Department of
Infrastructure, Planning and Natural Resources

ASSESSMENT REPORT

PROPOSED EXTRACTION OF SAND AND MARINE PEBBLE, GUMMA ROAD, GUMMA

File No: G91/00234

1. SUMMARY

Eagle Sands Pty Limited (the Applicant) is proposing to extract sand and marine pebble from a relict sand ridge located approximately 8 kilometres south east of Macksville in the Nambucca local government area. The proposed extraction area is part of an agricultural property owned by Scotts Head Grazing Trust. Previous development south east of the proposal was for the extraction of similar material under local approval granted on 15 September 1993. Approval is currently sought for extraction from the top of the relict sand ridge to the 4 metre Australian Height Datum (AHD) contour over an area of 8.7 hectares. Production is planned to be approximately 25,000 cubic metres per annum (m^3pa) (average 100 m^3 per day over 250 days per annum) over a maximum period of 10 years.

The proposal has a capital cost of $100,000 and would provide employment for one full-time and two part-time employees.

Under the NSW *Environmental Planning and Assessment (EP&A) Act 1979*, the proposal is State significant, integrated and designated development and the Minister is the consent authority.

The Applicant lodged a Development Application (DA) and Environmental Impact Statement (EIS) for the proposal with the Department of Infrastructure, Planning and Natural Resources on 26 November 2002. The Department subsequently notified and exhibited the DA and EIS in accordance with the relevant requirements of the *Environmental Planning and Assessment (EP&A) Regulation 2000.*

During the exhibition period, the Department received eight-nine (89) submissions on the proposal: seven (7) from Government agencies, two (2) from special interest groups and eighty (80) from members of the public. These submissions raised concerns regarding the following issues:

- Flora and fauna;
- SEPP 14 Wetlands;
- Soil and water, including groundwater;
- Road traffic issues;
- Effects on property values;
- Noise; and
- Amenity and visual impact.

2. CURRENT SITUATION

The Gumma extraction proposal is located approximately one (1) kilometre from the ocean shore at a site 8 kilometres south east of Macksville and two (2) kilometres north west of Scotts Head (see Figure 1). Portion of State Environmental Planning Policy (SEPP) 14 wetland No. 389 lies within the DA area, SEPP 14 wetland No. 392 is immediately adjacent to the eastern boundary of the DA area, and the Warrell Creek Natural Area lies adjacent to the proposal. Figure 2 shows the regional location of the proposed extraction area and the road network of the district.

The proposed extraction area is part of an agricultural property owned by Scotts Head Grazing Trust. It consists of a relic sand dune to a height of approximately 9 metres AHD and covers 8.7 hectares of the 220 hectare property. The area of proposed extraction is well vegetated with Banskia Closed Forest on the western portion of the dune and open sclerophyll forest on the higher and eastern portions of the dune. A transitional vegetation community exists between the two vegetation communities. The site has been degraded to some extent by past activities, such as the formation of a vehicle track along the crest of the dune, past extraction of sand, and cattle grazing. Overall the vegetation of the area is in good condition and provides habitat for a range of native animals.

The proposed extraction area is in the Warrell Creek catchment, which is part of the larger Nambucca River catchment. Warrell Creek joins with the Nambucca River a short distance from its mouth to the sea at Nambucca Heads. Topographically, the relict dune to be extracted represents an area of higher land on the combined flood plain of the Nambucca River and Warrell Creek.

2.1 Prior Operations

On 15 September 1993, Scotts Head Grazing Pty Ltd was granted development consent (DA 3054) by Nambucca Shire Council for the extraction of 100,000 m^3 of white sand and marine pebble from a 5.2 hectare extraction area on the floodplain of Warrell Creek. Material was extracted by the use of a dredge that operated from 1993 to 1997. The former extraction area is adjacent to the relict dune that is subject to the current proposal. Both the former operation, and the current proposal, share the same property description of Lots 141 and 157 DP 755539, Parish of Congarinni.

The previous operation was conducted at a similar extraction rate to the current proposal, which is for 25,000 m^3pa of extracted material. The proposed hours of operation are similar to that previously approved of 7 am to 5 pm, Monday to Friday, with operations also permitted between 8am and 12 Noon on Saturday. The proposed truck haulage rate for the current proposal will be similar to that of the former operation, being 10 truck movements per day (five laden).

While some of the original dredging/screening plant remains on the sand dune adjacent to the previous extraction site, the general area has been revegetated. A major change to the landscape has been the residual dredge pond that has been created on the Warrell Creek floodplain, in accord with the rehabilitation plans approved in the development consent. The rehabilitated, and surrounding, areas have become infested with weeds, particularly Bitou Bush.

