

Hitchcock Road Sand Extraction and Rehabilitation Project Environmental Assessment

Summary of the Environmental Assessment

Summary of the Environmental Assessment

Introduction

The Environmental Assessment (EA) has been prepared to accompany a development application by PF Formation for a change to their operations at the Hitchcock Road site in Maroota, Baulkham Hills. Although the proposal comprises a number of changes to the current approval, it is treated as a new development which would supersede it. This would require the surrender of the existing consent at an agreed time following the receipt of approval for the present application.

The site is located approximately 50 kilometres to the north-west of the Sydney Central Business District and about eight kilometres south of Wisemans Ferry. Its location is shown on *Figure 1*. The site is included within the Maroota sector of *Sydney Regional Environmental Plan No 9 - Extractive Industry (Number 2)*. The objective of this plan is to protect a valuable sand resource in this and other locations.

The site is zoned Rural 1(b) under *Baulkham Hills Local Environmental Plan 2005*. Extractive industry is permitted, with Council consent, within this zone.

The existing sand mining operation is located on a site adjacent to the intersection of Old Northern Road and Wisemans Ferry Road, Maroota comprising nine separate parcels of land covering approximately 79 hectares. The proposal would now include 11 parcels following the addition of three, including the former Maroota Meteorological Reserve site and its access roads. The area subject to sand extraction would now cover an area of approximately 97 hectares which is shown on *Figure 2*.

The site is basically triangular in shape with an additional rectangular portion located to the south east. The distance from the apex of the triangle at the intersection of Wisemans Ferry Road and Old Northern Road to its most southerly corner is approximately 1,500 metres while the base of the triangle from the junction with Hitchcock Road to its most easterly corner measures some 1,300 metres. The location of the parcels making up the site is shown on *Figure 2*.

The *Environmental Planning and Assessment Act 1979* and *Environmental Planning and Assessment Regulation 2000* control the use and development of land in New South Wales. The Act establishes the hierarchy of planning instruments that apply to the proposal.

The Act was amended in August 2005 by the inclusion of Part 3A. The Minister for Planning is responsible for determining development which has been declared to be major infrastructure under this part of the Act. The Minister may declare a development to be a major project if defined in *Schedule 1: Major Projects-Classes of Projects* in *State Environmental Planning Policy (Major Projects)*. Group 2.7 in Schedule 1 includes extractive industries and the Hitchcock Road project meets the criteria for consideration as a major project under the State Environmental Planning Policy due to its scale and significance.

The summary provides an overview of the proposal, its benefits and its impacts. It is designed to provide enough basic information to allow informed comment to be made without the need to examine the whole document and the associated technical papers.



