

# Champions Quarry Expansion Preferred Project Report

Final

for Reavill Farm Pty Ltd and Tucki Hills Pty Ltd

December 2011

0114049

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Champions Quarry

Champions Quarry  
Expansion  
*Preferred Project Report*

December 2011

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# Champions Quarry Expansion

Preferred Project Report (Final)

Champions Quarry

December 2011

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## INTRODUCTION

The Environmental Assessment for the Part 3A project application for the Champions Quarry Expansion (referred to as 'the EA') was exhibited from 12 March 2010 to 23 April 2010. In response to the exhibition submissions were received from government agencies and other groups, and the Department of Planning (DoP) (now known as the Department of Planning and Infrastructure (DP&I)) also provided a synopsis of public submissions. As the proponent of this project, Champions Quarry considered the various issues raised in the submissions received during the exhibition period and subsequently updated the proposal and a *Response to Submissions* (ERM, 2010) was prepared and submitted to DP&I.

In January 2011 the DP&I provided Champions Quarry with a *Draft Project Approval* document setting out the proposed *Conditions of Approval* for comment. This was also provided to Lismore City Council (LCC) and the NSW Department of Environment, Climate Change and Water (DECCW) (now the Office of Environment and Heritage (OEH)). A response to the *Draft Approval* document was prepared by ERM on behalf of Champions Quarry and submitted to the DP&I in January 2011.

In concurrence with the above approval process Champions Quarry was also appealing in the Land and Environment Court (LEC) the decision of Lismore City Council to refuse earlier development applications for the relocation of an amenity bund and for the expansion of Champions Quarry made under *Part 4* of the *Environmental Planning and Assessment Act 1979*. Champions Quarry has considered the findings of the LEC and has updated the proposal to address some specific concerns raised by the court, as they pertain to the Part 3A Project.

This Preferred Project Report has been prepared in direct response to a request from the DP&I dated 29 June 2011 (refer *Annex A*). It sets out the Preferred Project which includes amendments to the project plan and a revised statement of commitments. It also provides a summary of the project interactions with the environment and surrounding area. This includes additional and/or updated standalone assessment reports that have been specifically undertaken in response to matters raised by the LEC.

### 1.1

#### SUPPLEMENTARY INVESTIGATIONS, REPORTS AND PLANS

The additional information and reports produced since the provision of the Draft Approval by DP&I include:

- updated Project Site Plans (LandPartners, 2011, as provided in *Annex B*)
- *Supplementary Traffic Assessment for the Extraction of 1500 tonnes / day for Champions Quarry, Wyrallah Road, Wyrallah* (RoadNet, 2011, as provided in *Annex C*);

- *Acoustic Summary including a Construction Phase Acoustic Assessment* (Bridges Acoustics, 2011, as provided in *Annex D*);
- *Champion Quarry Marketing Assessment* (AusRocks, December 2011, as provided in *Annex E*);
- *Part 3A – Proposed Acoustic Bund A – Addendum to the Visual Assessment of Allan Wyatt – 17 September 2010* (ERM, 2011, as provided in *Annex F*); and
- *Anthropological Research and Assessment* (Tony Jefferies, 2011, summary provided in *Annex G*).

These additional standalone reports are provided as an Annexure to this report, and are summarised in *Section 3*.

## 2 *PREFERRED PROJECT*

### 2.1 *INTRODUCTION*

Champions Quarry has considered the issues raised by the LEC and DP&I, and those concerns specifically raised in relation to the proposed amenity *Bund A* for sensitive *Receiver 2* located to the northeast of the proposed quarry operational area, and has subsequently made minor modifications to the Project and the statement of commitments.

### 2.2 *PROJECT MODIFICATIONS*

#### 2.2.1 *Peak Truck Movements*

It is proposed that the approval allows truck movements during periods of peak output rather than average hourly truck movements. Annual output would not exceed the proposed 250,000 tonnes per annum. This will typically require short term campaigns to the expected peak output of up to 1,500 tonnes per day, which equates to five loaded truck and trailers per hour. The traffic assessment undertaken for this peak output has concluded that this level of operation will not have any adverse impacts on traffic flows and road safety along the nominated haulage routes (refer *Section 3.2* below).

#### 2.2.2 *Noise Control Bunds*

In response to concerns raised by the residents at sensitive *Receiver 2* and the LEC the bund located near *Receiver 2*, has been removed. It is now proposed to locate the acoustic bund referred to as *Bund A* to a location more remote and out of view from this receiver.

This noise control bund proposed in the northeast section of the Project Site will be located approximately 60m to the southwest of *Receiver 2* residence, and will be up to approximately 5.5m above ground height. At this location it will be screened from view from *Receiver 2* by the existing treed landscape bunds. This allows *Bund A* to be located further from sensitive *Receiver 2*, while still providing adequate noise control in relation to the Project operations.

In order to affectively attenuate operational noise impacts to *Receiver 2*, it is necessary to increase the height of *Bund A* at its new location to up to approximately 5.5m above ground level and to raise the height of other internal quarry bunds, such as those adjacent to or within the Central Extraction Area and the Southern Extraction Area, by 1m.

It is proposed to implement both of the above changes to bund heights, such that the combined effect will ensure the same or a better level of noise control is achieved as the bund system described in the EA (ERM, 2009). The above modifications have been assessed for acoustic and visual impacts which are discussed in detail in *Section 3* below.

### 2.3 *PROJECT SITE PLANS*

To reflect the proposed modification to the Project as discussed in *Section 2.2.2* and at the request of the DP&I a set of final Project Site Plans has been prepared and are provided in *Annex B*.

The Plan titled *Figure 1.3* show the Project Site boundary and allotments.

The Plan titled *LM070268 – SV1C* shows the full extent of the Project Site.

The Plan titled *LM070268-SV26 Master Plans Ver. H* provides the Preferred Project layout for all of the quarry development components. It includes the survey extraction limits along with other proposed site features such as *Bund A*, other bunds, dams and access.

The Plan title *LM070268-SV26G* shows details of the proposed relocated *Bund A*.

### 2.4 *PROJECT SUMMARY*

It is proposed to extract 6.25 million tonnes of sand and sandstone resource at the rate of 250,000 tonnes per year over a 25 year period at the Project Site. It is also proposed to expand the materials processing capacity of the quarry to accommodate for this increased extraction rate. The increased expansion will primarily occur in a new extraction area to the south of the existing quarry. The existing quarry pit (the Central Extraction Area), once exhausted, will become a processing area to allow for the proposed sand washing plant and the establishment of materials storage and processing facilities, plant storage and maintenance facilities and a building containing an office and staff amenities.

The proposed location and configuration of siltation ponds for treating water from the sand washing process is shown on the plan titled *LM070268-SV26H* as provided in *Annex B*. The final accurate design and sizing of these intermediate siltation ponds will be undertaken once sand washing capacity requirements are confirmed based on raw feed product attributes and market demand for washed sand products. As such, the final design and operation of sand washing plant at the Project Site will be subject to the approval by DP&I, along with OEHL upon application for an Environmental Protection Licence (EPL). No sand washing will be undertaken at the Project Site until approval has been granted.