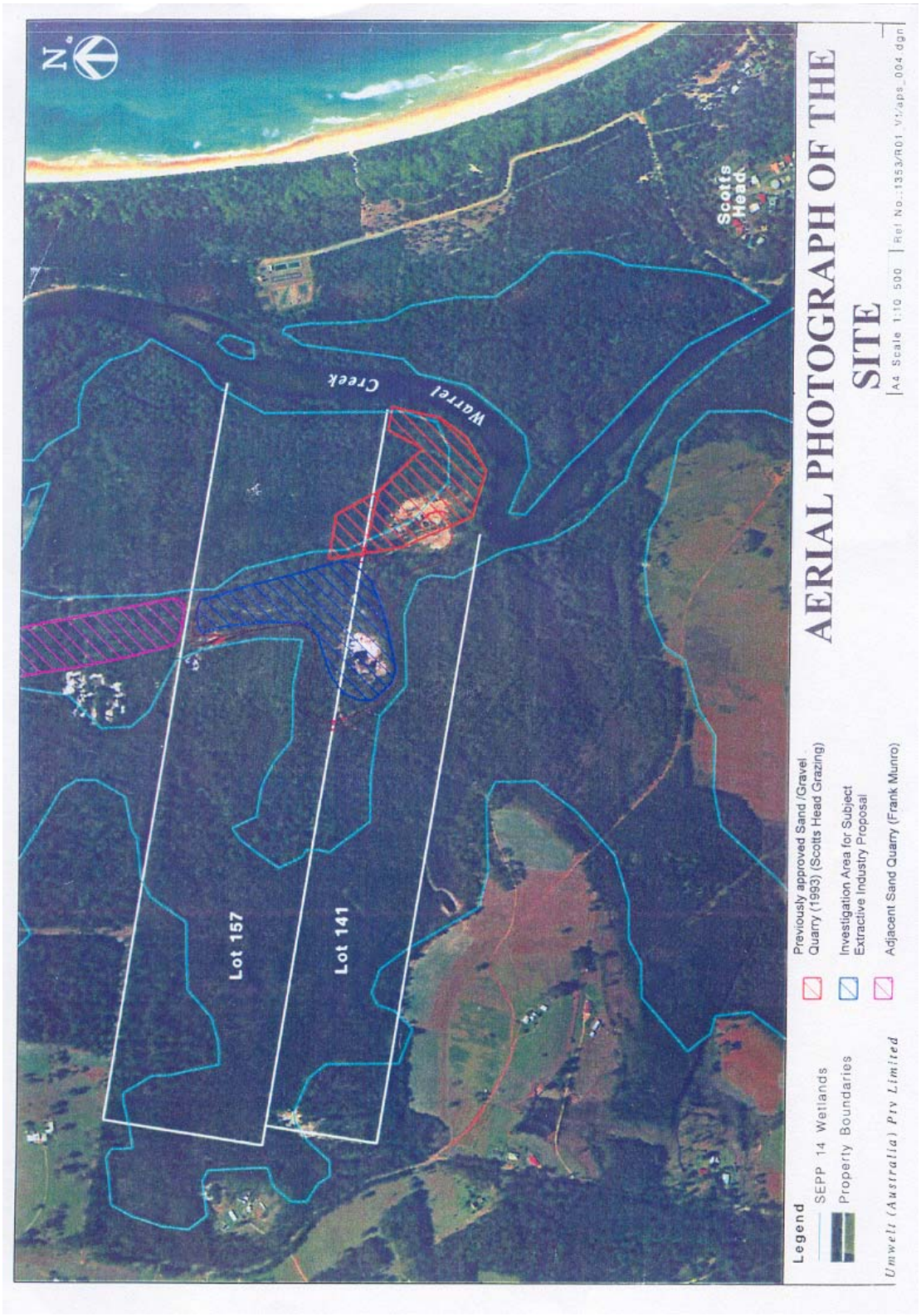

Figure 1:Aerial Photograph of the Site

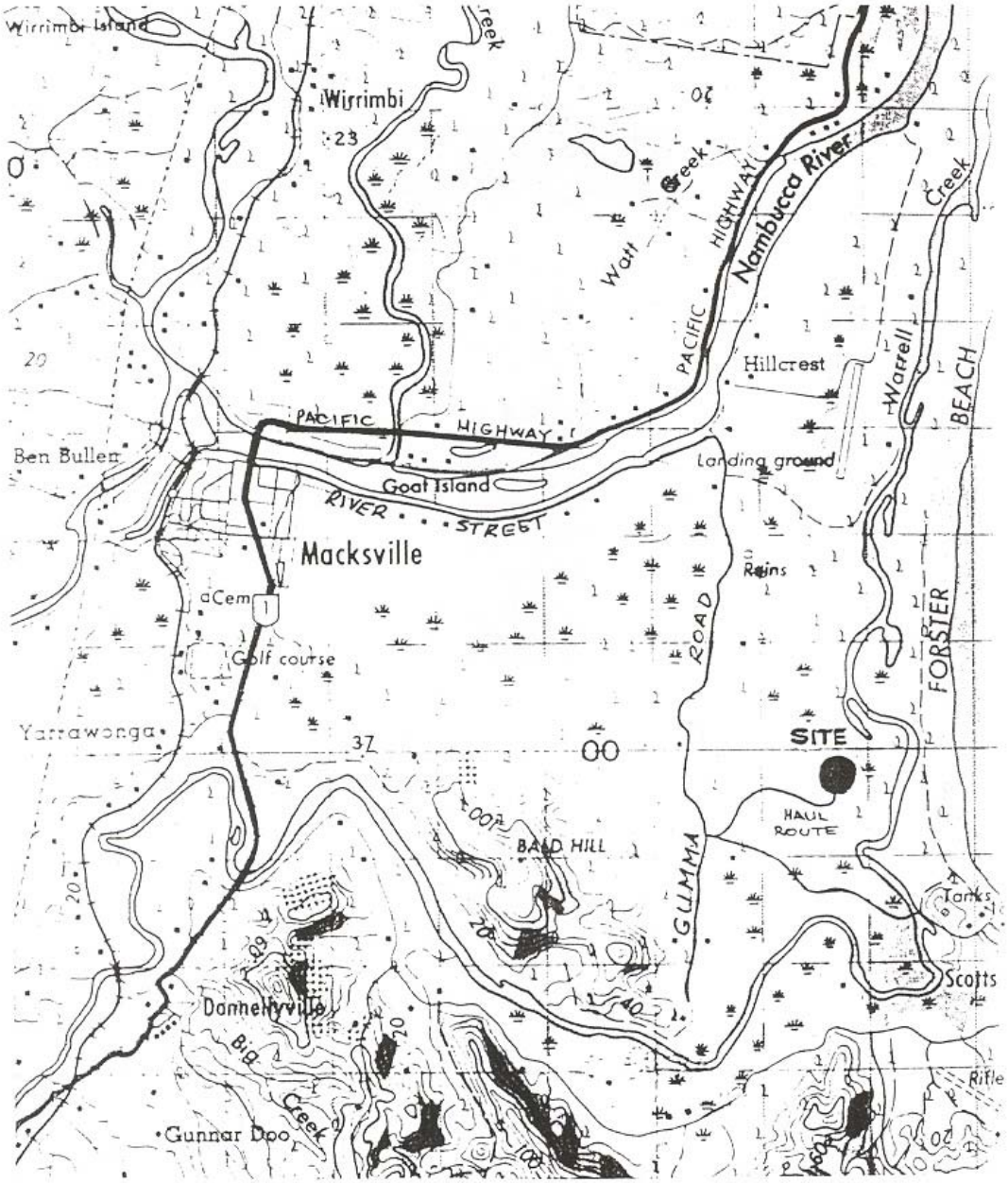

Figure 2: General Locality and Road Network

3. PROPOSED DEVELOPMENT

The Applicant is proposing to extract sand and marine pebble from an elevated dune area that bisects Lot 157 in a north/south direction. The sand dune area is located approximately 600 metres from Warrell Creek and one kilometre from the ocean foreshore (see Figure 1).

3.1 Available Resource

The white sand/pebble resource is found only in a very restricted number of locations of the Mid North Coast /North Coast Regions. The availability of a relatively long-term reserve of white sand and pebble is considered important to local and regional industries. Based on borehole data there are approximately 265,000 tonnes of white/light grey sand available for extraction. The area of proposed extraction is 8.7 hectares.

3.2 Method of Extraction

The extraction method is designed to maintain a minimum buffer of one metre between the known water table, or 300 mm above the "coffee rock", whichever is the highest, and the lower limit of extraction. "Coffee rock" is a naturally occurring indurated sand that has been stained dark brown by the accumulation of humic matter and/or silt. The one metre buffer from the known groundwater table is a response to such a request from the Department of Land and Water Conservation (DLWC) (now the Department of Infrastructure, Planning and Natural Resources (DIPNR)) to protect groundwater from direct impacts. The 300 mm buffer to "coffee rock" is to guard against contamination of white sand by coloured sand as well as protecting groundwater regimes from adverse impacts caused by the alteration of flow paths of percolating water.

The method of excavation is designed to utilise a limited amount of equipment. It is proposed to utilise an excavator and front-end loader to excavate the material and move it by truck to an on-site dry screening process to remove pebbles and grass roots. The extraction operation consists of the following main phases:

1. Clearing of vegetation from a maximum area of one hectare;
2. Removal of the relatively thin layer of silty sandy soils of an average depth of 200 to 300 mm. This material will be utilise in the rehabilitation process;
3. Removal of the layer of white sand resource that lies directly below the soil layer. The depth of extraction is between two and four metres. Directly below the white sand layer lies either coffee rock or the water table;
4. Removal of the white sand layer will cease either 300 mm above the coffee rock layer or one metre above the water table; whichever is the higher. No extraction will occur below two metres AHD;
5. Sand will be extracted by front-end loader, placed in a truck and moved to the on-site dry screening plant where organic material and pebbles will be separated from the sand;
6. Sand will be transported from the site to local and regional markets by trucks;
7. Staged rehabilitation of the site will be undertaken utilising the retained topsoils and a substantial layer of white sand under the topsoil to provide similar subsoil conditions to those currently existing on the site; and
8. Regular review and monitoring of all aspects of the operation.

It is proposed to limit extractive operations to within the four metre AHD topographic contour. The proposal includes an internal 1:1 batter for the area of extraction. It is proposed that there be a 10 metre buffer to the physical boundary of adjacent

wetlands (SEPP14 wetland No. 392). The proposal, as presented, involves the intrusion of the extraction area into SEPP 14 wetland No. 389.

3.3 Infrastructure

Except for the primary dry screen operation, the proposal does not involve any on-site processing or treatment.

The primary dry screening operation consists of a dump hopper located over a primary screen. The screening process removes marine pebble, sticks, roots, leaves and other debris from the resource. A small conveyor will move the screened sand from under the dump hopper to a screened sand stockpile. The screen and conveyor will be powered by a diesel-fuelled power plant.

An excavator and front-end loader will work on the site. An average of five truck and trailer movements (of 20 m^3 capacity) per day will remove screened sand from the site.

It is proposed to store up to 1,000 litres of diesel on site in an above ground tank, located within a sealed, bunded area. There will be no lubricants or oils stored on the site.

3.4 Extraction Rate

The proposed extraction rate is 25,000 m^3pa of sand and pebble.

3.3.1 Waste Management

The operation will generate minimal quantities of waste. An industrial type waste bin will be provided on site. All waste generated by the screening process will be utilised in the rehabilitation of the site. It is proposed to use toilet facilities at a farmhouse five kilometres distant from the extraction site, or a portable toilet.

3.6 Water Management

The extraction area consists of a highly permeable sand dune. The site will not directly drain to surrounding waterways by way of defined channel. To protect the site from major flood events it is proposed to construct a controlled fill structure to accommodate the 1:100 year flood event. The structure would allow the excavated area to fill with floodwater in a manner that minimized the erosion of the sands from the excavation site.

The area of extraction is designed to maintain a buffer of one metre between the maximum depth of extraction and the maximum height of the water table.

3.7 Rehabilitation

Extraction areas will be progressively rehabilitated as mining progresses northwards along the dune. Active extraction areas will be limited to one hectare blocks to allow for progressive revegetation. Soil will be conserved for use in the rehabilitation process and sufficient white sand will be retained to provide a similar substrate for the topsoil to that which currently exists on site.

3.9 Workforce

The project will employ one full-time employee and two part-time employees.

3.10 Operating Hours

The project will operate between 7 am and 5 pm Monday to Friday, with the exception of public holidays. Operations are planned from 7 am to 12 Noon on Saturdays.

3.11 Amendment to the Development Application

On 30 March 2004, the Applicant amended the development as outlined in the DA. The amendment took into account the submissions made by the DEC and has the effect of reducing the potential impacts on vegetation and fauna of the site and provides for buffer lands between the proposed extraction areas and the adjacent wetlands.

Specifically the modification incorporates the following buffer zones:

- Not less than 50 metres from the boundary of SEPP14 Wetland No. 382;
- At the statutory boundary of SEPP 14 Wetland No. 389 in lot 157 DP 755539, or the 5 metre contour AHD; and
- Not less than 50 metres from the boundary of SEPP 14 Wetland No.389 in Lot 141 DP 755539, or the 5 metre contour AHD.

The proposal was amended to include;

- The re-profiling and revegetation of existing cleared areas adjoining the proposed development at the commencement of the project;
- The implementation of a weed management plan;
- The implementation of a feral species management plan;
- Trials for the transplantation of mature Banksias;
- Re-erection of felled hollow bearing trees and the implementation of a nest box program to provide additional nesting/denning and roosting resources for native animals; and
- Progressive revegetation of disturbed areas.

The Department supports the amendments made to the proposal by the Applicant, with the provision that any re-profiling of existing cleared areas does not constitute the removal of material from the site.

4. STATUTORY CONTEXT

The proposal is State significant, integrated and designated development.

4.1 Environmental Planning & Assessment Act 1979

4.1.1 State Significant Development

The proposal is classified as State significant development, under State Environmental Planning Policy 71 – Coastal Protection (SEPP 71). Pursuant to section 76A (7) of the Act, development specified in Schedule 2 of SEPP 71 is declared State significant development. As Schedule 2 includes extractive industry, the proposal is considered to be State significant and, pursuant to section 76A (9) of the Act, the Minister is the consent authority.

