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PROPOSAL BY DIXON SAND (PENRITH) PTY LTD TO EXTEND AN EXISTING SAND QUARRY AT MAROOTA

Report on the assessment of a Development Application (DA 250-09-01) Pursuant to Section 80 of the Environmental Planning and Assessment Act, 1979
S00/00538

Department of Planning

November 2002

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1 Introduction

Dixon Sand (Penrith) Pty Ltd (The Applicant) lodged a Development Application (DA No. 250-09-01) on 21 September 2001 with the Department of Planning to develop an extension to its existing quarry at Maroota in the Baulkham Hills Shire.

The Applicant proposes to extend the life of the quarry by approximately ten years by expanding the extraction to a new area located between the existing operation and Old Northern Road, Maroota (Lots 1 and 2, DP547255, Old Northern Road Maroota).

The quarry has operated at Maroota (Lots 29 and 196 DP 752025, Old Northern Road Maroota) since the early 1980's and is currently operating under a consent granted by the Land and Environment Court on 7 July, 2000 (796/00/HE). The duration of the existing consent is until 22 March 2010. The existing quarry has a processing plant, workshop, weighbridge, tailings dams, and office building on site. The existing consent provides for a maximum of 60 laden truck movements per day (120 total) from the site via the access road shown on Figure 1 to Old Northern Road.

The existing quarry has an estimated resource of 1.2 million tonnes of white and yellow sand which, at current extraction rates, would be exhausted within approximately 3 to 4 years. The proposed quarry extension will provide an additional resource of 3 million tonnes, which will allow supply of fine sand to the Sydney market for a further 10 years.

The proposed quarry extension would provide for the continuation of employment for 10 to 15 current employees and involve a capital investment of approximately $1.3 million.

The quarry extension site is currently used partially for orchard production with the remainder of the site cleared land or native vegetation. The proposed quarry extension would involve quarrying on approximately 16 ha of the 26 ha site.

2 Development Proposal

2.1 OVERVIEW

The proposed quarry extension includes the following:

- Staged clearing of specified areas of vegetation in the DA area.
- Staged extraction of sand to within two metres of the wet weather groundwater level in the DA area.
- Loading and trucking of extracted material on internal haul roads to the existing processing plant on Lot 196 DP 75025.
- Processing and stockpiling of sand at the existing processing plant with an additional ten years of operation for the plant to enable processing of the excavated material from the quarry extension.
- Disposal of tailings from processed sandstone into tailings dams on the existing quarry site.
- Transport of processed material off-site with an additional ten years of consent to enable transport of material from the quarry extension.
- Use of dams on existing quarry site to receive surface water run-off from the quarry extension.

Figure 1 Site Location – Proposed Maroota Quarry Extension

SOURCE: ROBINSONS '300 KILOMETRES AROUND SYDNEY MAP'

★ QUARRY SITE

- Rehabilitation of extracted areas with integration into the existing quarry site to create a continuous landform.

2.2 SITE DESCRIPTION AND LOCALITY

The subject site is in the Maroota area of Baulkham Hills Local Government Area (LGA), located some 50 kilometres north-west of the Sydney Central Business District and 10 km south of Wisemans Ferry near the Hornsby Shire boundary. The predominant land uses in the Maroota region include other extractive industries, rural/residential allotments, agriculture, in particular orchards and market gardening, Marramarra National Park, and Maroota State Forest.

The subject land is described as Lots 1 and 2, DP547255, Old Northern Road Maroota, where the quarry extension is proposed and Lots 29 and 196 DP752025, Old Northern Road Maroota, where the existing quarry is situated. An aerial photo of the locality is shown in Figure 2.

Adjacent to the site are Maroota Public School, to the east; rural/residential allotments to the north, east and south; and other extractive industries to the southwest. To the west of the existing quarry site is the native bushland of the proposed Dryabbin Nature Reserve which slopes down towards the Hawkesbury River.

2.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed extractive industry involves the extraction of sand from the site which covers approximately 26 hectares. The actual extraction area is limited significantly within this area by the following factors:

- Setbacks from Maroota Public School, residences, property boundaries, and Old Northern Road required under local planning instruments;
- Setbacks from conservation areas of *Tetratheca glandulosa* and Shale-Sandstone Transitional Forest on the site; and,
- Areas of high groundwater where the minimum economic extraction depth is exceeded.

With these factors incorporated the extraction area is reduced to approximately 16 hectares, with the remaining 10 hectares conserved in buffer and conservation zones. Figure 3 shows the extraction plan for the site.

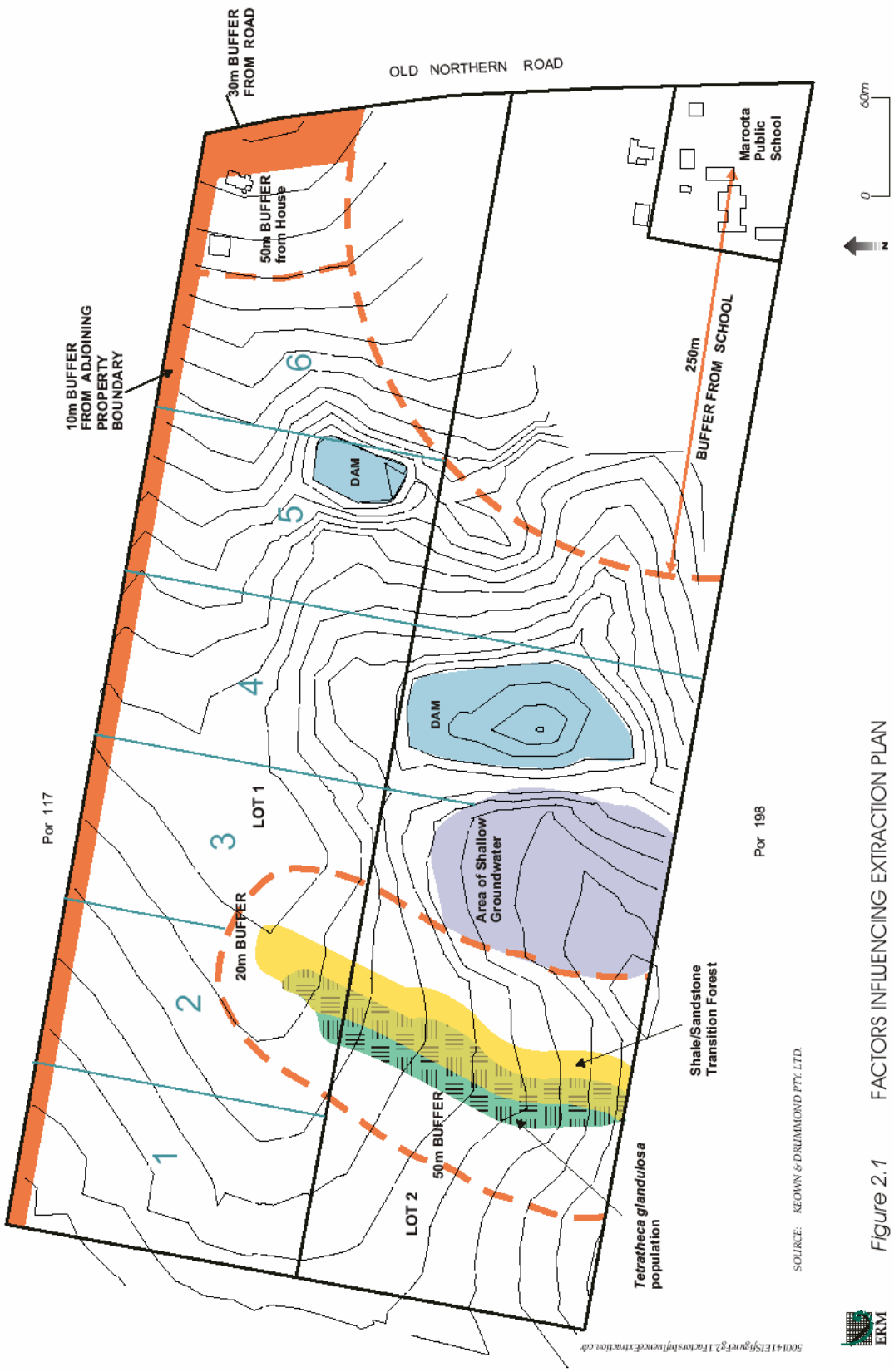
Extraction of the site is proposed in a series of six nominally 100 metre wide strips, as shown in Figure 3. Strips would be quarried sequentially allowing for progressive clearing, extraction and rehabilitation. This staged extraction aims to reduce the overall environmental impacts of the quarry by limiting the area active at any one time. As the resource is present in two layers, one white sandstone, the other orange/yellow sandstone, extraction strips would be benched to allow supply of either type of sand.

Acoustic bunds three to five metres high would be constructed along the northern and eastern edges of the extractable area, as defined by the setbacks shown on Figure 3.

Strips would be cleared of vegetation after selective removal of potential fauna habitat trees. Cleared native vegetation would be stockpiled separately from other vegetation to be used in rehabilitation of the site. Top soil would be removed and stockpiled or spread

Figure 2 Site Locality – Proposed Maroota Quarry Extension

Figure 3 Site Layout – Proposed Maroota Quarry Extension



directly on areas to be rehabilitated, again keeping topsoil from native vegetation areas separate from other topsoil. Overburden would be pushed into a temporary acoustic bund on the eastern edge of each strip. Extraction of the sandstone resource would then be achieved by ripping with a dozer or an excavator. The sandstone would be loaded with an excavator to articulated dump trucks which would transport the material via an internal haul road to the existing processing plant on Lot 196 DP 752025.

Approximately 80% of the extracted material would be dry processed and the remainder would be washed to remove clay fines. Of the washed material, approximately 15% would be clay fines which would be removed as tailings and pumped to existing tailings dams on Lot 196 DP 752025. Tailings dams are dewatered, capped, and rehabilitated when full.

Adjacent to the processing plant are a raw material stockpile and five product stockpiles for varying grades and types of sand. Approximately two weeks production is to be stockpiled at any one time.

Product would be hauled by truck from the site after sale. There is a weighbridge near the processing plant used to calculate sales. As production rates are not proposed to increase, no increase in the current approved number of truck movements (60 laden trucks per day) is proposed. Trucks travel south along Old Northern Road to Sydney with 35% turning off onto Wiseman's Ferry Road towards Windsor, Richmond, and Penrith.

Hours of operation would be in accordance with the current approved hours of operation for the existing quarry:

1. Monday-Saturday (except public holidays)

   5.45am – 6.00am – Site gates open and vehicles allowed to enter.
   6.00am – 7.00am – 30 truck movements (15 laden trucks) allowed to enter or leave site.
   7.00am – 6.00pm – Extraction, transportation, and processing or running machinery for maintenance purposes permitted

2. No extraction, transportation, or processing on Sundays and public holidays.

Surface water from the quarry extension would be diverted via a constructed channel on the quarry floor to the existing void on Lot 29 DP 752025. This void would be modified from its current form due to future extraction on Lot 29, and would have a future capacity of 2,500 m^3 and 1500 m^2 surface area. This would be sufficient to contain runoff from the site and allow for settling of solid particles. Any overflow from the void during periods of prolonged wet weather would be directed by a piped connection to the overflow dam on Lot 196 DP 752025. Water from this dam is managed as specified in the existing quarry consent and Environment Protection Licence.

Erosion and sediment control measures would be undertaken to ensure that sediment is not transported into adjoining properties and waterways.

The final landform after rehabilitation of the site would seek to mimic the surrounding landscape and reinstate or maintain existing flow paths on the site including an ephemeral drainage line in Lot 2 DP 547255. The threatened species conservation area would be higher than the quarry floor by up to 12 m and the buffer zone to the east would be up to 32m higher than the quarry floor. Backfilling and excavation of batters would integrate these areas into the final landform. The final landuse proposed is as a

mix of agricultural land and native vegetation. The buffer zone surrounding the threatened species conservation area would be maintained and batters would be revegetated with species similar to those within the conservation area.

Rehabilitation of the site would be carried out as it is at the existing quarry. Seed would be sourced from vegetation occurring on the site and a combination of topsoil and cleared vegetation spreading, transplanting, broad sowing and tubestock propagation would be used. Cleared logs would be used to provide ground fauna habitat and stabilise the soil.

3 Statutory Planning Framework

3.1 PERMISSIBILITY

The subject land is zoned Rural 1(b) under the Baulkham Hills Local Environmental Plan 1991. Extractive industries and associated works are permissible with development consent in the zone.

3.2 MINISTERS ROLE

The proposed development is classified as State Significant development and the Minister is therefore the consent authority. The Minister must therefore determine the Development Application by either granting or refusing consent under section 80 of the Act.

3.3 LEGISLATIVE CONTEXT

3.3.1 Environmental Planning and Assessment Act 1979

State Significant Development
The proposed extraction rate of the extractive industry development would be up to 500,000 tonnes per annum. The proposal is therefore State Significant Development under a declaration made by the Minister for Planning on 3 September 1999 under Section 76A(7) of the Act.

Integrated Development
The proposal is also 'integrated development' under section 91 of the Act since it requires an environment protection licence from the Environment Protection Authority (EPA) under *the Protection of the Environment Operations Act, 1997*

The EPA has provided its general terms of approval, indicating that it would licence the proposed development.

The Applicant indicated that a licence from the Department of Land and Water Conservation would be required under the *Rivers and Foreshores Improvement Act 1948*. DLWC subsequently advised that such a licence was not required after conducting a site inspection.

NSW Fisheries indicated that the Applicant would require a permit for dredging and reclamation works under section 201 of the Fisheries Management Act 1994. The applicant and the Department were unaware of this until after the exhibition period and assessment of the application. Therefore NSW Fisheries was not included as an integrated approval body. The applicant would seek this approval separately and the requirement for this approval has been included in the conditions of the recommended instrument of consent.

Designated Development
The proposal is 'designated development' as it is listed under Schedule 3 of the *Environmental Planning and Assessment Regulation 2000*. The Applicant obtained Director-General's requirements and submitted an EIS with the development application.

3.4 COMMONWEALTH LEGISLATION

Environment Protection and Biodiversity Conservation Act 1999

The Applicant made a referral to Environment Australia under the *Environment Protection and Biodiversity Conservation Act 1999* due to potential impacts of the project on matters of National Environmental Significance. The proposal was determined not to be a "controlled action" on 26 September 2001.

3.5 RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

State Environmental Planning Policy No. 11 – Traffic Generating Developments
The aim of SEPP 11 is to ensure that the traffic authority is made aware of, and is given an opportunity to make representations in respect of the development referred to in Schedule 1 or 2.

As extractive industry is listed in paragraph (m) of Schedule 1, this policy applies to the proposed development. In accordance with this policy, a copy of the DA and EIS was forwarded to both Baulkham Hills and Hornsby Shire Councils, and the Roads and Traffic Authority (RTA). Submissions from both Councils were considered in assessing the traffic impacts of the proposal.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 requires consent authorities in assessing Development Applications to have regard to the potential risk and offensiveness of the proposal in terms of impacts on human health, property and the biophysical environment. This plan applies to hazardous and offensive industry that, when all measures proposed to reduce or minimise impacts on the locality have been employed, would still pose a significant risk in relation to human health, life or property, or the biophysical environment.

The proposal would not result in any changes to the storage or use of hazardous materials at the site. The existing site currently stores diesel and lubricating oil which are classified as combustible liquids, class C1 and C2, under the *Australian Dangerous Goods Code* and are not "hazardous materials" as defined in SEPP 33. Therefore the development is not classified as a potentially hazardous development.

The proposal is potentially offensive as it requires an environment protection license for discharges. The EPA has advised that it is able to issue this license. Therefore, as the proposed extractive industry includes measures and procedures to minimise impacts on human health and the environment, which significantly reduce the possible risks, SEPP 33 does not apply to the development.

State Environmental Planning Policy No. 55 – Remediation of Land
SEPP 55 provides a State-wide planning approach for the protection of health and the environment from contamination and remediation of contaminated land. Clause 7 of this policy stipulates that a consent authority must not grant consent to the carrying out of any development on land unless:

a) it has considered whether the land is contaminated, and
b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

The subject site is currently used for agriculture and is also partially covered by native vegetation. Given the current land use and history of the site the Department considers that it is unlikely to be contaminated. Geological and groundwater investigations did not detect any contamination. It is considered that the site is suitable for the proposed development and would not require any remediation prior to commencement of the proposal.

