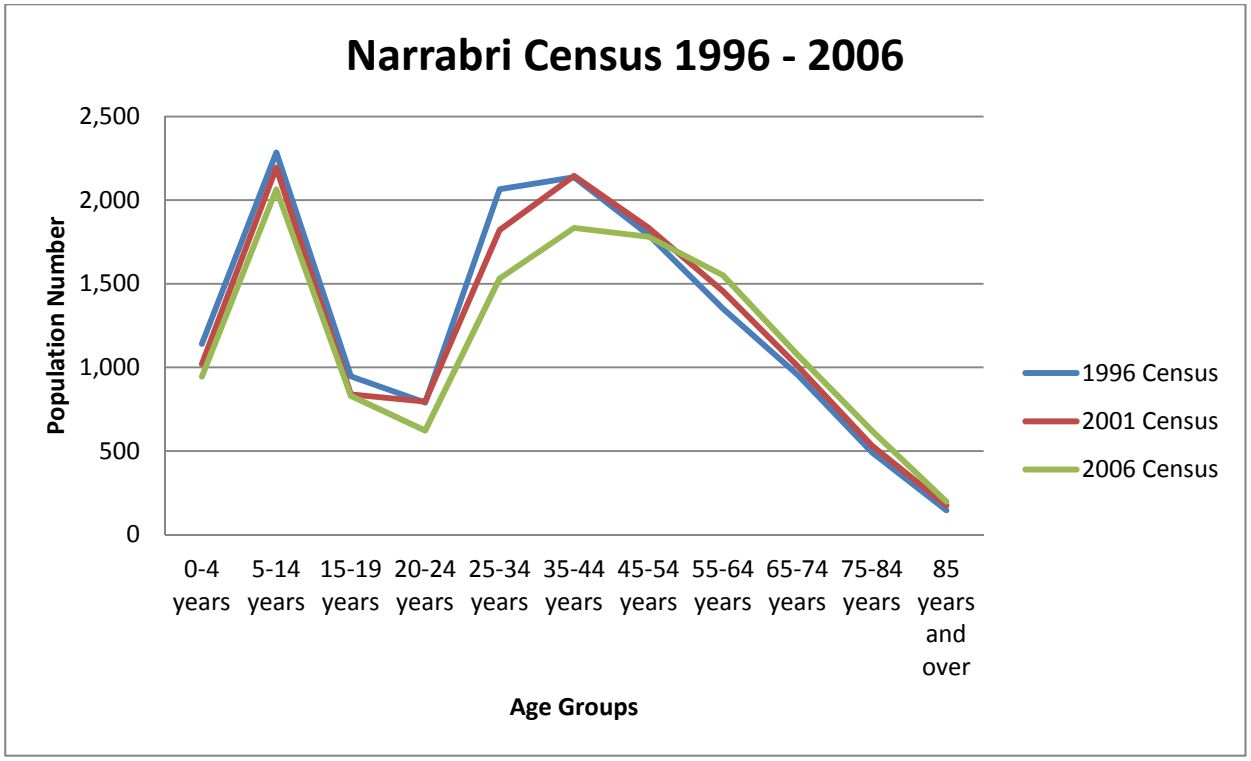


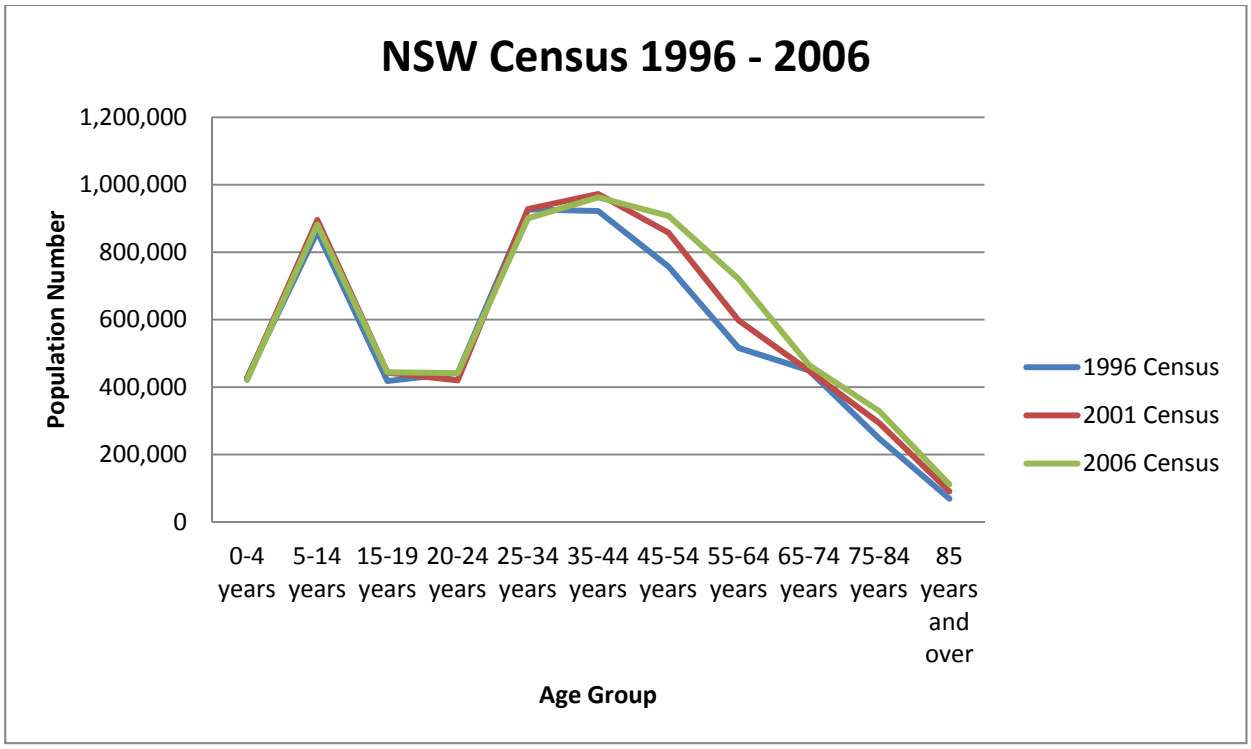


While it is usual for young people to move from country areas to cities and regional centres to pursue education, the data show that over the census period the younger are increasingly leaving earlier and those that do return are returning later. A growing number of people are not returning at all. There are no doubt a number of factors at play in the population decline which would include the recent drought, however, low wages (particularly compared with the mining industry), the casualisation of the agricultural workforce, and the increasing mechanisation in this sector, along with the attractiveness of larger centres that offer greater opportunities are also likely to be significant contributors.



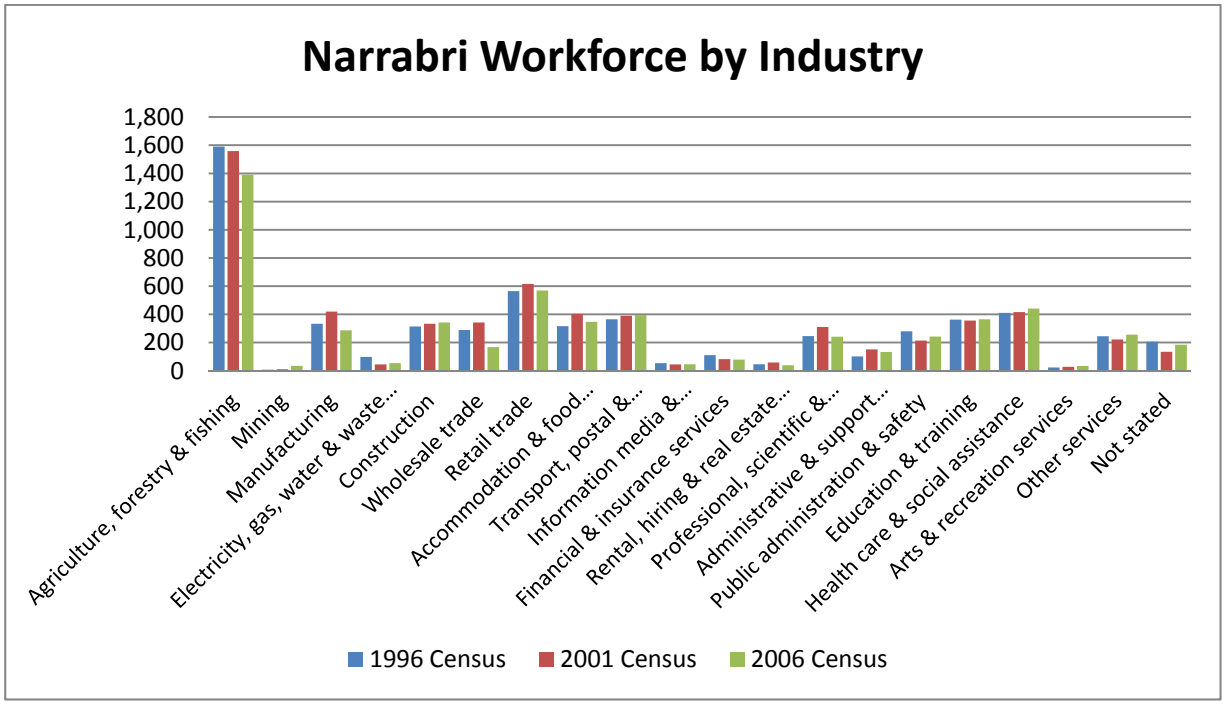
In comparing income movements in the Narrabri area in comparison to those in the state, the above chart shows that while Narrabri households were lagging the NSW median by around $100 in 1996 they had fallen some $200 behind the State median in 2006. The growth of mining in the region will likely skew these figures with high wages being a feature of the mining industry which is not replicated in the wider rural economy.



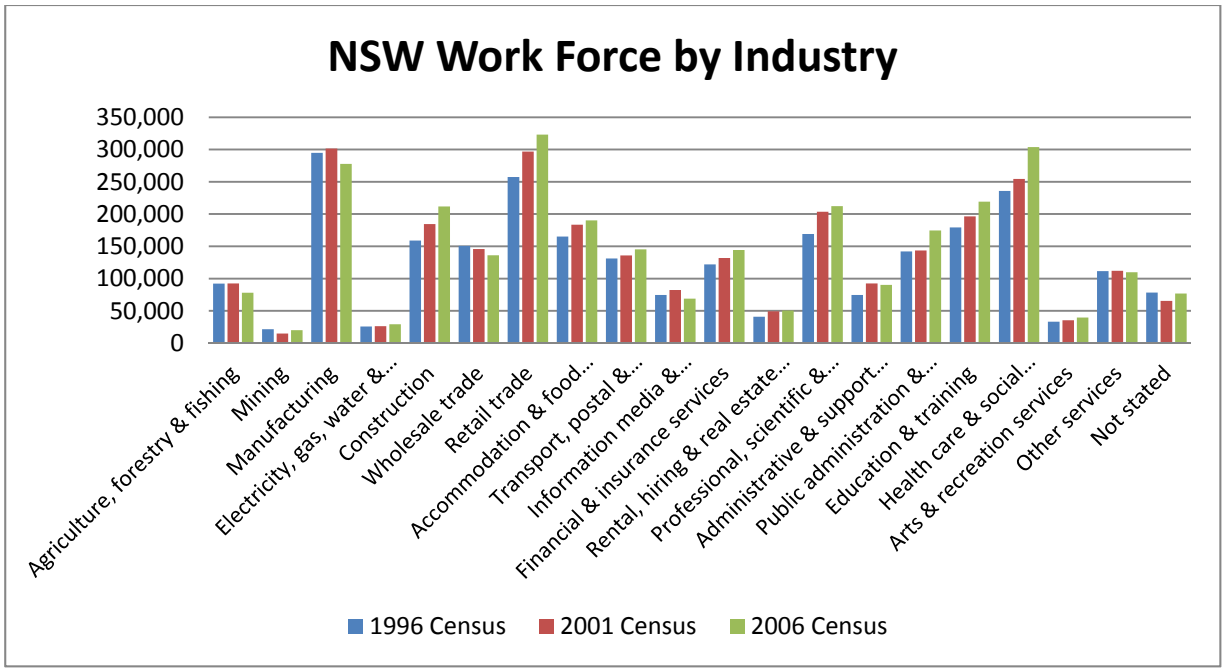


5.14. Employment

Narrabri has a narrow economic base with the major employer being the primary production sector. During the 1996-2006 decade the number of people employed in the primary production has declined by around 12% and most other employment sectors fluctuated or remained flat. This contrasts with the State figures which show that employment in the majority of industry sectors across the state has risen steadily.



New South Wales on the whole has shown steady growth in most employment sectors apart from Wholesale trade, Manufacturing and the primary industry sectors.



The foregoing clearly demonstrates the need for economic stimulation and diversification in the study area to help arrest further decline in the population.

Coal mining has recently begun in Narrabri but is not expected to change the census generated demographic profile greatly due to the workforce being heavily oriented to fly in/out workers who will be recorded for the census at their home location. Some economic trickle down can be expected from this source but has not been quantified for this report.

The continuance of the operations at Westport quarry is not considered to stimulate an additional employment and therefore population growth, however it would be considered as a contributing factor to the retention of current residents in the Shire through the maintenance and improvement of the local road network.

5.15. Aboriginal heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) at the Office of Environment and Heritage (OEH) revealed no items or sites within the area of the existing and proposed development. A copy of this search can be found attached in Appendix 3.

Detailed traverses were made of the surrounds of the site and within the area to be targeted for extension of the quarry. There were no items of Aboriginal Heritage located during the site assessment. The reason for this absence is considered to be the subject of various landscape factors which must be considered during the process of identifying the potential for Aboriginal heritage. Factor 1 influencing the site is a historical lack of water. Factor 2 is the lack of rock outcrops or potential sites for caves or similar refuge areas. Factor 3 to be considered is landuse history which includes removal of mature trees from the area as part of the extended logging history. Factor 4 would be the potential for available food or other products offered by the land which would be very seasonal resulting in very low impact or potential presence of historical aboriginal activity in the immediate area of the quarry.

The closest creek and potential source of water would be Bohena Creek which is an ephemeral stream with limited permanent water holes.

On this basis, the potential for any significant aboriginal sites or artefacts to be present in the area to be cleared was considered as nil.

5.16. European heritage

A search of the NSW and Commonwealth heritage registers and Narrabri Local Environmental Plan 1992 found no items of European heritage recorded on the site.

5.17. Planning and zoning

The subject land is zoned RU 3 – Forestry under the Narrabri Local Environmental Plan 2012. Extractive operations within the zone will need to be approved by Forestry Corporation of NSW who own the land that the quarry is situated. This approval is existing.

An Environmental Protection Licence is not required as extraction rates will not exceed 30,000 tonnes per year.

Narrabri Shire Council is the consent authority for this proposal.

5.18. Road network and traffic volumes

Westport Road is a gravel road that runs from the Newell Highway and past the quarry site. Vehicles that utilise the Westport Road are Council vehicles associated with the quarry, private vehicles for residents who live along the road and other vehicles related to agriculture and mining that may frequent the area.

The road is considered as a local road which services several farms and extends into various tracks within the Jacks Creek State Forest area.

The existing quarry operation involves periods of two to three weeks where Council trucks haul gravel from the site. The trucks consist of mainly body trucks and trailers. The average number of trucks used during this operation is in the order of eight trucks. The number of trips each truck makes to and from the site each day will vary according to the haul distance. Estimates indicate that each truck would make up to six trips per day to the quarry.

6. Proposed Development

6.1. Project description

Narrabri Council operate the Westport Quarry as a source of gravel material for construction of the local road network. The gravel consists of a mix of sandstone, ironstone and clay which makes a suitable gravel material for local roads and potentially foundation materials for Council infrastructure in Narrabri. The gravel is not considered high quality. Similar gravel pits have been located throughout the Shire in strategic locations to reduce transport costs to the local gravel road network. The gravel is utilised within a 20 to 50 km radius of the pit.

Over the past several years, Council has extracted as little as 1598 cubic metres to a maximum of 4512 cubic metres. No records are available to provide an extended history of extractions. The intention is to establish a maximum annual extraction volume of up to and not more than 30,000 tonne. On this basis, the site would not require an Environment Protection Licence.

The quarrying process involves winning the material with a dozer which is used to form a stockpile suitable for the intended project. The material is then crushed through a portable primary and secondary crushing plant which is moved to the site prior to the road or infrastructure project commencing. The crushed gravel is then hauled from the site in Council trucks to the construction site. During the loading and hauling, Council utilise a front end loader, various trucks and a water truck to suppress mainly traffic dust on the site and at specific sites along the haul route where houses are located adjacent to the road. The water is obtained from either within the pit area, from Council supplies in Narrabri or other water reserves utilised by Council for road watering.

The proposal will involve continued expansion of the site to the south and east. This expansion will follow the gravel reserve.

The expansion would require clearing of vegetation which would require the approval of the land owner and manager, being the Forestry Corporation of NSW. The proposal will extend the quarry footprint into the forest by a further 4.74 hectares. Allowing for a maximum quarry depth of 4m, the extended area would provide a maximum of up to 189,600 cubic metres of raw gravel material. This would potential offer the applicant up to 40 years of extraction from this site at a maximum rate of 5,000 cubic metres per annum.

The proposed operation would not be continuous. Operations generally involve Council employing a contractor to clear and win sufficient gravel material for their specific contract needs. Once this raw material is stockpiled, a portable crusher is brought to the site to crush the required amount of gravel for the specific project. The dozer and crusher are then removed from the site. When the project site is ready, Council deploy a front end loader to the site which loads their trucks and hauls the gravel to the project. The trucks would include a water truck to limit dust emissions from the vehicle movements. The number of trucks used to haul the gravel would vary according to the project size and location in relation to haul distances and work schedules.

The existing and proposed quarry footprint is shown in the following aerial photograph. The additional area extends approximately 100 m to the south of the existing cleared area and a similar distance to the east. The eastern sector has been partially cleared since the aerial photograph was taken. The southern sector has been disturbed by a road and logging activity which has removed the majority of mature trees from the forest. An edge effect has occurred as a result of previous disturbance. The edge effect consists of a growth of Acacia spp and several weed species growing in the stockpiled overburden material around the edge of the existing quarry.

Figure 5 Existing and proposed quarry footprint

Quarry by-products such as topsoil and overburden would be stockpiled and used in rehabilitation of the site once production ceases. Unused sections of the pit have been allowed to

revegetate. Pioneer species such as Acacia tend to dominate the regrowth on the site with a scattering of native forbs and grasses. The surrounding forest has few weed species and therefore weeds or noxious species are limited in the area.

6.2. Operating Hours

Operating hours will be between the hours of 6:00am and 6:00pm on weekdays. Operation events or projects will be variable as Council will only be present onsite to collect gravel during specific projects. Such projects generally occur on two to four occasions per year. These projects would require five day operation of the site for a period of two to three weeks. In between projects, the site would remain closed and no activity would occur other than occasional site inspections for assessment of gravel reserves or minor maintenance such as fence repairs.

The following table provides general hours of operation for specific activity on the site.

Activity	**Operating Times**
Dozer operation for winning, clearing and site remediation	6.00am – 6.00 pm Monday to Saturday
Crushing and screening within quarry pit	7.00am – 6.00 pm Monday to Friday
Loading and Transport	7.00am – 6.00 pm Monday to Friday
Staff, maintenance and servicing of plant and equipment on-site	As required
Emergency*	As required

*Emergency refers to supplying materials to the RTA, ARTC, SES and Councils or other agencies under emergency conditions as ordered by these Authorities such as flooding or bushfire.

6.3. Environmental Risk Analysis of Proposal

An environmental risk analysis was undertaken as part of the proposal. The analysis forms part of the management activity for operation of the quarry and related activity that may impact the local environment and therefore require further investigation or implementation of appropriate mitigation measures. Various independent consultations were also undertaken and the results of all consultations were prioritised in the following Environmental Risk Analysis.

Risk is the chance of something happening that would have an impact on the environment or operation of the project and is measured in terms of consequence and likelihood. Qualitative consequence and likelihood ratings developed for this project are set out in the following tables.

Qualitative Consequence Rating		
Level	**Descriptor**	**Description**
1	Insignificant	Negligible and temporary detrimental impact on the environment Affects an isolated area No remediation costs Reportable to internal management only No operational constraints posed No injuries or health impacts
2	Minor	Minor detrimental impact on the environment Affects a small area Minimal remediation costs Reportable to internal management only No operational constraints posed

		Minor injuries which would require basic first aid treatment
3	Moderate	Substantial temporary or minor long-term detrimental impact on the environment Moderately large area of impact Moderate remediation cost Reportable to government agencies Further action may be requested by government agency Injuries requiring medical treatment
4	Major	Extensive and/or permanent detrimental impacts on the environment Large area of impact Very large remediation costs Reportable to government agencies Possible prosecution and fine Serious injuries requiring medical treatment
5	Catastrophic	Massive and permanent detrimental impacts on the environment Very large area of impact Massive remediation costs Reportable to government agencies Large fines and prosecution resulting in potential closure of operation Severe injuries or death

Table 1: Qualitative consequence rating

Qualitative Likelihood Rating		
Level	**Descriptor**	**Description**
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Would probably occur in most circumstances
C	Possible	Could occur
D	Unlikely	Could occur but not expected
E	Rare	Occurs only in exceptional circumstances

Table 2 Qualitative likelihood rating

The risk associated with each environmental impact was assessed without the inclusion of any operational controls or safeguards based on the qualitative assessment of consequence and likelihood and a risk ranking in order of low (L), medium (M), high (H) or extreme (E) was assigned to each potential impact based on the matrix below.

Likelihood	**Consequences**				
	1 (Insignificant)	**2 (Minor)**	**3 (Moderate)**	**4 (Major)**	**5 (Catastrophic)**
A (Almost certain)	M	H	E	E	E
B (Likely)	M	H	H	E	E
C (Possible)	L	M	H	E	E
D (Unlikely)	L	L	M	H	E
E (Rare)	L	L	M	H	H

Table 3 Consequence ranking

The four risk rankings are defined as follows:

Low (L) – requiring a basic assessment of proposed controls and residual impacts. Any residual impacts are unlikely to have any major impact on the local environment or stakeholders.

Moderate (M) – requiring a medium level of assessment of proposed controls and residual impacts. It is unlikely to preclude the development of the project but may result in impacts deemed unacceptable to some local or government stakeholders.

High (H) – requiring in-depth assessment and high level documentation of the proposed controls and mitigation measures. This level of risk could preclude the development if effective control and mitigation measures are unavailable.

Extreme (E) – requiring in-depth assessment and high level documentation of the proposed controls and mitigation measures and possible preparation of specialised management plan. This level of risk may preclude the development if not considered to be adequately managed by the controls and/or management plan.

For each environmental risk identified in the following table the potential environmental impacts have been allocated a rating based on the potential consequences and likelihood of occurrence.

Table 4: Analysis of Unmitigated Risk

Analysis of Unmitigated Risk			
Potential Impact	**Consequence**	**Likelihood**	**Risk Rating**
Transport/traffic			
Increased traffic on roads	1	A	L
Increased wear on road pavement	1	A	M
Increased risk of accident – major accident	5	E	M
Increased risk of accident – serious accident	4	E	M
Increased risk of accident – minor accident	3	E	M
Noise			
Increased noise impact at sensitive receptors	2	E	L
Increased traffic noise	2	A	L
Air quality			
Deposited dust impact on off-site vegetation	1	E	L
Deposited dust impact on residences	3	C	L
TSP – nuisance to residences	1	E	L
PM10 – health impact at residences	1	E	L
Significant emissions of GHG	2	D	L
Visual amenity			
View from public place	2	C	L
Surface water			
Reduced water quality in Barra Creek	1	E	L
Reduced flow in Barra Creek	1	E	L
Groundwater			
Reduced water quality of groundwater	1	E	L
Impacted level of groundwater table	1	E	L
Soils and land capability			
Loss of soil by erosion	2	D	L
Sedimentation	2	D	L
Reduction in land capability	2	C	M
Flora and fauna			
Significant impact on threatened species	2	D	L
Heritage			

Analysis of Unmitigated Risk			
Potential Impact	**Consequence**	**Likelihood**	**Risk Rating**
Aboriginal	2	E	L
European	1	E	L
Technological hazard			
Hydrocarbon spill	2	D	L
Explosive accident	4	E	L
Machinery accident	3	C	H
Natural hazard			
Bushfire	3	C	H
Waste			
Litter and waste contamination	1	D	L
Socio-economic impacts			
Increased employment	2	A	M
Increased economic activity	3	B	M
Loss of value on adjoining properties	1	E	L

The results of this risk analysis are incorporated in the following sections which consider the potential environmental impact of the extension of area of this quarry site.