Works to be undertaken outside the quarry operational extraction and processing area, but within the Project Site include the construction of a Water Storage Dam, acoustic amenity *Bund A* and *Bund B*, vegetation screen planting and the lock-up and ongoing maintenance of areas of existing vegetation. Site features such as dams, amenity bunds and vegetation screening are to be constructed as presented in the EA (ERM, 2009). The exception to this will be the new location of *Bund A* and the increased height of internal quarry bunds and/or leading quarry walls (or combination of both) as discussed above and also in *Section 3* of this report.

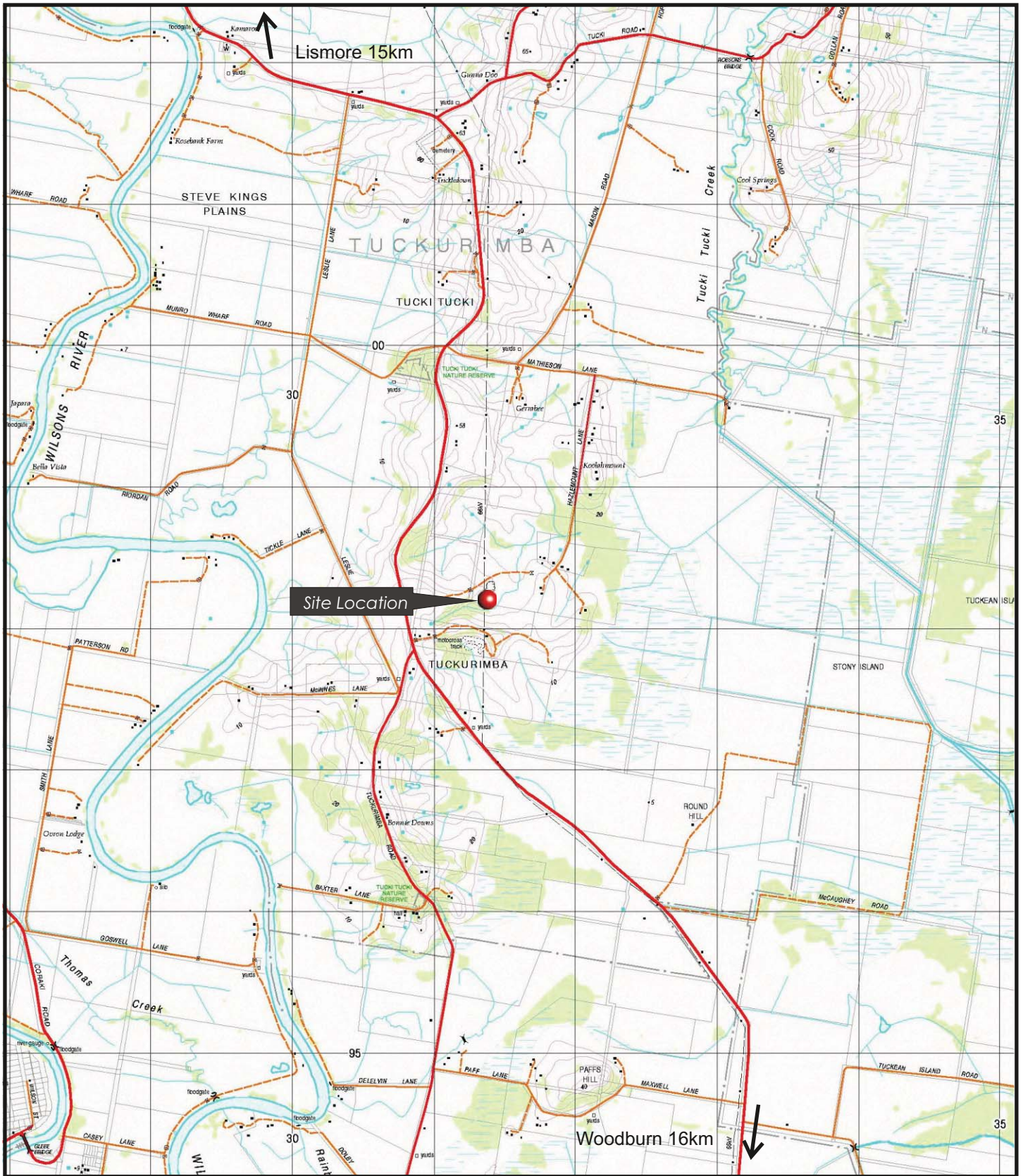
The vegetative screen planting, corridor links and the proposed lock up areas, along with ongoing maintenance of existing vegetation is considered by the proponent an important and positive aspect of the quarry proposal. It will ensure the ongoing protection and provision of a significant increase in habitat resources for local fauna.

The Project Site location is shown of *Figure 2.1* and the Site layout is shown of *Figure 2.2*. The Plan titled *Figure 1.3* (refer *Annex B*) shows the Project Site boundary and allotments. The full extent of the Project Site is depicted in the Plan titled LM070268-SV1C as provided in *Annex B* of this report.

The total area of the lots which make up the Project Site is approximately 187 hectares. Lots directly associated with the quarry, utilised for the access road, material extraction and processing, dams, screening vegetation and amenity bunds are:

- Lot 5 - DP 857530 - Hazlemount Lane, Tuckurimba
- Lot 1 - DP 729118 - Wyrallah Road, Tuckurimba
- Lot 4 - DP 588125 - Wyrallah Road, Tuckurimba
- Lot 183 - DP 1013042 - Wyrallah Road, Tuckurimba
- Lot 1 - DP 127550 - Wyrallah Road, Tuckurimba
- Lot 101 DP 755746 - Wyrallah Road, Tuckurimba

The environmental interactions and other aspects relevant to the Project are summarised in *Section 3* of this report.



**Figure 2.1**  
**Project Site Location**



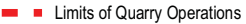

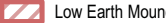


Client:	Champions Quarry		
Project:	Champions Quarry		
Drawing No:	0114049pm_01		
Date:	25/07/11	Drawing size:	A4
Drawn by:	AM	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer to Scale Bar		

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**Legend**

-  Receivers
-  Extraction Areas
-  Limits of Quarry Operations
-  Proposed Dams
-  Low Earth Mound
-  Bund
-  Site Boundary

**Source:**

Aerial imagery and Quarry Masterplan Areas - Land Partners (LM070268-SV1C)

Client:	Champions Quarry
Project:	Champions Quarry Expansion
Drawing:	0114049pm_GIS06_FIG1.4_FOR
Date:	9/11/2011
Drawn By:	TH
Reviewed By:	WW
Projection:	GDA 1994 MGA Zone 56
Scale:	Refer to scale bar



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**Figure 2.2**

**Site Layout**

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**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
9	Quarry Operation	The proponent commits to completing Department of Industry and Investment – Mineral Resources forms for data collection relating to quantity and value of construction materials on annual basis.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	The forms are provided to all operating quarries at the end of each financial year.
10	Visual	The noise control bund ( <i>Bund A</i> ) proposed in the north eastern section of the Project Site will be relocated approximately 60m to the southwest of <i>Receiver 2</i> , and beyond the existing landscape bunds in order to reduce construction noise impacts and mitigate visual impacts to the receiver..	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Initial construction phase.