Sydney Regional Environmental Plan No. 9 – Extractive Industry (No. 2) (SREP 9)

SREP 9 applies to the site as the Maroota Sand resource is listed in Schedule 2. The objectives of the Plan are:

a) to facilitate the development of extractive resources to proximity to the population of the Sydney Metropolitan Area by identifying land with contains extractive material of regional significance ; and
b) to permit, with the consent of the council, development for the purpose of extractive industries on land described in Schedule 1 or 2; and
c) to ensure consideration is given to the impact of encroaching development on the ability of extractive industries to realise their full potential; and
d) to promote the carrying out of development for the purpose of extractive industries in an environmentally acceptable manner; and
e) to prohibit development for the purpose of extractive industry on the land described in Schedule 3 in the Macdonald, Colo, Hawkesbury and Nepean Rivers, being land which is environmentally sensitive.

It is considered that the proposed extraction is consistent with these objectives as it represents the orderly development of the site and extraction of a regionally significant resource. Environmental impacts of the proposal have been assessed in detail in section 5 of this report.

Clause 7 of the Plan requires that the consent authority not grant consent to a proposal unless:

(a) it has considered the effect of the development on flood behaviour, the water quality, quantity and hydrodynamics of any watercourse or underground waters and also the effect of flood behaviour on the development and operations associated with the development in the vicinity; and
(b) it has considered a rehabilitation plan prepared in accordance with the Guidelines for Rehabilitation Plans in the Extractive Industry Report; and
(c) it is satisfied that, while the development is being carried out, noise and vibration levels will generally be in accordance with the guidelines in the State Pollution Control Commission Environmental Noise Manual (1985 edition) available at the offices of the Environment Protection Authority and the councils of the areas specified in Schedule 4; and
(d) it is satisfied that rehabilitation measures will be carried out in accordance with the guidelines in the Urban Erosion and Sediment Control Handbook (1992) prepared by the Department of Conservation and Land Management and available at the offices of the Department of Land and Water Conservation.

Stream hydrology and impact of flooding on the site water management system is considered in section 5 of this report as are rehabilitation, noise, and sediment and erosion control. The recommended instrument of consent requires detailed rehabilitation and erosion and sediment control plans to be prepared for the site. The Department is satisfied that the proposal is consistent with these provisions.

The Plan requires that development applications be forwarded to the Department of Mineral Resources (DMR) for comment. DMR received a copy of the DA and returned a submission offering no objection to the proposal.

In accordance with clause 9 of the Plan, the Department has taken into account the recommendations of the Extractive Industry Planning Report and considers that the proposal is consistent with the report which confirms the importance of continued sand extraction at Maroota to supply the Sydney fine and medium-coarse sand markets.

Clause 11 of the Plan relates specifically to extractive industry in Maroota. This clause ensures that consent for extractive industry is not granted unless the proposed development:

a) is unlikely to have a significant adverse impact on Maroota groundwater resource or other groundwater users in the region; and
b) will conserve the environmentally sensitive and significant areas and features of the Maroota locality, including the environment of threatened species; and
c) will involve controlled and limited access points to main roads; and
d) will result in a final landform capable of supporting sustainable agricultural production or other post–extraction land uses compatible with the established character and the landscape and natural quality of the Maroota locality.

Groundwater impacts are assessed in section 5 of this report, as are any impacts on environmentally sensitive areas and features of the area. The proposal would not involve the creation of new access points to main roads and the proposed final landform incorporates agricultural and native biodiversity values. The Department considers that the proposal is generally consistent with the relevant provisions of SREP 9.

Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2) 1997

This plan applies to the subject site and aims to protect the environment of the Hawkesbury-Nepean River System, by ensuring that the impact of future land uses are considered in a regional context. SREP 20 stipulates that total catchment management objectives, environmental sensitivity and alternative sites must be considered in determining an application. The proposed extractive industry does not fall within the definitions in Part 3 of the Plan, hence specific development controls in that part do not apply. The proposal has been assessed against the relevant provisions of Part 2 of the Plan and the Action Plan of the Hawkesbury-Nepean Environmental Planning Strategy 1997 in Appendix A. The Department considers that the proposal is generally consistent with the Plan and Action Plan.

Baulkham Hills Local Environmental Plan, 1991

Under the provisions of Baulkham Hills Local Environmental Plan 1991, the subject site is zoned Rural 1(b). The proposed development is permissible with consent in this zone. The objectives of this zone are:

a) to ensure that existing or potentially productive agricultural land is not withdrawn unnecessarily from agricultural production; and

b) to ensure that development is carried out in a manner that minimises risks from natural hazards and does not unreasonably increase demand for public services and public facilities; and
c) to provide for urban support functions; and
d) to protect and enhance those areas of particular scenic and environmental value; and
e) to maintain the rural character of the area without adversely affecting the carrying out of agricultural activities; and
f) *to make provision for tourist facilities in appropriate locations.*

The site of the quarry extension is partially agricultural land which is currently used for peach orchards. The proposed project would remove some land from production however after rehabilitation the site would be reverted to orchard production and agricultural land with some natural bushland. The development is unlikely to increase risk from natural hazards such as bushfire, and no additional facilities or services would be required. The development would provide for urban support by continuing supply of mortar and concrete sand to Sydney. Areas of environmental value containing threatened species would be maintained and protected in a conservation area on the site. The buffers and environmental bunds around the site would assist in maintaining the rural character of the area by reducing the number of potential viewing locations. Due to the proximity of existing quarries and Maroota Pubic School it is unlikely that the site would be appropriate as a tourist facility.

Clause 34 of the Local Environmental Plan relates specifically to extractive industries. This clause states:

In respect of extractive industry development, the Council must aim:

a) to ensure that extractive industries are not carried out in areas of particular environmental sensitivity; and
b) to ensure that extractive industries are undertaken in accordance with management and planning provisions as contained in any plan of management adopted by the Council; and
c) to permit extractive industry development which is of regional significance without burdening the Council with the costs for the provision of services and roads.

Before granting consent to an application to carry out extractive industry development the Council must take into consideration whether the development is in accordance with:

a) the provisions of any management plan adopted by the Council; and
b) *any staging and rehabilitation plan adopted by the Council.*

It is not considered that the subject site is particularly environmentally sensitive. Impacts on environmental values have been assessed in section 5 of this report. The Development Application was referred to Baulkham Hills Shire Council and the Department has taken into account issues raised in Council submissions. No plans of management adopted by the Council specifically relate to the proposed quarry extension site. Activities at the quarry would be carried out in accordance with Environmental Management Plans and the Rehabilitation Plan for the existing site, as approved by Council. The relevant objectives and provisions of Baulkham Hills Shire Council Development Control Plan 500 – Extractive Industries are discussed below. The proposal would not result in additional truck movements or road infrastructure requirements. The Applicant would be required to pay Section 94 contributions to

Council for road maintenance. The Department considers that the proposal is consistent with the objectives of relevant provisions of the Baulkham Hills LEP 1991.

3.6 DEVELOPMENT CONTROL PLANS

Development Control Plan No.1 – Rural Land
This Development Control Plan (DCP) aims to ensure that development in rural areas is sympathetic with environmental quality and it applies to the site of the proposed quarry extension (zone 1(b)). The provisions of the DCP relevant to the proposal are:

a) the site must have a minimum area of 10 hectares and a road frontage of 60 metres; and
b) a minimum setback of 30 metres from Old Northern Road.

The proposal complies with these provisions.

Development Control Plan No. 500 – Extractive Industries (DCP 500)
DCP 500 applies to extractive industries in Baulkham Hills Shire LGA including those in areas identified in Sydney Regional Environmental Plan No. 9 (No. 2)– Extractive Industries. The objectives of the DCP are as follows:

a) To consider the social, economic and environmental issues in the assessment and management of extractive industries;
b) To implement the objectives of international and nationally recognised environmental standards;
c) To encourage community participation in all phases of extractive industry development;
d) To provide sound technical parameters to facilitate the orderly development of extractive resources within environmentally sensitive regions;
e) To conserve the biological and cultural diversity and quality of Baulkham Hills Shire; and
f) *To implement the requirements of the Environmental Planning and Assessment Act 1979 and other relevant environmental statutes.*

DCP 500 sets objectives, performance criteria and prescriptive measures for various elements of an extractive industry proposal including community consultation, setbacks, transport, water resources, visual amenity, flora and fauna, heritage, soil conservation, acoustic management, extraction program planning, rehabilitation, social and economic assessment, ESD, post-extraction landuse, Section 94 contributions, environmental management systems, and specific requirements relating to developments in Maroota. The DCP states that prescriptive measures are numerical standards most likely to achieve the objectives and performance criteria for an element of the proposal. Variations to prescriptive measures may be justified by demonstrating that the nature and location of the project meets the objectives and performance criteria of that element.

The Department has assessed the proposal against the relevant objectives, performance criteria, and prescriptive measures of DCP 500 in Appendix A. The proposal would require variations to the prescriptive measures in the DCP as follows:

1. Width of internal haul roads;
2. Setback from Maroota Public School; and,
3. Setback from known critical or potential habitats of threatened species, populations, and ecological communities.

Width of Haul Roads

Internal haul road widths are prescribed according to the following objectives and performance criteria:

- Transport routes and their access points should be located, designed, constructed and maintained to conserve the amenity and safety of community facilities; the amenity of properties not associated with the extraction; and areas of environmental sensitivity;
- Extractive industries should provide safe and direct internal haul road link between extraction sites, processing areas, and the external road system; and,
- Internal access arrangements for Extractive Industries should be designed in accordance with established and recognised road construction standards.

DCP 500 also states that alternative designs of internal access and intersection points may be considered, having regard to specific needs of the operation and site characteristics. The only haul road to be constructed under the proposal is from the extraction area on the quarry extension site to the existing haul road network and the processing plant. The Applicant proposes to build a 5m wide haul road to accommodate the 3m wide internal haul truck currently used on the site. The Department considers that such design is adequate since a maximum of two trucks would be used on this road at any time and the reduced road width would result in less disturbed area and potential dust emissions. Mine safety at the quarry site, including safe design of internal haul roads, would continue to be regulated by the Department of Mineral Resources under the *Mines Inspection Act 1901*, therefore the recommended instrument of consent does not include any specific design requirements for the proposed haul road. The Department considers that the proposal is consistent with the objectives and performance criteria of DCP 500.

Setback from Maroota Public School

The objectives and performance criteria relating to the setback from Maroota Public School are:

- To facilitate and ensure extraction occurs in a controlled and environmentally acceptable manner;
- To protect and maintain the safety and amenity of the Maroota Public School and residences not associated with the extraction; and,
- Extractive operations should maintain the natural qualities, landform characteristics and environmental attributes of Maroota.

To meet these objectives the DCP prescribes a setback of 250m. The Applicant proposes a setback of 250m measured from the centre of Maroota Public School, or between 190 and 205m from the school property boundary. The Department considers that, although there is an inconsistency in DCP 500 between the Schematic Extraction and Transport Plan and the text of clause 2.16, setbacks should be measured from the property boundary. The Applicant was advised of this interpretation and requested a reduction in the 250m setback based on the importance of the sand resource and the EIS conclusion that environmental criteria would be met by the development and amenity at Maroota Public School would not be significantly affected.

The Department has assessed the potential environmental impacts of the proposal, considering a setback of 190m to 205m from the Maroota Public School boundary in section 5. This assessment confirms that relevant environmental performance criteria would be met by the proposal and that safety and amenity at Maroota Public School is unlikely to be compromised. The Department therefore considers that the proposal is

consistent with the objectives and performance criteria in DCP 500 and agrees in principle to the requested reduction in the setback. This must be balanced, however, against the substantial number of public submissions received which objected to the proposed reduction in the 250m setback prescribed in DCP 500 citing the importance of Maroota Public School to the community as a whole. To address these concerns, the Department considers that approval should be given for extraction up to 250m from the Maroota Public School property boundary which corresponds to extraction strip 5. Under the proposed framework, included in the recommended instrument of consent, the Applicant could then request a reduction of the setback from the Director-General to the proposed 190-205m, based on results of environmental monitoring at Maroota Public School, compliance with environmental criteria and the conditions of consent, and results of consultation with the Council, School, and the wider community.

Setback from threatened species habitat

The objectives and performance criteria of DCP 500 for the conservation of threatened species are:

- To conserve the biodiversity of the Shire including habitats of threatened flora and fauna;
- To protect the environment of threatened species, populations, or ecological communities;
- To conserve the biological and cultural diversity of Maroota; and,
- Extractive industries should provide and maintain an effective buffer capable of protecting and enhancing opportunities for native species, including threatened species, populations, and ecological communities like Yellow Bellied Glider, Maroota Sand Swamp Forest, and *Tetratheca Glandulosa*.

DCP 500 prescribes a buffer zone of 50m from "known critical or potential habitats" of threatened flora and fauna. The Applicant has requested a reduction of this buffer to 20m to the north of the conservation area and the proposal would result in the removal of some individual plants which are outside the conservation area. The Department has assessed impacts on threatened flora and fauna in section 5.4 of this report. The assessment concludes that, while some individual threatened plants would be removed, the project is unlikely to have a significant effect on those species under section 5a of the Act. This conclusion is partially based on the large number of threatened plants that would be conserved in the conservation areas and buffers on the site. The Department considers that the conservation area and rehabilitation works proposed by the Applicant represent a significant positive conservation outcome for threatened flora on the site. In addition, the Applicant has demonstrated that the 20 m setback on the northern side of the conservation area would not result in any significant indirect impacts on threatened plants from dust generation or other environmental factors. The Department considers that the proposal is consistent with the relevant objectives and performance criteria in DCP 500 and that the proposed reduction in setback is justified.

Baulkham Hills Shire Council Contributions Plan 6 – Extractive industries

This plan requires that developer contributions be paid for road impacts generated by extractive industries, in order to effectively and efficiently restore, upgrade and maintain Old Northern Road and Wisemans Ferry Road. This plan stipulates that monetary contributions are paid per tonne of extracted/processed material transported at a rate of 71 cents/tonne to the Roads and Traffic Authority (RTA). Contributions are collected by Council and forwarded to the RTA. Baulkham Hills Shire Council's standard condition for these contributions has been incorporated into the recommended conditions of consent.

3.7 RELATIONSHIP WITH EXISTING DEVELOPMENT CONSENTS

The Applicant has not applied to revoke or modify the existing consent on the site, granted by the Land and Environment Court on 7 July 2000 (796/00/HE). The recommended instrument of consent would operate over the same land, with the addition of the quarry extension site, and provide for continued operation of the processing and administrative facilities at the existing quarry.

3.8 CONCLUSION

The Department has assessed the development application for the proposed Maroota Quarry Extension in accordance with the Act and Regulation. All statutory requirements under NSW legislation have been met. The Department has considered the proposed development in the context of all relevant environmental planning instruments and Council's Development Control Plans. The Department concludes that the proposal is generally consistent with the aims, objectives and provisions of all applicable instruments, plans, and policies.

4 Stakeholder Consultation and Summary of Issues Raised

The Department's consultation with stakeholders has been comprehensive and in keeping with the scale and implications of the proposed development. The views expressed by each government agency, special interest group, and individual have been carefully considered. The Department has conducted public participation in accordance with the Act and the Regulation. The Department's consultation included:

- advertisement of the exhibition period on 9 and 23 October 2001 in the Hills Shire Times newspaper and 10 and 24 October 2001 in the Hawkesbury Gazette;
- notification of nearby and potentially affected landholders and residents, and placement of signs at the site during the exhibition period;
- exhibition of the development application and EIS at Planning NSW in Parramatta and Sydney CBD, Baulkham Hills Shire Council, Hornsby Shire Council, the Dixon Sands Maroota Quarry offices, and the Nature Conservation Council from 9 October 2001 to 9 November 2001; and
- consultation with community groups, Baulkham Hills Shire Council and other government agencies through correspondence and meetings.

A summary of submissions received by the Department from key stakeholder groups is provided in Table 1.

Table 1 Summary of Submissions

Submission Type	Number of submissions received	Submissions objecting to proposal
Community Private Individual	2	2
Community Pro-Forma letter requesting extension	19	
Government Agencies	8	
Elected Representatives	1	1
Special Interest Groups (Note one group with 72 objectors, another with 41 objectors)	5	5
Total	**35**	**8**

It should be stressed that while eight submissions objecting to the proposal were received, two of those submissions represented the objections of 113 people. When added to the other submissions, a total of 119 people objected to the proposal.

The key issues that were raised in public and government submissions are identified below.

