

An aerial photograph showing a coastal landscape. In the foreground, there is a large, flat, green field. In the middle ground, a bay or inlet is visible, with a long pier extending into the water. The background features rolling hills with sparse vegetation and several buildings scattered across the slopes.

ENVIRONMENTAL IMPACT STATEMENT

EXPANSION OF THE
CATHERINE HILL BAY
COAL PREPARATION PLANT

MAY 1987

JOHNSTONE ENVIRONMENTAL TECHNOLOGY PTY. LIMITED
AND
LONGWORTH & MCKENZIE PTY. LIMITED

ENVIRONMENTAL IMPACT STATEMENT
FOR
EXPANSION OF THE COAL PREPARATION PLANT
AND FOR THE DEVELOPMENT OF
NEW COAL HANDLING FACILITIES
AND
COAL WASHERY REJECT EMPLACEMENT AREAS
AT
CATHERINE HILL BAY N.S.W.
FOR
COAL & ALLIED OPERATIONS PTY. LIMITED

Initial investigation work and evaluation of environmental impact for expansion of the Catherine Hill Bay Coal Preparation Plant was undertaken under a contract to Longworth & McKenzie Pty. Limited, while the Study Director and other principal authors of this report worked for that company. Further evaluation of the proposed Catherine Hill Bay developments, final assessment of environmental impact and amendment and completion of the Environmental Impact Statement was undertaken under a contract from Coal & Allied Operations Pty. Limited to Johnstone Environmental Technology Pty. Limited, where the Study Director and principal authors now work, in conjunction with Longworth & McKenzie Pty. Limited.

MAY 1987

4.4 Planning Context

The Catherine Hill Bay area is a part of the undeveloped coastal land between the urban development in the City of Lake Macquarie at Swansea and Wyong Shire at Lake Munmorah. It forms a natural buffer between these two areas, which has been recognised as being strategically important in preventing the urban areas of Newcastle and the Central Coast joining up (Ref. 4). The area of the proposed developments is broadly within the Department of Environment and Planning's "Inter City Environmental Zone" where "further extensive urbanisation around the southern shores of Lake Macquarie" should be prevented and where it is strategically important to retain the rural and undeveloped character of the land. This includes the Company's freehold land near Catherine Hill Bay, which is still there because it has been a part of the Colliery Holding. Similarly the character of the coastal villages was developed by the coal mining activities they were built to serve.

Planning instruments and various other orders recognise these factors. The Environmental Protection - Scenic zoning of the Company's land in the City of Lake Macquarie prevents ribbon urban development there and the agreement between the Company and the Minister for Planning and Environment for Government acquisition of part of the Company's land abutting the Munmorah State Recreation Area will protect this land (see Figure 9). This includes Moonee Beach, which is owned by the Company at the present time.

It is recognised that use of the Company's freehold land to the east of the Pacific Highway, where the development is proposed, must be considered in terms of the longer term relationship of open space and coastal lands protection versus urban or other permanent change in the land use. Coal mining activity is a transient use, which is totally compatible with retention of the open space buffer function of the land. All uses proposed in this development, including coal washery reject disposal, fit into this category.

At present the Company operates a coal mine and a Coal Preparation Plant with stockpiles, coal reject emplacement and coal loading jetty at Catherine Hill Bay. These facilities are an integral part of the local environment and relate to the historic development of the settlements of Catherine Hill Bay and Middle Camp, both of which have been classified by the National Trust as Urban Conservation Areas because they are good examples of (Mining) company residential development in the late 19th century.

4.5 Wallarah Colliery Holding

The extent of Wallarah Colliery Holding is shown on Figure 2. Wallarah Colliery and Moonee Colliery extract coal from this Holding from the Wallarah and Great Northern Seams by way of two separate operations (the Wallarah Colliery at Crangan Bay and Moonee Colliery at Catherine Hill Bay). Both mine entries are used for men and materials access and for coal production. The extent of underground workings is shown in Figure 26.

4.6 Landform and Topography

The Catherine Hill Bay/Wallarah Colliery coal mining facilities are located within a narrow coastal strip of land separating Lake Macquarie and the Pacific Ocean. The peninsula is approximately 3 km wide with a main ridge, generally at R.L. 70 m but rising to a maximum height of R.L. 90 m, which is the watershed for valleys along the eastern and western sides of the ridge. These valleys, separated by secondary spurs along the main ridgeline, are generally steep sided with shallow grades across the valley floor. The Pacific Highway is located along the main ridge line.

Walarah Colliery and the Catherine Hill Bay Coal Preparation Plant are located on opposite sides of the main ridge; the Colliery on the western side and the Coal Preparation Plant at Catherine Hill Bay and Moonee Colliery on the eastern side. Catherine Hill Bay village is located on the northern side of a secondary spur that forms the southern headland of Catherine Hill Bay. This spur lies between two

10.12 Rehabilitation and Landscape Design

The emplacement design, the configuration of the contours, the extent of the emplacement and the proposed rehabilitation procedure for the final land surface have been designed to encourage natural regeneration of a Scrub-Woodland formation, which will ultimately blend back into the existing landscape. Important considerations in the design process included:

- (i) restrictions to the height of the emplacement so as to not exceed the height of the main topographical features;
- (ii) restrictions to the extent of the emplacement to allow for a buffer zone of vegetation to remain along the ridgelines so as to help screen the emplacement operations;
- (iii) restrictions have been applied on the slope angles of the proposed landform to reduce the potential for scour and assist in the establishment of vegetation.