### 3 SUMMARY ENVIRONMENTAL ASSESSMENTS

#### 3.1 INTRODUCTION

The following sections summarise the previous and additional environmental assessments undertaken and the development of quarry management, mitigation measures and specific Project modifications to the project in response to government agency and public consultation and submissions.

#### 3.2 TRAFFIC AND TRANSPORT

A traffic impact assessment was undertaken for the EA (ERM, 2010) for the Project and included an assessment of the capacity of three primary haulage routes to accommodate the increase in trucks leaving the quarry from an average of 11 trucks per day to an average of 30 trucks per day. The assessment concluded that provided a number of achievable recommendations are implemented the increase in traffic resulting from the proposed expansion of Champions Quarry will not have adverse impacts on traffic flow or safety along the nominated haulage routes.

The above traffic impact assessment considered average truck movements, which the DP&I considered would form the basis of its Conditions of Approval. However, such condition would have required a maximum output of 900 tonnes per day every working day of the working year (280 days/annum) to achieve the proposed quarry output of 250,000 tonnes per annum. This equates to three loaded truck & trailers leaving the quarry per hour, every hour of every working day which is not considered commercially or operationally viable.

As such, a supplementary traffic assessment has been undertaken at the request of the DP&I to consider times of peak operation of 1,500 tonnes/day for the supply of large project (ie. such as the Pacific Highway Upgrade). This would equate to five loaded truck & trailers leaving the quarry per hour for short term campaigns to achieve the daily peak output. The assessment undertaken by RoadNet (2011) to consider peak operation of 1500 tonnes/annum and is provided as *Annex C*.

The above assessment concludes that the additional traffic volumes at the assessed intersections will not require the upgrading of the existing intersection treatments other than some pavement widening as previously identified in the EA (ERM, 2010) for intersections at Wyrallah Road and Wyrallah Ferry Road and Coraki Road and Wyrallah Ferry Road. The assessment also found that the increased traffic volumes as a result of the proposed peak daily capacity will not have any adverse impacts on traffic flows and road safety along the haulage routes.

An ecological impact assessment was undertaken for the EA (ERM, 2010) to assess the impacts of the proposed expansion of Champions Quarry on endangered flora, fauna and their habitats.

Four vegetation communities (*Dry Rainforest, Wet Sclerophyll Forrest, Regenerating Pink Bloodwood/Forest Oak Woodland; and Grassland*) were identified in and contiguous with the Project Site. No threatened flora species as listed under the *Threatened Species Conservation Act 1995* (TSC Act) or the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC act) were recorded.

The rainforest community identified is considered to be representative of the Lowland Rainforest on the NSW North Coast and Sydney Basin Endangered Ecological Community. The final quarry design has ensured that rainforest community is external to the proposed quarry extraction and operational area. An assessment of this community has been undertaken in accordance with the TSC Act. The rainforest community will be managed and enhanced as has been detailed in a comprehensive biodiversity offset strategy and Vegetation Management Plan as provided with the *Response to Submissions Report* (ERM, 2010). The proposed quarry extraction and operational footprint is restricted to grassland and will not clear any vegetation communities of conservation significance. The proposal includes a 50m wide managed buffer between the quarry footprint and the mature hoop pines characterising this rainforest.

In response to the recommendations of the OEHL, additional assessment works were undertaken specifically targeting reptiles, microbats and the Atlas Rainforest Ground-beetle. These assessments were provided with the *Response to Submissions Report* (ERM, 2010). The targeted assessments concluded that the project is unlikely to result in significant impacts to fauna and flora, including endangered ecological communities and threatened species.

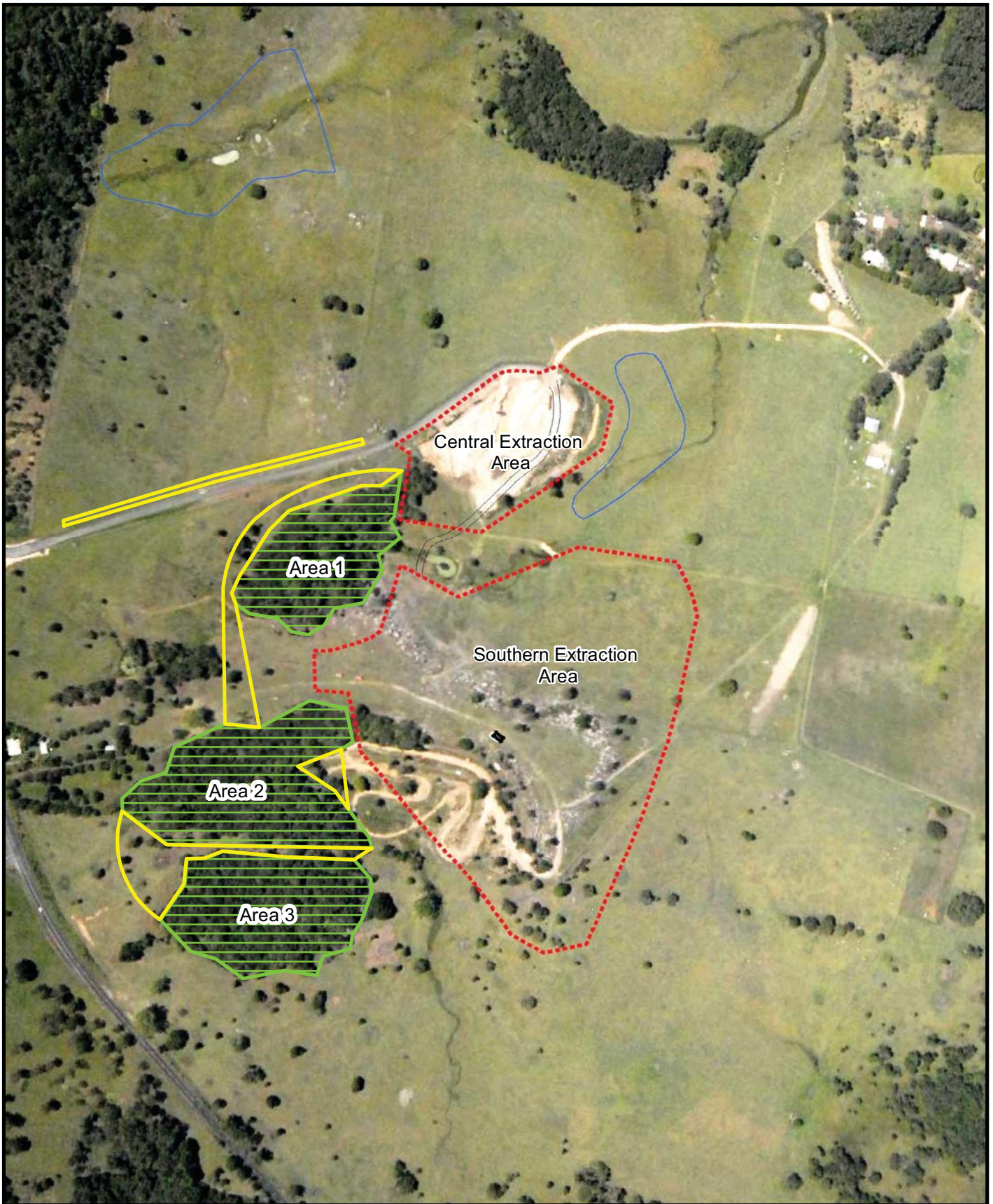
A number of community submissions were received in relation to Koala populations adjoining the Project Site. The proponent is well aware that the Koala is an iconic species that may on occasion traverse the Project Site and as such, responsible measures will be established in the Quarry Management Plan to protect Koala (ie. staff induction and awareness, on-site traffic limits etc). It is noted that there is significant separation distance between known and proposed new Koala habitat to the proposed operational quarry itself. Notwithstanding, Koala are known to co-exist with similar developments (such as the nearby Blakebrook Hard Rock Quarry).