7. Environmental Impact Assessment

7.1. Relevant Planning Considerations

7.1.1. Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act) requires the approval of the Commonwealth Minister for the Environment for actions on Commonwealth land or those that may have a significant impact on matters of national environmental significance, which are:

- world heritage areas,
- national heritage places,
- wetlands of international importance (Ramsar Sites),
- threatened species and ecological communities listed in the EPBC Act,
- migratory species listed in the EPBC Act,
- nuclear actions, and
- actions affecting the Commonwealth marine environment.

A search of the Department of Sustainability, Environment Water Population and Communities (DSEWPC) web site using the Protected Matters Search Tool provided the following information:

Protected Matter	**Presence**
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Significance (Ramsar Sites)	None
Commonwealth Marine Areas	None
Threatened Ecological Communities	4
Threatened Species	17
Migratory Species	11
Commonwealth Lands	None

Commonwealth Heritage Places	None
Listed Marine Species	9
Whales and Other Cetaceans	None
Critical Habitats	None
Commonwealth Reserves	None
Places on the RNE	None
State and Territory Reserves	None
Other Commonwealth Reserves	None
Regional Forestry Agreements	None
Invasive Species	27
Nationally Important Wetlands	None

Source: Commonwealth Protected Matters Search Tool (http://www.environment.gov.au/epbc/pmst/index.html)

The following table provides a list of threatened species from this EPBC list.

Scientific Name	**Common Name**	**Comments**
Rostratula australis	Australian Painted Snipe	Species or species habitat may occur within area
Anthochaera Phrygia	Regent Honeyeater	Species or species habitat may occur within area
Geophaps scripta scripta	Squatter Pigeon	Species or species habitat may occur within area
Leipoa ocellata	Malleefowl	Species or species habitat may occur within area
Polytelis swainsonii	Superb Parrot	Species or species habitat may occur within area
Maccullochella peelii	Murray Cod	Species or species habitat may occur within area
Chalinolobus dwyeri	Large-eared Pied Bat	Species or species habitat may occur within area
Nyctophilus corbeni	South-eastern Long-eared Bat	Species or species habitat may occur within area
Petrogale penicillata	Brush-tailed Rock wallaby	Species or species habitat may occur within area
Phascolarctos cinereus	Koala	Species or species habitat may occur within area
Pseudomys pilligaensis	Pilliga Mouse	Species or species habitat may occur within area
Bertya opponens	-	Species or species habitat may occur within area
Pterostylis cobarensis	Cobar Greenhood Orchid	Species or species habitat may occur within area
Rulingia procumbens	-	Species or species habitat may occur within area
Tylophora linearis	-	Species or species habitat may occur within area
Aprasia parapulchella	Pink-tailed Worm-lizard	Species or species habitat may occur within area
Uvidicolus sphyrurus	Border Thick-Tailed Gecko	Species or species habitat may occur within area

The listed species are considered in the flora and fauna assessment presented in the following sections.

In general, the potential disturbance on the site from the minor area of expansion when compared to the surrounding conservation and forestry associated with the Jacks Creek State Forest scrub has indicated that the potential impact on Commonwealth matters is considered as negligible. On this basis, the proposal was not forwarded to the Commonwealth Minister for the Environment for consideration.

7.1.2. Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 defines development and in Part 4 sets out the approval process and assessment heads of consideration.

The objectives of the Act relevant to this proposal are:

- *the proper management, development and conservation of natural and artificial resources,*
- *the promotion and co-ordination of the orderly and economic use and development of land,*
- *the protection of the environment,*
- *ecologically sustainable development, and*
- *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

7.1.3. Environmental Planning and Assessment Regulation 2000

The Environmental Planning and Assessment Regulation 2000, inter alia, defines what constitutes designated development, requires the proponent to consult with the Director-General to obtain his requirements and sets out what documents must accompany a development application.

Accordingly, the development proposal is Designated Development and this Environmental Impact Statement and its attachments satisfy the requirements for documentation contained in the Regulation.

7.1.4. The National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 provides for the protection of native flora and fauna and the protection, preservation and management of Aboriginal relics throughout NSW regardless of land tenure. A flora and fauna assessment and Aboriginal cultural heritage assessment have been completed and are reported elsewhere in this EIS.

7.1.5. Threatened Species Conservation Act 1995

The Threatened Species Conservation Act 1995 provides protection for threatened flora and fauna native to NSW and integrates the conservation of threatened species into the development approval process under the Environmental Planning and Assessment Act 1979 through the use of a seven part test. A seven part test was undertaken and is reported elsewhere in this EIS.

7.1.6. Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 establishes procedures for the issue of Environmental Protection Licences for Scheduled works and premises. As set out above the proposal would not require an Environmental Protection licence in relation to extracting gravel as annual extraction will not exceed a 30,000 tonne threshold in any one year period. This was confirmed with NSW EPA.

7.1.7. Heritage Act 1977

The Heritage Act 1977 provides for the protection of the State's natural, built, marine and moveable heritage. The Act establishes the Heritage Council of NSW which maintains the State Heritage Register and Inventory. No heritage items recorded on the Register or the Inventory are located on the subject land.

7.1.8. Contaminated Land Management Act 1997

The Contaminated Land Management Act 1997 establishes a process for investigating and (where appropriate) remediating land areas where contamination presents a significant risk of

harm to human health or some other aspect of the environment. The Act provides that the EPA may declare land to be contaminated and to declare investigation areas.

The EPA has not declared the subject land to be contaminated land nor part of an investigation area.

7.1.9. State Environmental Planning Policies

State Environmental Planning Policies are Environmental Planning Instruments that are created by the State government. The policies that are relevant to this application or required to be considered by the Consent Authority are:

Draft Strategic Regional Land Use Plan: New England North West

The draft plan seeks to balance land use between the agricultural, coal and coal seam gas mining sectors. The draft plan has no implications for this proposal if adopted in its present form.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

This SEPP has the following aims:

(a) To provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and

(b) To facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and

(c) To establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.

Clause 12 of the SEPP provides a number of matters that a consent authority must consider before determining a development application. These matters are similar to, but are in different terms to; the relevant matters contained in clause 10 of the LEP and are considered in the body of this report.

Clause 13 requires that Council must consider the compatibility of development proposals on land in the vicinity of existing mines etc or of land containing mineral or extractive resources. This provision is to ensure that these resources are not sterilised by incompatible development on surrounding land and is a matter for Council to consider. The proposed development involves a long term plan to maintain access to a historically used gravel resource.

Clause 14 requires the consent authority to ensure that the development is undertaken in an environmentally responsible manner to avoid or minimise:

- Impacts on significant water resources;
- Impacts on threatened species and biodiversity; and
- Greenhouse gas emissions.

These are matters for Council and are addressed below.

Clause 15 requires that consent authority consider whether the proposed resource recovery is efficient. Modern equipment and best practice management principles are used in the operation of the quarry to ensure that resource recovery is efficient and economically viable.

Clause 16 (1) requires the consent authority to consider whether a consent should contain conditions to:

- Require some or all of the material to be transported by means other than by public road;

- Require the preparation and implementation of a code of conduct relating to the transport of materials on public roads.

There are no other means other than road transport available for the transport of the gravel from this quarry. No viable alternatives are available. The haul route does not pass through residential areas or near schools. The haul route consists of part of the gravel road network to be maintained or improved by the gravel resource available at this quarry site.

Clause 16 (2) requires consent authority to provide a copy of the development application to each roads authority for the roads used and the Roads and Maritime Service within seven (7) day of receipt. This is a matter for Council.

Clause 16 (3) provides that the consent authority must not determine the development application until it has taken into consideration any submission received from the roads authorities and the Roads and Maritime Service within 21 days after the Authority was provided with a copy of the application, and provide each of them with a copy of the determination. This is a matter for Council.

Clause 17 requires that the consent authority must consider whether or not the consent should be issued subject to conditions requiring rehabilitation of the land affected by the development. This is a matter for Council and rehabilitation is considered below. The project proposal includes a rehabilitation component.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

The DUAP publication *Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines* at page 3 sets out the steps to determine if the policy applies to particular development applications. The first step is to determine if the proposed development constitutes an 'industry' under the applicable planning instrument.

The Narrabri Local Environmental Plan 2012 adopts the Environmental Planning and Assessment Model Provisions 1980. Clause 4 of the Model Provisions excludes extractive industries from the definition of 'industry' under the LEP.

The State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 also excludes extractive industries from the definition of 'industry', therefore, as extractive industries are not 'industries' this SEPP has no application to the proposal.

A review of the site has indicated that the Westport quarry has only been utilised as a quarry. No refuse or waste has been disposed on the site intentionally or indiscriminately. Fuel is only kept on the site in sealed portable containers such as fuel trailers and no spillages are present. An assessment of the site indicated that the site is not contaminated.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

The area approved for extraction comprises a mixture of woodland vegetation comprising mostly White Cypress (*Callitris glaucophylla*), Ironbark (*Eucalyptus creba*), Cyprus Pine *(Callitris spp.)* and scrubby acacia species. The existing vegetation is relatively young which suggests that the area has been logged in the past.

The land contains none of the species of koala food trees listed in Schedule 2 of the SEPP and surveys of the area did not find neither any koalas nor any scats or scratch marks that would suggest that koalas may migrate through the site. Other parts of the greater Pilliga may contain tree species preferred by Koala. Jacks Creek State Forest would contain some of these species and potentially other species that would provide some food for Koala. However, the site investigation has determined that the Westport quarry site and immediate surrounds does not comprise either core or potential koala habitat. On this basis, SEPP 44 does not require any further consideration for this site.

State Environmental Planning Policy No. 55 – Remediation of Land

The objective of this policy is to provide a State-wide planning approach for the remediation of contaminated land. Where it is proposed to rezone the land or to carry out a development that would change the use of the land a consent authority must consider whether the land is contaminated and if it is, whether the land is suitable for the proposed development in its present state or whether remediation is required.

Even where no change of use is proposed a consent authority must consider whether the land is suitable for the proposed development if the land has been used for a purpose listed in Table 1 to the contaminated land planning guidelines. The land has been used as a forestry nature reserve prior to the quarry opening and all adjoining land is forestry reserve.

A visual inspection of the land did not reveal any signs of chemical contamination such as chemically affected patches of vegetation or bare or discoloured areas. The visual inspection and the history of the land's past and its present use have led to the conclusion that it is unlikely for there to be contamination such as to render the land unsuitable for the present and proposed uses.

The Preliminary Assessment required by SEPP 55 is attached as Appendix 5.

7.2. Context & setting

The site is located within Jacks Creek State Forest on the flat plains of the Pilliga Forest. Jacks Creek State Forest covers an area of approximately 4,600 hectares and his home to a variety of plant and animal species. The quarry is located in an area zoned as RU3 – Forestry under the Narrabri Local Environmental Plan 2012. It is within the boundaries of the Narrabri Aboriginal Land Council. Other surrounding land uses include forestry reserves and the grazing enterprises on freehold and leasehold sections of the forest.

The quarry is in an area that has an extended history of occasional disturbance for forestry and grazing. However, the quarry could be considered as part of the local infrastructure development which has allowed local roads to be developed as gravelled roads rather than sand tracks. This should be considered to be relatively consistent with normal development of a rural area where available gravel sources are utilised to develop road infrastructure as part of the normal improvement of a Shire.

The quarry is visible from Westport Road, with a clear view into the site from the entrance gate and filtered views to the quarry through the vegetative cover along the fence line.

7.3. Access, transport & traffic

The main access route to the quarry is via Westport Road (SR60) from the Newell Highway (A39). Westport Road is categorised as a sub-arterial road whilst the Newell Highway is a National Route. Subsidiary roads would be used by traffic generated from the quarry when road repair or upgrade projects are occurring on that road.

Westport Road is a well maintained gravel road that is graded on a regular basis to maintain the road after or before any quarry related project.

The majority of normal traffic on this road is generated by local residents moving from their farms to Narrabri via the Newell Highway. Other traffic in the form of mining related traffic is currently operating on this road to service the Coal Seam Gas industry (CSG) to the south of the quarry area. The CSG related traffic varies in frequency which is dictated on a project by project basis.

During quarry operations, Council utilise mainly body/dog truck units carrying around 25 tonnes to transport the material from the site. Road trains are not permitted to access the quarry. When in production, each truck would make an average of six trips to and from the quarry per day

which would generate an average of 48-trucks trips per day. This would vary considerably. Council generally space the truck trips intervals after the initial loading of all trucks in the morning as a result of unloaded and loading time delays. An additional one or two light vehicles per day would be generated during winning, crushing and loading operations.

The proposed extension of the quarry perimeter would not alter the potential for traffic generation from this site. The rate of extraction would remain subject to the size of the project being undertaken. The proposed extension of the quarry perimeter relates to the long-term access to this site and not the rate of annual extraction.

Traffic density is considered to be within the capacity of the existing road network which presently functions at a level of service 'A' with the additional vehicle trips.

Sight distances for the intersection of Westport Road exceed the requirement set out in table 6.3 of AUSTROADS 2005 "*Guide to Engineering Practice - Part 5: Intersections at Grade*" which recommends approach sight distances and safe intersection sight distance for a 100 km/h zone at 157m and 240m respectively. The approach sight distance to the intersection exceeds 200 metres and the available intersection sight distance exceeds 250 metres.

Figure 6 Westport Quarry entrance off of Westport Road

Figure 7 Westport Road intersection with the Newell Highway

Level of Service	Average Delay per Vehicle (s/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 - 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, required other control mode

Table 5 Intersection level of service - Source: RTA

Table 6: Carriageway level of service classification

Level of service	Description
A	Free flow (almost no delays)
B	Stable flow (slight delays)
C	Stable flow (acceptable delays)
D	Approaching unstable flow(tolerable delays)
E	Unstable flow(congestion; intolerable delays)
F	Forced flow (jammed)

Source: Austroads

The following conclusions are drawn from the assessment of road investigations into the proposed expansion of Westport Quarry:

- The development proposal is to prolong the life of the quarry by extending by a proportion of 4.74 HA further into Jacks Creek State Forest and will not alter potential daily traffic numbers;
- Access to the site would remain via Westport Road;
- Existing road network operations on the haul route are well within the technical capacity limits and operational levels of service will remain satisfactory at ‘A’;
- All existing intersection between the quarry and the Newell highway are considered to meet or exceed the requirements of current best practice design

It considered that the volume of traffic associated with the quarry, together with the current flow on Westport Road, will have a minimal impact on the level of service for all road users.

7.4. Public domain

The proposal makes no demand on the public domain other than an extension of the life of the quarry and therefore the use of local roads for haulage of gravel obtained from the quarry.

7.5. Utilities

The quarry site does not have or need any connection to the local electricity or phone network. This is due to the type of work being carried out at the quarry which does not require electricity for operation. Mobile phone coverage is available on this site.

No sewage or other municipal services are present at the quarry. Such services are provided by portable equipment on an as needed basis.

A bore is located on a property 400 metres away from the quarry located location used for the purposes of stock supply. The quarry does not require permanent water such as a bore and therefore is not expected to impact on nearby bores.

7.6. Heritage

A desktop study of online heritage databases was undertaken followed by site inspection. The results are presented below.

7.6.1. Aboriginal heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) at the Office of Environment and Heritage (OEH) revealed no (0) items or sites within the area of the proposed development. A copy of this search is attached in Appendix 3. A thorough visual assessment traversing through the surrounding forest failed to identify any sites or potential areas of aboriginal heritage. The surrounding area had been the subject of historical logging, however this would have caused only minor disturbance. In general the resources available in the immediate adjoining forest do not include any permanent water. The area may have been used for occasional hunting by local aboriginal populations. However the main route of travel through the area would be directly linked to Bohena creek which does not traverse the area to be affected by the quarry.

The quarry is a soft rock material and would not have been suitable for artefact manufacture.

On this basis, no detailed archaeological investigation was considered necessary due to historical disturbances and landscape features which would not be considered beneficial to potential archaeological sites.

7.6.2. European heritage

A search of the NSW and Commonwealth heritage registers and Narrabri Local Environmental Plan 1992 found no items of European heritage recorded on the site. The existing quarry and proposed area of expansion did not contain any infrastructure or historically used sites other than the quarry.

7.7. Jacks Creek State Forest

The site has been historically reserved as a protected forest under the care of NSW Forestry Corporation. This portion of Jacks Creek State Forest has remained un-logged for several decades, with little disturbance within several square kilometres radius around the quarry over this period. The Forestry Corporation continue to have access to log the forest. This includes management actions such as tree trimming and thinning to promote the growth of millable cypress logs for mainly the housing industry.

Westport Quarry was approved by NSW Forestry Corporation for extraction of gravel to its current footprint to provide the applicant with quality gravel for the local roads network. Forestry is also a user of this network to access their forests, including times of emergency fire management.

Forestry Corporation has agreed to allow the applicant to expand the quarry into the surrounding forest area.

7.8. Water

7.8.1. Groundwater

Groundwater is an important and valuable resource and *The NSW State Groundwater Policy* aims to encourage the ecologically sustainable management of the State's groundwater resource to:

- slow and halt, or reverse any degradation of groundwater resources;
- ensure long term sustainability of the systems ecological support characteristics;
- maintain the full range of beneficial uses of these resources;
- maximise economic benefit to the Region, State and Nation.

The quarry is excavated to a depth of between three and four metres below ground level. There is no aquifer at this depth range and therefore the quarry is not anticipated to interfere with local groundwater tables.

The rock resource that is to be excavated does not include any substantive areas of sandstone which may form part of the local groundwater recharge system.

7.8.2. Surface Water

The quarry site is located in an area of relatively gentle slope with no local watercourse within or near the quarry site. The quarry is not affected by floodwater from the local area as it is located on a low ridge area.

Local runoff spreads east to Westport Road and northwest toward Bohena creek. The quarry is surrounded by a stockpile of topsoil material which prevents local runoff from entering the quarry. Rainfall falling within the quarry accumulates in the lower sections of the below ground quarry. No discharge occurs.

The area of the quarry is relatively limited when compared to the surrounding catchment. On this basis the capture and exclusion of runoff from within the pit would have minimal impact on the surrounding area.

7.9. Soils

Soils in the immediate locality of the quarry site consist of a sandy loam and sandy clay material. The soils are considered as unsuitable for cultivation but support medium forest vegetation including Cypress pine which is a valuable forest species utilised for house construction.

The soils on the site are not subject to instability such as subsidence, slip or mass movement.

The proposed development would involve an extension of the current perimeter of the quarry. Developing this area would firstly involve clearing and then stockpiling of topsoil. The intention of the application is to undertake this in stages based on demand. After clearing, the topsoil is utilised to create a surrounding stockpile and then the quarry becomes a below ground excavation. The topsoil contains many native flora species which continue to grow in the stockpiled topsoil. The process will firstly create a buffer in the form of the stockpile to prevent an external disturbance of soil and then all internal runoff accumulates at the lowest point within the quarry.

7.10. Soil and Water Management

A Soil and Water Management Plan (SWMP) has been prepared to satisfy the Director General's requirements for the proposed increase in output. No plan existed for the existing site operation.

The SWMP incorporates the detail that is required within both a Water Management Plan, and an Erosion and Sediment Control Plan.

The plan is considered as relatively simple in that the quarry consists of a below ground facility. All rainfall on the area is accumulated in several low points within the floor of the existing quarry. No runoff is discharged from this site and no external runoff drains into the site from outside the adjoining buffer area.

The quarry does not represent a threat to the local environment from either turbid surface runoff as the rainfall accumulates soil particles within the disturbed quarry area or substantial changes to the current runoff pattern in the local area.

Any water captured within the quarry floor would remain and settle to keep all silt within the site. On occasion when sufficient water is available, water tankers associated with the specific road works project may use water captured within the quarry for dust suppression within the active quarry and along the haul route to be utilised by trucks hauling gravel from the site.

Council has indicated that the primary sections for road water would include:

- Intersections on gravel roads used for hauling the gravel
- Gravel road sections where adjoining homestead may be affected by road dust
- Within the pit area to reduce overall dust emissions and maintain appropriate OH&S conditions within the working site

7.11. Air Emissions

This section provides an assessment of the potential impacts of air emissions from the site and a comparison of existing conditions.

7.11.1. Diesel exhaust

Exhaust emissions are generated by existing diesel powered dozers during winning of gravel, crushers during the crushing and preparation of the gravel, loaders to manage the gravel within the pit and trucks to remove the gravel from the site. The rate of emissions is not predicted to alter from existing rates as site operations are intended to remain in the same format. This involves periods of several weeks of onsite activity followed by extended periods of no activity between Council contracts.

Diesel exhaust emissions are not expected to have a significant impact on air quality in the locality due to its open nature.

7.11.2. Dust

The process of winning and hauling gravel from the site will occur on a gravel surface. The movement of vehicles on this surface would generate dust. Other dust would be generated during the winning, crushing and loading of the gravel material. Dust emissions also result from vehicle use of Westport Road.

Only limited management of dust can be undertaken during the winning of the raw gravel which is to be undertaken by a dozer. The crushing of sufficient gravel for each contract has to date taken approximately 1-week by a contractor to Council. The crushing equipment consists of portable equipment which is generally not fitted with dampening equipment.

The applicant intends to limit the generation of dust where possible from these preliminary operations. The available mitigation measures for the site include maintain a suitable vegetative buffer around the east and north edge of the quarry area. The vegetative buffer would capture a proportion of dust emissions from the site.

Road dust would also be generated when trucks are entering and exiting the site. The applicant intends to limit these dust emissions by inclusion of a water truck to wet a main internal haul route within the quarry and around the entrance area.

The closest residence is located on the northern side of Westport Road, opposite the northern edge of the quarry. The section of road at the intersection to this property would be dampened to reduce road dust and avoid potential traffic safety issues.

The quarry would be utilised for several weeks for each Council project. Activity and therefore dust generation from the site would be restricted to these periods as minimal activity would occur for the remainder of the year. On this basis, the annual average deposited dust levels in the local area would remain relative to the travel of dust generated from Westport Road users.

The quarry site is surrounded by relatively continuous forest. This forest would capture a significant proportion of dust generated from the quarry operation and therefore limit the impact on surrounding landholders. The closest landholder is approximately 350m from the site. The next closest landholders are located more than 1 km from the site. A large proportion of the dust generated on the site would settle over this distance or be captured in the vegetation.

Under specific conditions where strong wind is present from the south, it is recommended that the site supervisor observes the dust plume from the site in order to make an initial visual determination relating to the travel distance of visible dust toward the closest residence. Where the visible dust can be identified around the closest residence, operations should be altered or cease to limit dust emissions.

To date, no dust emission related objections have been received by the applicant over the past decades of operation on the site. The intensity of the quarry operation would not be altered as a result of this application and therefore it is predicted that the extension of the area would not create additional dust emissions. The primary source of dust generation being the crusher and winning operations are moving further away from the closest residence and therefore it is expected that dust impacts should reduce by a small extent.

7.12. Flora & Fauna

Westport Quarry has been operating for an extended period and has formed part of the local landscape for more than 20-years. The land that has been developed for the quarry had previously been part of Jacks Creek State Forest which is a part of the larger Pilliga Forest, supporting a wide range of tree species including Ironbark and Cypress. The habitat surrounding the quarry is similar to the remaining forest area. The habitat offers a relatively open understorey area with a sparse range of ground cover including scattered grass and forbs. The density of tree hollows is estimated to be in the order of 1 per 2 Ha as the larger trees from the forest have been selectively logged. The dominant tree species are not considered to be significant sources of tree hollows, which would provide habitat for fauna species such as birds, bats and possums.

A search of the NSW National Parks and Wildlife Service's Atlas of NSW Wildlife over a ten square kilometre area centred on the quarry showed that there are two threatened flora and four vulnerable fauna species recorded in the search area. The seven part assessment required by section 5A of the NSW Environmental Planning and Assessment Act 1979 has been attached as Appendix '4'. The assessment has indicated that the proposal to expand the quarry does not represent a significant action that may impact on local fauna and flora species to an extent which may cause an extinction of a species, population or community.