4.1 GOVERNMENT AGENCIES

The Environment Protection Authority and Department of Land and Water Conservation made requests for further information. This information related to air quality, noise, and water impacts and was provided by the Applicant during the assessment of the proposal. DLWC stated that a permit under the *Rivers and Foreshores Improvement Act 1948* would not be required and that it is not therefore an integrated approval agency. The final submissions received from EPA, DLWC, the Department of Mineral Resources, NSW Agriculture, National Parks and Wildlife Service, and the Department of Health indicated general satisfaction with the proposal and recommended specific issues that should be addressed in the assessment and the conditions of consent. These issues are detailed in the relevant parts of section 5 of this report.

NSW Fisheries indicated that a permit would be required under the *Fisheries Management Act 1994* and that further information is required regarding the potential for threatened fish species in the dams on the site. These issues are addressed in section 3.3.1 and section 5.4 of this report respectively.

Maroota Public School objected to the proposal. The Department of Education and Training indicated that it was concerned for the health and safety of students and staff of the school and requested that the issues raised by the school be carefully considered. The key issues raised by Maroota Public School include:

- Truck movements have major impact on school activities, particularly outdoors, such as school assemblies. The truck operations are not currently at the maximum of 120 per day. With the quarry extension the maximum truck movements will be used, creating even more noise impacts from trucks at the school.
- Cumulative impacts caused by all trucks associated with sand mining are an issue.
- Truck movements will increase the risk traffic accidents for students and staff.
- The 250m buffer zone is not measured from the boundary but the administration building.
- Outdoor learning spaces are critical to the school's operation and considered an essential part of the student's education. Outdoor areas are also used by parent volunteers who assist students. Increased noise and dust will place limitations on the use of these areas.
- Increase in noise pollution, increase in air-borne dust and silica particles, and increase in exhaust fumes.
- Air pollution will end up on rooves of school and will pollute the schools water supply which comes from rainwater collection.
- Dust may increase health impacts, particularly on the schools' asthma sufferers.
- Silica released during mining may have health impacts on students due to the fact that they inhale more particles relative to their size than adults and that they are still growing and developing.

These issues are addressed in the relevant parts of section 5 of this report.

4.2 LOCAL COUNCILS

Baulkham Hills Shire Council (BHSC) provided two submissions on the Development Application requesting further information and providing comments. Issues raised by Council, including flora and fauna, water management, groundwater, and coordination with the existing consent were resolved through negotiation with the Applicant and minor

changes to the proposed management of the site. Council did not object to the proposal and liaised closely with the Department and the Applicant during the assessment of the Development Application. Council has reviewed the draft instrument of consent and was generally satisfied with the conditions, subject to some changes which were incorporated.

BHSC suggested that the proposal should be re-exhibited since NSW Fisheries identified that an approval would be required under the Fisheries Management Act 1994 after the exhibition period. The Department notes that the change in the licensing requirements for he development does not alter the proposal in any physical way and does not change the potential impacts of the proposal. Therefore re-exhibition of the Development Application is not required. NSW Fisheries has indicated its satisfaction with the proposed condition requiring the Applicant to obtain the relevant approval before conducting the work.

Hornsby Shire Council (HSC) made a submission to the Development Application. HSC did not object to the proposal however it raised several biodiversity and water management issues that were considered by the Department and the Applicant. These issues are addressed in section 5 of this report.

4.3 ELECTED REPRESENTATIVES

The Hon. Kevin Rozzoli, MP, Member for Hawkesbury made a submission objecting to the proposal. Several key issues of concern were raised including:

- Noise and dust impacts at Maroota Public School
- Visual amenity of school
- Concern over truck movements.
- Unacceptable that extraction can encroach on school environment
- 250m buffer is not sufficient to maintain welfare of those at the school and a buffer of at least 500m with substantial bunding would be required to stop noise.
- Conditions requested for dust suppression and maintenance of vegetation in buffer zone.

These issues are addressed in section 5 of this report.

4.4 INDIVIDUALS AND SPECIAL INTEREST GROUPS

Key issues raised in the seven public and interest group submissions to the proposal include:

- Dust impacts on human health and potential to cause asthma and silicosis.
- Impact of noise and dust on children's learning.
- 55 dBA noise level is not acceptable in the playground as many classes and learning activities are conducted there.
- Assessment of road traffic noise under EPA Road Traffic Noise Criteria has not been done.
- 250m buffer around school is inadequate because it does not provide protection from health impacts.
- 250m buffer has not been measured from school boundary or even classrooms.
- Cumulative impact of truck movements past school has not been addressed.
- Cumulative impacts should be more fully assessed.
- No safety fencing of quarry to prevent access of children to the quarry.
- Clearing of land will have detrimental impacts on ecosystems and the land to be cleared is currently providing the school with a buffer from quarries.

- There has been little success with rehabilitation on existing adjacent quarries.
- The catchment of Jackson's swamp should be treated as of the highest conservation value.
- Economic and social benefits will not be distributed equally in the community.
- Community feels disempowered by number of consent authorities and lack of consultation from PlanningNSW.
- Social impact has not been assessed
- The applicant offers no compensation to the community for the adverse impacts it must endure.
- The proposal will have visual impacts which will affect the local tourist industry.
- Proposal does not comply with SREP 9 – Extractive Industries or DCP 500
- No assessment from Darug Native Title claimants is included in the EIS.
- Dixon Sands have a history of non-compliance which is likely to continue.
- Request that consent conditions provide for a community consultative committee which includes a PlanningNSW representative

These issues are addressed in section 5 of this report.

5 Consideration of Environmental Issues

5.1 AIR QUALITY IMPACTS

Applicant's Position

Dust Impacts

The Applicant assessed existing air quality and meteorological conditions at the site. Air quality monitoring was undertaken at the site between January and March 2001 for *Total Suspended Particulates (TSP)* and *Sub-ten micron Particulates (PM_{10}),* and between July 2000 and July 2001 for dust deposition. Air quality recorded in the locality is acceptable, with annual average TSP and PM_{10} levels both less than one third of the relevant EPA criteria. Dust deposition in the locality is also well within EPA air quality criteria with recorded annual average levels of 1.8 g/m^2/month compared to the criteria of 4 g/m^2/month.

The air quality impact assessment was based on a worst case modelling scenario of quarrying in strip 6 of the proposed development, see Figure 3. This scenario requires the use of two haul trucks, an excavator, and a bulldozer to rip, extract and transport the sand to the processing plant. The scenario includes the processing plant operating at 1,750 tonnes per day production, which equates to 550,000 tonnes per annum. Emission rates for each of these activities were obtained from NSW Minerals Council and USEPA published data and averaged over the proposed operating periods of the equipment to give the total emissions from strip 6 operations, the processing plant, stockpiles, and product transportation. Wind erosion from exposed areas in strip 6 and stockpiles near the processing plant were included in the assessment, using the conservative assumption that winds over 5m/s occur for five hours each day. The air assessment assumes that other extracted strips, ie. Strips 1 to 5, are rehabilitated and do not significantly contribute to dust emissions. Haulage of sand by PF Formation across the Dixon Sand site to their operations to the south was included in the assessment. Mitigative strategies such as environmental bunds were not included in the assessment.

Sensitive receptors closest to the proposed quarry site include residences along Old Northern Road and Maroota Public School to the east. Sensitive receptor locations are shown in Figure 2.

Modelling of air quality impacts was undertaken initially with the Industrial Source Complex Model (ISC). EPA requested that the Ausplume model be used and further modelling was carried out using Ausplume Version 5.1 (ERM, 2002b).

Meteorological data used in the modelling was obtained from hourly monitoring data for the year 1997 from Blaxland Ridge, which is approximately 15 km from the development site.

Results of air quality modelling at sensitive receptors is summarised in Table 5.1 to Table 5.4.

Table 5.1 Predicted 24 hour- average PM_{10} concentrations (ERM, 2002b)

Sensitive receptor	Predicted 24 hr PM_{10} (ug/m^3)	% of EPA Criteria
1 (Accurso)	27.7	55
2 (Manaldo)	24.4	49
3 (Ramm)	15.2	30
4 (Ramm)	11.0	22
5 (Scriverras)	9.6	19
6 (Maroota PS)	13.4	27
7 (Maroota PS)	11.2	22
EPA Criteria	**50**	**50**

Table 5.2 Predicted Annual Average PM_{10} concentrations (ERM, 2002b)

Sensitive receptor	Predicted increment due to Dixons (ug/m^3)	Predicted total annual avg PM_{10} (ug/m^3)	% of EPA Criteria
1 (Accurso)	4.0	16.0	53
2 (Manaldo)	2.4	16.4	55
3 (Ramm)	1.9	13.9	46
4 (Ramm)	1.6	13.6	45
5 (Scriverras)	1.4	13.4	45
6 (Maroota PS)	2.1	14.1	47
7 (Maroota PS)	1.8	13.8	46
EPA Criteria		**30**	

Table 5.3 Predicted Annual Average TSP concentrations (ERM 2002b)

Sensitive receptor	Predicted increment due to Dixons (ug/m^3)	Predicted total annual avg TSP (ug/m^3)	% of EPA Criteria
1 (Accurso)	15.0	37.0	41
2 (Manaldo)	8.6	30.6	34
3 (Ramm)	6.3	28.3	31
4 (Ramm)	5.9	27.9	31
5 (Scriverras)	5.2	27.2	30
6 (Maroota PS)	7.8	29.8	33
7 (Maroota PS)	6.8	28.8	32
EPA Criteria		**90**	**90**

Table 5.4 Predicted Annual Average Dust Deposition (ERM, 2002b)

Sensitive receptor	Predicted increment due to Dixons (g/m^2/month)	Predicted total annual avg dust deposition (g/m^2/month)	% of EPA Criteria
1 (Accurso)	0.7	2.5	63
2 (Manaldo)	0.4	2.2	55
3 (Ramm)	0.2	2.0	50
4 (Ramm)	0.2	2.0	50
5 (Scriverras)	0.2	2.0	50

6 (Maroota PS)	0.3	2.1	53
7 (Maroota PS)	0.3	2.1	53
EPA Criteria	**2**	**4**	**4**

The Applicant claims that modelling was based on a credible 'worst-case' scenario and that the results show that no exceedences of EPA air quality criteria are predicted. The Applicant concludes that the proposed development would not have unacceptable impacts on local air quality.

Greenhouse Gas Assessment

Since no additional equipment would be required for the development, the Applicant has predicted that greenhouse gas emissions from the site would not increase as a result of the proposed quarry extension. Major sources of emissions from the site were identified as diesel fuel usage and electricity usage. 100,000 litres of diesel is consumed and 120,000 kwhr/yr of electricity is used. Emissions from electricity use alone would be 129,064 kg of CO_2 per annum.

The Applicant argues that reduced sinks resulting from clearing of native vegetation would not have a significant impact, given the conservation and buffer areas that are to be retained on the site. In support of the proposal, the Applicant claims that if the development were not to go ahead, sand would need to be sourced from locations more distant from the Sydney market, giving rise to increased greenhouse gas emissions.

Issues Raised in Submissions

Individuals and Special Interest Groups

Key issues raised were:

- Impact of noise and dust on children's learning.
- Dust impacts on human health:
    - Data on cumulative future impacts incomplete
    - Potential to cause asthma and silicosis.
    - More information required on crystalline silica content of dust which can cause silicosis.
    - Human health impacts not properly addressed in EIS.
    - PF Formations quarry exceeded dust criteria in 1998/99 therefore cumulative impact of this plus the proposed quarry would exceed criteria.
- Dust and noise level predictions are based on data gathered from receptors which are some distance away from the "current extraction site" and do not resemble the relative location of the proposed quarry to the school.
- Dust from exposed areas is a major issue.
- Annual reports for PF Formation and Dixon Sands, and the Dixon Sands EIS of 2000 show exceedences of EPA limits for dust at Maroota Public School. DUAP must fully assess dust exposure at the school.
- Watering of internal roads for dust suppression has not been adequately implemented on Lot 196. Water restrictions mean that effective watering is not achievable.
- According to a report by BHSC Maroota sandstone is not suitable for construction of internal roads since it is prone to dust.
- Cumulative impacts of dust under prevailing winds have not been adequately addressed.

Government Agencies

Key issues raised by Maroota Public School and were:

- Health and safety of students and staff of Maroota Public School is of paramount importance.
- Outdoor learning spaces are critical to the school's operation and considered an essential part of the student's education. Outdoor areas are also used by parent volunteers who assist students. Increased noise and dust would place limitations on the use of these areas.
- This mine will have a detrimental effect on students, staff and parents of the school.
- Concerned about increase in air-borne dust and silica particles, and increase in exhaust fumes.
- Concerned that local air pollution will end up on rooves of school and will pollute the schools water supply which comes from rainwater collection.
- Dust levels have been exceeded on several occasions. This proposal will increase dust impacts. Concerned that this may increase health impacts, particularly on the schools' asthma sufferers. Questions accuracy of dust modelling and whether an independent body will monitor and regulate dust levels at the school.
- Concerned that silica released during mining may have health impacts on students due to the fact that they inhale more particles relative to their size than adults and that they are still growing and developing. Levels of exposure that put children at risk have not been identified.
- concern about impacts of silica and dust on children's health given that most students spend seven years at school.

The NSW Department of Health, Western Sydney Public Health Unit, made a submission stating that it is its' opinion that the proposed quarry extension does not constitute a significant human health risk, subject to the Applicant complying with the conditions of the Environment Protection Licence. The Public Health Unit recommended that the Applicant be required to improve dust mitigation measures such as ceasing operations in strong winds and covering all trucks leaving the site. Improved dust monitoring and more frequent reporting is recommended as well as improved communication between the Applicant and Maroota Public School.

The EPA provided general terms of approval for the proposal.

Department's Position

Dust Impacts

Public submissions questioned the accuracy of the Applicants air quality monitoring to establish background or existing air quality in the locality.

The worst case scenario upon which the Applicant based all air quality modelling involves quarrying operations at the point closest to the residential and school receptors to the east of the site. The quarry is assumed to extract and produce 550,000 tonnes per annum (1,750 tonnes per day) under the worst-case scenario. Current extraction rates are, however, much less than this and in the order of 350,000 tonnes per annum (ERM, 2002). Therefore the Department expects that, since demand for sand from the site is not predicted to rise, dust emissions would be substantially less than those predicted under this scenario. Wind erosion, caused by winds over 5 m/s (18 km/h), is

assumed to occur for five hours every day while extraction and processing is occurring. In reality, wind of this velocity would occur at a much lower frequency. The worst-case scenario does not include allowances for mitigative measures that would be installed such as environmental bunds, watering of haul roads, and modifying extraction operations under certain wind conditions. In addition, the noise assessment states that extraction operations would be modified under source to receiver wind conditions and the mitigative effect of this operating strategy on dust impacts has not been factored into the air quality modelling.

The Department notes that the scenario is based on previous strips (1-5) being rehabilitated at the time of extraction in strip 6 and therefore not contributing to emissions. The obligation to ensure rehabilitation of previous strips before starting new strips has been provided for in the recommended instrument of consent. However the Department has calculated that, even if all of strip 5 was not rehabilitated under the worst-case scenario, the additional contribution to emissions would be less than 10% of the emissions from extraction activities at strip 6. Additionally, strip 5 would be extracted and between the base of the 15-30m high quarry working face and the vegetative buffer provided by the Threatened Species Conservation Area, which would significantly reduce wind erosion dust emissions from the strip.

The Department therefore concurs with the Applicant that the scenario used in the air quality assessment represents a plausible worst-case and considers that actual emissions for the proposed development would be substantially lower.

The Department considers that the Ausplume model is adequate for the prediction of air quality impacts and notes that the model does not account for the mitigative effect of the "in-pit" operations that would occur for the majority of the quarry life. The Department considers that the model provides a conservative assessment of likely impacts.

The Department notes that the air quality impact assessment conducted by the Applicant indicates that relevant EPA ambient air quality criteria would not be exceeded as a result of the proposed development. All TSP, PM_{10}, and dust deposition criteria would be satisfied by the proposed development at all times. In fact, the maximum predicted impacts are less than 65% of the relevant criteria, at all potential receptors and for all air quality criteria. The Department considers that this provides an adequate "safety margin" and that, given the conservative worst case scenario and predictive modelling employed by the Applicant, actual impacts on air quality would be significantly less.

To provide further assurance the Department requires the Applicant, under the recommended instrument of consent, to develop an air quality management plan which shall include measures to further mitigate potential air quality impacts.

The Department concludes that potential air quality impacts from the proposed development would be well within relevant EPA criteria and can be further mitigated and managed under the recommended instrument of consent

Potential Health Impacts of Dust

Public submissions and direct consultation with the Maroota community indicated that health impacts were a central concern relating to the proposal. The Department notes the submission by the Department of Health which states that the proposal does not constitute a significant human health risk, however additional analysis is provided below to further clarify this issue.

