

Chapter Six

REHABILITATION

6.1 Introduction

The court orders (**Number 6.4**) require the preparation of a review in which compliance with the following is to be demonstrated:

- the rate of rehabilitation should relate to the staging programme referred to in **Condition 3.4** of the Court consent;
- vegetated conservation zones and rehabilitated areas are maintained;
- vegetation within buffer zones is successfully retained and protected;
- progressive rehabilitation integrates with the surrounding terrain as illustrated in the Rehabilitation Plan dated 25 June 1998, subject to the requirements of **Condition 2.1**;
- vegetative covers are established at the earliest possible opportunity;
- assessment/comment on the progress of rehabilitation carried out under the direction of the nominated supervisor;
- on-going monitoring programme for all flora and fauna species and communities within the development site, particularly those scheduled under the *Threatened Species Conservation Act, 1995*;
- conservation of threatened species, populations and ecological communities including buffer zones and conservation zones containing the Shale Sandstone Transition Forest as identified in the Rehabilitation Plan dated 25 June 1998 at all times;
- the construction of acoustic and visual bunding surrounding and containing all mechanical equipment is progressing in accordance with the Rehabilitation Plan dated 25 June 1998 and **Condition 2.1**; and
- method and progress of the rehabilitation of extracted areas and tailings dams are in accordance with current environmental laws, standards and practices including guidelines published by the Australian- Federal Environment Department and the Department of Land and Water Conservation.

A Landscape Management Plan has been prepared in compliance with the requirements of the current Project Approval but is awaiting approval by the Department of Planning. The following section therefore describes the current phase of site rehabilitation followed by responses to the issues raised in the court orders where appropriate. Reference is also made to the biodiversity offset strategy which is described in more detail in the Landscape management Plan.

6.2 Earth bunding and rehabilitation

This section of the report submitted to Council for the year 1998-1999 addressed the boundary treatment and rehabilitation of the Hitchcock Road site focussing on the areas around the periphery which constitute the first phase of rehabilitation. This will not be repeated here.

Staging of construction

Bund construction and planting work has been completed in most areas, mainly sections of the northern and southern boundaries of the triangular shaped, northern portion of the site bounded by Old Northern Road and Wisemans Ferry Road.

Sections along Old Northern Road have been completed and recently extended (refer to Staging Plans at **Appendix 6A** in the Audit Report for 1998-1999).

Visual assessment

The proposed works will, in time, provide a thick elevated visual screen of indigenous trees and shrubs to a minimum width of 30 metres and an eventual height between 10 and 20 metres. This will provide an acceptable screen to ameliorate the visual impacts of the sand extraction operations. However, most parts of the extraction area are not visible from the external roads although material stockpiled adjacent to the slurry plant at the northern extremity of the site can be seen by drivers travelling south along Old Northern Road.

Conclusions

The works as proposed ensure that satisfactory screening and rehabilitation of the boundary areas of the Hitchcock Road site is achieved. The proposed method of earth bunding and planting will, in time, ameliorate the visual impacts of the site operations. In conjunction with further rehabilitation work, the site can be returned to a natural state on the completion of sand extraction.

6.3 Response to rehabilitation issues

The following section provides responses, where relevant to the specific requirements of Court Order **Number 6.4** listed in the Introduction.

Rate of rehabilitation

Rehabilitation of the site is taking place generally in phase with the overall staging program. The removal of material from the first phases has been completed and extraction has continued as shown on the Site Survey Plan at **Attachment 2A**. Rehabilitation of the project is dependent on two main factors:

- Material for backfilling does not become available until topsoil and overburden are removed from later phases as similar material from the first phase area is used to form peripheral mounds and the earthworks required for the tailings dams.
- Substantial parts of the operational area are occupied by a series of basins required for surface water treatment. These require capping prior to any major rehabilitation-taking place in the area. This cannot be undertaken until new basins are developed as part of the next phase development which in turn serve the whole project. In addition, capping cannot take place until the ponds are sufficiently dry to accommodate heavy vehicles with safety. This can take up to three years.

The timing of the rehabilitation of the initial phases is therefore dependent on a substantial start being made on the next phase. Activity to date has focussed on the provision of the peripheral mounds which are required for acoustic and visual reasons. These have been constructed, so far, in those areas particularly sensitive to these impacts. This work has now been completed.