A general assessment of the proposal has indicated that the quarry expansion should be considered in relation to the total area to be cleared and the frequency for which the site is utilised. The area to be cleared represents a relatively small part of Jacks Creek State Forest. The productive capacity of the forest is considered to be low and therefore fauna density in the

immediate surrounds of the quarry would be considered as low. On this basis, the potential dispersement of individuals or a small population from the clearing to be undertaken is not considered to be of an extent that it would impact on population dynamics of the fauna or flora community in the surrounding forest. A second factor to be considered in this assessment is the frequency in which the site operates. The proposal would involve site operations for 6 to 10 weeks per year based on 2 to 3 week project periods. For the remainder of the year the site would remain undisturbed. It was noted that the open quarry area provides a temporary source of water which is not available in the adjoining forest area. In addition to this, grasses and other forbs growing across part of the disturbed area provide additional forage areas for kangaroos and wallabies.

In summary, the potential impact on local flora and fauna is considered to have both negative and positive effects. The negative effects are considered as minor and the potential positive effects of a source of semi-permanent water and foraging may outweigh the negative impacts.

7.13. Waste

The applicant has to date removed any waste generated on the site, such as machinery parts and other material resulting from equipment breakdowns. The site has not been utilised for indiscriminate waste disposal by locals or others.

7.14. Energy

The proposed development would not alter the energy consumption or produce an excessive demand for energy.

7.15. Noise & Vibration

Noise generated from the quarry is described as *moderate*. The increase of the quarry into Jacks Creek State Forest will not generate higher volumes of vehicle movements or machinery being utilised from present levels. The closest residential dwelling is 350 metres away from the present quarry site. The expansion of the quarry does not encroach towards any dwellings within the vicinity.

Crushing activity is to be below ground and therefore noise from this activity will be buffered by the surrounding quarry walls to some extent. Trucks entering and leaving the site would produce some noise during daylight hours.

Background noise levels in the local area are considered to be extremely low due to the lack of other activity in the area. Only occasional traffic noise is generated in the area and therefore the periods when the quarry is active would produce some of the only artificial noise in the local area.

No blasting is required on this site as the material is won by a dozer.

The proposed expansion of the quarry would not alter the level or frequency of noise emissions from the site. The proposal would enable the continuation of the quarry's life by many years at a similar level. Whilst noise from vehicles will impact on nearby fauna species, the level of operation is not constant and only within daylight hours.

The frequency of operations at the site is considered relatively low and should be considered as a significant parameter in the assessment of the impact on ambient and background noise levels in the local area.

The NSW Industrial Noise Policy (INP) establishes recommended limits on the noise emissions from any activity in NSW. Noise limits are dependent upon existing noise levels at a site and are designed to protect potential receivers from noise generated as a result of an activity. The noise

limits aim to protect the receiver from additional intrusive noise and the amenity of the environment to an acceptable degree.

The intrusiveness noise criterion require that the $L_{Aeq,15\ min}$ for the noise source measured at the most sensitive receptor under worst case conditions should not exceed the rated background level (RBL) by more than 5 dB.

The amenity criteria restrict increase made to the current ambient noise levels for a day, evening and night periods. The following table presents there standard criteria for a rural residential dwelling.

Time	Acceptable L_{Aeq} (dB)	Maximum L_{Aeq} (dB)
Day (7am – 6pm)	50	55
Evening (6pm – 10pm)	45	50
Night (10pm – 7am)	40	45

It is noted that the Jacks Creek State Forest area has no other artificial noise and therefore RBL's throughout the day are predicted to be less than 30 dB(A). On this basis, the minimum RBL according to the INP is set at 30 dB(A). The project specific noise level determined from the INP is therefore 30 dB(A) plus 5 dB or 35 $dBL_{Aeq,15\ min}$. This noise would be exceeded by the movements of trucks on the road area and intermittently exceeded by operations within the quarry as the criteria of 35 dB is considered to be the equivalent of no activity in the local area. The quarry has been considered as an existing use in the area and therefore history of the site would indicate that this RBL of 30 dB and a project specific noise level of 35 dB has always been exceeded when the quarry is operating. On this basis, the less stringent criteria as set out in the INP have been adopted to examine the impact on the closest residence.

The loudest and most intrusive noise on the site is considered to be the crusher used to prepare the raw gravel. This equipment generates a sound power level in the order of 114 dB(A) (Vipac, 2013) as a stationary noise. The machine will be located on the floor of the site and generally surrounded by mounds of gravel material. This location would create some natural buffering to reduce the spread of noise from the site as there will be no direct line of noise emission to the closest residence.

Using the following equation, the potential noise emissions can be assessed in relation to meeting guideline criteria.

$L_2 = L_1 \times 20\ Log_{10}\ (d_1/d_2)$ dB(A)

Where:

- L_1 = the sound level in dB(A) at the source;
- L_2 = the calculated sound level in dB(A) measured at the receptor;
- d_1 = the distance from the source at which L_1 is measured;
- d_2 = the distance of the receptor from the source;

This equation can be used to calculate the maximum sound pressure level at ground level on the northern edge of the pit (entrance area) to limit the impact on the amenity of the closest residence.

Allowing for a maximum L_{Aeq} (dB**)** of 55 dB(A) at the closest residence, the noise level of the crusher should be reduced to approximately 62 dB(A) at the northern boundary of the quarry. This would require an attenuation or dampening of noise emissions from the crusher by up to 42

dB(A) through the use of topography created by the below ground quarry and where required, additional mounding of gravel materials to deflect the crusher noise.

The raw rock material available in the quarry will vary in density and therefore crushing requirements. The denser material will require greater crushing strength and therefore increased noise. Crushing of softer material is expected to produce less noise due to the less effort required.

The crusher to be used on the site will involve a contractor. The make and set-up of the crusher may therefore vary which would also vary noise emissions. However, the reduction of 42 dB(A) is considered possible with the use of deflecting material in the form of either the raw or processed gravel which can be stockpiled on the northern side of the equipment to deflect noise to the uninhabited area to the south of the quarry. Under some occasions of southerly winds or no wind, some noise exceedances may occur. Under windy conditions, extensive wind swirl would occur as a result of the surrounding forest. This would reduce any direct emissions or enhancement of noise toward the residence.

Subject to the frequency and duration of crushing activity on the site, it is recommended that the Proponent advises the closest residents of the intention to crush rock and appropriate contact details if noise exceedances are of concern. The applicant would then have the obligation to alter the crushing operation with mitigation measures such as internal mounding to create a noise barrier or ceasing the crushing activity on the site until more favourable weather conditions occur such as northerly based winds.

7.16. Natural hazards

7.16.1. Flood

The site is not flood prone.

7.16.2. Geological instability

The land is geologically stable, consisting of volcanic basement rock, and not subject to subsidence, slip or mass movement.

7.16.3. Bushfire

Narrabri Shire Council's bushfire Hazard Map includes the quarry site. The map indicated that the quarry and associated surroundings is bushfire prone and contains category five vegetation. (medium trees open forest)

As the development will be assessed under Part 4 of the Environmental Planning and Assessment Act 1979, the consent authority is to take into account bushfire risk, and should consider the document 'Planning for Bushfire Protection' (NSW Rural Fire Service 2006, p6) when undertaking environmental assessments.

'Planning for Bushfire Protection' (PBP), however, does not provide for any bushfire specific performance requirements for non-habitable buildings and industrial facilities. As such there are no provisions for the application of Asset Protection Zones (APZ) and building construction standards for a quarry site under PBP. Instead, the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management (NSW Rural Fire Service 2006; pg 46).

Westport Quarry is situated on a cleared section of a slightly eastern sloped land within Jacks Creek State Forest. The surrounding forest is medium density that is thinned (tree lopping every 10 or so). Much of the surrounding vegetation is Cyprus Pine, Bloodwood, Iron Bark and Curracabah. Most trees are regrowth and young, with a small proportion of large mature trees

throughout the immediate vicinity. Ground cover is generally thin as a result of shading and limited productive capacity of the sandy soil.

The aim of PBP is to "use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to the development potential, on-site amenity and protection of the environment."

The development proposal meets the aim of PBP by virtue of the nature of the development (an extension of the quarry to allow for continued extraction). As discussed further below, the proposed development would not significantly decrease the existing level of bushfire protection for workers and emergency personnel. The development is also not considered an asset that requires specific bushland building setbacks or construction standards under PBP. The site could be used by Fire fighters as a cleared emergency area during a fire fighting event if required.

Objective 1 of PBP is to "afford occupants of any building adequate protection from exposure to bushfire".

The proposed development does not consist of a dwelling or building. The development is not expected to offer protection for people from a passing fire front although adequate setback from bushfire prone land is incorporated into the existing quarry. Workers and employees are also not expected to defend the facility from fire and would be evacuated should a bushfire threaten the site.

This objective is satisfied.

Objective 2 is to "provide for defendable space to be located around buildings".

There are no buildings or structures associated with the Westport Quarry.

This objective is satisfied.

Objective 3 is to "provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition".

The quarry is cleared of vegetation throughout its boundary right up until it adjoins the Jacks Creek State Forest. There are no permanent buildings or structures located within the quarry vicinity. All vehicles temporarily stored on site will have a 70 metre plus buffer of cleared ground between them and the forest at all times, providing adequate protection in a bushfire event.

This objective is satisfied.

Objective 4 is to "ensure that safe operation access and egress for emergency service personnel and residents is available".

As the quarry development provides for large truck movements, there is adequate access to proposed assets for fire fighting operations. There is no residential use of the land.

This objective is satisfied.

Objective 5 is to "provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zone (APZ)".

On occasion, water may be present in the quarry and in the event of a bushfire this water would be accessible for fire protection. The cleared nature of the quarry allows for vehicles associated with gravel extraction to be housed temporarily in the centre of the site, protected from any bushfire event should Jacks Creek State Forest experience a bushfire event. There are no permanent structures associated with the quarry that could be compromised by a bushfire event.

This objective is satisfied.

Objective 6 is to "ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bushfire fighting)".

Utility services such as water supply exist in the form of two sediment dams. A bore to supply water for livestock is located nearby on an adjoining lot and could be utilised in an emergency event if required.

This objective is satisfied.

In general, the proposed development is considered to be consistent with the aims and objectives of 'Planning for Bushfire Protection' (NSW Rural Fire Service 2006).

There are no additional bushfire protection measures recommended within this report. This section of the report has assessed the proposed development against the aims of objectives of PBP and demonstrates that these are satisfied.

7.17. Technological hazards

7.17.1. Blasting

The rock formation on the site does not require blasting. The material can be ripped and stockpiled by dozer. No blasting is anticipated for this site.

If blasting occurs as a result of changes in the gravel material that have historically been obtained from this site, appropriate guidelines and monitoring would be adopted in order for a licensed explosive contractor to undertake the work. This would include vibration monitoring and notification to immediate neighbours.

7.18. Traffic conflicts

Traffic impacts on the haul route have been assessed elsewhere in this report and have been shown to be minor due to the low level of traffic on the haul route and its intermittent nature. There are no traffic accident statistics available for the haul route, however, the low traffic density and good sight distances on the haul route suggest that serious traffic accident probability would remain low. There will not be an increase in traffic as a result of this quarry extension proposal.

7.19. Safety, security & crime prevention

The subject land is fenced from the Westport Road boundary. The machinery at the site is set back from the road and is secured when not in use. There are few land holders in the area and these few are considered by the applicant to be vigilant and report unusual activities to one another as a form of neighbourhood watch. This generally results in a lower level of rural crime in this locality compared to other areas without this level of public cooperation.

7.20. Social impact in the locality

The provision of quality road building and construction materials produced by the quarry is seen as a social benefit due to its contribution to the provision of community infrastructure at reasonable cost. If this material is not available locally then public infrastructure would suffer as transport costs for maintenance of local roads would increase. Local Council has a limited budget and therefore less maintenance would occur on the rural road network. Any reduction in road standards would lead to a reduction in social wellbeing in the region as roads deteriorated or money was diverted from other projects to fund the additional road and infrastructure construction and maintenance costs.

The proposal would not result in direct employment of additional staff or contractors as the work undertaken to operate the quarry is considered as an existing activity with the current Council budget.

From a social perspective the proposal is seen as creating positive social outcomes for the Shire through the continued maintenance of local road standards.

7.21. Site design

The design of the quarry is dictated by the size and location of the extractive resource. The pit is progressing in a south & east direction into the forest and the crushing and stockpile area follows the expansion of the site to reduce internal haul distances. The expansion will follow the gravel reserve. The expansion into the south will require the clearing of vegetation within the proposed extended quarry area. Sediment laden water from disturbed areas flows to lower areas within the pit but does not discharge from the pit.

The operation is set back more than 50 metres from Westport Road and is partially screened by regrowth vegetation. The existing entrance road will be retained in its present location and where required maintained to ensure safe access into and out of the quarry for trucks and other equipment.

No additional construction works that require further development consent are proposed. All plant and machinery that is required for gravel extraction is moved to the site on a temporary basis when the need to extract and use the gravel is necessary.

7.22. Cumulative impacts

The proposed development consists of an expansion of the area to be quarried does not alter the intended frequency or intensity of the activity on the quarry site. On this basis, the potential impacts relating to the effects of noise, dust and traffic on neighbouring receivers would remain similar. An assessment of these impacts has indicated that some dust and potentially noise impacts occur as the site is located in a relatively isolated area with no other similar industrial or extractive activity. The location is in a quiet relatively undisturbed location and therefore any noise or dust generated from the site could be considered an unacceptable impact. These impacts will not be any different from current levels as sensitive areas such as houses will not be further encroached upon and extraction levels will not increase.

On this basis, it is considered that no cumulative impacts are predicted for the locality.

Positive cumulative impacts such as the ability of local Council to maintain the local road network at a more reasonable cost compared to alternatives would be achieved.

On this basis, impacts associated with the Westport quarry are seen to be positive.

8. Environmental Management Plan

8.1. Preparation

Westport Quarry management will be responsible for the preparation of an Environmental Management Plan (EMP) for operation of the site. The plan would form part of the standard approach required for the Applicants operation of the site in order to establish and monitor objectives of the operation.

Relevant monitoring programs should be included in the EMP relating to specific performance criteria. These criteria should include the following aspects of the operation:

- Operation schedule and production
- Noise emission criteria
- Dust emission criteria
- Complaints receival and mitigation actions
- General environmental compliance

A draft EMP is presented in appendix 8. This draft provides a basic EMP including performance criteria. The draft should be adopted by site management and updated for the specifics of the operation. The EMP should be modified when required for various mitigation measures that maybe required on occasion in order for the quarry operation to meet the target criteria.

9. Site Rehabilitation

9.1.1. Rehabilitation and Final Land Use Objectives

The following objectives have been adopted to guide rehabilitation procedures for the site:

a. To produce a stable final landform able to support the rehabilitation of the land for forestry purposes;
b. To minimise the environmental impact of all site earthworks associated with the rehabilitation works;
c. To optimise the use of available overburden and top soil as a substrate for vegetation; and
d. To achieve a stable and functional drainage system at the site under extreme rainfall events.

9.1.2. Final Land Form

The final landform would be free draining with a gently sloping floor to the west towards the lower section of the quarry.

The existing extraction faces would be sloped to a batter of no steeper than 3 horizontal to one vertical, to allow the establishment of suitable vegetation without a high risk of complete erosion. Remaining stockpiles of raw or crushed gravel should be spread evenly over the site to enhance drainage. Stockpiled topsoil and overburden would then be spread on the batters and quarry floor to provide suitable topsoil material to allow vegetation growth. Where appropriate, reseeding would be undertaken to provide a cover crop to stabilise the surface and allow natural and local pioneering species such as Acacia to establish on the site, which would then allow the eventual natural regrowth of local tree species. Existing fencing should remain to exclude domestic stock if required and therefore limit the disturbance of the revegetation process.

9.1.3. Rehabilitation Method

As the pit floor would be utilised for stockpiling raw material, crushing operations, stockpiling and loading, rehabilitation would not commence until quarrying ceases and would be completed after quarrying activity ceases. The method to be adopted involves some managed revegetation to stabilise the available topsoil. However, in general the native vegetation in the surrounding

woodland has to date shown that it is more than capable of naturally revegetating the disturbed area.

9.1.4. Rehabilitation Funding

The applicant should consider funding of the rehabilitation works as part of the cost of site operations. The proposed work would be undertaken by a dozer to shape the site and spread the topsoil material. The applicant would then be required to revegetate some small, steeper parts of the site. Total cost of the works is anticipated to cost in the order of $15,000 based on 1-week of dozer hire and an allowance for revegetation. Based on the surveyed quantity of material available on the site, this cost would be covered by a levee of 8c per cubic metre or the equivalent of approximately $375 per annum to be set aside for rehabilitation. This is considered a minor amount in relation to the value of the material obtained from the site.

10. Conclusion

This assessment of the potential environmental impacts resulting from the proposed extension of Westport Quarry by an additional 4.74 hectares has demonstrated that there would be minimal further impact on the environment, provided that the management measures proposed in this report and contained in the Westport Quarry Environmental Management Plan are followed. Additionally, these impacts are expected to be offset by the introduction of a semi-permanent water supply, and foraging for local fauna, as well as allowing for the continued social and economic benefit provided to Council through access to cost effective materials.

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APPENDICES

Appendix 1 – Director General's Requirements

NSW GOVERNMENT | Planning & Infrastructure

Development Assessment Systems & Approvals
Mining Projects
Contact: Nicholas Brbot
Phone: (02) 9228 2019
Fax: (02) 9228 6466
Email: nicholas.brbot@planning.nsw.gov.au

Mr Peter Taylor
SMK Consultants Pty Ltd
PO Box 774
MOREE NSW 2400

Dear Mr Taylor

Westport Quarry Expansion (DGR 756)
Director-General's Requirements

I refer to your request for the Director-General's Requirements (DGRs) for the above development, which is designated local development under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). I have attached a copy of the DGRs for the Environmental Impact Statement (EIS) required for this development. These requirements have been prepared in consultation with relevant State agencies and are based on the information your company has provided to date. I have also attached the agencies' input into the formation of the DGRs, which you are also advised to consider closely during your preparation of the EIS.

In your request for DGRs, it was indicated that the proposal will require approval under the *Protection of the Environment Operations Act 1997* and *Rural Fires Act 1997*. Accordingly, the proposal is classified as integrated development under section 91 of the EP&A Act. If further integrated approvals are identified, you must undertake your own consultation with the relevant public authorities, and address their requirements in the EIS.

When you lodge your DA for the proposal, you must provide:

- two hard copies and one electronic copy of the EIS to the Department;
- one hard and one electronic copy of the EIS to each identified integrated approval authority; and
- a cheque for $320 to each identified integrated approval authority, to offset costs involved in the review of the DA and EIS. Do not send a cheque to the Department of Planning and Infrastructure as it is not an integrated approval authority.

If your proposal contains any actions that could have a significant impact on matters of National Environmental Significance, then it will require an additional approval under the Commonwealth's *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. If you have any questions about the application of the EPBC Act to your proposal, you should contact the Department of Sustainability, Environment, Water, Population and Communities in Canberra (6274 1111 or www.environment.gov.au).

Should the consent authority approve the proposal, then under section 22 of the *Mine Health and Safety Act 2004*, the owner or general manager of a mine or quarry must not undertake mining or quarrying operations without first nominating a person as the operator of the mine or quarry to the Chief Inspector of Mines. The Applicant should contact the local Mine Safety Operations Branch of the Division of Resources and Energy within the Department of Trade, Investment, Regional Infrastructure and Services in regard to this and other matters relating to compliance with the *Mine Health and Safety Act 2004.*

If you have any enquiries about these requirements, please contact Nicholas Brbot.

Yours sincerely

Howard Reed 16.8.13
Howard Reed
A/Director
Mining & Industry Projects
as delegate for the Director-General

Director-General's Requirements

Section 78A(8) of the *Environmental Planning and Assessment Act 1979* and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000.*

Designated Development

DGR Number	756
Proposal	Expansion of a gravel quarry to extract up to 30,000 tonnes of material per year.
Location	626 Westport Road, Narrabri (Lot 21 DP 757083)
Applicant	SMK Consultants P/L
Date of Expiry	16 August 2015
General Requirements (refer Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*)	The Environmental Impact Statement (EIS) must include: • an executive summary; • a full/detailed description of the proposal, including: - identification of the resource; - description of the site; - a history of any previous quarrying operations on the site; - the proposed works (including rehabilitation works); - the duration and intensity of extraction operations; - any likely interactions between the proposed operations and existing/approved development and land use in the area; and - a detailed justification for the development; • a conclusion justifying the development on economic, social and environmental grounds, taking into consideration whether the proposal is consistent with the objects of the *Environmental Planning & Assessment Act 1979*; and • a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading.
Key Issues	The EIS must also assess the potential impacts of the proposal during the establishment, operation and decommissioning of the proposal. The EIS must describe what measures would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor the potential impacts on: • **Land Resources** – including a assessment of the potential impacts on: - soils and land capability, including an assessment of activities that would cause erosion and the measures proposed to minimise erosion and sedimentation; - landforms and topography, including cliffs, rock formations, steep slopes, etc; and - land use, including agricultural, forestry and conservation lands; • **Water Resources** – including: - identification of any licensing requirements or other approvals under the *Water Act 1912* and/or *Water Management Act 2000*; - an assessment of potential impacts on the quality and quantity of existing surface and ground water resources; - a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant Water Sharing Plan or water source embargo; - an annual site water balance for representative years of the proposed life of the project; and - a detailed description of the proposed water management system (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts; • **Biodiversity** – including: - accurate predictions of any vegetation clearing on site or for any road upgrades; - a detailed assessment of the potential impacts of the development on any threatened species or populations or their habitats, endangered ecological communities and groundwater dependent ecosystems; - a detailed description of the measures to maintain or improve the biodiversity values within the site in the medium to long term; and - consideration of a Biodiversity Offset Strategy;

	- consideration of a Biodiversity Offset Strategy; • **Heritage** – including: - an Aboriginal cultural heritage assessment (addressing both cultural and archaeological significance) which must demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, and developing and selecting mitigation options and measures; and - a Historic heritage assessment (including archaeology) which must include a statement of heritage impact (including significance assessment) for any State significant or locally significant historic heritage items; • **Traffic and Transport** – including: - an assessment of potential traffic impacts on the capacity, efficiency and safety of the road network, in particular the assessment must include a Road Safety Audit to review the condition of the proposed routes and identify any safety issues which may exacerbated by the development; and - a description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network in the surrounding area over the life of the project; • **Noise and Vibration** - particularly any potential noise and vibration impacts on nearby private receptors due to construction, operation or road haulage; • **Air Quality** – particularly any potential dust impacts on nearby private receptors from construction, operation or road haulage; • **Rehabilitation** – including: - a detailed description of the proposed rehabilitation measures that would be undertaken during quarry closure; - a detailed rehabilitation strategy, including justification for the proposed final land form and consideration of the objectives of any relevant strategic land use plans or policies; and - the measures that would be undertaken to ensure sufficient financial resources are available to implement the proposed rehabilitation strategy; • **Waste Management** – including importation of any waste material to the site; • **Hazards and Risks** – paying particular attention to public safety, including bushfires and transport or storage of any dangerous goods; • **Visual Amenity**; • **Agricultural Impacts;** • **Utilities and Services**; and • **Social and Economic Impacts.**
Environmental Planning Instruments	The EIS must assess the proposal against the relevant environmental planning instruments, including (but not limited to): • *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007;* • *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development;* • *State Environmental Planning Policy No. 44 – Koala Habitat Protection;* • *State Environmental Planning Policy No. 55 – Remediation of Land;* • *Narrabri Local Environmental Plan 2012;* and • relevant development control plans and section 94 plans, strategies and management plans.

Guidelines	The EIS must take into account relevant State Government policies and guidelines, in particular the *Industrial Noise Policy* (EPA 2001), *Aquifer Interference Policy* (DPI 2012), *Soils and Construction: Managing Urban Stormwater* (Landcom 2004), *Guidelines for Fresh and Marine Water Quality and Guidelines for Water Quality Monitoring and Reporting* (ANZECC), *Using the ANZECC Guideline and Water Quality Objectives in NSW* (DEC), *Approved Methods for the Modelling and Assessment of Air Pollutants* (DEC), *Approved Methods for Sampling and Analysis of Air Pollutants* (DEC), *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft* (DECC 2004), *The Threatened Species Assessment Guideline – The Assessment of Significance* (DECC 2007), *Draft Guidelines for the Assessment of Aquatic Ecology in EIA* (DUAP 1998), *Guide to investigation, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011), *Code of Practice of the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010), *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010), *Draft Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC 2005), *Guide to Traffic Generating Development* (RTA), *Road Design Guide* (RTA), *Planning for Bush Fire Protection 2006* (RFS) or latest versions. During the preparation of the EIS you must consult the Department's EIS Guideline – Extractive Industries – Quarries. This guideline is available for purchase from the Department's Information Centre, 23-33 Bridge Street, Sydney or by calling 1300 305 695.
Consultation	During the preparation of the EIS, you must consult with Council and should consult with the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult surrounding landowners and occupiers that are likely to be impacted by the proposal. Details of the consultations carried out and issues raised must be included in the EIS.

