

## **Nocturnal**

The following are results from nocturnal surveys:

- Listening and/or capture (excluding trapping)

### Mammals

Nil

Amphibians – Only detected in adjacent drainage line.

Eastern Sedge Frog (*Litoria Fallax*)

Striped Rocket Frog (*Litoria nasuta*)

Red-backed Brood Frog (*Pseudophryne coriacea*)

Southern Laughing Tree Frog (*Litoria tyleri*)

### Reptiles

Nil

### Birds

Masked Lapwing (*Vanellus miles*)

Pheasant Coucal (*Centropus phasianinus*)

- Spotlighting

### Mammals

Some Microchiropteran bats (see Anabat Detection below - possible<sup>TS</sup>)

### Birds

Nil

### Reptiles

Dwarf Crown Snake (*Cacophis krefftii*)

- Amplified call playbacks

### Mammals

Nil



- Anabat Detection

*Scotorepens* sp. (probably *orion*) Eastern Broad-nosed Bat

*Vespadelus pumilus* Eastern Forest Bat

*Mormopterus* sp. (probably <sup>TS</sup>*norfolkensis*) Eastern Freetail-bat (or Eastern Mastiff Bat)

*Nyctophilus* sp. (possibly *gouldi*) Gould's Long-eared Bat or (possibly *geoffroyi*)

Lesser Long-eared Bat

*Tadarida australis* White-striped Freetail-bat

<sup>TS</sup> indicates Threatened Species

These surveys are considered more than adequate to indicate presence or otherwise of species - given; the nature of the habitat, the species likely to occur and finally, the anticipated impact of the proposal.

### 3.4 Threatened Species Detected

*Mormopterus* sp. (probably <sup>TS</sup>*norfolkensis*) Eastern Freetail-bat (or Eastern Mastiff Bat)

### 3.5 Threatened Species recorded within 10 km of the Site

A search of the NP&WS Atlas Database dated 21 November 2001, revealed records of the following threatened fauna (includes those detected on site) within a radius of 10 km.

#### Amphibians

Nil

#### Reptiles

Nil

#### Birds

Black Bittern (*Ixobrychus flavicollis*)

Black-necked Stork (Jabiru) (*Ephippiorhynchus asiaticus*)

Glossy Black-Cockatoo (*Calyptorhynchus lathami*)

Masked Owl (*Tyto novaehollandiae*)

Osprey (*Pandion haliaetus*)

Powerful Owl (*Ninox strenua*)

Square Tailed Kite (*Lophoictinia isura*)



## Mammals

Brush-tailed Phascogale (*Phascogale tapoatafa*)  
 Grey-headed Flying-fox (*Pteropus poliocephalus*)  
 Koala (*Phascolarctos cinereus*)  
 Large-footed Myotis (*Myotis adversus*)  
 Little Bent-wing Bat (*Miniopterus australis*)  
 Spotted-tailed Quoll (*Dasyurus maculatus*)  
 Squirrel Glider (*Petaurus norfolcensis*)  
 Yellow-bellied Glider (*Petaurus australis*)

Other mammal species detected on Lots (during EIS surveys but not in database) include:

<sup>TS</sup> Eastern Falsistrelle (*Falsistrellus tasmaniensis*)

Those species detected (see 3.4) will have an Eight Point Test analysis undertaken, and those other species listed above will be considered for eight point analysis (No 4 below and Attachment 6).

### **3.6 Threatened Species not recorded within 10 km of the Site - but which may occur**

A review was also undertaken of other threatened fauna species listed in Schedules 1 & 2 of the TSC Act species which could likely occur in this locality and within habitat as found on the area. Species and numbers will be very limited (if occurring at all) primarily due to the lack of suitable habitat. The term likely infers the species is known to occur in the broader area and suitable habitat of a type utilised by the species is present.

Possible species which could occur on the *Site* were reviewed (Source – NP&WS Databases, SFNSW Bulahdelah Management Area Plan, SFNSW EIS data, NP&WS Mid North Coast Fauna List, NP&WS correspondence, other studies eg Jandra EIS, personal knowledge including a researched Occurrence List based on habitat preference, known distribution and reference books).

## Amphibians

Nil

## Reptiles

Stephen's Banded Snake (*Hoplocephalus stephensi*)

## Birds

Barking Owl (*Ninox connivens*)  
 Bush Thick-knee (*Burhinus grallarius*)  
 Sooty Owl (*Tyto tenebricosa*)



## Mammals

Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*)  
 Common Bent-wing Bat (*Miniopterus shriebersii*)  
 Common (Queensland) Blossom-bat (*Syconycteris australis*)  
 Greater Broad-nosed Bat (*Scoteanax rueppellii*)  
 Large-eared Pied Bat (*Chalinolobus dwyeri*)  
 Rufous Bettong (*Aepyprymnus rufescens*)  
 Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)

These species will also be considered for Eight Point Test analysis (No 4 below and Attachment 6).

## **4 SECTION 5A (EP&A ACT) ASSESSMENT**

### **Previous Assessment**

The Section 5A Assessment undertaken as a component of the EIS prepared for quarry expansion found that the proposal would be “unlikely to have a significant effect on threatened species”. Whilst the current proposal is outside the scope of the EIS, given the nature of the vegetation/habitat to be removed and the survey results - it is a reasonable assumption that the findings of the EIS would similarly apply to the proposed overburden deposit area. Regardless, a new Section 5A Assessment will be undertaken for the proposal.