4.1.2 Integrated Development

The proposal is classified as integrated development, under section 91 of the Act because it requires additional approvals from:

- Nambucca Shire Council under the *Roads Act 1993.*

4.1.3 Designated Development

The proposal is classified as designated development, under Section 77A of the *EP&A Act*, because it meets the criteria for an extractive industry in Schedule 3 of the *EP&A Regulation 2000*.

4.1.4 Permissibility

The proposal is permissible with consent under the Nambucca Local Environmental Plan 1995.

4.1.5 Environmental Planning Instruments

The following planning instruments and policies are relevant to the proposal:

- *Nambucca Local Environmental Plan 1995;*
- *State Environmental Planning Policy No. 11 – Traffic Generating Developments;*
- *State Environmental Planning Policy No. 14 – Coastal Wetlands;*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*
- *State Environmental Planning Policy No. 71 – Coastal Protection; and*
- *North Coast Regional Environmental Plan 1988.*

Nambucca Shire Council has considered the applicability of the listed environmental planning instruments and provided its assessment to the Department by way of a submission dated 10 April 2003. The report on the proposal was prepared by the Director Environment and Community Planning and was adopted by Council at its meeting of 3 April 2003.

The report notes that Lots 141 and 157, DP 75539 are zoned part 1(a1) Rural residential; part 1(a2) Rural (Prime/Flooding) and part 7(a) Environmental Protection (Wetlands). The extractive industry will not occur on that part of the land zoned Part 1(a1) Rural residential. An “extractive industry” is permissible with development consent in the 1(a2) Rural (Prime/Flooding) and 7(a) Environmental Protection (Wetlands) zones.

Council considers that the proposal is not compatible with the zone objectives for the 7 (a) zone, which are, *inter alia*, to protect and promote rehabilitation of wetlands and estuaries. The proposal should therefore be amended to ensure there is no intrusion into the wetland.

On 27 November 2002, the Department sought, from the Applicant, clarification of the boundaries of the proposed extraction area in relation to the boundaries of the adjacent SEPP No. 14 wetlands. In correspondence dated 9 December 2002, the Applicant confirmed that the extraction area as shown in the EIS intruded into the SEPP 14 wetland No. 389, as shown on the official maps held by the Department. In subsequent correspondence, dated 12 May 2003, the Applicant states that *“it is proposed not to extract within the wetland areas and physical buffers are proposed*

between actual wetland areas and the overall extent of the proposed development." The Applicant claims that the physical boundary of the SEPP 14 wetland No. 389 has been incorrectly mapped on the official maps held by the Department.

The Department's view is that no extraction should occur in the lands officially mapped as SEPP No.14 wetlands. If the proponent is of the view that the boundaries of the SEPP No. 14 wetlands have been incorrectly mapped, then application for a consideration of changes to the boundaries should be progressed and resolved prior to the lodgement of a development application for sand extraction. The Department will not consider that part of the proposed extraction area, as indicated in the EIS, that intrudes into SEPP No. 14 wetland No. 389 as a component of the current development application.

The Department supports Nambucca Shire Council's assessment and, with the exception noted above, is satisfied that the proposal meets the relevant requirements of the applicable environmental planning instruments.

5. CONSULTATION

The Applicant lodged a DA and EIS, for the proposal with the Department on 26 November 2002.

The Department subsequently:

- Notified all residents who could be affected by the proposal in writing;
- Notified Nambucca Shire Council and all the relevant State Government agencies;
- Advertised the exhibition of the DA and EIS in the Nambucca Guardian News on four separate occasions; and
- Exhibited the DA and EIS at 4 locations from 13 December 2002 to 5 March 2003.

This satisfies the requirements for public participation in the *EP&A Regulation*.

During the exhibition period, the Department received 89 submissions on the proposal:

- 7 from Government agencies (NSW Agriculture, National Parks and Wildlife Service, Department of Mineral Resources, Department of Land and Water Conservation, Environment Protection Authority, Coastal Council of NSW, and Roads and Traffic Authority);
- 2 from special interest groups (Scotts Head Protection Group, and National Parks Association – Three Valleys Branch); and
- 80 from members of the public.

These submissions raised concerns about the potential impacts on:

- Road safety;
- Flora and fauna, SEPP 14 Wetlands;
- Soil and water including groundwater;
- Noise; and
- Amenity and visual impact.

The frequency with which issues were raised in the eighty private submissions is summarised in Table 5.1 below:

ISSUE	NUMBER OF SUMBISSIONS IN WHICH AN ISSUE WAS RAISED
Roads and traffic	79
Effect on property values	44
Noise	39
Visual impacts	25
Flora and fauna impacts	17
Amenity impacts	17
Air quality	8
Soils	3
SEPP 14 wetland impacts	2
Other impacts	27

Table 5.1 Frequency of Issues in Public Submissions.

The Department has assessed these concerns in detail in Section 6 of this report.

During the assessment process, the Department consulted extensively with the NPWS, the EPA, NSW Fisheries and Nambucca Shire Council to establish appropriate buffer distances from extractive operations and adjacent SEPP 14 wetlands.

6. CONSIDERATION OF KEY ISSUES

The Department has assessed the proposal, EIS and submissions on the proposal, additional information provided by the Applicant, and believes that the following are the key issues.

6.1 TRAFFIC

6.1.1 Traffic Impact Assessment

A Traffic Impact Report was prepared by Roadnet Pty. Limited (Roadnet) and is provided as Appendix I of the EIS. The traffic impact assessment was conducted in accordance with the RTA's *Guide to Traffic Generating Developments* and makes reference to Nambucca Shire Council's Codes and Australian Standards. It includes a discussion on road safety and amenity issues that arise from increased truck activity.

It is noted that the previous extractive industry that operated adjacent to the site generated an average of four laden truck movements per day, while the current proposal envisages a slight increase to five laden truck movements per day. The number of truck movements is likely to vary significantly from week to week.

Material leaving the sand extraction site will be transported along Gumma Road and River Street for a distance of eight kilometres to the Pacific Highway at Macksville. Trucks will deviate via Willis and Partridge Streets to gain access to the Highway via traffic signals in Partridge Street.

The existing access onto Gumma Road from the sand extraction area will be retained.

It is intended to use trucks of 20 m^3 capacity. These would either be large rigid trucks with a dog trailer or a semi tipper.

The traffic impact assessment included an analysis of:

- Existing traffic volumes;
- Safety issues;
- An inventory of existing road and traffic conditions of the entire length of the haulage route; and
- An assessment of impacts.

The traffic impact assessment concluded, that in general terms, the route is considered satisfactory for the type of existing and proposed use. Gumma Road is bitumen sealed of varying width between 5.0 and 6.0 metres with gravel shoulders generally 1.0 metre wide. The present condition is fair with some deformation and potholes. A single lane bridge is provided over Gumma Gumma Creek. It is in poor condition and in need of major repairs in the short term.

Council traffic surveys carried out in February 2002 showed a daily average of 667 vehicles (4.1% heavy vehicles) on Gumma Road near Gumma Gumma Creek.

6.1.2 Issues Raised in Submissions

Traffic impacts, in terms of public submissions, are the issue of greatest concern. Of the 80 public submissions, all but one raised some form of traffic impact as an issue of concern. Most of the submissions raised the problems of transporting sand by truck along Gumma Road, and its continuation, which is named River Street in proximity to Macksville.

The traffic issues raised in the public submissions were:

- Impact that 10 truck movements a day will have on:
    - Condition of the road surface;
    - Safety of local children;
    - Noise levels experienced by residents close to Gumma Road, River Street and Willis Street;
    - School bus and bus stops;
    - Cyclists;
    - Joggers;
    - Vibration;
    - Property values;
    - Condition of Gumma Gumma Creek bridge – one lane only / poor condition;
    - Less room on the road will increase the risk of accidents;
    - Dog walkers; and
    - Horse riders.
- Difficulty in gaining access to Gumma Road from side roads such as Boulton Close – blind intersection;
- River Street is not able to be used to access the Pacific Highway;
- Safety of Gumma Gumma Creek bridge as trucks do not obey Give Way signs;
- Inadequacy of Gumma Road – narrow /winding / blind corners / poor condition / lack of space for other road users; and
- Trucks will raise dust levels that will impact on the health of residents, especially asthmatics.

RTA submission

The RTA had no objection in principle provided that the following matters were addressed:

- Access to and from the Pacific Highway to be at the Partridge Street traffic signals;
- Applicant to pay Council a levy on material hauled, for road maintenance; and
- Recommendations of the Traffic Impact Report in the EIS to be included, with the exception of the speed zone review.

Nambucca Shire Council Submission

Nambucca Shire Council is an Integrated Approval Body under section 138 of the *Roads Act 1993* for roadworks associated with the intersection of Gumma Road with the access road to the sand extraction area. Council considered all aspects of the proposal and on 17 April 2003 resolved to accept the assessment report prepared by the Council officers and to recommend 15 conditions for the proposal. Of the 15 conditions specifically supported by the resolution, 13 relate to road and traffic matters. It is considered that those conditions that specifically relate to the intersection of Gumma Road and the access road to the sand extraction area, are Council's General Terms of Approval under the *Roads Act 1993*.

