NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Extension of the Gerroa Quarry

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2007

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EXECUTIVE SUMMARY

Cleary Bros is a major supplier of extractive materials and concrete to the construction industry in the Illawarra Region. These supplies are underpinned by two quarry operations: the Albion Park hard rock quarry and the Gerroa sand quarry.

The Gerroa quarry is located on Crooked River Road, approximately 3 km south-west of Gerroa and adjacent to the Seven Mile Beach National Park, in the Kiama and Shoalhaven local government areas.

It has been operating for over 50 years, and currently operates under a Ministerial development consent granted in September 2003. Under this consent, Cleary Bros is permitted to extract up to 300,000 tonnes of sand at a maximum rate of 80,000 tonnes a year, process this sand on site, and transport it to local and regional markets by truck.

The approved resource is almost exhausted, and to secure additional sand resources, Cleary Bros proposes to extend the quarry into a new area to the north of the existing quarry's operations.

The site (and its surrounds) contains sand, which has long been recognised as a regionally significant sand resource for the Illawarra region. It also contains remnant vegetation of conservation significance adjacent to a National Park.

The proposal involves the extension and continued operation of the Gerroa sand quarry, producing up to 80,000 tonnes of sand a year for the construction industry in the Illawarra, either as raw materials or as an input to the production of concrete.

The project is classified as a Major Project under Part 3A of the *Environmental Planning and Assessment Act 1979*, and the Minister for Planning is the approval authority for the project.

The Department received 288 submissions on the proposal: 6 from public authorities, 5 from special interest groups and 277 from the general public. None of the agencies objected to the proposal, however, 4 of the 5 submissions from the special interest groups and 138 of the 277 submissions from the general public objected to the proposal.

These objections raised a broad array of concerns about the various impacts of the project. However, the main argument in these submissions was that the short term economic benefits associated with extracting the sand on site would not outweigh the conservation benefits of preserving the vegetation on site.

The remaining (139) submissions from the general public supported the proposal, however, these submissions did not generally explain the reasons why they supported the proposal.

Key issues identified during the Department's assessment of the project were flora and fauna, surface and ground water, heritage, and visual amenity. The Department has assessed these issues in detail, and is satisfied that the impacts of the project can be managed and/or mitigated to ensure an acceptable level of environmental performance.

The proposal would extract, and facilitate the use of, sand from one of the two regionally significant sand resources in the Illawarra region, and secure at least 660,000 tonnes of sand supply for the construction industry in the region.

The proposal strikes an appropriate balance between the need to extract a valuable natural resource for the beneficial use of society and the need to protect and conserve the biodiversity values of the region.

On balance, the Department is satisfied that the proposal is consistent with the objects of the *Environmental Planning and Assessment Act, 1979*, particularly the object to encourage ecologically sustainable development, and believes the benefits of the project outweigh its costs, and should be approved, subject to conditions.

1 BACKGROUND

Cleary Bros (Bombo) Pty Ltd (Cleary Bros) is involved in the provision of construction materials to the construction industry in the Illawarra region. These supplies are underpinned by two quarry operations: the Albion Park hard rock quarry and the Gerroa sand quarry.

Cleary Bros operates the Gerroa sand quarry under a development consent granted in September 2003 by the then Minister for Infrastructure and Planning The development consent approved the extraction of approximately 300,000 tonnes of construction sand at a maximum rate of 80,000 tonnes a year, processing of this sand on the site, transporting it to local and regional markets by truck; and importing a range of construction materials for stockpiling on the site prior to dispatch to markets.

The quarry is located on the corner of Crooked River Road and Beach Road, Gerroa, approximately 3 km south-west of Gerroa and 7.5 km east of Berry (see Figure 1). The quarry, which straddles the boundary of the Kiama and Shoalhaven local government areas, has operated in various forms on the site for over 50 years.

Figure 1 – Regional Context

The major feature on the quarry site is the existing dredge pond, which is approximately 800m long and 250m wide. Extraction has been completed in the southern end of the pond and this section has been fully rehabilitated. Figure 2 below shows the site in detail, while Figure 3 shows the existing site layout.

Figure 2 – Site and Surrounds

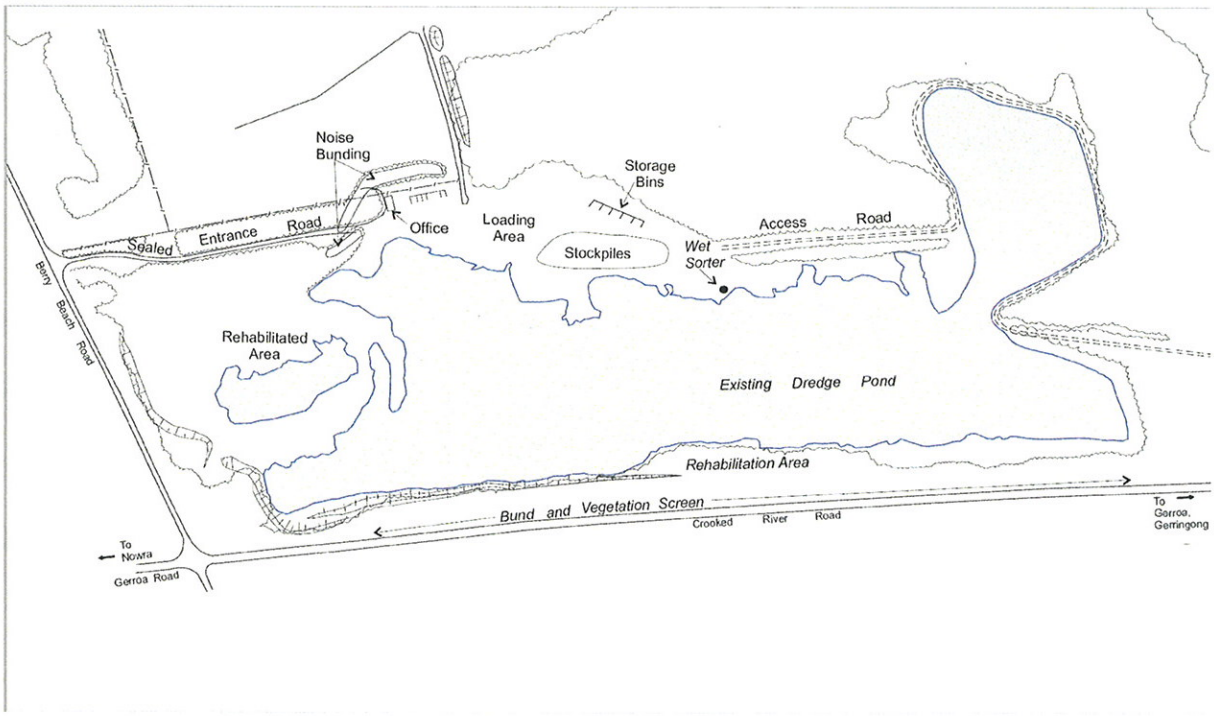

Figure 3 – Existing Quarry Layout

Although not directly related to this project application, the Department notes that Cleary Bros has lodged a Concept Plan for a tourist resort (golf course and residential units) on land adjoining the quarry. The Department has issued the Director-General's requirements for the proposed tourist resort. The Environmental Assessment (EA) for the tourist resort is expected to be lodged later this year.

2 PROPOSED DEVELOPMENT

2.1 Project Description

Cleary Bros is seeking approval for the extension and continued operation of the Gerroa sand quarry.

The main components of the project are summarised in Table 1 below and illustrated in Figures 4-7. A copy of the Environmental Assessment (EA) of the project is contained in Appendix F.

Aspect	*Description*
Project Summary	**Extension and continued operation of the Gerroa sand quarry, producing up to 80,000 tonnes of sand a year for the construction industry in the Illawarra, either as raw materials or as an input to the production of concrete.**
Resource	660,000 tonnes.
Project Life	15 years.
Construction Works	The project requires minimal construction works, as it would rely primarily on existing infrastructure. The construction works would be limited to extending the: • existing vegetation screen along the Crooked River Road frontage of the site, using a combination of earthen bunds and planting; • flood bund around the western edge of the proposed dredge pond to prevent flood waters from entering the pond, and water in the pond from entering Blue Angle Creek; and • vehicle access road along the western edge of the dredge pond, using the flood bund where possible.
Extraction	Dredging, using a floating suction dredge, in both the existing dredge pond and the proposed extension area.
Processing	The slurry from the dredge would be piped to the existing processing facilities. Once there, it would be passed through various screens in the wet sorter. The sorter would separate the slurry into sand, stone (heavier materials) and fines. The sand and stone would be stockpiled in the existing stockpile area, while the fines would be returned to the dredge pond with the wash water. The stone may also be processed in the dry sorter before it is dispatched to the market.
Import of Other Construction Materials	In accordance with current practice, other saleable construction materials – such as topsoil, mulch, blue metal, crusher dust, and crushed sandstone – would be imported onto the site from Cleary Bros other operations, and stockpiled on site before being dispatched to the market with some of the sand produced on site. The quantum of this material would vary, but is likely to be in the order of 3,000 tonnes a year.
Transport	All products would be trucked to local and regional markets. These trucks would generally use the Princes Highway via Beach Road or via Crooked River Road.
Compensatory Planting	At least 24 hectares of native vegetation would be planted on the site to compensate for the 3.6 hectares of vegetation that would be removed.
Conservation Zone	Approximately 56 hectares of vegetation (including vegetation with high conservation significance) would be conserved and protected from future development proposals.
Rehabilitation	The dredge pond would be retained, however, the adjacent shoreline would be stabilised and replanted with native vegetation, including wetlands.
Operational Hours	7am to 6 pm Mondays to Fridays; and 7am to 1pm on Saturdays.
Employment	Peak workforce of 9, including 5 truck drivers.
Capital Value	$75,000.

Table 1: Major components of the Gerroa sand quarry project

The application seeks approval to extend sand extraction to the north of the dredge pond and to continue sand extraction from the area approved for sand extraction in 2003. The continuation of sand extraction within the existing quarry area would enable sand that has settled on the floor of the dredge pond to be extracted simultaneously with extraction of the extension area. Extraction of the sand in the processing area would be the final stage of sand extraction on the Gerroa site.

It is noted that the proposed quarry extension is a modified version of an earlier proposal that was approved by the Land and Environment Court in 1990 (see Figure 6), and would clear significantly less native vegetation than that proposal (even though the Court's approval has now lapsed).