Health impacts from dust can occur through respiration of fine particulates which may have effects due to its composition (in the case of silicosis) or its particle size (in the case of PM_{10} and $PM_{2.5}$). Dust deposition on rooves which feed water supplies may also affect the quality of drinking water.

Silicosis

Silicosis is a lung disease resulting from overexposure to respirable crystalline silica dust. Respirable dust is described by the sub 10 micron fraction of airborne dust, or PM_{10}, since particles of larger diameter do not generally enter the lungs through respiration. Silicosis is principally an occupational disease and those most at risk through overexposure are those working in dusty environments such as mines and quarries, or the construction and stone cutting industries. Silicosis is prevented by reducing exposure to respirable silica dust in the work environment.

While silicosis is not normally associated with health effects from ambient air, studies have been conducted to determine whether observed ambient levels of silica pose a significant health risk to the public (USEPA, 1996). An analysis was conducted of a range of epidemiological studies from the USA, Canada, and South Africa dealing with silicosis health risk associated with continuous inhalation of silica-containing dust in a mining environment (USEPA, 1996). The USEPA analysis conservatively assumed an ambient environment in the community comparable to that in a mining or quarrying operation. The study indicates that the risk of silicosis to an otherwise healthy population continuously exposed for 70 years to the highest silica levels anticipated under the USEPA standards for PM_{10} would be less than 1% (USEPA, 1996). The USEPA standard for annual average PM_{10} is 50 $\mu g/m^3$.

It should be noted that this analysis is based on 10% of respirable dust being crystalline silica. While limited data is available on the relative contribution of silica to respirable dust from various sources, it is clear that fractions of silica in dust are less than in the source rock material (USEPA, 1996). This is because silica particles are less susceptible to being broken down than other fractions such as silts and clays. Studies conducted in the United States have indicated that silica fractions in respirable dust from quarries might be around 7% (USEPA, 1996) which indicates that ambient dust in Maroota could be expected to be within the bounds of the USEPA assumption of 10% silica in respirable dust.

Given that the USEPA concludes that its annual average PM_{10} standard of 50 $\mu g/m^3$ provides adequate protection from silicosis for the general population, the Department considers that the proposed development, is unlikely to present unacceptable health risks to the local community, since impacts of annual average PM_{10} are predicted to be below the NSW EPA standard of 30 $\mu g/m^3$. In addition, the Department notes that even under the worst case scenario the maximum PM_{10} levels expected at sensitive receptors are approximately half the NSW EPA standard which provides even further assurance that the development would not present a significant health risk.

Fine Particulates

Current EPA ambient air quality goals specify criteria for particles of aerodynamic diameter of less than 10 microns. Recent studies in Australia and overseas indicate that the fine fraction of these particulates is likely to be the most significant in terms of health effects (NEPC, 2002a). These fine particles are best described as those less than 2.5 microns, or $PM_{2.5}$. The National Environment Protection Council is currently developing an air quality standard for $PM_{2.5}$. The Draft National Environment Protection (Ambient

Air Quality) Measure, released for comment in October 2002, provides some indication of possible future standards for $PM_{2.5}$. This measure, if adopted by the relevant governments, would establish advisory reporting standards and a protocol for monitoring $PM_{2.5}$ (NEPC, 2002b). The following advisory reporting standards have been proposed for comment (NEPC, 2002b):

Column 1 Pollutant	Column 2 Averaging Period	Column 3 Maximum Concentration	Column 4 Goal
Particles as $PM_{2.5}$	1 day	25 µg/m³	Goal is to gather sufficient data nationally to facilitate a review of the standard as part of the review of this Measure scheduled to commence in 2005"
	1 year	8 µg/m³	

The Department notes that the predicted maximum PM_{10} impacts at nearby receptors are 27.7 ug/m^3 for 24-hr average, and 16.4 ug/m^3 for annual average. Taking the conservative assumption that $PM_{2.5}$ is 40% of PM_{10} in typical quarry dust, the predicted worst case $PM_{2.5}$ levels due to the proposed development would be 11.1 ug/m^3 for 24-hr average, and 6.6 ug/m^3 for annual average which clearly complies with the proposed $PM_{2.5}$ ambient air quality advisory reporting standard.

Dust Deposition in Water Supply

NSW EPA criteria for dust deposition have been developed to maintain environmental amenity. The following discussion demonstrates that the criteria also provides adequate protection for drinking water that may be affected by deposited dust on rooves where water is collected. The lowest mean monthly rainfall in the Maroota area, averaged from data collected from 1928 to 2000 is 35.9mm (ERM, 2001). This would provide the maximum concentration of dust per litre of rain water. Assuming that dust is deposited on rooves collecting drinking water at a rate of 4 g/m^2/month (the NSW EPA criteria), the maximum possible concentration of solids in the collected water would be 111 mg/L. Assuming that all these solids dissolve in the water and none settle out before reaching the point of consumption the resulting total dissolved solids (TDS) would be 111mg/L. The Australian Drinking Water Guidelines (NHMRC, 1996) state that water with TDS<500 mg/L is regarded as good drinking water , based on taste, and that water up to 1000 mg/L is acceptable. Therefore, even using the conservative assumptions in this analysis, drinking water quality in Maroota would not be affected by the development providing EPA dust deposition criteria (4 g/m^2/month, annual average) are not exceeded.

Contrary to claims made in some public submissions, the EPA has advised that monitoring of dust deposition at Maroota Public School by Dixon Sands and PF Formation has not indicated any exceedence of dust deposition criteria in the past. Monitoring of background dust deposition levels undertaken by the Applicant established that current levels are in the order of 1.8 g/m^2/month and that predicted total dust deposition if the proposed development goes ahead would be 2.5 g/m^2/month at the most affected receptor.

The Department concludes that the proposed development would not impact local drinking water quality through dust deposition on rooves that are used to collect rainwater.

Conclusion

The Department is satisfied that air quality impacts of the proposed development have been assessed conservatively and would comply with all relevant air quality criteria. The Department has assessed potential health impacts in detail, in response to community concern over this issue and concludes that the development is unlikely to compromise human health in the locality of at Maroota Public School.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Develop an air quality management plan in the site environmental management plan which identifies potentially affected residences and management measures for dust control;*
- *Monitor ambient air quality, specifically dust deposition and PM_{10}, on a regular basis;*
- *Report on air quality monitoring and modifications required to management practices in the annual environmental management report.*

5.2 NOISE IMPACTS

Applicant's Position

The Applicant prepared a noise impact assessment in accordance with the EPA's *Industrial Noise Policy*. Nearest potential noise receptors were identified as five residences along Old Northern Road and Maroota Public School. The development was modelled under prevailing wind conditions in two operating scenarios:

a) Quarrying on strip 2, hauling and processing;
b) Quarrying on strip 6, hauling and processing.

These were taken to be the worst case scenarios due to the proximity of the locations to sensitive receptors. Initial modelling indicated that the development would exceed project specific noise levels under certain source to receiver wind conditions. The Applicant committed to modifying its operations during wind speeds greater than 2 metres per second from 214 to 326 degrees to ensure compliance. Under the modified operating conditions the bulldozer would not be used concurrently with any other machinery until the extraction pit is 6m below ground level in strips 5 and 6.

Predictive noise modelling incorporating this mitigation technique identified that exceedences of project specific noise levels were likely at one receptor, the Accurso residence to the north of the site. No exceedences of project specific noise levels were predicted under calm or adverse weather conditions at any other sensitive receptor, including Maroota Public School.

The Applicant proposed an alternative operating method to reduce exceedences at the Accurso residence including increasing the height of the environmental bund to 5m and extracting with only an excavator and dump truck combination until at least 6m below ground level on strips 2 to 6. Predictive modelling of this scenario indicates that

exceedences of up to 5 dBA over the project specific noise levels may occur at the Accurso residence. The Applicant has negotiated an agreement with Mr and Mrs Accurso to cover any such exceedences at the residence.

No traffic noise assessment was conducted since the proposal would not result in any increases in current traffic generated by the development, approved under the existing consent.

Issues Raised in Submissions

Maroota Public School, the Parents and Citizens Association and other public submissions raised concern over perceived increases in noise pollution from the proposed quarry and traffic noise. Submissions noted that noise criteria would be exceeded in adverse weather if the quarry did not cease operations. Submissions also claimed that 55 dBA is not an acceptable criterion for external areas at Maroota Public School since some classes are held in the playground. Submissions from the public and Maroota Public School requested that a traffic noise assessment be conducted in accordance with EPA's *Environmental criteria for road traffic noise.*

EPA provided General Terms of Approval for the development, noting that exceedences were predicted at the Accurso residence and that the Environment Protection Licence would account for the negotiated agreement. It recommended that PlanningNSW consider a mechanism for resolving noise issues should the negotiated agreement be terminated in the future.

Department's Position

The Department notes concerns over potential noise impacts on Maroota Public School which are understandable given its location relative to the proposed development. Submissions stated that the 55 dBA criterion was not acceptable for external areas at the school. Predictive modelling conducted by the Applicant, however, indicates that actual noise levels in the playground would not exceed 45 dBA in worst-case adverse conditions. The EPA has therefore set noise limits at the school at 45 dBA instead of the 55 dBA limit calculated under the *Industrial Noise Policy*. This limit is comparable to the 44 dBA criterion developed for nearby residential receptors. The Department is satisfied that noise levels at Maroota Public School and nearby residential receptors, with the exception of the Accurso residence, would not exceed relevant EPA criteria as a result of the proposal.

Noise impacts identified at the Accurso residence have been addressed through a negotiated agreement in accordance with EPA's *Industrial Noise Policy*. The agreement also contains commitments to implement further mitigative strategies to reduce noise impacts at the Accurso residence. The Department is satisfied that the agreement provides a satisfactory environmental outcome and ensures that the Applicant would implement best-practice noise management. The termination of this agreement by either party would create potential for exceedences at the Accurso residence. The recommended instrument of consent should therefore ensure that the measures stated in the agreement are implemented. In addition, a procedure for management of residual noise should be imposed on the Applicant should the negotiated agreement be terminated. This would include improving the management system to ensure operations are further modified or cease in adverse wind conditions; placing additional controls and treatments on equipment used on site; and providing other forms of benefit or amelioration of impacts to the affected party. EPA suggested that land acquisition conditions be imposed, however the Applicants predicted noise criteria exceedences in worst-case conditions would not exceed standard land acquisition levels applied to

mining and extractive industries in NSW. Therefore conditions requiring land acquisition are not included.

In relation to road traffic noise, the Department notes that the original assessment for the existing quarry was conducted in accordance with the EPA's *Environmental criteria for road traffic noise.* Since traffic would not increase as a result of the proposed extension no further assessment is required. The original assessment conducted for the existing consent recommended that noise monitoring be conducted at Maroota Public School to verify predictions. This has not been undertaken and the Department considers that such monitoring should be carried out as part of the proposed development since traffic noise at the school is a key concern to the community.

The Department notes that the Applicant has based its noise impact assessment on ensuring that extraction operations are modified in certain wind conditions. In order to simplify the operating regime and remove the need for extensive noise monitoring the Department considers that a conservative mode of operation should be employed during all weather conditions on strips 4, 5, and 6. This would require that the bulldozer is not used concurrently with other machinery at any time until the extraction reaches 6m below ground level on strips 4, 5, and 6. These requirements should be translated as enforceable conditions of consent. In addition, the Department considers that the Applicant should monitor noise levels at potentially affected receptors every six months to ensure compliance.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Adhere to commitments in the negotiated agreement with Mr and Mrs Accurso;*
- *Actively manage residual noise exceeding EPA criteria if the negotiated agreement with Mr and Mrs Accurso is terminated for any reason;*
- *Ensure that quarry operations in strips 4, 5, and 6 are modified under all weather conditions until extraction reaches 6 m below existing ground level; and,*
- *Monitor noise levels at potentially affected residences and Maroota Public School every six months.*

5.3 WATER QUALITY IMPACTS

Applicant's Position

Groundwater in both the Maroota Sands and the Hawkesbury Sandstone in the Maroota area are an important resource for local water users and both have been identified as High Risk Aquifers by DLWC. Groundwater impacts were assessed by the Applicant with existing groundwater data obtained from four monitoring bores established on the site. There are 15 registered groundwater monitoring bores within 1 km of the site.

The Applicant proposes to maintain a 2m extraction buffer above the highest recorded groundwater level on the site. This level has been established in the EIS and would be modified based on monthly groundwater monitoring throughout the life of the development. The Applicant states that, due to the 2m buffer, lowering of the groundwater table is unlikely. Potential for groundwater contamination from refuelling and maintenance activities would be limited since all such operations are carried out at the existing facilities, not on the extraction areas. Potential for impacts on local groundwater users is assessed as low due to the above factors and the relative location of the site to other groundwater users being hydraulically downgradient.

The site is in the catchment of Jacksons Swamp, a wetland of regional significance identified in Sydney Regional Environmental Plan No 20. The northern section of the quarry extension site drains to the existing quarry while the southern section drains via an ephemeral waterway to an unnamed tributary of the Hawkesbury River and Jacksons Swamp. The existing quarry water management system has a licensed discharge to a tributary flowing into Jacksons Swamp.

Surface water from the site would be directed to the existing quarry water management system. Diversion of runoff from the site away from the ephemeral drainage line is not expected to have a significant impact on Jacksons Swamp since both systems discharge to the Swamp. In any case, changes to the 11 ha section of catchment on the site is unlikely to measurably affect the 23,000 ha catchment of Jacksons Swamp. The proposed final landform for the site includes reinstatement of the ephemeral watercourse which drains the southern section of the quarry extension.

Issues Raised in Submissions

Public submissions raised concern over potential water quality impacts and highlighted the high conservation value of the catchment of Jacksons Swamp.

Baulkham Hills Shire Council noted that the dam on Lot 2 appears to breech the groundwater table and that extraction is proposed in this area. DLWC indicated that it was satisfied that potential groundwater impacts are adequately considered in the EIS. It also stated that the existing quarry water management system is satisfactory and that an environmental management plan should be developed for the site incorporating erosion and sediment control works and provisions for stream restoration and vegetation management.

NSW Fisheries stated that revegetation of waterways on site as part of rehabilitation must be done with endemic species and must include monitoring and weed control; and that releases of water from the site should mimic natural flows

EPA requested additional information relating to design of the water management system and provided its General Terms of Approval upon receipt of that information.

Department's Position

The Applicant provided clarification of the groundwater level in the dam on Lot 2 in response to the concerns of BHSC and the Department. This information notes that the location of the groundwater table in the area of the dam has been inferred from the four bores on the site. Extraction would occur to 2m of this level and the base of the dam itself would not be extracted. If it is determined that the base of the dam does breach the groundwater table, the Applicant would backfill the depression with overburden from the site or direct surface water away from the depression to prevent changes to infiltration rates or groundwater quality. The Department is satisfied that the proposal would not result in any breaches of the groundwater table or significant groundwater impacts and that any existing breaches could be satisfactorily remediated.

The Department agrees with DLWC that the existing water management system at the quarry is adequate and provides protection for local tributaries and Jacksons Swamp. The Applicant has demonstrated that surface water from the proposed extension can be collected and managed in the existing system. The Department notes that the project would result in minor changes to the catchment areas on the quarry extension site. These changes would occur only in the latter stage of quarrying and the final landform would seek to reinstate the existing hydrological regime on the site. In any case, the

size of the area to be affected would result in imperceptible changes to flows and water quality within the catchment of Jacksons Swamp. The Department agrees with DLWC and NSW Fisheries regarding rehabilitation and management of the watercourses on the site and considers that these provisions should be incorporated into an Environmental Management Plan for the site.

The Department considers that erosion and sediment control works would be required on the site to ensure that excess sediment is not delivered to the existing water management system. The measures proposed by the Applicant would be adequate in this regard and should be incorporated into the Environmental Management Plan for the site.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Ensure extraction does not occur within 2m of the highest recorded wet weather groundwater level;*
- *Remediate any existing breach of the groundwater table on the site to the satisfaction of DLWC; and,*
- *Develop a management plan for the site incorporating erosion and sediment control procedures and rehabilitation and revegetation of watercourses.*

5.4 FLORA AND FAUNA IMPACTS

Applicant's Position

Native vegetation covers approximately 12.5 ha of the 26 ha site, with the remainder cleared or used for orchards. Native vegetation exists generally as woodland and open forest which were divided into seven distinct vegetation communities. Three artificial dams and an ephemeral drainage line provide aquatic habitat. Flora and fauna surveys undertaken in 1998 and 2001 identified the following threatened species and ecological communities occurring on the site:

- *Tetratheca glandulosa;*
- Shale/sandstone transition forest;
- Glossy black cockatoo (*Calyptorhynchus lathami*); and,
- Fishing bat (*Myotis adversus)*

The following threatened species were identified as being likely to occur in the area in 1998, however further targeted surveys in 2001 did not detect them on the site:

- Red crowned toadlet;
- Giant burrowing frog; and,
- Littlejohn's treefrog.