### **Current Assessment**

The Eight Point Test of significance is addressed below.

Based on the above, in relation to fauna, for each species detected, or recorded within 10 km, or judged as possible to occur (based on distribution and habitat occurrence - (see Nos 3.4, 3.5 and 3.6 above), species profiles have been prepared, detailing particularly the key and critical habitat requirements of the species.

The extent to which this habitat occurs on the *Site* has been reviewed and a classification of likelihood of occurrence (nil, low, moderate or high) derived. Definitions of degrees of likelihood are as follows:

Nil – no potentially generally suitable habitat, main habitat requirements absent, no records in the broader region/well outside recognised distribution area.

Low – no records within 10 km and/or habitat only barely suitable. Other factors eg general past and current disturbance, absence of specific habitat features - would almost certainly preclude occurrence. Poor or no links with other areas of similar habitat.



**Moderate** – recorded within 10 km, habitat suitable but not ideal, adjacent habitat similar.

**High** – recorded within 10 km (including detections on site), optimal habitat including links with adequate adjacent areas to support breeding.

A species specific Eight Point Test will be undertaken for any flora or fauna species that **occurs** or is judged to have a **moderate or high** likelihood of occurrence. A General Eight Point Test will be also be undertaken inclusively for all species judged to have a **low** likelihood of occurrence. An Eight Point Test is not required for other species with a **nil** possibility of occurrence.

Note the koala has also been addressed under the SEPP 44 Assessment.

#### 4.1 FAUNA

- 4.1.1 Threatened Species Detected
- 4.1.2 Threatened Species Recorded within 10 km
- 4.1.3 Threatened Species not Recorded within 10 km - but which may occur
- 4.1.4 General Eight Point Test
- 4.1.5 Fish and Marine Vegetation

#### 4.2 FLORA

- 4.2.1 Threatened Species Detected
- 4.2.2 Threatened Species Recorded Within 25 km
- 4.2.3 Threatened Species not Recorded within 25 km - but which may occur

The Eight Point Tests undertaken for fauna and flora in 4.1 and 4.2 above are in Attachment 6.

### 5 CONCLUSION and DISCUSSION

In relation to both threatened flora and fauna, based on the description of the proposal, adoption of the ameliorative measures recommended, and:

- ⇒ exclusion of some possible occurring species as having **no** potential to occur by analysis of prepared profiles on habitat requirements, presence or absence of microhabitat etc (2), and
- ⇒ the specific Section 5A Assessments on individual species that **occur** (1), and
- ⇒ the specific Section 5A Assessments on possibly occurring individual species that have a **moderate or high** possibility of occurrence (9), and



⇒ the general Section 5A Assessment on a group of possibly occurring species that have a **low** possibility of occurrence (15),

some conclusions can be reached. It is noted that:

1. The Lots have an area of 118 ha. Of this the proposal will remove only a further 2.2 ha of vegetation. Consequently, the area of potential habitat that will be lost will not be significant in terms of occurrence of similar habitat to be retained elsewhere on the Lots (98 ha) and most likely in the general locality.
2. The vegetation and type of habitat is generally common in the wider area (pers obs). It is a reasonable assumption that given the limited extent of clearing that presently takes place in the locality/and the tight controls on this - it is unlikely that the bulk of this wider area of vegetation will be removed by development.
3. Only one threatened fauna species (probable detection) and no threatened flora species were detected on or immediately adjacent the *Site*. In addition, a reported sighting of a <sup>TS</sup>koala some distance from the *Site* was provided by the quarry management. Further, the previous EIS surveys detected two species on the Lots – both are highly mobile and have large home ranges.
4. Habitat values of the vegetation are relatively minor. Only one potential habitat tree occurs (0.4 trees per ha). Whilst this potential habitat tree will need to be removed, it is a minor number and similar (better) habitat trees have been observed immediately adjacent the *Site* within areas to be retained. Although some food substrate for several threatened species occurs, no evidence could be found of occurrence (and hence use of food substrate) by these species.
5. The *Site* is a component of a wildlife corridor. Based on survey results (and presence of a working large quarry) use of this corridor in the vicinity of the *Site* is expected to be minimal. Provision has been made in the consent conditions to the EIS for the establishment, retention and improvement of significant wildlife connection corridors on the Lots. These connection corridors will permit continued movement between the identified disparate habitat nodes (see Attachment 1).
6. The individual Eight Point Tests did not find that the impact of the proposal on any one species would be significant. This finding was conditional on the adoption of the Recommendations made later in this Report.
7. To ameliorate impact of the proposal to acceptable (non-significant) levels, adoption of the Recommendations is desirable.

**Therefore it is considered that the impact of the proposal on threatened species will not be significant and a Species Impact Statement is therefore not required.**



## **6 RECOMMENDATIONS**

See PART D

## **7 ATTACHMENTS**

See Part E attached at the end of the entire Report.



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## PART C

### SECTION 79C (EP&A ACT) REQUIREMENTS

### IMPACT ON THE NATURAL ENVIRONMENT (FLORA AND FAUNA)

Item (1)(b) of this Section requires *“the likely impacts of that development, including Environmental Impacts on both the natural and built environments and social and economic impacts in the locality”* to be considered.

This Assessment is limited to only addressing impact on the natural environment (flora, fauna and biodiversity).