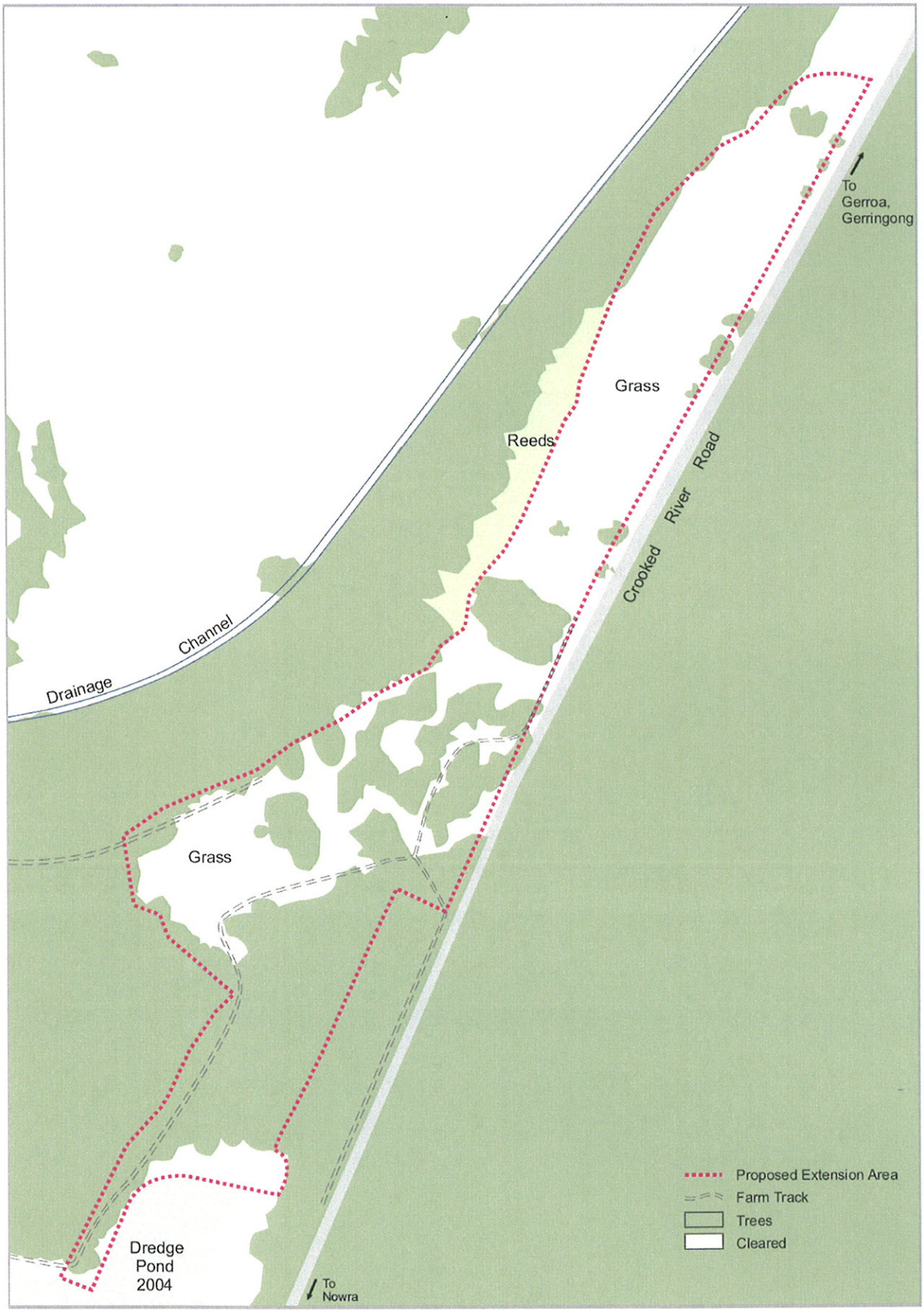

Figure 4 – Proposed Extension Area

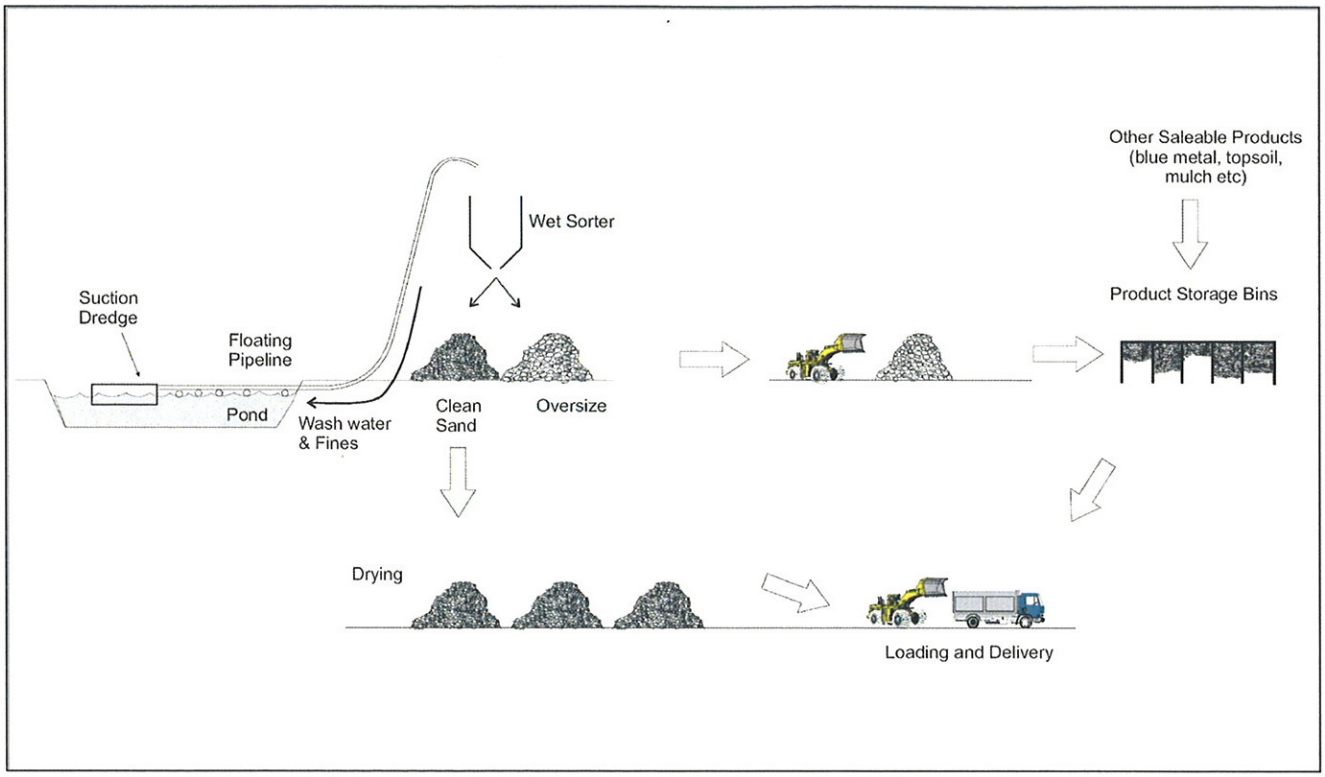

Figure 5 – Process Flow Diagram

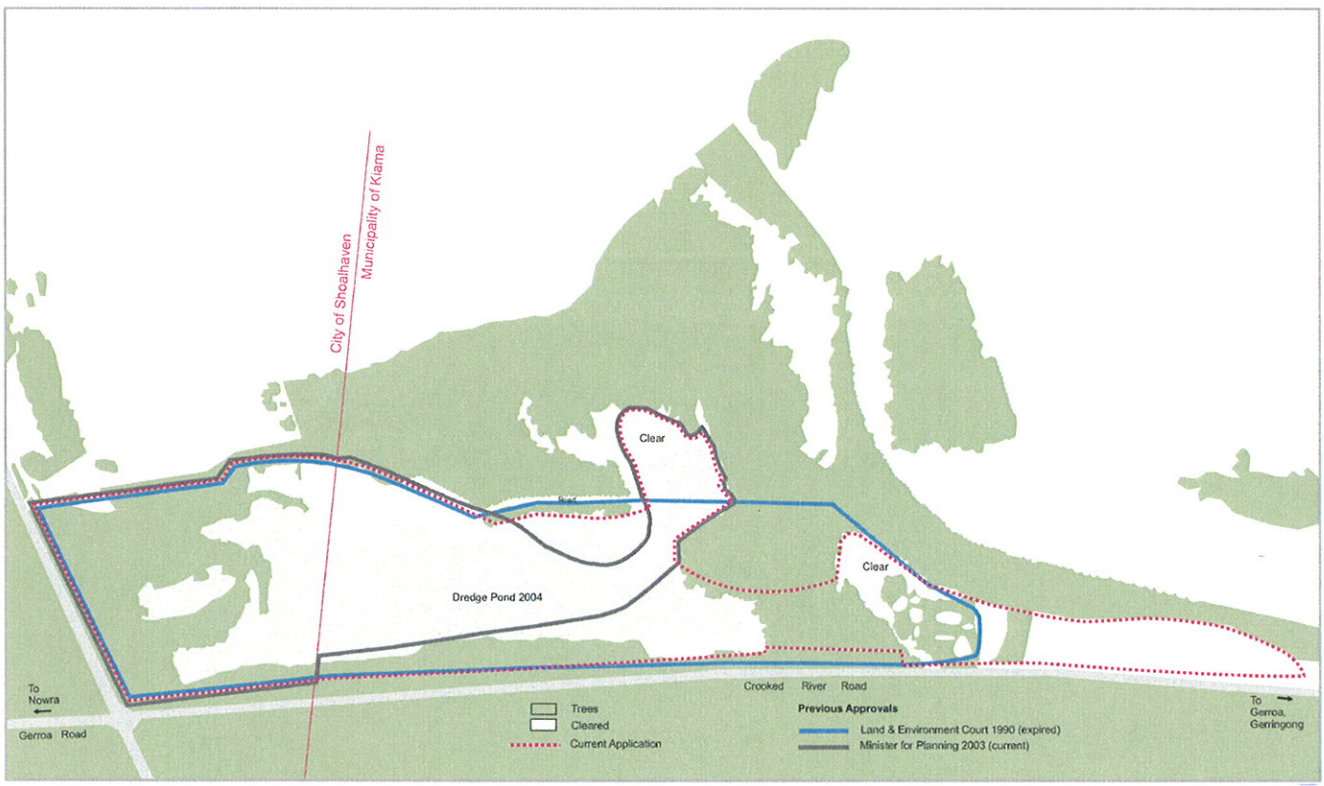

Figure 6: Current proposal in relation to previously approved quarry operations

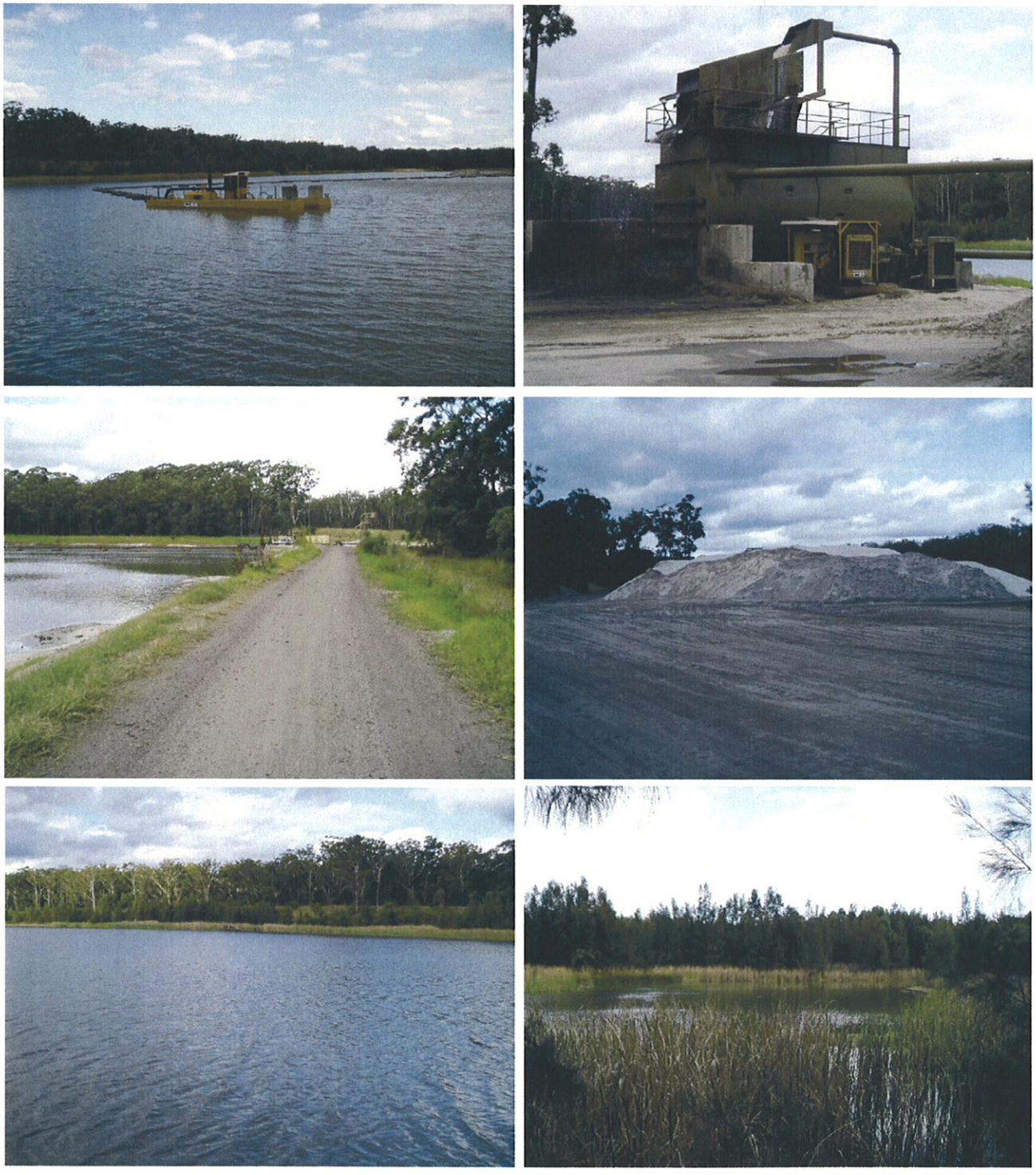

Figure 7: Site Photographs (Left to right from top to bottom: Existing dredge pond and dredge; Wet sorter processing plant; Flood bund; Product sand stockpile; Recent rehabilitation on eastern shoreline; Mature rehabilitation at site's southern end)

2.2 Project Setting

The quarry forms part of a large rural property of about 350ha extending from Crooked River Road westward to the southern railway (see Figure 2). The majority of the property is cleared grazing land, primarily low-lying and flat. It was formerly known as Foys Swamp, but has been drained by a series of channels which lead to Blue Angle Creek and then on to the Crooked River.

There is a large stand of remnant vegetation on the property to the immediate west and north of the quarry, which includes low-lying swampland and a number of endangered ecological communities (EECs).

Seven Mile Beach National Park occupies all of the land to the east of the property across Crooked River Road, and is comprised of a zone of bushland of about 500m wide along the coastline.

To the north of the property, about 3 kilometres from the quarry, there is a sewage treatment plant and then the village of Gerroa.

To the south of the property, there are a number or rural properties, with the closest residence being located about 90m from the entrance to the quarry off Beach Road and about 400m from the quarry's processing facilities.

Other residences in the locality are located to the north-west, and a caravan/holiday park is located 1.5km to the north-east. Within the national park are recreational and picnic sites, some 500m to the east of the quarry.

2.4 Project Need

Cleary Bros is required to extend the Gerroa sand quarry because the sand resource within the existing quarry is almost exhausted.

The extension area contains a proven sand resource, which is recognised in the *Illawarra Regional Environmental Plan No.1* as a regionally significant extractive resource for the Illawarra. The *Illawarra Regional Strategy*, which provides for the future growth of the Illawarra region over the next 25-years, also identifies the Gerroa sand resource as an important extractive resource.

Cleary Bros claims that sand is an essential ingredient for Cleary Bros' vertically integrated construction materials business. The company does not have access to any other sand resource in the Illawarra area that could replace the output of the Gerroa operation. The only other major sand extraction operation is at Dunmore Lakes, which is controlled by Boral – one of Cleary Bros competitors.

Cleary Bros claims that the proposal is critical to the ongoing success of its business in the Illawarra region, as it would secure at least 15 years worth of sand supply for the business, and enable it to sustain its supply of raw materials and concrete to the construction industry in the Illawarra region. It also claims the proposal is essential for ensuring that there is ongoing competition in the region's construction materials industry.

The company estimates that the resource has a net present value of $2.4 million (before external costs, such as vegetation clearing, are taken into account).

The Department is satisfied that there is a demonstrable need for the project, given that it would provide a valuable resource for the construction industry, realise considerable economic benefits, and importantly, ensure the maintenance of healthy competition in the supply of sand and construction materials in the Illawarra region, thus helping to keep the price of construction materials at reasonable levels over the medium to long term.