To avoid potentially significant impacts on these species and ecological communities, the Applicant modified the proposed extraction area, retaining all of the *Tetratheca glandulosa* and Shale/sandstone transition forest in a conservation zone surrounded by a buffer area.

The modified proposal would nevertheless result in the clearing of 4.5 ha of open forest and 1.5 ha of heath. Approximately 40 trees that provide potential roosting habitat for

arboreal mammals would be removed. Approximately 5 ha of native vegetation would be conserved in the threatened species conservation area and buffer zones on the site.

In response to a request from Hornsby Shire Council the Applicant undertook further surveys for threatened plants in March 2002 and found approximately 6,356 individual plants of *Darwinia fascicularis* subsp. *oligantha* occurring on the site. Of these individuals, 5,427 or 91% would be conserved in the existing and proposed conservation areas on the site.

The Applicant determined that no species listed under the *Fisheries Management Act 1994* is likely to occur in the dams on the site or the ephemeral drainage line.

The Applicant conducted tests of significance under section 5A of the Act for all threatened species and ecological communities occurring or likely to occur on the site. The tests concluded that the proposal would be unlikely to have a significant impact on any threatened species, population, or ecological community.

The Applicant proposes to mitigate residual impacts on flora and fauna by actively managing and rehabilitating the threatened species conservation area and buffer zones and revegetating extracted areas to create fauna habitat.

Issues Raised in Submissions

Several public submissions raised concerns over potential impacts on biodiversity through clearing of native bushland. Key issues raised include cumulative impacts on threatened species and the lack of successful rehabilitation at existing quarries.

BHSC requested further information relating to clearing of native vegetation and identification of glider species. The Applicant provided a satisfactory response to these specific issues.

NPWS indicated support for the modification that preserves *tetratheca glandulosa* and shale/sandstone transitional forest on the site. It requested a long-term management strategy for the conservation area which prevents construction of roads and includes:

- rehabilitation with local seed and weed control;
- construction of a barrier to prevent dumping of waste and quarrying materials, ingress of dust, weed infestation, and damage by machinery; and
- an ongoing monitoring program to ensure rehabilitation of the area and that changes in groundwater levels do not impact vegetation.

NSW Fisheries noted that the dams to be removed on site represent valuable fish habitat and requested an aquatic ecology study to further assess the proposal. NSW Fisheries stated that mitigation measures or compensation for loss of fish habitat must be considered after conducting tests of significance for threatened fish species likely to occur on the site.

Hornsby Shire Council requested further investigation for threatened plant species and recommended that the site EMP include:

- monitoring of Shale/Sandstone Transitional Forest and *tetratheca glandulosa*;
- planting of *Allocasuarina* to provide habitat for Glossy Black Cockatoo;
- tubestock and brush matting must be from locally collected seed; and,
- nest boxes which will replace potential habitat must be placed in similar trees at the same height and aspect.

Department's Position

The Applicant conducted flora and fauna surveys of the site on three occasions, including additional surveys for threatened plants in response to a request from Hornsby Shire Council. The Department considers that sufficient survey work and analysis has been carried out to accurately assess flora and fauna impacts.

Several threatened species and an ecological community were found on the site and others are likely to occur in the area. All threatened species and the ecological community would be protected within conservation areas on the site, except for 9% of the threatened plant *Darwinia fascicularis* subsp. *oligantha*. Given this important conservation outcome, and in considering the factors under section 5A of the Act, the Department is satisfied that the project is unlikely to have a significant effect on any threatened species, population, or ecological community.

The residual short-term impacts on flora and fauna resulting from the clearing of 6 ha of native woodland and heath would be partially offset by the retention of 5 ha of native vegetation in conservation areas and buffers. The Department considers that it is unlikely that these areas would be subjected to future extraction or other landuses which may impact on biodiversity conservation. In fact, the enhancement measures proposed by the Applicant in these areas would significantly improve overall habitat values of the site. Native vegetation corridor values in the area are unlikely to be effected since the vegetation to be cleared is surrounded by agricultural land, existing quarries, and Old Northern Road. The threatened species conservation area would link to a corridor on the adjacent land to the south which leads to the extensive bushland areas in the proposed Dryabbin Nature Reserve to the south and west of the site.

Further mitigation would be provided in the form of rehabilitation and revegetation of disturbed areas. Public concerns over the success of revegetation operations in Maroota are noted and the Department considers that these concerns could be addressed through conditions of consent that require strict targets, procedures, monitoring and reporting.

The Department notes NSW Fisheries concern over the loss of aquatic habitat in the dams on the site and potential impacts on threatened fish species. The Applicant addressed potential impacts on two possible threatened species that may occur in the area, the Adam's Emerald Dragonfly and the Macquarie Perch. The Applicant adequately demonstrated that suitable habitat for the Adams Emerald Dragonfly does not exist on the site. The Applicant also demonstrated, based on information from NSW Fisheries database and Fishinfo sheets, that suitable habitat for Macquarie Perch does not exist on the site and that the species has not been recorded in the area. NSW Fisheries acknowledged this in later correspondence, on 23 January 2002, stating that the only way Macquarie Perch could be in the dams is if they had been artificially stocked. The Department considers that aquatic surveys for the Macquarie Perch are not required given the lack of breeding habitat present and the fact that the dams are isolated from other waterbodies. In the unlikely event that the dams have been stocked with this species, the Department considers that the proposal would not have a significant effect on Macquarie Perch or its habitat.

The Department accepts that the proposal would have some short term adverse impacts on flora and fauna due to clearing operations. These operations, however, are unlikely to significantly effect threatened species or ecological communities on or around the site and would be substantially mitigated and offset by the establishment of conservation areas and revegetation works.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *revise and integrate the rehabilitation and landscaping plan for the entire site with a clear schedule and targets for rehabilitation,*
- *comply with the requirements of DLWC, NPWS, NSW Fisheries, Hornsby Shire Council, and BHSC;*
- *table the rehabilitation and landscaping plan before the Community Consultative Committee for review and recommendations;*
- *monitor impacts on flora and fauna as a result of the proposal until at least two years after closure of the quarry; and,*
- *conduct detailed monitoring and reporting of rehabilitation in annual environmental management reports.*

5.5 CULTURAL HERITAGE IMPACTS

The Applicant undertook an indigenous cultural heritage survey and a site investigation in conjunction with a representative of the Deerrubbin Local Aboriginal Land Council in 1998. No Aboriginal sites or artefacts were identified on the proposed quarry extension site. The Applicant's study recommends that a typical section of Maroota Sands outcrop should be retained on the project site or elsewhere in the district since it contains potential source material for stone artefacts manufactured by Aboriginal people. The Deerubbin Local Aboriginal Land Council provided a letter stating that it has no objection to the proposal on cultural heritage grounds.

The nearest item of non-indigenous cultural heritage is located 7km from the site at Wiseman's Ferry and would not be affected by the proposal.

Public submissions noted the recommendations of the Applicant's Aboriginal cultural heritage study to retain an outcrop of Maroota Sand and requested an assessment by the traditional owners of the area and native title claimants the Darug Tribal Aboriginal Corporation.

The Applicant provided a letter from the Darug Tribal Aboriginal Corporation which states that, based on a site inspection in February 2002, it finds that there are no constraints on Aboriginal cultural heritage grounds to impede development of the site.

The Department notes the recommendations of the Applicants report and considers that a substantial portion of Maroota Sand would be retained within the conservation areas and buffer zones on the site. In addition, typical outcrops of Maroota Sand are conserved on nearby Crown land and in nature reserves and state forests.

The Department concludes that the proposal is unlikely to have significant impacts on cultural heritage on the site or in the locality.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Cease work and consult with NPWS and the local Aboriginal community, or the NSW Heritage Office if appropriate, should any cultural heritage objects be uncovered during works on the site; and,*
- *Incorporate such procedures in an environmental management plan.*

5.6 TRANSPORT IMPACTS

The existing quarry has approval under its consent for up to 120 truck movements (60 laden trucks) per day. Trucks access the public road network via Crown Reserve Road which has been sealed and is maintained by the Applicant. Trucks generally proceed south along Old Northern Road, with approximately 35% turning onto Wiseman's Ferry Road south of Maroota Public School. The Applicant does not propose to alter the existing number of approved truck movements from the site, including a restricted number of movements between 6am and 7am. The current application includes, however, extension of the approval for these truck movements from 10 years to 20 years. The Applicant states that, assuming 2% growth in traffic per year, the contribution of traffic from the quarry would decrease over the 20 year approval period. The Applicant considers that traffic impacts would not be significant since no additional traffic would be generated by the proposal.

Public submissions and a submission from Maroota Public School raised concern over safety issues relating to truck movements past the school.

The Department concurs with the Applicant that increases in transport impacts would not be significant as a result of the proposal. Old Northern Road currently operates at well below its design capacity and the approved 120 truck movements would not compromise operation of the road even considering potential traffic growth over the next 20 years.

The Department has recently negotiated a strategic approach to managing truck safety at Maroota Public School with local quarry operators, Hornsby Shire Council, Baulkham Hills Shire Council, and RTA. This process resulted in the signing of a traffic management policy for Maroota by all four quarry operators in the area. This policy specifically refers to speed limits and the use of exhaust brakes near Maroota Public School and has been sent to all customers of Maroota quarries. In addition, the Department is negotiating with RTA to have flashing lights placed at the beginning of the 40km/hr zones on Old Northern Road to funded out of quarry section 94 contributions.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Develop a traffic management plan for the existing site and quarry extension and adhere to a transport code of conduct.*

5.7 LANDSCAPE AND VISUAL AMENITY IMPACTS

The site is in a rural setting on the western side of the Maroota Ridge where the topography slopes down to the Hawkesbury River. The Applicant states that the site has moderate scenic quality based on the rural setting, water bodies, and views to the Blue Mountains.

The site is potentially viewed from four properties to the north and from residences and the school along Old Northern Road to the east. The proposed development involves

removal of vegetation, operation of quarry machinery, and exposed extraction areas which may impact on visual amenity. The Applicant proposes to shield views through the retention of native vegetation and construction of bund walls along the edges of the extraction area. Bunds would create a short-term visual impact until they are revegetated.

One residence to the north would have partial views of the site, however views from residences and Maroota Public School on Old Northern Road are highly unlikely due to intervening vegetation and proposed bunds.

Several public submissions raised concern over impacts on the visual amenity of Maroota Public School and possible effects on tourism in the area.

The Applicant has demonstrated that views from public places and Maroota Public School of the development would be effectively screened by vegetation in the proposed buffer zone around the school. The Department is therefore satisfied that the proposal would not significantly detract from the scenic character of the locality, tourism, or visual amenity at Maroota Public School.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Install and rehabilitate proposed visual bunds prior to commencing operations on the quarry extension site.*

5.8 WASTE MANAGEMENT IMPACTS

Waste generated at the existing quarry site is managed in accordance with the Environment Protection Licence for the site. The proposed quarry extension would result in the creation of a quantity of vegetative matter from clearing and tailings from washing of sand. All vegetative matter would be used on site for rehabilitation and tailings would be used on both the existing site and the quarry extension site to fill voids and create the final landform. The Applicant proposes to cap and rehabilitate tailings dams once excess water has evaporated. This technique has been used with success on the existing quarry site. The Applicant provided a conservative calculation of all tailings and overburden to be generated on the site and confirmed that all would be required for creation of the final site landform. No waste is proposed to be brought on to the site for disposal. The Department is satisfied that waste management at the site would not result in any significant environmental impacts.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Ensure that no waste is transported to the site for disposal.*

5.9 HAZARDS

The proposal would not result in any changes to the storage or use of hazardous materials at the site. The existing site currently stores diesel and lubricating oil which are classified as combustible liquids, class C1 and C2, under the *Australian Dangerous Goods Code* and are not “hazardous materials” as defined in SEPP 33. Therefore the development is not classified as a potentially hazardous development.

The Department is satisfied that the proposal would not have any significant off-site risk impacts and that the requirements of SEPP 33 have been complied with.

5.10 SOCIO-ECONOMIC IMPACTS

The proposal would not result in any immediate changes to employment or investment in the area, however it would provide for continuation of employment for the current staff for over 10 years. The development is likely to continue to supply the same markets at similar rates, providing ongoing economic activity in the locality. Some of the benefits from the employment generation and economic activity would be expected to flow on to the local community through expenditure on local goods and services and section 94 contributions to Baulkham Hills Shire Council.

The Department is satisfied that the proposal is unlikely to have significant adverse socio-economic impacts and that the local community would continue to experience some flow-on benefits from the quarry.

The Department notes that over 100 objections were received during the exhibition period of the proposal. Consultation with community representatives confirms that there is widespread opposition to quarry developments in Maroota and this proposal in particular due to its proximity to Maroota Public School. The Department has assessed the key environmental issues relating to the proposal and considers that all relevant criteria and performance standards would be met. On this basis, it is considered that the extraction of this important strategic sand resource is justified and necessary for the orderly development of the State. Given this conclusion and the community opposition identified, the Department considers that a strategy should be developed by the Applicant to improve community relations and information exchange during the life of the development. This strategy would be in addition to an expanded Community Consultative Committee for the whole site. The strategy would be developed in conjunction with community groups and Maroota Public School and aim to facilitate communication and education through exchange of expertise in:

1. Bush regeneration;
2. Land management (Landcare);
3. Water quality (Streamwatch)
4. Environmental education;
5. Threatened species identification and management; and
6. Environmental monitoring and management.

The Department considers that such an approach would assist in developing better understanding of community concerns and improve communication between the Applicant and the community.

Recommendations

If the Minister determines to approve the Development Application the Applicant should be required to:

- *Establish a community consultative committee for the whole site; and,*
- *Develop a community relations strategy in consultation with Maroota Public School and the local community.*

5.11 CUMULATIVE IMPACTS

The proposal would have potential cumulative impacts on the following environmental values when considered in conjunction with existing extractive industry operations in the area:

- Air quality;
- Noise;
- Groundwater;
- Traffic;
- Surface water; and,
- Flora and Fauna

The Applicant integrated assessment of these potential cumulative impacts into its assessment of each environmental issue. Ambient air quality and noise levels of all existing operations and land uses were monitored and the predicted increment of the proposed development added to those levels to provide a cumulative total impact. Groundwater and surface water quality is unlikely to be altered as a result of the proposal therefore no cumulative effect would occur. Similarly, traffic levels would not be increased above existing approved truck movements and cumulative impacts with existing developments are unlikely. The flora and fauna assessment took into account the degree to which individual species are protected in existing conservation reserves, considering existing levels of clearing, and concluded that the proposal is unlikely to have a significant effect on any threatened species or ecological community. The Department is therefore satisfied that potential cumulative impacts have been adequately addressed.

In response to community concern over the cumulative impacts of sand extraction at Maroota, the Department is currently considering the establishment of a Cumulative Impact Committee which involves all Maroota quarry operators, both Baulkham Hills and Hornsby Shire Councils, community representatives and State government officers. The Department believes that such a committee would improve the communication and management of cumulative issues at Maroota.

5.12 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development (ESD) is one of the objects of the Act set out in section 5. The regulation requires, under Schedule 2, that and EIS contain a justification for a development proposal considering the following principles of ESD:

a) the precautionary principle;
b) inter-generational equity;
c) conservation of biological diversity and ecological integrity; and,
d) improved valuation, pricing and incentive mechanisms.

The Department has considered and implemented the precautionary principle in its assessment of the proposal and its negotiations with the Applicant. The Applicant has designed the proposal to avoid potentially irreversible impacts on threatened species and would establish a conservation area to protect those species and an ecological community. This action, combined with the rehabilitation and revegetation of the site would ensure that biological diversity and ecological integrity in the area are conserved.

The Department recognises that extractive industry operations deplete in situ resources and potentially restrict use of these resources by future generations. The proposal

would result in the removal of 3 million tonnes of sand resource, however the economic benefit and activity generated by this resource would assist current and future generations to develop alternative technologies which reduce reliance on non-renewable resources.

