

# PERRAM & PARTNERS

PLANNING AND ENVIRONMENTAL CONSULTANTS

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*Our Ref: 102L23*

**Attention: Mr Michael Young**

Dear Sir

**RE: GERROA SAND QUARRY - PROPOSED EXTENSION  
CLEARY BROS, BERRY BEACH ROAD, GERROA**

This letter provides Cleary Bros' reply to your Department's letter of 22 December 2006 requesting a response to issues raised in submissions received during exhibition of the environmental assessment for the above project. A revised statement of commitments is appended. In the company's opinion there are no significant changes to the project as would warrant preparation of a preferred project report.

The submissions are dealt with in category groups of public authorities, special interest groups and the general public.

## **PUBLIC AUTHORITIES**

### **1. Department of Primary Industries**

The Department notes that the existing extractive operation is an important source of construction sand for the local region and that the resource was identified as regionally significant in Illawarra REP No 1. In 1996 the Department's predecessor advised Kiama Council of the importance of the resource in relation to Section 117 Direction No 5. These comments will be referenced later in this response.

The Department has requested that the revised QEMP for the quarry contain a section on fish with the aim of preventing the dredge pond becoming a breeding ground for feral fish resulting from release of alien species by employees or the public. This request is acknowledged and a suitable section on fish management will be included in the QEMP.

The Department has also requested that annual production data from the sand resource be provided to its Mineral Resources Division. Statements of commitment to meet the Department's requirements have been included.

## 2. Department of Environment and Conservation

The DEC advises that it is able to support the project subject to DoP obtaining additions to the statement of commitments as outlined in the submission. The matters recommended for inclusion are repeated below with comments.

The sand quarry site is currently licensed for dredging works. Should approval for the extension be granted, there may be a need to amend the licence. If so a separate application to DEC will be required before any construction or operational works commence. Cleary Bros believes the need for licence variation should be determined and actioned in advance to avoid delays to preparatory works such as compensatory planting. The company will liaise directly with DEC in this regard.

In the event the Minister decides to approve the project, the additional statements of commitment recommended by the DEC include obligations to obtain subsequent agreements or approvals. Cleary Bros would prefer that such matters be resolved during the assessment while all parties are still under the time strictures of the Part 3A process. A requirement for subsequent consultation and approvals would be a de facto reintroduction of the permitting process that Part 3A of the Act has bypassed. Consequently it is proposed that should approval be granted, outstanding matters be resolved by conditions of consent or by inclusion of information in the revised QEMP for the sand quarry. A draft of the revised QEMP will be submitted to DEC for comment.

Additional statements of commitment (SOC) proposed by DEC:

*1 a) The boundary of the extension area must be clearly defined in consultation with a fully qualified ecologist prior to the commencement of any construction works to ensure that an adequate buffer distance is maintained from the dredging activities/mine operations to the conservation area and Swamp Sclerophyll Forest.*

The boundary of the vegetation to be protected has already been defined by an ecologist and registered surveyor. Figure 3.1 has been derived from that boundary marking. A SOC has been included to prepare a detailed survey plan of the extraction area showing the buffer recommended by the ecologist.

*1 b) All dredging activities and associated mine operations must remain within the defined boundary.*

*1 c) A monitoring program must be developed and documented in the QEMP to demonstrate that the defined boundary is maintained and not compromised during operations.*

*1 d) The buffer area should be revegetated with an appropriate native species and should be subject to a vegetation management plan for inclusion in the QEMP for its long term restoration and management.*

A SOC embodying the thrust of these recommendations has been proposed. On the eastern side of the dredge pond the buffer area will be revegetated (or remain vegetated). On the western side it is proposed that the buffer area be used for a continuation of the access track. Figure 3.3 of the environmental assessment shows typical cross sections of the pond foreshore. This is consistent with the existing development consent for the sand quarry which specifies that the limit of the extraction area shall be not less than five metres from

the root ball of any tree or shrub to be preserved, but does not preclude the access track from being located within that buffer area.

*2 a) The proponent must develop and implement a groundwater monitoring program as part of the QEMP to demonstrate that dredging activities and associated mine operations will not result in any actual or potential impacts to ground waters and the Swamp Sclerophyll Forest. DEC must be consulted in development of the plan.*

Groundwater is currently monitored at the sand quarry with results included in the annual report. It is intended to upgrade the existing groundwater monitoring program within the revised QEMP based on advice from Douglas Partners. Section 3.2.3 of the EA foreshadows the monitoring program where it refers to additional boreholes to be drilled to the east, west and north of the extension area. A SOC has been incorporated to this effect.

*3 a) A tree clearance protocol must be developed by a suitably qualified person as part of the QEMP to reduce any direct impacts to any tree dwelling threatened species or arboreal mammals during the construction phase. The DEC must be consulted in the preparation of this protocol.*

Kevin Mills and Associates outlined a tree clearance protocol in the additional information submitted with my letter of 12 December 2006. This will be developed as part of the vegetation management plan and included in the revised QEMP. A SOC to this effect has been included.

*3 b) The northern and southern rehabilitation areas must be established for fauna movement to the satisfaction of DEC before the East West link is severed.*

Complete removal of the existing vegetated east-west link is estimated to take up to six years from commencement, depending on the rate of sand extraction. The link will be considered severed when the dense area of trees bordering the cleared paddock is removed. This link will not be completely removed until the northern and southern link areas are revegetated for fauna movement and the roadside screen has been established to the satisfaction of a qualified ecologist. To provide certainty for DEC, a standard of revegetation to be achieved is being defined for the revised QEMP. A SOC to this effect has been included.

*3 c) The northern and southern revegetation areas must be monitored for regeneration success as part of the QEMP. The DEC must be consulted in the preparation of this monitoring program.*

A revegetation monitoring program is being added to the draft vegetation management plan for inclusion in the revised QEMP. A SOC to this effect has been added.