3 STATUTORY CONTEXT

3.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) because it is an extractive industry development in the coastal zone, and therefore meets the criteria in Schedule 2 of *State Environmental Planning Policy (Major Projects) 2005*.

Consequently, the Minister for Planning is the approval authority for the project.

3.2 Permissibility

Under Section 75J of the EP&A Act, the Minister cannot approve the carrying out of a project that would be wholly prohibited under an environmental planning instrument.

The site straddles the Kiama and Shoalhaven local government areas and is therefore subject to the provisions of the *Kiama Local Environmental Plan 1996* (Kiama LEP) and *Shoalhaven Local Environmental Plan 1985* (Shoalhaven LEP).

The portion of the site within the Shoalhaven local government area (see Figure 8) is zoned part 1(a) Rural (Agricultural Production) and part 7 (d2) Environment Protection (Special Scenic). The project is permissible in the Rural zone but prohibited in the Environment Protection zone.

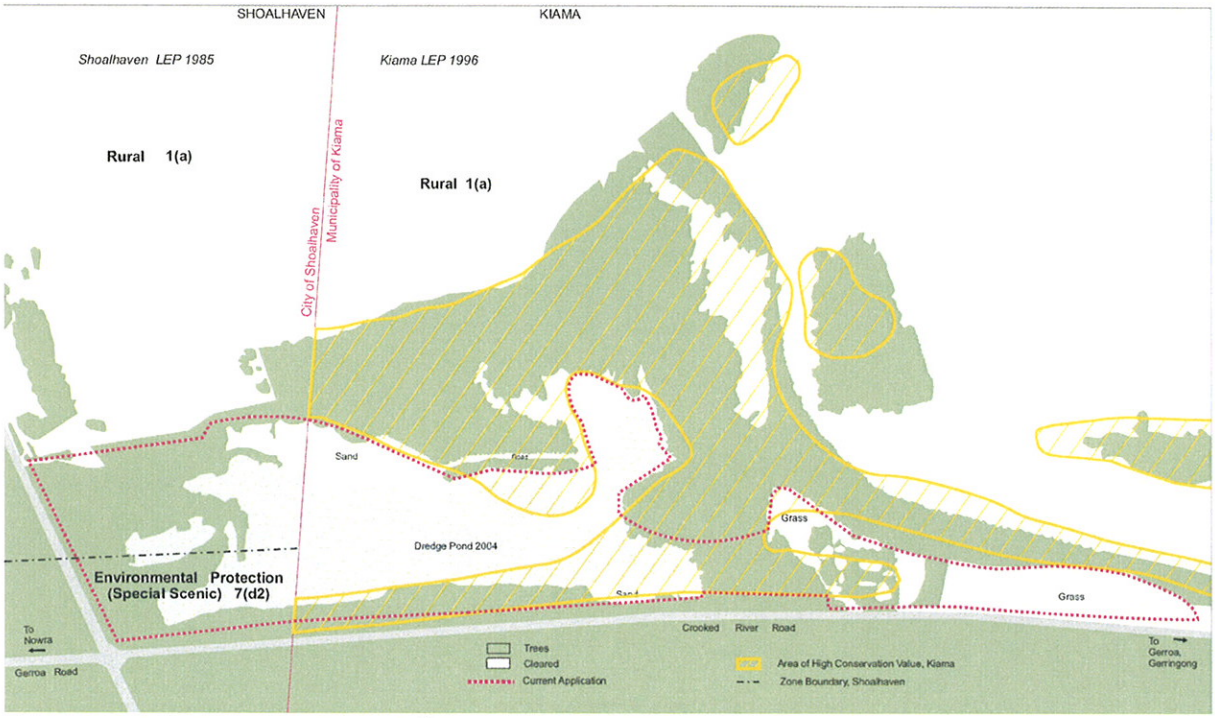

Figure 8 – Zoning

The portion of the site within the Kiama local government area (see Figure 8) is zoned 1(a) Rural (A). Extractive industries are permissible with consent in this zone. However, cause 37 of the Kiama LEP applies to certain land which is identified as an "area of high conservation value". Notwithstanding this, clause 37(2) prohibits extractive industry development on land of high conservation value, and since the site includes land that has been identified in the Kiama LEP as an area of high conservation value (yellow hatching in Figure 8) the proposal is prohibited on part of the land in the Kiama LGA.

However, as the project is permissible with consent on the majority of the site, the Department is satisfied that the Minister may approve the project even though part of the project is prohibited.

3.3 EA Exhibition

Under section 75(3) of the EP&A Act, the Director-General is required to make the EA for a project publicly available for at least 30 days.

After accepting the EA for the project, the Department placed the EA on public exhibition:

- for 6 weeks between 8 November and 19 December 2006:
  - on the Department's website; and
  - at the Department's Information Centre, Kiama Municipal Council, Gerringong Branch Library, Shoalhaven City Council and the Nature Conservation Council;
- notified landowners in the vicinity of the site by letter about the exhibition of the EA;
- notified relevant State government authorities and Kiama Municipal Council and Shoalhaven City Council by letter; and

- advertised the exhibition of the EA in the *Kiama Independent, Nowra Shoalhaven News* and *Illawarra Mercury* newspapers.

The Department considers these actions satisfy the requirements in section 75H(3) of the EP&A Act.

3.4 Environmental Planning Instruments

Under section 75I(2) of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the provisions of any State Environmental Planning Policies (SEPPs) that substantially govern the carrying out of the project. The Department has assessed the project against the relevant provisions of the following environmental planning instruments (see Appendix G):

- *State Environmental Planning Policy No. 11 – Traffic Generating Development;*
- *State Environmental Planning Policy No. 26 – Littoral Rainforests;*
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development;*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*; and
- *State Environmental Planning Policy No. 71 – Coastal Protection.*

Following its assessment, the Department is satisfied that the project can be constructed and operated in a manner that is consistent with the relevant requirements of these environmental planning instruments.