The efficient use of sand in building and infrastructure construction is a value-adding process that results in products which have a life of at least 50-100 years. In addition, the use of extractive materials in construction does not result in destruction of the material. The Department considers that future reuse of extractive materials used in construction is a reasonable eventuality that would not significantly restrict the wellbeing of future generations.

The Department considers that the Applicant has adequately considered the environmental and social costs of the proposal and is satisfied that, on balance, the value of the sand resource to the community and the State justifies the proposal going ahead.

The Department is satisfied that the proposal is generally consistent with the principles of ESD.

6 Recommended Instrument of Consent

The Department has prepared a set of recommended conditions of consent for the proposal. These conditions include EPA's General Terms of Approval.

The conditions are required to:

a) to minimise any adverse environmental impacts associated with the development;
b) provide for environmental monitoring, reporting, and independent review; and
c) to ensure consistency of the development with the existing development consent applying to the site.

The Applicant has been consulted and has agreed with the conditions in the recommended instrument of consent.

7 Section 79 (C) Consideration

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

The Department has assessed the DA against these matters (see Appendix B), and is satisfied that:

1. the proposal is generally consistent with the provisions of the relevant planning instruments;
2. the potential impacts of the proposal could either be mitigated or managed; and
3. the proposal is generally in the public interest.

8 Conclusions

The Department is of the opinion that the proposed development is consistent with State and regional planning objectives relating to environmental management, sustainable development and resource utilisation. It is further considered that the potential environmental impacts of the proposal can be suitably managed such that they do not preclude the granting of development consent. The proposal would also provide socio-economic benefits to the locality and the region. It is therefore concluded that the proposal should be approved, subject to the conditions of consent designed to control and mitigate potential environmental impacts.

9 Recommendations

It is RECOMMENDED that the Minister:

(i) Consider the findings and recommendations of this report;
(ii) Approve the DA subject to conditions under Section 80 of the Act; and
(iii) Sign the attached Instrument of Consent.

Nick Agapides
Manager – Mining and Extractive Industries
Major Development Assessment Branch

ENDORSED:

Sam Haddad
Executive Director
Sustainable Development

Report Prepared by Matt Andrews

10 References

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NHMRC, 1996, “Australian Drinking Water Guidelines”, National Health and Medical Research Council, updated in 2001, Commonwealth of Australia, Canberra.

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APPENDIX A – ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2) 1997

The relevant provisions of the Plan are considered below:

Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2) 1997		
(1)	***Total catchment management*** ***Policy: Total catchment management is to be integrated with environmental planning for the catchment.*** ***Strategies:*** *(a)Refer the application or other proposal for comment to the councils of each adjacent or downstream local government area which is likely to suffer a significant adverse environmental effect from the proposal.* *(b) Consider the impact of the development concerned on the catchment.* *(c) Consider the cumulative environmental impact of development proposals on the catchment.*	Consistent
(2)	***Environmentally sensitive areas*** ***Policy: The environmental quality of environmentally sensitive areas must be protected and enhanced through careful control of future land use changes and through management and (where necessary) remediation of existing uses.*** ***Note.*** *Environmentally sensitive areas in the Hawkesbury-Nepean catchment are: the river, riparian land, escarpments and other scenic areas, conservation area subcatchments, national parks and nature reserves, wetlands, other significant floral and faunal habitats and corridors, and known and potential acid sulphate soils.* ***Strategies:*** *(a) Rehabilitate parts of the riverine corridor from which sand, gravel or soil are extracted so that attached aquatic plant beds are replaced and water quality and faunal habitats improved.* *(b) Minimise adverse impacts on water quality, aquatic habitats, riverine vegetation and bank stability.* *(c) Minimise direct and indirect adverse impacts on land reserved or dedicated under the National Parks and Wildlife Act 1974 or the Forestry Act 1916 and conservation area sub-catchments in order to protect water quality and biodiversity.* *(d) Protect wetlands (including upland wetlands) from future development and from the impacts of land use within their catchments.* *(e) Consider the need to include buffer zones (such as adequate fire radiation zones) for proposals on land adjacent to land reserved or dedicated under the National Parks and*	Consistent Consistent N/A Consistent N/A

	Wildlife Act 1974 or the Forestry Act 1916. *(f) Consider the views of the Director-General of National Parks and Wildlife about proposals for land adjacent to land reserved or dedicated under the National Parks and Wildlife Act 1974.* *(g) Consideration should be given to the impact of the development concerned on the water table and the formation of acid sulphate soils.* *(h) New development in conservation area sub-catchments should be located in areas that are already cleared.*	 N/A Consistent N/A
(3)	***Water quality*** ***Policy: Future development must not prejudice the achievement of the goals of use of the river for primary contact recreation (being recreational activities involving direct water contact, such as swimming) and aquatic ecosystem protection in the river system. If the quality of the receiving waters does not currently allow these uses, the current water quality must be maintained, or improved, so as not to jeopardise the achievement of the goals in the future. When water quality goals are set by the Government these are to be the goals to be achieved under this policy.*** ***Note.*** *"Aquatic ecosystems" and "primary contact" recreation have the same meanings as in the document entitled Australian Water Quality Guidelines for Fresh and Marine Waters, published in 1992 by the Australian and New Zealand Environment and Conservation Council.* ***Strategies:*** *(a) Quantify, and assess the likely impact of, any predicted increase in pollutant loads on receiving waters.* *(b) Consider the need to ensure that water quality goals for primary contact recreation and aquatic ecosystem protection are achieved and monitored.* *(c) Approve development involving primary contact recreation or the withdrawal of water from the river for human contact (not involving water treatment), such as showers, only in locations where water quality is suitable (regardless of water temperature).* *(d) Do not carry out development involving on-site disposal of sewage effluent if it will adversely affect the water quality of the river or groundwater. Have due regard to the nature and size of the site.* *(e) Develop in accordance with the land capability of the site and do not cause land degradation.* *(f) Consider the need for an Erosion and Sediment Control Plan (to be in place at the commencement of development) where the development concerned involves the disturbance of soil.* *(g) Minimise or eliminate point source and diffuse source pollution by the use of best management practices.* *(h) Site and orientate development appropriately to ensure bank stability. Plant appropriate native vegetation along banks*	 Consistent Consistent N/A N/A Consistent Consistent Consistent N/A

	of the river and tributaries of the river, but not so as to prevent or inhibit the growth of aquatic plants in the river, and consider the need for a buffer of native vegetation. *(i) Consider the impact of the removal of water from the river or from groundwater sources associated with the development concerned.* *(j) Protect the habitat of native aquatic plants.*	 Consistent Consistent
(4)	***Water quantity*** ***Policy: Aquatic ecosystems must not be adversely affected by development which changes the flow characteristics of surface or groundwater in the catchment.*** ***Strategies:*** *(a) Future development must be consistent with the interim or final river flow objectives that are set for the time being by the Government.* *(b) Ensure the amount of stormwater run-off from a site and the rate at which it leaves the site does not significantly increase as a result of development. Encourage on-site stormwater retention, infiltration and (if appropriate) reuse.* *(c) Consider the need for restricting or controlling development requiring the withdrawal or impoundment of water because of the effect on the total water budget of the river.* *(d) Consider the impact of development on the level and quality of the water table.*	 Consistent Consistent Consistent Consistent
(5)	***Cultural heritage*** ***Policy: The importance of the river in contributing to the significance of items and places of cultural heritage significance should be recognised, and these items and places should be protected and sensitively managed and, if appropriate, enhanced.*** ***Strategies:*** *(a) Encourage development which facilitates the conservation of heritage items if it does not detract from the significance of the items.* *(b) Protect Aboriginal sites and places of significance.* *(c) Consider an Aboriginal site survey where predictive models or current knowledge indicate the potential for Aboriginal sites and the development concerned would involve significant site disturbance.* *(d) Consider the extent to which heritage items (either identified in other environmental planning instruments affecting the subject land or listed in Schedule 2) derive their heritage significance from the river.*	 Consistent Consistent Consistent N/A
(6)	***Flora and fauna*** ***Policy: Manage flora and fauna communities so that the diversity of species and genetics within the catchment is conserved and enhanced.*** ***Strategies, generally:*** *(a) Conserve and, where appropriate, enhance flora and*	 Consistent

	fauna communities, particularly threatened species, populations and ecological communities, aquatic habitats, wetland flora, rare flora and fauna, riverine flora, flora with heritage value, habitats for indigenous and migratory species of fauna, and existing or potential fauna corridors.	
	(b) Locate structures where possible in areas which are already cleared or disturbed instead of clearing or disturbing further land.	Consistent
	(c) Minimise adverse environmental impacts, protect existing habitat and, where appropriate, restore habitat values by the use of management practices.	Consistent
	(d) Consider the impact on ecological processes, such as waste assimilation and nutrient cycling.	N/A
	(e) Consider the range of flora and fauna inhabiting the site of the development concerned and the surrounding land, including threatened species and migratory species, and the impact of the proposal on the survival of threatened species, populations and ecological communities, both in the short and longer terms.	Consistent
	(f) Consider the need to provide and manage buffers, adequate fire radiation zones and building setbacks from significant flora and fauna habitat areas.	Consistent
	(g) Consider the need to control access to flora and fauna habitat areas.	Consistent
	(h) Consider the need to maintain corridors for fish passage, and protect spawning grounds and gravel beds.	N/A
	Strategies for wetlands:	
	(i) Maintain the ability of wetlands to improve the quality of water entering the river through the filtering of sediments and the absorption of nutrients.	Consistent
	(j) Maintain the ability of wetlands to stabilise soils and reduce bank erosion.	Consistent
	(k) Maintain the ability of wetlands to reduce the impact of flooding downstream through the retention of floodwaters.	Consistent
	(l) Maintain a variety of wetland flora and fauna species in the region and consider the scarcity of particular species on a national basis.	Consistent
	(m) Encourage the appropriate management of wetlands, including monitoring and weed control.	N/A
	(n) Provide opportunities for recreation, scientific research and education where they are compatible with the conservation of wetlands.	N/A
	(o) Consider the need to protect and improve the quality and quantity of surface water and groundwater entering wetlands by controlling development in the catchment of wetlands.	Consistent
	(p) Consider the desirability of protecting any wetlands of local significance which are not included on the map.	Consistent
	(q) Consider the desirability of protecting or, if necessary, actively managing, constructed wetlands if they have significant conservation values or make a significant contribution to improvements in water quality.	N/A

Development Control Plan No. 500 – Extractive Industries (DCP 500)

The relevant provisions of the plan are assessed below.

Baulkham Hills Development Control Plan No. 500 – Extractive Industries		
2.1	**COMMUNITY PARTICIPATION**	
	• Community participation should be undertaken in the preparation, assessment, and management of extractive industries.	Consistent
	• Proponents are encouraged to promote a better understanding of the industry in relation to sustainable links with local cultural history and diversity; natural features and biodiversity of the catchment; local economies; and local views, values and aspirations.	Consistent, Community Relations Plan required

	• Proponents are encouraged to interact with permanent residents and local community groups during development and in particular the following phases:-
	  • Planning and pre-lodgement;
	  • Assessment;
	  • Operation and management;
	  • Rehabilitation ; and
	  • Post extraction land uses.
		Consistent

	• Proponents should ensure that community views, values and concerns are:-
	  o identified;
	  o recognised and classified;
	  o assessed: and evaluated;
	  o responded to; and effectively monitored and managed.
	This may form the foundation of a Social Impact Assessment and annual management plan referred to in Section 2.13 of this DCP.
		Consistent

	• Proponents may be required to establish a Management Committee including at least three (3) permanent residents not associated with the operation. This management Committee may provide input into the proponent company's environmental management system and details of which may be recorded in the annual Environmental Management Plan referred to in Section 2.18 of this DCP.	Required in conditions

	• Proponents are encouraged to promote a better understanding of the industry by:-
	  o providing additional dust gauges to be monitored by community members;
	  o supplying streamwatch kits to local schools and/or community groups
	  o facilitating local bio-diversity conservation education programs and local scenic routes;
	  o promoting local cultural history and diversity;
	  o participating in local community events;
	  o imitating open inspection days;
	  o contributing towards local rural resource centres;
	promoting and facilitating links with existing and new local
		Community Relations Plan required in conditions

	economies and businesses.	
2.2	**SETBACKS** • Extraction operations should be set back no less than:- • **10m** from adjoining property boundaries; • **30m** from a public road; • **40m** from any boundary to a National park or State Forest or unalienated Crown Lands; • **40m** from any site or relic of heritage, archaeological, geological, cultural significance; • **40m** from the top bank of a watercourse or otherwise to the requirements of the Department of Land & Water Conservation; • **100m** of a Pubic or Community facility; and • **100m** from a Residence not associate with extraction.	Consistent
2.3	**TRANSPORT** • An internal access carriageways associated with Extractive Industries should be no less than 20m wide, as illustrated in Figure 4: Typical Cross Section of Internal Access Road; • Internal access carriageways associated with Extractive Industries should be set back no less than:- o **10m** from adjoining property boundaries; o **50m** from environmentally sensitive areas including habitats of threatened species; o **100m** from residences not associated with extraction. • The standard of construction of Internal Access Carriageways shall have regard to: o cross sectional characteristics, including straight runs, curves and bends; o horizontal and vertical alignment characteristics; o pavement & drainage proposals; o other technical parameters; and o suitable vehicle grades.	Not consistent, see section 3.6. Consistent
2.4	**WATER RESOURCES** • The ***Groundwater Impact Assessment report*** should:- o identify & classify aquifer systems; o identify all ground water dependent land uses & environments within catchment areas; o assess vulnerability of ground water; o identify freeboard level (to AHD) above high groundwater level capable of protecting groundwater flow patterns & water quality; o identify potential sources of impacts including seepage from tailing dams; and o outline procedures for monitoring ground water flow and quality. • Extraction should not occur within **2m** of the wet weather high groundwater level or otherwise to the requirements of the Department of Land & Water Conservation. • Proponents should ensure that all bores and extraction operations which intercept the water table and/or require pumps meet the requirements of the Department of land & Water Conservation. • The **Water Management Strategy** should outline a	Consistent Consistent Consistent Consistent

	framework for the identification, classification and management of artificial and natural surface and sub-surface water cycles. This framework should incorporate details for all phases of development including:- ○ site investigations used to identify and classify catchment origin, drainage patterns, water flow and water quality; ○ source, quantity and quality of water required to provide a reliable supply of water to the operations; ○ procedures for minimising importation of water' ○ procedures for maximising re-use and recycle of collected waters particularly during extreme climatic conditions; ○ procedures capable of maintaining natural surface water flow and quality conditions along downstream boundary alignments; ○ destination points for collected waters are retained within the extraction site; ○ the design, location and likely impact of any temporary diversion of drainage patterns within the extraction site; ○ procedures for ensuring that contaminated waters are contained on-site during the 1% AEP; ○ risks, safeguards and contingency plans for extreme climatic conditions or operational hazards including breach or contamination; ○ procedures for monitoring groundwater flow, quality and recharge areas within catchments having regard to the recommendations of the Groundwater Impact Assessment Report.	
2.5	**VISUAL AMENITY & SCENIC QUALITY** • Proponents should submit with their application a **Landscape Site Analysis** which identifies and assesses the scenic qualities, landscape constraints and options for landscape protection of the proposed extraction site. • Extractive Industries should demonstrate that areas of high visual sensitivity such as outstanding, unusual, distinctive or diverse landform or land cover features are preserved and protected. • Perimeter screen planting known to achieve sufficient height capable of softening the exposure of extraction sites when viewed from surrounding private and public places should be provided at all times • Extraction sites are to be rehabilitated to a final landform compatible with the shape, grade, level, form, land use, landscape quality and bio-diversity of the surrounding terrain.	Consistent Consistent Consistent Consistent
2.6	**FLORA and FAUNA** • Proponents should undertake a ***Fauna and Flora Assessment*** to assess whether the:- ○ native vegetation is remnant vegetation in a region that has been extensively cleared; ○ immediate area has a high biological diversity;	Consistent