*4 a) Documentation must be developed defining both the area to be included in the compensatory package and associated management strategies for their protection.*

*4 b) The areas covered by the compensatory package must be secured for long term conservation prior to operations commencing through a means agreed to by the DoP, Cleary Bros and DEC*

The land to be included in the compensatory package comprises all of the land shown for compensatory planting in Figure 5.4 of the environmental assessment together with the remnants of Swamp Mahogany forest and contiguous forest on the property. Access roads and large cleared areas will be excluded. A plan showing the extent of the proposed

compensatory package is being prepared and will be forwarded under separate cover. Management of the land included in the compensatory package will be included in the revised QEMP.

Cleary Bros would like to discuss with DoP an appropriate means of conserving the areas to be included in the compensatory package so that this can be incorporated as a condition of approval. A SOC to this effect has been added.

*4 c) Any future development of the land must not compromise the compensatory package for this proposal.*

The compensatory package for this proposal will continue to apply until such time as a subsequent land use decision is made by a responsible body in accordance with the law at the time. It is not possible to forecast what the future may hold. Cleary Bros accepts that any future land use decision should not derogate from the intent of the compensatory package associated with the sand quarry application. That does not mean that a future proposal would be prevented from modifying any agreement resulting from approval of the sand quarry extension in the context of a further improvement to the conservation values of the property.

*5 a) A site rehabilitation program must be developed by a suitably qualified person and documented as part of the QEMP. The DEC must be consulted in the preparation of this program. The plan must:*

- (i) incorporate staged rehabilitation of the extraction area based on best practice and appropriate guiding principles at the time of rehabilitation;*
- (ii) be consistent with the Department of Primary Industries – Mineral Resources' Rehabilitation and Mine Closure Environmental Policy Implementation Principles*
- (iii) detail practices that protect surface and groundwater from pollution*
- (iv) detail practices that maintain or improve biodiversity so there is no net impact on threatened species or native vegetation*
- (v) detail practices that protect places, objects and features of significance to Aboriginal people*
- (vi) outline performance criteria/goals/principles for staged rehabilitation during the life of the quarry and post mining*

A SOC to this effect has been included. With regard to point (iv) it is intended that the compensatory package will create a positive net impact for threatened species and native vegetation. The site rehabilitation program is currently being prepared and will be included in the revised QEMP.

*6 a) The compensation strategy for mining of areas containing Aboriginal cultural heritage objects must be negotiated prior to operations commencing to the satisfaction of DEC, the DoP, the local Aboriginal communities and Cleary Bros.*

Cleary Bros has agreed to implement the recommendations of Navin Officer contained in the environmental assessment including protection of the area of sand dune containing littoral rainforest which includes Area A shown in Figure 5.4. In addition, excavation and salvage of relics in nominated areas is proposed to enable others to address unanswered research questions, as recommended by Navin Officer. Navin Officer conducted a comprehensive survey of the site and concluded that there were no reasons to prevent the sand quarry extension from proceeding. It is Cleary Bros opinion that a further compensation strategy is not necessary. It is noted that the Jerrinja LALC did not request a compensation strategy in their letter of review included in Appendix L of the EA.

6 b) *The recommendations provided in the report by Navin Officer heritage consultants in Appendix L of the environmental assessment must be followed.*

There is an existing SOC to implement the recommendations of the environmental assessment.

6 c) *The compensatory package must include the area labelled "Area A" in figure 5.4 of the EA and must be secured for long term conservation prior to operation commencing through a means agreed on by DEC, the DoP and Cleary Bros.*

Conservation of the land containing Area A is covered by item 4 b) above.

6 d) *DEC must be consulted regarding the research design for the archaeological salvage work that is to be undertaken prior to further sand mining.*

Cleary Bros agrees to undertake the targeted salvage excavations outlined in the Navin Officer report included in the EA. It is noted that under Part 3A, a permit is not required from DEC for this work to proceed. When a draft protocol has been developed, it will be referred to DEC for comment.

6 e) *Consultation with the Aboriginal community should be ongoing. The Aboriginal community must be provided with notification of development approvals and requirements as they relate to Aboriginal heritage and be invited to contribute to any further heritage management activities, including the archaeological salvage and management of Area A.*

Cleary Bros has maintained a good relationship with local Aboriginal groups over the many years that the sand quarry has operated and proposes that this will continue. A SOC to this effect is included. It is not proposed to undertake salvage operations within Area A.

6 f) *Once the archaeological salvage is complete, DEC's AHIMS register must be provided with updated site information.*

A SOC to this effect has been included.

6 g) *As per the Navin Officer report, the protocol for human skeletal remains must be followed.*

There is an existing SOC to implement the recommendations of the environmental assessment.

6 h) *The environmental management plan that is to be developed for conservation Area A must include consideration for the protection of Aboriginal heritage items within that area. The management plan should be developed in consultation with the Aboriginal community (Jerinja LALC and Jerrinja Consultants) and a suitably qualified archaeologist.*

6 i) *Any vegetation clearing or other maintenance works within Area A must be undertaken in consultation with the local Aboriginal community*

Environmental management protocols being developed for the land containing Area A includes consideration of heritage items. Cleary Bros has previously discussed the planting and management of bushland with the Aboriginal community and will maintain this dialogue. A SOC to this effect has been included.

6.j) *Should any impacts occur within Area A as a result of sand mining related activities (such as erosion impacts) DEC and the Aboriginal community must be advised immediately so as to develop an appropriate strategy to minimise impacts.*

A SOC to this effect has been included.

### **3. Roads and Traffic Authority**

The RTA has no objection to the proposal, but recommends that a further upgrade be undertaken of the intersection between the site access road and Berry Beach Road. This intersection was recently upgraded in conformance with a condition of the 2003 development consent. Plans were approved by Shoalhaven Council.