Figure 1
SITE LOCATION

● Site

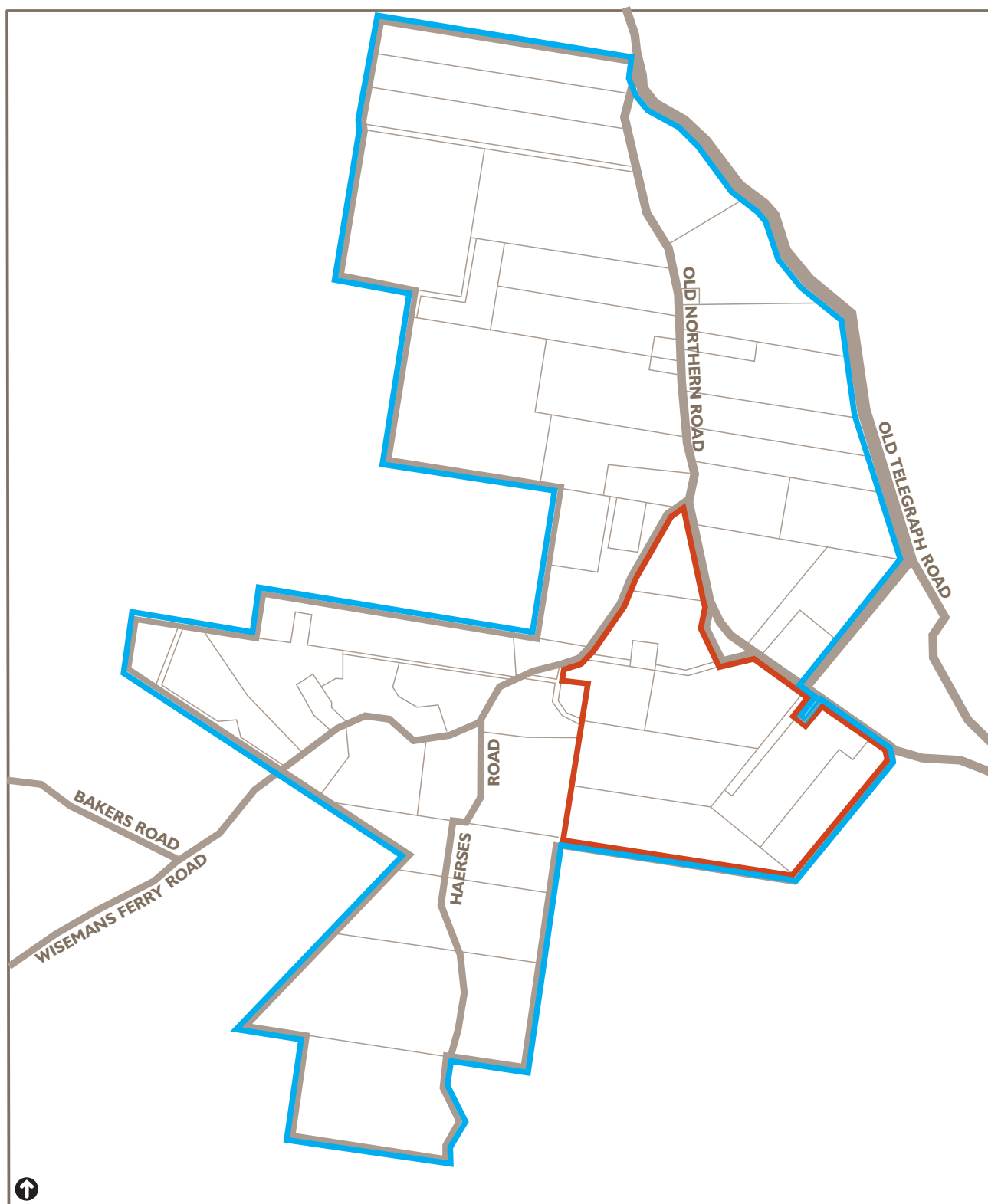


Figure 2

SYDNEY REGIONAL ENVIRONMENTAL PLAN OF
EXTRACTIVE INDUSTRIES DESIGNATED AREA MAROOTA

- Area boundary
- Hitchcock Road Site

The issues addressed in the EA and summarised here are derived from a number of sources. These include the requirements of the Director General of the Department of Planning and other relevant authorities, the previous EIS, experience of operating the site and the Consent Orders of the Land and Environment Court which determine the way in which the existing operations are conducted.

The authorities raised a comprehensive range of issues with no indication of priorities. As a result, each has been addressed in the document. Specialist consultants have provided detailed studies in relation to the following:

- geology and resource assessment;
- noise;
- air quality;
- groundwater;
- flora and fauna;
- traffic and access;
- cultural heritage; and
- visual impacts.

Existing Operations

Sand extraction has been undertaken on part of the site since the mid-1980s based on a number of Council consents. Following a long series of discussions, an application covering most of the current site was determined by Baulkham Hills Shire Council by the granting of consent with conditions on 16 December 1997. The consent excluded an area located in the centre of the site, then known as the Maroota Trigonometrical Reserve, and its approach roads. The resulting landform, following completion, would therefore have comprised two separate extraction zones with a major elevated area remaining in the centre of the main part of the site plus an additional area to the east.

A third party filed a Class 1 Appeal against the consent in March 1998. This was heard in the Land and Environment Court in July 1998 and the appeal dismissed.

The extraction has subsequently been operated in compliance with Consent Orders 10064 of 1998 of the Land and Environment Court dated 14 July 1998. These have been administered by Baulkham Hills Shire Council. The consent orders allow Council to amend the staging of the development and the depth to which extraction can take place following application from the proponent. Staging has been amended as a result of site related factors with the approval of Council but two applications to amend the depth of extraction in response to continuing groundwater monitoring have not been granted.

Key conditions contained in the consent orders include:

- retention of the existing Trigonometrical Reserve and hence sterilising a significant volume of extractable Tertiary sand;
- limitation of the period of extraction to 30 years from July 1998 (the endorsed date of consent);

- restriction of the maximum depth of extraction to 187 metres AHD subject to the outcomes of the Maroota Groundwater Study;
- limitation of annual extraction of Tertiary sand from the site to 400,000 tonnes of processed material; and
- limitation of laden vehicle movements to a combined total of 200 movements per day via the intersection of the haulage road and Wisemans Ferry Road.

The site is operated in compliance with these and other conditions included in the consent orders administered by Baulkham Hills Shire Council.

The site is also operated in compliance with the provisions of Environment Protection Licence 3407 under the *Protection of the Environment Operations Act 1997* administered by the Department of Environment and Conservation.

Planning Context

The main planning instruments applying to the proposal are *Baulkham Hills Local Environmental Plan 2005*, *Baulkham Hills Shire Development Control Plan 16 – Extractive Industries 2004* and *Sydney Regional Environmental Plan 9 – Extractive Industry (Number 2) 1994*.

The site is included within the area defined for inclusion in *Sydney Regional Environmental Plan 9* which was introduced to assist in the development of extractive resources located close to the Sydney Metropolitan area. The plan takes precedence over local planning instruments.