Appendix 2 – Authority Correspondence

All communications to be addressed to:

Headquarters
NSW Rural Fire Service
Locked Mail Bag 17
GRANVILLE NSW 2142

Telephone: (02) 6655 7002
e-mail:csc@rfs.nsw.gov.au

Customer Service Centre
NSW Rural Fire Service
PO Box 203
URUNGA NSW 2455

Facsimile: (02) 6655 7008

Director General
NSW Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Your Ref: DGR ID 756
Our Ref: S13/0034
DA13072288280 AB

15 August 2013

ATTENTION: Mr Nicholas Brbot

Dear Mr Brbot,

Agency Comment:- Expansion of Westport Quarry 626 Westport Road Jacks Creek; Narrabri LGA

I refer to your email dated 19 July 2013 seeking comment from the NSW Rural Fire Service on matters to be included in the Director-General's requirements for an environmental impact statement for the above proposal.

The subject land is mapped as bushfire prone land by Narrabri Shire Council. The NSW Rural Fire Service considers that the environmental impacts statement for the expansion of the existing quarry should include an assessment of the proposed development with respect to the following:

- the aim and objectives of 'Planning for Bushfire Protection 2006';
- identification of bush fire prone land within 140 metres of the proposed development, including vegetation types;
- identification of potential ignition sources during construction and operation of the development;
- proposed bushfire protection measures for the development, including vegetation management and fire suppression capabilities;
- operational access for fire fighting appliances to the site; and
- emergency and evacuation planning.

1 of 2

Office of Environment & Heritage

Date: 9 August 2013
Our reference: DOC13-36184
Contact: Erica Baigent 6883 5311

Nicholas Brbot
Student Planner – Mining Projects
Department of Planning & Infrastructure
GPO Box 39
SYDNEY 2001

Dear Nicholas

RE Request for EIS Requirements - Expansion of Westport Quarry DGR ID No. 756 (Narrabri Region)

Thank you for your email dated 19th July 2013 seeking the requirements of the Office of Environment and Heritage (OEH) for the preparation of an Environmental Impact Statement (EIS) for the above proposal.

The background information provided indicates that the proposed expansion of the Westport Quarry into the Jacks Creek State Forest will involve the clearing of 4.74ha of native vegetation and extend the life of the quarry by approximately 22 years. This will take the quarry to an estimated total area of 7.74ha.

OEH Role

OEH has responsibilities under the:

- *National Parks and Wildlife Act 1974* - namely the protection and care of Aboriginal objects and places, the protection and care of native flora and fauna and the protection and management of reserves; and the
- *Threatened Species Conservation Act 1995* which aims to conserve threatened species of flora and fauna, populations and ecological communities to promote their recovery and manage processes that threaten them.
- *Native Vegetation Conservation Act 2003* – ensuring compliance with the requirements of this legislation.

OEH understands from the correspondence that the proposed activity is a Part 4 application pursuant to the *Environmental Planning and Assessment Act 1979* (*EP&A Act*), and has not been classified as State Significant Development. As such OEH only has a statutory role in assessing such an activity if the determining authority determines that:

a) the activity is likely to significantly affect a threatened species, population, ecological community, or its habitat, as listed under the *Threatened Species Conservation (TSC) Act 1995*; and/or

b) An Aboriginal Heritage Impact Permit is required.

PO Box 2111 Dubbo NSW 2830
Level 1 48-52 Wingewarra Street Dubbo NSW
Tel: (02) 6883 5312 Fax: (02) 6884 8675
ABN 30 841 387 271
www.environment.nsw.gov.au

The *EP&A Act* requires that the EIS should fully describe the proposal, the existing environment and impacts of the proposal. It is the responsibility of the proponent and consent authority to adequately consider the requirements under the *EP&A Act.*

OEH can provide advice on the EIS where the EIS deals with natural and cultural heritage conservation issues. OEH may also comment on the legitimacy of the conclusions reached regarding the significance of impacts by the proposed development to these components of the environment.

This letter directs you primarily to our generic guidance material. However please note that it is up to the proponent (and later the consent/determining authority after appropriate consultation) to determine the detail and comprehensiveness of the surveys and level of assessment required to form legally defensible conclusions regarding the impact of the proposal. The scale and intensity of the proposed development should dictate the level of investigation. It is important that all conclusions are supported by adequate data.

OEH Requirements

In summary, the OEH's key information requirements for the proposal include an adequate assessment of:

1. **Impacts to Aboriginal cultural heritage objects;** and
2. **Impacts on flora, fauna, threatened species, populations, communities and their habitats.**

This assessment should include consideration of direct and indirect impacts as a result of both construction and operation of the quarry. Assessment of the cumulative impact of this and other developments in the area will be essential.

Flora, Fauna and Threatened Species

A copy of our generic Environmental Assessment Guidelines are included in Attachments A and B. These guidelines address requirements under the *EP&A Act* and OEH's areas of responsibility relating to flora, fauna and threatened species, populations and ecological communities and their habitats.

OEH is committed to the protection, appropriate management, and where necessary, rehabilitation of native vegetation. For these reasons, OEH considers that careful planning should precede any development that involves further vegetation clearance or other significant impact within areas of remnant vegetation.

Negative impacts to native vegetation (eg clearing) should be avoided where possible. Where impacts cannot be avoided, the environmental impact assessment should detail how a "maintain or improve" outcome for biodiversity will be achieved. BioBanking provides a voluntary mechanism through which this can be achieved. The BioBanking Assessment Methodology allows quantification of impacts and assessment of the value of offset areas and associated management regimes for those areas. The biobanking scheme provides an alternative path for proponents to the current threatened species assessment of significance process. Information about BioBanking is located on OEH's website at http://www.environment.nsw.gov.au/biobanking/ .

We caution the proponent regarding the following matters specifically in relation to the Pilliga forest environments:

- Many of the threatened flora species which will need to be considered are cryptic species and therefore appropriate survey timing and methods will be important.
- Any surveys and assessments targeting the Pilliga Mouse (*Pseudomys pilligaensis*) in particular must take into consideration issues of trap shyness and seasonal fluctuations in populations; factors which present difficulties for impact assessment. Any use of habitat suitability as a measure of local populations must be based on an appropriate and rigorous habitat assessment.

Cultural Heritage

The importance of protecting Aboriginal Cultural Heritage is reflected in the provisions under Part 6 of the *NP&W Act 1974*, as amended. That Act clearly establishes that Aboriginal objects and places are protected and may not be harmed, disturbed or desecrated without appropriate authorisation. Importantly, approvals under Parts 4 and 5 of the *EP&A Act 1979* do not absolve the proponent of their obligations under the *NP&W Act 1979*.

Under the *NP&W Act 1974*, it is the responsibility of each individual proposing to conduct ground disturbance works to ensure that they have conducted a due diligence assessment to avoid harming Aboriginal objects by the proposed activity. OEH has produced a generic due diligence process, which is not mandatory to follow, however any alternative process followed must be able to demonstrate their process was reasonable and practicable in attempts to avoid harm to Aboriginal objects.

Consultation must also be in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) as set by OEH if impact to cultural heritage is unavoidable.

Further advice regarding Aboriginal cultural heritage can be found on the OEH web-site at: http://www.environment.nsw.gov.au/licences/achregulation.htm. and within guidance documents listed in Attachment B.

Should you require further information on flora, fauna or cultural heritage requirements please contact Erica Baigent on (02) 68835311.

Yours Sincerely,

SONYA ARDILL
Senior Team Leader Planning
North West Region

ATTACHMENT A

Office of Environment and Heritage

EIS Requirements for the Expansion of Westport Quarry DGR ID No. 756

1. Environmental impacts of the project

Impacts related to the following environmental issues need to be assessed, quantified and reported on:

- **Cumulative impact**
- **Aboriginal cultural heritage**
- **Biodiversity**
- **OEH Estate - Land reserved or acquired under the NPW Act**

The Environmental Impact Statement (EIS) should address the specific requirements outlined under each heading below and assess impacts in accordance with the relevant guidelines mentioned. A full list of guidelines is at **Attachment B**.

2. Cumulative Impact

The cumulative impacts from all clearing activities and operations, associated edge effects and other indirect impacts on cultural heritage, biodiversity and OEH Estate need to be comprehensively assessed in accordance with the *Environmental Planning and Assessment Act 1979*.

This should include the cumulative impact of the proponent's existing and proposed development and associated infrastructure (such as access tracks etc) as well as the cumulative impact of other developments located in the vicinity. This assessment should include consideration of both construction and operational impacts.

3. Aboriginal cultural heritage

The EIS report should contain:

a. A description of the Aboriginal objects and declared Aboriginal places located within the area of the proposed development.

b. A description of the cultural heritage values, including the significance of the Aboriginal objects and declared Aboriginal places, that exist across the whole area that will be affected by the proposed development, and the significance of these values for the Aboriginal people who have a cultural association with the land.

c. A description of how the requirements for consultation with Aboriginal people as specified in clause 80C of the *National Parks and Wildlife Regulation 2009* have been met.

d. The views of those Aboriginal people regarding the likely impact of the proposed development on their cultural heritage. If any submissions have been received as a part of the consultation requirements, then the report must include a copy of each submission and your response.

e. A description of the actual or likely harm posed to the Aboriginal objects or declared Aboriginal places from the proposed activity, with reference to the cultural heritage values identified, and the need apply for a Aboriginal Heritage Impact Permit (AHIP).

f. A description of any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places.

g. A description of any practical measures that may be taken to avoid or mitigate any actual or likely harm, alternatives to harm or, if this is not possible, to manage (minimise) harm.

h. A specific Statement of Commitment that the proponent will complete an Aboriginal Site Impact Recording Form and submit it to the Aboriginal Heritage Information Management System (AHIMS) Registrar, for each AHIMS site that is harmed through the proposed development.

In addressing these requirements, the proponent must refer to the following documents:

- ***Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*** (DECCW, 2010) - http://www.environment.nsw.gov.au/licences/consultation.htm. This document further explains the consultation requirements that are set out in clause 80C of the National Parks and Wildlife Regulation 2009. The process set out in this document must be followed and documented in the Environmental Assessment Report.

- ***Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales*** (DECCW, 2010) http://www.environment.nsw.gov.au/licences/archinvestigations.htm. The process described in this Code should be followed and documented where the assessment of Aboriginal cultural heritage requires an archaeological investigation to be undertaken.

Notes:

i. An *Aboriginal Site Impact Recording Form* (http://www.environment.nsw.gov.au/licences/DECCAHIMSSiteRecordingForm.htm) must be completed and submitted to the Aboriginal Heritage Information Management System (AHIMS) Registrar, for each AHIMS site that is harmed through archaeological investigations required or permitted through these environmental assessment requirements.

ii. Under section 89A of the *National Parks and Wildlife Act* 1974, it is an offence for a person not to notify OEH of the location of any Aboriginal object the person becomes aware of, not already recorded on the Aboriginal Heritage Information Management System (AHIMS). An AHIMS Site Recording Form should be completed and submitted to the AHIMS Registrar (http://www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm), for each Aboriginal site found during investigations.

4. Biodiversity

Biodiversity impacts can be assessed using **either:**

- The BioBanking Assessment Methodology (scenario 1) **or**
- A detailed biodiversity assessment (scenario 2).

The requirements for each of these approaches are detailed below.

The BioBanking Assessment Methodology can be used either to obtain a BioBanking statement, or to assess impacts of a proposal and to determine required offsets without obtaining a statement. In the latter instances, if the required credits are not available for offsetting, appropriate alternative options may be developed in consultation with OEH officers.

Note:

i. The Shire may be listed in Schedule 1 of ***SEPP No. 44 - Koala Habitat Protection.*** If so, the requirements of the SEPP regarding Koala habitat protection should also be considered by the proponent.

SCENARIO 1 - Where a proposal is assessed using the BioBanking Assessment Methodology (BBAM)

1. Where a BioBanking Statement is being sought under Part 7A of the *Threatened Species Conservation* Act 1995 (TSC Act), the assessment must be undertaken by an accredited BioBanking assessor (as specified under Section 142B (1)(c) of the TSC Act 1995) and done in accordance with the *BioBanking Assessment Methodology and Credit Calculator Operational Manual* (DECCW, 2008). To qualify for a BioBanking Statement a proposal must meet the 'improve or maintain' standard.

1a. The Environmental Impact Statement (EIS) should include a specific Statement of Commitments that reflects all requirements of the BioBanking Statement including the number of credits required and any DG approved variations to impact on Red Flags.

2. Where the BioBanking Assessment Methodology is being used to assess impacts of a proposal and to determine required offsets, and a BioBanking Statement is not being obtained, the EIS should contain a detailed biodiversity assessment and all components of the assessment must be undertaken in accordance with the *BioBanking Assessment Methodology and Credit Calculator Operational Manual* (DECCW, 2008).

2a. The EIS should include a specific Statement of Commitments which:

- is informed by the outcomes of the proposed BioBanking assessment offset package;
- sets out the ecosystem and species credits required by the BioBanking Assessment Methodology and how these ecosystem and/or species credits will be secured and obtained;
- if the ecosystem or species credits cannot be obtained, provides appropriate alternative options to offset expected impacts, noting that an appropriate alternative option may be developed in consultation with OEH officers and in accordance with OEH policy;
- demonstrates how all options have been explored to avoid red flag areas; and
- includes all relevant 'BioBanking files (e.g. *.xml output files), data sheets, underlying assumptions (particularly in the selection of vegetation types from the vegetation types database), and documentation (including maps, aerial photographs, GIS shape files, other remote sensing imagery etc.) to ensure that the OEH can conduct an appropriate review of the assessment.

3. **Where appropriate**, likely impacts (both **direct** and **indirect**) on any adjoining and/or nearby OEH estate reserved under the *National Parks and Wildlife Act 1974* or any marine and estuarine protected areas under the *Fisheries Management Act 1994* or the *Marine Parks Act 1997* should be considered. Please refer to the *Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water* (DECCW, 2010).

4. With regard to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, the assessment should identify and assess any relevant Matters of National Environmental Significance and whether the proposal has been referred to the Commonwealth or already determined to be a controlled action.

SCENARIO 2 - Where a proposal is assessed outside the BioBanking Assessment Methodology

1. The EIS should include a detailed biodiversity assessment, including assessment of impacts on threatened biodiversity, native vegetation and habitat. This assessment should address the matters included in the following sections.

2. A field survey of the site should be conducted and documented in accordance with relevant guidelines, including:
   - the *Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna -Amphibians* (DECCW, 2009);
   - *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft* (DEC, 2004); and
   - Threatened species survey and assessment guideline information on www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm.
   - Commonwealth survey requirements (birds, bats, reptiles, frogs, fish and mammals): http://www.environment.gov.au/epbc/publications/guidelines.html. These are relevant when species or communities listed under the *Environment Protection and Biodiversity Conservation Act* are present.

   It is preferable for proponents to use the Interim Vegetation Mapping Standard data form to collect the vegetation plot data for the project site, and any offset site associated with the project. This will provide data that is useful for vegetation mapping as well as in the BioBanking Assessment Methodology. This is available at http://www.environment.nsw.gov.au/research/VISplot.htm.

   If a proposed survey methodology is likely to vary significantly from the above methods, the proponent should discuss the proposed methodology with the OEH prior to undertaking the EIS, to determine whether the OEH considers that it is appropriate.

   Recent (less than five years old) surveys and assessments may be used. However, previous surveys should not be used if they have:
   - been undertaken in seasons, weather conditions or following extensive disturbance events when the subject species are unlikely to be detected or present, or
   - utilised methodologies, survey sampling intensities, timeframes or baits that are not the most appropriate for detecting the target subject species,

   unless these differences can be clearly demonstrated to have had an insignificant impact upon the outcomes of the surveys. If a previous survey is used, any additional species listed under the TSC Act since the previous survey took place, must be surveyed for.

   Determining the list of potential threatened species for the site must be done in accordance with the *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft* (DEC, 2004).

The OEH Threatened Species website http://www.environment.nsw.gov.au/threatenedspecies/ and the *Atlas of NSW Wildlife* database must be the primary information sources for the list of threatened species present.

The BioBanking Threatened Species Database, the Vegetation Types databases (available via the OEH website at http://www.environment.nsw.gov.au/biobanking/biobankingtspd.htm and http://www.environment.nsw.gov.au/biobanking/vegtypedatabase.htm, respectively) and other data sources (e.g. PlantNET, Online Zoological Collections of Australian Museums (http://www.ozcam.org/), previous or nearby surveys etc.) may also be used to compile the list.

Other reference literature may be available for the subject locality/region. The proponent should explore this possibility thoroughly.

3. The EIS should contain the following information as a minimum:

   a. Description and geo-referenced mapping of study area (**and associated spatial data files**), e.g. overlays on topographic maps, satellite images and /or aerial photos, including details of map datum, projection and zone, all survey locations, vegetation communities (including classification and methodology used to classify), key habitat features and reported locations of threatened species, populations and ecological communities present in the subject site and study area. Separate spatial files (.shp format) to be provided to the OEH should include, at a minimum, shapefiles of the project site, impact footprint, vegetation mapping and classification for both the impact and any offset site(s);

   b. Description of survey methodologies used, including timing, location and weather conditions, and a comparison of survey effort (in tabular form) with that recommended in the *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft* (DEC, 2004). Where survey effort is not consistent with those guidelines justification must be provided;

   c. Detailed description of vegetation communities (including classification and methodology used to classify) and including all plot data. Plot data should be supplied to the OEH in electronic format (eg MS-Excel) and organised by vegetation community;

   d. Details, including qualifications and experience of all staff undertaking the surveys, mapping and assessment of impacts as part of the EIA;

   e. Identification of national and state listed threatened biota known or likely to occur in the study area and their conservation status;

   f. Description of the likely impacts of the proposal on biodiversity and wildlife corridors, including **direct** and **indirect** and **construction** and **operation** impacts. Wherever possible, quantify these impacts such as the amount of each vegetation community or species habitat to be cleared or impacted, or any fragmentation of a wildlife corridor;

   g. Identification of the **avoidance**, **mitigation** and **management measures** that will be put in place as part of the proposal to avoid or minimise impacts, including details about alternative options considered and how long term management arrangements will be guaranteed;

   h. Description of the residual impacts of the proposal. **If the proposal cannot adequately avoid or mitigate impacts on biodiversity, then a biodiversity offset package is expected** (see the requirements for this at point 6 below); and

   i. Provision of specific Statement of Commitments relating to biodiversity.

4. An assessment of the significance of **direct** and **indirect** impacts of the proposal must be undertaken for threatened biodiversity **known or considered likely to occur** in the study area based on the presence of suitable habitat. The Assessment of Significance is a statutory mechanism which allows decision makers to assess whether a proposed development or activity is

Page 9

likely to have a significant effect on threatened species, populations or ecological communities, or their habitats. This assessment must take into account:

a. the factors identified in s.5A of the EP&A Act[1]; and

b. the guidance provided by *The Threatened Species Assessment Guideline – The Assessment of Significance (DECCW, 2007)*. This guideline is available on the OEH website:
http://www.environment.nsw.gov.au/resources/threatenedspecies/tsaguide07393.pdf

5. Where an offsets package is proposed by a proponent for impacts to biodiversity (and a BioBanking Statement has not been sought) this package should:
   a. Meet the OEH's *Principles for the use of biodiversity offsets in NSW*[2], which are available at: http://www.environment.nsw.gov.au/biodivoffsets/oehoffsetprincip.htm
   b. Identify the conservation mechanisms to be used to ensure the long term protection and management of the offset sites; and
   c. Include an appropriate Management Plan (such as vegetation or habitat) that has been developed as a key amelioration measure to ensure any proposed compensatory offsets, retained habitat enhancement features within the development footprint and/or impact mitigation measures (including proposed rehabilitation and/or monitoring programs) are appropriately managed and funded.

6. **Where appropriate**, likely impacts (both **direct** and **indirect**) on any adjoining and/or nearby OEH estate reserved under the *National Parks and Wildlife Act 1974* or any marine and estuarine protected areas under the *Fisheries Management Act 1994* or the *Marine Parks Act 1997* should be considered. Refer to the *Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water* (DECC, 2010).

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[1] Following threatened species assessment via the Assessment of Significance, it may be necessary to prepare a **Species Impact Statement** (SIS). The proponent will need to prepare a SIS in the following circumstances:

- If (after having addressed Section 5A) the flora/fauna assessment concludes that there is likely to be a significant impact to threatened species, or
- The proposed development is likely to affect critical habitat declared under the TSC Act.

If a SIS is required, the proponent (not the consultant) must write to OEH for any formal requirements for the SIS that he might deem appropriate. The SIS must then be prepared in accordance with these requirements and provided to the OEH. In some instances the Minister for the Environment will also need to be consulted for approval.

Methods to reduce the impact on the protected and threatened species should be considered fully, and are considered an integral requirement within any SIS document.

Conducting an Assessment of Significance or an SIS according to the provisions of the *EP&A Act* and the *TSC Act* is a complex task and should be undertaken by suitably qualified person(s).

[2] **Please note** that the OEH's *Principles for the use of biodiversity offsets in NSW* ('the Principles') require offsets to be based on a **quantitative assessment** of the loss in biodiversity from the proposal and the gain in biodiversity from the offset. The methodology must be based on the best available science, be reliable, and used for calculating both the impact and offset sites. Even where a proponent does not intend to use the BioBanking Assessment Methodology and Credit Calculator (Scenario 1), use of a **suitable alternative metric**, justified in the EA, is necessary to demonstrate that the proposal is consistent with the Principles or the Interim policy. Ultimately the proponent is expected to demonstrate quantitatively that the biodiversity losses associated with the project will be adequately compensated for by the improvement in vegetation condition and security expected from the offset site. This cannot be properly determined by a hectare comparison alone.

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7. With regard to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, the assessment should identify any relevant Matters of National Environmental Significance and whether the proposal has been referred to the Commonwealth or already determined to be a controlled action.

Attachment B – Guidance Material

Title	Web Address
Commonwealth Environment Protection & Biodiversity Conservation Act 1999	http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
Environmental Planning and Assessment Act 1979	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+203+1979+cd+0+N
Fisheries Management Act 1994	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+38+1994+cd+0+N
National Parks and Wildlife Act 1974	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+80+1974+cd+0+N
Threatened Species Conservation Act 1995	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+101+1995+cd+0+N
Water Management Act 2000	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+92+2000+cd+0+N
Aboriginal Cultural Heritage	
Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (2005)	Available from DoP.
Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)	http://www.environment.nsw.gov.au/licences/consultation.htm
Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010)	http://www.environment.nsw.gov.au/licences/archinvestigations.htm
Due Diligence Code for the Protection of Aboriginal Objects in NSW (DECCW 2010)	http://www.environment.nsw.gov.au/resources/cultureheritage/ddcop/10798ddcop.pdf
Aboriginal Site Impact Recording Form	http://www.environment.nsw.gov.au/licences/DECCAHIMSSiteRecordingForm.htm
Aboriginal Heritage Information Management System (AHIMS) Registrar	http://www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm
Biodiversity	
BioBanking Assessment Methodology (DECC, 2008)	http://www.environment.nsw.gov.au/resources/biobanking/08385bbassessmethod.pdf
BioBanking Assessment Methodology and Credit Calculator Operational Manual (DECCW, 2008)	http://www.environment.nsw.gov.au/biobanking/calculator.htm
Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna –Amphibians (DECCW, 2009)	http://www.environment.nsw.gov.au/resources/threatenedspecies/09213amphibians.pdf
Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC, 2004)	http://www.environment.nsw.gov.au/resources/nature/TBSAGuidelinesDraft.pdf
Survey requirements (birds, bats, reptiles, frogs, fish and mammals) for species listed under the EPBC Act	http://www.environment.gov.au/epbc/publications/guidelines.html
DECCW Threatened Species website	http://www.environment.nsw.gov.au/threatenedspecies/

Atlas of NSW Wildlife	http://www.environment.nsw.gov.au/wildlifeatlas/about.htm
BioBanking Threatened Species Database	http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/home_species.aspx
Vegetation Types databases	http://www.environment.nsw.gov.au/biobanking/vegtypedatabase.htm
PlantNET	http://plantnet.rbgsyd.nsw.gov.au/
Online Zoological Collections of Australian Museums	http://www.ozcam.org/
Threatened Species Assessment Guideline - The Assessment of Significance (DECCW, 2007)	http://www.environment.nsw.gov.au/resources/threatenedspecies/tsaguide07393.pdf
Principles for the use of biodiversity offsets in NSW	http://www.environment.nsw.gov.au/biodivoffsets/oehoffsetprincip.htm

Nicholas Brbot - RE: Request for EIS Requirements - Expansion of Westport Quarry DGR ID No. 756 (Narrabri Shire LGA)

From: Development Western <development.western@rms.nsw.gov.au>
To: Nicholas Brbot <Nicholas.Brbot@planning.nsw.gov.au>
Date: Thursday, 1 August 2013 11:33 AM
Subject: RE: Request for EIS Requirements - Expansion of Westport Quarry DGR ID No. 756 (Narrabri Shire LGA)
Attachments: Table 2.1 GTTGD.pdf; TIA checklist.pdf

Hi Nicholas,

The key concern for Roads and Maritime Services (RMS) is potential for impacts upon the safety and efficiency of the classified road network. The intersection of interest for RMS is Westport Road with the Newell Highway.
RMS requires that the following issues be addressed in any Environmental Impact Statement (EIS).