References include the Jandra EIS, numerous other EISs, FISs, SISs, the results of this Study and other general references.

#### 1 ANALYSIS OF IMPACT

To consider these impacts the following issues have been analysed and addressed:

a) **Maintenance of biodiversity**

Conservation of biodiversity is critical to the concept of ecological sustainable development. The NSW Biodiversity Strategy has been prepared to ensure a collaborative approach to achieve this occurs, thus protecting native biodiversity and maintaining ecological processes and systems. To the extent possible the provisions and principles of this Strategy have been taken into consideration when undertaking this review. In addition, the initial design of the proposal has been undertaken with the objectives of adhering to the provisions and principles of this strategy eg retention of riparian areas.

The conservation of biodiversity is critical to the concept of ecological sustainable development. Following a review of the nature of the proposal and its effects on the natural environment, it has been concluded that impact on biodiversity should not be significant. This conclusion is based on the following considerations:





- i) The *Site* is adjacent a large active quarry. A significant component of the Lots has been identified as required for quarrying. Removal of a further 2.2 ha of vegetation will result in a minor increase in the area developed in the locality, or conversely, a minor decrease in the area of forest remaining.
- ii) Relatively, only a minor area of vegetation will be removed (2.2 ha).
- iii) The condition of the vegetation is not exceptional and is common in the area (pers obs). Larger trees are very few and the remainder of the stand is regrowth.
- iv) The remainder of the Lots outside projected extensions to the quarry will be retained undeveloped (98 ha). Continued use of this component of the habitat by a range of fauna can thus be expected.
- v) The vegetation community occurring does not have a high conservation value in that it is not listed as a threatened community (TSC Act). There is little diversity in the vegetation (all sclerophyll forest). However, conservation value as determined by criteria other than the provisions of the TSC Act, is addressed in c) below.
- vi) In my view, vegetation within the development envelope does not contain any significant species, nor tree of size, historical, heritage or other non ecological value.
- vii) The vegetation has some habitat values for threatened fauna – a tree with “habitat” value (larger tree with hollows). Such habitat features are likely to be declared “critical” or “threatened” habitat at some future date. Although one habitat tree occurs, relatively this is at a very low density (0.4 trees per ha for the *Site*). No threatened fauna were detected utilising these trees. Further, as the forest is regrowth, there are very few mature trees present that have short term potential as replacement habitat trees. A hiatus in the occurrence of habitat trees on the *Site* is therefore likely over time. Finally, better habitat trees occur adjacent the *Site*.
- viii) Only one threatened fauna species (probable detection) and no threatened flora species were detected on or immediately adjacent the *Site*. In addition, previous surveys and reports have detected a further three species nearby. Although a number may possibly occur, numbers and species diversity is expected to be low. Impact resulting from the proposal will not be significant on any species (Section 5A EP&A Act Assessment/SEPP 44 Assessment).



- ix) Other non threatened fauna are not prolific in species nor in numbers. Habitat needs of this fauna (likely to be mainly bush rats, birds and brushtail possums) can be met from retained vegetation outside the clearing envelope (see c) below). At this stage there are no known proposals to remove adjacent vegetation (outside longer term expansion area for quarry). Whilst some individuals may be displaced, others more tolerant to human presence and disturbance eg kookaburra, could flourish. Those displaced will either perish on the site, adapt to the changed environs, or move to adjacent habitats. Whether movement can be successful depends on a variety of factors. Fauna could be affected by increased predation, disease or have their life cycle significantly affected. It is not considered that any non threatened species (as distinct from individuals) will be unduly affected by the site disturbance as a result of the proposal.

There were no other locally or regionally rare species detected, nor are any likely to occur.

- x) The vegetation is not an important "remnant" as defined.
- xi) The vegetation forms a continuous component of a connection corridor linking otherwise disparate habitat nodes. This value will be conserved - (see e) below).
- xii) Recommended Conditions to be applied to the to the proposal either have been incorporated at the design stage or will be considered for inclusion as development consent conditions. These will ensure impacts are minimised.
- xiii) Incremental loss of habitat is minor. In this case only 2.2 ha of habitat (regrowth eucalypt forest) will be removed by the proposal. It is unlikely that removal of such a small area will have any impact in the broader locality. This decision can only be made on the assumption that widespread clearing of vegetation elsewhere in the "locality" is unlikely.

DUAP should encourage Council to consider addressing continued incremental vegetation loss by wider studies though, such as the preparation of either Vegetation Management Plans and/or a Koala Plan of Management and/or DCP for the locality/Shire. Moreso, broader state or federal guidelines/legislation adopting a wider vision on biodiversity and population spread (balancing need for development with population increase and spread) are a necessary pre-requisite to local assessment. Ad hoc assessments such as this (nor a site specific Koala Management Plan, nor a Species Impact Statement) cannot and are not the mechanism to address incremental loss of vegetation/habitat. As "clearing" is now a listed "key threatening process" under the TSC Act, a broad based approach is required.



Having made this point, a wider holistic approach is required to address incremental vegetation loss. This cannot be achieved whilst local government is the consent authority. Each and every Council should not be evaluating "conservation" value using criteria based on extent of vegetation occurrence in the "LGA" (also in some Draft VMP's parts of the LGA, and all state forest and national park, are excluded). Such analysis is considered to exaggerate "conservation value". At least a region or state basis for assessment is required.