A SEPP 44 Assessment and an Assessment of Significance were conducted in the ERM (2009) Ecological Assessment specifically relating to the Koala, which concluded that the Project was not expected to have a significant impact on Koala population. Further more, proposal to plant over 0.7 hectare of Koala feed and habitat trees on the northern boundary of the Project Site as part of the Project is expected to significantly bolster the resources available to Koala

and other fauna populations in the area and provide an additional corridor away from the operational quarry area for Koala and other fauna species movements throughout the Tucki area. No Koala feed trees are present in the proposed quarry operational area and none are proposed to be cleared within the Project Site. It is also noted that the well established and well colonised Koala habitat trees along Hazelmount Lane to the northeast of the Project Site were originally planted by the proponent.

In addition to the above Koala feed tree and habitat planting the Project proposes to retain and manage 2.17 ha of Wet Sclerophyll Forest, 0.16 ha of Pink Bloodwood/Forest Oak Woodland and 3.46 ha of Dry rainforest/Lowland Rainforest for the purpose of biodiversity off-set in compensation for the small amount of clearing that is proposed on the Project Site. These biodiversity off-set areas are depicted *Figure 3.1* below taken from the *Vegetation Management Plan* as provided with the *Response to Submissions Report* (ERM, 2011). It is noted that less than 1.2 ha of vegetation is to be cleared which can best be described as disturbed remnant stands and fringe trees of low habitat value. Therefore, the proposed biodiversity off-set is over 4.8 : 1 for that to be cleared. A further 4.5 ha of native planting (including the 0.7 ha of Koala feed species) is proposed on the Project Site for visual and habitat amenity purposes.

The combination of biodiversity off-sets, corridor links and other plantings will be managed in accordance with the detailed Vegetation Management Plan and Landscape Management Plan for the Project Site, and will be further complemented by on-going rehabilitation of completed quarry areas over time. The net result will provide a significant improvement in habitat availability and connectivity over the Project Site, which is currently characterised as predominantly disturbed grazing lands, along with the long-term protection of existing vegetation communities.

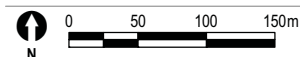


**Legend**

- ▬ Protected Revegetation Area
- ▬ Protection Areas
- ▬ Quarry Extraction Area Boundaries
- ▬ Proposed Dams

**Source:**  
Aerial imagery and Quarry Masterplan Areas - Land Partners (LM070268-SV26)

Client:	Champions Quarry
Project:	Champions Quarry Expansion
Drawing:	0114049pm_GIS04_Ecol_v2.mxd
Date:	8/11/2011
Drawn By:	TH
Reviewed By:	WW
Projection:	GDA 1994 MGA Zone 56
Scale:	Refer to scale bar



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**Figure 3.1**  
**Biodiversity Offsets**

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Port Macquarie, Sydney



## 3.4 SOIL AND WATER MANAGEMENT

### 3.4.1 *Surface Waters*

A detailed Water Management Plan for the quarry was developed and provided with the EA (ERM, 2010) to ensure adequate water supplies under most climatic conditions, and safeguard the integrity of downstream watercourses and lowlands. This includes a detailed site water balance to confirm the capacity of the on-site Water Reuse Dam to capture and treat all quarry extraction and operational area run-off, including from proposed sand washing activities.

In addition to the Water Reuse Dam and proposed quarry sediment basins, a series of siltation ponds will be constructed to treat sand washing water before reaching the Water Reuse Dam. These ponds are to be located to the south of the existing quarry pit and will be accurately designed and sized once the required capacity is determined. This will be based on analysis of the raw feed material (once accessed by quarrying) and expected market driven output. While sand washing has been assessed in every other respect (ie. site water balance, noise etc), no sand washing will occur on the Project Site until the detailed materials assessments and designs have been completed and approved by the DP&I. This will also be required for the inclusion of sand washing on the Project Site's Environmental Protection Licence and as such will require concurrent approval from OEH.

An operational surface water monitoring program will be designed and implemented as part of the quarry environmental management procedures.

The proposed conservatively designed Surface Water Management System is considered to be adequate, as it not only accounts for site operational water needs, but provides for conservative design measures for the detaining and treatment of Extraction Area runoff and washing plant reuse water.

### 3.4.2 *Groundwater*

As the quarry expands laterally and vertically it is not expected to intercept the regional groundwater table. Based on the hydrogeological properties encountered during site investigations, shallow perched groundwater identified within the extraction zones is not expected to result in significant levels of seepage into the quarry pits. This is further supported by the conditions experienced in the existing quarry pit where only limited seepage is encountered. Further geotechnical testing in the vicinity of the proposed water control dam did not identify the regional groundwater resource to the depth of drilling at minus 13 metres AHD. As such, no water control dams and siltation ponds will be constructed to a depth within 1m of the groundwater resource.

Ongoing groundwater quality monitoring will be undertaken at the Project Site to ensure the quarry is operating as anticipated with respect to groundwater quality protection.

### 3.4.3 *Acid Mine Drainage*

There exists what is expected to be only a very minor potential for AMD at the site. As all operational site runoff is to be contained within the Project Area, the proposed Water Reuse Dam will provide a means for capturing and treating (if required) any AMD. It is noted that no pyrite was recorded in any of the bore holes within the Central Extraction Area or the proposed Southern Extraction Area.

## 3.5 *NOISE*

### 3.5.1 *Operational Noise Levels*

An acoustic assessment was undertaken and provided with the EA (ERM, 2010A) and included modelling of all major quarrying equipment for representative operational scenarios. The assessment identified acceptable Project Specific Noise Criteria levels that the operational quarry expects to successfully achieve with the incorporation of proposed mitigation measures within the Project Site. In order to minimize acoustic impacts associated with the expansion of Champions Quarry, the following measures are proposed to be put in place:

- the operating hours of the quarry are restricted from 7am to 5.30pm Monday to Friday and 7.30am to 3.00pm on Saturdays;
- road traffic noise created by the haul trucks accessing the site will be reduced by imposing a speed limit on the access road of 30km/h and prohibiting haul trucks from using compression braking on-site;
- effective placement and stockpiling of product so that where possible, plant equipment can be working behind stockpiles;
- 5m earth bunds adjacent to plant that is not shielded by permanent bunding or leading quarry walls;
- modern, well maintained industrial equipment will be used;
- plant operations personnel will undergo induction training into quarry operations (i.e. lean manufacturing training), the benefits of which help to minimise unnecessary noise emissions from plant equipment;
- for compliance purposes, attended noise monitoring (at established permanent noise assessment locations) and plant equipment audits will be undertaken on an annual basis;

- sealing of the main access road from the site entrance intersection to the Central Section pit;
- no other on-site material extraction plant is to be operational when the rock hammer is in use; and
- use of the rock hammer to be limited to between 9:00am to 12:00pm and 2:00pm to 4:00pm on Monday to Friday only.