A traffic study should be undertaken that takes into account the key issues relevant to the scale of this proposal as set out in Table 2.1 of the Roads and Traffic Authority 'Guide to Traffic Generating Developments" (copy attached). The traffic study should include information relating to:

- Impact of the proposed development on the surrounding road network
- The number and type of vehicles required to service the quarry
- Details of existing and proposed access conditions
- Intersection sight distances for the intersection of Westport Road with the Newell Highway
- Improvements for the intersection of Westport Road with the Newell Highway
- Impact on Transport (i.e. School Bus Routes)
- Road Traffic Noise and Dust Generation
- Considerations for mining & extractive industries under Clause 16(1) of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

Current AUSTROADS standards should be adopted for any necessary upgrading of the surrounding road infrastructure.

Regards,

Fiona Francis
Development Assessment Officer
RCS Western RSTM | Traffic Management
T 02 6861 1688 F 02 6861 1414
www.rms.nsw.gov.au

Roads and Maritime Services
51 - 55 Currajong St Parkes NSW 2870

From: Nicholas Brbot [mailto:Nicholas.Brbot@planning.nsw.gov.au]
Sent: Friday, 19 July 2013 5:41 PM
To: RFS; Development Western; landuse.enquiries@dpi.nsw.gov.au; namoi@cma.nsw.gov.au; planning.matters@environment.nsw.gov.au; william.hughes@dpi.nsw.gov.au
Subject: Fwd: Request for EIS Requirements - Expansion of Westport Quarry DGR ID No. 756 (Narrabri Shire LGA)

Proposal – Expansion of Westport Quarry
DGR ID No. 756

Good afternoon,

SMK Consultants Pty Ltd (the Applicant) has requested the requirements of the Director-General of the Department of Planning and Infrastructure for the preparation of an Environmental Impact Statement (EIS) for the above local designated development located in the Narrabri Shire LGA.

Under Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, the Director-

General is requesting your requirements for the EIS.

It would be greatly appreciated if we could receive your advice by **Friday 9 August 2013**, otherwise the Director-General (or Delegate) will advise the Applicant to consult you directly for your requirements. If this occurs, it would be appreciated if you would forward a copy of any requirements to us for our records.

I have attached a copy of the applicants request for your reference.

If you have any enquiries please contact myself.

Yours sincerely

Nicholas Brbot
Student Planner | Mining Projects
Department of Planning & Infrastructure
23-33 Bridge Street SYDNEY 2000 | GPO Box 39 SYDNEY 2001
ph: 02 9228 2019 | e: nicholas.brbot@planning.nsw.gov.au

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(13/08/2013) Nicholas Brbot - Table 2.1 GTTGD.pdf

2.3 Issues to be addressed.

A traffic impact study should follow the standard format and structure that is listed in Table 2.1. This format covers the key issues to be addressed in determining the impact on traffic of a development. Use of this format and the checklist will ensure those involved in the preparation and / or assessment of Development Applications that the most significant matters are considered.

Table 2.1
Key issues in preparing traffic impact studies

Procedures & Key Parameters	Source	Check
Brief description of the development		
Application and study process		
Introduction		
Background		
Scope of report		
The key issues and objectives of a traffic impact study		
General Data Collection / Existing Conditions		
Description of the Site and Proposed Activity		
Site location		
Current land use characteristics (zoning) of the proposed site and land use in the vicinity	Development Consent Authority	
Site access		
The Existing Traffic Conditions		
Road hierarchy; including the identification of the classified road network (major and minor roads) which may be affected by the development proposal	Council / RTA	
Inventory of road widths, road conditions, traffic management and parking control	Council / RTA and Survey	
Current and proposed roadworks, traffic management works and bikeways	Council / RTA	
Traffic Flows		

Procedures & Key Parameters	Source	Check
Selection of key streets - possibly divided into the major and the minor road network; selection of key assessment periods, chosen to cover the times at which the development would be expected to have its major impacts	Section 3	
AADT on key streets	Council / RTA and Survey	
Daily traffic flow hourly distribution, particularly in or near residential areas	Survey	
Estimate of the speed of traffic on the road to which vehicular access is proposed	Survey	
Current traffic generation of site	Survey	
Daily and peak period heavy vehicle flows and percentages	Survey	
The adaptation of appropriate computer models or techniques for assessing levels of traffic congestion and queuing conditions		
Traffic Safety		
Accident history of road network in the area	Council / RTA	
Parking Supply and Demand		
On-street parking provision	Council	
Off-street parking provision	Council / Survey	
Current parking demand, including utilisation by time of day and turnover rates	Survey	
Short term pick up and set down areas	Council / Survey	
Modal Split		
Public Transport		
Rail station locations	State Rail / Cityrail	
Bus routes and bus stop locations; Pedestrian access to bus stops; Constraints and conflicts	STA / Private Operators / Council / Survey	
Rail and bus service frequencies, ideally separated into Monday to Friday, Saturday and Sunday, for both peak and off-peak times	State Rail / Cityrail / Survey	

(13/08/2013) Nicholas Brbot - Table 2.1 GTTGD.pdf

Procedures & Key Parameters	Source	Check
Commuter parking provision	State Rail / Cityrail / Survey	
Pedestrian Network		
Identify major pedestrian routes	Survey	
Pedestrian flows and potential conflicts with vehicles, particularly where such conflicts cause capacity constraint on either vehicular or pedestrian movement	Survey	
Pedestrian infrastructure	Survey	
Proposed developments in the vicinity		
Proposed Development		
The Development		
Plan reference, if plans not contained in study report		
Nature of development		
Gross floor areas of each component of development		
Projected number of employees/users/residents		
Hours and days of operations		
Staging and timing of development		
Selection of appropriate design vehicles for determining access and circulation requirements	Section 6	
Access		
Driveway location, including review of alternative locations	Sections 5, 6	
Sight distance of driveways and comparisons with stopping and desirable minimum sight distances	Section 6	
Service vehicle access	Section 6	
Analysis of projected queuing at entrances	Section 6	
Current access to site and comparison with proposed access		
Provision for access to, and by, public transport	Section 6	

Procedures & Key Parameters	Source	Check
Circulation		
Proposed pattern of circulation	Section 6	
Internal road widths	Section 6	
Provision for bus movements	Section 6	
Service area layout		
Parking		
Proposed supply		
Parking provision recommended by State Government policy	RTA / DUAP	
Council code and local parking policies and plans	Council	
Parking layout		
Projected peak demand, based where appropriate on similar research reports and on surveys of similar developments;	Section 5	
Parking for Service / courier vehicles and bicycles	Section 5	
Impact of Proposed Development		
Traffic generation during design periods		
Daily and seasonal factors		
Pedestrian generation and movements		
Traffic Distribution and Assignments		
Hourly distribution of trips		
Assignments of these trips to the road system based where possible on development feasibility studies or on origin/ destination surveys undertaken at similar developments in the areas		
Impact on Traffic Safety		
Assessment of Road Safety Impact		
Impact of Generated Traffic		
Daily traffic flows and composition on key streets and their expected effect on the environment particularly in residential areas		

(13/08/2013) Nicholas Brbot - Table 2.1 GTTGD.pdf

Procedures & Key Parameters	Source	Check
Peak period volumes at key intersections and effect of generated traffic on congestion levels	Survey	
Impact of construction traffic during construction stages		
Other proposed developments in the vicinity their timing and likely impact, if known		
Assessment of traffic noise		
Public Transport		
Options for extensions and changes to bus routes and bus stops following discussions with the STA and or private bus operators	STA / Private Operators	
Provision for pedestrian access to bus stops		
Recommended Works		
Improvements to site access and circulation		
Improvements to roads, signals, roundabouts and other traffic management measures		
Improvements to pedestrian facilities		
Effect of recommended works on the operation of adjacent developments		
Effect of recommended works on public transport services including access to bus routes and bus stops		
Provision of LATM measures		
Funding of proposed improvement projects		
Noise attenuation measures		

APPENDIX A CHECKLIST FOR TRAFFIC IMPACT ASSESSMENTS

Table A 1: Technical completeness checklist – Austroads guide to traffic management – Part 12

TECHNICAL COMPLETENESS CHECKLIST

Austroads Guide to Traffic Management Part 12

Project Name: _____

Reference _____

GTM section	Steps in traffic impact assessment	Done (*)
4.4.1	**Document proposed development**	
	Obtained plans showing layout of all traffic and pedestrian areas on site, locations of vehicle and pedestrian accesses, position and layout of nearby driveways and intersections.	
	Each type of internal access (cars, pedestrians, trucks, etc.) is direct, connected, continuous and makes sense.	
	Approach roads and paths are clearly understood and practical.	
	The correct design vehicle and checking vehicle have been used in various sections of the development.	
	Basic design requirements have been applied.	
	Land use planning zonings in the vicinity are documented.	
	Traffic-related features of the development have been summarised.	
	Timing and staged phasing (if any) has been described, including any connections with external timings.	
4.4.2	**Resolve any initial problems with designers**	
	Any initial problems or issues needing resolution by designers have been identified.	
	Designers notified.	
	Issues have been checked and re-worked by designers.	
	Amended proposal has been re-documented.	
4.4.3	**Identify area and stakeholders affected**	
	Agreed functional road hierarchy in area has been documented.	
	Relevant or affected non-car transport networks or services have been documented.	
	Initial assessment of area affected by changed traffic conditions has been made.	
	Sites potentially impacted have been listed.	
	All affected stakeholders have been identified and a note made about when each needs to be consulted.	

GTM section	Steps in traffic impact assessment	Done (*)
4.4.4	**Describe existing and design year conditions**	
	Existing on-site conditions, including traffic and parking, have been documented.	
	Existing traffic conditions for external sites, road lengths and/or areas identified as potentially impacted have been documented for critical periods.	
	Design year has been selected, and traffic conditions, excluding traffic generated by the development, have been documented. Volumes shown on plan.	
	Parking conditions, as relevant, have been described.	
	Traffic crashes at potentially impacted locations have been documented.	
	Other known traffic safety or operational problems, and any proposals to address them, have been documented.	
	Any traffic, transport or parking policies which affect the proposed development have been documented.	
4.4.5	**Determine generated traffic and modal split**	
	Number of trips which will be generated by the development (daily, peak period, etc.) has been determined for the design year or years.	
	The split of general traffic, commercial vehicles, public transport vehicles (including taxis), bicycles, pedestrians, etc. has been determined.	
4.4.6	**Determine approach and departure directions**	
	Approach and departure directions for the traffic have been determined.	
	Nature of attracted traffic (same origin and return destination, linked trips, etc.) has been considered and described.	
4.4.7	**Assign traffic to roads**	
	Traffic generated by the development has been assigned to the road network in the potentially affected area for the design year or years.	
	Development-generated traffic has been shown on plans.	
	Background traffic (existing volumes factored to the design year) and development-generated traffic have been added together.	
	Total traffic has been shown on plans for critical times of day or week, etc.	
4.4.8	**Determine where non-car traffic will go**	
	Paths, lanes, etc. required for pedestrians, cyclists, buses, delivery vehicles, etc. have been determined.	
4.4.9	**Review limits of area affected**	
	Limits of area impacted by the development have been checked, and necessary alterations noted.	
	If assessment over a greater area is needed, further analysis has been done.	
4.4.10	**Assess traffic operation on roads**	
	Traffic operations (traffic volumes, capacity, level of service, delays) for access points, mid-blocks and intersections have been assessed; consequences noted.	
	Circulation of traffic near the site has been considered.	
	Need for on-street parking, and potential impact on arterial roads / traffic routes, has been determined.	
	Impact on public transport services, from development generated use and from increased traffic on public transport routes (buses and trams) has been assessed.	

GTM Section	Steps in traffic impact assessment	Done (*)
4.4.11	**Assess traffic operation on-site**	
	Traffic operation of roads, aisles, access ways on-site, including traffic circulation within the site, has been analysed.	
	Expected traffic volumes and vehicle types can be safely and efficiently accommodated within the traffic and parking areas on-site.	
	On-site parking provision is adequate and is suitably located.	
4.4.12	**Determine required impact-mitigating treatments**	
	Required changes, improvements, upgrades and/or modifications to roads, intersections, traffic lanes, controls, access driveways, have been determined.	
	Required changes on-site and on nearby roads/streets to manage parking have been determined.	
	Required works and traffic management to accommodate pedestrians, cyclists, public transport, delivery vehicles, on-site and in the nearby area, have been determined.	
	Required treatments relating to pavements, safety and environmental issues have been determined.	
	Coordination of all required treatments has been considered.	
4.4.13	**Obtain road safety engineering assessment**	
	Need for an independent assessment of the road safety aspects of the development has been considered.	
	If necessary, independent road safety engineering assessment has been arranged.	
4.4.14	**Document findings and recommendations**	
	The above steps and their outcomes have been documented in a suitable report.	

Table B 3: Issues checklist for intensive road use, such as feedlots or mining/extractive industries

	Generally required	MR discretion
Development context		
site locality	X	
site access (existing use, location and layout)	X	
preferred land use	X	
adjacent land uses/approvals		X
description of road network (function, alignment, grade, lanes, intersections, median breaks, etc)	X	
existing traffic volumes (daily & peak)	X	
traffic growth trends	X	
speed environment/speed surveys		X
existing parking provision	X	
current MR planning and Roads Implementation Program (RIP)	X	
road hierarchy	X	
public transport network and services (existing and planned)	X	
pedestrian/bicycle facilities		X
crash history		X
flood immunity of access route		X
existing pavement standard/condition	X	
Development proposal		
proposed uses and scale (dwellings, rooms, floor area)	X	
operating hours, peaks	X	
number of employees/visitors	X	
travel demand management policies		X
site layout (including adjoining connections to properties and other roads)	X	
access form and location	X	
development staging	X	
traffic demand (vehicle/pedestrian/bicycle/ public transport)	X	
stormwater and drainage works (internal)		X
stormwater and drainage works (external)	X	
construction traffic	X	
service vehicle arrangements (access and on-site manoeuvring areas etc)	X	
proposed parking provision	X	
trip distribution/assignment	X	
haulage routes (including vehicle type and operating times)	X	
Impact assessment and remedial works treatments		
traffic operation (including pedestrian, cycle and public transport)	X	
road safety issues	X	
pavement and bridge impacts	X	
changes to the road network or planning	X	
noise/hydraulic impacts on state-controlled roads		X
visual amenity and other environmental impacts		X

*Depending upon the size / location of the development proposal, Main Roads may reduce the number of issues to be considered in an RIA.

NSW GOVERNMENT Trade & Investment Resources & Energy

30 July 2013

Nicholas Brbot
Mining Projects
Dept Planning & Infrastructure
GPO BOX 39
Sydney NSW 2001

Emailed
Your Reference: DGR ID No 756
Our Reference: OUT13/20284

Dear Mr Brbot,

Re: Request for Director General Requirements
- Expansion of Westport Quarry DGR ID No 756
(Narrabri Shire LGA)

Thank you for the opportunity to provide advice on the subject proposal.

This is a response from NSW Trade & Investment, incorporating advice from its Agriculture, Fisheries, and Mineral Resources Branches. Specific Fisheries or Forests issues arising may be provided in separate correspondence.

Mineral Resources Issues
Gravel is not a prescribed mineral under the Mining Act, 1992. Therefore, DTIRIS – Mineral Resources Branch has no statutory role in authorising or regulating the extraction of this commodity, apart from its role under the *Work Health & Safety Act 2011* and associated regulations and the Mine Health and Safety Act 2004 and associated regulations, for ensuring the safe operations of mines and quarries.

All environmental reports (EISs or similar) accompanying Development Applications for extractive industry lodged under the Environmental Planning & Assessment Act 1979 should include a resource assessment (as detailed in Attachment A) which:

- Documents the size and quality of the resource and demonstrates that both have been adequately assessed; and
- Documents the methods used to assess the resource and its suitability for the intended applications.

Applications to modify, expand, extend or intensify an existing consent that has already been adequately reported using the above protocol in publicly available documents, may restrict detailed documentation to the additional resources to be used, if accompanied by a summary of past resource assessments and of past production.

DTIRIS - Mineral Resources Branch collects data on the quantity and value of construction materials produced annually throughout the State. Forms are sent to all

NSW Department of Trade and Investment, Regional Infrastructure and Services
RESOURCES & ENERGY DIVISION
PO Box 344 Hunter Region Mail Centre NSW 2310
Tel: 02 4931 6666 Fax: 02 4931 6726
ABN 51 734 124 190
www.dtiris.nsw.gov.au

operating quarries at the end of each financial year for this purpose. The statistical data thus collected is of great value to Government and industry in planning and resource management, particularly as a basis for analysing trends in production and for estimating future demand for particular commodities or in particular regions. In order to assist in the collection of construction material production data, the proponent should be required to provide annual production data for the subject site to DTIRIS - Mineral Resources Branch as a condition of any new or amended development consent.

Queries regarding the above information, and future requests for advice in relation to this matter, should be directed to the MRB Land Use team at landuse.minerals@industry.nsw.gov.au

Agricultural Issues for Extractive Industries (Quarries)

The relevant agricultural issues to consider when preparing and also when assessing extractive industry proposals are set out in the Departments' Guideline: *Agricultural issues for Extractive Industries* available on our website; http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/extractive-industries. The guideline also documents recommended project design and mitigatory responses.

The guideline is part of a series designed to help consent authorities identify potential agricultural impacts, and assess whether such proposals can avoid conflict with existing agricultural developments; and protect valuable food and fibre production resources. The guidelines can similarly help consultants and proponents and are available from the Department of Primary Industries land use planning web portal: http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture .

Fisheries Issues
General issues are summarised in Attachment B.

Yours sincerely

Cressida Gilmore
Team Leader Land Use

Encl. Attachments "A to B"

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NSW GOVERNMENT Resources & Energy

ATTACHMENT A

TRADE & INVESTMENT NSW
RESOURCES & ENERGY DIVISION (Mineral Resources Branch)

ENVIRONMENTAL and WORK HEALTH & SAFETY ASSESSMENT REQUIREMENTS FOR CONSTRUCTION MATERIAL QUARRY PROPOSALS

It is in the best interests of both the proponent and the community to fully assess the resources which are to be extracted. This means that a thorough geological assessment should be undertaken to determine the nature, quality and extent of the resource. Failure to undertake such an assessment could lead to operational problems and possibly even failure of the proposal.

The following issues need to be addressed when preparing an environmental assessment (EA) or environmental impact statement (EIS) for a proposed construction materials (extractive materials) quarry:

Resource Assessment

1. A summary of the regional and local geology including information on the stratigraphic unit or units within which the resource is located.

2. The amount of material to be extracted and the method or methods used to determine the size of the resource (e.g. drilling, trenching, geophysical methods). Plans and cross-sections summarising this data, at a standard scale, showing location of drillholes and/or trenches, and the area proposed for extraction, should be included in the EA or EIS. Relevant supporting documentation such as drill logs should be included or appended. Major resource proposals should be subject to extensive drilling programs to identify the nature and extent of the resource.

3. Characteristics of the material or materials to be produced:
   a) For structural clay/shale extraction proposals, ceramic properties such as plasticity, drying characteristics (e.g. dry green strength, linear drying shrinkage), and firing characteristics (e.g. shrinkage, water absorption, fired colour) should be described.
   b) For sand extraction proposals, properties such as composition, grainsize, grading, clay content and contaminants should be indicated. The inclusion of indicative grading curves for all anticipated products as well as the overall deposit is recommended.
   c) For hard rock aggregate proposals, information should be provided on properties such as grainsize and mineralogy, nature and extent of weathering or alteration, and amount and type of deleterious minerals, if any.

d) For other proposals, properties relevant to the range of intended uses for the particular material should be indicated.

Details of tests carried out to determine the characteristics of the material should be included or appended. Such tests should be undertaken by NATA registered testing laboratories.

4. An assessment of the quality of the material and its suitability for the anticipated range of applications should be given.

5. The amount of material anticipated to be produced annually should be indicated. If the proposal includes a staged extraction sequence, details of the staging sequence needs to be provided. The intended life of the operation should be indicated.

6. If the proposal is an extension to an existing operation, details of history and past production should be provided.

7. An assessment of alternative sources to the proposal and the availability of these sources. The impact of not proceeding with the proposal should be addressed.

8. Justification for the proposal in terms of the local and, if appropriate, the regional context.

9. Information on the location and size of markets to be supplied from the site.

10. Route(s) used to transport quarry products to market.

11. Disposal of waste products and the location and size of stockpiles.

12. Assessment of noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.

13. Proposed rehabilitation procedures during, and after completion of, extraction operations, and proposed final use of site.

14. Assessment of the ecological sustainability of the proposal.

Health and Safety Issues

In relation to the health & safety of mining and quarrying operations, the following issues should be addressed:

1. All operations are to comply with the following Acts & Regulations
   a. *Work Health & Safety Act 2011*
   b. Work *Health & Safety Regulations 2011*
   c. *Mine Health & Safety Act 2004*
   d. *Mine Health & Safety Regulations 2007*

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2. The mine holder must nominate the mine operator in writing on the prescribed form to the Chief Inspector as required by the *Mine Health & Safety Act 2004* Section 22 prior to the commencement of extraction.

3. The operator of the mine must appoint a production manager as required by the *Mine Health & Safety Regulation 2007* Clause 16 and the operator must notify the Chief Inspector of the appointment in writing as required by the *Mine Health & Safety Regulation 2007* Clause 18 prior to the commencement of extraction.

4. Any blasting operations carried out by the mine operator must comply with the *Explosives Act 2003* and the *Explosives Regulations 2005*.

Mineral Ownership

The *Mining Act 1992* applies to those commodities prescribed by the regulations of the Act (Schedule 2, Mining Regulation 2003). Most construction materials are not prescribed minerals under the *Mining Act 1992*. In general terms, this means these materials are owned by the Crown where they occur on Crown land and by the landowner in the case of freehold land. A Mining Title is not required for their extraction although a Crown Lands licence is required where they occur on Crown land.

Construction materials such as *sand (other than marine aggregate), loam, river gravel, and coarse aggregate materials such as basalt, sandstone, and granite* are not prescribed minerals under the *Mining Act 1992*. Therefore, Trade & Investment NSW has no statutory responsibility for authorising or regulating the extraction of these commodities, apart from its role under the *Mine Health and Safety Act 2004* with respect to the safe operation of mines and quarries. However, the Department is the principal government authority responsible for assessing the State's resources of construction materials and for advising State and local government on their planning and management.

Some commodities, notably *structural clay (ie clay for brick, tile and pipe manufacture), dimension stone (except for sandstone), quartzite, kaolin, limestone and marine aggregate* are prescribed minerals under the *Mining Act 1992*. Minerals which are prescribed as minerals under the terms of the Mining Act may, in some cases belong either to the Crown or to the landowner, depending on a number of factors including the date on which the mineral was proclaimed and the date of alienation of the land. The proponent needs to determine whether the material is privately owned or Crown mineral (publicly owned). If it is privately owned, then either a notification under Section 8 of the Mining Act 1992 or, alternatively, a mining lease or mineral claim would be required. If it is a Crown mineral, an application for a mining lease or mineral claim will have to be lodged.