3.5 Objects of the Environmental Planning and Assessment Act 1979

Decisions made under the EP&A Act must have regard to the objects of the EP&A Act, as set out in section 5 of the EP&A Act. The Minister's consideration and determination of the project application must be consistent with the relevant provisions of the EP&A Act, including the objects of the EP&A Act. The objects of most relevance to the Minister's decision on whether or not to approve the project are found in section 5(a)(i), (ii), (vi) and (vii) of the EP&A Act. They are:

(a) to encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,

(ii) the promotion and co-ordination of the orderly and economic use and development of land,

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

(vii) ecologically sustainable development, and"

The EP&A Act adopts the definition of Ecologically Sustainable Development (ESD) found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD "requires the effective integration of economic and environmental considerations in decision-making processes" and that ESD "can be achieved through" the implementation of the principles and programs including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms. In applying the precautionary principle, public decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment and an assessment of the risk-weighted consequences of various options.

The Department has fully considered the relevant objects of the EP&A Act, including the encouragement of ESD, in its assessment of the project.

The assessment has considered all the significant economic and environmental issues associated with the proposal in an integrated way, and sought to avoid any potential serious or irreversible damage to the environment based on an assessment of potential risks of the proposal.

The Department believes the project would generate regional and local economic benefits by the extraction of a regionally significant sand resource (DPI advice to Kiama Council on extractive resources, *Illawarra Regional Environmental Plan*, and *Illawarra Regional Strategy*). It also believes would not have a significant impact on the environment, or any threatened species or endangered

ecological communities, and would provide adequate compensation for the limited vegetation clearing that is an unavoidable impact of the proposal.

Finally, the Department is satisfied that the project would strike an appropriate balance between the orderly and economic use of the land, which contains a scarce sand resource, and the protection and conservation of the area's biodiversity values.

3.6 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements with respect to the project. The Department is satisfied that the environmental assessment requirements have been complied with.

4 CONSULTATION AND ISSUES RAISED

During the exhibition period the Department received 288 submissions on the project (see Appendix E for a copy of these submissions):

- 6 from public authorities;
- 5 from special interest group; and
- 277 from the general public (comprising 69 individual submissions and 208 form letters).

4.1 Public Authorities

Section 75I(2)(b) of the EP&A Act requires that the Director-General's assessment report include advice provided by public authorities on the project. The key issues raised by the public authorities are summarised below:

The **Department of Environment and Climate Change** (DECC), former Department of Environment and Conservation, does not object to the project and recommended additional statement of commitments to address biodiversity conservation and Aboriginal cultural heritage. These include:

- maintaining an adequate buffer between the extraction area and the conservation/remnant vegetation area;
- implementing a ground water monitoring program;
- developing a tree clearance protocol and establish the northern and southern rehabilitation areas before the east-west link is cleared;
- developing a site rehabilitation program for the staged rehabilitation of the site; and
- developing a compensatory strategy for the mining of areas containing Aboriginal cultural heritage items.

The **Department of Water and Energy** (DWE), former Department of Natural Resources, does not object to the project, but raised a number of issues relating to:

- the habitat value of the vegetation on the site and consistency with SEPP 26 and SEPP 71;
- the rehabilitation plan should include the planting of a mix of wetland plant species on the entire pond foreshore;
- groundwater extraction and monitoring bores will need to be licensed; and
- economic justification.

The **Department of Primary Industries** (DPI) does not object to the project, but recommended a number of conditions of approval covering:

- fish management; and
- provision of production data.

The Roads and Traffic Authority (RTA) does not object to the project and recommended a condition of approval relating to the intersection of the site access road with Beach Road.

The **Kiama Municipal Council** does not object to the project, but raised a number of issues relating to:

- the cumulative loss of flora and fauna over the life of the project;
- the importance of the vegetation links between the site and Seven Mile Beach National Park;

- consideration of the effectiveness of the restoration projects against *Green Offsets for Sustainable Development;*
- Aboriginal cultural heritage, acid sulphate soils, and demand for the resource.

The **Shoalhaven City Council** does not object to the project, but raised a number of issues relating to:

- the design of the site access road intersection with Beach Road;
- section 94 contributions for the maintenance of Beach Road; and
- assessment of the impact of the project on koalas.

4.2 General Public and Special Interest Groups

The 277 submissions from the general public consisted of 69 individual letters and 208 form letters, which were equally divided in support of or objected to the project (139 in support/138 objected or raised concerns). The submissions from 4 of the 5 special interest groups (Australian Conservation Foundation Shoalhaven Branch, Conservation Volunteers Australia, Gerroa Environmental Protection Society Inc (GEPS), Kiama Greens;) objected to the project. The Kiama Municipal Council South Precinct did not object or support the project but raised a number of concerns

The submissions objecting to the project raised a broad array of concerns about the various impacts of the proposal. However, the main argument in these submissions was that the short term economic benefits associated with extracting the sand on site would not outweigh the conservation benefits of preserving the vegetation on site.

This argument can be summarised as follows. sand is abundant in the Kiama/Shoalhaven area and this proposal would clear 3.6ha of forest to extract 660,000 tonnes of sand; the forest is: listed as an area of high conservation value in both the *Illawarra Regional Strategy* and Kiama LEP; contains 2 endangered ecological communities; and forms part of an important habitat corridor in the region with the adjoining national park; and clearing of forest of high conservation value is not justified, given the abundance of sand in the region.

The submissions which supported the project, apart from a simple statement supporting the project, gave little or no explanation of the reasons for supporting the project.

Cleary Bros' response to issues raised by the submissions is provided in Appendix D. The Department's consideration of the issues raised by the general public and public authorities is addressed in Section 5 below.

5 ASSESSMENT

5.1 Flora and Fauna

The Cleary Bros property consists of a 350ha landholding which has been largely cleared for agricultural uses, except for remnant bushland in the south eastern part of the property, adjacent to the existing sand quarry. A flora and fauna assessment was carried out on a 16.5ha project area extending to the north and west of the existing quarry between the Foys Swamp drainage channel (Blue Angle Creek) and Crooked River Road.

Native Vegetation

The vegetation on the site forms part of a large tract of remnant native vegetation, which is considered to have significant conservation value in both the *Illawarra Regional Strategy* and the Kiama LEP. This conservation value stems from the fact that the remnant vegetation is adjacent to the Seven Mile Beach National Park, contains vegetation from at least 4 endangered ecological communities (EEC), including a major stand of Swamp Sclerophyll Forest which is poorly represented in the national estate, and forms part of a fledgling east-west vegetation corridor between the national park and the nearby escarpment.

The project would:

- clear up to 7.5ha of the site, which is comprised of 3.9ha of introduced grassland and 3.6ha of native vegetation, including 2ha of the Bangalay Banksia Forest and Littoral Rainforest endangered ecological communities (see Table 2 and Figure 9);
- remove the east-west corridor currently linking the national park to the regionally significant stand of Swamp Sclerophyll Forest, which is located on the western side of the existing dredge pond as well as the quarry extension area; and
- include extraction operations adjacent to both the Swamp Sclerophyll Forest and Phragmites Reedland endangered ecological communities.

Vegetation Type	Area (ha)		Comment
	Existing	To be Cleared	
Littoral Rainforest	0.5	-	EEC – good quality community adjacent to Crooked River Road
Blackbutt-Banksia Forest	1.7	1.7*	Regrowth of previously logged area, vegetation is mainly younger remnant trees. * Includes 0.4 ha of Littoral Rainforest.
Bangalay-Banksia Forest	1.6	1.6	EEC – heavily disturbed community of scattered trees which has been partially cleared.
Swamp Sclerophyll Forest on Coastal Floodplains	7.0	-	EEC – community of high conservation value on the western edge of the proposed extraction area.
Phragmites Reedland	-	-	EEC – associated with the Swamp Sclerophyll Forest. Occurs on waterlogged land adjacent to the Swamp Sclerophyll Forest.
Miscellaneous Forest	0.3	0.3	Area of local native trees planted in 1993 as a visual screen.
Introduced Grassland	5.4	3.9	Exotic grasses in the northern end of the proposed extraction area.
Total	**16.5**	**7.5**	3.6 ha trees/3.9 ha grassland

Table 2 – Vegetation Communities within the Project Area

Cleary Bros states that these impacts have been kept to a minimum through the detailed design of the proposed extension, by:

- avoiding any clearing of the regionally significant Swamp Sclerophyll Forest EEC;
- ensuring that the proposed quarry extension area is setback at least 5m from both the Swamp Sclerophyll Forest and Phragmites Reedland EECs;
- minimising the clearing of Littoral Rainforest on the site and ensuring that the better quality Littoral Rainforest is protected from any development; and
- confining the proposed extension as much as possible to the areas of lessor conservation significance, such as the Blackbutt-Banksia Forest and introduced grassland.

The ecological assessment considered the EEC that would be removed had low conservation value because it was of poor quality, being highly modified and disturbed from previous logging and clearing activities. Cleary Bros considers the clearing of the vegetation would have minimal impact on the long term survival of these endangered communities in the locality. The higher quality Littoral Rainforest community in the project area would be retained and other high conservation value rainforest communities exist to the north of the site (SEPP 26 Littoral Rainforest areas) and within the national park. The Bangalay Sand Forest is well represented in the national park and surrounding land, and of higher quality than the small area of low conservation value in the project area that would be removed. The ecological assessment considered the clearing of 3.6ha of native vegetation for the project would not have a significant impact on any other threatened flora or fauna species.