### **4. Kiama Council**

Kiama Council has listed seven concerns with the proposal, which are summarised and briefly commented upon below:

1) *Removal of 1.6 ha of Bangalay Sand Forest, an endangered ecological community.*

The Bangalay Sand Forest is heavily disturbed, reported as being scattered trees remaining from previous clearing with grass understorey. A compensation package is included in the proposal involving revegetating up to five times the area of native vegetation to be removed. Bangalay Sand Forest species have been included in the planting schedule.

2) *The cumulative effect of the proposed clearing and previous clearing should have been considered.*

It is normal practice when assessing environmental impact to consider the effects of a proposal on the existing environment, rather than on the environment that existed at some arbitrary date in the past. If Council's suggested approach were to be applied generally across Kiama Municipality, there may be no more development anywhere.

3) *Lack of consideration to the importance of the east-west fauna link through the site.*

Consideration has been given to the east-west link resulting in the proposal to establish replacement links to the north and south.

4) *Lack of consideration of the NSW Government paper "Green Offsets for sustainable development – April 2002" when proposing compensatory planting.*

The report from Kevin Mills and Associates, Appendix J of the environmental assessment, indicates that the NSW Government paper has been taken into account.

5) *Inconsistencies between the location of Areas A and B and the locations identified in previous documents.*

Prior to undertaking archaeological investigations for the proposed sand quarry extension, Navin Officer questioned whether the fenced areas on the site accurately enclosed the locations nominated by Paton (1992) as Areas A and B. To resolve any uncertainty, Cleary Bros arranged for Areas A and B to be pegged on the ground by a registered surveyor based

on source information, being the sketch included in Paton's report. The surveyor produced a site plan showing the precise location of the pegged areas. This correct location for the Areas has been transferred to Figure 5.4 included in the environmental assessment.

6) *Potential problems with acid sulphate conditions in mining through the clay layer to obtain the deepest sand resource.*

An acid sulphate soils management plan is contained in the environmental assessment setting down procedures for handling acid sulphate conditions, if encountered.

7) *No adequate justification that there is demand for the Gerroa sand resource considering the nearby resources in the region and the need to remove endangered ecological communities.*

The submission from the Department of Primary Industries states that the Gerroa sand resource is an important source of construction sand for the local region and that the resource was identified as regionally significant in Illawarra REP No 1. DPI states that in 1996 Kiama Council was advised of the importance of the resource in relation to Section 117 Direction No 5.

Council fails to acknowledge the importance of maintaining a diversity of suppliers of resources in order to encourage competition and restrain prices. There is an economic benefit to the Illawarra region for sand resources to be developed simultaneously rather than sequentially.

#### **4. Shoalhaven Council**

1) *A rural type basic intersection (BAR) should be provided, with design details determined by traffic type and flow.*

This intersection was recently upgraded in conformance with a condition of the 2003 development consent. Plans were approved by Shoalhaven Council.

2) *An assessment of the impact on koalas should be undertaken prior to determination.*

Kevin Mills and Associates addressed the issue of koala sightings in the additional information forwarded to the Department with my letter of 12 December 2006.

3) *Recommendations of the flora and fauna assessment should be included as conditions of approval.*

There is an existing SOC to implement the recommendations of the environmental assessment.

### **SPECIAL INTEREST GROUPS**

#### **1. Kiama Greens**

i) *The sand quarry would be in an area of high conservation value [as defined in Kiama LEP]*

This is noted in the EA and is not a determining factor for a Part 3A project. The boundaries of the area of high conservation value are poorly aligned to the bushland and Kiama LEP does not refer to any qualitative assessment of the land so designated. That assessment has been carried out as part of the current application indicating that the treed areas to be affected are not of high conservation value.

ii) *It involves clearing of important coastal forests*

The significant Swamp sclerophyll forest on the property will be preserved. The proposal affects only degraded forest, for which a compensatory package is included. Over five times the area of the forest affected by the sand quarry extension will be planted.

iii) *It may impact on the hydrology of Blue Angle Creek and the Crooked River*

The submission suggests the waterways will be at risk of contamination from the dredge pond. The site will be bunded to separate the pond from drainage channels. Furthermore the EA reports the result of analyses showing the dredge pond water to be of higher quality than water in the drainage channel. There has been no evidence of adverse effects on the Swamp sclerophyll forest adjoining the existing pond.

iv) *Aboriginal archaeological sites are under threat*

The submission states that two significant archaeological sites, marked by GPS coordinates, are located within the extension area. Areas A and B are referred to as “preservation areas” in the archaeological report by Navin Officer. Area A is outside the extension area and is to be preserved. Area B was the subject of concentrated subsurface testing and shown to contain little of archaeological significance. Sites A and B are not marked by GPS coordinates, but have been plotted by registered surveyor from Paton’s source documents.

v) *There is no justification to destroy high conservation forests to extract this sand.*

This matter has been addressed in the response to item 7 of the Kiama Council submission.

vi) *It will impact of on the scenic beauty of the area*

The submission states that travellers on Crooked River Road will face an industrial landscape. Views into the site will be screened prior to the dredge pond being extended into the cleared northern paddock. The area of planting will extend beyond the extraction area to include the northern end of the paddock where a vegetation link will be created. The effect of the project will be to reduce westerly views from Crooked River Road.

No response is made to the comments on the environmental assessment as these are matters of opinion.

This submission concludes that approval of the application will result in loss of “this protected area”. This misrepresents the situation as the environmental attributes of the land are not currently protected. The area of high conservation significance and the threatened species legislation are only invoked in the event of a development application to carry out work or clear vegetation. They do not control a continuation of normal farming activities



including the gradual deterioration that occurs from grazing stock in forested areas. Nor do they require that any maintenance work be done within the forested land.