The site is zoned Rural 1(b) under *Baulkham Hills Local Environmental Plan 2005*. Quarrying is permissible in this zone with development consent. The proposal described in the EA generally complies with the requirements of *Baulkham Hills Shire Development Control Plan 16*.

Relationship between Existing and Proposed Developments

The present application seeks changes of two kinds. First, these would amend the area over which the activity would be permitted and, second, would change the depth to which extraction could be undertaken and modify the resulting final landform on cessation.

The proposal would entail extraction of Tertiary sand and other materials from all the lots included in the current consent with the addition of Lot 1 DP1013943 (formerly Maroota Trigonometrical Reserve 6739), adjacent Crown Roads, Lot 2, DP752039 and Lot 1 DP223323.

It is proposed to use the existing sand slurry transport system, central wash plant and ancillary facilities such as the workshop, weighbridge and office located on Lot 198 DP752025 in addition to the existing haul roads on site. It is not proposed to increase output above the limit set out in the existing consent (400,000 tonnes of processed material per year). As a result, the number of trucks allowed to leave the site via the weighbridge on Lot 198 each day would not increase over the approved limit (400 truck movements per day). (No trucks are allowed to convey material from the extraction site across Wisemans Ferry Road to the central wash plant except in an emergency or when routine maintenance is taking place). There would therefore be no change in the traffic impacts on the surrounding road network as a result of the proposal.

Extraction activities on the site including rehabilitation are limited to a period of 30 years from 14 July 1998 (the endorsed date of consent). It is not proposed to extend this period.

The development application will seek a new approval. This will require the surrender of the existing consent by the proponent and the compliance of the development with a new set of approval conditions.

The Proposed Development

Development consent is sought for the proposal including:

- staged extraction of Tertiary sand, friable sandstone, clay and gravel to within two metres of the wet weather high groundwater table (nominally 181 metres AHD) with no extraction within buffer zones and perimeter setbacks as defined in the EA;
- loading and transport of the extracted Tertiary sand via articulated vehicles to the existing sand slurry plant located at the northern end of the site. Other extracted material would be stockpiled for later reuse as backfill or for transport to the central wash plant on Lot 198 prior to removal to market;
- staged clearance of vegetation within those areas designated for extraction as defined in the EA;
- transport of Tertiary sand as a slurry via the existing pipeline to the central wash plant on Lot 198;
- processing and stockpiling of Tertiary sand at the existing central wash plant in accordance with the existing consent for this operation which allows such processing for the life of the extraction on the former Trigonometrical Reserve site;
- importation and processing of clean material for recycling up to a maximum of 20 laden trucks per day;
- return of wash water via the existing pipeline and disposal of tailings from the processed Tertiary sand into sedimentation ponds located on the site of the proposal;
- transport of the product off-site in accordance with the existing consent;
- use of the existing dam on Lot 167 DP752039 to receive and detain runoff from the extraction area and return clean water to the sand slurry transport system and the existing dam on Lot 198 to receive and detain runoff from the central wash plant area; and
- rehabilitation of extracted areas on the site of the proposal to create an integrated, continuous landform across all extracted areas as the basis for productive future use.

Extraction Operations

The development would be undertaken in four main stages requiring approximately five years each to complete. Extraction would continue as currently planned under the existing consent until a new approval is received. Some of the activities described under Phase One could be undertaken under the existing consent.

Phase One (2006 – 2010)

- continuation of extraction westward from Area B;
- extraction eastward from the haul road (overburden backfilled into Area B);
- construction of Pond 11;
- completion of Pond 9;
- partial rehabilitation of Pond 5;
- continuing extraction of the area adjacent to Old Northern Road;
- extraction on Lot 2 DP752039 and Lot 1 DP34599;
- rehabilitation (planting) in the area of former ponds 3, 4 and 6;
- completion of Pond 10 (overburden backfilled into Area B).

Phase Two (2011 – 2015)

- extraction southwards from Area A;
- construction of Pond 12;
- extraction on Lot 2 DP555184
- rehabilitation of area adjacent to Old Northern Road;
- overburden backfilled into extracted areas to the south;
- rehabilitation of Pond 11;
- extraction to the south;

Phase Three (2016 – 2020)

- continuation of extraction to the south;
- backfilling of clay overburden into extracted areas to the north and south;
- completion of Pond 13;
- rehabilitation of northern section of the northern extraction area;
- rehabilitation of the western part of the southern extraction area.

Phase Four (2021 – 2024)

- continuation of extraction southwards;
- backfilling of clay overburden into extraction to the north;
- continuation of extraction in the southern area;
- extraction on Lot 2 DP565184 and Lot 1 DP34599;
- construction of Pond 14;
- rehabilitation of southern extraction area;
- rehabilitation of northern extraction area;
- rehabilitation of ponds leaving one to drain each catchment;
- completion of land reformation and landscape planting;
- removal of all fixed infrastructure and formation of final land form.

The overall staging of the development is shown on *Figure 3*.