Cleary Bros acknowledged the project would generate unavoidable impacts which should be offset. To offset these impacts, Cleary Bros proposes to:

- carry out a range of compensatory planting on the site (see Figure 10) covering an area of approximately 24ha, which is almost seven times the amount of native vegetation that would be lost as a result of the project;
- create 2 new east-west links between the National Park and the Swamp Sclerophyll Forest, one to the south of the existing dredge pond by strengthening the rehabilitation over previously mined areas, and the other across the grassland to the north of the proposed extension area;
- permanently conserving approximately 56ha of vegetation on the site (see Figure 11), including the regionally significant stand of Swamp Sclerophyll Forest to the west of the site; and

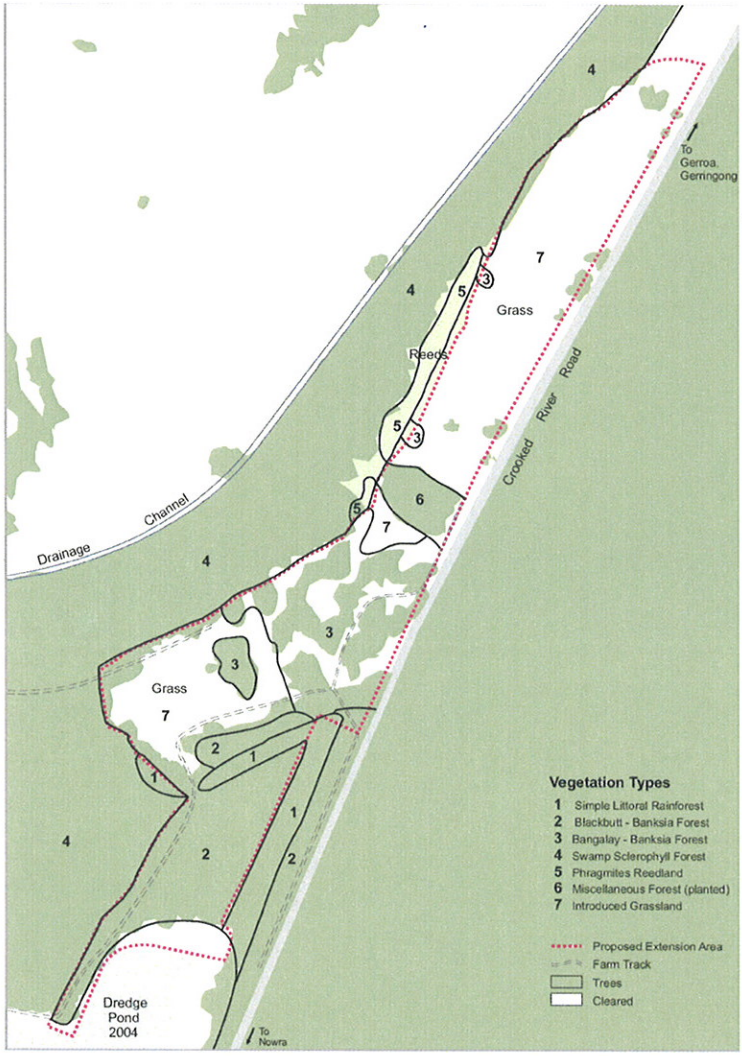

Figure 9 – Vegetation Communities

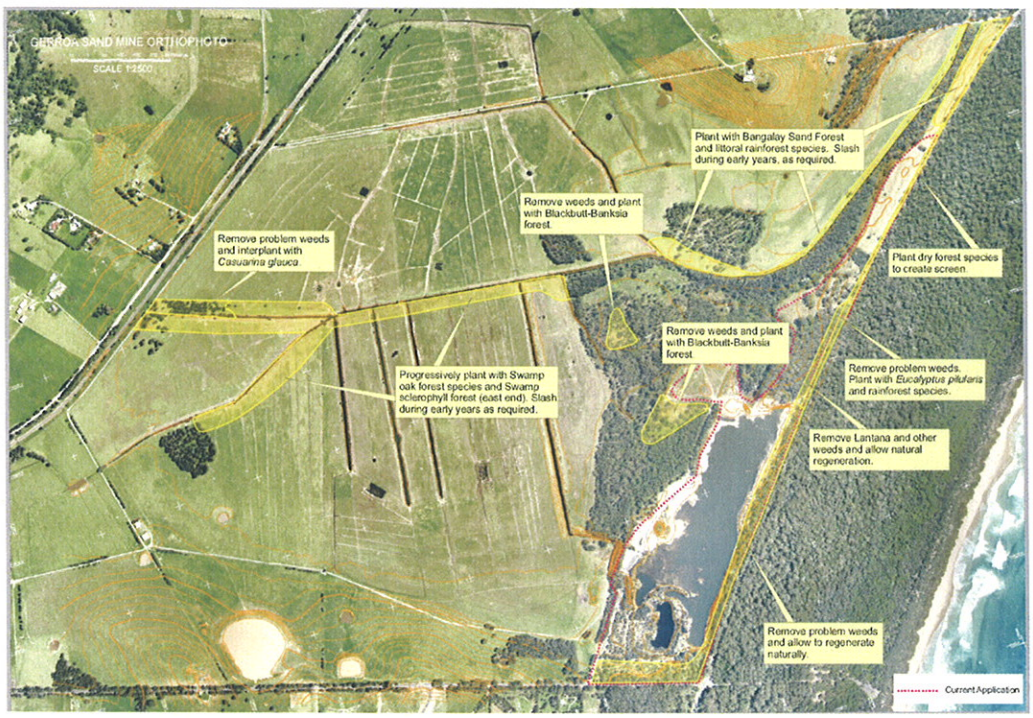

Figure 10 – Compensatory Planting

Figure 11: Proposed Conservation Area To Be Protected Under Voluntary Planning Agreement

- rehabilitate the disturbed areas for conservation, planting a range of native vegetation including wetland species to complement the surrounding conservation area.

This means that once the site is fully rehabilitated, it would contain a large water feature (dredge pond) surrounded by a large stand of native vegetation which contains at least 4 EEC species, and has good linkages to the adjoining national park.

The compensatory planting proposal involves revegetation of approximately 24ha of native vegetation, of which 85% would be characteristic of EEC species. These include Bangalay Sand Forest/Littoral Rainforest and Swamp Sclerophyll Forest/Swamp Oak Forest and non-EEC Blackbutt Banksia Forest in various locations across the site, which are consistent with existing vegetation communities. The planting would improve habitat linkages across the property, between currently isolated stands of vegetation and the regionally significant vegetation adjacent to the quarry and the national park.

The Department engaged an independent ecological expert (Cumberland Ecology) to review the ecological assessment of the proposal and the proposed compensation offset package (see Appendix C).

Severing of Vegetation Links

The community were concerned that the proposal would result in the loss of an existing vegetation link between the national park and vegetation on the site, which would restrict fauna movements between the two areas.

Cleary Bros proposes to compensate for the loss of this east-west link by creating 2 new east-west links: one to the south of the existing dredge pond on previously rehabilitated land, and the other to the north of the proposed quarry extension on land that is currently covered by grass. It argues these new links would provide suitable habitat for any fauna wanting to move between the national park and remnant vegetation on the site.

Several submissions were concerned about the time it may take to suitably establish the new east-west links, and raised the possibility that the existing east-west link may be severed before these new vegetation links are suitably established.

Cleary Bros contends that at current extraction rates it would take at least 6 years to completely remove the existing east-west link, and that this gives more than enough time to establish the new links To support this argument, Cleary Bros states that the planting that was carried out in 1993 to the north of the existing east-west link (see vegetation type 6 in Figure 9) as a vegetation screen, is now well established with tree heights of between 15-20m and an extensive understorey of 28 native species. Cleary Bros has also made a commitment to ensure that the new east-west links are suitably established before the existing link is removed.

The Department's ecologist supported this commitment, but also made the point that the types of fauna that currently use the site, and particularly the threatened bat and bird species, are fairly mobile and would not depend on these vegetation links for movement.

Both the Department and the DECC agree with this assessment, and are satisfied with Cleary Bros' commitment to establish the habitat links to the north and south of the site before the existing link is severed.

Hydrological Impacts

The community argued the EA did not adequately assess the impact of changes in the ground water regime on the ground water dependent ecosystems both on and in the vicinity of the site, and in particular on the Swamp Sclerophyll Forest.

In response, Cleary Bros says the groundwater impacts of the proposal are likely to be local and temporary with any depressions in groundwater levels associated with extraction recovering quickly due to the high transmissivity of the aquifer sands. To support this, it points to the fact that there has been no evidence of sand extraction at the quarry having an adverse effect on the Swamp Sclerophyll Forest adjoining the quarry, even though extraction has occurred to within 5 metres of this community before. To protect the Swamp Sclerophyll Forest, Cleary Bros proposes to maintain a 5m buffer between the existing vegetation and the dredge pond, and argues that - consistent with past practice - his would be sufficient to ensure that there are no adverse impacts on this community.

The Department's ecologist agrees with Cleary Bros' arguments.

The Department and the DECC are satisfied that an adequate buffer area would be provided between the extraction area and both the existing vegetation on site and proposed compensatory planting areas. However, they believe Cleary Bros should be required to monitor the vegetation and groundwater adjacent to the dredge pond to ensure that no adverse impacts occur, and to implement suitable contingency measures should any adverse impacts be detected during this monitoring.

Compensatory Planting Package

The community groups were critical of the proposed compensatory planting package, saying it would not maintain or improve the biodiversity values of the area, nor offset the loss of coastal forest vegetation. In particular, they argued that some of the proposed planting was more akin to landscaping planting than biodiversity conservation planting; and that it would very difficult, if not impossible, to recreate the conservation values of the vegetation that would be removed.

Cleary Bros disputes this, saying the package – which involves the planting more than six times the amount of vegetation than would be removed – would result in a net gain of vegetation in the area; and that in the long term, this planting would enhance the conservation value of the significant vegetation on site (such as the Swamp Sclerophyll Forest) as well as increase the total area of vegetation on site.

The Department's ecologist was critical of some elements of the proposed package, particularly the narrow strips of planting proposed to the west of the Swamp Sclerophyll Forest. He argued that this vegetation would have little conservation value, and was likely to be susceptible to weed invasion and edge effects. He also acknowledged that it may take some time for the proposed planting to establish, and develop into useful flora and fauna habitat. However, he was satisfied that the proximity of the proposed plantings to existing native vegetation would assist with the rate of natural regeneration, as these plantings would be close to the necessary seed sources. He was also satisfied that the proposed package would be successful if Cleary Bros implemented the revegetation plan over a long period, and placed considerable effort in making sure the new planting succeeded, as the swamp

communities tend to regenerate easily under the right hydrological conditions, and are relatively simple in terms of diversity of species.

Nevertheless, both the DECC and the Department's ecologist agreed that compensatory planting on its own would not be sufficient to offset the impacts of the proposal, and should be complemented by the protection of the high conservation vegetation on site, such as the Swamp Sclerophyll Forest which is currently under-represented in the national estate.

In response to these criticisms, Clearly Bros revised its compensatory package, and agreed to permanently protect the high conservation value vegetation adjoining the quarry (see Figure 11). With the proposed planting and the inclusion of this vegetation, almost 56 hectares of the site would be set aside for conservation and protected from future development. Cleary Bros proposes to achieve this by entering into a voluntary planning agreement with the Minister, and registering this agreement on the title of the land.

The Department, DECC and the Department's ecologist are satisfied that the revised offset would more than compensate for the 3.6 hectares of vegetation that would be removed by the proposal.

In addition, although the Department agrees that some of the proposed planting may have limited conservation value, it believes that the rest of the planting is essential to ensure there is no net loss of vegetation in the area in the medium to long term, and that a large proportion of this planting is likely to provide useful habitat in the area over time.

Consequently, it is satisfied that the proposal would not compromise the biodiversity values of the area (in particular the national park), and that with good management it should actually enhance these values in the medium to long term, and is therefore consistent with the aims of SEPP 71 which seek to protect the natural attributes of the coast.

Cumulative Impacts

A number of community groups argued that the impacts of the project should be considered along with the cumulative impacts of all previous sand quarrying activities in the area, which have resulted in the clearing of around 80ha of vegetation in the last 50 years.

The Department does not support this approach to cumulative impact assessment which singles out the impacts of a particular industry in an area, rather than the impacts of all development in the area; and which assesses the impacts of vegetation clearing from some arbitrary date in the past (such as 50 years ago). Instead, the Department favours the current practice – which is enshrined in the *Threatened Species Conservation Act 1995* - of considering the impacts of the proposal on the existing environment taking into account its current conservation significance.