- xiv) No fragmentation or isolation of a significant habitat or area of habitat will occur.
- xv) Assessment of impact under the provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act's provisions found that the proposal will not have a significant impact on any matter of national environmental significance, nor on any Commonwealth Land.

**b) Protection and management of critical habitats, threatened species, populations, ecological communities or their habitats.**

Addressed essentially in SEPP 44, Section 5A Assessments above, in this Assessment and in the Recommendations. Provided consideration is given to adopting the main Recommendations in this Report, impact should be at acceptable levels (certainly not significant). However, in c) below, flora and plant communities not necessarily threatened (under TSC Act) but inadequately/poorly conserved will be addressed.

**c) Protection and management of other protected species**

**Flora**

i) Protected Plants (Sch 13 NP&W Act)

None occur on the *Site*. However, Cabbage Tree Palm (*Livistona australis*) was observed in the adjacent drainage line - therefore this species will not be disturbed to any degree by the proposal.

Whilst this species is listed as Protected under Schedule 13 of the NP&W Act, listing is more so a means to prevent commercial exploitation of this and other species - rather than an indication of its conservation value.

ii) Rare or Threatened Australian Plants (ROTAP) species

No ROTAP flora species (Briggs and Leigh 1995) have been detected on site. The only species with some likelihood of occurrence is *Eucalyptus rudderi*. However, this tree is not known near this area. Impact on all potentially occurring Commonwealth listed threatened species has been assessed under the provisions of the Commonwealth's Environment Protection and Biodiversity Act's provisions (see **Part D** below).



### iii) Conservation status of Communities

The communities present are not listed in Schedules 1 or 2 of the TSC Act (threatened and vulnerable).

Firstly, the mature regrowth forest is not defined "Old Growth". It contains both young regrowth/suppressed trees and relatively mature regrowth. The forest has been modified by timber harvesting at least 40 years ago and very few larger/mature trees occur.

Adopting the titles of the vegetation association occurring and using the criteria listed in "Conservation Status of Vegetation Communities of NSW – Hager and Benson 1994", this association can be given a listed "conservation status". The difficulty is that a best fit title for the association has to be adopted.

Conservation status of this best fit association is as follows:

*Eucalyptus acmenioides* – *E. propinqua* (listed as "inadequately conserved over all it's range" ie less than 5% conserved within the Southern Zone of the North Coast Region) or

*E. microcorys* (listed as "adequately conserved over all it's range" ie 25% or greater conserved within the Southern Zone of the North Coast Region) or

The minor occurrence of Spotted Gum on the upper slopes has been ignored (not dominated by Spotted Gum).

Be that as it may, a simple deduction cannot be made that this vegetation has ecological significance on the grounds of conservation value (and therefore requires complete and total preservation).

This opinion is based on the following considerations:

- ◆ Definition of these Associations is quite arbitrary and at times a "best fit" is required. Variations to species composition (as modified by logging etc) can vary the title of the vegetation association and this can have a major impact on conservation status. Importantly, the Hager and Benson Classification does not have titles (and therefore a conservation status) for some of the commonly occurring associations. Hence care needs to be taken in totally accepting conservation status for arbitrarily defined vegetation associations.

From the observations made overstorey should be categorised as a Tallowood/White Mahogany Community.



Note however that the original dominant vegetation compositions have been considerably altered by past selective harvesting. Inherent variations can also be expected. Therefore, definitive (absolute) classification as a specific Community must be treated with caution. It is quite probable that selective harvesting of say Tallowwood has created the current species mix and originally the stand may have been more dominated by Tallowwood. Currently, this is not the case. The Hager and Benson conservation status varies for dry hardwood communities with various degrees of dominance of the occurring species.

- ◆ Use of conservation status for either South, Central, North or for the full zone can have variable results. It would seem logical to use data for the full North Eastern NSW Zone – not for some reduced (more localised) area. If so, conservation status listed above (South) may vary from that applicable to the full Zone.
- ◆ Only 2.2 ha of relatively recently undisturbed vegetation will be removed by the proposal. This is a small area in terms of the extent of overall local occurrence as well as occurrence in the Zone.
- ◆ Vegetation in this general area is not listed as a “known area of environmental sensitivity within GTCC area (1999/2000 State of the Environment Report).
- ◆ The classification of Conservation Status above depends on the largely outdated Hager and Benson’s classification in 1994. Since 1995 one million ha of additional National Parks (Reserves) have been dedicated. Further, on 12.11.98 following the Comprehensive Regional Assessment (CRA) of north coast forests, The North East Forest Agreement resulted in 380 000 ha of additional National Parks (Reserves) being dedicated (part of the 1 mil ha). This dedication was mainly of State Forest with a prime objective of increasing representation of poorly conserved communities within Reserves eg this community (known as CAR – Comprehensive and Adequate Reserve System). In March 2000, a further 400 000 ha of State Forest was set aside as reserves to increase the protection levels previously achieved.

Review of data available (ref Lower North East Region Statistics – RFA Lower North East prepared by RACD) to compare current areas conserved with Hager and Bensons data is very difficult due to incompatibility of Association titles. Adopting best fit titles indicates:



In relation to conservation of Grey Gum-Ironbark Associations:

ASSOCIATION	PRE RFA CONSERVED	POST RFA CONSERVED
No 36 Tallowwood –Grey Gum	3213 ha	41225 ha
No 55 Foothills Grey Gum –Spotted Gum	75 ha	656 ha
No 63 Grey Gum – Stringybark	4345 ha	6098 ha
No 71 Ironbark	24661 ha	34977 ha

Of the 400 000 ha set aside as reserves from previous State Forest areas in March 2000, within the adjacent Kiwarra SF there were 3650 ha of dry hardwood associations (most Grey Gum-Ironbark/White Mahogany) added to National Park.

