Management strategy for Newnes Plateau providing for winning of its construction and industrial sand resources.
NEWNES PLATEAU

MANAGEMENT STRATEGY FOR WINNING OF SAND
MANAGEMENT STRATEGY FOR NEWNES PLATEAU PROVIDING FOR WINNING OF ITS CONSTRUCTION AND INDUSTRIAL SAND RESOURCES
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1 INTRODUCTION

1.1 Background

The Newnes Plateau is a large elevated tableland about 5km north-east of Lithgow and 100km north-west of Sydney. The plateau covers an area of approximately 300 sq.km and extends north from the escarpment of the Leff River Valley. It is bounded to the east by the Wollemi and Blue Mountains National Parks and to the west by the Upper Coxs River and the Wolgan Gap (see figure 1).

Extensive deposits of deeply weathered, soft and friable sandstone occur on the plateau. The Department of Minerals and Energy has produced a report entitled “Construction and Industrial Sand Resources of the Newnes Plateau” identifying the resource and six areas it favours for initial investigation. Figure 12 shows these areas. The Newnes Plateau is also the site of a large number of co-existing and sometimes competing land uses, including forestry, water supply catchments, sand extraction, coal mining, military usage and recreation. It also combines the elements of natural beauty, diverse flora and fauna and archaeological remains. The area has very high natural environmental values and is partly a wilderness area in close proximity to the Sydney metropolitan area.

The Newnes Plateau has been of interest to environmental groups for some time because of its unique topography, rare vegetation and aboriginal history. The area is also of interest to the Department of Minerals and Energy because of the sand resource which could be utilised for the Sydney market.

The then Department of Mineral Resources approached the Department of Planning with regard to preparation of a regional environmental plan dealing with extractive industries. To consider this, the Department of Planning convened a working party consisting of:
- the Greater Lithgow City Council
- the Department of Water Resources
- the Department of Minerals and Energy
- the Forestry Commission
- the Soil Conservation Service
- the Electricity Commission
- the Department of Main Roads (now Roads and Traffic Authority)
- the Department of Lands
- the National Parks and Wildlife Service
- the Department of Planning

The Nature Conservation Council and Quarry Masters’ Association were invited to comment on the draft report and attended a working party meeting to discuss the report.

1.2 Objectives

It was agreed that the working party’s objectives with regard to sand extraction in the Newnes Plateau area are to:
- develop a coordinated approach to government decision making and help resolve potential development/conservation conflicts in the context of the area’s environmental constraints; and
- identify areas in which exploration could proceed with a high probability that a project would be approved.

It was decided that a management strategy be prepared for sand extraction. It was also decided that land with the least environmental constraints is preferred for initial extraction.

1.3 Scope of Management Strategy

The working party, relying on input from the various government agencies, has some information regarding the resource and environmental constraints on the plateau at a macro level. Consequently, the management strategy sets broad parameters for further investigations at the micro or site-specific level but, to achieve the above objectives, places them in the context of the overall strategy. This is done through the Plan of Management. Information to guide future exploration and extraction is provided. Areas of least constraint are mapped.

1.4 Planning Provisions

The Newnes Plateau is within the City of Greater Lithgow. It is zoned Non Urban 1(a) under L.D.O. 1 Shire of Blaxland. State Environmental Planning Policy No. 11 is applicable to traffic aspects of development of the sand resources. A new local environmental plan is being prepared by the council.

Extraction of the sand resource is subject to the consent of the council, and is designated development under the Environmental Planning and Assessment Act 1979. As such, it requires an environmental impact statement and consultation with the Director of Planning.

2 EXTRACTIVE INDUSTRY DEVELOPMENT ON THE NEWNES PLATEAU

2.1 Market and Demand

Once processed, the sand of the plateau is suitable for use in ready-mixed concrete, concrete products, filtration sand, mortar sand and numerous other applications. The largest market for these products is the Sydney metropolitan area. It should be noted that construction sand has been in short supply in the Sydney region for some years.

At this time there is no assessment of the potential demand. However, as sand resources closer to the Sydney market are exhausted or sterilised by competing land uses the market for Newnes Plateau sand will expand. The Department of Minerals and Energy is of the opinion that the Newnes Plateau is the most likely source of new supplies for this market.
2.2 Existing Extractive Industries

Output/Potential

There are at present three sand quarries located on the Plateau: Clarence Sand and Gravel Pty. Ltd., Kables Transport Pty. Ltd. and AMATEK Ltd.

The former has reserves of 30-180 million tonnes and in 1986/97 produced 78,000 tonnes of processed sand. Kables Transport Pty. Ltd. currently has reserves of 2.5 million tonnes but a recently approved extension secures another 24 million tonnes. Kables produced 324,000 tonnes of processed sand (1986/97). AMATEK Ltd. has current reserves of 15 million tonnes and in 1985/86 produced 4000 tonnes. It is apparent special circumstances have affected AMATEK'S production. Approximately 75% of the sand goes to the Sydney market.

2.3 Location of Existing Extractive Industry

Figure 2 shows the location of Clarence Sand and Gravel Pty. Ltd., Kables Transport Pty. Ltd. and AMATEK Ltd.

There are no other approved areas of extraction on the Newnes Plateau.

These deposits are typical of friable sandstone deposits on the Newnes Plateau and range from very fine to very coarse. However, there is considerable lateral and vertical variation in terms of grain size and sorting characteristics.

All of these operations are located within catchments of the adjacent National Parks or Lithgow City's water supply dam.

One of them currently encroaches upon the adjoining National Park. There has also been an instance of rupture of a tailings dam allowing spillage of tailings into the National Park.

This experience with the existing operations casts doubt on the adequacy of current methods/standards and controls on operations. It would therefore be appropriate to establish a sound, consistent environmental management record at the existing Newnes Plateau operations which ensures public confidence in the guidelines for future operations.

3 POTENTIAL CONFLICTS ASSOCIATED WITH EXTRACTIVE INDUSTRY DEVELOPMENT

The greater part of the area is dedicated as state forest (Newnes State Forest No. 748) and accordingly controlled and managed by the Forestry Commission. Most of the identified sand resources lie within the state forest. Discussions between the Forestry Commission and the Department of Minerals and Energy indicate that sand extraction is possible in the state forests subject to meeting certain requirements.

Features of particular management significance include pine plantations, high quality mining timber stands, Flora Reserves/Preserves, and known distributions of certain rare flora and aboriginal sites. There is significant recreational use. See figures 3 and 4.

Coal mining interests on the Plateau are the existing Angus Place Colliery, Fernbrook Colliery, Clarence Colliery, proposed Karriwara Colliery, Austen and Butta and various coal leases. These interests are shown on figure 5 and figure 11. The interest of the Electricity Commission in the area rests with its coal mine projects eg. Angus Place Colliery.

Access to sites of interest for tourists is an important issue. These sites include the Glow Worm Tunnel and potential educational sites such as Black Fellows Hand Cave.

The National Parks and Wildlife Service has areas of interest (see figure 4) such as:

- Dargans Creek Nature Reserve proposal;
- catchment protection in the Wollangambe, Bungleboori and Wolgan headwaters;
- possible additions to the Blue Mountains and Wollemi National Parks to rationalise boundaries;
- Aboriginal sites;
- conservation of, and educational and recreational opportunities for the historic precinct of the Newnes Railway Alignment, Glow Worm Tunnel, the old Coach Roads and the Newnes historic ruins; and
- scenic and wilderness protection of the Blue Mountains and Wollemi National Parks, and Colo Wilderness, including the Wollangambe section.

The Newnes Plateau is within the Lithgow Heritage Lands as defined by the Department of Lands (see Appendix B and figure 11). The area has no value for future residential use, being too remote from services. At present there is limited rural residential development in the Dargans Creek area.

3.1 Surface Water

The Newnes Plateau includes the headwaters of the Wollangambe Creek, Bungleboori Creek, Dargans Creek, Wolgan River and Coxs River. The Wolgan River and Wollangambe and Bungleboori Creeks are headwaters of the Colo River and hence are integral to the Wollemi National Park and the Colo Wilderness. Reaches of the Coxs, Wolgan, Bungleboori and Wollangambe were identified as wild and scenic rivers in a consultants' study sponsored by the Department of Water Resources.

3.2 Landscape Protection and Environmental Conservation Issues

The landscape quality of the Newnes Plateau has long been of concern. In this regard the pagodas and cliffs have been seen to be important.

At present the major landuses of the plateau are recreation, forestry and sand winning. Minor landuses include army training and coal mining.

The Dargans Creek Catchment contains a proposed Nature Reserve where there are rare plants and Aboriginal sites. The National Parks and Wildlife Service has information on this area (see Appendix A and figure 7).
The Wollangambe and Bungleboori Creeks are the headwaters of streams flowing to the Blue Mountains and Wollemi National Parks. The Wollangambe also flows into the Colo 'Wilderness.

The Forestry Commission has under its care the Birds Rock Flora Reserve and Snow Gum Forest Preserve.