This is what Cleary Bros has done in the EA, and the Department is satisfied that it has adequately assessed the cumulative impacts of the project on the conservation significance of the region.

Koala Habitat

The community believes koala colonies may exist in the area, as there was recently an unconfirmed sighting of a koala in the vicinity of the quarry.

Cleary Bros states that the last reported sighting of a koala in the Seven Mile Beach area was in the 1960s, and various fauna surveys in the area since that time have not recorded any koalas/koala colonies on the site or adjacent national park. The nearest koala colonies in the Illawarra Region are near Mount Murray (about 29 km north-west of the site) and the western side of Morton National Park (about 65 km south-west of the site). As there are no koala colonies in the Gerroa area, the koala is likely to be a lone wandering male from the colonies in the Illawarra Region. Wandering males are not uncommon in koala colonies and they are known to roam large distances from their colony for a period of time.

Cleary Bros states that *State Environmental Planning Policy No. 44 – Koala Habitat Protection* (SEPP 44) does not apply to the proposal as the site and surrounding land is not "core koala habitat" as there are no breeding colonies in the area or historical records of a koala population in the area, or "potential koala habitat" as no koala feed trees are located within the proposed extraction area. Although two listed koala feed tree species (Swamp mahogany and Forest red gum) are located on the site (near

the quarry access road and in the Swamp Sclerophyll Forest area), the proposal does not involve the clearing of these species. The Department agrees that the proposal does not trigger SEPP 44 as the proposal does not involve the clearing of any koala feed trees.

To minimise the impact of the project on any roaming koalas in the area, Cleary Bros has committed to inspect each tree for koalas on the day of the clearing operation. Should a koala be found, then clearing would not proceed until the koala removed itself from the area. The Department's ecologist considers that as only wandering individual koalas are likely to occur on the project area, the pre-clearance tree surveys proposed by Cleary Bros would be adequate to ensure that the project has no detrimental impact on koalas.

The Department and the DECC are satisfied with the assessment of the impact of the proposal on koalas and koala habitats.

Threatened Fauna

The flora and fauna assessment identified a number of endangered or vulnerable fauna species which are known to occur or have been recorded in the project area and national park. These are:

- Endangered species – Green and Gold Bell Frog and Regent Honeyeater
- Vulnerable species – Glossy Black Cockatoo, Australian and Black Bittern, Swift Parrot, Powerful and Masked Owl, Spotted-tail Quoll, Large Bentwing-bat, Grey-headed Flying-fox, Yellow-bellied Sheathtail-bat and Greater Broad-nosed Bat.

The Green and Gold Bell Frog is found in fresh water wetlands and occupies the Coomonderry Swamp (to the south of Beach Road) and nearby dams and ponds. These frogs have been recorded in the rehabilitated southern part of the dredge pond. The project is unlikely to have an impact on these frogs as the rehabilitated southern part of the pond is not affected by the project. The creation of additional wetland species as part of the pond rehabilitation program would increase potential habitats for these frogs.

The clearing of 3.6ha of native vegetation could potentially impact on the foraging or breeding habitat of the above mentioned vulnerable species. However, the flora and fauna assessment concluded the project is unlikely to place at risk the extinction of a local population of these species, as there are few if any suitable tree hollows or large trees suitable for breeding/roosting, the small area of the native vegetation that would be cleared and the availability of similar vegetation in the national park, and the large foraging areas of these species. The Swamp Sclerophyll Forest is an important habitat for the Swift Parrot and Regent Honeyeater as Swamp mahogany usually flowers during the winter. The project does not affect the regionally significant Swamp Sclerophyll Forest which would be permanently conserved as part of the compensation package.

Aquatic Species

The lack of consideration of aquatic flora and fauna species was raised by the community. Cleary Bros states that the only aquatic flora and fauna in the area is in Blue Angle Creek and the dredge pond. The EA notes that that the proposal would not impact on Blue Angle Creek or the southern part of the dredge pond. The southern part of the dredge pond has been rehabilitated with wetland species. Similar species would be planted around the rehabilitated dredge pond, providing additional habitats for flora and fauna in the area. Cleary Bros has made a commitment to include fish management in its Management Plan for the proposal to prevent breeding of feral fish in the dredge pond.

The Department's ecologist is satisfied that impacts on aquatic flora and fauna has been adequately assessed.

The proposed sand extraction area does not encroach within 40m of the Blue Angle Creek riparian zone. To prevent flood waters from entering the pond and pond waters from overflowing, a flood bund would be constructed on the western boundary of the dredge pond. The Department is satisfied that the proposal has minimal impact on the existing drainage lines and Blue Angle Creek.

Survey Methodology

The community groups state that the flora and fauna assessment may be inadequate as surveys may not have been conducted in accordance with DECC guidelines.

Cleary Bros states that its ecologist (Kevin Mill & Associates) has been studying the site since 1989 and has made frequent visits since that time, including 2 annual visits for the past 6 years. As a result its ecologist has an extensive knowledge of the site and enough time has been spent investigating and surveying its flora and fauna. Cleary Bros considers the ecological assessment of the site is thorough and considers all likely flora and fauna impacts.

The Department's ecologist notes that the species list provided in Cleary Bros ecological assessment indicates that adequate surveys have been conducted due to the large diversity of flora and fauna on the site. The Department, DECC and the Department's ecologist are satisfied with the flora and fauna surveys of the project area.

Conclusion

The Department, DECC and the Department's independent ecologist are satisfied with the assessment of flora and fauna on the site and considers the compensation package of approximately 24ha of revegetation, creation of 2 new east-west links, protection of approximately 56ha of vegetation on the site would provide adequate compensation for the clearing of 3.6ha of native vegetation (of which approximately 2ha are EEC species). The compensation package is equivalent to nearly seven times the amount of vegetation that would be cleared.

To secure the long term management of the compensation package, Cleary Bros has agreed to enter into a Planning Agreement with the Minister under section 93F of the EP&A Act. The agreement would require Cleary Bros to protect and maintain the vegetation in the Compensatory Planting area and register the Planning Agreement on the title of the land, which would secure the long term protection of the remnant vegetation, and protect it in perpetuity by binding subsequent owners of the land to protect the remnant vegetation.

To minimise and manage the impacts of the project on flora and fauna, the Department believes Cleary Bros should be required to prepare a comprehensive Landscape and Rehabilitation Management Plan, which includes:

- a description of the short, medium and long term measures that would be implemented to rehabilitate the site, implement the compensatory planting, and manage remnant vegetation and habitat on the site;
- detailed assessment and completion criteria for the offset strategy, and the rehabilitation of the site;
- a program to monitor the performance of the rehabilitation over time; and
- the measures that would be implemented to minimise and manage impacts on flora and fauna.

5.2 Water Resources

The site is located within the catchment of Blue Angle Creek, which flows to the Crooked River before discharging to the Pacific Ocean via a restricting sandbar at Gerroa (see Figure 12). The former Foys Swamp, which has undergone drainage works for rural landuse, is located to the west of the site.

The project has the potential to impact water resources in a number of ways, including impacts to:

- riparian areas, including Blue Angle Creek;
- surface water and groundwater flows, and water availability to downstream water users;
- surface water and groundwater quality; and
- flood behaviour and storage capacity.

Many of the submissions raised concerns about the potential surface and ground water impacts of the project. These concerns particularly related to the impacts of increasing the size and depth of the dredge pond, impacts on the hydrology of Blue Angle Creek and acid sulfate soils.

Riparian Areas

The closest riparian areas to the site are Blue Angle Creek and the drainage channels associated with Foys Swamp. Both of these riparian areas, in the vicinity of the site, have been significantly modified with drainage flowing through man-made channels.

The boundary of the extension area is more than 40m from the bank of the man-made channel of Blue Angle Creek, and the Department is satisfied that the project would not have any significant direct impact on these riparian areas or the Blue Angle Creek catchment.

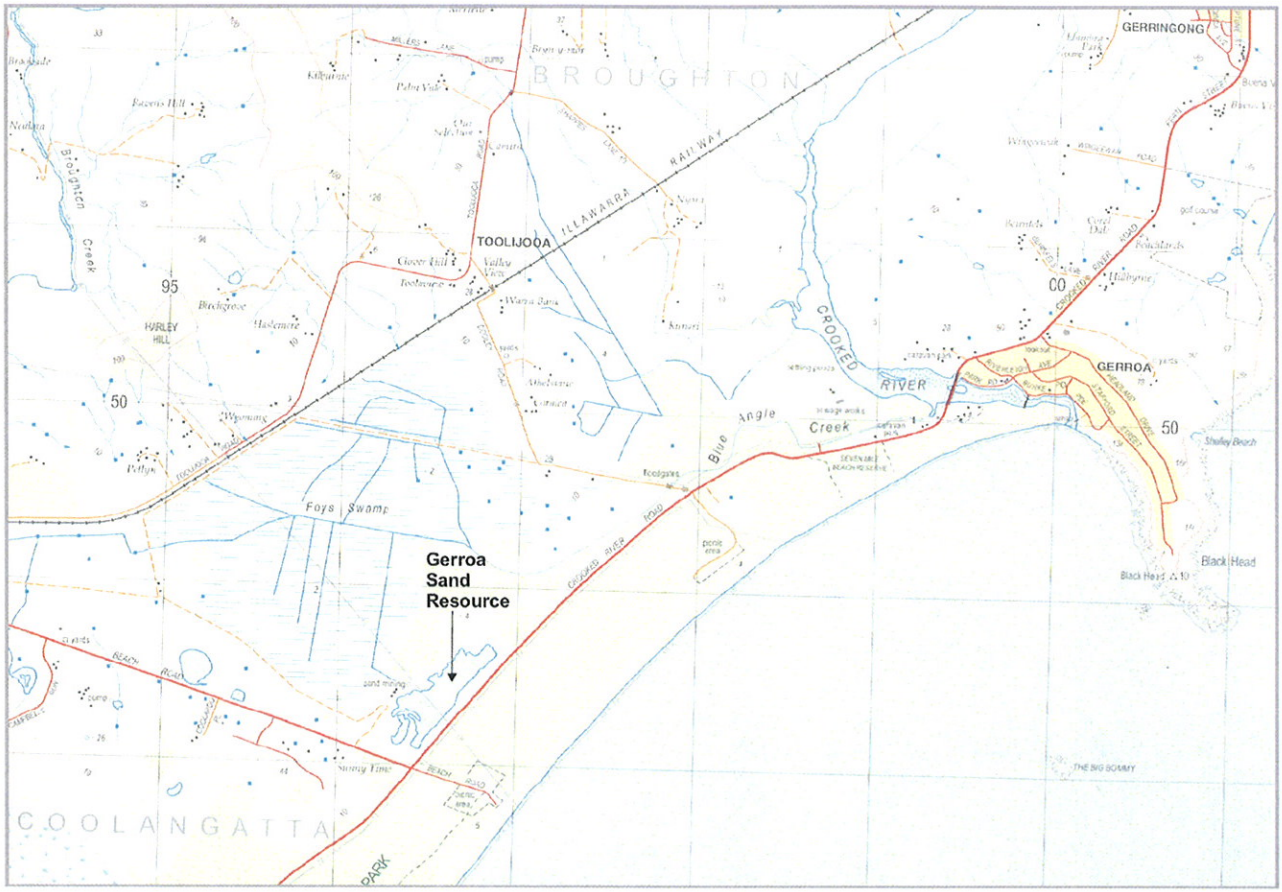

Figure 12: Topography and Drainage

Surface and Groundwater Flows

The sand resource on the site acts as an aquifer and the dredge pond level varies in response to the variation in local groundwater levels. Groundwater levels vary rapidly with rainfall, with groundwater flow trending generally east or north-east across the site (ie. toward the ocean).