Noise experienced at sensitive receivers is expected to be progressively reduced as the quarry expansion proceeds, through implementation of the following measures:

- plant is to be progressively moved in-pit where the pit walls will act to shield receiver locations from noise generated;
- plant will be relocated to greater pit depths throughout the life of the quarry to further reduce noise at receiver locations;
- the earth bunds adjacent to the existing quarry pit will be progressively increased in height and consequently increase shielding to the residences nearest to the quarry; and
- no additional noise producing activities, plant or equipment will be introduced to the Project Site that have not already been assessed, without further acoustic assessment.

In response to issues raised in relation to construction noise and the location of a proposed acoustic bund (known as *Bund A*), further consideration and assessment of noise impacts including confirmation of the findings of the Noise Assessment prepared for the EA (ERM, 2010) has been undertaken by Bridges Acoustics (refer *Annex D*). It is noted that construction noise was not previously modelled for the EA.

### 3.5.2 *Bund A Relocation*

Modelling of operational scenarios for the relocated *Bund A*, constructed to a height of up to approximately 5.5m above the ground shows the proposed bund is 1 to 2 dBA less effective than the previously proposed bund (up to approximately 4.7m in height), which was much closer to Receiver R2.

Champions Quarry proposes to raise *Bund A* to a maximum height of 5.5m and to raise the height of other in-pit or near-pit bunds to a height of 5m where doing so would directly benefit *Receiver R2*.

Noise modelling with the amended 5.5m *Bund A*, together with 5m surround or temporary bunds within the extraction areas, has confirmed that the proposed noise control measures would provide the same or a better level of noise control as the previously proposed bund system described and assessed in the EA under all operating conditions.

### 3.5.3

#### *Construction Noise Levels*

The proposed construction activities were modelled and construction noise levels calculated at the sensitive receivers for all proposed construction activities. A table of noise levels to six of the closest and most representative receivers is presented in the Bridges Acoustics report provided in *Annex D*. The modelling indicates that exceedances of the ICNG noise criterion are expected to occur at *Receiver 2* only.

*Receiver 2* as identified in the EA (ERM, 2010) as *NAL 2* would have an exceedance of 1 dBA above the criterion for approximately 5 days during the construction of acoustic amenity *Bund A*.

It is noted that in accordance with *Table 2* of the ICNG that the expected construction noise impact do not result in any receivers being highly noise affected. However, Champions Quarry will apply all feasible and reasonable work practices to meet the noise affected level, and will inform the residents of *Receiver 2* of the nature of works to be carried out, the expected noise levels and duration, and will provide contact details.

It is understood that the residents of *Receiver 2* are generally away from home during the weekdays and would not actually be expected to receive construction noise levels above the criterion during working/school hours. Based on this the proposed program is considered acceptable from an acoustic perspective.

### 3.6

#### *AIR QUALITY*

A Level 2 air quality impact assessment, as described by the OEH (DECC, 2005) was carried out and provided with the EA (ERM, 2010) to determine potential impacts from the quarry expansion. This was undertaken utilising a computer based dispersion model to predict ground level dust concentrations and deposition levels in the vicinity of the quarry.

The air quality impact assessment demonstrates that the proposed expansion and operations can be undertaken in compliance with OEH air quality impact criteria for PM10 and TSP short and long term averages and dust deposition. Additionally, the concentration contours produced demonstrate that the predicted concentration are localized around the site and decrease rapidly with distance.

The expansion of Champions Quarry is not anticipated to have negative air quality impacts on the surrounding environment. A number of mitigation

measures have been developed for implementation to minimise the potential for operations to generate dust.

### 3.7

#### *ABORIGINAL HERITAGE*

An Aboriginal Heritage assessment was undertaken by Everick Heritage Consultants Pty Ltd in 2008, which included the proposed Central and Southern extraction and operational areas, lockup areas and other areas adjacent to what now comprises the Part 3A area. This assessment was reviewed by ERM and deemed adequate for inclusion in the Part 3A application. However, some additional work was considered necessary for the purpose of the Part 3A application to adhere to the OEH's *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*.

Consultation was undertaken by ERM in accordance with the above referenced guidelines. The extraction areas, the operational area, the lockup areas 1, 2 and 3 and the general area of the site were all inspected by ERM's archaeologist. ERM concluded that there were no known Aboriginal heritage constraints identified for the proposed expansion of Champions Quarry.

In response to submission raised by the Environmental Defenders Office (EDO) and one registered stakeholder, Anthropological research was undertaken by Mr Tony Jefferies as provided with in the *Response to Submissions Report* (ERM, 2010).

Specific claims as to the cultural significance of the Project Site and specifically the area of the operational quarry, as opposed to previous advice with regard to the cultural significance of the region, were raised by the above single stakeholder for the first time post the exhibition of the EA (ERM, 2010). These claims specifically related to a ritual pathway through the Project Site between the nearby Bora rings and Round Hill. Further advice was subsequently sought by the proponent from Dr Gaynor Macdonald of Sydney University in relation to the cultural significance of the Project Site and surrounding lands.

In response to the specific issues raised by Dr Gaynor Macdonald (refer *Affidavit 22-03-2011* as provided with the report in *Annex G*) further anthropological research has been undertaken by Tony Jefferies, Anthropologist. The works undertaken have been summarised by Tony Jefferies in his report provided in *Annex G*.

In summary, Dr Macdonald considered further research should be undertaken to understand aspects such as traditional ownership and cultural significance of the area and region in which the Project is located. Also, that persons of cultural standing be consulted for their comments. The additional works undertaken were also to consider the significance of further research as addressed by Dr Inge Riebe and Mr Murray John Roberts in their testimony to the LEC.

In undertaking the additional research Tony Jefferies consulted many local Bandjalang Elders and knowledge holders. Tapes and video material of Bandjalang Elders (living and deceased) were also studied at the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) audio and video library in Canberra. Written material was also accessed and reviewed. The additional research and site inspections with Aboriginal Elders concentrated over the hills of the Project Site, including inspection of rock overhangs, proposed dam sites and bund locations, and the broader region.

The findings of the above research have indicated that there are no apparent constraints in relation to Aboriginal Cultural Heritage for the proposed quarry development at the Project Site. The finding is supported by the knowledge and opinions held by the relevant Aboriginal Elders and knowledge holders who were consulted as part of the extensive research undertaken. Dr Macdonald has also reviewed the anthropological works discussed above and has deemed that they adequately addressed the Aboriginal Cultural Heritage aspects in relation to the region and Project Site (refer letter provided in *Annex G*).

In addition to above, it is noted that the proposed development does not result in the denying of access to areas of identified actual Aboriginal cultural heritage significance in the regional proximity to the Project Site or through the Project site itself.

### 3.8

#### *WASTE MANAGEMENT*

Waste will be generated in both the site set up and ongoing operations of the expanded Champions Quarry. The wastes generated will be recycled wherever possible or disposed of in an environmentally acceptable manner in accordance with the appropriate operational or environmental management plan.