A number of the early tailings dams have been capped and the area is in the process of rehabilitation. This is particularly the case in the western part of the site immediately to the south of the former Crown Road where several silt ponds have been capped and the ground contours reconfigured. The final pond in this area is currently in the process of capping and the northern part has been seeded under the supervision of Greening Australia.

Maintenance of vegetated conservation zones and rehabilitated areas

Conservation zones identified in the draft Landscape Management Plan are regularly inspected as required in the Environmental Strategy (**Strategy 7.1**). These will be marked and the areas suitably protected. All existing vegetation around the periphery of the site will be protected within setbacks and buffer zones.

The peripheral bunds constructed to date have been planted. These are regularly inspected and the area maintained.

Retention and protection of vegetation within buffer zones

All existing vegetation within the defined buffer zones will be retained and protected. A setback with a minimum depth of 30 metres is being maintained along Hitchcock Road and all existing vegetation within this area will be retained.

Integration of the site rehabilitation with the surrounding terrain

Operations have been undertaken on the Hitchcock Road site under the previous consent since November 1998. These have inevitably concentrated on the site works required for the development including retention basins and the construction of the peripheral bunds. It is too early in the life of the development, with more than 20 years of life remaining, to consider the establishment of the final landform in any detail. The area to the south of the former Crown Road has been reformed with final batter slopes which give an indication of the way in which the final landform will integrate with the surrounding area.

The final landform of the Hitchcock Road site will be influenced by the depth of extraction, the location of commercially available resource 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 previous consent and part of this area has been rehabilitated.

Setbacks around the periphery of the site, at the boundaries of properties not undertaking sand extraction and from buildings such as houses and other facilities not located on properties associated with sand extraction are defined in Baulkham Hills Shire Council Development Control Plan 16 – Extractive Industries. The setbacks shown on the Site Survey Plan at **Attachment 2A** generally comply with the requirements of DCP 16.

The existing topography is also shown on the Site Survey Plan. Two final landforms have been developed in response to the requirements of the proposed biodiversity offset strategy.

- Strategy A is similar to that shown in the EA (**Figure 2.7**). This comprises a large gently sloping basin with steeper side slopes along the boundary to Old Northern Road. Some of the levels have been amended to reflect changes in the extraction areas to minimise vegetation removal.
- Strategy B accommodates the retention of the woodland on the highest slopes of the site. As the high point is retained, the landform would comprise steeper slopes from those in Strategy A with substantial inward facing slopes in the northern section of the site with a large more gently sloping area in the centre. The area to the south (Lot 214 DP752039) would be the same in both strategies. This strategy is constrained by the volume of overburden available for the reshaping of the site profile so that steep slopes are unavoidable.

A decision on which strategy is to be implemented will be dependent on the success achieved in creating a revegetated area containing a community with the characteristics of that to be removed from the area adjacent to the former trig reserve, namely *Sydney Hinterland Transition Woodland*. This process is described in more detail in the Landscape Management Plan.

Early establishment of vegetative cover

Grass cover has been established on those peripheral mounds already in place and tree and shrub planting has been undertaken. The main works within the peripheral areas of the site have been completed with some further additions undertaken in 2008-2009.

A revised planting program is currently being prepared in collaboration with Greening Australia. Implementation of the program was delayed by the exceptionally dry conditions prevailing prior to the rains in July/August 2007 but the first phases have now been completed. Further consideration of the planting program is currently being undertaken as part of the implementation of the biodiversity offset strategy being developed in collaboration with the Department of Planning and the Department of Environment and Climate Change.

Assessment of the progress of rehabilitation

Initial works relating to rehabilitation such as the peripheral mounds are complete. All the tailings dams in the early extraction stages have been decommissioned, and all have been capped. This area has now been regraded to its finished level.

An area of approximately one hectare was prepared initially as a test site for the broadcasting of seed previously collected and stored by Greening Australia. The top soil stripped from an adjacent site is expected to contain a substantial supply of native seed and this was reinforced by the broadcasting of further seed in 2005 and 2006. This area is developing successfully and the approach used will be extended to include other areas within the conservation areas included in the biodiversity offset strategy.

Additional seed has been collected. This includes *Alocasuarina littoris*, *Banksia Ericifolia*, *Syncarpia glomulifera* and *Pittosporum undulatum*. Consideration will be given over the next 12 months to the establishment of orchards of shrub layer and understorey species, from which it is difficult to derive seed stock, on parts of the site which are not expected to be disturbed for many years. The planting of large numbers (approximately 10,000) of seedlings is planned for future planting seasons.