The Newnes Plateau above 1000m includes a series of shrub/heath swamps. These scientifically important high altitude shrub/heath swamps do not occur within the Blue Mountains or Wollemi National Parks.

The old Newnes Railway Alignment, Glow Worm Tunnel, old Coach Roads and the Newnes historic ruins, as well as the Black Fellows Hand Rock and other Aboriginal sites, are items of significant value on the plateau.

The Newnes Plateau has extensive views across large areas of natural rugged scenery. The area is popular for bushwalkers, canyoneers, rockclimbers and other people seeking a peaceful and natural setting for their recreation. An important element of any development on the plateau is its effect on the adjacent wilderness areas.

3.3 Transportation
The Great Western Railway alignment passes along the southern margin of the plateau and is close to the area of least constraint located south of the railway. There is a railway loop at the Clarence Colliery used exclusively for the loading of the colliery’s product.

Main Road 516 (Bells Line of Road) is to the south of the Newnes Plateau; State Highway 5 (Great Western Highway) and Trunk Road 55 (Mudgee Road) are nearby (see figure 8). Long term planning for removing heavy vehicles from the urban area of Lithgow, and for eliminating the unsatisfactory road approach on the eastern side, could involve a deviation of Main Road 516 through the southern part of the study area.

There are a number of local roads on the plateau. However, these are not of a high standard in relation to vertical and horizontal alignment or pavement strength.

3.4 Other Issues
Relatively high exploration, project planning approval, infrastructure and establishment costs are likely to be involved in obtaining use of new sand resources.

The Australian Army has an occupation permit for an ammunition demolition site issued by the Forestry Commission of NSW. The boundaries of this permit extend onto the plateau and, although the site is not presently in use, large amounts of unexploded ammunition exist on the area, making it unsuitable for public use.

Two small water dams, originally built for railway use, are located on the western edge of the plateau. One of the dams has also been used to augment the Lithgow water supply during periods of drought. The catchments of these dams are within the area of least constraint (figure 6). Also, their catchments are small and could be isolated.

4 SUMMARY OF ENVIRONMENTAL CONSTRAINTS
Figure 9 shows the six subcatchments of the Newnes Plateau. The three northern subcatchments of Wollangambe Creek, Bungleboori Creek and Wolgan River flow to the north east while Dargans Creek, Lithgow Water Supply Dams catchment and Coxs River flow to the south east.

The constraints have been identified by the agencies represented on the Working Party on the best information available. The areas of constraint are areas on the plateau of interest or concern to one or more agencies and where significant impact may occur as a result of sand winning activities. The constraints on development of the sand resource have been mapped and the area of least constraints is identified in figure 6. In this area, exploration could proceed on the expectation that if the resource is found then the project would be approved (subject to the local planning provisions and satisfaction of the Environmental Planning and Assessment Act requirements).

5 PLAN OF MANAGEMENT
As few sites have been explored to assess the extent and nature of the resource, a plan of management for the extraction of sand on the Newnes Plateau cannot be site-specific. However, there is a need to set guidelines and parameters which could form a framework upon which exploration, assessment of viability, attachment of conditions and approval to develop can be based.

The Plan of Management therefore consists of three sections:

- policy indications on control of exploration and sand extraction in the area;
- specific guidelines which developers could use in assessing sites and which council would use as a basis for considering any application; and
- samples of draft conditions which are relevant to the Newnes area (appendix A).

5.1 Policy Indications
5.1.1 Exploration
(i) The Government should foster exploration in the areas of least constraint. (REASON: To avoid environmental conflicts, minimise costs and ensure that Newnes Plateau can start to supply the Sydney market soon.)

(ii) Exploration would be likely to face fewer constraints in the area generally south of the Old Bells Line of Road (see figure 6). (REASON: The environmental problems could be more easily managed in this area.)

(iii) Exploration companies should be made aware that very stringent conditions for exploration would be imposed. (REASON: The plateau has areas within which significant constraints are apparent.)
Basic requirements to protect the environment will be set for any exploration project. (REASON: To indicate to the industry the minimum acceptable standard.)

For large scale exploration activities, where trenching or pitting is involved, similar safeguards to those given for extraction should apply. (REASON: To minimise adverse impacts of exploration.)

NOTE: It should be made clear to those granted rights to explore that such rights in no way guarantee consent to extract should economic resources be defined.

5.1.2 Controls on Extraction

(i) Extraction of sand in the Bungleboori and Wollangambe Creek catchments would be subject to significant constraints. In particular, strict controls would apply to runoff. (REASON: As both the Bungleboori and Wollangambe Creeks flow into a national park. Also the visual impact of any such development may be significant.)

(ii) Any pit in the Lithgow City’s water supply catchment would also have strict controls over runoff placed on it. A pit would have to be below the dam site. (REASON: Protection of the quality of Lithgow City’s water supply and safety of the dam.)

5.1.3 Staging of Extraction

(i) Overall plans of development of a site would be required with approvals given in stages. (REASON: In this way a more coordinated approach would allow for new areas to be opened up while previously worked areas are rehabilitated.)

(ii) Where extraction is proposed within a state forest consideration needs to be given to maturity of trees. (REASON: So that maximum value can be obtained from the trees prior to sand winning.)

5.1.4 Screening and Buffer Zones

(i) All operations should be well screened from public view. This is particularly important where such operations are near roads or public areas such as national parks. (REASON: To protect the appearance of the area.)

(ii) Screening should be considered well in advance of sand winning. (REASON: Screen trees need to be planted and tended prior to sand winning so that a mature screen is in place.)

5.1.5 Cessation of Sand Winning/Future Use

Future use should be determined prior to approval of commencement of operations. (REASON: So adequate drainage can be put in place and pit faces graded to appropriate angles for safety in its future use.)

5.1.6 Transportation

(i) Appropriate contributions or works on council’s roads would be required from extractors. (REASON: To improve the quality and prevent deterioration of roads used for sand movement. For safety, any roadworks should also be considered in the light of improving public access to the area.)

(ii) Council should monitor truck traffic. (REASON: To ensure that major increases in truck traffic do not occur without approval and that consideration is given at the appropriate time to transportation of sand by rail.)

(iii) Over a certain threshold level it may be a requirement of consent that sand moved to the Sydney market be transported by rail. (REASON: To preserve the condition and safety of roads.)

5.2 Specific Guidelines

There is a need to demonstrate that proposals are compatible with the plan of management, and that they optimise the economically and environmentally acceptable extraction of sand from the Newnes Plateau.

5.2.1 Catchment Protection

5.2.1.1 In relation to runoff

(i) The water management system, including tailing dams, should allow for the retention of all flows up to a 1 in 100 year storm frequency. (REASON: To prevent pollution of the downstream areas.)

(ii) Water running onto the site should be diverted away from mining operations by diversion banks. (REASON: To reduce overall impact, prevent erosion and ensure progressive rehabilitation.)

(iii) All runoff from disturbed areas should be directed to silt control structures. (REASON: To prevent silt movement to adjoining lands.)

(iv) A permanent, clean water, flood and silt retention structure should be constructed. This structure should not produce any runoff in dry times. (REASON: To take runoff from all disturbed areas.)

(v) No discharge of anoxic wastes should occur. (REASON: To maintain water quality.)

5.2.1.2 In relation to sewerage and pollution control

(i) There is a need to demonstrate the suitability of the site for septic tank utilisation. Effluent should be contained and used for revegetation. Sewage sludge from the tanks must be disposed of to a suitable site away from Newnes Plateau. (REASON: Maintenance of water quality in natural areas downstream.)

(ii) With regard to fuels, oils and chemicals, attention should be given to the location and structure of storage facilities. (REASON: To ensure that spills and leaks are minimised.)
5.2.1.3 In relation to erosion control

(i) An erosion and sediment control plan is required. Such a plan should consist of a comprehensive explicit set of instructions for controlling erosion and sediment during site preparation and production. (REASON: Erosion and sediment control is necessary due to presence of sandy soils susceptible to erosion.)

(ii) The control plan would need to include erosion and sediment control practices both for disturbed areas on site and for runoff at the perimeter of the site. Drainage upslope of the disturbed areas must be diverted properly around or through the disturbed areas. (REASON: To minimise the quantity of any polluted waters to be contained on site.)

(iii) Prior to clearing for construction, sediment traps and basins must be installed. Revegetation practices would need to allow for seasonal considerations, as autumn and spring are the best time for planting shrubs. (REASON: To ensure structures are in place and well vegetated prior to commencement of operations.)

(iv) Maintenance must not be overlooked. Particular attention should be given to inspection and maintenance of water handling structures, sediment traps and basins. Sediment should be removed from these structures at regular intervals to maximise their operational capacity. Their structural stability should also be regularly checked and remedial measures carried out where necessary. (REASON: Proper performance of control structures.)

(v) Consistent with mining constraints, the minimum possible surface area should be disturbed at any time. Natural drainage lines should remain undisturbed as long as possible. A mining sequence should be established to allow progressive rehabilitation of mined areas. (REASON: To reduce overall impacts, prevent erosion and ensure progressive rehabilitation.)