The increased production within Champions Quarry will result in considerable social and economic benefits at both the local and regional level. The principle economic benefit of the proposal is related to the security of local construction materials for the northern New South Wales market and the increased production resulting in greater economies of scale and a significant saving in overall green house gas emissions per tonne of material produced. Local economic benefits include increased employment opportunities resulting from both the increase in annual production capacity and the increase in quarry life. This will have significant flow on effects to the local community.

A quarry marketing assessment was completed by Ausrocks Pty Ltd (2009) as provided with the EA (ERM, 2010). This has been recently updated and is provided as *Annex E*. The recent assessment concludes that the proposed expansion of Champions Quarry will provide a unique high quality sandstone resource for the Far North Coast Region and will provide a wide range of washed sand and sandstone derived products for the civil construction industry, particularly in the local region.

Current and future potential products from the Project Site identified by Ausrocks include:

- Washed sand (in the future).
- Roadbase and select roadbase using select sandstone product and imported basalt (RTA Specification DGS and DGB).
- Sandstone roadbase and select roadbase (RTA specification DSS and DSB).
- Engineered fill (CBR 30 and above).
- Bricklayers sand (loam).
- General sandstone fill.
- Topsoil.
- Landscaping boulders and Type "A" and "B" for engineered walls.
- Aggregate products (concrete aggregates) from identified high strength sandstone layers (in the future).

In regards to product demand, competition and potential market position for Champions Quarry, significant research has been completed by Champions Quarry and Environmental Resource Management (ERM) in regard to local demand and competition in the Far North Coast Region.

This includes resource estimates and production rates of competitors, local prices and population growth. Ausrocks has used this and other data to rank Champions Quarry as a long term State Significant Resource and a major supplier of quarry products within the Lismore/Ballina Region. Key regional issues as identified by Ausrocks include that:

- the Far North Coast Region in general and the Lismore/Ballina Region in particular is principally basalt and has limited sand/sandstone quarries;
- in the Lismore City Council LGA of 1,200 square kilometres Champions Quarry is the only sand/sandstone resource, in excess of 12 million tonnes;
- there is a distinct lack of washed sand for the concrete and asphalt markets in the Lismore/Ballina Region;
- there is a distinct lack in volume of certified engineer fill in the Lismore/Ballina Region;
- there is a distinct lack of suitable sandstone for blending with basalt to provide RTA specification DGS and DGB blended road base for the region or sandstone roadbase DSS and DSB;
- there are limited sources of dimension stone and sandstone boulders;
- there are no licensed quarries for topsoil sales in the area; and
- some local quarries are considered likely to be operating illegally or over quota.

The potential ability of Champions Quarry to supply washed sand, select roadbase, engineered fill and other sand products to regular markets and to major projects in the Lismore/Ballina Region will have a major effect on the growth of the quarry, and its ability to support local and regional developments.

Ausrocks Pty Ltd have predicted that Champions Quarry should reach a production capacity of 250,000 tonnes/annum within three to five years of the approval, or sooner dependent on the timing of the Pacific Highway upgrade south of Ballina, and following implementation of the necessary infrastructure for larger scale extraction and sand washing. The study undertaken by Ausrocks Pty Ltd has identified that Champion's Quarry is probably the largest potential resource of State significance of washed sand and sandstone available for approval in the Lismore/Ballina Region of Northern New South Wales. This is considered particularly important in light of future resource requirements for Critical State significant infrastructure projects, in particular the Pacific Highway upgrade south of Ballina, and requirements for construction material in the Lismore/Ballina Region in general.

### 3.10

#### *LANDSCAPE AND VISUAL*

A detailed visual assessment was undertaken for the Project and provided with the EA (ERM, 2010). It included the preparation of a series of visual montages of the various stages of quarry development and from various sensitive receiver view points. The visual impact assessment concluded that impacts resulting from the proposed expansion of Champions Quarry will be minimal.

In response to issues raised in relation to the location of acoustic amenity *Bund A*, this bund was redesigned in a new location with a view to minimising the visual impacts.

As a result of concerns raised with the original location of *Bund A* it has been elected to locate this bund as previously discussed in *Section 3.5* above. The proposal to construct *Bund A* approximately 60m to the southwest of *Receiver 2* (as shown on the plan titled *LM070268-SV26G* in *Annex B*) was considered to reduce the visual amenity impacts of this bund to *Receiver 2*, as well as to further reduce construction impacts. This minor modification has been assessed in an addendum to the visual analysis report as provided in *Annex F*.

The new proposed location for *Bund A* is situated to the southwest of the two existing approved landscape bunds. Once the bund is stabilised, and in conjunction with continued growth of vegetation on the landscape bunds, *Bund A* has been assessed to have “Nil” visual impact to *Receiver 2* when constructed to a height of up to approximately 5.5m above ground level.

The operators of Champions Quarry are committed to the rehabilitation and development of the best end use for the quarry. This has been described in detail in the Vegetation Management Plan as provided with the *Response to Submissions Report* (ERM, 2010) and as depicted in the above referenced visual montage. It is considered by the proponent that the proposed vegetation planting and landscape treatments at the Project Site will result in a significant improvement in the visual landscape from current disturbed site conditions.

### 3.11

#### GREENHOUSE GASES AND CLIMATE CHANGE

A greenhouse gas assessment was undertaken for the EA (ERM, 2010). In calculating the direct emissions profile, it is anticipated that the Project will contribute approximately 0.00008 percent of emissions to the Australian annual greenhouse gas emissions total and approximately 0.0003 percent of emissions to the NSW annual total. The greenhouse intensity of the Project equates to approximately 0.0019 tCO<sub>2-e</sub>/t of sandstone material extracted.

The Project is expected to significantly increase supply of washed sand and engineered fill available within the Lismore and Ballina region. As such, local infrastructure projects, currently relying on materials from outside of the local region, will be able to use materials from this Project and subsequently reduce product haulage distances by more than 50%. The net effect would be expected to result in a significant overall benefit with regard to greenhouse gas emissions.

In correspondence from the NSW Department of Primary Industries (DPI) to Lismore City Council (dated 23 September 2008) in reference to the Champions Quarry resource, the DPI stated:

*The subject quarry could offer significant long term advantages in both carbon emissions and transport costs compared to alternative sources in view of its size and proximity to population centres in and around Lismore City.*

**BENEFITS OF THE PROJECT**

Champions Quarry has been identified as a significant sandstone and sand resource with the ability to supply local markets, supporting both current and projected regional growth. The following are examples of specific benefits of the Project:

- a stable long term supply of sand and sandstone material for the Lismore/Ballina Region;
- a reduction of cartage distances, cost and impacts on the road network for relating to supply sand and sandstone products in the region;
- lower greenhouse gas emissions per tonne of product produced for supply to local markets;
- the creation of long term employment opportunities and the subsequent multiplier effects within the region;
- contribution to the upgrading of local road infrastructure;
- the contribution of road levies that are not required for current deliveries from outside of the local government area;
- the proposed protection of existing, and creation of new significant habitat zones on-site through tree plantings and the lock up of existing vegetation remnants;
- the proposed establishment of new koala habitat zones and corridors, and commitment to the ongoing protection and enhancement of koala habitat, as has previously been successfully achieved by local plantings undertaken by the proponent; and
- overall improvements to the visual landscape amenity through the proposed establishment of the above and other screen plantings throughout the Project Site.