The conditions relevant to roads and traffic are:

1. *The payment of contributions for each tonne of product trucked from the site under Council's section 94 Contribution Plan for Extractive Industries to offset the extra road damage caused by the increase in heavy vehicles attributable to the development.*
2. *A $50,000 contribution towards the strengthening of the drainage culvert over Gumma Gumma Creek to allow the continuation of heavy vehicle access across the structure.*
3. *Upgrade the intersection of the haul road and Gumma Road to a "Left Turn Type A" standard. Engineering plan to be submitted for approval prior to construction.*
4. *Construction of passing bays every 150 metres along the internal access road to ensure the safe movement of trucks.*
5. *Access road to be bitumen sealed for 30 metres from Gumma Road then the installation of a shaker ramp to reduce the incidence of sand and pebbles at the intersection.*
6. *Sign posting of Gumma Road at the intersection with the access road warning of entering trucks.*
7. *Covering of loads to ensure no spillage of sand, stones and dust.*
8. *Only dry material to be transported on Gumma Road. Extracted material to be de-watered before loading onto trucks.*
9. *Sign posting for direction and speed at 6 corners on Gumma Road as nominated by Council.*
10. *The initial and first maintenance painting of centre line markings on Gumma Road from the end of River Street to a point 50 metres past the intersection with the access road.*
11. *Revise Traffic Impact Report to address changes to Pacific Highway and River Street intersection (No Right Turn) and the identification of any resulting impact on the local streets of Willis and Partridge.*
12. *Nambucca Traffic Committee to review the appropriate speed zonings.*
13. *Regional Traffic Committee to consider the application.*

Applicant's Response to Traffic Issues

The applicant provided a response to traffic issues raised by the Department on 5 September 2003. Included in the response were the following:

1. The proposed additional truck use on the local road system is very slight and considered an imperceptible impact on existing road use and/or maintenance.
2. Impacts from truck haulage on the road system, in respect of dust emissions, noise and vibration and an assessment of the suitability of the haulage route for trucks are contained within the EIS.
3. Gumma Bridge
   "It is acknowledged that this bridge has a limited life span and will soon need to be replaced by Council. However, the subject development proposal and the limited additional truck use is not considered a reasonable opportunity to seek any upgrading of the existing bridge.

   There has been a significant increase in the use of this bridge due mainly to increased rural-residential subdivision in the Gumma area. If Council considers it appropriate, then a S.94 Contribution Plan should be prepared so that any new developments can contribute equitably towards any future bridge upgrading works".

6.1.3 Consideration of Key Issues

The key transport issue is the adequacy of the transport route from the sand extraction area to the Pacific Highway at Macksville. The concerns expressed by the public in 79 submissions have been considered from a safety and road engineering perspective in the submissions of the RTA and the Council.
Council has requested that the Applicant contribute to the maintenance of local roads used by heavy vehicles travelling to and from the Gumma sand extraction site by way of contributions under its "*Mines and /extractive Industries Road Maintenance Section 94 Contributions Plan".* The Plan levies an indexed contribution based on tonnage of sand transported and distance from the Pacific Highway.

In addition, Council has assessed that Gumma Road is in poor condition, especially the culvert over Gumma Gumma Creek. Council has proposed conditions of consent that would address the damage to Gumma Road that would be caused by heavy vehicles transporting sand and gravel from the development.

Council recognises the poor condition of the culvert over Gumma Gumma Creek and has estimated that its replacement is required, at a cost of $250,000 to $300,000, dependant upon the foundation costs. Council's suggested conditions of consent include a contribution, by the Applicant, of $50,000 towards the replacement of the culvert.

Council and the RTA have considered road safety issues. Council recommends the installation of advisory signage along Gumma Road for six curves, additional signage at the intersection with the access road to the sand extraction area and the provision of centre line markings for Gumma Road. The RTA has recommended that access to and from the Pacific Highway be at the traffic control signals at Partridge Street, Macksville.

6.1.4 Conclusion

The Department supports the assessment of the RTA and all but one of the recommendations of Council, including contributions under the existing Section 94 Contributions Plan for Road Maintenance. The one Council recommendation not supported by the Department is the method of determining the Applicant's contribution to the upgrade of the Gumma Gumma Creek bridge.

The most important traffic issue is the condition of Gumma Road and its ability to cater for heavy vehicles and other road users with safety. The most important safety issue along the proposed haul route is the condition of the culvert over Gumma Gumma Creek. The proposed conditions of consent suggested by Council would provide substantial funds to Council towards the replacement of the culvert and, ongoing funds towards the maintenance of Gumma Road by way of the section 94 contributions.

However, the Department agrees with the Applicant that Council's recommendation for the Applicant to provide a $50,000.00 contribution to the replacement of the bridge is not an appropriate funding mechanism. The Department's view is that it is appropriate for the Applicant to contribute to the cost of replacing the bridge, but that the level of funding should be determined by a specific Section 94 Contributions Plan prepared by Council.

The safety of the intersection of the access road with Gumma Road will be ensured by a requirement for engineering plans to be approved by Council prior to construction.

Amenity impacts will be mitigated by requirements for all loads to be covered to reduce dust.

Only dry material will be transported to prevent spillage of wet material from trucks to the road surface.

A shaker is to be required 30 metres prior to the access road reaching Gumma Road, with the intervening road surface to be of bitumen seal to reduce the incidence of sand and pebbles being tracked by the wheels of the trucks to Gumma Road.

The signage and centre line marking recommended by Council will help improve the safe operation of Gumma Road.

Overall, the Department is satisfied that the transport of material from the sand extraction site to the Pacific Highway can be achieved in a safe manner with manageable amenity impacts, provided that the recommendations of Council and the RTA are implemented. The general safety and service of Gumma Road will be improved if the culvert over Gumma Gumma Creek is replaced. The Applicant should be required to contribute to the replacement of the Gumma bridge, in accordance with a specifically prepared section 94 Contribution Plan prepared by Council. As Council has not prepared a specific Plan for the bridge, the Department has not included a condition of consent requiring the applicant to contribute to the bridge's replacement.

6.2 FAUNA AND FLORA

6.2.1 Flora and Fauna Impact Assessment

Lyndal Thompson, the consultant ecologist for the EIS, has assessed the potential flora and fauna impacts of the proposal, using database searches, literature reviews, consultation with government agencies and ecologists, and field survey work (see Table 6.1).

Survey Period	Coverage	Activities
April 2002 4 days; 2 persons	Subject site, and areas to the south and west of the site (former extraction area and margin of wetland No. 389)	General vegetation & habitat mapping survey • 15 person hours of spot-lighting; and • 3 nights of Anabat II detector use • 3 quadrats – 20x20 m with 10 internal 1x1 m quadrats; • 2 owl call-back sessions; • Morning and afternoon diurnal bird surveys; • Opportunistic bird observations; • 2 frog and reptile searches; • 78 small Elliot trap nights; • 27 large Elliot trap nights; and • 102 hair tube nights.
ADDITIONAL SURVEY AT REQUEST OF NPWS & DIPNR		
March 2003 4 days; 3 nights; 2 persons	As above.	• Arboreal trapping – 150 trap nights; • Squirrel Glider playback sessions – 3 nights; • Spot-lighting – 3 nights; • Opportunistic herpetofauna searches; and • Scat analysis – 2 scats.
ADDITIONAL SURVEY FOR AMPHIBIANS		
August, 2003 2 nights; 2 persons	2 wetland sites and 1 pond adjacent to sand extraction area; and 1 pond in sand extraction area.	• Spot-lighting – 2 nights; • Call playback for Green and Golden Bell Frog and Wallum Froglet – 2 nights; and • Opportunistic observations and call identification.
ADDITIONAL SURVEY FOR BATS		
August, 2003	Proposed sand extraction area.	• 3 harp nets over 3 consecutive nights; • 1 mist net over 2 consecutive nights; and • 3 Anabat II Delay units over 2 consecutive nights.

Table 6.1: Summary of Survey Work

These assessments identify vegetation clearing and the loss of habitat and potential habitat for several threatened fauna species as the most significant impacts of the

proposal, but conclude that the removal of vegetation is not significant on either a local or regional scale.

Vegetation Clearing

The site forms part of a large area remnant coastal vegetation in close proximity to the Warrell Creek Coastal Rainforest, which is listed on the Register of the National Estate. The Flora and Fauna Assessment in the EIS concluded that there were no threatened flora species, populations or communities within the extraction site.

The vegetation to be cleared consists of approximately 3.5 hectares of Blackbutt (*Eucalyptus pilularis*) Open Forest community and approximately 5.0 hectares of Coastal Banksia (*Banksia integrifolia*) Closed Forest community and Transition Zone between the two communities.

The site has suffered a degree of disturbance from:
- Past extraction activities on the margins of the site;
- A vehicle track located along the crest of the dune;
- Fires; and
- Cattle grazing activities.

The EIS states that the Blackbutt Open Forest and the Coastal Banksia Closed Forest of the extraction area are generally characteristic of communities found elsewhere in the region. The removal of the vegetation is not considered significant on the local or regional scale.

To offset these potential impacts, the Applicant initially proposed to:
- Restrict vegetation clearing to approximately one hectare per year;
- Progressively rehabilitate the site;
- Restrict clearing activities to summer months to avoid the known breeding seasons of certain hollow-dependant threatened species; and
- Install nesting boxes in adjacent vegetation areas prior to vegetation clearing for sand extraction.

With the implementation of these management measures, the Applicant believed there would be no significant impact on the vegetation communities by the proposal.

Loss of Habitat/Potential Habitat

The remnant vegetation contains habitat for a wide range of fauna species.Targeted surveys identified six threatened species on site, being five species of bat and one other mammal. The identified threatened species are
- Common Blossom-bat;
- Grey-headed Flying Fox;
- Little Bent-wing Bat;
- East Coast Free-tail Bat;
- Yellow-bellied Sheath-tail Bat; and
- Brush-tailed Phascogale.

The major impacts would be:
- Direct disturbance from sand extraction;
- Loss of habitat;
- Fragmentation of vegetation corridor; and
- Edge effects, leading to weed infestation and alteration of habitat.