Processing and Product Transport

All Tertiary sand would be transferred to articulated dump trucks to transport the material via established on-site haul roads to the existing plant located at the northern end of the site. Here it would be mixed with water and transported as slurry by pipeline some 1.5 kilometres to the central wash plant located on Lot 198. The wash water would be returned to the site for settlement in a series of clay lined basins prior to recirculation from the clean water pond at the lowest point on the system and subsequent reuse.

Product is currently trucked from the central plant and all sales are made from the weighbridge on Lot 198. Trucks leave the site via the access road to Wisemans Ferry Road turning either left to the intersection with Old Northern Road and right to Dural and Castle



Scale
0 500 Metres

Figure 3
PHASING OF EXTRACTION

- | | |
|---|---|
| Extraction completed - rehabilitation underway | Areas for future extraction and rehabilitation |
| Areas to be capped and rehabilitated - currently ponds | Areas currently working / almost completed |
| Area extracted - to be used as detention basin | Internal haul road |

Note: Work will continue under current approval

Hill or right along Wisemans Ferry Road to Windsor, Richmond and Penrith. The proportion of trips on these routes is approximately equal.

It is proposed that sand extracted from the Hitchcock Road site would supply the same markets as the current operation and the same transport routes would be used. The number of truck movements would remain within the currently approved limit of a total of 200 laden trucks per day (400 truck movements).

Site Services

All necessary site services are available and no augmentation is required.

Workforce and Hours of Operation

The current workforce would remain at 20 to 22 staff. Truck drivers, either permanent staff or contracted or employed by others would pick up loads from the central process plant on Lot 198.

The hours of operation would be in accordance with those applying to Lot 198 containing the central process plant and the weighbridge:

- 5.45 AM Monday to Saturday – gates open to allow entry of vehicles to the site;
- 6.00 AM to 7.00 AM Monday to Saturday (excluding public holidays) – 30 truck movements (15 loaded vehicles) may enter or leave the site;
- 7.00 AM to 6.00 PM Monday to Saturday (excluding public holidays) – extraction, transportation and processing or running of machinery for maintenance purposes permitted; and
- no extraction, transportation or processing on Sundays and public holidays.

Life of the Proposal

Extraction rates at the Hitchcock Road site have ranged between 200,000 and 250,000 tonnes per year over the past six years. This is not expected to change although annual rates may vary from depending on market conditions. Extraction of some 5,335,000 tonnes of material at these rates would require between 21 and 26 years to complete. This is consistent with the existing consent (30 years from November 1998).

Management of Waste

The overall waste management objective is to minimise the generation of waste, maximise recycling and ensure that wastes are managed in a way that minimises impacts on the environment.

Trees, shrubs and other plants stripped during site clearing would be reused during rehabilitation to provide a source of seed, organic matter and refuge for fauna.

All overburden would be used in rehabilitation of the previously extracted area or adjacent parts of the site. Tailings, the fine clays and silts removed from the sand during washing would be disposed of in tailings ponds on the site.

General waste would be managed at the workshop and offices on Lot 198 which provides separate receptacles for paper, aluminium, glass, plastic and general domestic waste with the recyclables (paper, aluminium, glass and plastic) collected by a licensed disposal contractor.

Sewage treatment and disposal is provided by an *enviro-cycle* type plant. It is not proposed to install any additional office facilities or amenities on the site.

Waste oil and grease is collected and stored in a bunded tank and periodically removed by a licensed oil recycling contractor. Building waste and putrescible material is also removed from site on a regular basis and this procedure would continue.

Rehabilitation and Final Land Uses

The final landform of the Hitchcock Road site would be influenced by the depth of extraction, the location of commercially available resource (both Tertiary sand and friable sandstone) and the volume of overburden, mainly clay, available for re-contouring the extracted areas. Sand has been extracted from part of the site to the depth allowed in the existing consent and part of this area has been rehabilitated. These areas will not be reworked.

Most of the area is expected to be reclaimed to Class 3 agricultural land suitable for grazing and improvement for pasture. Rehabilitation would comprise the return of the stored topsoil and the progressive revegetation of the site. Techniques to be used have been based on several sources: *Urban Erosion and Sediment Control Handbook* (Department of Conservation and Land Management 1992); *Managing Urban Stormwater* (Landcom 2004); and *Best Practice Environmental Management in Mining – Rehabilitation and Revegetation* (Environment Protection Authority 1995).

A comprehensive rehabilitation strategy would be prepared as part of the revised environmental management plan for the site.

Environmental Impacts and Safeguards

Specialist studies were undertaken to assist in the understanding of the environment of the site and its surroundings which together with the experience of operating the site over the past six years has enabled the proposed development to be designed to avoid or minimise undesirable impacts. Potential impacts and proposed or existing safeguards are summarised in the following sections.

Land Use

Land uses in the surrounding area include agriculture, extractive industries, forestry, national park, nature conservation and water reserve. Agricultural activities include orchards, market gardens and grazing undertaken mainly on the plateau along the Maroota ridge.