**REVISED STATEMENT OF COMMITMENTS**

Champions Quarry is committed to minimising the potential for environmental impacts from the proposed quarry expansion. *Table 4.1* below outlines the updated measures Champions Quarry will implement to minimise any potential deleterious environmental, social and/or economic impacts.

Table 4.1 Revised Statement of Commitments (December 2011)

Item Number	Item	Commitment	Responsibility	Timing
1	Scope of Development	<p>The development will be carried out as outlined in the documentation and plans listed below, except where amended by other items of this Statement of Commitments, and any conditions of approval issued by the Department of Planning and Infrastructure (DP&amp;I) or the Office of Environment and Heritage (OEH):</p> <ul style="list-style-type: none"> <li>• Environmental Assessment (EA) report, prepared by ERM, September 2009 and supporting reports;</li> <li>• Additional Assessment provided with the Response to Submissions report and this Preferred Project Report.</li> <li>• Quarry Plans (refer Figures 3.1 to 3.13 in Annex E of the Response to Submissions report)</li> <li>• Preferred Project Plans (refer Plans in Annex B of this report)</li> </ul>	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
2	Roads	<p>The primary route to and from Lismore to be via the Bruxner Highway, Coraki Road, Wyrallah Ferry Road and Wyrallah Road.</p> <p>The preferred route to and from the Pacific Highway to be Wyrallah Road or via Broadwater Road.</p> <p>The intersection of Wyrallah Road and Wyrallah Ferry Road be upgraded in the form of widening for the left turn in for heavy vehicles from Wyrallah Road {refer to Figure 19 in Appendix F of the Environmental Assessment report (ERM, November 2009)}.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation and cooperation with Lismore City Council</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Payment to Lismore City Council (as agreed in February 2009) 6 months prior to extraction commencing</p>

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
		<p>Coraki Road and Wyrallah Ferry Road intersection upgraded in the form of widening for the left turn in to cater for heavy vehicles from Coraki Road (refer to <i>Figure 19 in Appendix F of EA (ERM, 2010)</i>). The proposed design will require 90m<sup>2</sup> of pavement widening in conjunction with a two coat seal.</p> <p>Payment of road contributions to Lismore City Council.</p> <p>Reduction of the speed limit on Wyrallah Road from 100km/hr to 80km/hr from Tuckurimba to Wyrallah.</p> <p>Vegetation be cleared that obscures the T-junction warning sign in Wyrallah Ferry Road on the approach to the Bridge.</p> <p>A '200m' distance plate be added to the above sign.</p> <p>When the quarry has an increased truck volumes forecast for particular periods, this information to be forwarded onto the local bus companies.</p> <p>A truck warning sign, W5-22, including a suggested distance of 200 metres should be provided on Wyrallah Road on each approach to the quarry access to be displayed during hours of operation.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation and cooperation with Lismore City Council</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation and cooperation with Lismore City Council</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation and cooperation with Lismore City Council</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title in consultation with Lismore City Council and NSW RTA.</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title.</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Payment to Lismore City Council (as agreed in February 2009) 6 months prior to extraction commencing</p> <p>Ongoing</p> <p>Pending Council approval.</p> <p>Prior to extraction commencing</p> <p>Prior to extraction commencing</p> <p>Ongoing</p> <p>Prior to extraction commencing</p>

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
3	Aboriginal Heritage	<p>All site employees/contractors will undergo site induction training that includes stop work procedure if archaeological sites are discovered.</p> <p>Information regarding heritage requirements will be made available on-site for employees/contractors.</p> <p>If an Aboriginal item is found on the Project Site all work will cease and the police (in the case of human remains), relevant Aboriginal community groups and a suitably qualified archaeologist contacted.</p> <p>Aboriginal Burial Management Plan to be in place prior to the commencement of works. This plan should be written in conjunction with the relevant stakeholder groups (such as Elders of the Bundjalung Elders Council).</p> <p>The Proponent commits to preparing and implementing an Aboriginal Cultural Heritage Management Plan (ACHMP) to the satisfaction of the Director-General following the approval of the proposed quarry expansion. This plan will:</p> <ul style="list-style-type: none"> <li>(1) be prepared in consultation with all relevant Aboriginal communities;</li> <li>(2) be submitted to the Director-General for approval; and</li> <li>(3) include a: <ul style="list-style-type: none"> <li>• description of the measures that would be implemented to salvage any identified Aboriginal sites within the disturbance area;</li> <li>• description of the measures that would be implemented to protect any Aboriginal sites outside the disturbance area; and</li> <li>• description of the measures that would be implemented if any new Aboriginal objects or skeletal remains are discovered during the project</li> </ul> </li> </ul>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd</p> <p>As Above</p> <p>As Above</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation with relevant stakeholders and OEH</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd in consultation with relevant stakeholders and OEH</p>	<p>Ongoing</p> <p>As Above</p> <p>As Above</p> <p>Prior to extraction commencing</p> <p>Prior to extraction commencing and following approval of the quarry expansion</p>

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
4	Ecological Considerations	<p>The biodiversity offset strategy shown in <i>Figure 6.1</i> of the Response to Submissions will be implemented through a vegetation management plan developed in consultation with OEH and the DP&amp;I. This will be aimed at retaining and managing areas of existing vegetation outside of the operational quarry area and includes revegetation in adjoining areas. In addition, the proponent will commit to the protection and management of the offset area secured through legal enforcement of the offset strategy via a voluntary conservation agreement under the National Parks and Wildlife Act 1974 or Section 88B-E covenant of the Conveyancing Act 1919 to be negotiated by the proponent and the DP&amp;I and OEH.</p> <p>Pre-clearance inspection of each 'work cell' prior to the commencement of clearing works to identify potential fauna habitat (e.g. fallen hollow logs, and hollow-bearing trees) and identify appropriate measures. Measures to minimise impact on fauna during clearing operations will include modified clearance of hollow-bearing trees by clearing up to the tree, nudging the tree then leaving the tree to be cleared at a later period to allow any resident fauna to relocate;</p> <p>Where potential fauna habitat identified a suitably qualified wildlife handler would be present during clearing operations to supervise clearance and rescue any individuals where required;</p> <p>Pre-clearance inspection of any trees to be felled for presence of Koalas.</p> <p>Measures to minimise impact of traffic movement on fauna includes:</p> <ul style="list-style-type: none"> <li>• limiting traffic movement to approved hours;</li> <li>• limiting the speed of haul trucks within the <i>Project Site</i> to 30km/h; and</li> <li>• selection of shrub species and/or tree species that do not provide a foraging resource for Koalas in visual screening proposed along the haul road; and</li> <li>• providing a break in the screening planting near the junction of the haul road and Wyrallah Road to discourage directing terrestrial fauna on to the road.</li> </ul>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Any truck drivers requiring access to the <i>Project Site</i></p>	<p>Biodiversity Offset Strategy and Vegetation Management Plan to be developed prior to extraction commencing.</p> <p>Implementation of Plan of Management to be ongoing</p> <p>Prior to commencement of any clearing works.</p> <p>Ongoing</p>