To offset these impacts, the Applicant is proposing to:

- Restrict vegetation clearing to approximately one hectare per year;
- Progressively rehabilitate the site;
- Restrict clearing activities to summer months to avoid the known breeding seasons of certain hollow-dependant threatened species; and
- Install nesting boxes in adjacent vegetation areas prior to vegetation clearing for sand extraction.

However, the Applicant believes that these impacts are unlikely to be significant at the local, regional, state or national level, as there is similar habitat within the surrounding area to accommodate the species that would be affected by the proposal. Since affected species are known, or likely, to occur in the study area outside the subject site, clearing of the subject site is unlikely to result in loss of any species from the local area. Vegetation communities on the subject site are generally well represented in the study area.

The Applicant has prepared Eight-Part Tests under section 5A of the *EP&A Act* for threatened species known to occur, or potentially occurring, on the proposed sand extraction site.

The Applicant also assessed the potential impact of the proposal on several State-listed threatened species that occur, or are likely to occur, on the site. The results of this assessment are summarised in Table 6.2 below.

Threatened Species	TSC Act	Subject Site	Loss of Potential Habitat
Osprey	V	Yes	Yes
Glossy Black-Cockatoo	V	No	No
Powerful Owl	V	No	Yes
Sooty Owl	V	No	Yes
Masked Owl	V	No	Yes
Barking Owl	V	No	Yes
Barred Cuckoo-shrike	V	No	No
Black Bittern	V	No	No
Brolga	V	No	No
Square-tailed Kite	V	No	Yes
Wompoo Fruit-dove	V	No	No
Black-necked Stork (Jabiru)	E	No	No
Koala	V	No	No
Squirrel Glider	V	No	Yes
Yellow-bellied Glider	V	No	Yes
Little Bent- Wing Bat	V	No	No
Eastern Little Mastiff-Bat	V	No	No
Brush-tailed Phascogale	V	Yes	Yes
Grey-Headed Flying Fox	V	Yes	Yes

V denotes Vulnerable; E denotes Endangered.

Table 6.2: Summary of Threatened Species Assessment

These tests show that there is no requirement for the Applicant to prepare a Species Impact Statement for any of the species considered.

6.2.2 Issues Raised in Submissions

The NPWS identified a number of deficiencies in the ecological assessment contained in the EIS. These deficiencies related to:

- Threatened species records;
- Habitat attributes;
- Survey methodology and effort;
- Warrell Creek Coastal Rainforest;
- SEPP 14 – Coastal Wetlands;
- SEPP 44 – Koala Habitat Protection;
- Impact assessment;
- Cumulative impact assessment;
- Eight-Part Tests for threatened species; and
- Other species.

The NPWS recommended that further survey work and threatened species assessments should be undertaken. The NPWS did not consider that sufficient information had been provided as to whether or not the proposed development would have a significant effect on the following threatened species and their habitats:

- Brush-tailed Phascogale;
- Squirrel Glider;
- Various microchiropteran bat species; and
- Eastern Pygmy Possum.

6.2.3 Additional Information Requested

The Department, following a review of the NPWS submission and a detailed private submission on ecological issues, requested the following information from the Applicant:

- Vegetation mapping of the site;
- Threatened species database search records;
- Comprehensive additional survey of the site was required;
- Eight-Part Tests for all threatened species;
- New Eight-Part Tests required for:
    - Koala
    - Brown /Treecreeper;
    - Common Blossom-bat;
    - Little Bent-wing Bat;
    - Scented Acronychia;
    - Eastern Pygmy Possum; and
    - Any other threatened species identified during additional survey work, probably including the Green and Golden Bell Frog and Wallum Frog.
- Revised Eight-Part Tests for:
    - Squirrel Glider;
    - Brush-tailed Phascogale;
    - Grey-headed Flying Fox; and
    - Glossy Black Cockatoo.
- Ability to rehabilitate habitats;
- Impacts on the Warrell Creek Coastal Rainforest;
- SEPP 14 – Coastal Wetlands;
- SEPP 44 – Koala Habitat Protection; and
- Referral under the EPBC Act.

The additional information requested by the NPWS and the Department is discussed in this report.

The Department also requested the following information, following its review of the DA, EIS and all of the submissions from the public and agencies:

- Details on the fuel storage area;
- Confirmation that the final vegetative cover would be 100% native vegetation;
- Details on the end land use and final landform;
- Long-term flooding impacts;
- Impacts on SEPP 14 wetlands;
- Consideration of compensatory measures for habitat/wetland loss;
- Justification for the lack of a quantitative air quality impact assessment;
- Details of equipment to be used to clear the land;
- Clarification of the hours of operation; and
- Further information on road traffic impacts.

The Applicant provided the following additional reports on 15 September 2003:

1. *Outstanding Information on the Proposed Extractive Industry at Gumma* – letter from Townplanning Consultants & Drafting Services, dated 5 September 2003;
2. *Supplementary Report to National Parks and Wildlife Service NSW Regarding Sand Extraction Activities Proposed at Gumma by Eagle Sands Pty Ltd,* prepared by Lyndal Thompson;
3. *Feral Species Management Plan,* prepared by S.P.E.C.S.;
4. *Weed Management and Revegetation Plan,* prepared by Brit Rollo;
5. *Assessment of Impacts on Bats of a Proposed Sand and Marine Pebble Quarry, Gumma Road, Gumma (August 2003)*, prepared by Terra Consulting; and
6. *Assessment of Impacts on Amphibians of a Proposed Sand and Marine Pebble Quarry, Gumma Road, Gumma (August 2003), prepared by Terra Consulting.*

Supplementary Report to NPWS

This report contained the following assessment from the additional survey effort shown in Table 6.1:

1. No threatened species were trapped;
2. No Squirrel Gliders were heard during call playback sessions;
3. Two collected scats were identified as Swamp Wallaby and European Red Fox;
4. The correct identification of the Brown Treecreeper of the original survey is the Red-browed Treecreeper;
5. The correct identification of the Inland Scribbly Gum in the original survey is the Northern Scribbly Gum;
6. The correct identification of *Bothriochloa bilobal* in the original survey is *Bothriochloa macra*;
7. As *Eucalyptus signata* represents less than 1% of all trees on site there is no requirement for a SEPP 44 –Koala Habitat Assessment;
8. Eight-Part Tests under section 5A of the *EP&A Act* for the Eastern Pygmy Possum and the Koala were provided. There is no requirement for a Species Impact Statement for either species.

Feral Species Management Plan

The Feral Species Management Plan was produced in recognition that native animals are subject to predation by introduced species and that the proposed sand extraction operation provides opportunities for the introduction of vertebrate pest species.

The management plan addresses the following species:

- European Fox;
- Wild Dog;
- Feral Cat;
- Rabbit;
- Plague Minnow;
- Brown Hare;
- Black Rat; and
- House Mouse.

The management plan includes communication, reporting and review processes.

Weed Management and Revegetation Plan

The Weed Management and Revegetation Plan (WM&RP) incorporates the rehabilitation program proposed in the EIS. The WM&RP expands on the information contained in the EIS. It outlines the principles of bush regeneration for the control of weeds and the re-establishment of native bushland vegetation. The aim of these activities is to restore the ecological integrity of the site and protect the environmental features of the surrounding areas.

The plan is based on reinstating local native species and communities (i.e.: assisting recovery of resilience levels), rather than on eliminating weeds. In many cases it is not reasonable to expect that certain species will be eliminated, but rather, that they will be managed to minimise their spread and the impact that they have on and off site.

The WM&RP addresses;

- The pre-extraction phase;
- The operational phase;
- The rehabilitation phase;
- Impacts on SEPP 14 wetlands;
- Assessment of currently occurring weeds on the site;
- Managing Bitou Bush;
- Minimisation of disturbance;
- Erosion and sediment control;
- Clearing of native vegetation;
- Specific actions for both on-site and adjacent areas;
- A monitoring program to evaluate progress against objectives;
- Information on weed control techniques;
- Information on species present; and
- Recommendations for revegetation and rehabilitation of the sand extraction area.

A feature of the WM&RP is that it recommends the treatment of areas adjacent to the sand extraction area before the commencement of sand extraction operations. This includes a weed control program for the land associated with the access track to the site and areas that have been poorly rehabilitated following past extractive

operations. It is proposed that these areas can be used to trial the transplantation of mature Banksias that provide a food source for the Common Blossom Bat.

Additional Bat Assessment

The assessment of the impacts on bat species is based on the survey effort recorded in Table 6.1. The Table 6.3 below lists bat species recorded on the site.

Common Name	TSC Act
Common Blossom Bat	V
Grey-headed Flying Fox	V
Little Bent-wing Bat	V
Gould's Wattled Bat	Not Listed
Chocolate Wattled Bat	Not listed
Gould's Long-eared Bat	Not listed
Large Forest Bat	Not Listed
Little Forest Bat	Not Listed
East Coast Free-tail Bat	V
Eastern Free-tail Bat	V
White-striped Free-tail Bat	Not Listed
Yellow-bellied Sheath-tail Bat	V

V denotes Vulnerable

Table 6.3 – Results of Additional Bat Surveys.

After consideration of bat species recorded on the site, species known to occur in the locality and the suitability of habitat on the site for those species, Eight-Part Tests of significance were conducted for the following species:

- Black Flying Fox;
- Grey-headed Flying Fox;
- Common Blossom Bat;
- Large-footed Myotis;
- Little Bent-wing Bat;
- Common Bent-wing Bat;
- Greater Broad-nosed Bat;
- Eastern Falsistrelle;
- Eastern Free-tail Bat; and
- Yellow-bellied Sheath-tail Bat;

The assessment report for the impact on bat species acknowledges the potential impacts caused by clearing of up to 8.7 hectares of native vegetation that is suitable habitat for threatened species known, or likely, to use the site.