5.2.1.4 In relation to rehabilitation

Note: Soils are of low fertility and subject to rapid leaching. Initial application of fertilisers will be necessary for revegetation. However, it is likely that this application will not cause any long term effects on the surrounding areas. It will be necessary for the Soil Conservation Service to be consulted in the preparation of the rehabilitation and maintenance program.

(i) Permanently stable and battered embankments will be required. All disturbed areas should be reduced to 1 in 4 (V:H) or flatter where vegetative stabilisation is proposed. High walls are acceptable in in situ rock materials at near vertical angles provided that no flows are allowed to run over the batters or embankments (albeit subject to height limits and public safety). Run-on water should be diverted into stable drains away from any high walls. (REASON: To permit revegetation, prevent erosion and maintain water quality.)

(ii) Progressive rehabilitation will be required. By implementing progressive rehabilitation fresh topsoil will generally be available. Use of fresh topsoil materials significantly decreases revegetation problems. Immediate temporary cover should be established on areas to be revegetated by sowing the appropriate species. (REASON: To ensure rapid revegetation, maintain soil stability and reduce range of impacts.)

(iii) Permanent fencing should be provided at the boundary to control grazing of revegetated areas by native fauna and for public safety. (REASON: To protect the rehabilitation work.)

(iv) A maintenance program should be established. (REASON: To ensure the success of rehabilitation works and structures such as diversion banks and silt control structures.)

Essential features of the maintenance program are:

- exclusion of stock
- control of noxious weeds and pests including rabbits
- maintenance of drainage and water control works to ensure their continued operation
- control of wild fire in rehabilitated areas
- grassed and tree planted areas will require refertilisation to ensure persistence of species.

(v) The extractor must ensure proper rehabilitation of the site after completion of sand winning. The ultimate aim of rehabilitation may be to return the site to indigenous species. Alternatively, consideration could be given to retaining a disused pit for long-term waste disposal, depending on land management objectives and drainage or other constraints. (REASON: To ensure site is compatible with its surroundings or that it is suitable for an identified need.)

(vi) The proponent should submit to the Greater Lithgow City Council, at least two years prior to closure of the pit, a report outlining proposals for its closure including the removal of all structures and rehabilitation of the site. (REASON: Ensure proper close down procedures are undertaken.)
Before a new pit opens or a new stage begins, a rehabilitation plan and value of bank guarantee is to be agreed on. (REASON: To ensure that the bank guarantee at all times matches the current cost of rehabilitation, and to ensure that the extractor meets all the costs of progressive and final rehabilitation.)

5.2.2 Aesthetics
The visual quality objective which the development should be related to is that of “partial retention” as defined by the US Forest Service. Most activities should remain visually subordinate to the plateau landscape. Where visual modification becomes necessary, the respective structures should follow naturally established form, line, colour and texture. These are to be subject to the approval of the Greater Lithgow City Council. Should local guidelines become available these are to be substituted for the above.

(i) The minimum visual impact from vantage points in the neighbouring National Parks and State forest Areas needs to be demonstrated. (REASON: These are important recreation areas and should not be marred by development.)

(ii) It is important that the boundary be accurately located. A buffer strip of at least 20 metres should be maintained undisturbed within the property. This buffer strip should retain as much as possible of the existing vegetation and tree cover. (REASON: For aesthetic protection and soil erosion control.)

(iii) The pit working face should be concealed behind an undisturbed hill slope. (REASON: To protect the appearance of the area. See figure 10.)

5.2.3 Archaeological Sites and Heritage Items
An archaeological and heritage study would be required from the proposed extractor. (REASON: All archaeological and heritage items shall, as far as practical, be conserved and none shall be destroyed without permission from the National Parks and Wildlife Service and/or Heritage Council and/or Greater Lithgow City Council.)

5.2.4 Biological Impact
Areas of significant vegetation and animal habitat shall be preserved. Significant vegetation communities shall be taken into account before undertaking any changes to drainage patterns, and such changes shall be minimal. (REASON: To minimise biological impact and preserve the essentially natural character of the area.)

5.2.5 Fire Hazard
Appropriate fire fighting systems will be required. (REASON: Newnes Plateau is a bush fire prone area.)

5.2.6 Coal Sterilisation
Most of the areas on the Newnes Plateau identified as having potential for sand extraction are underlain by coal resources. However, in view of the substantial depths of the coal (200-400m), it will, in general, be possible for sand and coal extraction to proceed in the same locations with a minimum of mutual interference.

Nevertheless, sand extraction should be conducted so as to avoid the permanent sterilisation of any underlying coal resources. Surface structures should therefore be located or be designed to ensure that they are capable of withstanding expected levels of subsidence due to coal mining. Permanent water storage areas — such as dams, ponds, or final mine voids — should be located so as to avoid the sterilisation of coal resources. (REASON: Coal is an important resource and mining may take place under parts of the plateau.)

5.2.7 Roads
The proponent should enter into a Deed of Agreement with the Greater Lithgow City Council or meet licence conditions in accordance with the relevant authority to contribute to:

(a) the construction and/or reconstruction of roads to be utilised by the project; and

(b) the maintenance of such roads.

Where possible, separate roads or haulage lines should be considered. (REASON: To minimise the burden on the council or relevant authority and to aid in protection and expansion of the tourist potential of the area.)

5.2.8 Monitoring
A comprehensive monitoring program for the project is to be agreed with the Greater Lithgow City Council. (REASON: To generally ensure that operations are environmentally acceptable.)

5.2.9 Schedule of Works
The proponent shall provide for the approval of the Greater Lithgow City Council a proposed schedule of extraction and rehabilitation works setting out the proposed phasing of those works, before any new work commences and/or for any continuing work within 24 months of these guidelines being adopted.
APPENDIX A

CONSTRAINTS AND SPECIFIC REQUIREMENTS IDENTIFIED BY VARIOUS BODIES

Note: Responsibility for the following text is with the nominated body. Policies may change as more information on a particular site becomes available.

DEPARTMENT OF PLANNING

Removal of the sands is an extractive industry which is designated development under Schedule 3 of the Regulation to the Environmental Planning and Assessment Act. The proponent is required to request the Director's requirements for the preparation of an environmental impact statement which must support the development application to the consent authority (the Council of the City of Greater Lithgow).

The consent authority is required to publicly exhibit the development application and the environmental impact statement. Objections received to any development application are referred to the department for consideration. The department has 21 days in which to advise the consent authority if the Minister proposes to order an Inquiry. In the absence of the department's advice the consent authority may proceed to determine the development application.

The department's advice for preparation of an environmental impact statement current at December 1988 is as follows:

STATUTORY REQUIREMENTS FOR ENVIRONMENTAL IMPACT STATEMENTS

In accordance with Part IV of the Environmental Planning and Assessment Act 1979, an environmental impact statement (EIS) must meet the following requirements:

Pursuant to clause 34 of the Environmental Planning and Assessment Regulation 1980, as amended, the contents of an EIS shall include the following matters:

(a) full description of the designated development proposed by the development application;
(b) a statement of the objectives of the proposed designated development;
(c) a full description of the existing environment likely to be affected by the proposed designated development, if carried out;
(d) identification and analysis of the likely environmental interactions between the proposed designated development and the environment;
(e) analysis of the likely environmental impact or consequences of carrying out the proposed designated development (including implications for use and conservation of energy);
(f) justification of the proposed designated development in terms of environmental, economic and social considerations;
(g) measures to be taken in conjunction with the proposed designated development to protect the environment and an assessment of the likely effectiveness of those measures;
(g') details of energy requirements of the proposed development and measures to be taken to conserve energy;
(h) any feasible alternatives to the carrying out of the proposed designated development and reasons for choosing the latter; and
(i) consequences of not carrying out the proposed development.

The EIS must also take into account any matters required by the Director of Planning pursuant to clause 35 of the Regulation.

The EIS must bear a certificate as required by clause 26(1)(b) of the Regulation.

ADVICE ON THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR AN EXTRACTIVE INDUSTRY*

A definition of extractive industry may be found in paragraph (n) to Schedule 3 of the Environmental Planning and Assessment Regulation 1980 (as amended). These industries are operations undertaken for the purpose of winning sand, gravel, clay, turf, soil, rock, stone or similar substances. The definition of extractive industry specifically excludes coal, petroleum or minerals which are prescribed under the Mining Act 1973. Extractive industries may take the form of dredging operations, quarrying operations, turf farms or various forms of land excavation etc. Processing of extracted material on the same site as the winning of the material may also constitute an extractive industry.

Extractive industries have prompted considerable public controversy in the past since, among other things, they affect the appearance of the landscape, generate heavy vehicle movement, raise dust and cause disturbance through noise and blasting. This is the prime reason for designation of extractive industries under the Environmental Planning and Assessment Act 1979.

The purpose of this paper is to outline various issues relevant to the preparation and consideration of an EIS for extractive industries. It is intended to assist the preparation of the EIS. However, it is the applicant's responsibility, in complying with the requirements for EIS preparation, to identify and address as fully as possible the matters relevant to the specific development proposal.