These figures are indicative of the increase (since Hager and Benson's analysis) in areas conserved of similar Communities. In addition to areas dedicated to National Park, large areas of informal reserves have been set aside on State Forest and forest management prescriptions adopted to assist in providing further conservation of "poorly conserved communities".

Therefore, Hager and Benson's classification is now outdated and until an update occurs it is a reasonable assumption that the new additions to National Park have resulted in either adequate conservation of these communities, or have made a significant contribution to achieving adequate conservation.

- ◆ These communities are known to be widespread on State Forest and on freehold lands (pers observations). Whilst not necessarily "conserved" – it must be recognised that occurrence is widespread (unlike say rainforest) and therefore in reality, it is unlikely that the Communities are really "threatened." Given responsible forest management on State Forest and the governmental controls that exist over clearing on freehold land, it is a reasonable assumption that large areas of "poorly conserved" vegetation that occur on these tenures will not be cleared. Hence the pool of "conserved" areas is in reality much larger than Hager and Benson's claim.



- ♦ The definitive and most up to date analysis and database of the conservation status of vegetation communities can be found in a document titled "*Forest Ecosystem Classifications for UNE and LNE CRA Regions*" – 1999). The vegetation on the Lot best fits Ecosystem No 36 – *Dry Grassy Tallowwood-Grey Gum*. This ecosystem is listed as having 15.6 % representation in the CAR Reserve System (target being 15%). Hence this Ecosystem has been conserved at the target level. Importantly, this Ecosystem is not listed as vulnerable, rare or endangered (JANIS Criteria). Equally it is not listed as a priority for voluntary protection of forest ecosystems on private land in NSW North East Region. Alternative titles for the vegetation could be *No 71 – Ironbark* or *No 146 Tallowwood*. Respectively, these Ecosystems have 16.7% and 39.5% representation in Reserves. In my view though, neither alternative titles are appropriate.

Therefore caution is required in total acceptance of an Ecosystem Title – these Titles are then used as the basis for determining the conservation value of the vegetation present.

In conclusion, given that the proposed area of vegetation removal is small and is not of significant conservation value – retention is not required based solely on conservation status.

## **Fauna**

As determined by survey, occurrence of fauna utilising the Site is minimal. Although some protected native species occur (and others could occur) these species will not be impacted upon significantly by the proposal (see SEPP 44 and Section 5A Assessments for threatened fauna - which would equally apply to other (Protected) species). This conclusion is based on the main Recommendations being adopted.

Whilst some displacement of individuals must occur, some will relocate to retained or adjacent areas of similar or better habitat.

Habitat does not contain any significant special values and is common in the area. In this case only up to 2.2 ha of common habitat and commonly occurring vegetation will be removed. Significant areas of full clearing could well have an incremental impact on habitat availability – but not from a small area of partial clearing such as proposed.

### **d) Protection and management of adjacent wilderness areas and national parks**

Not relevant as the site is neither adjacent identified wilderness nor National Park.



## **e) Wildlife corridors and remnant vegetation**

### **Wildlife Corridors**

This issue was discussed above in the SEPP 44 and Section 5A Assessment.

The general area near the *Site* is variously developed. Nearby and mainly to the west, major vegetation removal has occurred for either the quarry or for associated infrastructure. The extent of development is shown on Attachment 1. This development has both reduced habitat values of the Lots – by habitat removal, disturbances and fragmentation of habitat. The *Site* is now on the western fringe of a relatively extensive area of forest vegetation that has not had significant recent disturbance (other than indirect disturbance eg noise and dust). As it is adjacent quarry development, removal of 2.2 ha of vegetation cannot have much additional impact on connective corridors beyond that which has already occurred.

### **Remnant Vegetation**

No old growth remnant occurs (see above). The vegetation within the development envelope is not a remnant due to the proximity to other similar vegetation.

## **f) The relationship of vegetation to soil erosion/stability and the water cycle**

Provided adequate revegetation and ground cover practices eg, sediment barriers are undertaken, the proposal will have negligible impact on soil erosion and stability.

## **g) Weeds, feral animal activity, vermin and disease**

Any increase in weeds, feral animal or vermin could only be marginal.

## **h) Disturbance to native fauna and habitats**

Addressed in b) and c) above.

## **i) The amount and location of vegetation disturbance and clearance**

A total of 2.2 ha of vegetation will be removed by the proposal. The location and relevance of this vegetation has been addressed previously.

## **j) New vegetation – species selection, placement and purpose**

Rehabilitation in the long term will occur both artificially and naturally. Provision will be made in the design of overburden placement to ensure an appropriate substrate results for the establishment of endemic shrub and tree species.





## **2 CONCLUSION AND RECOMMENDATIONS**

Given these considerations the proposal should have minimal impact on flora, fauna and biodiversity. This conclusion is based on the Recommendations provided being adopted and implemented. Recommendations are found in PART E.