If you are unsure whether a mining title is required for your proposal you should contact NSW Trade & Investment, Resources & Energy Division.

NSW GOVERNMENT Trade & Investment

ATTACHMENT B

Primary Industries Division - Aquatic Habitat Protection Requirements

Matters to be Addressed

Definitions
The definitions given below are relevant to these requirements:

Fish means any part of marine, estuarine or freshwater fish or other aquatic animal life at any stage of their life history (whether alive or dead). This includes aquatic molluscs, crustaceans, echinoderms, worms, aquatic insect larvae and other macroinvertebrates .

Marine vegetation means any species of plant that at any time in its life must inhabit water (other than fresh water).

Waters refers to all waters including tidal waters as well as flowing streams, irregularly flowing streams, gullies, rivers, lakes, coastal lagoons, wetlands and other forms of natural or man made water bodies on both private and public land.

1. General Requirements

- Area which may be affected either directly or indirectly by the development or activity should be identified and shown on an appropriately scaled map (1:25000) and aerial photographs.
- All waterbodies and waterways within the proposed area of development are to be identified.
- Description and maps of aquatic vegetation, snags, gravel beds and any other protected, threatened or dominant habitats should be presented. Description should include area, density and species composition.
- A survey of fish species should be carried out and results included. Existing data should be used only if collected less than 5 years previously.
- Identification of recognised recreational and commercial fishing grounds, aquaculture farms and/or other waterways users.
- Details of the location of all component parts of the proposal, including any auxiliary infrastructure, timetable for construction of the proposal with details of various phases of construction
- Aspects of the management of the proposal, both during construction and after completion, which relate to impact minimisation and site rehabilitation eg Environment Management Plans, Rehabilitation Plans, Compensatory offsets
- For each freshwater body identified on the plan, the plan should include, either by annotation or by an accompanying table, hydrological and stream morphology information such as: flow characteristics, including any seasonal variations, bed substrate, and bed width
- For each marine or estuarine area identified on the plan, the plan should include, either by annotation or by an accompanying table, hydrological and stream morphology information such as: tidal characteristics, bed substrate, and depth contours

DREDGING AND RECLAMATION ACTIVITIES
- Purpose of works
- Type(s) and distribution of marine vegetation in the vicinity of the proposed works
- Method of dredging to be used

- Timing and Duration of works
- Dimension of area of works including levels and volume of material to be extracted or placed as fill
- Nature of sediment to be dredged, including Acid Sulphate Soil, contaminated soils etc
- Method of marking area subject to works
- Environmental safeguards to be used during and after works
- Measures for minimising harm to fish habitat under the proposal
- Spoil type and source location for reclamation activities
- Method of disposal of dredge material
- Location and duration of spoil stockpiling, if planned

ACTIVITIES THAT DAMAGE MARINE VEGETATION

- Type of marine vegetation to be harmed
- Map and density distribution of marine vegetation
- Reasons for harming marine vegetation
- Methods of harming marine vegetation
- Construction details
- Duration of works/activities
- Measures for minimising harm to marine vegetation under the proposal and details of compensatory habitat development to replace lost vegetation.
- Method and location of transplanting activities or disposal of marine vegetation

ACTIVITIES THAT BLOCK FISH PASSAGE

- Type of activity eg works in a stream that change flow or morphological characteristics of the stream, including culvert and causeway construction, sediment and erosion control measures, stormwater diversion structures.
- Length of time fish passage is to be restricted, whether permanent or temporary
- Timing of proposed restriction. Should be timed to avoid interfering with migratory movements of fish.
- Remediation or compensatory works to offset any impacts

THREATENED SPECIES

- Threatened aquatic species assessment (Section 5c, EP&A Act 1979). This must be addressed even if there are no Threatened Species present on the site.
- Seven Part Test

FISHING AND AQUACULTURE

- Outline and document commercial, recreational and indigenous fishing activities that may be affected by the activity, including regular commercial fishing grounds, popular recreational fishing sites, recognised indigenous harvesting sites.
- Will the activity interfere with or cause an impact on the continuing operation and viability of nearby aquaculture or mariculture ventures.

2. Initial Assessment

A list of threatened species, endangered populations and endangered ecological communities must be provided. In determining these species, consideration must be given to the habitat types present within the study area, recent records of threatened species in the locality and the known distributions of these species.

In describing the locality in the vicinity of the proposal, discussion must be provided in regard to the previous land and water uses and the effect of these on the proposed site. Relevant historical events may include land clearing, agricultural activities, water

abstraction/diversion, dredging, de-snagging, reclamation, siltation, commercial and recreational activities.

A description of habitat including such components as stream morphology, in-stream and riparian vegetation, water quality and flow characteristics, bed morphology, vegetation (both aquatic and adjacent terrestrial), water quality and tide/flow characteristics must be given. The condition of the habitat within the area must be described and discussed, including the presence and prevalence of introduced species. A description of the habitat requirements of threatened species likely to occur in the study area must be provided.

In defining the proposal area, discussion must be provided in regard to possible indirect effects of the proposal on species/habitats in the area surrounding the subject site: for example, through altered hydrological regimes, soil erosion or pollution. The study area must extend downstream and/or upstream as far as is necessary to take all potential impacts into account.

Please Note: Persons undertaking aquatic surveys may be required to hold or obtain appropriate permits or licences under relevant legislation. For example:

Fisheries Management Act 1994
- Permit to take fish or marine vegetation for research or other authorised purposes (Section 37)
- Licence to harm threatened (aquatic) species, and/or damage the habitat of a threatened species (Section 220ZW).

Animal Research Act 1985:
- Animal Research Authority to undertake fauna surveys.

It is recommend that, prior to any field survey activities taking place, those persons proposing to undertake those activities give consideration to their obligation to obtain appropriate permits or licences which may be required in the specific context of the proposed survey activities.

3. Assessment of Likely Impacts

The EIS must:
- describe and discuss significant habitat areas within the study area;
- outline the habitat requirements of threatened species likely to occur in the study area;
- indicate the location, nature and extent of habitat removal or modification which may result from the proposed action;
- discuss the potential impact of the modification or removal of habitat;
- identify and discuss any potential for the proposal to introduce barriers to the movement of fish species; and
- describe and discuss any other potential impacts of the proposal on fish species or their habitat.

For all species likely to have their lifecycle patterns disrupted by the proposal to the extent that individuals will cease to occupy any location within the subject site, the EIS must describe and discuss other locally occurring populations of such species. The relative significance of this location for these species in the general locality must be discussed in terms of the extent, security and viability of remaining habitat in the locality.

4. Ameliorative Measures

The EIS must consider how the proposal has been or may be modified and managed to conserve fisheries habitat on the subject site and in the study area.

In discussing alternatives to the proposal, and the measures proposed to mitigate any effects of the proposal, consideration must be given to developing long term management strategies to protect areas within the study area which are of particular importance for fish species. This may include proposals to restore or improve habitat.

Any proposed pre-construction monitoring plans or on-going monitoring of the effectiveness of the mitigation measures must be outlined in detail, including the objectives of the monitoring program, method of monitoring, reporting framework, duration and frequency.

In the event of a request for concurrence or consultation of the Director of Industry & Investment NSW, one (1) copy of the EIS should be provided to Industry & Investment NSW in order for the request to be processed.

It should be noted that Industry & Investment NSW has no regulatory or statutory role to review draft EISs unless they are accompanied by or are requested as part of a licence application under Part 7A of the FM Act. However, Industry & Investment NSW is available to provide advice to consent and determining authorities regarding Fisheries' opinion as to whether the requirements have been met if requested, pending the availability of resources and other statutory priorities.

Useful Information
To help you in the preparation of an EIS, the publication "*Guidelines for the Assessment of Aquatic Ecology in EIA*" (Draft 1998) produced by the Department for Urban Affairs and Planning may prove useful in outlining appropriate procedures and methodologies for conducting aquatic surveys.

Should you require any further information on these requirements please contact the Aquatic Habitat Protection Office at Port Stephens on 4916 3931.

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Appendix 3 – AHIMS Search Results

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)
Search Result

Your Ref Number : 13/97 NSC
Client Service ID : 99710

SMK Consultants

Date: 03 May 2013

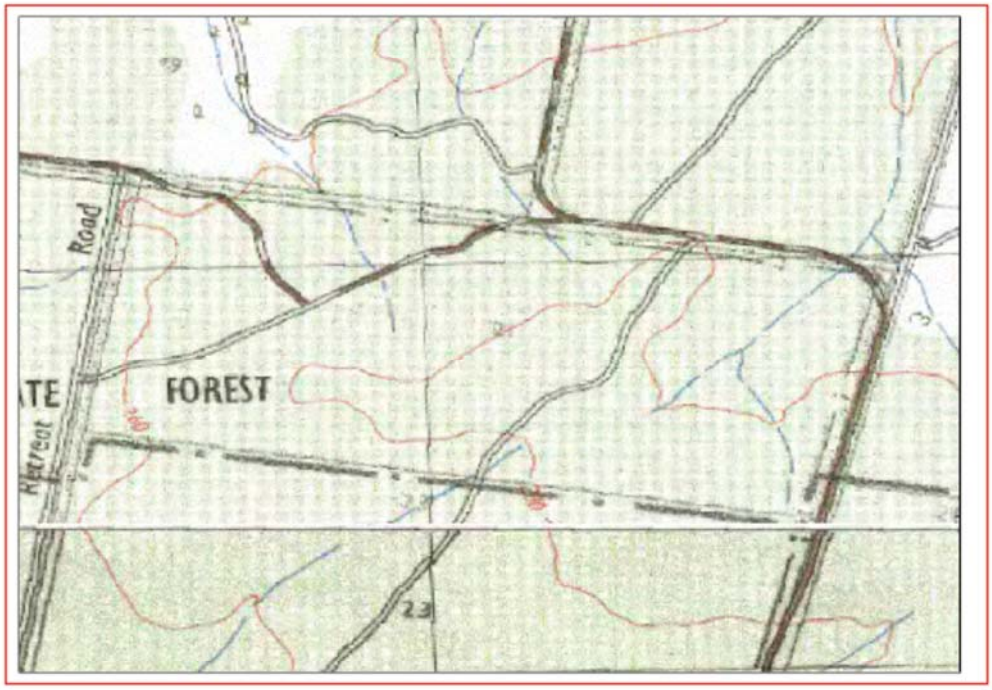
P O Box 774
Moree New South Wales 2400
Attention: Sarah Grady

Email: sarah@smk.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 21, DP:DP757083 with a Buffer of 200 meters, conducted by Sarah Grady on 03 May 2013.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Appendix 4 – Seven Part Test

The following provides a seven part assessment of threatened species, populations or ecological communities, or their habitats as required under section 5A of the Environmental Planning and Assessment Act 1979.

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Reptilia					
Crinia sloanei	Sloane's Froglet	V,P		**Range:** Murray Darling Basin particularly the Darling Riverine Plains, NSW South Western Slopes and Riverina Bioregions. **Habitat:** It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats on the flood plains. **Breeding:** Typically breeds in ephemeral wetlands, or periodically inundated areas of permanent wetlands, in grasslands, woodlands, and disturbed environments.	
Anomalopus mackayi	Five-clawed Worm-skink	E1,P	V	**Range:** Western slopes of the Great Dividing Range. Northern floodplains, Bimble Box-Pine Woodlands. **Habitat:** Lives in permanent tunnel-like burrows under fallen timber and in deep cracking clays. Open woodlands with low grass cover and scattered eucalypt in regions with red-black to black clay loam soils.	
Hoplocephalus bitorquatus	Pale-headed Snake	V,P		**Range:** Central eastern Australia, from Mareeba (NE Qld) to mid-eastern NSW; common on Darling Downs and near Brisbane **Habitat:** ranges, slopes, valleys, plains & floodplains which may be vegetated with dry or wet sclerophyll, esp. callitris. Shelters under bark or in tree hollows **Preferred Food:** frogs, geckoes, skinks, birds and mammals	
Aves					
Oxyura australis	Blue-billed Duck	V, P		**Range**: SE and SW Aust **Habitat**: Well-vegetated swamps, large dams, lakes **Breeding**: Usually produce 5-6 pale green eggs. **Nest**: Domed cup of reeds on trampled reed platform **Comment**: No wetlands associated with this site.	N
Stictonetta naevosa	Freckled Duck	V, P		**Range**: W. NSW, far SW Qld, NE SA, SW WA. **Habitat**: Large, well-vegetated swamps, in dry periods, moves to open lakes. **Breeding**: Sept-Dec **Nest**: Well constructed bowl of stems and sticks in lignum clump, over-hanging tea-tree branch or flood-debris or old nest of Coot. **Comment**: No wetlands or swamplands available on this site	Y
Circus assimilis	Spotted Harrier	V, P		**Range**: Wide spread on mainland Australia but sparsely distributed.	Y

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				Habitat: The Spotted Harrier is found in open wooded country in tropical and temperate Australia, particularly in arid and semi-arid areas. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Preys on terrestrial mammals (e.g. bandicoots, bettongs and rodents), birds and reptiles, occasionally insects and rarely carrion. **Breeding**: Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. **Comment**: Habitat may be available on site	
Hamirostra melanosternon	Black-breasted Buzzard	V, P,3		**Range**: Throughout interior of Aust., especially in north-west. **Habitat**: Open woodland and plains, especially along timbered watercourses. **Breeding**: Aug – Oct near water in a tall tree. Usually produce 2 blotched white eggs. **Nest**: Stick nest that is large and flat and lined with green leaves. **Comment**: Habitat may be associated with Merri Merri Creek.	Y
Hieraaetus morphnoides	Little Eagle	V, P		**Range**: Throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. **Habitat**: Occupies open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. Prays on birds, reptiles and mammals, occasionally adding large insects and carrion. **Breeding**: Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Lays two or three eggs during spring, and young fledge in early summer. **Comment**: Habitat may be available on site	Y
Lophoictinia isura	Square-tailed Kite	V, P,3		**Range**: Throughout Aust **Habitat**: Open woodland. Each pair has a territory of +100 km2 **Breeding**: Usually produce 2 blotched white eggs. **Nest**: Large stick cup on horizontal branch **Comment**: Habitat may be available on site.	Y
Falco hypoleucos	Grey Falcon	E1, P,2		**Range**: Resident or nomadic visitor to inland parts of all mainland states **Habitat**: Lightly treed inland plains, gibber deserts, sand ridges, pastoral lands, timbered watercourses **Breeding**: June-Nov to produce 2-3 buff and heavily red-brown marbled eggs **Nest**: Refurbished nest of another raptor or corvid, usually high in leafy eucalypt on watercourse or waterhole **Comment**: Habitat may be associated with Merri Merri Creek	Y

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Grus rubicunda	Brolga	V, P		**Range**: Most of northern and eastern Aust. **Habitat**: Congregate in marshlands. **Breeding**: Usually produce 2 spotted & blotched white eggs **Nest**: Large heap of grass and sticks, usually in shallow water. **Comment**: No marshland habitat available on site	N
Ardeotis australis	Australian Bustard	E1, P		**Range**: Mainland Australia, mostly extinct in settled areas of S, SE Aust and SW WA. Nomadic in response to rainfall; regular movements south in summer and to northern coastal Aust in winter **Habitat**: Grasslands, spinifex, open scrublands, grassy woodlands, sand-hills, pastoral lands, burned ground, occasionally crops, airfields. **Preferred** Food: Centipedes, insects, lizards, young birds, small rodents, molluscs, leaves, seeds and fruit. **Breeding**: Aug-Nov in southern Aust and all months in northern Aust to produce 1-3 buff to green-buff eggs **Nest**: Open, bare ground, by bush, stones, tussock. **Comment**: Habitat may be available on site	Y
Burhinus grallarius	Bush Stone-curlew	E1, P		**Range**: Widespread north and north-eastern Aust. **Habitat**: Occurs in large groups on northern pastures. **Breeding**: Usually produce1-2 blotched pale umber eggs. **Nesting**: Normally on the ground **Comment**: Habitat may be available on site	Y
Rostratula australis	Australian Painted Snipe	E1, P	V	**Range**: SE Aust, Qld, eastern NT, north coastal WA. Dispersive or irruptive in response to rainfall. **Habitat**: Well vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, open timber **Breeding**: Aug-Dec in sth, May-Oct in Qld, probably any time after good rains, to produce 4 creamy buff, blotched black, brown underlying grey eggs **Nest**: Saucer of twigs, reeds, grasses on small hummock above water level, usually in cover, may have light canopy of stems and grasses **Note**: Listed under CAMBA agreement **Comment**: No wetland areas available on site	N
Limosa limosa	Black-tailed Godwit	V, P	C, J, K	**Range**: Breeds in Mongolia and Siberia; regular summer migrant (Sept-May) to Aust., common in all areas except arid zones of WA, SA and southern NT **Habitat**: Tidal mudflats, estuaries, sand spits, shallow river margins, sewage ponds, large, shallow fresh or brackish waters. **Preferred Food:** Forages for insects, crustaceans, mollusc, worms, larvae, spiders, fish eggs, frog eggs and tadpoles in soft mud or shallow water **Comment**: Minimal habitat available on site.	N