Flora and fauna monitoring programme

Regular monitoring of flora and fauna is a requirement of the Environmental Strategy. Surveys are undertaken over an appropriate period in the warmer weather, later in the year. Results to date are encouraging.

Conservation of threatened species, populations and ecological communities

It is a requirement of the Environmental Strategy that all those areas to be retained and defined as needing protection will be clearly identified. This will be undertaken at a suitable time as part of the biodiversity offset Strategy.

Construction of acoustic and visual bunding

Construction of the peripheral bunds has already been noted. These have now been completed including those screening the sand slurry plant.

Compliance with current environmental laws, standards and practices

All the necessary management controls and related actions are in conformity with all relevant current laws, standards and practices as indicated in the document.

*Chapter Seven***SOCIAL IMPACT MANAGEMENT**

The court orders (**Number 6.5**) required the preparation of a report confirming that the extraction operations effectively manage and monitor social impacts on the local community including:

- impact management planning which clearly identifies adjusted operating objectives and procedures undertaken to minimise social impact;
- monitoring and mitigating procedures involving the collection of information about actual impacts which is then applied to specific operating procedures to mitigate and manage social effects; and
- evaluation involving the retrospective review of the overall performance of extraction and assessment of the effectiveness of the management process itself with the view of rectifying any deficiencies.

There are a significant number of difficulties associated with compliance with this consent order. Some of these are:

- difficulty in defining and measuring social impacts as distinct from the environmental issues described elsewhere in this document. The latter include noise, air quality and visual effects which could all be classified as having social effects as they impact directly on the local community. These are measured separately and their impacts reported. Other, more ill-defined impacts relate to economic and general amenity effects. These include such factors as community perceptions of the benefits or costs of sand mining in the area. None of these can be directly measured even if the effect could be adequately conceptualised by the affected individuals;
- impossibility of identifying the social impacts of one operation in the context of a much larger and more widespread industry in the area; and
- great difficulty in linking specific operating procedures on a single site to somewhat generalised social effects and measuring effectiveness in their mitigation.

There is no doubt that large-scale sand mining has some social effects, however defined, but it would take a very extensive investigation to identify those issues in such a way as to understand the relationship between the on-site operation and community perceptions of its impacts. Any attempt to measure change would also be fraught with difficulties. Such a requirement goes well beyond what can be reasonably expected in the context of a development approval.

However, the EMP included a series of actions related to social issues (**Item 5.9**) aimed at attempting to determine the views and perceptions of local residents and community groups in relation to site activities. The outcomes of this consultation will be taken into consideration in the regular reviews of operations undertaken at the site.

Overall the effectiveness of the site operations can best be judged by the level of compliance achieved with relevant factors which are subject to measurement plus the number and nature of any complaints received from members of the local community. In essence, the decision to safeguard the Maroota sand resource by the State government can be seen to be based on its conclusion that the community as a whole would benefit. It is not unreasonable to suggest that it is the responsibility of the Department of Planning to determine whether this is so in practice.

Community-based activities during 2008-2009

Community representatives participate in the Liaison and Review Committee (now renamed the Community Consultative Committee) which has met twice since July 2008. Minutes of these meetings are included as **Attachment 7A**. Most of the concerns expressed by community members related to issues which go well beyond those that can be considered within the context of a single, albeit, large-scale development. These continue to include the cumulative impacts of sand mining on the Maroota area and social impacts on the community relating to those who are seen to gain significantly while others experience undesirable impacts. This has been interpreted as reflecting a potential split in the community. Concerns are also expressed about the nature and extent of the environmental impacts reported in the EMP. Concerns have been raised relating to the cessation of the activities of the Maroota Quarry Cumulative Committee whose apparent demise is seen as premature.

Other concerns relate to the direct benefits - or lack of them - accruing to the local community as a result of Sc 94 contributions stemming from the development. Again this is an issue which relates to all sand mining operations in the area and cannot reasonably be considered in the light of a single development approval.

These issues are regularly raised at the formal meetings as noted in the minutes and during conversations with individual community members.

Meetings of the Maroota Quarry Cumulative Committee convened by the previous Department of Infrastructure, Planning and Natural Resources have ceased and no meetings have taken place during this reporting year.

Conclusions

The issues summarised above go well beyond the measurable effects of one development. It is unrealistic to expect to be able to determine a verifiable relationship between activities on one site plus the specific methods employed there and the community's concerns about the future of their area when it is not possible to establish even a theoretically acceptable connection between the two. It might be possible to demonstrate such a relationship following a long-term study of the community but this remains way beyond a reasonable requirement on the site operator.