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## **PART D**

# **ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT ASSESSMENT**

### **1 REQUIREMENTS OF THE ACT**

The Environmental Protection and Biodiversity Conservation Act (EPBC Act) came into force on 16 July 2000. This Commonwealth Act provides for actions that are likely to have a significant impact on matters of national environmental significance to have a rigorous referral, assessment, and approval process. Actions include a project, development undertaking, activity or series of activities.

The Act currently identifies six matters of national environmental significance. These are:

- World Heritage properties;
- Ramsar wetlands of international significance;
- listed threatened species and ecological communities;
- listed migratory species;
- Commonwealth marine area; and
- nuclear actions (including uranium mining).

In addition, the Act's assessment and approval provisions also apply to actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land) and actions taken by the Commonwealth that will have a significant impact on the environment anywhere in the world.

Any activity (referred to as a "controlled action" in this Act) determined to significantly impact on any of the above listed matters of national environmental significance, must have the Commonwealth Minister of Environment's approval prior to undertaking such an activity.

Environment Australia's database dated 28 March 2001 was accessed to obtain the appropriate listings within each matter of national environmental significance.



## **2 ASSESSMENT OF IMPACT**

Environment Australia has published Administrative Guidelines on the determination of whether an action has, will have, or is likely to have a significant impact on a matter of national environmental significance. These guidelines have been adopted to assess determination of significance and impact. The guidelines set out criteria which are intended to assist in determining whether the impact of an action on any matter of national environmental significance is likely to be significant. Criteria are provided for each matter of national environmental significance.

In order to decide whether an action is likely to have a significant impact, it is necessary to take into account the nature and magnitude of potential impacts.

In determining the nature and magnitude of an action's impact, it is important to consider matters such as:

- all on-site and off-site impacts,
- all direct and indirect impacts,
- the frequency and duration of the action,
- the total impact which can be attributed to that action over the entire geographic area affected, and over time,
- the sensitivity of the receiving environment, and
- the degree of confidence with which the impacts of the action are known and understood.

### **2.1 World Heritage Properties**

#### **2.1.1 Occurrence**

None of the four World Heritage Areas listed for NSW occur on the *Site* or adjoin the *Site*.

#### **2.1.2 Impact Assessment**

Not required.

### **2.2 Ramsar Wetlands of International Significance**

#### **2.2.1 Occurrence**

The list contains 23 NSW North Coast nationally important wetlands. Of these nine are declared Ramsar wetlands. None of these occur on or adjacent the *Site*.

#### **2.2.2 Impact Assessment**

Not required.



## 2.3 Listed Threatened Species and Ecological Communities

### 2.3.1 Occurrence

#### 2.3.1.1 Species

Analysis of listed species was undertaken in the following categories:

- extinct in the wild - none of the 117 listed species in Australia (54 fauna and 63 flora) occur or may occur,
- critically endangered or endangered - of the 510 listed species in Australia, 7 species (4 fauna and 3 flora) occur or may occur within GTCC LGA (Marine species excluded),
- vulnerable - of the 821 listed species in Australia, 14 species (5 fauna and 9 flora) occur or may occur within GTCC LGA (Marine species excluded).

These species are as follows (list includes all species – except marine species, that may occur within the boundaries of Greater Taree City Council):

#### Fauna

Common Name	Scientific Name	Status
<sup>TS</sup> Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	Vulnerable
<sup>TS</sup> Giant Barred Frog	<i>Mixophyes iteratus</i>	Endangered
<sup>TS</sup> Green & Golden Bell Frog	<i>Litoria aurea</i>	Vulnerable
<sup>TS</sup> Hastings River Mouse	<i>Pseudomys oralis</i>	Endangered
<sup>TS</sup> Long-nosed Potoroo	<i>Potorous tridactylus</i>	Vulnerable
<sup>TS</sup> Regent Honeyeater	<i>Xanthomyza phrygia</i>	Endangered
<sup>TS</sup> Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable
<sup>TS</sup> Stuttering Frog	<i>Mixophyes balbus</i>	Vulnerable
<sup>TS</sup> Swift Parrot	<i>Lathamus discolor</i>	Endangered



## Flora

Common Name	Scientific Name	Status
No common name	<sup>TS</sup> <i>Allocasuarina defungens</i>	Endangered
No common name	<sup>TS</sup> <i>Allocasuarina simulans</i>	Vulnerable
No common name	<sup>TS</sup> <i>Asperula asthenes</i>	Vulnerable
Leafless Tongue-orchid	<sup>TS</sup> <i>Cryptostylis hunteriana</i>	Vulnerable
White-flowered Wax Plant	<sup>TS</sup> <i>Cynanchum elegans</i>	Endangered
Slaty Red Gum	<sup>TS</sup> <i>Eucalyptus glaucina</i>	Vulnerable
-	<sup>TS</sup> <i>Grevillea guthrieana</i>	Endangered
	<sup>TS</sup> <i>Hakea</i> sp. (Manning River SF – Broken Bago SF) now <i>Hakea archaeoides</i>	Vulnerable
-	<sup>TS</sup> <i>Haloragis exalata</i> subsp. <i>velutina</i>	Vulnerable
Waxy Sarcochilus	<sup>TS</sup> <i>Sarcochilus hartmannii</i>	Vulnerable
Magenta Lilly Pilly	<sup>TS</sup> <i>Syzygium paniculatum</i>	Vulnerable
Toadflax	<sup>TS</sup> <i>Thesium australe</i>	Vulnerable

<sup>TS</sup> Threatened Species (Threatened Species Conservation Act 1995)

### 2.3.1.2 Ecological Communities

Analysis of listed endangered ecological communities was undertaken. None of the 6 listed communities for NSW occur on or adjacent the *Site*.