Sand extraction now constitutes a major land use in the Maroota area with this activity protected by designation in the *Sydney Regional Environmental Plan 9 – Extractive Industries* (Department of Urban Affairs and Planning 1994). Sand mining has been undertaken in the Maroota area since 1983 and will become a source of increasing importance as sources in other parts of the metropolitan area reach the end of their active lives.

The *Agricultural Land Classification Atlas* (NSW Agriculture 1995) maps the site as Class 3 land. This is well suited to grazing and pasture improvement and may be cropped or cultivated in rotation with pasture. Soil conservation or drainage works may be required due to erosion hazard and soil structural breakdown on this class of land.

The majority of the site to be quarried would be rehabilitated with grasses on the flatter slopes and local native plants on the batters and steeper slopes.

Groundwater

Three separate aquifers can be identified, although the extent of their hydrogeological separation or, conversely, interconnection, is sometimes uncertain. These aquifer units are:

- Maroota sand;
- eluvial/weathered profile of the underlying Hawkesbury sandstone; and,
- Hawkesbury sandstone.

The more significant of these are the Maroota sand and the deeper Hawkesbury sandstone.

The following potential impacts of sand extraction have been investigated:

- reduced groundwater availability to users;
- reduced flow to streams;
- increased turbidity in streams; and
- lowering of the water table.

None of these are expected to occur as a result of the proposal which is expected to lead to an increased potential for groundwater recharge to the deep aquifer with benefit to nearby users. No mitigation measures, in addition to those in place and reported in the annual management plan, would be necessary.

Surface Water

Surface water flows are directed to a number of large detention basins which are part of the process system employed at the site. These allow the silt in the water, returned from the wash plant on Lot 198, to settle out before progressing to the clean water basin located in the lowest part of the site. The clean water is returned from here to the slurry plant and the central process plant.

The site where sand extraction has taken place to date is inwardly draining due to a combination of topography and the effect of the peripheral bunds constructed as part of the project. No surface water is therefore discharged beyond its boundaries. The whole site can therefore be considered to be a detention basin capable of accommodating far in excess of the runoff from the 100 year ARI time of concentration event.

The site can be divided into three catchments. Based on containing all runoff from the 100 year storm event, the following basins would be required on completion of the proposal.

Northern catchment	16 hectares	8,600 cubic metres
Southern catchment	52 hectares	24,000 cubic metres
Eastern catchment	29 hectares	12,600 cubic metres

The impact of current operations on catchment flows is minimal and this would be expected to continue. Surface runoff would only occur during high intensity storms when the infiltration capacity of the soils is exceeded. The dams and creeks in the vicinity of the site are known to be groundwater dependent and are not expected to be influenced by any changes in catchment conditions. In addition, extraction of overburden and the underlying Tertiary sand is expected to improve groundwater recharge.

That part of the site (most of the eastern catchment) potentially discharging to the headwaters of Little Cattai Creek makes up less than 0.3 percent of the total catchment and would therefore not be expected to have any impact on the quality or quantity of surface water discharged to the Hawkesbury River.

The sedimentation ponds on Lot 198 where the central wash plant is located, are not used for tailings disposal and will be reprofiled. One will be backfilled and the other recontoured for continued use in the surface water drainage system in this catchment. The development of two additional dams within the extracted areas is part of the development approved for this site.

Soils

The soils on site are highly erodible under concentrated flows. Erosion and sediment controls have therefore been proposed to manage drainage and minimise the area of soil exposed to surface water flows. Controls would include:

- provision of buffers and installation of silt fences where appropriate to prevent sediment transport to adjoining land;
- minimising the area of disturbance by only clearing areas immediately prior to extraction within each stage and progressive rehabilitation of the completed area;
- diversion of upslope drainage away from disturbed areas;
- diversion of sediment laden runoff to sediment basins; and
- regular inspection and maintenance of sediment controls.

Noise

Noise would be generated on those parts of the site where extraction and subsequent rehabilitation is taking place. This would vary depending on the location of these activities at any one time. Noise levels would be similar to those currently generated and would provide the basis for the assessment of future noise levels.

The focus for the noise assessment was the nearest non-project related sensitive receptors adjacent to the site. These are mainly located on the north-eastern side of Old Northern Road. All are protected from site generated noise by acoustic mounds and one residence is at a considerable distance from current operations. Two residences are located close to the western side of the site: one at the intersection of Hitchcock Road and Wisemans Ferry Road and one close to the intersection of Old Northern Road and Wisemans Ferry Road.

The responsibility for the control of noise emissions in NSW is vested in local councils and the Department of Environment and Conservation. The Environment Protection Authority (now part of the Department of Environment and Conservation) released an Industrial Noise Policy in January 2000. This provides a framework and process for deriving noise criteria for consents and licences that regulate premises scheduled under the *Protection of the Environment Operations Act 1997*. The Hitchcock Road site is scheduled under the Act.