The matters nominated in this paper are not intended to identify all issues which may arise in respect of an extractive industry. Some of the issues nominated may not be relevant to a specific proposal. On the

*This is general advice, prepared before the working party deliberations, and in no way derogates from the guidelines in this report. With guidelines and site-specific information available, the department would provide detailed Director's requirements.
other hand, there may be other issues — not included — that are appropriate for consideration in the EIS.

Information provided should be clear, succinct and objective and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The purpose of the EIS is to enable members of the public, the consent authority (usually the council) and the Department of Planning to properly understand the environmental consequences of the proposed development.

1. Description of the Proposal

The description of the proposal should provide general background information on the location and extent of the works proposed, an indication of adjacent development, and details of the site, land tenure, zoning and relevant forward planning proposals and any other land use constraints.

The EIS should address the compatibility of the proposal with any regional strategy for extractive industries in the area and with the provisions of the local environmental plans for existing and proposed development.

This section should provide specific information on the nature, intent and form of the development. It should, as far as possible, include such details as the processes involved (highlighting any proposed crushing or blasting), disposal of wastes, landscaping and site rehabilitation. A description should also be provided of associated operations such as the transport of materials and use of the end product if it is likely to have environmental implications.

Particular details that may be relevant include:
- characteristics and economic significance of the resource
- possible availability of alternative resources
- quantity of materials to be extracted
- methods of extraction/plans of operations
- details of any blasting and/or crushing
- effects of vibrations
- type of machinery and equipment to be used
- expected life of the operation
- number of persons to be employed
- hours of operation
- details of necessary stockpiling
- access arrangements — truck routes, truck numbers etc
- site drainage and erosion controls
- proposals for rehabilitation

2. Description of the Environment

This should provide details of the environment in the vicinity of the development site and also of aspects of the environment likely to be affected by any facet of the proposal. In this regard, physical, natural, social, archaeological and economic aspects of the environment should be described in so far as they are necessary for assessment of the environmental impact of the proposed development.

3. Analysis of Environmental Impacts

Environmental impacts usually associated with extractive industries are listed below. Where relevant to the specific proposal, these should be addressed in the EIS, taking into account the adequacy of safeguards proposed to minimise them.

- the flow of any affected rivers or watercourses
- the effect of the extraction on the sediment transport rate of any affected rivers or watercourses
- the bed and bank stability of any affected river during and after completion of the operations
- any possible siltation, sedimentation or downstream effects of the operation
- any likely cumulative effects of the proposed operation when considered together with other operations in the vicinity
- details of floods and any likely effects of the operation on flood liability of surrounding lands
- the possible effects of flooding on the operation
- effects on flora and fauna
- the agricultural viability of the landholding
- likely noise/vibration disturbance caused by the operations, including transport operations, on nearby residences
- other impacts of trucking movements, including access over railways and onto highways
- dust nuisance likely to be caused
- effects on water quality of nearby watercourses
- disposal of waste material
- effects on the visual environment
- any likely effects on sites of Aboriginal archaeological or European heritage value if located in the vicinity of operations

In addition, any potential for hazard or risks to public safety and any proposals to monitor and reduce environmental impacts should be included.

4. Contact with relevant Government Authorities

In preparing the EIS, it is suggested that authorities — such as those listed below — should be consulted and their comments taken into account in the EIS.

- the State Pollution Control Commission in regard to air, water and noise impacts and relevant pollution control legislation requirements;
- the Soil Conservation Service regarding appropriate erosion control and rehabilitation procedures;
- the Department of Agriculture, if prime agriculture land may be affected by the proposal; and
- the Heritage Council of NSW if the proposal is likely to affect any place or building having heritage significance for the State;
- the National Parks and Wildlife Service if Aboriginal places or relics are likely to be affected.

It is the responsibility of the person preparing the EIS to determine those departments relevant to the proposed development.
FORESTRY COMMISSION

Development would be unacceptable within a state forest, if it encroached upon any Flora Reserve or Preserve, or upon established long-term research plots. Similarly, disturbance of known areas of rare flora or of Aboriginal sites should be avoided. Otherwise, subject to the balance of economic considerations and overall environmental effects, preference, in general, would be given to any proposal avoiding areas of higher investment or productive potential.

Any operations proposed for a state forest would generally be required to meet the Forestry Commission's requirements. In particular, the proponent would be required:

- to carry out any relevant road or bridge construction or improvements within the state forest to a designated standard acceptable to the Commission, and to maintain that standard;
- to develop and work the pit or quarry in accordance with a plan — including provisions for safety, drainage, stabilisation and rehabilitation — acceptable to the Commission.

All such relevant matters would be required to be addressed to the Commission's satisfaction before owner's consent would be given to an application to Lithgow City Council for development consent.

Upon development consent being granted and lodgment of such guarantees as may be required, operations would be authorised by a Forest Materials Licence issued under the Forestry Act 1916. Such licence would incorporate conditions consistent with any relevant conditions of tender, the environmental impact assessment and conditions of development consent.

THE DEPARTMENT OF WATER RESOURCES

Introduction

The Department of Water Resources was created on the 1st January 1987 with a charter to ensure that the State's water resources are managed and used to provide maximum long-term benefit to the State, consistent with environmental requirements. The department has indicated the protection and enhancement of the aquatic and related environment, in co-operation with other agencies, as a key performance area in fulfilling this charter. Other major interests of the department relate to water allocation and supply, flood mitigation and control and the maintenance and improvement of water quality for the full range of beneficial uses.

The department sees the main constraints to sand winning on Newnes Plateau as the need to protect heath swamp areas, protect urban water supply and protect wild, scenic and recreational river values. The department would also require safeguards to protect surface and groundwater quality from exploration and extraction activities.

In 1987 the department sponsored a consultant's report on the State's wild, scenic and recreational rivers. This produced an inventory and classification of wild, scenic and recreational river reaches and advocated a process for managing these reaches based on limiting human changes to a defined acceptable level. This management concept was supported by a working group established by the previous government to advise on wild and scenic rivers. However, the report is yet to be formally endorsed by the present Government.

The major constraints on mining activities in the subcatchments relate to land use compatibility and the need for water quality protection. For this reason, the department is likely to encourage a stringent "no discharge" policy which encourages re-use of water for any extractive industry mine approved within the catchment of wild and scenic rivers and is likely to object to any intrusions in the viewscape of the river. In the Newnes Plateau this would apply from the river to the first ridgeline. Access associated with exploration activities would be included in this.

Groundwater Protection/Management

The areas of friable sandstone on Newnes Plateau are indicated in figure 3 of the report "Construction and Industrial Sand Resources of the Newnes Plateau". Most of the areas fall within the Newnes State Forest. The friable sandstone forms part of the Narrabeen Group of sedimentary rocks of Triassic age. These rocks generally contain good quality groundwater (less than 100 mg/L of salinity) and yields to bores generally range from 0.1 to 0.9 litres/second. There are 14 bores within the friable sand areas, 12 of which occur in a small area of Clarence. The rest of the area is practically devoid of bores.

The groundwater resource in the Narrabeen Group of rocks is generally useful for stock and domestic purposes. The permeability of rocks is low. The quarrying of the sandstone is unlikely to have much impact on the groundwater resource. The only concern is pollution of the resource from oils, fuels, garbage or refill material as a result of the quarrying operation. Safeguards are needed to prevent this. Other than this, groundwater resources present no specific constraints.

General groundwater management guidelines require:

(1) continued access to the groundwater contained in the fractured and porous sandstone formations at depth;

(2) protection of groundwater recharge areas (i.e. exposed sandstone) against pollution; and

(3) developer to maintain a monitoring program (perhaps for the existing bores and close to the quarrying operations) to ensure no resource degradation is occurring.
Water Quality Protection

The major threats to water quality from sand winning operations in this area include increased turbidity, siltation, fuels and oils, products of metal corrosion, sewage and sullage containing bacteria and plant nutrients. Sewage, fuels and oils have already been discussed under groundwater.

Licensing

In applying for a water entitlement the majority of factors which need to be addressed are referred to above and, specifically, in 5.2.1 Catchment Protection. Any application should give full details of the plans and strategies to protect water quality and groundwater. Other details required are covered by forms available from the Department (Application under Section 10 of the Water Act 1912, for a licence and application for a bore licence under Part V of the Water Act 1912).

Any discharge should have a SS (suspended sediment) level of less than 20 mg/L and a pH in the range 6.3 - 9.0.

The tailings dam should be maintained to ensure no anoxic waters with a pH in the range 6.3 - 9.0 are discharged.

The tailings dam would not normally require a licence under the Water Act. However, this could be required if the catchment area is proclaimed under the Act. Under the authority of the Clean Waters Act, the State Pollution Control Commission may direct special conditions to guard against dam failure.

THE DEPARTMENT OF LANDS

It appears that there are no Crown lands directly affected by extraction proposals in the Wolgan and West Coxs River catchments and only a small section of the Bungleboori Creek catchment is contained within Crown lands.