By contrast the proposal will preserve existing vegetation beyond the extension site, reafforest other areas by way of compensation and see that the protected land is managed and maintained in a manner that will enhance its natural values and habitat potential.

## **2. South Precinct, Kiama Municipality**

The submission from South precinct is neither in objection nor support and does not require a response.

## **3. Australian Conservation Foundation, Shoalhaven Branch**

The ACF submission objects to the proposal because of the loss of forest vegetation and questions the value of the compensatory planting proposal. Specifically the proposal claims:

- the short term economic benefit does not justify loss of forest;
- the forest to be affected is a remnant of a unique sequence extending through this property which has been progressively reduced;
- the simple littoral rainforest occurs only on this limited site and should be retained;
- the adjoining blackbutt forest provides protection to the rainforest from sunlight and wind;
- the Bangalay sand forest has an additional 13 species and could recover if managed;
- compensatory planting will take an extended period to create species diversity and complex structure;
- the sites offered for planting are not similar to the dune system and hence do not suit establishing an equivalent plant community;
- some of the planting sites are narrow and more like landscaping than restoring biodiversity;
- experience of rainforest plantings at Baileys Island produced disappointing results;
- the proposal for slashing in the early stages suggests sparse planting;

In recommending that the Minister reject the proposal the ACF requests that a process to manage, restore and permanently protect the vegetation be established. No suggestion is made as to how this could be achieved. The ACF does not contemplate that rejection of the application would lead to closure and fencing of the existing operation and management of the remainder of the property as a farm with likely re-introduction of cattle to the grassland understorey of the Bangalay Forest.

Kevin Mills and Associates has responded to other matters raised by the ACF as follows:

“The ACF submission objects to the proposal because of the loss of forest vegetation and questions the value of the compensatory planting proposal. Specifically the proposal claims:

- the short term economic benefit does not justify loss of forest;

Response: Obviously the loss of this relatively small area of forest must also be balanced against the positive conservation benefits from rehabilitation and revegetation proposed for the vast majority of forest growing on the wider site. These proposals will lead to a much larger area of forest being protected in the long term, connecting all remnants together and a much better configuration in terms of its viability.

- the forest to be affected is a remnant of a unique sequence extending through this property which has been progressively reduced;

Response: The sequence is well represented within the nearby Seven Mile Beach National Park; this is in a better condition than that found on the subject land. The replanting that is proposed will in fact strengthen this vegetation zonation across the subject property.

- the simple littoral rainforest occurs only on this limited site and should be retained;

Response: Most of the northern part of Seven Mile Beach National Park is covered in littoral rainforest similar to that on the proposed quarry site. The majority of this vegetation will be retained on the quarry site; the small fragmented area removed is not considered to be of high value. The replanting scheme will include planting areas of littoral rainforest in appropriate locations.

- the adjoining Blackbutt forest provides protection to the rainforest from sunlight and wind;

Response: This rainforest occurs through the Gerroa-Seven Mile Beach area, nowhere is it showing signs of degradation from the sunlight and wind. In most cases, it is protected below a canopy of Blackbutt or other taller trees and is composed of hardy rainforest species.

- the Bangalay Sand Forest has an additional 13 species and could recover if managed;

Response: Balanced against loss of a very small area of modified Bangalay Forest is the replanting and rehabilitation of over 20 hectares of local forest communities.

- compensatory planting will take an extended period to create species diversity and complex structure;

Response: Obviously the replanting of cleared land will take a considerable number of years to become established as a fully developed forest. In the long term, however, the better management of the existing forest and the replanted links between forest remnants, as well as the replanted areas of forest, provides a good conservation outcome for the forest in this area.

- the sites offered for planting are not similar to the dune system and hence do not suit establishing an equivalent plant community;

Response: The areas proposed for replanting and rehabilitation include all of the local environments, including dunes, wetlands, dune swales, sandy and clayey soils. Within the area selected for conservation management, all of these environments exist and the communities planted/rehabilitated will match the naturally occurring communities on these sites.

- some of the planting sites are narrow and more like landscaping than restoring biodiversity;

Response: The only narrow area for planting is the screen planting along Seven Mile Beach Road; this is not considered to be an important habitat area and is not included in calculations as part of the compensation package.

- experience of rainforest plantings at Baileys Island produced disappointing results;

Response: The success of any planting program will depend upon the quality of the management that occurs. There is no reason to suggest that plantings will not be successful, particularly as monitoring and reporting are proposed.

- the proposal for slashing in the early stages suggests sparse planting;

Response: Planting densities and other matters will be documented in detail in the Vegetation Management Plan. Mowing or spraying between plantings may be necessary, as suggested. The need for the use of such measures will become apparent as the project advances. Fairly dense plantings will be undertaken.”

#### **4. Gerroa Environmental Protection Society**

GEPS has summarised its submission into eight points which are listed below. The comments relate to the listed points and the explanatory text appearing in the GEPS submission associated with each point:

1. *The document fails to justify the need for the resource as required by the Director General.*

This matter was addressed in item 7 of the response to Kiama Council's submission. The Department of Primary Industries disagrees with the assertions of GEPS with regard to the significance of the resource.

Cleary Bros already utilises slag sand to the extent possible as a proportion of its sand mix. Slag sand cannot fully replace natural sand for the product to meet technical specifications.

Gillespie Economics has predicted the effects on Cleary Bros business of elimination of the company-controlled sand resource at Gerroa. It is not possible to "demonstrate" these outcomes as the instigating event has never occurred.

GEPS asserts that negative externalities have been assumed to be insignificant. This is not correct. The analysis does not attempt to quantify negative externalities, but gives a valuation for the resource that would need to exceed the value of negative externalities for overall benefits to exceed costs.