The project is unlikely to have any significant impact on regional groundwater levels or flows. Although the initial excavation and operation of the dredging operation would likely create a localised depressed groundwater level, the high transmissivity of the aquifer sands would promote rapid recharge to the dredge pond. In addition, the likelihood of runoff surcharging the dredge pond would act to reduce the differential and therefore largely mitigate impacts. Groundwater monitoring at the existing quarry supports conclusions that the impacts on the regional aquifer system would be acceptably small.

The low level of impact on groundwater levels indicates that the project is unlikely to have any significant impact on flows in surface water bodies near the quarry, including Blue Angle Creek.

Water Quality

Cleary Bros has undertaken a hydrogeological assessment of the project based on surface and groundwater monitoring data from the existing quarry operations. The water quality of the existing dredge pond is generally of a higher quality than up-gradient groundwater and surface water in the adjacent waterways. Nutrient levels in the dredge pond (ammonia, nitrate and phosphorous) generally comply with the relevant ANZECC Guidelines while nutrient levels in the adjacent waterways exceed the ANZECC Guidelines on occasions.

The existing dredge pond is a closed system that has been designed to minimise the discharge of surface water from the pond to the surrounding drainage system. Water removed from the pond

during dredging is returned via runoff from the discharge/processing area or by infiltration of the sand profile in the working area. The flood bund around the pond prevents the discharge of water from the pond to the adjacent waterways.

Acid Sulfate Soils

Cleary Bros' assessment acknowledges that there is potential for acid sulfate soils to be disturbed by the dredging activities. The EA includes an acid sulfate soils assessment, based on a review of water quality monitoring data from the existing quarry and testing of core samples from the project area.

The assessment found that potential acid sulfate soils are contained in a clay layer between the upper fine grained sand and lower medium to coarse grained sand. The clay material forms a semi-continuous layer up to 3 m thick within the south-western section of the site. Elsewhere on the site the layer is discontinuous and up to 1 m thick.

A number of community groups have raised concerns about the impact of acid sulfate soils as the existing operations have remained above the clay layer.

The proposal involves the removal of the clay layer where it is less than 1m thick to access the underlying sand. The dredging of the clay material may expose potential acid sulfate soils. To manage potential acid sulfate soils, Cleary Bros proposes to implement a range of measures, including:

- continuation of surface, ground water and dredge pond water quality monitoring;
- additional testing of acid sulfate soil potential to determine the final extraction areas;
- monitoring of the pyritic content of the reject fine material; and
- controlled placement of reject material.

These measures would be managed through an Acid Sulfate Soils Management Plan, prepared in accordance with the NSW Government's *Acid Sulfate Soils Assessment and Management Guidelines.* The Department is satisfied that Cleary Bros has assessed the potential for acid sulfate soils and that should such material be extracted, appropriate mitigation measures would be implemented to manage the material such that the project would have minimal impacts on the water quality of the waterways on or off the site. Monitoring conducted for the existing quarry indicates that Cleary Bros is able to appropriately manage the acid sulfate soil risk on the site.

Flooding

The Blue Angle Creek catchment has an area of 12km^2 and largely comprises the former Foys Swamp. Floodgates have been installed on Blue Angle Creek close to where the creek leaves the Cleary Bros property, to prevent the backflow of floodwaters from Crooked River, when water levels are higher than flood levels on the property. A flood bund has been constructed on the western side of the existing dredge pond to prevent floodwaters from the property entering the pond.

Cleary Bros proposes to extend the flood bund to prevent flood waters from entering the extended dredge pond. The extension of the flood bund would reduce the available storage on the flood plain. Cleary Bros has prepared a flood study to model the impacts of the project on flooding on the property.

The flood study predicts that the project would have an insignificant effect on flood storage capacity and levels. For a 36-hour duration 1 in 100 year flood event, the project would result in a maximum water level increase of 15mm. In a 1 in 20 year flood event, water levels would increase by 5mm.

The study also concludes that the project would have minimal impact on peak flood flow velocities. At the Blue Angle Creek floodgates, the peak water flow is expected to increase by 0.2m^3/sec (from 26.3m^3/s to 26.5m^3/s).

The Department is satisfied that the project would have minimal impact on flood levels and flood flows on the Cleary Bros land and surrounding properties.

Conclusion

The Department is satisfied with Cleary Bros' assessment of surface and ground water impacts, and believes the project is unlikely to have a significant impact on the surface water and groundwater

resources in the surrounding area. However, the Department believes that Cleary Bros should be required to:

- comply with water quality objectives that are consistent with the NSW Government's environmental objectives for waterbodies in the Illawarra;
- prepare and implement a comprehensive Water Management Plan for the project, which includes:
  - an erosion and sediment control plan;
  - surface water and groundwater monitoring programs; and
  - an acid sulfate soils management plan.

5.3 Visual Amenity

The perimeter of the existing operations is vegetated, which screens it from view from outside the site. Cleary Bros has installed earth berms and undertaken tree and shrub planting along the Crooked River Road frontage of the existing operations to screen the pond and processing area from the road. Within the proposed extension area, approximately one third of the frontage to Crooked River Road is vegetated with remnant vegetation. Further to the north, the remainder of the road frontage consists of cleared grassland, which is visible from the road.

Cleary Bros proposes to retain the existing vegetation along the frontage of Crooked River Road, initially a 35m setback to protect a strip of littoral rainforest and revegetation of a disused access track with rainforest species as part of the compensatory planting. To the north of the littoral rainforest the vegetation screen would be extended along the Crooked River Road frontage of the remainder of the project area, by planting native vegetation species along a 10m strip between the proposed dredge pond and the road (see Figure 13).

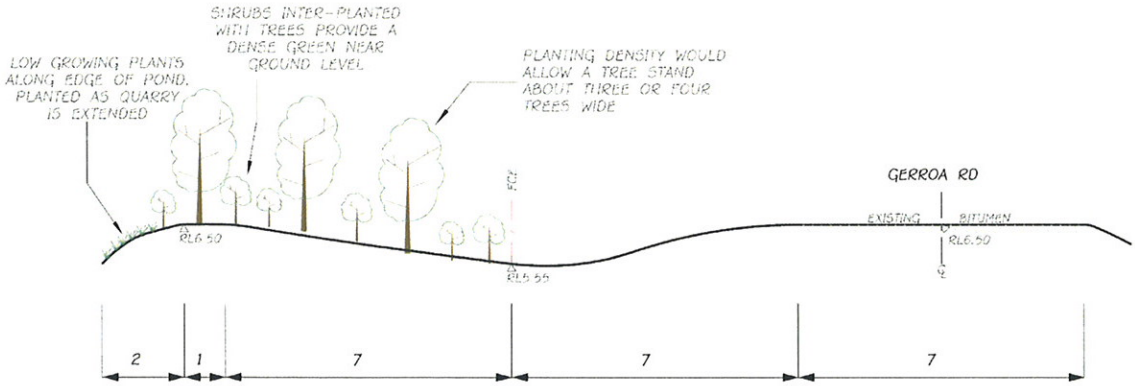

Figure 13 – Cross Section of Landscape Bund

The vegetation would be planted in the first year of the sand extraction operation and would be continuously maintained. This would ensure that there is an effective vegetation screen along the road frontage when sand extraction in the cleared paddock commences. The balance of the cleared paddock to the north of the sand extraction area would be revegetated as an area of compensatory planting, which would further assist the screening of the proposed sand extraction area. Cleary Bros also proposes to provide additional planting to infill gaps in the vegetation fronting the existing dredge pond. Cleary Bros states these measures would ensure that there would be minimal visibility of the sand extraction operations when viewed from Crooked River Road and the national park.

The visual impacts of the project, in particular on the scenic beauty of the national park and Seven Mile Beach, impact of sand mining on the natural landscape, and the long term effectiveness of the proposed vegetation screening, was raised in submissions from the community groups.

Cleary Bros states that the proposed planting of vegetation along the frontage of Crooked River Road would screen views into the site from the road. Views of the site would be screened prior to the dredge pond being extended into the cleared northern paddock area. The area of planting would extend beyond the extraction area to include the northern end of the paddock where a vegetation link would be established. The project would improve the visual landscape of the area by replacing the existing westerly views of the property (grassed paddock) with a vegetated view for the frontage of the property to Crooked River Road. Cleary Bros believes the replanting program will provide an effective

screen of the extension area prior to dredging commencing. An area to the north of the then approved quarrying area was planted in 1993 with native species to screen the proposed operations from Crooked River Road. The vegetation screen has been successful with trees up to 15-20m in height and native understorey species have successfully colonised the area, with some 28 native species present in and outside a survey plot of the area. Cleary Bros states the success of the vegetation planted in 1993 demonstrates that the long term effectiveness of vegetation planted adjacent to the road would ensure the project area would not be visible from the road.

The Department is satisfied that the issues raised by the community in relation to the visual impacts of the project can be managed and mitigated by the provision of vegetated screening along the road frontage of the site.

Conclusion

The Department is satisfied that the project can be managed in such a way that it would not result in a significant visual impact on the national park and Crooked River Road. The proposed visual amenity mitigation measures are considered to be appropriate to reduce potential visual impacts. To minimise and manage the visual impacts of the project, the Department believes Cleary Bros should be required to:

- prepare an implement a Landscape and Rehabilitation Management Plan for the project, which includes the planting of vegetation along the frontage of the property to Crooked River Road;
- monitor the performance of the vegetation planting; and
- create a visual bund and vegetation screen along Crooked River Road as quickly as possible, with quarrying not to start in exposed areas before the new planting is suitably established.

5.4 Aboriginal Heritage

An Aboriginal Cultural Heritage Assessment for the project was undertaken by Navin Officer Heritage Consultants Pty Ltd in conjunction with the local Aboriginal communities (Jerrinja Local Aboriginal Land Council and Jerrinja Consultants). The assessment included a review of previous archaeological investigations carried out on the Gerroa quarry site over a number of years, an assessment of previously identified conservation sites in the area, and a sub-surface investigation of the proposed extraction area.

Previous studies have identified 2 conservation sites on the Gerroa sand quarry site, 'Area A' comprising a 60 x 30 m site on the eastern part of the project area within the littoral rainforest, and 'Area B', a 30 x 30 m site on the western boundary of the project (see Figure 14). As Area A would be retained within the littoral rainforest as part of the vegetation conservation area, no further investigation of the site was carried out of this area. Area B is located on the crest and western slopes of the dune leading down to the drainage canal and would be bisected by the project.