Any development application over Crown areas requires the Department of Lands' consent before lodgment. Also, the Department of Lands will need to be satisfied with the conditions of development approval before it grants a Permissive Occupancy (PO) for extraction. The conditions of the PO should be consistent with those of the development application for the sake of efficiency.

The Department of Lands would seek an automatic condition in any development approval which required its regular consent to each stage of the project and, in particular, consent to:

- amount of bank guarantee;
- progress and approaches to land rehabilitation; and
- variations in Crown royalties and other compensation sought by the Department.

In essence, the Department of Lands is the land owner where Crown land is concerned and has an obligation to ensure:

(a) an adequate monetary return is obtained for extraction; and
(b) the resultant landscape is the best achievable in the long-term public interest.

With regard to the techniques of extraction, pollution control and rehabilitation, the Department of Lands would rely upon the advice of the specialist authorities (Minerals and Energy, SPCC, NPWS and Soil Conservation Service).

THE DEPARTMENT OF MINERALS AND ENERGY

There is some potential locally for sand extraction to interfere with the establishment of coal pit top facilities but it should generally be possible to avoid such conflict by proper planning of future extraction areas and consultation with colliery operators.

Depth restrictions are imposed on coal mining leases under Section 62(6) of the Coal Mining Act (1973) in order to prevent damage to the surface. Such it is a condition/restriction on the coal lease which limits the depth for any other mining title over the same area. In most instances the depth restriction is not less than 20 metres, and as long as it does not prevent the colliery from mining the available coal resources, it can be whatever depth is appropriate (i.e. 50m, 100m, 200m). In the case of areas where sand extraction is proposed above the coal bearing land, the depth restriction should be devised to afford full recovery of the coal, extraction of the sand, and a separation of at least 20 metres between the two titles of operations (e.g. depth restriction of 50 metres for the coal lease and a depth restriction of 30 metres for any sand winning). An arrangement of this nature gives a sufficient barrier between the two operations and permits the recovery of the available resources, allowing for variations in the topography of the region.

The Department of Minerals and Energy's standard exploration licence conditions are included in Appendix D.

COUNCIL OF THE CITY OF GREATER LITHGOW

Detailed below are the broad areas considered to be constraints to the future development of sand winning on the Newnes Plateau of specific interest to the Council.

Lithgow Water Supply

The area of land comprising the Lithgow Water Supply Catchment (see figure 9) is considered a major constraint to any development. The integrity of this water supply must be maintained to ensure a high quality domestic water supply to the people of Lithgow City and the residents of Dargan. It is therefore recommended no development be permitted within the Lithgow City water catchment area and that all time is runoff from disturbed areas be directed into the said catchment.
Rural Roads on the Plateau and Arterial Roads Serving Lithgow Generally

The roads serving the Plateau are of a gravel or similar standard and the effect of increased traffic movements, particularly large haulage vehicles, will quickly result in a deteriorating surface.

This will have implications for the adjoining sensitive environment (soil erosion) and also for Council’s road maintenance program.

The length and quality of access roads servicing extracting sites is of particular concern. Major arterial routes such as the Bells Line of Road and the Great Western Highway may also be a major constraint on the location of a development area. Any development site that includes haulage routes that pass through urban areas will need close investigation. Where a development proposes to use local roads for haulage purposes, Section 94 contributions will be imposed to upgrade the road to a minimum pavement width of 7.2m with a stabilised pavement. The extent of such work will be assessed at the development application stage. It may be decided that alternative haulage routes need to be built to preserve the quality of the existing residential and community area.

Tourism

The potential impact of sand winning and related development on the existing and future tourist potential of the Newnes Plateau area is of major concern to Council.

The potential for increased traffic problems (between tourist vehicles and large haulage vehicles) should be considered a constraint on development.

The selective location of pit sites — invisible, or suitably screened, from items of tourist, scientific or heritage interest — is considered to be a constraint on the location and size of pit sites.

SOIL CONSERVATION SERVICE

Areas of concern for the Service relate principally to the mitigation of land degradation. It is involved with land use planning, land management and rehabilitation of degraded lands applicable under the Soil Conservation Act 1938.

The principal statutory controls relevant to the Newnes Plateau are those relating to the management of Protected Lands under the Soil Conservation Act 1938; and the rehabilitation of mined lands under the Coal Mining Act 1973 and Mining Act 1973, in the context of coal mining on the Newnes Plateau.

Construction techniques to be used on water and silt detention structures are as follows:

(i) All construction is to be carried out layer by layer to obtain good compaction (i.e. clay is to be evenly spread in approximately 0.1m layers and not dumped into the bank or spilled over the back);

(ii) No logs, large rocks, trees or debris to be left in constructed wall;

(iii) Natural vegetation to be left undisturbed, particularly below spillway and in-flow areas. A properly designed spillway should be provided on permanent structures;

(iv) The spillway and spill outlet must be level in cross-section;

(v) All disturbed areas, not within storage area, to be immediately sown with an appropriate seed mixture and fertiliser;

(vi) All batters should be 1:3 (V:H) or flatter; and

(vii) Structures to be lined with an impermeable membrane or sealed with Bentonite to ensure water holding capacity. Rate of Bentonite application to be determined by laboratory testing.

Protected Lands

The Soil Conservation Act 1938 requires owners, occupiers and holders or grantees of timber rights to make application to the Catchment Areas Protection Board for an authority before destroying or injuring trees growing on protected land.

“Protected land” means land mapped by the Catchment Areas Protection Board as having slopes generally in excess of 18 degrees from the horizontal; land within or within 20 metres of the bed of any river, stream, lake, lagoon or swamp mapped or listed by the Board; or land mapped by the Board as being environmentally sensitive, or affected by or liable to erosion, siltation or degradation.

The Soil Conservation Act 1938 provides that, unless the authority of the Catchment Areas Protection Board has been obtained, a person shall not:

(a) ringbark, cut down, fell, poison or otherwise destroy, or cause to be destroyed;

(b) top, lop, remove or injure or cause to be injured, any tree (tree includes saplings, shrub and scrub) on protected land.

Maps showing protected land in the vicinity of the Newnes Plateau are deposited in the office of the District Soil Conservationist at Lithgow and may be inspected by any person during normal office hours without payment of a fee.

Protected land maps are also available for inspection at the local offices of a number of other departments, including the Department of Lands and the Forestry Commission.
With regard to the areas of friable sandstone on Newnes Plateau (indicated in figure 3 of the report "Construction and Industrial Sand Resources of the Newnes Plateau") most of the areas fall within the Newnes State Forest and some privately owned lands. There appears, subject to field checking, to be areas of protected land on the plateau coinciding with the mapped resources.

Application forms for permits to clear can be obtained from any Soil Conservation Service office, which will accept the completed applications on behalf of the Catchment Areas Protection Board.

Any person contravening these provisions of the Soil Conservation Act is liable to a fine of up to $10,000 for each offence.

It is recommended that all matters relating to soil conservation issues be referred to the Soil Conservation Service before development consent by council.

NATIONAL PARKS AND WILDLIFE SERVICE

The National Parks and Wildlife Service has responsibility for:

(i) the protection of native flora and fauna in NSW;
(ii) the protection of Aboriginal sites in NSW;
(iii) the conservation and management of national parks, nature reserves, State recreation areas, Aboriginal areas and historical sites; and
(iv) providing appropriate recreational opportunities in these reserve systems.

The National Parks and Wildlife Service has various interests in the Newnes Plateau:

(a) Areas of interest:—
1. Dargans Creek Nature Reserve proposal.
2. Proposed additions to Blue Mountains and Wollemi National Parks for boundary rationalisation.
3. Catchment protection for the Wollangambe, Bungleboori and Wolgan headwaters.
4. Access suitable for tourists to the Glow Worm Tunnel in Wollemi National Park and potential educational Aboriginal sites such as Black Fellows Hand Cave.

(b) Areas of responsibility:—
1. Aboriginal sites. All Aboriginal sites are protected under the National Parks and Wildlife Act 1967. No sites can be destroyed without the consent of the Director of the National Parks and Wildlife Service. The Newnes Plateau is the major focus of prehistoric Aboriginal habitation in the Blue Mountains. Any sand mining proposals will require an archaeological survey to be carried out by a qualified archaeologist. A list of consultant archaeologists can be obtained from:

The President,
Australian Association
of Consulting Archaeologists,
Box 214, Holme Building,
SYDNEY UNIVERSITY 2006.

2. Rare, endemic and threatened plants and animals and their habitats — in particular, swamps above 1000m.

The shrub swamps above 1000m contain rare and threatened species which do not occur in Blue Mountains or Wollemi National Parks. Therefore, the swamps on Newnes Plateau are highly significant for scientific purposes. Preservation of examples of such areas intact is necessary for scientific research into past environmental changes.

Any sand mining proposals would require a flora and fauna survey to ascertain the significance of the communities present. Advice can be sought from the:
National Parks and Wildlife Service,
Blue Mountains District Office,
Heritage Centre,
Gowetts Leap Road,
BLACKHEATH 2785
Ph. (047) 878877.