*2. The proposal to remove 3.4 hectares of coastal forest will have a significantly adverse and irreversible impact on high conservation ecological communities that demonstrate a unique sequence of vegetation, provide habitat, maintain vegetation links for corridors, and conserve biodiversity.  
It will add to the cumulative losses attributed to previous mining applications.  
Compensatory plantings are inadequate and would not maintain or improve biodiversity values of the area*

GEPS claim is not correct that prior to 2003 a significantly greater buffer than five metres existed between the extraction area and the swamp mahogany forest. Extraction to within five metres of the swamp mahogany forest occurred before the 2003 consent. This can be observed along the western side of the pond north of the processing area.

The text included in GEPS submission with regard to compensatory planting appears identical to that included in the ACF submission.

Kevin Mills and Associates responds to this item as follows:

"The potential to impact upon the endangered ecological communities on the property is set out in the assessment reports. Due to the removal of the forest on the quarry site, it is proposed to undertake an extensive compensation package, as described in the assessment reports. The cumulative loss of forest in this area will be halted, as all of the remaining forest around the quarry site, including the old quarry areas to the south, will be protected and managed for their long term conservation. The compensation package is quite extensive and far outweighs the loss of the 3.4 hectares of forest within the quarry site."

*3. The EA does not thoroughly investigate or quantify the potential impacts of the project on the hydrogeological regime and is not consistent with the NSW Groundwater Policy.*

The GEPS submission relies upon comments from the attachment from the Environmental Defenders Office to expand this claim.

The hydrogeological assessment was undertaken by Douglas Partners, a company with extensive experience in geotechnical investigations, hydrogeology and resource assessment.

4. *All stages of the proposal are not described in detail. The basis for interpretation of part of the resource estimate seems inadequate.*

The GEPS submission refers to an absence of staging plans and interim locations for the access track and wet sorter. The quarry will uniformly progress in a northerly direction according to the rate of extraction. There are no defined stages. As indicated on page 3.3 of the EA, the access track will be extended along the western side of the dredge pond and the wet scrubber may be relocated northwards. Should the scrubber is relocated it will be to a site within the area approved for extraction.

The boundaries of the extension area do not include the Phragmites Reedland as this is part of the Swamp Sclerophyll forest community.

The resource assessment was undertaken by Douglas Partners, a company with extensive experience in geotechnical investigations, hydrogeology and resource assessment.

5. *A significant impact is posed by the presence and extraction of potential acid sulphate soil material, in particular, the Unit 3 layer. The extent of the problem is not clearly defined. Proposed extraction of the pyrite material has not been undertaken in current operations due to the potential negative impacts.*

The clay layer has not been extracted to date because there has been no underlying sand of economic potential for extraction. The Douglas Partners resource assessment indicates that the Unit 4 sand resource increases in thickness to the north and the Unit 3 clay decreases in the same direction, making extraction of the Unit 4 material an economic proposition in the extension area.

6. *No clear plan is presented for a stable, long-term and effective screen to quarantine the mining operation from public notice. Mining is incompatible with the coastal forest landscape of the area.*

Appendix M has been included in the EA specifically to address the screen planting design and methods.

As stated in the EA the visual screen may be obtained by constructing an earthen bund as has been done in the southern section of the site or, where relative levels make this impracticable, by dense planting in the screening strip. The typical cross section shown in Appendix M applies in areas where a visual bund is not practicable. The low level bund is used in these areas to neutralise the greater elevation of the road and will be densely planted.

The EA contains an undertaking by Cleary Bros that the sand quarry workings will not be extended into any section of the site that has not been effectively screened from motorists on Crooked River Road.

7. *The Archaeological Report does not adequately assess the presence of relics in the mine application area or the adequacy of the proposed conservation zone as a significant representation of the complete range of material once located throughout the area and now largely destroyed. Discrepancies as to the location of Areas A and B compared to previous reports are not explained.*

Drawing No SEA02 included in the previous application for extension (Davron Engineering 2001, subsequently included as an appendix in Perram & Partners 2003)

purports to show the location of Areas A and B as surveyed in 1993 and gives central coordinates for each. In undertaking further archaeological work for the present application, Navin Officer observed that the relative positioning of the two areas on SEA02 did not correlate with the sketch in Paton's 1992 report. No details of the 1993 survey could be found. To resolve the matter, Cleary Bros engaged a registered surveyor to locate the two areas using Paton's sketch, mark the sites on the ground and prepare a survey plan. The locations shown for areas A and B in the EA are consistent with the plan resulting from that survey.

Navin Officer responds to this submission as follows:

"This submission is based on a letter by Robert Paton to the Gerroa Environmental Protection Society. Paton was the archaeologist who carried out archaeological investigations with a lecturer and students from the ANU on the Cleary Bros sand mine in 1991. These investigations were then summarised in a report dated 1992. Paton makes a number of comments about the present archaeological investigation, each of which will be addressed below.

*Paton's opinion is that the archaeological methodology used to investigate the mine extension area was inadequate, and less effective than that employed during his previous investigation.*

The subsurface methodology employed was similar to that conducted by Paton. Both studies used augers to probe the deposits at test locations arranged in a grid or straight line traverses. This auger methodology is one that identifies the horizontal and vertical distribution of archaeological material across the study area, subject to the sampling constraints of the testing interval, and the width and depth of the auger used. Paton employed a 10 cm diameter, hand driven auger to test his study area, with sample locations mostly arranged within a 5 m grid. Approximately 2000 holes were excavated across a total area of approximately 20 hectares.