Mitigatory Actions

The following actions are proposed to mitigate the effects of bat habitat removal;

1. Limitation of vegetation clearing to a maximum of one hectare at any on time;
2. Progressive rehabilitation immediately after extraction has ceased;
3. Implementation of a weed management program;
4. Implementation of a feral animal control program;
5. Boundaries of extraction areas would be clearly marked for machinery operators to minimise impacts on habitats;
6. Pre-clearing surveys, targeting hollow-bearing trees and stags, are to be conducted by an ecologist to identify any bat roost sites;
7. Provision of nest-boxes in adjacent habitats;

8. Revegetation of Banksia species will use local providence seed; and
9. Enhancement of understorey species in adjoining areas unaffected by quarrying operations.

Compensatory Habitat

Two former quarrying areas, both containing ponds, adjoin the proposed extraction site. They were not successfully revegetated at the cessation of extraction operations, allowing the establishment of Lantana and Bitou Bush.

These areas represent an opportunity to provide compensatory habitat at the commencement of quarrying activities. It is proposed to reduce steep batters, remove heavy infestations of Lantana and Bitou Bush and revegetate the areas. This will reduce the potential for weed infestation of the proposed extraction area during the progressive rehabilitation of the site. Species used to revegetate the areas will include those that are important food sources for bat species that are known, or likely, to utilise the site. A trial of the transplantation of mature Banksia species will be undertaken, utilising specimens removed during the initial clearing operations. If successful, the technique will become a component of the progressive rehabilitation program.

Conclusions

The additional report for the impact on bat species indicated that there would be no significant impact on the threatened bat species or their habitat.

Additional Amphibian Assessment

The amphibian impact assessment is based on the survey effort detailed in Table 6.1. The assessment targeted two sites in adjacent wetlands and two ponds created by previous sand extraction operations. These sites are shown in Figure 3. Only Pond Site 1 is likely to be directly impacted by the proposed sand extraction operations.

The following frog species were observed during the amphibian assessment:
- Common Eastern Froglet;
- Brown-striped Frog;
- Northern Banjo Frog;
- Bleating Tree Frog;
- Eastern Dwarf Tree Frog;
- Rocket Frog;
- Tyler's Tree Frog; and
- Dusky Toadlet.

The following threatened frog species are known to occur in the local region;
- Wallum Froglet;
- Giant Barred Frog;
- Sphagnum Frog;
- Green and Golden Bell Frog; and
- Green-thighed Frog.

Suitable habitat for only the Wallum Froglet and the Green and Golden Bell Frog exists on the extraction site. Eight-Part Tests under section 5A of the *EP&A Act* were undertaken. They concluded that, with mitigation measures associated with the

rehabilitation of the site, no significant impacts would be caused by the proposal on threatened frog species.

6.2.4 Additional Threatened Species Records

The DEC informed the Department on 1 December 2003 that it had been provided with information concerning threatened species recorded on the site but not referenced in the EIS.

The Department requested the Applicant provide the all information in its possession concerning the presence of threatened species on the site. After the additional information was provided, the applicant undertook additional 8-Part Tests under section 5A of the *EP&A Act* for;

- Beccari's Freetail Bat;
- Common Planigale; and
- Squirrel Glider.

The 8-Part Test concluded that the proposal, when assessed in respect to the proposed mitigation measures, would not result in the potential for a significant impact on these additional species.

6.2.5 Consideration of Key Issues

Adequacy of Survey

The Department accepts that the initial survey of the site was inadequate due to:

- Inadequate survey effort;
- Inadequate vegetative mapping;
- Miss-identification of some species;
- Failure to identify species that are known to inhabit the local area and may utilise the habitat present on the site; and
- Failure to fully consider the potential impacts of the proposal on a local and regional scale.

The Department's view is that the additional information provided by the Applicant adequately addresses this issue.

Impacts on Threatened Species

The additional information provided has assessed the impacts on threatened species known to occur, or potentially occurring, on the extraction site. Eight-Part Tests of significant impact under section 5A of the *EP&A Act* concluded that there would be no significant impact on those species.

The Department is satisfied that, by the provision of additional Eight-Part Tests, all threatened species, reasonably expected to utilise the extraction site, have been considered.

The provision of a Weed Management and Revegetation Plan as well as a Feral Species Management Plan, provides a mechanism to mitigate the impacts of the proposal caused by the removal of approximately one hectare of native vegetation each year for about nine years.
The Applicant has proposed to provide compensatory habitat by the removal of weeds from adjacent former extraction areas and to integrate the rehabilitation of

these areas with the progressive rehabilitation of the extraction area. This measure will attempt to remedy past poor environmental performance while reducing the risk of weed infestation of the rehabilitation program for the extraction area.

Conclusion

The Department's view is that the integrated approach to vegetation removal, mitigation measures, provision of compensatory habitat, control of weeds and feral species, use of pre-clearing surveys and use of endemic species in the progressive rehabilitation program provides measures to mitigate impacts to acceptable levels. A program of monitoring the success of these measures will be required to ensure that refinements can be made and corrective action taken, should predictions contained within the EIS and supplementary information not be met.

Figure 3: Location of Amphibian Survey Sites

6.3 SEPP 14 WETLANDS

6.3.1 SEPP 14 Wetland Assessment

The EIS incorrectly states "There are no SEPP No. 14 wetlands directly affected by the proposal." As described in Section 4.2.6, the Department requested clarification of the location of the proposed extraction area in relation to SEPP No. 14 wetland No.389. It has been established that the proposed extraction area as shown in the EIS intrudes into wetland No. 389.

The EIS proposes that wetland No. 392 be protected from extraction operations by the maintenance of a minimum 10 metre buffer, which corresponds with the four metre AHD contour.

The access road from Gumma Road to the extraction area passes through wetland No. 389. This road was upgraded for a previous extractive industry that operated on Lot 140. The wetland will be protected from sediment and runoff from the access road by the upgrading and maintenance of stormwater drainage and erosion control devices along this haulage route.

The EIS recognises the potential for adjacent wetlands to be impacted by acidic runoff if acid sulphate soils were to be disturbed by the extraction of sand and pebble. The proponent proposes to protect against impacts to wetlands and waterways by the implementation of the following measures:

- Extraction and screening by dry screening methods only;
- Sand extraction to be above the groundwater level;
- Maintenance of a buffer zone to the wetlands;
- Limited, and staged method of extraction;
- No vehicle and equipment maintenance to be carried out at the extraction site; and
- Provision of sediment traps along the haul route.

6.3.2 Issues Raised in submissions

The potential for impacts on adjacent SEPP 14 wetlands was raised in two public submissions but was of significant interest to government agencies. All agencies that commented on this issue recommended a buffer zone greater than the 10 metres proposed by the Applicant.

The EPA, NSW Fisheries and DLWC (now DIPNR) all recommended a buffer zone of 50 metres, while Nambucca Shire Council provided a recommendation "*of at least 20 metres"*.

6.3.3. Additional Information Requested

The Department requested the Applicant supply a report, referenced but not included in the EIS, on an assessment of the acid sulphate potential of the resource.

The report *"Results of Exploration Drilling for Proposed Sand Quarry"* by Umwelt (Australia) Pty Limited, dated 15 September 2000 was provided to the Department on 5 September 2003. The report stated that none of the sand or "coffee rock" material tested in the field was *"acid sulphate soil".*

The Applicant supplied a surveyed plan of the site on 12 May 2003, which indicated the statutory boundaries of SEPP 14 wetlands as well as most probable physical boundaries (based on change in slope and elevation of the land). The Applicant contends that the statutory boundaries of SEPP 14 wetlands are incorrectly located, particularly those of SEPP 14 wetland No. 389.

6.3.4 Conclusion

The Department supports the provision of a 50 metre buffer zone between the proposed extraction operations and SEPP 14 wetlands.

The application of this measure for SEPP 14 wetland No. 392 is straightforward, as there is good agreement between the statutory and physical boundaries of the wetland.

Based on topographic data and vegetation communities, there would appear to be a difference of approximately 100 metres between the statutory and physical boundaries of SEPP 14 wetland No. 389, in the area to the west of the extraction area. It is the Department's view that the statutory boundary of SEPP 14 wetland No. 389 can form the boundary of the extraction area, provided that it does not extend beyond the 5 metre AHD topographic contour. This measure will allow for an effective buffer zone in excess of 50 metres to the physical boundary of the wetland.

6.4 NOISE

6.4.1 Noise Impact Assessment

H.K.Clarke & Associates Pty. Limited (HKC) conducted a noise impact assessment of the proposal, in accordance with the Environment Protection Authority's *NSW Industrial Noise Policy*.

As operations of the sand winning operations are restricted to the hours of 7am to 5pm, Monday to Friday, and 7 am to 12 Noon on Saturday, only the EPA's daytime noise criteria are relevant for this proposal. A noise data logger was utilised over a period of seven days at the location of the two nearest residences to the extraction area (Residence A) to establish a daytime Rating Background Level (RBL) of 36 dB(A). An Intrusive Noise Criteria (INC) of 41 dB(A) was established. The Project Specific Noise Level (PSNL) was also established at 41 dB(A), L_{eq} 15 minutes (Day).

The EPA's *Environmental Criteria for Road Traffic Noise* was used to establish a criteria for the project of 55 dB(A), L_{eq} (1hr) for road traffic noise (RTN) generated by the traffic associated with the proposal and utilising Gumma Road. Gumma Road is considered a local road for the purposes of establishing the RTN criterion.