3. Conservation of the historic precinct of the Newnes Railway alignment, Glow Worm Tunnel, the Old Coast Road and the Newnes Ruins.

These historic resources make the Newnes Plateau very significant. The historic roads on the plateau provide access for tourists to historic sites. Before any major development takes place an assessment of the significance of historic sites would be required and the impact of the proposal on the tourist and recreational use of the area.


The rivers that flow into the National Parks have high water quality and should not be disturbed. Therefore any proposals for sand mining should ensure that stringent sediment control structures are designed and maintained to ensure the catchments are protected.


The Newnes Plateau is known for its outstanding spectacular views of rugged natural scenery. A key consideration in any development proposal is its effect on one of the largest wilderness areas in NSW and an area of rugged beauty used by bushwalkers, campers and car tourers.
APPENDIX B
CROWN LANDS HERITAGE LANDS SYSTEM OF RESERVES

In its Heritage lands System of Reserves, the Crown Lands Office administers regional land management. The Department of Lands is adopting a more active approach to the planning and management of the remaining Crown Estate. In the Central West Region, which includes the Newnes Plateau, the Department of Lands is developing a coordinated system which attempts to address management of those Crown lands which do not fit the NPWS or Forestry models.

Multiple/sustainable use is the emphasis of this “Heritage lands” system — land is retained for public purposes such as resource conservation, outdoor recreation and landscape enhancement. Economic uses such as agriculture and resource extraction are permitted within some Heritage lands, so that income can be derived for their operation and state development needs are met. Any extraction is subject to stringent environmental conditions being met.

In preparing management plans and strategies for the Heritage lands system, advice is sought from the various specialist authorities such as NPWS, Forestry Commission, Mineral Resources, Soil Conservation Service etc. Where extraction is to occur within Heritage lands, the Department of Lands would prefer to see it operate to an approved environmental management and restoration plan. Such a plan would have the endorsement of all the relevant specialist authorities and a bond or bank guarantee would be sought from the developer. Usually the bond would be adjusted annually so that, should the developer default, it equates with the current cost of restoration.

Figure 13 shows the areas relevant to Newnes Plateau which have been established as part of the Lithgow Heritage lands Reserves.

APPENDIX C
LIST OF CONSTRAINTS IN THE VARIOUS CATCHMENTS

Wallangambe Creek
Identified Constraints are:
1. Catchment protection of waters flowing to Blue Mountains National Park
2. Scenic, wilderness and recreational values
3. Shrub/heath swamps
4. Tourist roads
5. Forestry interests
6. Coal reserves
7. Historic roads and areas
8. Aboriginal relics
9. Department of Lands requirements (see Appendix B)

Bungleboori Creek
Identified Constraints are:
1. Catchment protection of waters flowing to Wollemi and Blue Mountains National Parks
2. Scenic, wilderness and recreational values
3. Shrub/heath swamps
4. Tourist roads
5. Forestry interests
6. Coal reserves
7. Historic roads and areas
8. Aboriginal relics

Wolgan River
Identified Constraints are:
1. Catchment protection of waters flowing to the Wollemi National Park
2. Scenic, wilderness and recreational values
3. Shrub/heath swamps
4. Tourist roads
5. Forestry interests
6. Coal reserves
7. Historic roads and areas
8. Aboriginal relics

Coxs River
Identified Constraints are:
1. Scenic, wilderness and recreational values — in particular the Zig Zag Reserve. Extractive activity should not have an impact on the visual quality of the Scenic Hill drive and Zig Zag Reserve outlook or disturb the formulation of the historic routes (Bells Line of Road and Old Newnes railway) and their curtilage/buffer area
2. Shrub/heath swamps
Tourist interests
4. Forestry interests
5. Coal reserves
6. Aboriginal relics

Lithgow Water Supply
Identified Constraints are:
1. Catchment protection of City Water Supply
2. Shrub/heath swamps
3. Aboriginal relics
4. Forestry interests

Dargans Creek
The Dargans Creek catchment has been identified by some agencies as being important. To determine the significance of the constraints on development, the Department of Lands and National Parks and Wildlife Service should accelerate the land assessment of the catchment.

Constraints include:
1. Catchment protection for rare and endangered plants
2. Rare and endangered plants
3. The area represents the limit of distribution of eastern and western plants
4. Scenic and recreational value. There is a need for more detailed assessment of Heritage and other Crown lands leading to a reserve management strategy. This would incorporate:
   - analysis of recreation potential of old railway dams plus surrounding recreation and conservation buffers;
   - repair works needed/potential for extraction within existing disturbed areas;
   - potential for exchange of Crown and freehold lands to obtain more rational boundaries; and
   - protection of the visual quality of the area, as viewed from:
     - Chifley Road;
     - Railway;
     - Lookouts from Crown Reserves at Mt York and Hassans Walls; and
   - zoning of areas of high nature conservation value plus production of a strategy for their management which meets NPWS requirements.
5. Aboriginal sites
6. High altitude shrub/heath swamps
7. Catchment contains large undisturbed areas
8. Proximity to residential development

APPENDIX D
DEPARTMENT OF MINERALS AND ENERGY'S EXPLORATION LICENCE CONDITIONS*

NOTE: These conditions are for minerals and are included for reference purposes only.

A. Standard Conditions**
   (included in all licences)
1. Protection for Shafts and Excavations
   Operations shall be conducted in a manner which does not cause any danger to persons and stock and the registered holder shall, to the satisfaction of the Minister, provide and maintain adequate protection around each excavation opened up or used by the registered holder.

11. (a) Any topsoil which may be disturbed shall be removed separately for replacement, as far as practicable, and as work progresses all other residues shall be returned to the excavations made and all worked ground shall be levelled off and the topsoil previously removed shall be replaced and levelled and sides of the cut shall be battered to a safe low angle. All depressions shall be effectively drained and such filling, levelling, battering, and draining shall be done to the satisfaction of the Minister.

   (b) The registered holder shall plant or sow such grasses, shrubs or trees in the replaced topsoil as may be considered necessary by the Minister to control erosion.

16. Upon the expiration or prior determination of the authority the registered holder shall remove all machinery and buildings and the subject area shall be left in a clean and tidy condition to the satisfaction of the Secretary.

17. The registered holder shall ensure that runoff from any worked area, including the overflow from any depression or ponded area, shall be discharged in such a manner that it will not cause erosion.

18. All trees, shrubs and undergrowth which the registered holder cuts down, removes or damages for the purpose of the operation shall be disposed of by the registered holder as directed by and to the satisfaction of the Secretary.

19. Upon completion of operations or the prior determination of this authority, the registered holder shall rehabilitate any areas disturbed to the satisfaction of the Minister.

*Reproduced with permission of Department of Minerals and Energy
**Numbers refer to Conditions of Authority 1986
20. Roads, Tracks, Fences, Transmission and Telephone Lines

(a) The registered holder shall not excavate within 15 metres of the boundaries of any road unless with approval of the Minister first had and obtained and subject to such conditions as he may stipulate.

(b) The registered holder shall not conduct any operations under any road at a depth less than twenty metres from the surface thereof unless with the approval of the Minister first had and obtained subject to such conditions for the prevention of damage to the surface of any road as may be considered necessary by the Minister.

(d) Notwithstanding that the registered holder shall have complied with this condition, the registered holder shall pay to the local Council, the Department of Lands, the Commissioner for Western Lands or the Commissioner for Main Roads, the cost incurred by such Council or Department or Commissioners of making good any damage to any road caused by operations carried on by or under the authority of the registered holder or any person claiming through or under the registered holder.

(e) AND THE REGISTERED HOLDER HEREBY COVENANTS with the said Council that the registered holder will pay to the said Council of making good any such damage caused as aforesaid and the registered holder hereby covenants with the said Commissioners that the registered holder will pay to the said Commissioners the cost incurred by the said Commissioners of making good any such damage caused as aforesaid.

AND IT IS HEREBY AGREED AND DECLARED that the amount to be paid by the registered holder under the provisions of this clause shall include in addition to the cost of all necessary labour and materials, all costs and expenses reasonably incurred in and about the making of surveys and preparations of plans and specifications and estimates, the supervision and inspection of the works, and all administration and overhead costs and expenses of the Council or the Department of Lands or the Commissioner for Western lands or the Commissioner for Main Roads as the case may be, related or attributable to the works undertaken to make good any damage caused to any road. A certificate under the hand of the Town or Shire Clerk of the local Council or the Secretary for lands, the Commissioner for Western lands or the Commissioner for Main Roads or the person for the time being acting as such Clerk.

22. The registered holder shall not interfere with or impede the use of any track on the subject area or endanger its stability in any way by reason of the operations carried out.

23. The registered holder shall not interfere in any way with any fences on or adjacent to the subject area unless with the approval in writing of the owner thereof or the Minister first and obtained and subject to such conditions as the Minister may stipulate.

25. The registered holder shall so conduct the operations as not to interfere with or impair the stability or efficiency of any telephone or power transmission line traversing the subject area.

27. The registered holder shall restrict the use of any road or track within the subject area during wet weather to prevent any damage to such road or track.