Note that other categories of communities eg critically endangered, are not yet listed.

### 2.3.2 Impact Assessment

#### 2.3.2.1 Species

The administrative guidelines on significance provide for assessment of the following criteria to determine significance. These are:

##### a) Extinct in the wild

List of criteria and assessment of impact not required.



## **b) Critically Endangered and Endangered**

### ***Criteria***

An action has, will have, or is likely to have a significant impact on a critically endangered or endangered species if it does, will, or is likely to:

- lead to a long-term decrease in the size of a population, or
- reduce the area of occupancy of the species, or
- fragment an existing population into two or more populations, or
- adversely affect habitat critical to the survival of a species, or
- disrupt the breeding cycle of a population, or
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat, or
- interfere with the recovery of the species.

### ***Assessment***

The above criteria were assessed in relation to the species listed above. It was determined that the proposal would not have a significant impact on any of these species. Essentially this determination was based on the fact that these species were not detected on site and are unlikely to occur and/or critical habitat does not occur and/or only a minor area of potential habitat will be affected and/or ameliorative measures are proposed to minimise impact. In addition, all species listed as threatened under the NSW Threatened Species Act, have been considered under impact assessments previously undertaken. Whilst the list adopted may not be totally inclusive of all possible species that may occur, any additional species would be unlikely to be significantly impacted upon as a result of the proposal.

## **c) Vulnerable**

### ***Criteria***

An action has, will have, or is likely to have a significant impact on a vulnerable species if it does, will, or is likely to:

- lead to a long-term decrease in the size of an important population of a species (one that is necessary for a species' long-term survival and recovery), or
- reduce the area of occupancy of an important population, or



- fragment an existing important population into two or more populations, or
- adversely affect habitat critical to the survival of a species, or
- disrupt the breeding cycle of an important population, or
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat, or
- interferes substantially with the recovery of the species.

### **Assessment**

The above criteria were assessed in relation to the species listed above. It was determined that the proposal would not have a significant impact on any of these species. Essentially this determination was based on the fact that these species were not detected on site and are unlikely to occur and/or critical habitat does not occur and/or only a minor area of potential habitat will be affected and/or ameliorative measures are proposed to minimise impact. In addition, all species listed as threatened under the NSW Threatened Species Act, have been considered under impact assessments previously undertaken.

Whilst the list adopted may not be totally inclusive of all possible species that may occur, any additional species would be unlikely to be significantly impacted upon as a result of the proposal.

#### **2.3.2.2 Ecological Communities**

No assessment of impact required (no identified Community occurs).

## **2.4 Listed Migratory Species**

### **2.4.1 Occurrence**

Of the 343 listed species, 33 are known to occur (or may occur) in the general locality (GTCC area). Marine species were excluded. Of these species, none were detected on the *Site* nor on the Lots during previous and current surveys.



These species are:

COMMON NAME	SCIENTIFIC NAME
Bar-tailed Godwit	<i>Limosa lapponica</i>
Black-faced Monarch	<i>Monarcha melanopsis</i>
<sup>TS</sup> Black-tailed Godwit	<i>Limosa limosa</i>
<sup>TS</sup> Broad-billed Sandpiper	<i>Limicola falcinellus</i>
Cattle Egret	<i>Ardea ibis</i>
Common Sandpiper	<i>Actitis hypoleucos</i>
Crested Tern	<i>Sterna bergii</i>
Eastern Curlew	<i>Numenius madagascariensis</i>
Eastern Reef Egret	<i>Ardea sacra</i>
Fork-tailed Swift	<i>Apus pacificus</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Great Egret	<i>Egretta alba</i>
<sup>TS</sup> Great Knot	<i>Calidris tenuirostris</i>
<sup>TS</sup> Greater Sand Plover	<i>Charadrius leschenaultii</i>
Greenshank	<i>Tringa nebularia</i>
Japanese Snipe	<i>Gallinago hardwickii</i>
<sup>TS</sup> Lesser Sand Plover	<i>Charadrius mongolus</i>
<sup>TS</sup> Little Tern	<i>Sterna albifrons</i>
<sup>TS</sup> Masked Booby	<i>Sula dactylatra</i>
<sup>TS</sup> Painted Snipe	<i>Rostratula benghalensis</i>
Red Knot	<i>Calidris canutus</i>
Regent Honeyeater	<i>Xanthomyza phrygia</i>
Rufous Fantail	<i>Rhipidura rufifrons</i>
<sup>TS</sup> Sanderling	<i>Calidris alba</i>
Satin Flycatcher	<i>Myiagra cyanoleuca</i>
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>
Spectacled Monarch	<i>Monarcha trivirgatus</i>
<sup>TS</sup> Terek Sandpiper	<i>Xenus cinereus</i>
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>
Whimbrel	<i>Numenius phaeopus</i>
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>
White-throated Needletail	<i>Hirundapus caudacutus</i>
Wood Sandpiper	<i>Tringa glareola</i>

<sup>TS</sup> Threatened Species (Threatened Species Conservation Act 1995)





## 2.4.2 Impact Assessment

### **Criteria**

An action has, will have, or is likely to have a significant impact on a vulnerable species if it does, will, or is likely to:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species.