	○ area contains disjunct populations of a native species or a species that is near the limit of its geographic range, including riparian vegetation or vegetation associated with wetlands; ○ area has connective importance as, or part of, a corridor of native vegetation; ○ vegetation is adequately represented in a conservation reserve system; ○ area is important as a site along the migratory route for wildlife; ○ area functions as a drought refuge for wildlife; ○ development would likely exacerbate soil erosion, salinisation, acidification and/or landslip; ○ need for conservation of all or part of the vegetation due to its condition, low boundary to area ration, geological context and presence of Aboriginal sites. • Extraction operations should provide a buffer zone no less than:- ○ **40m** from National Parks, State Forests or unalienated Crown lands; ○ **50m** from critical habitats of threatened species, populations, ecological communities; or otherwise ○ site specific requirements of the National Parks & Wildlife Service. The buffer zone should not be disturbed except for on going management or rehabilitation purposes.	Not consistent, see section 3.6
2.7	**HERITAGE & ARCHAEOLOGICAL RESOURCES** • Proponents should submit an ***Archaeological Study*** which includes an assessment of the scientific, educational, landscape and cultural value of all Aboriginal and non-aboriginal sites.	Consistent
2.8	**SOIL CONSERVATION** • Proponents should limit the extent of cleared areas at any one time by ensuring that soil surface conditions on extraction sites are protected & maintained by natural or manufactured material or mulch or by any other acceptable soil stabilisation technique. • Proponents should ensure that drainage control measures are provided for up stream catchments from runoff may by pass the extraction site. They should also ensure infiltration into and control runoff from the subject site. • Proponents should ensure the long term stability of natural channels downstream of the site by maintaining pre-existing rates, volumes and quality of channel flow. Protection measures may include controlled entry and exit points from sub-catchments. • Sediment control dam designs should include details of the proposed dewatering method for the settling volume, spillway configuration, energy dissipation, and the design life of the structure. • ***Sediment & Erosion Control Plan*** should be submitted with each application and which indicates:- ○ Site investigations used to determine areas most &	Consistent Consistent Consistent Consistent Required in conditions

	least suited to extraction operations; o Clearing, grading & drainage plans for the site layout; o Procedures for installing & maintaining devices for all phases of extraction; o Procedures for removal of the controls; o Method of controlling water from the top through to and beyond the bottom of the site; o Procedures for maintaining protective ground covers; o Refer to ***Sample sediment & Erosion Control Plan.***	
2.9	**ACOUSTIC MANAGEMENT** • Proponents shall submit an **Acoustic Impact Assessment Report** should identify and assess the range of noise levels within the locality and the impacts likely to be generated by the operations.	Consistent
2.10	**AIR QUALITY MANAGEMENT** • Proponents should identify and assess all potential sources of air pollution. This should be demonstrated by way of submitting an ***Air Quality Assessment Report;*** with each application. • Proponents should implement effective measures capable of controlling air pollution caused by dust, particularly during dry and windy weather conditions.	Consistent Consistent
2.11	**EXTRACTION PROGRAM** • Proponents are encouraged to promote and facilitate an orderly sequence of extraction within an extraction site having regard to the nature of the resource and the environmental sensitivity of the locality. • Extractive operations should employ an efficient and environmentally sensitive extraction method which:- o maximises the quality & volume of material; o minimises the generation of adverse impacts; o minimises the volume of waste; and o limits the potential impact upon sensitive site features & areas. This should be demonstrated by way of submitting an **Extraction Program Plan** with each application.	Consistent Consistent
2.12	**REHABILITATION** • All applications should include a **Rehabilitation Strategy** which outlines:- o site analysis used to determine conservation areas; o the implementation of the findings of Flora & Fauna monitoring program – *see Section 2.5*; o means of maintaining vegetative buffer zones rehabilitated areas; o placement of rocks & landscape features; o tree replacement of rocks & landscape features; o tree retention, protection and replenishment scheme; o integration of the final landform with the landscape characteristics of the surrounding terrain; o capacity of the final landform to achieve the objective and performance criteria of this plan; o details of backfilling works; o a ***Works Program*** defining a time period for rehabilitation of each stage with the aim to restore	Consistent and required in conditions

	vegetative covers at the earliest possible opportunity; o those works that are to be carried out under supervision of a nominated qualified person; o reference to a ***Farm Management Plan*** – see Section 2.14, for sites to be rehabilitated to agricultural land; o compliance with all controls set out in this Section; o compliance with other established rehabilitation methods endorsed by relevant Public Authority including *"best practice"* publications.	
2.13	**SOCIAL & ECONOMIC ASSESSMENT** • Proponents should identify the number, degree, and extent of economic linkages between Extractive Industry and businesses within the Shire by way of an ***Economic Appraisal Report.*** • Proponents should identify, mitigate and manage / monitor social impacts resulting from extractive industries by way of a **Social Impact Assessment** and **Social Impact Management Plan.**	Consistent Consistent
2.14	**ECOLOGICALLY SUSTAINABLE DEVELOPMENT** • Proponents should justify the carrying out of an extractive industry having regard to the principles of ESD by way of submitting an ***ESD Summary Report.***	Consistent
2.15	**POST – EXTRACTION LAND USE** • Proponents should ensure that extraction sites are rehabilitated to a usable and stable final landform which can support a variety of agricultural or other permissible land uses • Proponents should demonstrate that rehabilitation of extraction sites will integrate with the shape, form, contour, vegetation, soil composition, drainage and land use characteristics of the surrounding terrain.	Consistent and required in consent Consistent
2.16	**MAROOTA** • All provisions of this DCP should apply to the Maroota designated area. • When planning and designing projects at Maroota proponents should reference Figure 12: ***Schematic Extraction & Transport Plan.*** Proponents may justify variations to this Schematic Plan based upon technical & environmental information, legal binding agreements with landowners and/or having regard to community views, values and knowledge. **Setbacks:** • Extractive activities should be set back no less than:- o **10m** from adjoining property boundaries such as those identified as being excluded from extraction; o **30m** from Old Northern Road and Wisemans Ferry Road; o **40m** from the Maroota State Forest and Dyrabbin Nature reserve or other unalienated Crown; o **50m** from known critical or potential habitats of *Yellow Belly Glider, Kunzea rupestris* and *Tetretheca glandulosa,* and other threatened species, populations, and ecological communities; o **250m** from the Maroota Public School; and	Consistent Consistent Generally consistent, for setback to Maroota Public School see section 3.6

	○ **100m** from any residence not associated with extraction. The site specific Groundwater Impact Assessment Report should reference the findings and recommendations of the **Maroota Ground water Study –** Stage 1: Scoping Study, 1996 and any subsequent reports. **Visual Amenity & Scenic Quality:** • Proponents should minimise the visual *"moonscape"* appearance of extraction sites particularly when viewed from the Hawkesbury River, Old Northern & Wisemans Ferry Roads, surrounding private & public places and other ridges lines surrounding the Sydney basin. **Extraction Program Planning:** • Prior to the commencement of on-site works including clearing works, proponents should notify all immediately adjoining landowners, relevant community groups and place a notice in the Offices of the Maroota Public School; **Rehabilitation Management Plan:** • Proponents should participate with the Maroota community in the preparation of the final landform plan proposed within the rehabilitation strategy. **Social & Economic Assessment:** • Proponents should arrange a Public meeting with Maroota residents giving due regard to the views, values, concerns and knowledge of the local community. A list of local community groups is set out in *Attachment No.2.*	Consistent Consistent Consistent Consistent
2.17	**SECTION 94 CONTRIBUTIONS** • As a result of road damage caused by heavy vehicles Extractive Industry operators shall contribute to the maintenance of the regional and local road network.	Consistent and required in conditions
2.18	**ENVIRONMENTAL MANAGEMENT SYSTEMS** • Proponents should deal with each application the way in which all facets of their operation employ and maintain good environmental management practises. To ensure that operations sustain a high level of performance during the life of the activity, proponents should submit a series of ***Annual Management Plans.***	Consistent and required in conditions

APPENDIX B – SECTION 79C CONSIDERATION

Section 79C requires that the consent authority, when determining a development application, takes into consideration the following matters:

a) The provisions of:

i) any environmental planning instrument;

The following environmental planning instruments are relevant to the proposed development:

- *State Environmental Planning Policy No. 11 – Traffic Generating Developments*
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*
- *State Environmental Planning Policy No. 55 – Remediation of Land*
- *Sydney Regional Environmental Plan No.9 – Extractive Industry (No.2)*
- *Sydney Regional Environmental Plan No.20 – Hawkesbury-Nepean River (No.2) 1997*
- *Baulkham Hills Local Environmental Plan (LEP) 1991*

The consistency of the proposal with these planning instruments is assessed in section 3.5 and in Appendix A. The proposal is generally consistent with the provisions of relevant environmental planning instruments.

ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority;

There are no draft environmental planning instruments relevant to the proposed development.

iii) any development control plan;

The following Development Control Plans apply to the proposed development:

- *Baulkham Hills Shire Council Development Control Plan No 1 – Rural Land*
- *Baulkham Hills Shire Council Development Control Plan No. 500 – Extractive Industries*
- *Baulkham Hills Shire Council Contributions Plan No. 6 – Extractive Industries*

The Department has assessed the proposed development against the relevant provisions of these development control plans (see section 3.6 and Appendix A) and concludes that it is generally in accordance with the aims and provisions of these plans.

iv) any matters prescribed by the regulations that apply to the land to which the development application relates;

Clause 92 of the *Environmental Planning and Assessment Regulation 2000* requires the following matters to be taken into consideration by a consent authority in determining an application:

- *The Government Coastal Policy (where relevant);*

The Government Coastal Policy does not apply to the proposed development site.

- *In the case of a DA for the demolition of a building, the provisions of Australian Standard AS 2601-1991: The demolition of structures, as in force 1 July 1993;*

The proposed development does not include demolition of structures.

b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality;

Section 5 of this report considers the environmental, social and economic impacts of the proposed development in detail. The Department is satisfied that all relevant impacts can be appropriately managed and mitigated through the conditions of the recommended instrument of consent, if the Minister decides to approve the development application.

c) the suitability of the site for the development;

The proposed development site is in an area with a number of existing quarries that has a sand resource which has been identified as regionally significant in Sydney Regional Environmental Plan No. 9. Surrounding landuses such as residential locations and the Maroota Public School potentially conflict with extractive industry development, however the environmental assessment of the proposal concludes that amenity at those locations is unlikely to be affected. The proposal is therefore generally consistent with existing surrounding landuses. Through consideration of each of the relevant impacts posed by the development, detailed in section 5 of this report, the Department concludes that the development can be constructed and operated on the site within appropriate environmental limits. The Department is satisfied that the site is generally suitable for the proposed development.

d) any submissions made in accordance with this Act or the regulations;

All matters raised in submissions have been given due consideration, as outlined in section 4 and Appendix C of this report, and addressed in relevant parts of section 5.

e) the public interest.

The Department has considered each of the issues of concern raised in public submissions. Assessment of each of these issues has concluded that the proposed development can be carried out within appropriate environmental limits. The proposal would result in minimal changes to environmental amenity and quality in the locality and the region during its operation and provide significant conservation outcomes in the long term. The local community would also benefit from the economic flow on effects of the development and improved communication and exchange intended under the Community Relations Plan and Community Consultative Committee required in the recommended instrument of consent.

At a regional level, the Department recognises the importance of sand extraction at Maroota to the construction industry in greater Sydney and the improved quality of life that building construction brings to the broad community. The proposed development would continue supply to Sydney markets and provide ongoing benefits to the general public. Having considered both the local and regional stakeholders in the proposed development, the Department is satisfied that the proposal is in the public interest.

APPENDIX C – SUMMARY OF SUBMISSIONS

GOVERNMENT AUTHORITIES

Baulkham Hills Shire Council Ron Zwicker PO Box 75 CASTLE HILL 1765 (folio 1-6)	• Request for further information before making submission • Request report clarifying proposal's relationship with existing development consent No. 796/00. • Request for revised extraction and rehabilitation plan for Lot 29 and plan for construction of permanent access road across Lot 29 that complies with conditions of existing consent No. 796/00. • Request for plans showing final landform consistent with existing consent No 796/00 including staging and rehabilitation plans. • States that application should be revised to restrict operating life of development to 22 March 2010 in line with existing consent 796/00. This is due to reliance on central processing plant on Lot 196 DP 752025. • Extraction plans show that extraction will encroach on groundwater in the area of the lower dam on Lot 2. This is contrary to the statement that a 2m buffer zone above the groundwater will be maintained. Request plans detailing amelioration measures to deal with this encroachment. • "Clearing of native vegetation" has recently been determined by the Scientific Committee to be a key threatening process under the TSC Act. Request a revised 8-part test which considers "clearing of native vegetation". • Sugar gliders identified on site by spotlighting have not been positively identified and there is a possibility that they are actually squirrel gliders. Request conclusive evidence that site contains sugar gliders and not threatened squirrel gliders. • Council requests meeting between DUAP, itself and other key stakeholders including the proponent to clarify these issues. • Council asks whether community groups have been notified as per Council DCP500.
Department of Mineral Resources Steve Lishmund PO Box 536 ST LEONARDS NSW 1590 (folio 7)	• No objection to proposal • Correction to Section 2.9.2 of EIS, should read "New South Wales requires around 11 million tonnes of construction sand per year, of which 5 to 6 million tonnes are consumed in the Sydney Region".
National Parks and Wildlife Service Lou Ewins PO Box 1967 HURSTVILLE NSW 2220 (folio 8-9)	• Support modification to proposal that preserves *tetratheca glandulosa* and shale/sandstone transitional forest on site. • Request long-term management strategy for the conservation area which prevents construction of roads; includes rehabilitation with local seed and weed control; includes construction of a barrier to prevent dumping of waste and quarrying materials, ingress of dust, weed infestation, and damage by machinery; and includes an ongoing monitoring program to ensure rehabilitation of the area and that changes in groundwater levels do not impact vegetation.
NSW Agriculture Andrew Docking Locked Bag 11 WINDSOR NSW 2756	• No objection to proposal • Final landform will result in a net loss of soil-based agricultural land. • This project will add to cumulative loss of agricultural potential in the

(folio 32)	Maroota area. • Planting of natives rather than exotics in the final landform is positive and will reduce impacts on threatened species.
4. NSW Fisheries Lesley Diver PO Box 21 CRONULLA NSW 2230 (folios 33 and 34)	• Permit must be obtained for dredging and reclamation work either from NSW Fisheries or DLWC who will incorporate NSW Fisheries requirements into their section 3A permit. • Request further information from applicant. • Dams to be removed on site represent valuable fish habitat and an aquatic ecology study must be done to allow NSW Fisheries to assess the proposal. • The presence of threatened fish species has not been adequately assessed. • Eight-part test required for all possible threatened fish species on site. • Mitigation or compensation for loss of fish habitat must be considered including translocation of fish. • Revegetation of waterways on site as part of rehabilitation must be done with endemic species and must include monitoring and weed control. • Releases of water should mimic natural flows.
5. Department of Education and Training John Burkhardt GPO Box 3927 SYDNEY NSW 2001 (folios 35 and 36)	• Health and safety of students and staff of Maroota Public School is of paramount importance. • Concerned about the proposal and requests that DUAP give utmost consideration to issues raised in school's submission (see submission no 7) • Want to be notified if a COI is called so they can prepare submission.
6. Maroota Public School Ashley Scott, Principal, Old Northern Road, Maroota NSW 2756 (folios 52-55)	• Objects to proposal. • Very concerned about proposal. • Currently truck movements have major impact on school activities, particularly outdoors, such as school assemblies. The truck operations are not currently at the maximum of 120 per day. With the quarry extension the maximum truck movements will be used, creating even more noise impacts from trucks at the school. Cumulative impacts caused by all trucks associated with sand mining are an issue. • Prevailing westerly and north-westerly winds will increase truck noise impacts from the quarry site and the access road. • Concerned that the increase in truck movements will increase the risk traffic accidents for students and staff. • Current mining sites do not create a noise problem at the school. • Concerned that the 250m buffer zone is not measured from the boundary but the administration building. • Outdoor learning spaces are critical to the school's operation and considered an essential part of the student's education. Outdoor areas are also used by parent volunteers who assist students. Increased noise and dust will place limitations on the use of these areas. • This mine will have a detrimental effect on students, staff and parents of the school. • Concerned about increase in noise pollution, increase in air-borne dust and silica particles, and increase in exhaust fumes. • Concerned that local air pollution will end up on rooves of school and will pollute the schools water supply which comes from rainwater collection.