The noise assessment comprised three components:

- operational noise impacts at local sensitive receivers in the vicinity of Lot 198;

- traffic noise impacts resulting from the proposal at locations on Wisemans Ferry Road and Old Northern Road; and
- cumulative noise impacts at various selected locations taking account of the proposal and other adjacent sand extraction operations.

Each of these assessments was based on operational and traffic scenarios which represented a worst case condition to provide a comparison with criteria designed to manage industrial noise emissions.

Noise levels during operation marginally exceed the respective noise criterion at three locations. These relate to minor exceedances of the night time criterion during the period from 6.00 AM to 7.00 AM during periods when particular meteorological conditions were prevailing (north-west wind or temperature inversion). One receiver is predicted to experience a minor exceedance (1 dBA) during operational hours. However, this is not likely to occur in practice as the operational scenario tested assumes that all equipment is working simultaneously. Lower received noise levels would therefore be experienced at the various assessment locations.

Existing day time traffic noise levels are within the Department of Environment and Conservation's recommended assessment criterion of 60 dBA at all assessment locations and the worst case predicted increases in peak daytime traffic noise levels are 1.2 dBA. However, existing night time traffic noise levels exceed the recommended assessment criterion of 55 dBA at five locations. The worst case predicted increase in peak night time traffic noise levels is 1 dBA.

Cumulative noise emissions for the proposal and adjoining extraction operations during non-adverse meteorological conditions are below the relevant acceptable amenity criteria for industrial noise (non-transport related) during daytime and night time periods at all assessment locations.

Air Quality

Dust generation would be the principle air quality issue on the Hitchcock Road site. The main activities likely to generate dust during the operation of the proposed extraction areas would include:

- topsoil stripping and overburden removal;
- ripping and excavation of friable sandstone;
- vehicles travelling on unsealed surfaces;
- screening of the raw feed material on site or at the wash plant;
- loading and unloading the raw feed and products to trucks and stockpiles; and
- wind erosion of stockpiles and exposed unpaved areas.

The quantity of dust generated by each activity has been established by reference to emission factors developed both locally and by the US EPA.

Dust concentrations and deposition rates resulting from extraction operations for existing and proposed developments at the nearest residential receptor included predictions of:

- maximum 24-hour average PM₁₀ concentration;
- annual average PM₁₀ concentration;

- annual average Total Suspended Particulate concentration; and
- annual average dust deposition.

Predicted emissions are not expected to differ from those currently experienced. Air quality monitoring undertaken over the past six years has indicated that emissions generally remain below the annual average dust deposition goal of the Department of Environment and Conservation of 4 g/m²/month. It is unlikely that future emissions would exceed the applicable air quality goal even in combination with future PM₁₀ and total suspended particulate concentrations generated by other local operations.

Flora and Fauna

A total of four vegetation communities occur on site, including Shale Sandstone Transition Forest, Sydney Sandstone Gully Forest, Sydney Sandstone Ridgetop Woodland and regrowth vegetation. Vegetation in the cleared areas is dominated by weeds and is not considered to be a native community.

The condition of the Shale Sandstone Transition Forest is moderate, while the Sydney Sandstone Gully Forest and Sydney Sandstone Ridgetop Woodland are in good condition. The regrowth vegetation areas are also in moderate to poor condition. Two threatened species of plant, *Tetratheca glandulosa* and *Grevillea parviflora* subsp *parviflora* were recorded during detailed surveys of the site and potential habitat exists for *Pimelea curviflora* subsp *curviflora*, *Caladenia tessellata*, *Acacia gordonii* and *Persoonia hirsuta*.

The condition of the fauna habitats in the Sydney Sandstone Gully Forest is generally good while those in the Shale Sandstone Transition Forest and Sydney Sandstone Ridgetop Woodland are in moderate condition. The regrowth vegetation areas contain fauna habitats that are in poor condition. The threatened Glossy-black Cockatoo was recorded on site. However, the species would only use the site as a marginal foraging area and would not depend on its habitat resources.

Impact assessments as required under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* were carried out for the Shale Sandstone Transition Forest Endangered Ecological Community, five threatened species of plant, microchiropteran bats (as a group) and nocturnal birds (as a group). The assessments concluded that the proposed sand extraction and rehabilitation was unlikely to have significant impact on threatened species, population or communities.

Overall, the proposal would result in the clearing of seven hectares of native vegetation with the associated loss of flora and fauna habitats. This is not considered to be a significant impact on either local or regional ecosystems. Neither would the proposed extension of sand mining activities at Hitchcock Road be expected to significantly affect any threatened species, population or community.

Cultural Heritage

No Aboriginal sites were identified during the survey.

One European site was located during the site investigations. This comprised a simple farm shed which, due to its age, exhibited potential heritage significance. However, this does not meet the threshold where it would be considered significant under any of the criteria established by the NSW Heritage Office. The site does not therefore qualify for any additional assessment or listing on any local or State registers.

The Maroota Trigonometrical Station is typical of the standard design used throughout NSW and is very common. It is less than 50 years old and as such is not a heritage item under the NSW Heritage Act.