Figure 4 indicates the location of sensitive residences and the road transport route along Gumma road in relation to the proposed sand extraction area.

The acoustic assessment utilised sound power levels that had been sourced from direct measurement of similar equipment to that proposed to be used at the sand extraction site. The assessment considered a worst case with all items of equipment operating and located in the most exposed locations of the extraction area.

Noise generated by laden trucks from the sand extraction area travelling along Gumma Road has been assessed at Residence C. This residence was assessed as

being the closest residence on Gumma Road (10 metres from the nearside traffic lane) to the passage of the laden trucks. The acoustic assessment was based on assumptions of existing traffic volume, proportion of heavy vehicles in the traffic flow and the speed of travel of the trucks. Under all the scenarios assessed the increase in traffic noise attributable to the proposed sand extraction operation will be less than 1.0 dB(A). The existing road traffic noise levels for Gumma Road are, under some scenarios, in excess of the 55 dB(A), L_{eq},1hr limit. Under these conditions of traffic noise, the EPA's *Environmental Criteria for Road Traffic Noise* sets the criterion as existing impact plus 2 dB(A). The road traffic noise generated by the trucks from the sand extraction proposal meets this criterion.

The acoustic assessment concludes that the proposal will meet the PSNL for the operation of the sand extraction site and that the road traffic noise from trucks along Gumma Road will be in accord with the EPA's criteria for road traffic noise. The assessment is based upon the condition that the development proceeds as specified and that all equipment is operated and maintained in accord with best practice.

6.4.2 Issues Raised in Submissions

Most of the 39 submissions received in respect of noise were concerned with road traffic noise along the transport route from the sand extraction area, along Gumma Road and River Street, to the Pacific Highway at Macksville. Residents in closer proximity to the extraction site raised the issue of noise from the operation of equipment at the site. These residents are generally located near the intersection of the access road and Gumma Road.

The EPA's submission indicated that Nambucca Shire Council is the appropriate regulatory authority for the site. If noise complaints are received after the operation commences, Council could require compliance tests, and, that proposed measures to minimise truck noise should be reflected in conditions of consent.

6.4.3 Consideration of Key Issues

Adequacy of the Noise Assessment

The Department considers that the data collected and acoustic assessment conducted by HKC is adequate and in accord with the EPA's *NSW Industrial Noise Policy* and *Environmental Criteria for Road Traffic Noise.* The acoustic assessment has utilised a "simple" approach to the use of meteorological data. This approach is consistent with the Industrial Noise Policy, and, may result in conservative (a tendency to overestimate) predictions of noise impact.

Traffic Noise

Traffic noise was of concern in most submissions relating to noise impacts. Traffic noise has the potential to impact a proportionally large number of residents along the transport route from the sand extraction area to Macksville, a distance of eight kilometers. The noise impact assessment has assessed a residence that is within 10 metres of the nearest traffic lane and established that road traffic noise would be increased by less than I.0 dB(A), L_{eq} (1 hr). This impact is within the EPA criterion of existing road traffic noise levels plus 2.0 dB(A).

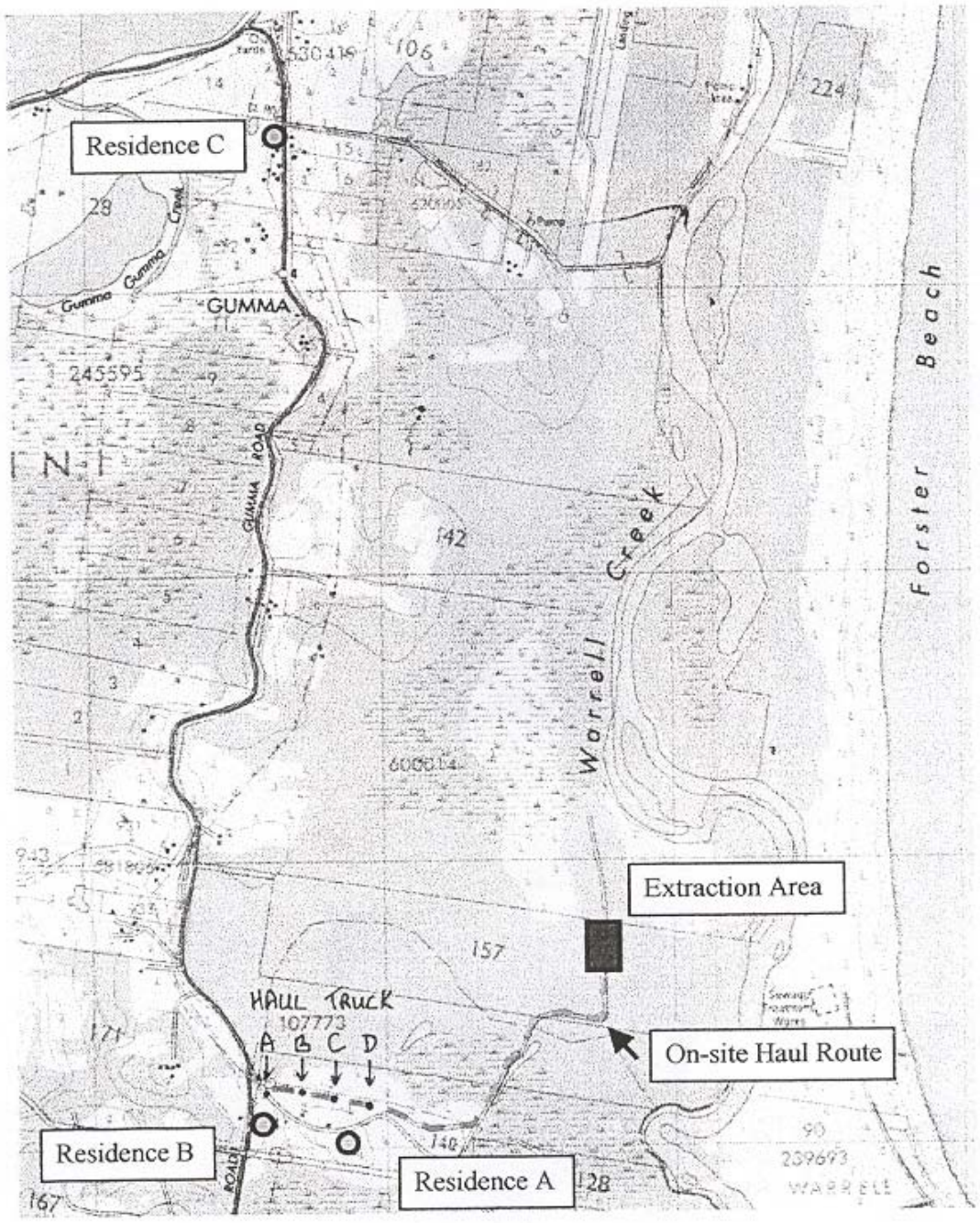

Figure 4 – Noise Assessment Locations

6.4.5 Conclusion

The proposal is predicted to meet all of the relevant EPA noise criteria, although the road noise criteria may already be exceeded due to the noise generated by existing levels of road usage.

To address these impacts, the Applicant should be required to implement the following measures:

- No truck haulage outside of the normal working hours;

- Limit the use of engine brakes on trucks in the proximity of residences;
- Maintain trucks to ensure engines and exhaust systems are operating within specifications;
- Tailgates and other loose fittings on trucks should be secured to prevent the occurrence of rattling; and
- Undertake an acoustic assessment of all on-site equipment prior to commencement of operations and ensure that its Sound Power Levels are equal to, or lower, than those utilised in the noise impact assessment contained in the EIS.

6.5 SURFACE WATER IMPACTS

6.5.1 Surface Water Impact Assessment

The EIS states that site drainage impacts are extremely unlikely, given that the extraction will take place on an elevated sand dune, which has very limited runoff due to the highly permeable nature of sand. Impacts on water quality are protected by the intention to service mobile equipment away from the extraction site and the storage of fuel in a bunded area.

The interior of the extraction area will be lower than its perimeter. Surface water flows would be internally draining until such time as the water percolates through the sand and forms a component of the groundwater. Any measures proposed for the protection of surface water quality would also protect groundwater quality.

The EIS contains a flood study that indicates the proposed excavation area will not increase flood flow velocities or re-direct the direction of flood flow. The 1% Average Exceedance Probability (AEP) flood has a water level of 4.4metres AHD, which would overtop the perimeter of the extraction area (proposed to be 4 metres AHD) and may lead to scour of the sand material within the extraction area. The report recommends the construction of a low point in the perimeter of the extraction area to allow it to fill with flood waters under controlled conditions that would minimize the potential for scour.

6.6.2 Issues Raised in Submissions

Issues raised in submissions concentrated on the protection of water from contamination by sediment loss or fuel or chemicals proposed to be used on the site. The submissions expressed a concern over the potential water quality impacts on adjacent wetlands and other high conservation habitat areas.

6.5.3 Assessment of Key Issues

The key issues identified are the provision of adequate buffer zones to adjacent wetlands, the prevention of water contamination from fuel spills and sediment loss and the need to plan for low probability flood events.

6.5.4 Conclusion

It is the Department's view that the provision of an effective 50 metre buffer between the sand extraction area and adjacent wetlands and the Warrell Creek floodplain will provide protection of existing water quality in the area. The buffer will be especially effective at controlling erosion by the maintenance of undisturbed, vegetated land in proximity to water bodies. The vegetation will provide stability to the steep slopes

adjacent to SEPP 14 wetland No.392 and also provide a filter for any sediment transported towards the water bodies.

The Department supports the proposal to service mobile equipment off site and the storage of fuels in a bunded area.