Paton's choice of auger type and test interval reflect the nature of his investigation, namely salvage ie the recovery of archaeological information prior to the conduct of an approved development impact. It also reflects his available resources including access to a supervised workforce of ANU students and ANU teaching staff. The aims and resources of salvage programs, such as the one conducted by Paton, are often substantially different to those of a test program such as the one conducted for the current assessment. In general the former are more comprehensively resourced (due to funding security afforded by an approved development), and the scope of excavation impact is greater given the certainty of future development impact. By comparison, exploratory test programs are conducted prior to a decision regarding development approval. As a consequence, resources are limited and impact to potential sites from archaeological activities must be circumspect. Paton's critical comparison of the methodologies employed by his and the current investigation does not take into account the fundamental differences in the two types of investigation.

Given the pre-development consent and exploratory context of the current investigation, many elements of the 2006 methodology demonstrate an effective tailoring of the method to the project aims and available resources. Paton's use of a hand driven 10 cm diameter auger posed considerable constraints on the nature of his sample. Paton acknowledges that the hand augers used in his study actually ground up the midden shell and pushed material deeper into the deposits. In addition, the depth of testing using hand augers was limited to 90 cm. The net volume of a 10 cm diameter auger column is very small compared to the surrounding deposit. This means that it is difficult to adequately assess the nature of the deposits where the density of artefactual material may be quite low. Paton attempted to compensate for this by using a large number of test locations in a relatively small testing interval. He was also, by virtue of the resources available to his salvage program, able to conduct open area hand excavations to supplement the auguring program.

In contrast, the 2006 investigation employed a mechanical spiral auger with a 45 cm diameter. This allowed for the recovery of a much larger (and therefore more representative) sample of the surrounding deposit. The excavated deposit was also in a better condition given that the action of the spiral had the effect of lifting rather than crushing the sample. In addition, the use of the larger auger allowed for deeper testing of the sand deposit, compared to the Paton investigation. The Paton study achieved a maximum depth for augers of 90 cm and his hand excavations were to a depth of between 50 and 100 cm. The mechanical auger testing of 2006 was able to excavate to a depth range of between 100 and 170 cm, with an average depth of 143 cm for the 51 test holes.

Given the primary use of the larger diameter auger, and the exploratory nature of the investigation, it was considered feasible to sample at a larger interval (a 50 m grid was employed) and to use small diameter augers selectively where necessary.

Following due process and review by the DEC, a permit to implement the 2006 methodology was approved. This indicates that the DEC was of the belief, as were the consultants, that the methodology was appropriate to meet the aims of the investigation.

*Paton questions the ability to locate middens and the assessment regarding areas A and B.*

The area sampled by each auger pit conducted by Paton was approximately 0.008 m<sup>2</sup>. The net total sample area produced by his method was therefore about 16 square metres or 0.008% of the total study area of approximately 20 hectares. Using the resources available to a salvage program, Paton was able to boost the coverage sample through hand excavation of an additional 35 m<sup>2</sup>. Paton identified that over one year (a total of 375 person days) was spent on conducting this fieldwork.

The 2006 field investigations formed part of a development proposal assessment and were conducted within a number of resourcing constraints typical of this stage of assessment including time, budget and the scale of development. As stated above, this was in contrast to the resources associated with the salvage status of the Paton investigations. Such resources were neither available nor deemed necessary, to conduct a level of assessment that was considered adequate to investigate the presence and significance of cultural material within the proposed mine extension area.

The 51 auger holes conducted in the extension area in 2006 provided a net total sample area of 4.87 square metres, produced from 30 person days of fieldwork. This equates to a sample of (0.006%) of the 7.5 hectare study area. We believe that this is an effective degree of coverage given the investigation context and that it compares well to that of Paton's augering program.

Despite differences in sampling strategy and resourcing constraints, when compared to Paton's methodology, the 2006 investigation was successful, in detecting artefactual material and in providing sufficient material to draw conclusions about the nature of the archaeological sites in the study area. This is a conclusion substantiated by subsequent review and comments by the DEC regarding the appropriateness of the proposed development.

Contrary to Paton's comment that the testing had "some unknown objective", the objectives of the 2006 assessment are clearly stated in Section 5.1 (p.11) of the 2006 report. The objectives were deliberately simple, in order to ensure they were achieved. Within the constraints of the project identified above, there was not scope for the same intensive testing grid used by Paton, nor was there the same scale of personnel (such as student volunteers) to analyse the data that this would have generated.

According to figure 3 in the Paton report, Paton tested area B with approximately four 10 cm diameter auger holes, only one of which contained midden material. During the 2006 investigations, two 10 cm auger holes were placed in this area but neither revealed cultural material. Given Paton's results this is not unexpected. However, in order to ensure that the general location of Paton's Conservation Area B was investigated, a 45 cm auger and an additional four 10 cm auger holes were excavated in close proximity. Three of these contained shell midden and one contained stone artefacts.

With regard to area A, our report relies upon the findings of Paton's investigation that the material identified by Paton in area A warrants conservation and is representative of the sites within the area. It is assumed that the proposed extension of conservation area A would increase the likelihood of cultural deposits being preserved. A proposal by the consultants to conduct archaeological subsurface testing within conservation area A was rejected by the proponent given that the area is situated outside the development extension and that such impact would be contrary to the conservation objectives of the reserved area.

*Paton argues that the testing was inadequate to locate sites.*

It is the view of the consultants that the methodology implemented in 2006 provided an effective sample of the archaeological resource present within the study area. Differences in the scope and scale of the 2006 investigations and Paton's 1992 investigations relate to the differing nature of each and their available resources, but do not provide grounds for a finding of inadequacy. The methodology and findings of the 2006 investigation have been subject to review by the DEC.

The selection of test pit locations using the 50 m grid was to ensure an unbiased sample. A grid was also used by Paton, albeit at only 5 m. The 2006 methodology enabled a systematic sampling approach to the study, and to provide a sample from a range of topographies rather than specifically targeting high potential areas. The additional targeted testing with closer spacing of auger holes at a number of areas with cultural material was designed to provide more detailed information about the extent and nature of the archaeological material encountered. This testing resulted in finer scale definition.