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V, P, 2		**Range**: Widespread in Western Division of NSW **Habitat**: Nomad in mallee, mulga and cypress-sheoak woodlands and grasslands near tree-lined watercourses. More commonly seen on red than grey soil country. Distributed throughout arid & semi-arid Aust. **Breeding**: Usually produce 2-3 white eggs. **Preferred Food**: Eats seeds, nuts, fruits and roots especially of the Cypress pine and acacias and also eucalypts. **Nesting**: Deep hollows in eucalypts or Belah **Note**: Sedentary near good water supply, nomadic elsewhere **Comment**: Habitat may be available on site.	Y
Leipoa ocellata	Malleefowl	E1,P	V	**Range:** Southern NSW, NW Vic, SE SA and southern WA **Habitat:** Scrubs, eucalypt woodland, sandy or gravel soil Breeding: Sept –Apr to produce 5-33 eggs singly at intervals of 2-14 days. Eggs are pink to dark brown. **Nest:** Mound 2-5 m diameter and up to 1.5 m high	
Arseranas semipalmata	Magpie Goose	V,P		**Range:** Coastal from Broome (WA) to Brisbane (Qld) and 300 km inland. Casual S and NE NSW, SE Qld, Vic, SA, WA **Habitat:** Large seasonal wetlands and well-vegetated dams with rushes and sedges, wet grasslands, floodplains **Breeding:** Jan-Apr in nth, Jul-Nov in sth to produce 1-16 off-white eggs **Nest:** Deep cup on mound of floating or trampled-down vegetation, in colony in swamp	
Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		**Range:** Coastal and sub-coastal nth Aust from Port Headland (WA) to central coast NSW **Habitat:** Large areas of shallow swamps/flooded meadows. **Breeding:** Breed in solitary pairs. Strongly territorial when breeding to produce 2-4 white eggs **Nest:** Large stick nest on tree top.	
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	**Range:** Coastal and sub-coastal SE Aust and far south WA **Habitat:** In or over water in tall reed beds, sedges, rushes, cumbungi, lignum; drains in tussocky paddocks. **Breeding:** Sept-Dec to produce 4-6 green-brown eggs **Nest:** Shallow saucer in platform of trampled water plants over water in reeds	
Calyptorhynchus lathami	Glossy Black Cockatoo	V,P,2		**Range:** NE Vic, inland NSW and Qld in hilly, rocky ridge country. **Habitat:** She oaks (mostly Allocasuarinas) in forests, woodlands, timbered watercourses. Also in eucalypts, native cypress (Callitris), brigalow (Acacia) scrub. **Preferred Food:** Almost exclusively on seeds extracted from the wooden cones of casuarinas	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				Breeding: March-August producing one large, white, oval egg. **Nest:** Layer of woodchips in large hollow, often high.	
Glossopsitta pusilla	Little Lorikeet	V,P		**Range:** Eastern and southern Australia, from Cairns in northern Qld south into NSW from the western slopes of the Great Dividing Range eastwards to the coast, though most of Victoria and south eastern South Australia. **Habitat:** Eucalypt forests and woodlands particularly riparian habitats. Feeds mostly on nectar and pollen occasionally of native fruit. Roosts in treetops often distant from feeding areas. **Breeding:** May to September, clutch of 3-5 matte white roundish eggs. **Nest:** Small hollows generally in smooth barked Eucalypts	
Lathamus discolor	Swift Parrot	E1,P,3	E	**Range:** Breeds in Tas and migrates to mainland during winter to feed (Feb–Apr). Occur as far inland in NSW as Warialda **Habitat:** Range of habitat. Dry sclerophyll forest and woodland and occasionally green grasslands. **Preferred Food:** Feed mostly in the higher branches of eucalypts **Breeding:** Usually produce 3-5 eggs **Nest:** Unlined hollow in eucalypt in Tas.	
Neophema pulchella	Turquoise Parrot	V,P,3		**Range:** Slopes, lowlands of Divide in SE Australia **Habitat:** Open grassy woodland, with dead trees, near permanent water and forested hills, coastal heaths, pastures with exotic grasses, weeds, roadsides, orchards. **Preferred Food:** Seeds of grasses, herbaceous plants and shrubs, with a reliable source of water. Flowers, nectar, fruits, leaves and scale insects may also be eaten. **Breeding:** Aug-Dec and Apr-May to produce 4-5 white, round eggs **Nest:** In dead stump or sprout of eucalypt	
Polytelis swainsonii	Superb Parrot	V,P,3	V	**Range:** Eastern inland NSW Breeding on the South western slopes, migrating to the Namoi & Gwydir regions during winter **Habitat:** Red river gums, black box, yellow box, river oak, mostly near rivers; mallee, stubbles, pastures, gardens. Feeding mostly on grass seed and herbaceous plants but also fruits, berries, nectar, buds insects and flowers. **Breeding:** Sept-Jan to produce 4-6 round white eggs **Nest:** Hollow of red river gum or yellow box near water	
Ninox connivens	Barking Owl	V,P,3		**Range:** Mainland Aust. **Habitat:** Open forests, woodlands, dense scrubs, foothills, river red gums, other large trees near watercourses, penetrating otherwise open country, paperbark woodlands. Rare or absent from arid, treeless or heavily forested regions.	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				Breeding: July-Nov to produce 2-3 dull white roundish eggs. **Nest:** Decayed debris, tree hollows, occasionally on the ground and sometimes in rabbit burrows	
Tyto novaehollandiae	Masked Owl	V,P,3		**Range:** Coastal mainland Australia **Habitat:** Forests, open woodlands, farmlands with large trees eg river red gums adjacent cleared country, partly forested coastal plains in Vic, timbered watercourses, paperbark woodlands, caves. **Breeding:** Any month, mostly autumn-winter to produce 2-3 dull white, elongated eggs. **Nest:** Decayed debris in hollow eucalypt 12-20 m high; bare sand or earth of cave.	
Pyrrholaemus sagittatus	Speckled Warbler	V,P		**Range:** East and southeastern Aust. **Habitat:** Open woodland **Breeding:** Usually produce 3-4 reddish chocolate eggs **Nest:** Dome of grass, leaves, bark & moss concealed by groundcover.	
Xanthomyza phrygia	Regent Honeyeater	E4A,P	E	**Range:** In NSW from the coast to Western Slopes as far as Narrabri **Habitat:** Temperate Eucalypt woodlands & open forest in SE Aust., especially in box-ironbark communities **Breeding:** Jul–Nov to produce 1-3 eggs **Nest:** An open cup-shaped nest is constructed of bark, grass, twigs and wool. Often located in Red Ironbark/River Red Gum but also in other Eucalypts, mistletoe etc	
Epthianura albifrons	White-fronted Chat	V, P		**Range**: Across the southern half of Australia from south east QLD to southern TAS across to WA as far north as Carnarvon. In NSW occurs mostly in the southern half of the state. **Habitat**: Forage on bare or grassy ground in wetland areas. Feed on insects mostly flies and beetles. **Breeding**: Late July through to early March 2-3 eggs are laid per clutch. **Nest**: open cup nests built in low vegetation. **Comment**: No wetland habitat available on site	N
Grantiella picta	Painted Honeyeater	V, P		**Range**: East and north Australia. Breeding migrant in spring –summer to SE Aust, winter dispersal north to Qld, far east SA, east NT and the lower Top End. **Habitat**: Mistletoes in eucalypt woodlands, paperbarks, casuarinas, mulga and other acacias, trees on farmlands, gardens **Breeding**: Oct-March to produce 2-3 oval, salmon-pink, spotted, speckled red-brown, lilac eggs. **Nest**: Flimsy cup of plant fibre, spider's web, rootlets, in foliage 3-20 m high **Comment**: Habitat may be available onsite	Y
Melithreptus gularis gularis	Black-chinned Honeyeater	V,P		**Range:** Northern, central & eastern Australia. **Habitat:** Dry forest & woodlands especially along rivers.	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				Breeding: Usually produce 2 spotted pink eggs **Nest:** Deep cup consisting of fur, down, bark & grass in outer foliage.	
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V, P		**Range**: Eastern and northern Australia. Becoming rarer in settled areas. **Habitat**: A bird species common in Box-Gum, Box-Cypress & Open Box woodlands and scrubland. Birds are generally unable to cross large open areas. **Preferred Food**: Feed on invertebrates by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses. **Breeding**: Usually 2-3 eggs laid between July and February. **Nest**: Nest is a large, untidy dome of sticks lined with grass, bark, wool etc. 3-6m above ground. **Comment**: Habitat may be available on site	Y
Daphoenositta chrysoptera	Varied Sittella	V,P		**Range:** Widespread on mainland Australia **Habitat:** Eucalypt woodlands and forests throughout their range. They prefer rough-barked trees like stringybarks and ironbarks or mature trees with hollows or dead branches. **Breeding:** nest is a deep open cup, like a cone, of bark and spider web, decorated on the outside with long pieces of bark, camouflaged to look like the fork or branch where it is placed.	
Parchyephala inornata	Gilbert's Whistler	V,P		**Range:** much of the arid and semi arid zone ofe Inland SA. Central NSW mallee, south and east through Cocoparra Range to Pomingalama Reserve then north through the south west slopes east as far as Cowra. **Habitat:** Range of habitats from Mallee shrub land to box-ironbark woodlands, cypress pine and belah woodlands and river redgum forests. They prefer dense shrub layers. Foraging on spiders and insects and occasionally seeds and fruit **Breeding:** Breeding occurs between August and November, with 2-4 eggs laid. **Nest:** usually a lined cup or sometimes re-used old nests of other birds (particularly Babbler's)	
Melanodryas cucullata	Hooded Robin	V,P		**Range:** Drier woodland/forest habitats in mainland Aust. **Habitat:** Drier eucalyptus forests, woodlands, scrubs; with fallen logs, debris; mallee, casuarinas, cypress pine, mulga; cleared paddocks with stumps/dead trees or regrowth; banksia-dominated coastal scrubs. **Breeding:** July-Dec to produce 2-3 apple-green/pale olive, faint red/brown tint on large end, or clouded rich brown eggs. **Nest:** Open cup of bark-strips, rootlets, grass, spider's web; on stump, cavity in broken trunk, horizontal fork/branch, stunted eucalypt, on or near dead wood, 1-6 m high. Communal nests – three or more may attend a nest.	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Petroica boodang	Scarlet Robin	V,P		**Range:** From south east QLD to south east SA and also in TAS and south west WA. In NSW occurs from the coast to the inland slopes. After breening some dispers to the lower valleys and plains of the tablelands and slopes as far west as the eastern edges of the inland plains in autumn and winter. **Habitat:** Drier eucalyptus forests, woodlands, scrubs; with fallen logs, debris; mallee, casuarinas, cypress pine, mulga; cleared paddocks with stumps/dead trees or regrowth; tea-tree swamps. Birds forage from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer. Birds usually occur singly or in pairs, occasionally in small family parties; pairs stay together year-round. In autumn and winter, the Scarlet Robin joins mixed flocks of other small insectivorous birds which forage through dry forests and woodlands. **Breeding:** July and January; they may raise two or three broods in each season. Eggs are pale greenish-, bluish- or brownish-white, spotted with brown; clutch size ranges from one to four. **Nest:** Nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground; nests are often found in a dead branch in a live tree, or in a dead tree or shrub.	
Petroica phoenicea	Flame Robin	V,P		**Range:** Endemic to SA. Ranges from near QLD border to South east SA and TAS. In NSW likely to be two separate populations (Northern Tablelands & Central to Southern Tablelands). **Habitat:** Prefers clearings or areas with open understorey **Breeding:** Spring to late summer, eggs are oval in shape and are pale bluish- or greenish- white and marked with brownish blotches, clutch size usually 3-4 eggs. **Nest:** open cup shaped nest of plant materials and spider web. usually build near the ground in sheltered sites	
Stagonopleura guttata	Diamond Firetail	V,P		**Range:** eastern Aust. West of Great Dividing Range **Habitat:** Open forest woodland & wooded grassland **Breeding:** Aug-Jan to produce 4-6 white, oval eggs **Nest:** Globe of grass lined with feathers, with entrance spout, found in dense bush or high tree, mistletoe or Babbler's nest.	
Mammalia					
Dasyurus maculates maculatus	Spotted-tailed Quoll	V,P	E	**Range:** Daintree; eastern Aust; Tas **Habitat:** Cool temperate to tropical wet sclerophyll forest and rainforest. **Preferred Food:** Small mammals, birds, reptile, insects **Breeding:** Apr-July to produce five young. Sexually mature at 1 yo	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Sminthopsis macroura	Stripe-faced Dunnart	V, P		**Range**: Inland central and northern Aust. Has declined from NE parts of the western division (Barwon & Namoi Rivers) early 1900's **Habitat**: Arid to semi-arid woodland, shrubland or tussock grasslands on a variety of substrates from clays to sandy or stony soils. Tends to prefer denser vegetation along drainage lines & shelters in cracks in ground during day **Preferred Food**: Feeds at night mainly on invertebrates. **Breeding**: Females sexually mature at ~ 5mths & can rear 2 litters (each of ~6 young) during breeding season from July to Feb. **Comment**: Habitat may be available on the site	Y
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V, P		**Range**: Eastern & northern Aust. **Habitat**: Wooded habitats of Mulga, Bimble Box – Pine communities, Northern floodplains. **Preferred Food**: Airborne insects above canopy and sometimes closer to ground. **Breeding**: Normally one per year **Comment**: Minimal habitat available on the site	N
Chalinolobus picatus	Little Pied Bat	V, P		**Range**: NSW, Qld **Habitat**: Caves, mines, tunnels **Breeding**: Normally one per year **Comment**: minimal habitat available on the site	N
Phascolarctoc cinereus	Koala	V,P	V	**Range:** Tropics to cool temperate regions across eastern Qld, eastern and central NSW, Vic and south-eastern coastal SA (although being re-established in many of these areas) **Habitat:** Eucalypt forests, Bimble box, Pinelands and woodlands; generally in higher nutrient soil. **Preferred Food:** River red gum and Bimble box are two of the preferred tree species. **Breeding:** Sep – Mar (when vegetation is producing new growth). Sexual maturity is about 2-3 yrs. Females can produce a single young annually until ~15yrs. Breeding females occupy the best habitat. Fecundity rates vary depending on habitat availability, age of population, disease and decline.	
Cercartetus nanus	Eastern Pygmy-possum	V,P		**Range:** From southern QLD to SA and in Tas. In NSW from coast inland as far as the Pillaga, Dubbo, Parkes and Wagga Wagga on the western slopes. **Habitat:** From rainforests through sclerophyll forest and woodland to heath. **Preferred Food:** Nectar and pollen from banksias, eucalypts and bottlebrushes, soft fruits and insects. **Breeding:** Whenever food sources are available, however most births occur between late spring and early autumn.	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Petaurus norfolcensis	Squirrel Glider	V,P		**Range:** Inland eastern Aust. **Habitat:** Dry sclerophyll forest to woodland. **Preferred Food:** Sap, gum, pollen nectar, insects. **Breeding:** May-Dec producing 1-2 young per year after 12 months old	
Aepyprymnus rufescens	Rufous Bettong	V,P		**Range:** Eastern Australia from tropical Queensland down to central New South Wales. **Habitat:** Lives in open forest with dense grassy cover. It builds a nest of grass under thick tussock. **Food:** Grass, roots, flowers, seeds and fungi **Breeding:** The Rufous Bettong breeds throughout the year the female will give birth to a single young where it attaches itself to one of her four teats. Pouch life lasts for about 4 weeks. The young one stays close to the mother until about nine months of age.	
Macropus dorsalis	Black-striped Wallaby	E1,P		**Range:** NE NSW, central east and south-east Qld **Habitat:** Forest with a dense scrub layer including rainforest margins, brigalow scrub and open forest with thick Acacia or other shrub understorey. **Preferred Food:** Almost exclusively feeds on the leaf material of grasses and sedges **Breeding:** Maximum annual fecundity per year ranges from 1-1.5 for the Macropus genus with a range of 236-367 days minimum between litters	
Petrogale penicillata	Brush-tailed Rock-wallaby	E1,P	V	**Range:** Inland SE Australia along the Great Dividing Range **Habitat:** Cliffs and rock slopes in slerophyll forest with grassy understorey or close to grassed areas. **Preferred Food:** Native grasses and other vegetation	
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	**Range:** S. Qld, western slopes of Great Dividing Range & Pilliga Nature Reserve. **Habitat:** Favours moderately well wooded habitats. **Preferred Food:** Small flying insects below forest canopy. **Breeding:** Roosts by day in caves, abandoned mine tunnels and disused bottle-shaped mud nests of Fairy Martins. Normally produces one offspring per year.	
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	**Range:** Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. **Habitat:** Inhabits a variety of vegetation types, including mallee, bulloak *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. **Preferred Food:** Hunt non-flying prey - especially caterpillars and beetles - and will	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				even hunt on the ground. **Breeding:** Mating takes place in autumn with one or two young born in late spring to early summer.	
Vespadelus troughtoni	Eastern Cave Bat	V,P		**Range:** They have a wide distribution along the Qld coast and northern NSW coast but are poorly known. Tropical mixed woodland and wet sclerophyll forests on coast and dividing range but extend into drier forest of western slopes and inland areas. **Habitat:** Caves, sandstone overhangs, and mine tunnels. Usually well-lit areas. Colonies of up to 500, but 6 to 60 also recorded. **Preferred Food:** Unknown	
Pseudomys pilligaensis	Pilliga Mouse	V,P	V	**Range:** Northern NSW **Habitat:** Cypress pine forest with heath understorey on sandy soil **Preferred Food:** Seeds and insects **Breeding:** Oct-Feb	
Flora					
Tylophora linearis		V,P	E	**Status:** Vulnerable (NSW) Endangered (Commonwealth) **Range:** NSW, (NWS, CWS), Qld **Habitat:** Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla and Allocasuarina luehmannii. Also grows in association with Acacia hakeoides, Acacia lineata, Melaleuca uncinata, Myoporum species and Casuarina species. **Flowering:** Spring, with flowers recorded in November or May with fruiting probably 2 to 3 months later. Very low number of confirmed populations and has been recorded in very low abundances.	
Lepidium aschersonii	Spiny Peppercress	V,P	V	**Range:** Central NSW, Vic, WA **Habitat:** In or around swamps and salt marshes on heavy black or clay soil. **Flowering:** Spring to autumn	
Cyperus conicus		E1,P		**Status:** Endangered **Range:** Occurs rarely in the Pilliga area of NSW and is also found in Victoria, Qld, the NT and WA. **Habitat:** Recorded from Callitris forest in the Pilliga area, growing in sandy soil with Cyperus gracilis, C. squarrosus and C. fulvus. Interstate habitats include floodplains, creek beds and banks, swamps, run-on areas and various watercourses, near or in dams and bores, and in vegetation communities such as Melaleuca swamps, open Box woodland and sedgelands. Soils are usually sandy or silty and damp to wet. Often associated with other sedge species including C. victoriensis, C.	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				difformis, C. iria, C. compressus, C. nervulosus, C. dactylotes, Fimbristylis and Eleocharis species. Cyperus conicus has been recorded as very rare and occasional, to common and abundant in populations.	
Bertya Opponens	Coolabah Bertya	V,P	V	**Range:** Central NSW, Vic, WA. High rainfall areas of the great dividing range. **Habitat:** Dry rainforest, subtropical rainforest, warm-temperate rainforest, wet sclerophyll forest, dry sclerophyll forest, grassy sclerophyll forest, riparian forests (including gallery rainforests), at no particular altitude. Often Mallee community on sandy red earth are favoured, also green mallee and grey box communities. **Flowering:** Spring to Summer. Fruit are a capsule, borne on the plant.	
Monotaxis macrophylla	Large-leafed Monotaxis	E1,P		**Range:** Recorded from several highly disjunct populations in NSW: eastern edge of Deua NP (west of Moruya), Bemboka portion of South East Forests National Park, Cobar area (Hermitage Plains), the Tenterfield area, and Woodenbong (near the Queensland border). It is also in Queensland. A recent record from the eastern spur of the Nandewar Range is in the Namoi catchment. **Habitat:** Vegetation within NSW (less though in Queensland), encompassing coastal heath, arid shrubland, forests and montane heath from almost sea level to 1300 m altitude. Displays the properties of a fire ephemeral species in many ways. Germination is stimulated by the passage of fire, individual plants have a short life span, a large biomass is produced in a short period of time, flowering occurs shortly after germination, and populations do not persist in the absence of fire. **Flowering:** August	
Swainsona murrayana	Slender Darling Pea	V,P	V	**Range:** north & central slopes, north, south and far south-western plains of NSW & in QLD, VIC, SA. **Habitat:** Grey & brown heavy clay & clay loam soils in bladder saltbush, black box and grassland communities. Grasslands on inland floodplains & discharge areas and eucalypt forests. **Flowering:** Flowering spring.	
Diuris tricolor	Pine Donkey Orchid	V,P,2		**Range:** Sporadically distributed on the western slopes of NSW, extending from south of Narrandera all the way to the north of NSW. Localities in the south include Red Hill north of Narrandera, Coolamon, and several sites west of Wagga Wagga. Condobolin-Nymagee road, Wattamondara towards Cowra, Eugowra, Girilambone, Dubbo and Cooyal, in the Central West. Pillaga SCA, Pillaga National Park and Bibblewindi State Forest in the north and Muswellbrook in the east. **Habitat:** Grows in sclerophyll forest among grass, often with native Cyprus pine. **Flowering:** Early September to late October	
Dichanthium setosum	Bluegrass	V,P		**Range:** Tropical and warm regions **Habitat:** Grows in dry sclerophyll woodland, grassy sclerophyll woodland, grasslands (including pastures), at no particular altitude. Variable geology and	

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
				various soils are favoured. **Flowering:** Flowers mostly in summer. Fruit are a seed, borne on the plant during Autumn.	
Polygala linariifolia	Native Milkwort	E1,P		**Range:** Pilliga and north eastern inland parts of NSW **Habitat:** In the Pilliga area, this species has been recorded in Fuzzy Box woodland, White Cypress Pine-Bulloak - Ironbark woodland, Rough-barked Apple riparian forb-grass open forest, and Ironbark - Brown Bloodwood shrubby woodland. **Flowering:** Spring to Summer	
Rulingia procumbens		V,P	V	**Range:** Restricted to the Dubbo-Mendooran-Gilgandra region with recordings from Pilliga and Nymagee (Goonoo State Forest). **Habitat:** Sandy, gravelly soil with perfect drainage and in full sun.	
Community					
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3	E		
Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions	Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions	E3			
Coolibah – Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregion	Coolibah – Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregion	E3	E		
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3			
Inland Grey Box Woodland in the Riverina, NSW South Western	Inland Grey Box Woodland in the Riverina, NSW South		E		

Scientific Name	Common Name	NSW status	Cwth status	Details/Comments	7 Part Test?
Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3			
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3	E		
White Box Yellow Box Blakely's Red Gum Woodland	White Box Yellow Box Blakely's Red Gum Woodland	E3	CE		

Table 7 Species from NPWS Atlas of NSW Wildlife

Assessment

This assessment is referred to as an assessment of significance in the form of a Seven Parameter Test. The following presents the seven parameters:

a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction:

Comment:

If a population of the listed threatened species is present in the adjoining forest area, this population may be affected by a minor encroachment on its habitat as a result of the clearing for the extended quarry area. The minor loss of habitat is not considered to be a threat to the life cycle of such populations.

b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction:

Comment:

The Australian Brush Turkey has not been sighted near the quarry and tends to inhabit dry rainforest vegetation which does not occur on the site. The Endangered population is found to the north of the quarry site within the Deriah Aboriginal Area and the Kaputar National Park. Therefore the endangered population is not likely to be placed at risk of extinction by this proposal.

c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Comment:

No endangered or critically endangered ecological communities are present on this site.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Comment:

No endangered or critically endangered ecological communities are present on this site.

d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

Comment:

The proposal includes additional land clearing. The land to be cleared has been impacted by over 100-years of forestry management and logging and is not considered as pristine woodland. However forestry operations are relatively infrequent and for the remainder of the period the forest remains undisturbed to provide a relatively natural undisturbed environment. The loss of a minor area of forest adjoining Jacks Creek State Forest is considered relatively insignificant in relation to the overall area of this forest and adjoining lands.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

Comment:

Clearing associated within this development proposal would disturb the edge of a large forest area and would not be considered as a potential habitat fragmenting activity.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality:

Comment:

The habitat to be removed is relatively common and represented in significantly large areas of the surrounding woodland extending between Narrabri and Coonabarabran.

e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly):

Comment:

No critical habitat has been declared for this site.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan:

Comment:

As the quarry expansion is to take place on previously logged and grazed land. The proposal is not considered to be inconsistent with recovery or threat abatement plans for listed local species.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process:

Comment:

The proposed action is not part of a key threatening process nor is it likely to increase the impact of a key threatening process.

Summary

Searches of relevant data bases revealed that there are nine vulnerable species and one endangered population possibly found on or within the vicinity of the subject site. A Seven Parameter Test of Significance resulted in a decision that there was no need to undertake any further assessment such as a Species Impact Statement. This decision was based on the fact that the proposed quarry expansion would occur on previously logged land and is adjoins a significantly large area of forest and national park reserve extending from Narrabri to Coonabarabran. The potential effects from the loss of 4.75 Ha adjoining the quarry site is considered as negligible.

SEPP 55

Contamination Assessment Report

for a

Proposed Quarry Expansion

"Westport Quarry"

Lot 21 DP 757083

Parish of Blake
County of White

Prepared for: Narrabri Shire Council
C/- PO Box 261
Narrabri, NSW 2390

Prepared by: SMK Consultants
39 Frome Street
Moree, NSW 2400

September 2013

Introduction

Narrabri Shire Council intends to extend the current footprint of the Westport quarry to provide a longer term source of gravel material for local road maintenance and construction. As part of the development proposal, the site has been investigated for potential contamination issues in accordance with the NSW legislation under SEPP 55-Contaminated Land.

The following provides the report of this site investigation.

Scope of Work

The assessment involves the investigation of the land included in the development application to determine whether contaminated land is present and if so, whether this land requires remediation or is acceptable when considering the intended land use.

The scope of works for the investigation was to initially carry out a 'Preliminary Site Investigation' to determine if any contamination existed. If contamination was found to exist at a level that was considered unsuitable for the intended land use, the study should include remediation and validation of the site to ensure the site is acceptable before Council consent is issued for the development application.

Site Details

The study area is located about 24 km south of Narrabri on the Westport Road. The land is zoned RU3 – Forestry and is currently under the maintenance of NSW Forestry. The Westport quarry has been utilised as a quarry site for a period of greater than 30-years as a source of gravel for the local road network. The surrounding area consists of Jacks Creek State Forest which has used as a forest for harvest of mostly cypress pine logs for a period of approximately 100-years or more. The expansion of the quarry will enter the forest area.

Plan 2 (EIS) presents a site plan of the proposal.

Land Use

The forest and quarry area is generally used to graze cattle. Quarry operations at present involve an annual extraction of up to 5,000 cubic metres of gravel per year.

Surrounding land is generally utilised for grazing and forestry. No other potential hazardous surface industries are present in the local area. Some Coal seam gas mining occurs to the south of this site, however the impacts of surface activity associated with this mining is considered to be isolated to the drill or well sites.

Site Condition and Adjoining Land Use

The site is occasionally used for the extraction of gravel. The process involves firstly winning the gravel with a dozer and then preparing the raw gravel with a crusher. The crushed gravel is then hauled from the site by trucks. Potential contaminants may include fuel and oil utilised by diesel powered equipment on the site. Diesel is stored in portable trailers. Oil is brought to the site on an as needed basis.

No previous activity on the site has involved potential contaminants.

Sampling and Analysis Plan

The object of the investigation was to determine whether contaminated areas existed on the property and whether these sites may impact on the proposed or future land use. In accordance with NSW EPA Guidelines, a Preliminary Site Investigation was undertaken.

Results

The investigation indicated that the land utilised forestry has no history of chemical use. The quarry site has involved the use of diesel fuels and oil during the extraction process.

No sites of fuel contamination were noted to be present. No other indiscriminate dumping of material had occurred on the site.

Discussion and Recommendations

The investigation of the site has been carried out in accordance with the requirements of SEPP 55 and Guidelines published by the Environment Protection Authority.

The investigation indicated that the property has been utilised as a forest reserve and quarrying. No potential sources of contamination were identified on the site from either current or previous land uses.

Based on this assessment, the property should be classified as acceptable for continued use as forestry reserve extractive industry.

There are no further requirements for investigation of the property.

Limitations

This report does not represent a detailed investigation involving sampling of materials on the property to identify unknown chemical contaminants from random soil contamination or contamination of sites on adjoining lots. The conclusions and recommendations are based on observations and advice provided by the Landowner in regard to chemicals applied to the land for current land use activities.

Prepared by:

Peter Taylor B.Sc. MEIANZ
Environment and Resource Consultant
SMK Consultants

Appendix 6 – Soil and Water Management Plan

Introduction

This Soil and Water Management Plan for the proposed increase in footprint of the Westport Quarry has been prepared in accordance with the Landcom document *Managing Urban Stormwater: Soils and Construction, Vol. 1, 4th eds.* (Landcom, 2004) (the 'Blue Book').

The SWMP incorporates:

For management purposes, the water within the development site has been divided into two classes.

"Clean" water - surface runoff from undisturbed catchments or relatively undisturbed by extraction, processing or related activities.
"Dirty" water - surface runoff from disturbed catchments such as the active extraction, crushing, stockpiling and loading areas which could produce significant concentrations of suspended sediment.

Soil and Water Management Principles

The principal objective of surface water management at the Westport Quarry is to reduce the potential for the transport of sediment off-site into watercourses and the flow-on impact of sedimentation on receiving waters. This objective is basic to erosion and sedimentation designs and controls, and is achieved by implementing the following principles:

- Directing sediment-laden runoff into designated sediment control retention basins;
- Diverting 'clean water' runoff unaffected by the operations away from disturbed areas and off site; and
- Maintaining sediment control structures to ensure that the designed capacities are maintained for optimum settling of sediments.

Catchments of the development site

The development site sits on a slight elevation on an otherwise gently sloping terrain of forest and scrub. There are no identifiable catchments within the vicinity that water may run and pool within the quarry from external areas as the quarry is protected by a raised embankment or surrounding catch drains in the form of table drains. The quarry consists of a below ground excavation. The only water to enter the site consists of rainwater which is held within the excavation.

The following plan 1 presents an aerial image of the existing quarry site and the area identified for the extension of the quarry footprint to provide a 40-year resource of gravel for the applicant. The plan shows the current low areas within the quarry in which rainfall ponds. No discharge points are present and therefore all silt generated as a result of rain fall within the quarry is captured and settled within the active or inactive areas of the quarry.

Plan 1: 2010 Six Viewer image of Westport Quarry showing existing quarry and area deemed for the propose expansion showing areas where internal water pools

Assessment of Constraints

Introduction

Constraints are classified as either:

- on-site, i.e. relating to soils, landforms, ecology, pollutants and hydrology occurring on the site of the proposed or approved activities; or
- downstream, i.e. relating to aquatic ecosystem sensitivity and the social and aesthetic values of the community.

Based on the identified constraints and opportunities, best management practices (BMPs) have been developed for the site to minimise the potential degradation of soil and water resources and/or other aesthetic/environmental assets while maximising the achievement of outcomes in accordance with principles of Ecologically Sustainable Development (ESD).