No complaints have been received from the local community concerning the operations of PF Formation at Maroota over the last 12 months.

Attachment 7A

**MINUTES OF COMMUNITY CONSULTATIVE
COMMITTEE MEETINGS**

**Liaison and Review Committee Meeting
Re PF Formation Hitchcock Road and Lot 198
Sand Extraction and Rehabilitation Projects**

**Minutes
10 November 2008**

Attendance

Kristine McKenzie – Baulkham Hills Shire Council (BHSC) - Chairperson
Robert Buckham – Baulkham Hills Shire Council (BHSC)
Daniel Giffney – Baulkham Hills Shire Council (BHSC)
Peter Ridgeway – Baulkham Hills Shire Council (BHSC)
Steve Durrington – Department of Environment and Conservation (DECC)
Marianne Sheumack – Resident
Shaunagh Hitchcock – Resident
John Graham – PF Formation
Peter Cummins – PF Formation
Luke Graham – PF Formation

Apology

Liz McAuley – Resident
David Fingland – DFA Consultants
Joshua Graham – PF Formation

Minutes of Previous Meeting

- Accepted

Report on Current Status of Operations by John Graham

- No complaints received in the period
- Business has been solid notwithstanding the depressed Sydney building industry for the last 2 years since the M7 motorway was finished. This local demand emphasizes the importance of the Maroota resources even in depressed economic times. Penrith Lakes are closing their fine sand production at December whilst the remaining sand and gravel will be extracted over the next five years. The slowdown over the last few years has extended the life of the Penrith Lakes Development area.
- We recently had a Mine Engineer conduct a safety audit as part of the Department of Mineral Resources mine safety monitoring. The recommendations were implemented and reviewed at a follow up visit..
- Quarterly staff safety meetings have been expanded to incorporate environment concerns to ensure all staff realize their environmental responsibilities.

- The new Hitchcock Road Development is still with the Department of Planning awaiting approval. Draft conditions of consent have been received and further requests for additional information were provided to the Department the previous Friday. PF Formation is hopeful of receiving approval before Christmas and will commence extraction immediately from the 'Breen' property. Current production is very inefficient working in a very limited area up against the for Crown Road area due to the much longer than anticipated approval process.
- It was noted that removal of vegetation in the new development was one of the ongoing issues. It is now confirmed that the existing vegetation is classified as Sydney Hinterland Transition Woodland which is not an endangered ecological community.

Other Matters

- PF Formation have lodged a development application with Baulkham Hills Shire Council over Lot 1 Old Northern Road (Accurso property). Extraction has previously occurred on this property and the proposed development is to finish off the extraction on the property and better shape the final landform. The DA is for a maximum of 30,000 cubic metres and the extraction will be completed within 2 years. No additional trucks will use the roads as the material will be transferred off-road to Lot 198. The majority of Lot 1 is approved for agriculture but as part of this approval an area will be returned to bushland.
- The Environmental Management Plan Annual Audit for 2007-2008 was distributed to Marianne Sheumack to have at the resource centre. It was noted that the rainfall for the year was 1,292 mm, 50% higher than the long-term average. This has resulted in an increase in the groundwater levels. No contaminants were found in the testing of the ground water. Noise was within the usual limits and dust results from the dust deposit gauges were generally good with the one or two abnormal results that has not derived from quarry generated dust. PF Formation has an agreement to be notified by Dixon Sands if the 24-hour average PM10 dust levels next to the school monitoring site exceed 45. No exceedances have occurred in the last six months.
- The RTA responded to the PF Formation letter dated 5 June requesting that flashing lights be installed in the Maroota Public School traffic zone. The RTA letter stated that 400 sets of lights will be installed over the next four years at schools in NSW based on risk factors. Maroota school will be assessed based these on risk factors.
- Steve Durrington was introduced as the new DEC officer.
- Peter Ridgeway was introduced as BHSC flora and fauna officer.

Resident Matters

- Council views and actions on weed control were discussed.
- No news on possible development of the adjoining Arkzeal property.

Site Visit

- A full site inspection was conducted.

Next Meeting

- Monday 10.00 AM Monday 11 May 2009 (subject to aligning the meeting with Dixon Sands meeting on the same day).