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
		<p>Buffer distance of at least 50m Between the quarry extraction area and the adjacent native vegetation and habitat - specifically the rainforest community within Area 1. These will be clearly marked prior to the commencement of expanded quarrying operations.</p> <p>In accordance with the relevant legislation, measures will be taken to control the growth and spread of existing Camphor Laurel and Lantana infestations in the <i>Project Site</i>.</p> <p>The existing quarry has a Rehabilitation and Final Landscape Plan. The principals of this plan will be applied to the expanded quarry operation. Work cells will be progressively rehabilitated. A large part of the proposed quarry will be rehabilitated with pasture species to grazing land as currently characterises the <i>Project Site</i>. The benches would be shaped and rehabilitated with locally occurring native species. The rehabilitation will be monitored monthly to assess establishment of vegetation and progress documented by the Environmental Officer.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Prior to commencement of any clearing works.</p> <p>Ongoing</p> <p>Ongoing</p>
5	Noise	<p>Provision of bunding as shown in <i>Quarry Management Plan</i>, with the exception of <i>Bund A</i> which will be constructed per Plan titled <i>LM070268-SV26G</i> as provided in <i>Annex B</i> of this report.</p> <p>The operating hours of the quarry are restricted to the following:</p> <ul style="list-style-type: none"> <li>• 7am to 5.30pm Monday to Friday;</li> <li>• 7.30 to 3pm Saturday; and</li> <li>• no operations to occur on Sunday or public holiday.</li> </ul> <p>Use of a rock hammer to be limited to the following times:</p> <ul style="list-style-type: none"> <li>• 9am–12pm and 2pm–4pm (Monday to Friday);</li> <li>• not to be used on weekends or public holidays.</li> </ul>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>All personnel associated with extraction, processing and transportation operations</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>All personnel responsible for</p>	<p>Prior to extraction commencing</p> <p>Ongoing</p> <p>Ongoing</p>

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing																				
			operating the rock hammer																					
		<p>'Broadband' reversing beepers or alternative non noise emitting reverse warning arrangements (i.e. communications based) will be used on all key plant rather than single frequency reversing beepers.</p> <p>The Project Specific Noise Levels (PSNL) as per the following table should be the appropriate noise limit for the project in any subsequent approval granted by the DP&amp;I.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Ongoing</p> <p>Ongoing</p>																				
		<table border="1"> <thead> <tr> <th>Location</th> <th>Period</th> <th>Intrusiveness Criteria LAeq(15minute)</th> <th>Amenity Criteria LAeq(Period)</th> </tr> </thead> <tbody> <tr> <td>NAL 1</td> <td></td> <td>35</td> <td>50</td> </tr> <tr> <td>NAL 2</td> <td></td> <td>37</td> <td>50</td> </tr> <tr> <td>NAL 3</td> <td>Day</td> <td>37</td> <td>50</td> </tr> <tr> <td>NAL 4</td> <td></td> <td>39</td> <td>50</td> </tr> </tbody> </table>	Location	Period	Intrusiveness Criteria LAeq(15minute)	Amenity Criteria LAeq(Period)	NAL 1		35	50	NAL 2		37	50	NAL 3	Day	37	50	NAL 4		39	50		
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NAL 1		35	50																					
NAL 2		37	50																					
NAL 3	Day	37	50																					
NAL 4		39	50																					
		<p>The proponent will conduct noise compliance monitoring at sensitive receiver locations to demonstrate compliance of the quarrying operations. This monitoring program will form part of a detailed Noise Monitoring Program to be prepared to the satisfaction of the Director General of the DP&amp;I.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Within one month of commencing expanded quarrying operations</p>																				

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
		The rock hammer will only be used on-site in isolation from all other quarrying extraction and processing operations.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Road traffic noise created by the haul trucks accessing the site speed limited to 30km/h and prohibiting haul trucks from using compression braking on-site.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Effective placement and stockpiling of product so that where possible, plant equipment can be working behind stockpiles.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Construction of a 5m earth bund as a barrier to operational plant that is not shielded by permanent bunding or leading quarry walls.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Modern, well maintained industrial equipment will be used.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Plant operations personnel will undergo induction training into quarry operations (i.e. lean manufacturing training), the benefits of which help to minimise unnecessary noise emissions from plant equipment;	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Prior to any works commencing on site
		For compliance purposes, attended noise monitoring (at established permanent noise assessment locations) and plant equipment audits will be undertaken on an annual basis;	All personnel associated with extraction, processing and transportation operations Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
		Sealing of the main access road from the site entrance intersection to the <i>Central Section</i> pit.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Prior to expansion of extraction activities commencing on site
6	Air Quality	Any unsealed quarry roads on the <i>Project Site</i> will be watered at a rate of 2 L/m <sup>2</sup> /minute as required.  Water sprays will be used on all mobile processing equipment and stockpiles to minimize airborne particulate matter.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title  Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing  Ongoing
		All trucks leaving the <i>Project Site</i> to have covers in place prior to leaving the operational area.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
		Stockpiles of overburden and topsoil being stored for utilization in rehabilitation activities to be seeded to minimize the potential for fugitive dust.	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	Ongoing
7	Soil and Surface Water Management	The soil and water management regime developed in accordance with the Soil and Water Management Plan provided as an <i>Appendix of the EA</i> and accounting for the revised sediment dam calculations provided as <i>Annex B of the Response to Submissions Report</i> (ERM, 2010).	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title	All water and soil water management devices to be put in place prior to construction commencing  Management of water and soil to be ongoing.

**Table 4.1 Revised Statement of Commitments (December 2011)**

Item Number	Item	Commitment	Responsibility	Timing
		<p>The Environmental Management Plan (EMP) to be developed by the proponent will include detailed information to justify the upstream/background monitoring locations/results and clearly quantify and justify any departure from the pH limit range of 6.5–8.5. This will include a detailed surface water monitoring and review program to establish a case for any departure from the commonly prescribed range. Until such time as the case is made, and approved by the OEH and/or Director General of the DP&amp;I, any water discharged from the site will be required to fall within the pH limit range of 6.5–8.5</p> <p>All tail water is to be collected in the sediment basins and/or in the waste water reuse dam.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p> <p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Prior to any works commencing on site and ongoing</p> <p>The quarry is to be designed and infrastructure installed to recapture all tail water before the commencement of works within the expanded quarry. The infrastructure will be progressively developed with the continued quarry expansion</p> <p>Ongoing</p>
8	Quarry Rehabilitation	<p>The progressive rehabilitation approach developed within the Vegetation Management Plan, Visual Analysis and Quarry Management Plan provided as Annexure to the <i>Response to Submissions Report</i> (ERM, 2010) to be implemented.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Ongoing</p>
		<p>The rehabilitation program will aim to return as much of the disturbed areas to their class 3 and class 4 classifications where possible to assist in achieving the LEP zone objectives and providing opportunities for sustainable grazing in the longer term. Benching may be part of this program as is proposed.</p>	<p>Reavill Farm Pty Ltd and Tucki Hills Pty Ltd, and/or its successors in title</p>	<p>Progressively where possible, but predominately upon quarry closure.</p>