	• Dust levels have been exceeded on several occasions. This proposal will increase dust impacts. Concerned that this may increase health impacts, particularly on the schools' asthma sufferers. Questions accuracy of dust modelling and whether an independent body will monitor and regulate dust levels at the school. • Concerned that silica released during mining may have health impacts on students due to the fact that they inhale more particles relative to their size than adults and that they are still growing and developing. Levels of exposure that put children at risk have not been identified. • Restates concern about impacts of silica and dust on children's health given that most students spend seven years at school.
7. **Hornsby Shire Council** Janene Harris Education Policy Officer PO Box 37 HORSNBY NSW 1630 (folio 65-68)	• No clear statement of objection or otherwise. • Drainage channels should be used instead of closed pipes • Request clarification of which water table will be used to calculate the 2m buffer, the current, historical, wet or dry weather water table. • Must incorporate mitigation measures to prevent hydrocarbon contamination of groundwater. • EIS has not explored impact of increase in groundwater acidity due to removal of humus on down gradient ecosystems. • Questions the validity of baseline monitoring data for groundwater level and quality. Says this data should reflect the state of the groundwater before any sand extraction in the area, not just before the proposed project. • EMP should include silt traps and maintenance schedule. • EMP should include water quality monitoring 4 times per month and after rain at the weir on Lot 196. • Final landform should be designed to make final surface and subsurface water flows the same as prior to extraction. • Plant locally native species in ponds on site. • EMP should include contingency plan for pollutants that may enter drainage system. • EMP should include measures to determine historic groundwater level. • No direct water quality implications for Hornsby Shire. • Request further investigation for plant species *Grevillea parviflora subsp. supplicans, Eucalyptus sp. Cattai*, and *Hibbertia superans*. • EIS has not addressed impacts on endangered population of *Darwinia fascicularis subsp. oligantha* which was reported by Gunninah (1998). • Consider impacts of the lowering of the watertable on Shale/Sandstone Transitional Forest. • Impacts of locally and regionally significant flora species have not been adequately considered. • EMP should include monitoring of Shale/Sandstone Transitional Forest and *tetratheca glandulosa*. • Should include planting of *Allocasuarina* to provide habitat for Glossy Black Cockatoo. • All tubestock and brush matting must be from locally collected seed. • Professional bush regenerators to do rehabilitation • Nest boxes which will replace potential habitat must be placed in similar trees at the same height and aspect.
9. The Hon. Kevin Rozzoli, MP Member for Hawkesbury	• Objects to proposal. • Service provided by Maroota school cannot be replaced by other schools in area. • Noise and dust impacts considerable

11 Baker St WINDSOR NSW 2756 (folios 84 and 85)	• Concerned over visual amenity of school • Concern over truck movements. • Unacceptable that extraction can encroach on school environment • 250m buffer is not sufficient to maintain welfare of those at the school and a buffer of at least 500m with substantial bunding is required to stop noise. • Requests conditions for dust suppression and maintenance of vegetation in buffer zone.
10. Western Sydney Public Health Unit	• The proposed quarry extension does not constitute a significant human health risk, subject to the Applicant complying with the conditions of the Environment Protection Licence. • Sub-optimal control of dust at existing quarry. Suggests routine collection of wind-speed measurements from on-site meteorological monitoring devices, and correlation of these data with periods of active quarrying. • Continual dust deposition monitoring during quarrying operations using an up-to-date sampler would enable more reliable surveillance of exposure to dust around the school. • Although the Licence specifies annual reporting, that results from dust deposition monitoring be reported more frequently to the school and other concerned community members. The monitoring protocol should also be made easily available to any enquirers. • Improved communication with Maroota Public School • Road traffic issues
11. Environment Protection Authority	• Notes potential for noise level exceedences at the Accurso residence should the negotiated agreement be terminated. • General Terms of Approval provided.
12. Baulkham Hills Shire Council	• Raises issues discussed with Mr M Dixon at the Dixon Sands Liaison Review Committee held on 19 March 2002 (ie pertaining to Develoment Consent No 796/00). • Stresses importance of consistency between existing and any future consent. • Water management system would prejudice construction of final haul road.
13. Department of Land and Water Conservation	• The *existing* Water Management system summarises basic principles of good site management with regard to water use and protection as well as erosion control and ecosystem protection. Whilst these are implied in the *proposed* surface water section, they should be re-stated as these are guiding principles that must be adhered to. • It is noted that reference is made to an EMP for the Erosion and Sediment Control Works. The Department recommends also that either an EMP for the Surface Water Management be presented, specifically demonstrating how the spillways on the tailings ponds and sediment basins will be stabilised to prevent damage and erosion during flow events or this issue be addressed in part of a Stream Restoration and Vegetation Management Plan. • Issues of potential cumulative impacts, applicant's history of non-compliance with consent conditions. • Rivers and Foreshores Improvement Act, 1948 approval not required. • Groundwater issues adequately addressed.

PRIVATE INDIVIDUALS

MAROOTA NSW 2756 (folio 12)	• Requests extension to EIS exhibition time to allow for Parents and Citizens (P&C) of Maroota School to meet.
SOUTH MAROOTA NSW 2756 (folio 13)	• Refer submission 1.
MAROOTA NSW 2756 (folio 14)	• Refer submission 1.
WISEMANS FERRY NSW 2775 (folio 15)	• Refer submission 1.
MAROOTA NSW 2756 (folios 16-17)	• Refer submission 1.
SOUTH MAROOTA NSW 2756 (folio 18)	• Refer submission 1.
MAROOTA NSW 2756 (folio 19)	• Refer submission 1.
MAROOTA NSW 2756 (folio 20)	• Refer submission 1.
SOUTH MAROOTA NSW 2756 (folio 21)	• Refer submission 1.
MAROOTA NSW (folio 22)	• Refer submission 1.
WISEMANS FERRY NSW 2775 (folio 23)	• Refer submission 1.
SOUTH MAROOTA NSW (folio 24)	• Refer submission 1.
MAROOTA NSW 2756 (folio 25)	• Refer submission 1.
MAROOTA NSW 2756 (folio 26)	• Refer submission 1.
MAROOTA NSW 2756 (folio 27)	• Refer submission 1.
MAROOTA NSW 2756 (folio 28)	• Refer submission 1.
MAROOTA NSW 2756 (folio 29)	• Refer submission 1.
Glenorie NSW 2157 (folios 48-51)	• Notes grammatical and typing errors • Report does not mention recommendations of archaeological survey by Corkill (1998) regarding conservation of Maroota sandstone as a geological formation and source of Aboriginal stone material. • No assessment from Darug Native Title claimants is included in the EIS. • Notes erroneous reference to Hawkesbury Nepean Catchment Management Trust. • States that it cannot be assumed that since the operation is hydraulically down gradient it will have no affect on hydrological pressures (relating to groundwater).

	• Removal of overburden will change pattern of absorption rates. • Requests details for remediation of aquifers. • Cumulative impacts on threatened species such as glossy black cockatoo must be assessed. • There has been little success with rehabilitation on existing adjacent quarries. • Nesting boxes only suit some species. • Questions the criteria for conservation of a species saying it should not be based on whether a species is "placed at risk of extinction". • Habitat for the red-crowned toadlet and giant burrowing frog may exist on the site. • The catchment of Jackson's swamp should be treated as of the highest conservation value. • Sand should be sold at higher prices to cover the environmental costs of sand mining. • Cumulative impacts should be more fully assessed.
Maroota NSW 2756 (folios 62 and 63)	• Objects to proposal • Complaint that EIS was not readily available during exhibition • Dust impact on health and possible silicosis. • Impact of noise and dust on children's learning. • Cumulative impacts have not been satisfactorily addressed. • Dixon Sands have a history of non-compliance which is likely to continue. • Concerned that company may modify consent in future to increase truck movements. • Request that consent conditions provide for a community consultative committee which includes a DUAP representative.

SPECIAL INTEREST GROUPS

Maroota Public School P&C MAROOTA NSW 2756 (folio 10)	• Requests extension to EIS exhibition time to allow for Parents and Citizens (P&C) of Maroota School to meet.
NSW Teachers Federation Maroota Public School Old Northern Rd MAROOTA (folio 11)	• Refer submission 1.
Maroota Public School P&C MAROOTA NSW 2756 (folios 30 and 31)	• Objects to proposal • History of Dixon Sands operation is has involved non-compliances which led to closure of quarry by Baulkham Hills Shire Council. Council has previously refused applications by Dixon Sands to quarry other sites around the school, including the site of this proposal. It is likely that Dixon Sands will apply for other sites around school in the future, adding to cumulative impacts. • Inconsistency between current 10 year consent and 20 year consent being proposed. • Any approval should be deferred until DUAP's review of SREP 9 and DLWC's groundwater study have been completed. • 250m buffer around school is inadequate because it does not provide

	protection from health impacts. • No safety fencing of quarry to prevent access of children to the quarry. • Dust impacts on human health: • Data on cumulative future impacts incomplete • Potential to cause asthma and silicosis. • More information required on crystalline silica content of dust which can cause silicosis. • Human health impacts not properly addressed in EIS. • PF Formations quarry exceeded dust criteria in 1998/99 therefore cumulative impact of this plus the proposed quarry will exceed criteria. • Cumulative impact of truck movements past school has not been addressed. • Clearing of land will have detrimental impacts on ecosystems and the land to be cleared is currently providing the school with a buffer from quarries. • Final landform does not include provisions for safety of school children, such as fencing. • Noise impacts assessed as exceeding criteria in adverse weather. Traffic noise has not been assessed. Assessment of cumulative noise impacts is incomplete and misleading.
NSW Teachers Federation MAROOTA (folios 37, 38 and 39)	• Objects to proposal. • Concerns endorsed by unanimous resolution of NSW Teacher's Federation at branch meeting of Hawkesbury Teacher's Association. • 250m buffer has not been measured from school boundary or even classrooms. • Dust and noise level predictions are based on data gathered from receptors which are some distance away from the "current extraction site" and do not resemble the relative location of the proposed quarry to the school. • No detail as to the locations of proposed vegetative bunds. Concerned that the vegetative bund will be located close to school boundary. • Concerned that dust impacts will increase incidence of asthma in school children and states that the social costs of this illness should be considered. • Current dust monitoring has exceeded EPA criteria behind the school on several occasions. Current sand extraction is 500m from school, hence there are concerns that the proposed quarry will also exceed EPA dust criteria at school. • Serious concerns about impacts of dust on health of school children and staff at school including asthma, respiratory diseases, long term effects of dust inhalation, silica content of dust, and requests a precautionary approach if possible impacts are not fully understood. • EIS states that EPA noise criteria was exceeded 3 of 11 times during testing in 1998. Concern that, with the proximity of the proposed development to the school, criteria will be consistently exceeded. • Indicates that stated noise levels of 40 dBA in classroom and 55 dBA in the playground are not reliable predictions and only account for "good days". • 55 dBA noise level is not acceptable in the playground as many classes and learning activities are conducted there. These include environmental education, physical education, science, maths, and art classes. This development will mean the school is limited to indoor education. Concern over the impact on students learning experience

	and staff working conditions. • The EIS states that noise and dust criteria will be exceeded in adverse weather conditions when quarry plant is operating at ground level. Concern over how regulation of the cessation of work during periods of adverse weather will be achieved.
Hawkesbury River Environment Centre TURRAMURRA NSW 2074 (folios 40-47)	• States that he was previously closely associated with Dixon Sands but that he does not recommend sandmining close to the school. • Refers to corruption in Baulkham Hills Shire Council (BHSC) and the Council's poor regulation of sandmining in Maroota. • States that DLWC water study of Maroota is flawed by assumptions made by PF Formations staff. • Final land form does not address the situation with the dog-leg on Lot 198 and land bridge. • Describes issues relating to PF Formations and BHSC's enforcement of conditions of consent. • Concern about source of water to be used to wash sand from the proposed development. • States that water from bores on Lot 196 is contaminated with arsenic and does not comply with "World Health Standards" for discharge to creeks. Water from Lot 117 is also contaminated. • Surface water from the proposed site should not drain to Lot 29 since this site will be degraded when the "land bridge" on this Lot is quarried. • The mining of the land bridge may impact on the threatened Kunzea population in the "dog leg" and will need an EIS. • The EIS states that water will be pumped from Lot 29 to a pond in Lot 196. This pond is contaminated with agricultural run-off from Lot 117. • The issue of contaminated run-off from Lot 117 has not been properly addressed by EPA or BHSC. This issue must be resolved before the DA can be approved. • Dust from exposed areas is a major issue. Claims that PF Formations are responsible for much of disturbance since they mined out of their area of consent. • Annual reports for PF Formation and Dixon Sands, and the Dixon Sands EIS of 2000 show exceedences of EPA limits for dust at Maroota Public School. DUAP must fully assess dust exposure at the school. • Silicosis and asthma has not been considered in the EIS. Approval should not be given until dust generation from Lots 198 and 196 is resolved. • States that dust gauges have not been properly installed and that dust also comes from Trigg Hill site which is poorly managed. • EIS fails to address: • Mining of land bridge and impact on dust generation • Dust generation from temporary road through to Lot 198, and existing weigh bridge at Dixon Sands • Rehabilitation on Lot 198 to prevent cumulative dusts impacts • Watering of internal roads for dust suppression has not been adequately implemented on Lot 196. Water restrictions mean that effective watering is not achievable. • According to a report by BHSC Maroota sandstone is not suitable for construction of internal roads since it is prone to dust. • Claims to have pictures of "sand blasting effects" of quarries. • Intends to make a further submission after discussions with DUAP. • Believes that an alternative solution to dust problem is to move the

	school. • Considers that the cost of moving the school could be covered by royalties from sand mining. • Requests that development not be approved until issues are addressed and that an independent inquiry be held into sand extraction in Maroota. • Believes that there has been fraud in relation to s.94 contributions by quarrying companies operating in Maroota. • Believes sand mining does not receive adequate scrutiny from Government. • Consent should not be granted since Dixon Sands already has consent for other sites and does not need this site now. • Requests a full public inquiry into sand mining in Maroota.
Maroota Resource Centre Maroota NSW 2756 (folios 56-61) Plus list of 41 names.	• Objects to proposal. • EIS is incomplete. No consultation with Native Title claimants, Darug Tribal Aboriginal Corporation. • EIS contains typing mistakes. • Assessment of cumulative impacts is inadequate • Dust levels measured at the school exceed EPA guidelines. This baseline monitoring data was not used by the consultant to calculate cumulative impacts. • Concern over health impacts of "silicaceous dust". • Cumulative noise impacts should be based on data collected at the school by PF Formation. Background noise levels have changed since the monitoring upon which the EIS is based was done in 1998. Mentions three quarries which have started operations in the area since 1998. Doubts that Dixon Sands will actually cease work in adverse weather conditions to avoid noise impacts. • Assessment of road traffic noise under EPA Road Traffic Noise Criteria has not been done. • Insufficient consideration of alternatives such as marine aggregate and recycled concrete for sand supply. • Economic and social benefits will not be distributed equally in the community. Concerns over health impacts, road safety, and dubious contribution to local economy. • Concerned that DUAP does not provide adequate regulation of consents and that DUAP must coordinate with BHSC over existing Dixon consent. • Community feels disempowered by number of consent authorities and lack of consultation from DUAP. • Request a moratorium on all sandmining approvals until there is an assessment of the available resource, cumulative impacts, alternatives, a groundwater management plan is completed, and DUAP meets with the Maroota community to hear its concerns.
Maroota Public School P&C MAROOTA NSW 2756 (folios 69-83) Plus list of 72 objectors.	• Objects to Proposal. • Proposal does not meet accepted environmental standards and criteria. • EIS has not considered impacts on the school during peak learning periods. • Minimal benefits to community. • Request that the Minister refuse the application. • Community consultation by the applicant has been inadequate and the poor EIS reflects this. • Setback of 250m from the school should be calculated from the boundary, not the administration building.

	• Dust impacts on School will greatly increase. • Questions safety measures to prevent children falling into quarry. • Clearing of 11 ha. of bushland will have impacts on biodiversity. Maroota has already lost 89% of native bushland. • Concerned over soil conservation measures of the proposal and the impact of contaminated runoff on Jacksons' Swamp. • 250 m setback will be inadequate to prevent noise impacts on the school. • Removal of bushland will remove sound buffers. • Impact of truck movements past the school is not addressed. • Noise study as not accounted for removal of bushland (sound screening) and is hence not valid. • EIS does not address impacts on human health. • Information on air quality in EIS is incomplete and misleading. • Cumulative impacts of dust under prevailing winds have not been adequately addressed. • Rehabilitation will not be sufficient to replace biodiversity. • Applicant has a poor record of rehabilitation on existing sites. • Social impact has not been assessed • The applicant offers no compensation to the community for the adverse impacts it must endure. • The proposal will have visual impacts which will affect the local tourist industry. • Dixon Sands environmental management record is very poor. • Dixon Sands has always been late in paying s.94 contributions. • Contributions should reflect the environmental and social cost of the project. • Cumulative impacts have not been adequately addressed. • Appeal is likely if DUAP approves application. • Proposal does not comply with SREP 9 – Extractive Industries or DCP 500