### **Assessment**

The above criteria were assessed in relation to the species listed above. It was determined that the proposal would not have a significant impact on any of these species. Essentially this determination was based on the fact that these species were not detected on site and are unlikely to occur, and important habitat does not occur. Further, impact on potential habitat will be minimal. In addition, all species listed as threatened under the NSW Threatened Species Act, have been considered under impact assessments previously undertaken. Whilst the list adopted may not be totally inclusive of all possible species that may occur, any additional species would be unlikely to be significantly impacted upon as a result of the proposal.

## 2.5 Commonwealth Marine Area

### 2.5.1 Occurrence

The *Site* is not a Commonwealth Marine Area nor does it adjoin a listed Area.

### 2.5.2 Impact Assessment

Not required.

## 2.6 Nuclear Actions

### 2.6.1 Occurrence

The proposal does not involve nuclear actions of any description.



### **2.6.2 Impact Assessment**

Not required.

## **2.7 Impact on Commonwealth Land**

### **2.7.1 Occurrence**

The *Site* is not Commonwealth land nor is it adjacent any Commonwealth Land.

### **2.7.2 Impact Assessment**

Not required.

## **3 CONCLUSION**

It has been determined that the proposal will not have a significant impact on any matter of national environmental significance nor on any Commonwealth Land.

Therefore the Commonwealth's Minister of Environment approval to undertake the activity is not required.



## PART E

# RECOMMENDATIONS

Following the conclusions made after the Assessments undertaken – it can be concluded overall that the proposal will not have significant impacts on the biota of the *Site*. Neither therefore, are impacts on bio-diversity significant.

The following Recommendations are made to assist in ensuring (to the extent feasible and practicable) that the development is undertaken in an environmentally sensitive manner in accordance with sound ecological principles. The consideration of the following Conditions at the design stage (and incorporation of appropriate conditions attached to consents, approvals and determinations) will ensure that potential adverse impacts do not occur on threatened species, populations - and their habitats, ecological communities and biodiversity in general.

These Recommendations adopt a precautionary approach, and where relevant, require consideration and inclusion in any subsequent development consent. They are:

1. As stated in this Report, following close analysis and consideration, the proposal should not have a significant impact on threatened species (nor their habitats).

The following recommended conditions should provide the required minimisation of impact. Note that some of these have been incorporated at the design stage of the proposal. Regardless, they have still been included should some revision of the proposal occur - subsequent to this assessment. This will ensure that any revised proposal still adheres to the basic ecological considerations and recommendations as determined by these Assessments.

**Note though, importantly, only one (probable) threatened species was detected near the *Site*, and the Eight Point Tests did not find the impact of the proposal significant on species that may occur.**

2. As a condition to undertaking clearing, all trees to be cleared should be closely inspected by an appropriately qualified person immediately prior to clearing to ensure that a koala is not resident. If a koala should be found, clearing should be delayed until the koala leaves the area.



3. Removal of one habitat tree is to be undertaken in a manner that minimises impact on potentially occurring fauna. Methods could include: habitat tree inspection and fauna survey before clearing – particularly to determine possible use by owls; nudging tree with tractor/saw to encourage wildlife to leave the tree; removal of trees outside nesting/breeding season for most likely fauna resident; removal of the tree at night – possibly using explosives/chainsaw; clearing non habitat adjacent trees first for some distance and leaving habitat trees to be vacated by fauna the following night; consideration of inspection of tree hollows for resident fauna and subsequent immediate closing of hollows and then early removal. The previously prepared EIS for Quarry expansion and subsequent Quarry Management Plan has provisions of this nature to be followed prior to clearing commencing.
4. At the time of clearing (particularly the identified habitat tree) it would be desirable if a representative from WIRES or FAWNA could be contacted to enable collection of any injured fauna for rehabilitation and subsequent release nearby.
5. To the extent reasonably practicable, the retained vegetation adjoining the development envelope should not be damaged by any clearing or burning undertaken as a result of the development.
6. Appropriate rehabilitation of the overburden placement area should be undertaken in accordance with the provisions of the Quarry Management Plan applicable to other Jandra Quarry sites requiring rehabilitation.
7. The ephemeral drainage line and vegetation adjacent the *Site* should be protected to the extent possible by ensuring cleared vegetation is not stacked in this area. Additionally, installation of sediment fences should occur adjacent this area – and these should be maintained until the overburden placement area is revegetated.

Hence DUAP is not prevented by the provisions of SEPP No 44, Sections 5A or 79C of the EP&A Act nor from the requirements of the Environment Protection and Biodiversity Conservation Act from granting consent to the development application. Nor is it considered a Section 91 nor a Section 120 Licence is required from the NP&WS (provided consent is issued).



## **PART F ATTACHMENTS**

Attachment 1 – Location Map and Air Photo - vegetation disposition and connection corridors

Attachment 2 – Development Proposal Plan.

Attachment 3 – Vegetation Map

Attachment 4 – Wildlife Map (Call Playback Location, Fauna Detection Locations, Koala vegetation survey Plots, Habitat tree location)

Attachment 5 – Koala Vegetation Survey Plot Data

Attachment 6 – Section 5A (Eight Point Test) Assessments

Attachment 7 – References and Bibliography

Attachment 8 – CV of B J Salter