Traffic and Access

Traffic growth on both Wisemans Ferry Road and Old Northern Road in the vicinity of the Hitchcock Road site has been slow over the last 15 years and has declined over the last three years on the former and remained static on the latter. Heavy vehicles, defined as articulated trucks with three to six axles and B-Doubles similar to those commonly used for the transport of sand, make up nine percent of the total on Wisemans Ferry Road and seven percent on Old Northern Road. There is a distinct tidal flow during peak periods on both these roads with a bias towards northbound traffic in the morning with the reverse occurring in the evening.

The proposal would not generate more laden trips from the central area on Lot 198 than at present and would remain within the permitted total of 200 laden trips per day for all PF Formation operations in Baulkham Hills. Future operations could generate an additional 20 laden truck trips per day if the consent is extended to include the processing of materials for recycling from sites other than the Hitchcock Road and Lot 198 developments. In addition, the future development of Lot 198 would generate a maximum of 10 laden trips per day over the period from 2006.

The performance of the local road network and the intersections used by the site-generated traffic has been assessed using growth factors for future traffic. The assessment indicated that the traffic generated by the proposal would have no significant impacts on the road network or the performance of the intersections. No changes to these items are therefore required.

Visual Impacts

The proposed development would remove vegetation, topsoil, overburden and the available Tertiary Sand and friable sandstone resource from defined areas on the site. This would result in remoulding of the existing landform and, during active extraction, the exposure of substantial parts of the area. Progressive rehabilitation would return the site to a vegetated state as quickly as possible.

Visual mitigation measures such as bunds and vegetated setbacks have been implemented along the periphery of the site and parts of the site where extraction is complete have been reformed and seeded with local native species.

The proposal would lead to modification of the topography of the site with a lowering of its central and highest part. This would require removal of the remaining vegetation on the present skyline which would be replaced during rehabilitation. However, this is only visible from a small number of locations with public access. These are along Haerses Road and a short section of Old Northern Road. The former is little used (it is not a through road) and will soon become part of a recently approved major sand extraction operation resulting in the elimination of public access. Views from Wisemans Ferry Road are at a considerable distance, are fragmented and will be interrupted by sand extraction activities in the foreground.

Views of proposed extraction areas on the Hitchcock Road site from Old Northern Road would be limited by the topography and existing vegetation which will remain. These would be reinforced by new bunds included in the proposal which would remove any views of the works.

Hazard

State Environmental Planning Policy 33 – Hazardous and Offensive Development requires that the safety and pollution impacts of a proposal are addressed at an early stage of the

development application process. The policy provides a procedure which links the permissibility of the proposal to its safety and pollution control performance.

The application of the screening procedure set out in *Applying Safe Environmental Planning Policy 33* (Department of Urban Affairs and Planning 1994) indicated that as no hazardous materials as defined by the code were stored on site, the development is not classified as hazardous and the Environmental Planning Policy does not apply.

Socio-economic Effects

The Hitchcock Road development is operated within a Maroota-wide context which includes a number of other similar sand extraction projects. Together these result in cumulative impacts relating to the nuisance experienced from traffic, particularly large trucks passing through a small rural community, dust and, in some cases, noise. A small number of residents in adjacent properties may also be affected by the direct impacts of a single extraction operation. In the case of the Hitchcock Road development this is limited as the majority of adjacent residents are separated from the site by the roads along its periphery.

Jointly and separately, sand extraction operations inject resources into the local economy in the form of royalties to the land owners, providing jobs both directly and indirectly and supporting local services. These are all benefits to the local community. The activities of the industry are controlled by a wide range of measures which aim to manage the environment so that all established criteria are met.

Cumulative Impacts

There are currently three sand extraction proposals at various stages in the development process in the Maroota area which could result in cumulative impacts. These are:

- Sand extraction on Lots 1 and 2 DP 547255, Old Northern Road, Maroota using the existing process plant on Lot 196 DP 752025. This development has a life of 18 years from the date of consent and is currently underway. Production from the existing quarry and its extension is not to exceed 495,000 tonnes per year.
- Sand extraction on Lot 198 DP 752025, Wisemans Ferry Road, Maroota. The development application supported by an EIS was recently approved by Baulkham Hills Shire Council. Production would be expected to average 35,000 tonnes per year over a ten year life.
- Sand extraction on Lot 170 DP 664767, Lots A and B DP 407341 and Lots 176 and 177 DP 752039, Haerses Road, Maroota. The development application supported by an EA was recently approved by the Minister for Planning. The development would have a life of 25 years with an annual extraction rate of 250,000 tonnes. The proposal would use empty trucks returning to Lot 196 DP 752025 to transport the extracted material to the process plant. The annual production rate on Lot 196 would be in accordance with the approved maximum of 495,000 tonnes per year.

Each of these proposals was assessed in terms of its cumulative impact in relation to existing and future development in the Maroota area. The existing operations at the Hitchcock Road site are included in these assessments. As the proposal assessed in this EA would result in no change to environmental impacts with the exception of changes to the final topography of the site, any additional cumulative impacts can be considered to be minimal.