**Community Consultative Committee
Hitchcock Road and Lot 198 Maroota
Sand Extraction and Rehabilitation Projects**

**Minutes
12 May 2009**

Attendance

Kristine McKenzie – Baulkham Hills Shire Council (BHSC) - Chairperson
Robert Buckham – Baulkham Hills Shire Council (BHSC)
Daniel Giffney – Baulkham Hills Shire Council (BHSC)
Kieran Horkan - Department of Environment and Climate Change (DECC)
Mark Hanemann – Department of Environment and Climate Change (DECC)
Marianne Sheumack – Resident
Shaunagh Hitchcock – Resident
David Fingland – DFA Consultants
John Graham – PF Formation
Peter Cummins – PF Formation
Joshua Graham – PF Formation

Apology

Liz McAuley – Resident
Kane Winwood – Planning NSW

Minutes of Previous Meeting

- Accepted

Meeting Chairperson

- On behalf of the Hills Shire Council Kristine McKenzie agreed to continue as Chairperson of the Community Consultative Committee (CCC).

New Approval

- Signed by Minister for Planning on 3 February 2009. A summary of the new approval taken from the 'News' section of the website www.pfformation.com.au was handed out and discussed.
- A copy of the conditions attached to the Project Approval and the assessment documentation can be accessed from the website.
- The Noise Management Plan, Air Quality Monitoring Program, Water Management Plan and Environmental Strategy incorporating the above have been reviewed by DECC and are with the Department of Planning awaiting approval.
- A Maximum Extraction Depth Map and survey plan of the extraction and ancillary work areas will be sent to the Department of Planning in the next few days
- A Landscape Management Plan including a Rehabilitation and Offset Management Plan and Quarry Closure Plan will be submitted in the next 3 months.
- An Annual Environment Management Report based on the year ending 30 June 2009 will be submitted to Planning NSW in the second half of the year.

- An Independent Environment Audit will be undertaken during the first year and every three years after that.
- Approved management plans/monitoring programs and other information will be maintained on the website.

Report on Current Status of Operations by John Graham

- No complaints received in the previous six months
- Operations have continued in a stable manner
- The main extraction area has moved to the eastern side of the site. The rehabilitation of the previous extraction area has commenced.
- The main slurry pipeline will be replaced by a rubber-lined steel pipeline to minimize breakdowns and the resultant potential environmental impact.

New DEC Officer

- Kieran Horkan introduced Mark Hanemann as the DECC Officer responsible for this area replacing Steve Durrington who has been rotated to other industries.

Other Matters

- Two new groundwater monitoring bores have been installed. One each on the eastern and northern perimeters.
- How the Arkzeal and Camilleri properties included in the 1998 Court Approval can be extracted in conjunction with this new approval was discussed.
- Property setbacks were discussed. Generally 30 metres from roads and properties not connected with extractive industry and 40 metres from former Crown land to east of Project.
- Deposited dust gauge results over last year were reviewed
- The plan for revegetation and the future removal of vegetation was discussed

Site Visit

- A full site inspection was conducted.

Next Meeting

- Friday 10.00 AM Monday 6 November 2009 (subject to aligning the meeting with Dixon Sands meeting on the same day).

Chapter Eight **CONCLUSIONS**

The Environmental Management Plan (EMP) prepared for the Hitchcock Road Sand Extraction and Rehabilitation Project was previously in two parts. The Management Plan itself formed Part One, provided the basis for the environmental management system to be employed at the site. It conformed to ISO 14001-14004 and went substantially further than required by the court orders. It set in place a series of management controls which, when implemented, ensured that the development not merely complied with the conditions imposed by the Court but with all other current relevant legislation and guidelines. It provided the basis for the operation of the site within the context of all these requirements. It was reviewed in 2005 and updated to reflect experience gained and changes that have taken place over the previous five years.

The requirements of the EMP, which were expressed as a series of management controls and associated actions, were gradually put in place. The reporting procedures included within the EMP more than satisfy those set out in the court orders.

The monitoring undertaken complied with the requirements of these orders and the results clearly indicated that the site has been operated in compliance with the orders and all other prevailing legislation and guidelines.

This report has provided a summary and assessment of monitoring undertaken over the past 12 months. This has mainly focussed on the requirements of the previous Court orders as the relevant management plans and monitoring programs were not approved by the Department of Planning until early July 2009 with approval of the Landscape Management Plan still outstanding. The report to be submitted next year will respond to the requirements of the new plans and report the results of the new monitoring programs.