The recommended constraints to be addressed by the Blue Book are discussed in the sections below. These are in addition to the project-specific constraints discussed elsewhere in the EIS.

Riparian Lands

Waterfront Lands (formally known as Riparian Lands under the *Rivers and Foreshores Improvement Act 1948*) are those vegetated lands within 40 metres of waterbodies such as rivers, creeks, estuaries, lakes and wetlands. Development on riparian lands is constrained:

- to protect and enhance the social, economic, cultural, spiritual and heritage values of waterfront land for Aboriginal groups and the wider community; and
- to avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, acidity, waterlogging, salinity hazards and decline of native vegetation.

The approved extraction area is not within 40m of a river, creek, estuary, lake or wetland as defined by the Act.

Erosion (Rainfall Erosivity & Soil Erodibility)

Rainfall Erosivity

The rainfall erosivity factor, R, is a measure of the ability of rainfall to cause erosion. It is the product of two components, namely:

- total energy; and
- maximum 30 minute intensity for each storm.

Soil Erodibility

Soil erodibility is a measure of the susceptibility of individual soil particles to detachment and transport by rainfall and runoff. Soil texture is the principal component affecting soil erodibility, but structure, organic matter and permeability also contribute.

Topsoil material within the site is removed as overburden and stockpiled as a buffer around the perimeter of the site. The soil contains a seed bed for many of the local native grasses and forbs which recolonise the topsoil in the absence of tree shading. The revegetation of this topsoil stabilises the stockpiles and minimises the potential erosion of this soil material. No raw soil remains within the quarry site.

Soil Characteristics

Blue Book classifications for the soil show that the soils are type F soils, which are generally fine-grained soils with less than 10 percent of the soil materials dispersible. Type F soils are slow settling in wet basins. Surface water from external areas does not enter the site. The sandy nature of surrounding soils creates minimal runoff. The natural slopes of the immediate surrounds of the quarry encourage any runoff to move away from the quarry.

The working surfaces within the quarry are based on the raw rock materials. The erosion from these surfaces is minimal.

Surface Water Runoff

The surface water runoff expected during average, wet and dry rainfall years has been calculated in the water balance for the site.

The following presents statistical annual rainfall quantities for the quarry site:

- Annual 10th percentile (dry year): 422 mm
- Annual 50th percentile (average year): 633 mm
- Annual 90th percentile (wet year): 861.4 mm

The quarry currently covers an area of approximately 4 Ha. The proposal involves a gradual expansion to extend this internal area by an additional 4.75 Ha. Annual average runoff for this area is in the order of 0.6 ML/Ha. This calculation is based on surface absorption of small falls of rain and wetting of the available surface soil profile. Based on this figure of runoff, the existing site would generate an average of 2.4 ML per annum. This would increase to a potential for 5.25 ML in total. At present the quarry is capable of storing all internal runoff without any discharges. Once the quarry reaches the limit of the proposed development, the potential spread of internal runoff collected over a 12-month period could potentially cover the floor of the quarry to a depth of approximately a depth of 0.166 m of water.

Summary

Based on the information provided above in relation to the proposed expansion of Westport Quarry, and with the implementation of the recommended mitigation and control measures relating to soil and water management at the development site, it is anticipated that there would be minimal impact on surface

water within and downstream of the development site as a result of the proposed operations. The key features of the proposed water management system are as follows.

- All clean water would be held within the quarry site
- Any build up of water within the site would be utilised for dust mitigation measures
- The water would also provide some benefit to local fauna in the form of an alternative source of water in an area where limited surface water is available

Site Water Balance

Introduction

This section reviews site water requirements and available water storage against water availability to present a water balance for the Westport Quarry. The water balance is provided for average, wet and dry years (10th, 50th and 90th percentile rainfall years).

There are two sediment dams which are the two 'minor' catchments for the site. These are considered clean water catchments as water entering these catchments are from runoff from Jacks Creek State Forest and water running over the cleared quarry floor. Overflow of these two minor dams will result in water continuing along natural drainage lines that enter and surround the quarry site.

Inputs

Rainfall/Runoff

The water balance considers rainfall and runoff generated during low (annual 10th percentile), average (annual 50th percentile) and high (annual 90th percentile) rainfall years. The rainfall data has been obtained from the Bureau of Meteorology monitoring station at Narrabri Bowling Club (station 054120), which is considered to be the most representative of the development site. Rainfall is as follows.

Annual 10th percentile (dry year): 442 mm
Annual 50th percentile (average year): 633 mm
Annual 90th percentile (wet year): 861.4 mm

Rainfall is summer dominant although rainfall is generally present in all months.

Groundwater seepage

Significant groundwater is not expected to be intersected during the extraction operation. Groundwater seepage has therefore not been included as an input to the water balance, as it is assumed that any water pooling in the active extraction area would be a result of runoff after a rainfall event, and this water would naturally drain/evaporate.

Outputs

Evaporation losses

This Surface Water Assessment has reviewed the sediment and storage dams. It is assumed that the only loss from the dams would be evaporation, apart from some water for dust suppression which is discussed below. Evaporation losses have been calculated as the direct evaporation from the surface of the dams.

The nearest BOM station to the development site, Narrabri Bowling Club. This station does not collect evaporation data. Mean evaporation data was therefore obtained from the Moree BOM station (No. 053048), with the average yearly evaporation being 2,044 mm. The evaporation loss from the water storage dams has been calculated as follows:

Evaporation loss = Dam surface area x average yearly evaporation x 0.7.

It is estimated that the water storage dams would have a combined surface area of 1000 m^2. A factor of 0.7 has been used to account for variations in the water level in the dams, and to account for the dams not always being full. Consideration is also given to the shallowness of the sedimentation dams.

The combined annual average evaporation from the on-site dams and sump is therefore estimated at less than > 0.5 ML.

Dust Suppression

Dust suppression would be the primary on-site water use. This includes dust suppression on the access roads, hardstands and stockpile areas. All water used for dust suppression would be non-potable water sourced from the sediment dams or with permission from a nearby bore. Should additional water be required for dust suppression during a dry period this water could be obtained from external sources available to the applicant in road reserve areas.

Water Balance

As can be seen in the above tables, there is a deficit of water in all but a 90th percentile rainfall year.

In the 90th percentile rainfall there would be an excess of water and some may be discharged from the site. It is important to note, however, that all dirty water collected on site would be directed to lower parts of the quarry that have been constructed as a Type F sediment basins in accordance with Blue Book specifications. Therefore, as long as these dams are maintained as per Blue Book requirements to ensure the dams continuously operate effectively as sediment basins, then any overflow from these dams would be clean water.

Surface Water Monitoring Program

Introduction

The following parameters consider all facets of water control and monitoring associated with the continued use and expansion of the Westport Quarry.

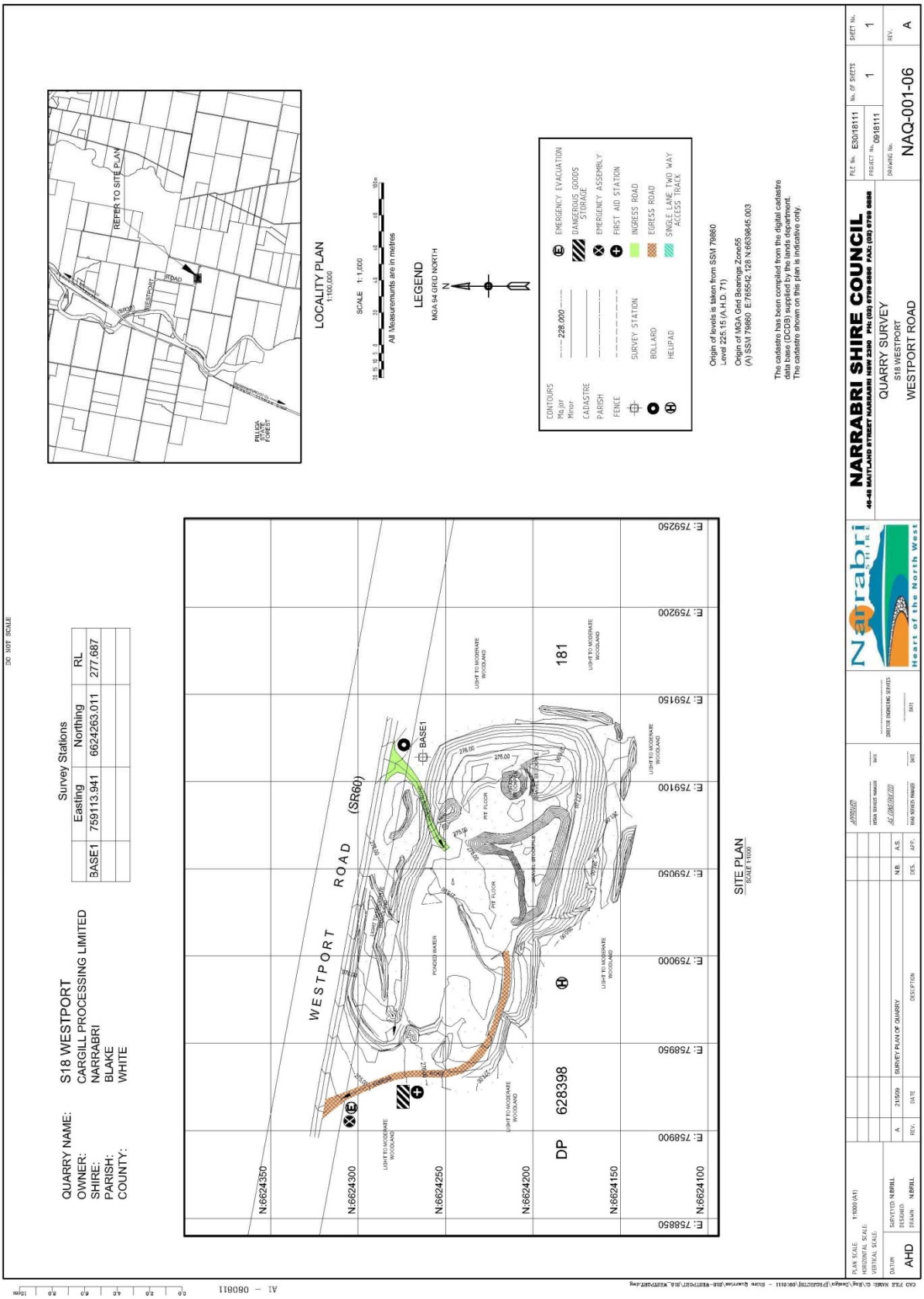
Water quality

Sediment dams onsite collect water that flows in their direction from a rainfall event. No chemicals associated with vehicles extracting gravel are disposed of within these sediment dams. No bore is located within 100 metres of the quarry footprint. Groundwater is not expected to be impacted upon from the expansion of the quarry.

Surface and groundwater impacts

The potential for impacts to surface and groundwater regimes is related to methods used to extract and process the resource and the size of the area to be disturbed. The present operation has not recorded any negative impacts on off-site water quality and has not intersected or extracted any groundwater.

Appendix 7 – Original Site Plan



WESTPORT QUARRY
Westport Road
Narrabri

Environmental Management Plan

Prepared by:

Narrabri Shire Council
Maitland Street
Narrabri

September 2013
(Draft)

Document Verification

Narrabri Shire Council					
Environmental Management Plan					
Revision	Date	Purpose	Prepared by	Checked by	Authorised by
			SMK Consultants	SMK Consultants	Narrabri Shire Council
Signature	15-9-2013	Initial Release			
Signature	15-9-2014	1st Review			
Signature	15-9-2015	2nd Review			
Signature					

Introduction

The following presents an Operational Environmental Management Plan for Westport Quarry which is operated by Narrabri Shire Council. The quarry is utilised to obtain gravel for Council use on the local road network and other special projects. The work undertaken on the site involves clearing, ripping of gravel, crushing of gravel, stockpiling and then hauling the prepared gravel from the site to the relevant project site.

The quarry is operated under this Environmental Management Plan to enable Council to meet their environmental and statutory responsibilities. The objective of this plan is to provide management with a scope for site operations and a process to follow in order to determine and record whether the operation meets those obligations.

Operational Environmental Management Plan		
Issue	**Safeguards**	**Frequency**
Scope and Objectives	The scope of this management plan is to present an environmental management framework and outline tasks for management and staff to meet Council and statutory requirements for operation of Westport Quarry	
	The objective of this plan is to provide management and staff with sufficient detail of required tasks to operate the site in a proactive manner that would minimise the environmental impact of various activities on the site.	
	This Environmental Management Plan incorporates all operational consent conditions issued by the Narrabri Council as part of development consent conditions as presented as Annexure 1 to this Plan, together with all commitments made by the Proponent (except where modified by a condition of consent)	
Potential Impacts	Operation of the facility will involve ripping of gravel, crushing and preparation of gravel, stockpiling of gravel and hauling of the prepared gravel to specific Council projects	
	Potential impacts identified in the Environmental Assessment include noise from operations during site activity, dust generated from winning, crushing and loading of gravel, wind borne dust and fringe effects on the adjoining forest reserve.	
	Potential receptors of impacts from the facility include residents in along Westport road and the adjoining Jacks Creek State Forest.	
Roles and Responsibilities	Persons responsible for environmental management and decision making shall be delegated suitable authority to take action to achieve the objectives of this plan.	
	The Primary management and decision making role is delegated to the Site Operations Manager	
	The secondary management and decision making role is delegated to the site supervisor/s on a daily or shift basis.	
	All staff employed on the site shall be inducted into their responsibilities under the plan and their responsibilities to manage the impact of their specific role on the site.	On Engagement or change of

Operational Environmental Management Plan		
Issue	**Safeguards**	**Frequency**
		Role
	Staff inductions to be recorded as per record sheet presented in Appendix 1.	
	Contractors or others hauling gravel from the site shall be made aware of their responsibilities while traversing the site through the process of a site induction to be undertaken as part standard site procedures.	
	Roles and responsibilities shall be outlined in the Site Induction Documentation.	
	A copy of the current EMP document shall be available for inspection and perusal by staff and contractors at the point of site induction.	
Operational Triggers	Operation triggers will be observed as described under each trigger for site management to determine whether operational conditions are suitable to meet air and noise emission objectives with the aim on not exceeding offsite performance criteria set by NSW Legislation	
Monitoring	The objective of monitoring is to quantify environmental impacts to determine whether objectives of this plan are being achieved and ensure regulatory compliance. Monitoring criteria for this site are discussed for each trigger below.	
Surface water		
Runoff management	Appropriate sediment control and erosion management is installed if required to manage topsoil materials	
Control erosion and sediment	Progressively revegetate and maintain disturbed areas outside of the quarry walls. Ensure that batters are not less than 3 horizontal to 1 vertical (3:1 H: V) on the excavation face. Ensure that sediment laden water does not discharge from the quarry area.	Monitoring on a continual basis with work as required.
Storage Capacity	Use water captured in the quarry for road watering as part of standard mitigation activity to minimise traffic generated dust.	As required
	Monitor depth of silt in detention pond system to ensure that no water captured within the quarry is discharged from the site.	Annual
Noise		
Control noise emissions	Maintain equipment to manufacturers' specification. Operate equipment in accordance with the equipment operator's manual. Ensure that all guards and silencers are in place when equipment is being used. Ensure that crushing operations occur along the southern side	Monitoring on a continual basis with work as required.

<table>
<tr><th colspan="2">Operational Environmental Management Plan</th><th></th></tr>
<tr><th>Issue</th><th>Safeguards</th><th>Frequency</th></tr>
<tr><td></td><td>of the quarry to maximise the distance between the crusher and the closest northern residence.

Where possible create stockpiles of raw and processed gravel on the northern and eastern side of the crusher to a maximum height to create noise shielding around the crushing operation.

Trucks entering the site must be maintained in accordance with the manufacturer’s specification to comply with relevant noise regulations. (Truck operator to provide details upon request by Management)

Avoid unnecessary engine revving during operations.

Maintain an adequate speed limit as sign posted (20 KPH) on the site for all vehicles in consideration of site conditions including road conditions, vehicle size, vehicle loads, frequency of vehicle trips and emission criteria for noise and dust.

Ensure truck traffic follows the designated routes to and through the quarry.

Maintain roads in smooth trafficable condition by removing corrugations and potholes to minimise empty trailer generated noise.</td><td></td></tr>
<tr><td>Noise Criteria</td><td>The noise level criteria based on definitions provided in the NSW INP to be adopted for this site are as follows:

<table><tr><th rowspan="2">Location</th><th rowspan="2">Time of Day</th><th colspan="2">INP Recommended L_{Aeq} Noise Level dB(A)</th></tr><tr><th>Acceptable</th><th>Recommended Maximum</th></tr><tr><td rowspan="3">Nearby Residences</td><td>Day</td><td>50</td><td>55</td></tr><tr><td>Evening</td><td>45</td><td>50</td></tr><tr><td>Night</td><td>40</td><td>45</td></tr><tr><td>Jacks Creek State Forest</td><td>When in use</td><td>50</td><td>55</td></tr></table>
These are noise levels to be adopted at the closest receptor point unless further information is presented to alter these levels.</td><td></td></tr>
<tr><td>Monitoring</td><td>Noise monitoring to be undertaken as required by Council or if necessary as part of treatment of complaints</td><td></td></tr>
<tr><td></td><td>Noise to be monitored using NATA calibrated attended noise monitoring equipment by a competent person using equipment to store data. Written and electronic records of noise monitoring are to be maintained, and made available to regulatory authorities on request.</td><td>Monitored as determined by Site Management</td></tr>
<tr><td></td><td>Ensure all vehicles used on site comply with manufacturer standard emissions.</td><td>Continual</td></tr>
</table>

<table>
<tr><th colspan="2">Operational Environmental Management Plan</th><th></th></tr>
<tr><th>Issue</th><th>Safeguards</th><th>Frequency</th></tr>
<tr><td></td><td>Maintain records of any attended monitoring.</td><td></td></tr>
<tr><td></td><td>Conduct an analysis of recorded data to determine whether noise criteria adopted on the site are being met, quantify noise spikes and source of noise spike emissions.</td><td>After each attended monitoring event.</td></tr>
<tr><td>Operational Triggers</td><td>Under conditions of southerly wind, management is to monitor noise levels on the boundary of the facility closest to the receptor. If noise criteria levels are exceeded, operations are to be modified to meet the noise criteria.</td><td></td></tr>
<tr><td>Light</td><td>Light emissions from the site are to be limited to the type and application of lights in accordance with AS 4282 - Control of Obtrusive effects of outdoor lighting.</td><td></td></tr>
<tr><td></td><td>Maintain the surrounding vegetation buffer to minimise the emission of light toward adjoining residences if operations are conducted outside of daylight hours</td><td></td></tr>
<tr><td>Air Quality</td><td></td><td></td></tr>
<tr><td>Dust</td><td></td><td></td></tr>
<tr><td>Objectives</td><td colspan="2">Dust criteria to be adopted on the site are:
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>Maximum concentration</th><th>Source</th></tr>
<tr><td>Particles as PM10</td><td>1 day</td><td>50 µg/m^3</td><td>NEPM</td></tr>
<tr><td>Particles as PM2.5</td><td>1 day</td><td>50 µg/m^3</td><td>NEPM</td></tr>
<tr><td>Deposited dust</td><td>Annual</td><td>Max 4 g/m^2</td><td>NSW DECCW</td></tr>
<tr><td>Deposited dust</td><td>Annual</td><td>Max increase of 2 g/m^2</td><td>NSW DECCW</td></tr>
</table></td></tr>
<tr><td>Road and Traffic generated dust emissions.</td><td>Minimise wind borne dust potential by selection of coarse pavement surfacing materials.
Use a water truck to dampen the main haul road on an as needed basis to control dust emissions.
Ensure trucks remain on main haul roads.</td><td>Monitoring on a continual basis with work as required.</td></tr>
<tr><td>Gravel generated dust emissions</td><td>Minimise the exposure of gravel between the loader and crusher to avoid dust separation during the crushing process.
Avoid exposure of gravel to high winds by minimising the height of drop from loader to trucks during loading operations.
Do not use any exposed sieving process where fines from the crushed gravel are purposely exposed to wind for separation of fines from larger gravel particles.</td><td></td></tr>
<tr><td>Monitoring</td><td>If required, install dust deposition gauges to quantify deposited dust emissions from site.</td><td>Response to complaints</td></tr>
<tr><td></td><td>Any dust gauge network to include a minimum of two gauges at the edge of the quarry and a separate gauge located away from the quarry to act as a sample control point</td><td></td></tr>
</table>

Operational Environmental Management Plan		
Issue	**Safeguards**	**Frequency**
	Deposited dust sampling to be undertaken on a monthly basis and compared to recommended dust criteria	
	Dust samples to be analysed using a NATA registered laboratory under the appropriate Australian Standard.	
	15-minute duration spot checks of ambient air quality is to be undertaken determine PM_{10} and $PM_{2.5}$ dust levels in accordance with appropriate standards if complaints are received relating to ambient dust pollution affecting nearby residences if appropriate management actions are unable to mitigate the movement of dust from the site.	
Weather Monitoring	In the event that dust gauges are established on the site, an appropriate weather station to monitor wind direction and speed is to be installed for the duration of the monitoring	
	The alternative to a weather station would consist of a minimum of a wind sock installed in an appropriate location to monitor wind during site operations with wind direction and description recorded on an hourly basis during site operations.	
Operational Triggers		
Wind Direction	During winds from a southerly direction, management shall consider noise and dust emissions that may result from site operations that may travel toward the closest farm residence. When management note visible dust emissions from site operations, appropriate changes in practices are to be made to avoid impacts on potential receptors.	During crushing and loading activity.
Hazard and risk		
Worker safety and training	Develop and implement a site induction plan in conjunction with the OH&S to include adherence to the EMP. Advise all staff and contractors onsite of their obligations under the EMP. Ensure all workers, contractors and visitors receive a site induction prior to commencing work or entering the worksite.	
Pest and Weed Control	All chemical use to be undertaken in accordance with Manufacturer's instructions. All pest control activities to be undertaken by suitably qualified operators with complete knowledge of the Pest Control Program registered with the Site Manager via the contract held in the Brisbane Head Office (Commercial In Confidence) All chemicals to be used on the site must be recorded in the Site Managers records.	
Complaints	All complaints are to be dealt with by Site Management. Upon receipt of a complaint site management is to record details of the complaint, the complainant's name and location, date of the problem, the cause of the complaint, the result of the impact and any changes made to operations or the OEMP as a	

Operational Environmental Management Plan		
Issue	**Safeguards**	**Frequency**
	result of the complaint.	
	Complaints shall be recorded with a standard methodology. (Refer to Appendix 1: Complaints forms.)	
	Complaints are to be dealt with in a timely manner.	
	All complaints are to be acknowledged and the complainant should be provided feedback on any action taken to resolve the issue.	Within 1 business day.
Complaints Contact	A 24/7 day per week email contact shall be active at all times during operation of the quarry with emails directed to multiple staff. Email address: (email to be advised.)	
Modification to EMP	This EMP can be modified by Narrabri Shire Council under circumstances where data is obtained to indicate that changes are required as a result of operational changes or operational control/limit changes that may on occasion be required as a result of site management decisions, policy changes or changes to consent conditions.	
	Copies of any modifications to be supplied promptly to Council for its consideration as to consistency with the approvals in place.	
Contingency Planning	If management identify a potential to exceed noise, dust or other emission criteria, corrective actions shall be taken to avoid the exceedance	
	Where corrective action of site operations is not considered sufficient to reduce site emission to performance criteria, site management shall cease site operations until conditions change or can be managed to a level which would avoid exceedance of accepted criteria.	
	Records shall be maintained of such incidences. The records shall include but not limited to: Date, time, description of site activity, conditions causing potential or actual performance criteria exceedance, recorded data used to determine the exceedance level, person/s responsible for controlling action, duration of event and whether the activity was linked to a complaint or direction from authorities.	
	A review is to be undertaken as a result of a site shut-down to determine corrective actions that shall be put in place to correct the cause of the shutdown procedure.	

Appendix 1 – Staff Induction Form

Date	Time	Date on EMP	Name	Title	Signature
1-10-2013	*7 am*	*15-9-13*	*John Smith*	*Loader operator*	*John Smith*

Appendix 2 - Incident Reporting Forms and Register Forms

Date	Time	Complainant name and contact details	Method of complaint	Nature of complaint	Details of action taken. If no action taken, what were the reasons why no action was necessary?