Justification of the Proposal

Biophysical Impacts

The impacts of the proposal would be similar to those associated with existing extraction operations with the exception of visual impacts resulting from the changes to the topography of the site. However, the resulting impacts would be limited as there are relatively few views of the centre of the site from areas with public access. Overall, the impacts of the proposal would be minimal with the adoption of the proposed safeguards and operational procedures.

Economic Effects

High quality construction sand is a limited resource in the Sydney region especially when located relatively close to the main markets. As a number of large sources of supply become exhausted over the next ten years or are subject to increasingly stringent environmental controls (Penrith Lakes and Kurnell respectively), a secure supply of Tertiary sand will become increasingly valuable to the NSW economy. Alternative sources are at considerably greater distances from the main markets resulting in increased transport costs and environmental impacts.

The increased volume of material available for extraction as a result of the approval of the proposal would result in the continuing employment of the 20 to 22 full-time employees at Maroota. This would offer long term employment security over the next 25 years.

Continuing activity at the Hitchcock Road site would also support employment in the product transport industry in addition to equipment supply and maintenance.

The development would also make a contribution to economic development in the local community through the purchase of services and various consumables.

Social Impacts

The proposed sand extraction would service the same market as previous operations undertaken by PF Formation at Maroota, would employ the same number of staff and use the same fixed and ancillary plant. Negative effects on local employment and the economy are therefore unlikely.

Socio-economic benefits of the proposal include the continuation of local employment, continuing supply of high quality sand to the Sydney market and continuing flow-on effects to the local and regional economy.

Sustainability

The precautionary principle has been applied by reliance on comprehensive scientific data throughout the planning and assessment of the proposal leading to the identification of mitigation measures and environmental safeguards. Wherever a potential impact has been identified, mitigation measures have been proposed to reduce any impacts as far as is practicable.

The proposal would provide access to a large volume of high quality sand, which would not otherwise be accessible without a major change to environmental impacts at the site and on the surrounding area. Any substitution of sand from other sources to compensate for the sterilisation of the material available at Hitchcock Road would result in additional environmental impacts. The proposal would have long term benefits for future generations by providing a secure resource close to market with a minimal environmental impact.

The principle of conservation of biological diversity and ecological integrity has been considered throughout the assessment process. Access to a large mass of Tertiary sand close to the centre of the site will require the removal of a small remnant of Shale/Sandstone Transition Forest (Ridge Top Open Forest) which is listed as threatened. Seed has been collected from this community over the past three years and has been used in the site rehabilitation implemented to date. This process will continue and a large stock of seed stored for future use. This would be used to recreate, as far as possible, a similar community to that previously established on the site to ensure that no net loss of native vegetation occurs.

The value of environmental resources on and adjacent to the site is determined by a large number of factors. These include the extent of detailed investigations and studies and planning and design of mitigation measures to prevent any irreparable damage to these resources. Regular monitoring of the existing development is undertaken on the Hitchcock Road site and this would continue for the proposed development. The cost of these activities has been included in the proponent's assessment of the proposal.

Alternatives

The only realistic alternative to the proposal is the continuation of the current consent which would result in the sterilisation of substantial volumes of extractable sand. As the proposal would result in minimal environmental impacts on the biophysical and economic environments, this approach is not considered to be effective or realistic. The proposal would lead to the removal of a small area of a protected woodland community and an adjustment to the local topography which would have limited visual impacts. The removal of the former Trigonometrical Reserve site would have no heritage impacts as the existing concrete pillar is less than 50 years old and is of a common type.

Need for the Proposal

The predicted demand for medium to coarse grained sand of the type available at Hitchcock Road during the period from 2000 to 2010 is 25.4 million tonnes with a predicted supply from the region of 22.5 million tonnes over the same period. The potential shortfall of three million tonnes would need to be satisfied by increasing imports or by increasing production within the region (Department of Mineral Resources 2001).

In the medium term (2010 to 2020) the predicted demand for medium to coarse grained sand is expected to increase to 30.6 million tonnes. There will be no dominant secure supply of this material in the Sydney region following the closure of the Penrith Lakes scheme, expected in 2010. Current sand supplies from Maroota and elsewhere in the region are approximately 800,000 tonnes per year. The remainder of the annual requirement of three million tonnes would need to be derived from elsewhere, and, as a result, sand produced from sources such as Maroota will have an increasing importance in supplying the Sydney market for construction sand.

There is clearly a need for additional sources of medium to coarse grained sand within the Sydney region in both the short and medium terms. Importation would both increase its price due to the additional transport costs involved and result in additional environmental impacts as new sources are exploited. It is therefore important to enable the maximum available resource to be obtained from existing sources of sand in the Sydney region while ensuring that appropriate environmental standards are maintained. The new proposal at Hitchcock Road is seeking to achieve these principle objectives.