35. The registered holder shall conduct operations in such a manner as not to cause or aggravate soil erosion and the registered holder shall observe and perform any instructions given or which may be given by the Secretary with a view to minimising or preventing soil erosion.

52. Prohibition of Firearms

The registered holder shall not allow any firearms to be brought onto the subject area.

56. (a) The registered holder shall provide and maintain to the satisfaction of the Minister efficient means to prevent the contamination, pollution or siltation of any stream or watercourse or catchment area or any undue interference to fish or their environment and shall observe any instruction given or which may be given by the Minister with a view to preventing or minimising the contamination, pollution, or siltation of any stream, water course, or catchment area or any undue interference to fish or their environment.

62. The registered holder shall not keep nor permit to be kept on the subject area any dog unless chained up or kept under proper control.

82. The registered holder shall observe any instructions which may be given by the Secretary with a view of minimising or preventing public inconvenience or damage to public or private property.
100. The registered holder shall take all precautions against causing an outbreak of fire and shall comply with the provisions of any regulations under the Bush Fires Act, 1949, as amended and shall not burn off any grass, foliage or herbage unless with the consent of the owner or occupier and the local fire authority.

106. The minimum number of tracks shall be used for access from one site of operations to another and such tracks shall be positioned as far as may be practicable so that they do not cause any unnecessary damage to the land.

107. The registered holder shall not interfere with the flow of water in any stream or watercourse and shall conduct operations so that they cause no pollution of any stream or watercourse.

108. The registered holder shall not deposit any refuse except in properly constructed containers which shall be regularly removed by the registered holder from the subject area and the registered holder shall maintain the area in a clean and tidy condition at all times.

109. Any gates within the subject area or any other gates used by the registered holder shall be closed or left open in accordance with the requirements of the owner or occupier.

110. The registered holder shall not carry out any operations on the subject area unless with the approval of the Minister first had and obtained and subject to such conditions as he may stipulate.

111. The registered holder shall lodge with the Secretary within 14 days after the expiration of each six (6) months of the term of the licence a written report to the satisfaction of the Minister containing particulars of:

(a) all surveys and other operations including expenditure thereon carried out by the registered holder during each six months of the term of the licence;

(b) the proposed exploration to be conducted during the remainder of the term of the licence.

112. The registered holder shall forward to the Secretary upon the expiration or prior determination of the licence a comprehensive written report to the satisfaction of the Minister containing full particulars of:

(a) all surveys and other operations including expenditure thereon carried out by the registered holder during the period of the licence or the last renewal thereof as the case may be;

(b) results of such surveys and other operations and conclusions reached by the registered holder on the basis thereof as to the economic mineral potential of the subject area.

113. The registered holder shall forward to the Secretary such further reports on surveys and other operations as the Minister may from time to time require.

114. The registered holder shall forward with every report all such maps, plans and data as are necessary to satisfactorily interpret and evaluate the report.

115. The registered holder shall furnish such notifications and particulars and preserve such cores and samples as required by Section 42B of the Mines Inspection Act 1901, as amended.

116. Where the registered holder proposes to drill a drillhole or borehole he shall ensure:

(a) all cored holes are accurately surveyed and permanently marked so that their location can be readily ascertained;

(b) all holes whether cored or otherwise are sealed so as to prevent collapse of the surrounding surface;

(c) all flowing drillholes or boreholes are permanently sealed with cement plugs to prevent surface discharge of groundwaters;

(d) that where any drillhole or borehole encounters natural or noxious gases, it is plugged or sealed so as to prevent their escape;

(e) that where any drillhole or borehole encounters an artesian or sub-artesian flow that it is sealed effectively to prevent contamination of aquifers.

117. Unless otherwise directed by the Minister, the registered holder shall expend an amount of $ on operations conducted on the area during the term of the authority, of which not less than $ shall be expended during the first twelve months of such term.

118. Where the registered holder intends to conduct any operations authorised by the authority in or adjacent to any river, stream, creek, tributary, lake, dam or reservoir, the subject of a proclamation under the Fisheries and Oyster Farms Act 1935, relating to or prohibiting the taking of species of fish, the registered holder shall not less than seven (7) days before commencement of such operations give notice in writing to the local Inspector of Fisheries setting out details of such operations and the river, stream, creek, tributary, lake, dam or reservoir that shall or may be affected thereby.
119. Upon abandonment or completion of any drillholes within any site the registered holder shall fill in or suitably plug such drillholes and shall leave the site in a clean and tidy condition to the satisfaction of the Secretary, and the registered holder shall comply with any instructions given or which may be given by the Minister regarding the rehabilitation of the land.

120. The registered holder shall not drill nor permit to be drilled any hole in excess of 200 millimetres in diameter unless with the approval of the Secretary first had and obtained and subject to such conditions as he may stipulate.

127. (a) The registered holder shall not knowingly destroy, deface, or damage any Aboriginal relic or other item of archaeological significance within the subject area and shall take every precaution in drilling, excavating or disturbing the land against any such destruction, defacement or damage.

(b) The registered holder shall within twenty-four (24) hours notify the Director of National Parks and Wildlife Service of the discovery of any such relic or other item referred to in paragraph (a) of this condition.

(c) The registered holder shall not continue any operations likely to interfere with or disturb any such relic or other item without the concurrence of the Director of National Parks and Wildlife Service, provided that such concurrence must be given or refused within sixty (60) days of the notification referred to above.

131. (a) Where a Regional Mining Engineer is of the opinion that any condition of this authority relating to the working of the subject area or any provision of the Mining Act, 1973, relating to the working of the subject area is not being complied with by the registered holder, he may, in writing, direct the registered holder:

(i) to cease working the subject area in contravention of that condition or Act; and

(ii) to carry out within a specified time works at the expense of the registered holder necessary to rectify or remedy the situation.

(b) Where the Engineer issues any direction to the registered holder pursuant to paragraph (a) of this condition the registered holder shall comply with the direction.

134. (a) A security in the sum of $ shall be lodged with the Minister by the registered holder for the purpose of ensuring the fulfilment by the registered holder of his obligations under this authority. If the registered holder fails to fulfill any one or more of such obligations, the said sum may be applied at the discretion of the Minister towards the cost of fulfilling such obligations. For the purpose of this clause the registered holder shall be deemed to have failed to fulfill the obligations of this authority if he fails to comply with any conditions or provision hereof, or any provision of the Act or regulations made thereunder, or any condition or direction imposed or given pursuant to a condition or provision hereof or of any provision of the Act or regulations made thereunder.

(b) The registered holder shall provide the security required by sub-clause (a) hereof in one of the following forms:

(i) cash

(ii) an interest-bearing deposit in the name of the Minister in such form and with such institution as may from time to time be approved by the Minister

(iii) a banker's certificate or bond in such form and given by such surety as may from time to be approved by the Minister

Variations to Conditions

Depending on the particular exploration methods to be employed, and other specific circumstances, deletions or additions may be made to the standard exploration licence conditions. Common variations which may be relevant to the Newnes Plateau include the following:

Pitting, Costeining, Trenching, Line Clearing and Track Construction

Add Schedule EL Condition 6:

6. The registered holder shall not open up more than one hectare of the surface of the subject area at any one time unless with the approval of the Minister first had and obtained and subject to such conditions as he may stipulate.
Bulk Sampling
Add Conditions of Authority No. 126, Schedule EL
Condition 8:

126. In the event that the registered holder shall
win mineral from the subject area during bulk
sampling operations, the registered holder
shall pay to the Minister a royalty at such as
is, at the time the minerals are won,
prescribed for the purposes of Section 97(1)
of the Mining Act, 1973, in respect of a
mining lease, and the royalty shall be
payable in accordance with the provisions
of the Mining Act 1973 and the Regulations
thereunder.

Schedule EL-8
The registered holder shall restrict the size of bulk
samples taken from the subject area to not more than
sixty cubic metres of material per annum unless with the
approval of the Minister first had and obtained and
subject to such conditions as he may stipulate.

Caldweld Drilling (large diameter drilling)
Delete conditions of Authority Nos 119 and 120 and
add the following conditions:
Operations shall be conducted in such a manner as not
to cause any danger to persons and stock, and the
registered holder shall provide and maintain adequate
protection to the satisfaction of the Minister around
each drill hole or excavation opened up or used by the
registered holder.

At least fourteen days prior to commencing any
drillholes in excess of 200 millimetres in diameter, the
registered holder shall notify the Regional Mining
Engineer of his intention so to do and shall supply such
information as may be required by the Regional Mining
Engineer in order to determine the precise location of
the proposed drillholes.

All drillholes in excess of 200 millimetres in diameter
shall be rehabilitated by (a) removing the casing, (b)
returning the residues and (c) replacing the topsoil, and
the registered holder shall observe any direction in this
regard which may be given by the Minister.

The registered holder shall not drill, nor permit to be
drilled, any hole in excess of 1,000 millimetres in
diameter unless with the approval of the Minister first
had and obtained and subject to such conditions as he
may stipulate.