*Location of areas A and B*

The in-field identification of the conservation areas A and B was carried out by a surveyor contracted by Cleary Bros. The information was obtained from figure 3 in the Paton report. Despite searches at the DEC and requests to the proponent, no other source of locational information regarding the conservation zones was available to the consultants. Subsurface testing within conservation area A was not consented to by the

proponent because it was situated outside the development extension and the impact was contrary to the conservation objectives of that reserved area.

*Character of the middens.*

The conclusions of the current investigation were based on the results of the 2006 testing together with the results reported by Paton. Paton identified the spatial and content characteristics of the middens and our report concludes that the extension area shows a similar pattern (p.23).

Paton's comments on the notion of Conservation Areas and his criticism of the justification for conservation area A are difficult to reconcile against the absence in his 1992 report of any discussion or justification for the conservation area A and B proposals. His assessment of the value of these areas must be assumed. It should also be noted that his testing of areas A and B were not at the same density as the bulk of the salvage area. Area A appears to comprise a single transect and area B appears to include two intersecting transects. Testing outside these areas appears to have been at 10 m or greater intervals. They are therefore substantially less comparable than the extensive grid coverage conducted in the salvage areas, the methodology upon which Paton's claims of greater effectiveness rest.

The discussion in our 2006 report about the nature of other pipi middens along the coast is largely based on the information supplied by the 1992 Paton report. Paton concluded that the sites within the Cleary Bros property were rare but not unique. It was beyond the scope of our brief to undertake comparative testing of such midden sites as a comparison with those in the study area.

With respect to Paton's comment about the significance assessment, it is noted that his investigation arrived at the same conclusion as the 2006 report -, that the sites were of moderate significance based on research potential and representativeness criteria.

It has been noted in the report that similar midden deposits are preserved to the north at the location of the Gerroa Sewerage Treatment Plant.

*Artefact analysis.*

Paton asks why artefact and other data from his investigation were not employed in the 2006 analysis. The 1992 Paton report stated that it was an interim report and it did not include detailed excavation data, artefact descriptions, or inventories which would allow comparison with a new assemblage, or analysis by a third party. Enquiries were made at the ANU, Department of Archaeology and Anthropology, in an effort to obtain copies of the investigation data, student research reports and related material. Similarly, enquires were made of the DEC regarding the presence of reports or other material lodged since the interim report. Nothing was found to be available or was produced from these efforts.

*Dating of the site.*

It is agreed that there is a need to clarify the chronology of the archaeological deposits at the site. Actions addressing this issue form part of the justification and recommendation for the salvage program.

*Conclusions.*

The assessment provided in the 2006 report followed standard archaeological practice and was subject to review by the DEC. The analysis included available data from previous archaeological studies together with the 2006 programme. Paton's work, to the extent that it has been reported in an available form, was consulted during the compilation of the report and many of his conclusions were supported by the 2006 study. It is the view of the consultants that the methodology conducted provided an effective sample and analysis of the archaeological resource present within the study area.

It should be noted that when given an opportunity to review the Cleary Bros operation in 1997, Stuart Huys, working for Robert Paton Archaeological Studies Pty Ltd, reaffirmed the Paton conclusions. Huys concluded that despite mining having destroyed more of the site complex, thus reducing its representativeness, the significance was still the same and recommended that mining could continue."

Approximately 40 per cent of the area of the proposed extension was approved for sand extraction in 1990 by the Land and Environment Court. Paton investigated the archaeology of the approved area for his 1992 report. Significantly, Navin Officer has pointed out that the 2006 archaeological study supported many of Paton's (1992) conclusions. A notable exception is the failure to confirm a need for preserving Area B.

8. *It is unclear if all noise components from the operation have been assessed.*

This matter relates to reversing alarms. Noise assessments undertaken at the site with reversing alarms in operation and have confirmed compliance with noise goals. However, given the concern raised by a neighbour, Cleary Bros is prepared to install a lower noise reversing alarm known as a “clacker”. A SOC to this effect has been included.

## **GENERAL PUBLIC**

Below is a compilation of issues raised in individual submissions:

- i) the Bangalay Sand Forest to be removed is an EEC;
- ii) there will be a loss of valuable forest and wildlife habitat;
- iii) the acclaimed scenic value of the area will be diminished;
- iv) an adequate source of sand is available at Dunmore;
- v) valuable Aboriginal “sites” will be lost;
- vi) the land is protected by Kiama LEP and SEPP 71;
- vii) the creek/river system may be contaminated or become turbid;
- viii) compensatory planting could take 100 years to replace what is lost;
- ix) a search for Koalas should be undertaken given recent sightings;
- x) sand trucks have been a nuisance on the local roads;
- xi) removing the forest will destroy a buffer to the national park;
- xii) there has been incremental forest destruction over a number of years;
- xiii) the existing operation emits noise and dust and stockpiles are visible;
- xiv) tourism potential of the area will be degraded, including swimming, boating;
- xv) the land cannot be returned to its original state after mining;
- xvi) final land use strategy is not known – a golf course has been proposed;
- xvii) Aboriginal consultation was inadequate;
- xviii) noise at Athelstane has not been assessed;
- xix) reversing horns on mobile plant have not been considered;

In most cases the issues have also been raised by agencies or special interest groups and responded to above. Issues for which a further response is

### **Noise**

The sand quarry currently operates within noise limits included in the 2003 development consent. The Annual Environmental Management Report for calendar year 2004 (ERM 2005) reports that a noise monitoring survey was undertaken during 2003 resulting in the conclusion that without operation of the dry sorter, the operation would comply with its consent conditions. The dry sorter was decommissioned in 2004.