It is the Department's view that extractive operation should not extend beyond the 5 metre AHD topographic contour. This will provide protection of the extraction site to floods greater than the 1% AEP flood level. The contour is approximately equivalent to the statutory boundary of wetland No. 392, to the west of the proposed extraction area.

6.6 GROUNDWATER

6.6.1 Groundwater Impact Assessment

The Applicant consulted, on-site, with officers of the DLWC (now DIPNR) to establish their requirements for an adequate assessment of the existing groundwater regime and the assessment of potential impacts.

Works included sampling and monitoring of exploration bores, adjacent water bodies, determination of the groundwater level and the geological structure of the the sand dune.

These studies indicated that a layer of "coffee rock" underlies the dunal ridge. The groundwater above and below this barrier flows towards wetland No.392 to the east.

The groundwater level in the extraction area was established from exploration borehole and water levels in adjacent ponds, and is at approximately 1 metre AHD.

The planned operation will maintain a minimum buffer of 1 metre between the known groundwater level at the extraction site and the maximum depth of extraction. A minimum buffer of 300 mm will be maintained above the "coffee rock" and the maximum depth of extraction to ensure that this groundwater barrier remains intact.

Piezometers will be established within the dunal ridge to monitor the quality of groundwater and be reported in an annual environmental report.

As indicated in section 6.6.3. the sands and "coffee rock" in the extraction area have been tested and found not to contain acid generating material.

6.7.2 Issues Raised in Submissions

The submissions received were concerned with the potential for groundwater to become contaminated by fuel or chemicals, or be affected by acidic water formed by the oxidation of acid sulphate soils that may be disturbed in the extraction area. One submission raised a concern that saltwater would be used to wash equipment on the site and so contaminate good quality groundwater.

6.7.3 Consideration of Key Issues

The key issue is the protection of the quality of existing high quality groundwater resources in, and adjacent to, the sand extraction area.

The measures proposed avoid a direct interaction of the sand extraction operations with groundwater, as they will occur a minimum of either 1 metre above the water table, or 300 mm above the “coffee rock”, whichever is the highest elevation.

Prior testing of the sand and “coffee rock” indicates that acid sulphate soils do not exist in the sand extraction area. The Department supports the proposal for ongoing testing of the sand during extraction operations. This should ensure that any potential acid sulphate material is identified and appropriately handled.

There is minimal risk of contamination of groundwater occurring from fuels or chemicals. Fuels will be stored in a bunded area. The use of chemicals will be minimised, as mobile equipment will serviced off-site.

6.7.4 Conclusions

The Department is satisfied that the proposal presents a minimal risk of contamination or impact on groundwater in the area. The avoidance of excavation activities that disturb the water table or the “coffee rock” reduces the risk of adverse impacts.

The Department supports measures that minimise the risk of fuel or chemical contamination of the soil, and consequently groundwater.

The Department supports an ongoing groundwater monitoring program, as well as a program to test for the presence of acid sulphate soils.

6.8 ABORIGINAL CULTURAL HERITAGE

6.8.1 Aboriginal Cultural Heritage Impact Assessment

The Applicant has consulted with the Unkya Local Aboriginal Land Council (Unkya LALC) who investigated the area proposed for sand extraction. Three personnel from the Unkya LALC (Sites Officer, LALC Representative and Elder) inspected the site during 2001, in the company of John Appleton, an archaeologist. The representatives of the Unkya LALC included members who had been present during previous inspections conducted in 1993 and 1994.

No archaeological sites were identified during any of the three inspections.

No sites of Aboriginal significance are known to occur within the proposed extraction area and there is no objection from the Unkya LALC to the proposed sand extraction operation.

6.8.2 Issues Raised by the Unkya LALC

The following issues were raised by the Unkya LALC and requested to be included in the conditions of consent for the proposal:

- Concern expressed should any works take place in the wetland between the extraction area and Warrell Creek. This area is known as “Biddy’s Place” in the Unkya oral tradition;
- The area of land including the wetland and up to an elevation of 4 metres AHD contains bush tucker that is used by the Unkya Elders to teach younger members of the Aboriginal community and school children about bush tucker. An agreement exists between the Unkya People and landowners to allow

informal visits to the land for educational purposes. This access should continue.

- Should any shell, bone or stone (not natural in context) be discovered during excavation, then works in the area should cease immediately and officials of the Unkya LALC and NPWS be informed.

6.8.3 Consideration of Key Issues

The Unkya LALC's wishes in respect of the proposed extraction area are clear. There are no known Aboriginal sites in the area of extraction.

6.8.4 Conclusion

The Department's view is that the wishes of the Unkya LALC be respected and incorporated into the conditions of consent for the proposal.

As there are no known archaeological or cultural heritage sites in the proposed area of sand extraction, and the Unkya LALC has expressed its support for the proposal, there are no impediments to the proposal from the consideration of impacts on Aboriginal cultural heritage.

6.9 VISUAL IMPACTS

6.9.1 Visual Impact Assessment

The EIS states that the proposed extraction area is remote from the general public, and is not able to be viewed from any existing, adjoining residences. The site will be progressively rehabilitated, resulting in a reduction of residual visual impacts.

6.9.2 Issues Raised in Submissions

Visual impact was raised in 25 submissions received from the public. The impacts were usually described in general terms of the proposed sand extraction operations as being out of character with the surrounding wetlands and rural landscape.

6.9.3 Consideration of Key Issues

The impact of vegetation removal is the key visual impact.

The retention of the 50 metre vegetated buffer zone between the extraction area and wetland No. 392 will provide an effective screen of extractive operation from the direction of Scotts Head. The buffer zone extends to the top of the vegetated sand dune. All extraction operations will occur behind this screen. Similar buffer zones to wetland No. 389 will provide a vegetated screen to the west, so that the extraction operations will not be open to view from that direction.

6.9.4 Conclusion

The Department's view is that visual impacts will not be significant for the surrounding community, or for those using public roads in the Gumma area.

6.10 PROPERTY VALUES

6.10.1 Property Value Impact Assessment

The EIS did not specifically address the issue of the impact of the proposal on property values. Information on the socio-economic benefits of the proposal was presented in terms of employment for one to two persons and the income generated in the local area and the importance of a source of sand to the local economy.

6.10.2 Issues Raised In Submissions

44 submissions were received from the general public regarding the negative impact of the proposal on property values. Most often the impact was perceived a being due to a loss of general amenity caused by the passage of trucks along roads in the vicinity of residences.

6.10.3 Consideration of Key Issues

The Applicant responded to the issue by stating:

There are two existing extractive industries presently operating in the Gumma area. Both involve greater use than the subject proposal. There is no evidence to suggest that property values have been detrimentally affected by these essential resource industries.

6.10.4 Conclusion

The Department does not have knowledge of fluctuations in the property market in the Gumma/Macksville area.

The Department does not believe that the proposal will have a significant impact on property values. This view is based on the relatively small proportional increase in truck traffic volumes that the proposal would generate along local roads and the remoteness of the extraction site from neighbours.

6.11 OTHER ISSUES

Other issues raised in the EIS, by government agencies or by way of public submission are considered to be minor issues, components of key issues or of minor environmental impact.

Dust from trucks is considered as a component of transport impacts, while the relative remoteness of the site and planned progressive rehabilitation program will mitigate on-site dust impacts.

General amenity issues are to a large degree considered in the sections on property values and visual impacts.

Soils and revegetation are considered in the Weed Management and Revegetation Plan.

Monitoring requirements are considered as components of management plans or conditions of consent.

7. SECTION 79C CONSIDERATIONS

Section 79C of the *EP&A Act* sets out the matters that a consent authority must take into consideration when it determines a DA.

The Department has assessed the proposal against these matters, and is satisfied that:

- The proposal is generally consistent with the provisions of the relevant planning instruments;
- The potential impacts of the proposal can either be mitigated or managed; and
- The proposal is generally in the public interest.

8. RECOMMENDED CONDITIONS OF CONSENT

The Department has prepared recommended Conditions of Consent for the proposal.

These conditions are required to:

- Prevent, minimise and/or offset adverse environmental impacts;
- Set standards and performance measures for acceptable environmental performance;
- Require regular monitoring and reporting; and
- Provide for the ongoing environmental management of the development.

The Applicant does not object to these recommended conditions.

9. CONCLUSION

The proposal would provide positive social and economic benefits to the people of the Nambucca region of NSW.

The Department is satisfied that there will be no significant impact on threatened species that are known, or likely, to utilise the proposed extraction area. Impacts would be offset by the implementation of the Applicant's Weed Management and Revegetation Plan and Feral Species Management Plan, if implemented successfully. These Plans include the treatment of lands adversely affected by previous extractive industries in adjacent areas.

The Department has recommended that 50 metre vegetated buffer zones be established between the extraction area and adjacent SEPP 14 wetlands to provide protection of these sensitive habitats from sediment and water quality impacts. The buffer zones will also provide an effective visual screen of the operations.
The community's concerns in respect of the safety of the transport route will be addressed, in part, by the provision of an improved intersection between the access road and Gumma Road, improved road safety signage and a contribution by the Applicant to the maintenance of Gumma Road.

The Department has assessed the EIS, and various submissions on the proposal, and recommends that the Minister approve the DA subject to conditions.

10. RECOMMENDATION

It is RECOMMENDED that the Minister:
(1) Consider the findings and recommendations of this report;
(2) Approve the DA under Section 80 of the Act; and
(3) Sign the attached Instrument of Consent.

David Kitto
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Mining and Extractive Industries

Chris Wilson
Director
Major Development Assessment

Report prepared by Colin Phillips.