The registered holder shall not open up more than
five (5) Caldwell drillholes at any one time.

Catchment Areas
Add Conditions of Authority Nos. 53a, b.

53. Catchment Areas
(a) Operations and/or works shall be carried out
in such a manner as not to cause any
pollution of the Catchment Area/s.

(b) If the registered holder is using or about to
use any process which in the opinion of the
Minister is likely to cause contamination of
the waters of the said catchment area/s the
registered holder shall refrain from using or
cease using as the case may require such
process within twenty four (24) hours of the
receipt by the registered holder of a notice in
writing requiring the registered holder so to
do.

(c) The registered holder shall comply with any
regulations now in force or hereafter to be in
force for the protection from pollution of the
said catchment area/s.
APPENDIX E
GLOSSARY

Anoxic waste — material lacking in oxygen
Consent Authority — in relation to a development application is the Council of the City of Greater Lithgow.

Designated Development — any class or description of development that is declared pursuant to section 29 or 158 of the Environmental Planning and Assessment Act.

Extractive Industry — the winning of extractive material not being coal, petroleum or any mineral within the meaning of the Mining Act 1973.

In situ rock — in its original place.

Partial Retention — management activities remain visually subordinate to the characteristic landscape when managed according to the partial retention visual quality objective.

Pitting — method of testing for grade of material.

Site rehabilitation — action during the duration of the development to ensure the land is in a stable state for the proposed future use of the land.
A composite map entitled "Newnes Plateau Sand Winning Management Strategy" at a scale of 1:25 000 of the information shown on the following maps is available for purchase from the Information Centre, Department of Planning.
INTERESTS IN NEWNES PLATEAU

NATIONAL PARK

HEATH SWAMP

TOURIST ROAD

fig. 4
Vegetation at Dargan's Creek

- **Open Forest of E. sieberi - E. piperita also**
  with H. haematocephala and understorey of
  *Davidia latifolia*, *Acacia dealbata*,
  *Telopea speciosissima* and *Grevillea laurifolia*.

- **Open-Woodland Eucalyptus mallee on sites with**
  poor drainage and associated with swamps.
  Understorey of *Bankia marginata*,
  *Leptospermum* spp., *Hakea decumbens*,
  *Petrophile* sp. and *Cardinia* sp.

- **Open Forest of E. iberida - E. haematocephala**
  with *E. blakelyi*, *E. mannifera* in sheltered water
  courses and slopes.

- **Closed Scrub and Closed Heath with Leptospermum* sp
  *E. greggiana*, *E. phoenicea* var. nova, *E. greggiana* var.
  *Casuarina cunninghamiana*, *C. bidwillii*.
  *Banksia marginata*,
  *Eucryphiopsis* sp. and *Petrophile* sp. Located on rocky
  and exposed sites and particularly well-formed
  on 
  west facing slopes, typically stunted
  vegetation with high heath.

- **Swamp** located in water courses with *Leptospermum* spp.
  and *Chionia* sp. and disfigured by *E. mannifera*,
  *Cuileonella shagournrensis* and orchids also occur.

**Fig. 7**

**Newnes Plateau**

Kilometres
ROADS and TRAFFIC AUTHORITY
INTERESTS IN NEWNES PLATEAU

STATE HIGHWAY
MAIN ROAD
TRUNK ROAD
Possible deviation (long term)
SUGGESTED PROFILE FOR QUARRY

NEWNES PLATEAU

fig. 10
DEPARTMENT OF MINERALS & ENERGY

COAL INTERESTS

NEWNES PLATEAU

fig. 11
Sites of highest prospectivity

Fig 12
LITHGOW HERITAGE LANDS RESERVES

HERITAGE LANDS RESERVES

NEWNES PLATEAU

fig. 13
NEWNES PLATEAU
QUESTIONS AND ANSWERS

DEPARTMENT OF PLANNING

MANAGEMENT STRATEGY FOR WINNING OF SAND
INTRODUCTION

Newnes Plateau is a large, elevated tableland about 100km north-west of Sydney near Lithgow. It is well known for the spectacular views of the cliffs and escarpment complexes surrounding the plateau. The plateau is an environmentally sensitive area with rare vegetation, untouched natural features and a unique archaeological history. It also contains extensive and valuable sand resources which will play an important role in supplying the Sydney region's future construction and industrial sand requirements.

The Department of Planning convened an interdepartmental working party whose objectives are to develop a coordinated approach to government decision making in the Newnes Plateau area and to help resolve development and environmental issues. As a first step the working party has prepared a Management Strategy for Newnes Plateau, which provides for the winning of the construction and industrial sand resources within the context of protecting the important qualities of this environmentally sensitive location. Other issues may be considered by the working party at a later stage.

This brochure answers questions likely to be raised about the Management Strategy copies of which are available from the Department of Planning’s head office, 175 Liverpool Street, Sydney. It will also be available from the Greater Lithgow City Council and the Department of Minerals and Energy, 8-18 Bent Street, Sydney.

You are invited to make comments on any part of the Management Strategy. Written submissions should be forwarded to:

The Secretary
Department of Planning
P.O. Box 3927 GPO
SYDNEY 2001

If you have any enquiries, please contact the department on 266 7111.

WHY WAS THE STRATEGY PREPARED?

The Management Strategy was prepared both to establish guidelines for the winning of sand resources and also to prevent damage to the environment. A number of government bodies, industries and organisations have different, and sometimes conflicting, interests in the plateau. As a result there needs to be a framework for decision making: the Management Strategy establishes this framework and will enable a balance to be achieved between conflicting interests and uses.

WHAT ARE SOME OF THE POTENTIALLY CONFLICTING USES AND ISSUES?

In addition to the sand resources, much of the Newnes area has been set aside for prospecting under the Coal Mining Act and there are already significant coal mining activities underway. Also, state forests are being harvested for hardwood stands of timber. On the other hand, the area also contains Aboriginal relic sites, areas of rare flora, historic buildings and scenic landscapes.

HOW IMPORTANT ARE THE SAND RESOURCES?

The Newnes Plateau contains very large and extremely valuable resources of sand suitable for a wide range of construction and industrial uses. These deposits are already an important source of construction sand for the Sydney region, particularly for use in the manufacture of concrete products such as tiles and masonry blocks. They are also the principal source of construction sand for the Blue Mountains and Lithgow regions.

WHAT IS THE DEMAND FOR SAND RESOURCES?

The reserves of construction sand from currently available sources in the Sydney region are limited and cannot meet demand. Substantial additional resources will need to be made available for extraction to meet future requirements.
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The reserves of construction sand from currently available sources in the Sydney region are limited and cannot meet demand. Substantial additional resources will need to be made available for extraction to meet future requirements.
CAN THE SAND RESOURCES BE FOUND ELSEWHERE?

There are only a small number of resources which could conceivably be developed to supply the Sydney region's future needs. However most of these resources are subject to severe environmental and land use constraints which may restrict or even prevent future extraction. In addition, none of these deposits has the type of sand obtainable from the deposits on the Newnes Plateau. Therefore, as the existing sources become depleted or sterilised Newnes Plateau will play an increasingly important role in supplying the Sydney region's construction sand requirements.

WHAT ARE THE ENVIRONMENTALLY SENSITIVE AND SIGNIFICANT FEATURES OF THE PLATEAU?

- the cliffs and escarpment complexes surrounding the plateau
- archaeological sites
- rare endangered or restricted plant communities or species including high altitude open heath, high altitude woodland above 1050 m and high altitude shrub-swamps.

Also, the integrity of adjacent national parks (Wollemi and Blue Mountains) and the natural landscape features in the other surrounding areas are of great importance.

WHY IS THE NEWNES PLATEAU ENVIRONMENTALLY IMPORTANT?

- it represents one of the highest elevated areas in the Sydney Basin and is the largest plateau remnant in the Blue Mountains;
- it includes major portions of the headwater of the Wolgan, Bungleborri and Wollangambe streams which flow into adjoining national parks;
- it has an Aboriginal history which can be traced back for thousands of years and represents a major focus of prehistoric Aboriginal habitation in the Blue Mountains;
- it contains many natural features in remarkably good condition;
- it is the western limit of the Sydney Basin environment, beyond which significantly different natural systems operate; and
- it is an important social, cultural, recreational and educational resource for Sydney's population.

WHAT DOES THE STRATEGY DO?

The strategy summarises the environmental constraints and identifies areas where sand winning activities will have the least impact. This information is incorporated into a Plan of Management which consists of:

- policy indications for the location and control of exploration and sand extraction in the area;
- specific guidelines for site assessment; and
- constraints and specific requirements identified by various bodies, including the Greater Lithgow City Council.

HOW WILL THE STRATEGY BE IMPLEMENTED?

It is intended that the strategy will provide a framework for decisions by the various State and local bodies involved in managing the plateau. The strategy is not a statutory plan under the Environmental Planning and Assessment Act 1979. Initially, it will be applied as an interim measure by the various bodies. Following the exhibition and consideration of submissions, Government endorsement of the strategy will be sought.
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LOCALITY MAP

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