The annual reports for calendar years 2004 and 2005 both report that no noise complaints had been received.

The submission from the property *Athelstane* expresses concern that noise levels will be higher on that property than on *Coralea*. The environmental assessment considered noise levels at *Coralea* because it is the closest residence to the north west of the quarry, demonstrating that noise goals will be achieved under calm conditions and with a slight wind in the direction of the property. The report considered *Coralea* to be representative of residences to the north west of the quarry. *Athelstane* is several hundred metres further



from the sand quarry than *Coralea* with no altitude advantage. Consequently noise levels at *Athelstane* from the sand quarry would be expected to be no greater than those at *Coralea*.

The matter of reversing horns is addressed above in response to item 8 of the GEPS submission.

### **Visible stockpiles**

The submission from J and R Stanger (# 35) states that stockpiles of sand and soil and large metal containers are visible on the property from Berry Beach Road in the vicinity of the Bangarra Street intersection.

Cleary Bros would be pleased to inspect the site with the Department of Planning with a view to determining whether any action is required in response to this submission.

### **Aboriginal Consultation**

In response to item 6 e) of the DEC submission Cleary Bros has agreed to continue the good relationship with local Aboriginal groups by maintaining ongoing consultation. A SOC to this effect is included.

### **Koala sightings**

A response to the matter of recent Koala sightings was provided to the Department during the exhibition period as part of the attachment to my letter of 12 December 2006. The attachment was prepared by Kevin Mills and Associates and assessed the significance of recent koala sightings. The letter indicated that a koala survey would be carried out on the day of each clearing campaign prior to clearing commencing. If a koala was found within the area, clearing would be postponed until the koala removed itself.

A SOC to this effect has been included.

Should you have any questions regarding this matter, please give me a call.

Yours Faithfully  
for Perram & Partners

Terry Perram  
Principal

## **REVISED STATEMENT OF COMMITMENTS**

### **A Draft Statement of Commitments included in Environmental Assessment**

- 1) Undertake the extension of the Gerroa sand quarry in a manner consistent with this Environmental Assessment and Statement of Commitments;
- 2) Comply with obligations under any Act;
- 3) Update the (QEMP) for the site to include all relevant matters contained in this Environmental Assessment and any requirements emanating from Ministerial approval for the project;
- 4) Operate the sand quarry within the requirements of the QEMP as updated in 3) above (Note: the existing QEMP embraces the requirements of the existing development consent with regard to such matters as environmental management, monitoring, auditing, reporting and community consultation. These requirements will be retained except where superseded in the approval for the current application).
- 5) Survey and fence the approved boundary of the proposed extension and ensure that all activities associated with sand extraction other than rehabilitation or approved mitigation works remain within the fenced area;
- 6) Maintain annual production within an upper limit of 80,000 tonnes per year;
- 7) Progressively rehabilitate all areas disturbed by the sand mining operations in accordance with this Environmental Assessment and the QEMP;
- 8) Protect from disturbance and maintain existing native vegetation around the periphery of the sand quarry;
- 9) Undertake compensatory planting in the locations identified in this Environmental Assessment and nurture the vegetation and created habitat to maturity in accordance with the vegetation management plan, to be incorporated in the QEMP;
- 10) Protect from disturbance area "A", identified on *Figure 5.4*, of significance for potential Aboriginal relics;
- 11) Arrange for targeted salvage excavations for Aboriginal artefacts to take place as recommended by Navin Officer prior to mining occurring in the nominated locations;
- 12) Prior to extending workings into any part of the extension, ensure that a screen of vegetation, with or without bunding, effectively prevents viewing of the land to be disturbed from any publicly accessible locations;
- 13) Ensure that the requirements of the acid sulphate soils management plan are incorporated in the QEMP and implemented where indicated to prevent degeneration of water quality in the dredge pond and in groundwater

### **B Additional Commitments in Response to Submissions**

- 14) Include a section on fish management in the dredge pond in the revised QEMP for the site.
- 15) Forward annual production data to the Department of Primary Industries.

- 16) Prior to finalising the revised QEMP, forward a draft to DEC for comment.
- 17) In surveying the boundary of the extraction area (see 5 above) include an adequate buffer to protected vegetation as defined by a qualified ecologist.
- 18) Include a requirement to monitor compliance with the approved boundary in the revised QEMP.
- 19) Revegetate and maintain the buffer area in conjunction with adjoining vegetation, except where the buffer is used for access.
- 20) Update the groundwater monitoring program in the revised QEMP.
- 21) Include a tree clearance protocol in the revised QEMP incorporating pre-clearing inspection for koalas.
- 22) Incorporate in the revised QEMP a standard of revegetation to be achieved to the north and south of the extraction area before the existing east-west link can be severed. Do not completely remove the existing link until a qualified ecologist has confirmed that the required standard of revegetation has been achieved.
- 23) Include a revegetation monitoring program in the revised QEMP to include all areas being revegetated as part of the project.
- 24) Define the compensatory vegetation land by survey and include an appropriate plan in the QEMP.
- 25) Include a detailed site rehabilitation program in the QEMP addressing the matters listed in item 5a) of the submission from DEC dated 22 December 2006.
- 26) Maintain ongoing consultation with the Aboriginal community including notification of approvals and requirements that relate to Aboriginal heritage with an invitation to contribute to any heritage management activities.
- 27) Submit updated site information to DEC's AHIMS register when archaeological salvage is complete.
- 28) Include in the revised QEMP, reference to protection of Aboriginal heritage items located in Area A as part of management of that land and consult the Aboriginal community in developing and implementing the management protocols.
- 29) Should any sand mining impacts occur within Area A, consult DEC and the Aboriginal community as soon as possible in developing an appropriate response.
- 30) Investigate and if practicable, install "clacker" reversing alarms on mobile plant within the sand quarry site.