The sub-surface investigation included 51 archaeological test pits in various locations in the project area (low sandy flats, high ground (dune crest), cleared and grazed land, and creek margins). The test pits included sites within and adjacent to Area B. The investigation recovered shell material from 26 of the 51 test pits and 39 artefacts from 5 of the 51 test pits.

The pattern of shell midden distribution within the proposed extraction area was characterised by sparse, spasmodic and fragmented pipi shell fragments scattered across the dune. However, there appears to be isolated occurrences of higher concentrations of middens on the crest on the western side of the dune, overlooking Foys Swamp. The sub-surface presence of stone artefacts was limited in number and spatial distribution.

The assessment concludes that the shell fragments and stone artefacts have moderate archaeological significance at a local level and a low to moderate significance in the regional context. Although the test pits adjacent to Area B yielded moderate amounts of shell fragments, the assessment concluded there was no cultural material of archaeological significance within Area B. Only a very small portion of Area B incorporates the dune crest, where most of the shells and artefacts were found. Most of Area B is located on the steep western slopes of the dune where little archaeological material occurs.

The assessment recommends preservation of the relics in the littoral rainforest area (ie. Area A) and identification of a suitable buffer to prevent erosion by the dredge pond, limited salvage excavations to

retrieve and analyse a sample of the artefacts, monitoring of soil stripping by the Aboriginal community and adoption of a human skeletal remains protocol.

Figure 14: Archaeological Areas

Concerns about the loss of Aboriginal archaeological sites were raised in many submissions. The GEPS submission included a critique on the archaeological assessment by Robert Paton, who carried out the previous archaeological assessment on the site in 1991 which identified Area A and Area B. Paton is critical of the level of survey effort in the present archaeological assessment and Paton, along with the GEPS, believes there may be discrepancy as to the identified location of Areas A and B from previous archaeological investigations, particularly as Paton's mapping was conducted prior to the introduction of sophisticated mapping technology (ie. GPS).

Cleary Bros has provided a response to the issues raised in submissions, including detailed advice from Navin Officer. With regard to level of survey effort, the Department is satisfied that the present assessment has been conducted in accordance with DECC guidelines, that it has been conducted in consultation with DECC and local Aboriginal groups, and that the assessment has appropriately

considered the previous archaeological assessments on the site. The DECC has not raised any concerns regarding the level of assessment, and has noted that it has been closely involved in the assessment of Aboriginal cultural heritage values on the site.

With regard to the potential discrepancy in the location of Areas A and B, Cleary Bros states that the identification of the areas was carried out by a surveyor based on the information contained in the Paton report.

Whilst it acknowledges that the location of Areas A and B may not be exact (because of the level of mapping technology available at the time of the Paton report), the Department is satisfied that Cleary Bros has adequately identified and assessed the areas. In this regard, the assessment included sub-surface investigation both within and adjacent to Area B. Although Area A was not subject to sub-surface investigation, the Department is satisfied that the area has been satisfactorily identified based on previous assessment and survey, and that any discrepancies are likely to be relatively minor. In any case, any discrepancy in Area A would likely fall within the proposed rainforest conservation area (see Figure 10), and as such the area would be protected. The Department is satisfied that additional sub-surface investigation of Area A is not warranted, as the area is proposed to be conserved.

The Department considers the loss of a small amount of shell fragments and stone artefacts across the project disturbance area to be relatively minor and that the partial removal of Area B would not result in a significant impact on the Aboriginal cultural heritage significance of the site. The proposed long term conservation of Area A and the location of more significant midden sites to the north of the site are more important than the removal of a small number of relics of low to moderate archaeological significance. In this respect, the Department believes that the project provides a positive outcome for archaeological conservation in the locality.

The Department acknowledges Cleary Bros' commitment to involving local Aboriginal groups in surveys during soil stripping on the site. This monitoring, along with supplementary measures under a recommended Aboriginal Cultural Heritage Management Plan, should ensure that any Aboriginal objects or relics identified during site excavations are appropriately managed.

Conclusion

The Department and the DECC are satisfied with the Aboriginal cultural heritage assessment conducted for the project. Following this assessment, the Department is satisfied that the project is unlikely to result in a significant impact on Aboriginal cultural heritage values of the areas, and believes that the long term conservation of Area A would benefit local archaeological values.

The Department has recommended conditions that would require Cleary Bros to:

- provide for the long term conservation of 'Area A';
- prepare and implement a comprehensive Aboriginal Cultural Heritage Management Plan; and
- involve the Aboriginal community in the management and monitoring of Aboriginal cultural heritage on the site.

5.5 Other Issues

Other environmental issues associated with the project, and the Department's consideration of these issues, are summarised in Table 3 below.

Impact	Consideration
Noise	The project does not involve an increase in production, changes to the production method or modification of the existing noise bunds. However, the noise characteristics of the site would be altered by the progressive northwards movement of the sand dredge. Cleary Bros has assessed the noise impacts of the project in accordance with the DECC's *Industrial Noise Policy*. The assessment modelled noise impacts on residences to the south (Beach Road), north-west and north-east (caravan park) and recreational facilities (picnic areas) within the national park. The noise assessment predicts that the operation of the project would comply with the project's noise criteria at all receiver locations under all weather conditions. The assessment concludes that additional noise mitigation measures would not be necessary to reduce noise emissions. The project would not involve any change to the number of trucks and transport routes. The noise assessment concludes that the traffic noise generated by the project would comply with

	DECC's *Environmental Criteria for Road Traffic Noise*. The DECC and the Department are satisfied that Cleary Bros has adequately assessed the project's potential noise impacts. The Department considers the project is unlikely to result in any significant noise impact on surrounding receivers, however, Cleary Bros should be required to: • comply with strict operational noise criteria; and • implement a detailed noise monitoring program.
Air Quality	Cleary Bros has identified tree clearing and topsoil stripping, product loading and vehicle movements, landform shaping and stockpiles as potential sources of dust. Sand dredging and processing are wet processes and would not be expected to generate significant dust emissions. Dust deposition is monitored at the existing operations. Cleary Bros states that the monitoring results indicate that the existing sand quarry complies with the maximum deposited dust standard of 4g/m^2/month. The dust gauges are located within the site. Given that the on-site monitoring indicates compliance with the air quality standard, any dust impacts on the residential receivers would be lower due to their distance from the quarry (south 500-700m, north-west 850m and north-east 1.5km). Cleary Bros proposes to install a dust deposition gauge towards the northern end of the project area to monitor deposited dust levels in that area. To reduce dust generation, Cleary Bros proposes to: • keep to a minimum the area of land disturbed; • revegetate disturbed lands when no longer used; • cover loads on vehicles; • water internal haul roads and loading areas to minimise vehicle generated dust; • regulate production to avoid excessive stockpiles; and • minimise dust generation by closing the site for loading and transport in extreme wind conditions. The DECC and the Department are satisfied that the air quality impacts of the project have been adequately addressed. The Department considers the project is unlikely to result in any significant air quality impacts on the surrounding receivers. However, the Department believes that Cleary Bros should be required to implement an air quality monitoring program for deposited dust levels.
Traffic and Transport	The project involves the continuation of the existing sand quarry operation and would not alter the current traffic conditions on and off the site. No changes are proposed to the number of trucks (average about 28 truck movements (14 loaded) per day) or the transport route (60% to the north (via Crooked River Road and Gerroa) and 40% to the south (west to Berry)). A traffic study undertaken in 2001 indicated that truck movements generated by the quarry comprised 6.6% of all truck movements (and 1.1% of all traffic) on Beach Road, and 4.8% and 0.2%, respectively on Crooked River Road. Cleary Bros considers that the level of traffic movements generated by the quarry has no engineering or capacity concerns on the transport routes of the project. Cleary Bros states that the existing site access off Beach Road would remain the only access to the site and the current traffic management procedures would be retained for the project, including: • limiting truck movements to the site's operational hours (7.00am to 6.00pm Monday to Friday, 7.00am to 1.00pm on Saturdays, and no tucks on Sundays and public holidays; • using the approved transport route; and • using Gerroa Road for local deliveries. The RTA and Shoalhaven Council requested upgrade of the site access intersection in accordance with the RTA's *Road Design Guide*. The Department is satisfied that the project would have minimal impacts on traffic movements and capacity of the roads of the approved transport route. The recommended conditions require Cleary Bros to restrict truck movements to the approved transport route and upgrade the access road and Beach Road intersection in accordance with the RTA's *Road Design Guide.*

Non-Indigenous Heritage	There are no listed heritage items in the vicinity of the site. The Department is satisfied that the project is unlikely to affect any non-indigenous heritage values of the area.

Table 3 – Other Issues

6 RECOMMENDED CONDITIONS OF APPROVAL

The Department has prepared recommended conditions of approval for the project (see Appendix A).

These conditions are required to:
- prevent and minimise 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 project.

Cleary Bros does not object to the recommended conditions of approval.

7 CONCLUSION

The Department has assessed the EA, the submissions received on the project and Cleary Bros response to submissions, and consider the project would extract, and facilitate the use of, sand from one of the two regionally significant sand resources in the Illawarra region, and secure at least 660,000 tonnes of sand supply for the construction industry in the region.

The project would support the ongoing operation of the quarry and maximise the use of the existing infrastructure on site and would provide an essential ingredient for the continued success of Cleary Bros' business in the Illawarra region. The extension of the quarry would ensure that there is healthy competition in the region's extractive material industry, as the only other major sand resource in the region is controlled by Boral – one of Cleary Bros' competitors.

While the extraction of this sand would generate a range of environmental impacts - as it involves the clearing of native vegetation, the destruction of some Aboriginal heritage objects, and the generation of dust, noise and traffic - the Department is satisfied that most of these impacts would be minor, and could easily be mitigated and/or managed to ensure an acceptable level of environmental performance.

Undoubtedly, the most significant impact of the project would be caused by the removal of up to 3.6ha of native vegetation on the site, including 2 hectares of endangered ecological community vegetation.

However, the Department is satisfied that:
- Cleary Bros has designed the proposal to minimise the impacts on threatened species and endangered ecological communities, and ensure that there would not be any irreversible impacts on these species or communities;
- the two endangered ecological communities that would be directly affected by the proposal are adequately represented in the adjoining Seven Mile Beach National Park; and
- Cleary Bros' proposed offset – which includes the permanent protection of approximately 56ha of vegetation (including a regionally significant Swamp Sclerophyll Forest community) and compensatory planting of approximately 24ha – would more than compensate for unavoidable impacts of removing up to 3.6 ha of native vegetation.

The Department is satisfied that the project strikes an appropriate balance between the need to extract a valuable natural resource for the beneficial use of society and the need to protect and conserve the biodiversity values of the region.

Consequently, the Department is satisfied that the proposal is consistent with the objects of the EP&A Act, particularly the object to encourage ecologically sustainable development, and should therefore be approved subject to strict conditions.

8 RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, in accordance with section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the project approval (see Appendix A).

David Kitto
Director, MDA

31.5.07

Chris Wilson
Executive Director
Major Project Assessment

Sam Haddad
Director-General

31 MAY 2007