Due to the extremely exposed saline conditions of the study area, special procedures will be adopted for revegetation in order to ensure satisfactory and rapid growth of plant material. Alternatives to be used will either be hydromulching of the surface with seeds gathered from the surrounding woodland communities or chipping the foliage of the existing vegetation, and respreading over the surface of the seeded emplacement. Either method will be used to provide cover for the emplacement areas and dam face so as to control surface erosion, to help retain moisture in the soil which will assist the germination process and to retain the seed bank which is contained in the existing vegetation on the site. Figure 53 shows the areas to be landscaped and rehabilitated. Figures 54 and 55 show sections through particular areas of rehabilitation.

The dam face and other areas where a rapid cover of stabilising vegetation will be required to protect steep slopes from erosion, will be hydraulically seeded using a slurry of seed, bituminous emulsion and fertilisers. Spray irrigation will be installed until the vegetation is established.

The choice of plant species in the proposed seed mix has been influenced by the experience of Coal & Allied to date in this location, as the exposed nature of this site and wind born salt spray combine to create an extremely difficult environment for vegetation. Recent planting operations in and around the existing mine facilities have indicated the most appropriate choice of plant species to ensure an acceptable level of survival. As well, different soil treatments and rehabilitation methods used in other mined areas have also been considered in this final rehabilitation procedure proposal which is as follows:

1. spread and compact nominal 300mm of clay over the surface of the emplacement;
2. evenly spread 400mm subsoil and weathered rock over the clay;
3. cover subgrade material with 300mm of topsoil (as available);
4. water thoroughly and cover evenly with cleared vegetation/mulch material as available;
5. broadcast seed with the following seed mixture over the top of the mulch/vegetation:

Japanese Millet/Spring sowing	10.0 kg/ha
Rye Corn/Autumn sowing	10.0 kg/ha
<u>Acacia longifolia</u>	3.0 kg/ha
<u>Acacia suaveolens</u>	3.0 kg/ha
<u>Angophora costata</u>	0.5 kg/ha
<u>Leptospermum laevigatum</u>	1.0 kg/ha
<u>Casuarina littoralis</u>	1.0 kg/ha
<u>Eucalyptus piperita</u>	0.2 kg/ha
<u>Eucalyptus gummifera</u>	0.1 kg/ha
<u>Eucalyptus haemastoma</u>	0.2 kg/ha
<u>Dillwynia floribunda</u>	0.5 kg/ha
<u>Kennedia rubicunda</u>	0.5 kg/ha
<u>Hardenbergia violaceae</u>	0.5 kg/ha

Acacias will be treated by scalding with boiling water and soaking for 24 hours prior to inoculation with rhyzobium bacteria and sowing;

6. additional watering may be required if no rainfall occurs within 3 days of sowing;

7. initial application of fertiliser and subsequent applications as recommended by the Soil Conservation Service of N.S.W. To check on the nutrient level of the existing top soil in the area, nine topsoil samples were collected and analysed. The location of the samples is shown on Figure 53 and the analytical results are given in Table 24.

In those areas shown on the landscape plan (Figure 53) to be screen planted, topsoil, subgrade and clay will be used to build a stable elevated profile. This will be covered with the cut foliage or mulch of the existing vegetation and planted with advanced size plants (200 mm pots) of the following species at the spacings shown:

	Spacing
<u>Casuarina littoralis</u>	3 m
<u>Acacia longifolia var. sopherae</u>	3 m
<u>Eucalyptus gummifera</u>	5 m
<u>Eucalyptus haemastoma</u>	5 m
<u>Leptospermum laevigatum</u>	3 m
<u>Banksia integrifolia</u>	3 m
<u>Banksia ericifolia</u>	2 m
<u>Kennedia rubicunda</u>	2 m
<u>Hardenbergia violaceae</u>	2 m

10.13 Final Land-Use

On completion of filling operations and surface rehabilitation, the emplacement areas will be managed to become part of the open space and "natural area" surrounding Catherine Hill Bay in accordance with planning objectives for the region set out in the Hunter Regional Environmental Plan No. 1 (Ref. 4) and the existing Local Environmental Plan zoning.

This increase in trucking, directly related to reject handling, is an adverse impact of the development on the local environment, which is offset by the decrease in truck transport of coal from the 250 tonne Moonee Road Bin. This reduction will be an initial average of 153 truck loads (306 truck movements) per day for the Stage 2 : 3,600,000 tpa development to the present average 100 truck loads per day and subsequently 253 truck loads (506 truck movements) for the Stage 2 : 5,000,000 tpa development.

12.10 Land Use and Planning Considerations

The proposed coal handling, coal stockpiling, coal washery reject emplacement and dam components of the Catherine Hill Bay Coal Preparation Plant Stage 2 development conflict with existing environmental protection zoning over the Company's freehold land. The proposed developments are a transient land use, which will only exist until the Company's coal leases are worked out. When this occurs, the coal processing facilities will be dismantled and removed.

As discussed in Section 4.4, the reason why the coastal land at Catherine Hill Bay has not been cleared and developed is because it was acquired by the coal mining company to prevent sterilisation of valuable coal reserves. Coal mining activities are well established at Catherine Hill Bay and the proposed development is an extension and expansion of this activity.

It is considered that Government objectives to retain the open space separation of development in Wyong Shire and the City of Lake Macquarie, as set out in the Hunter Regional Environmental Plan No. 1 (Ref 4.) will not be compromised by this development. Moreover the fragile coastal wetlands in the Company's freehold land in Wyong Shire will remain intact and unaffected - a situation which would most probably not be the case if the land had been in other ownership. The agreement between the Company and the N.S.W. State Government for this land to come into public ownership, and form an extension to the Munmorah State Recreation Area, will reinforce planning objectives in this area, as well as safeguarding a fragile ecosystem and being a benefit to the community.

The proposed development will result in progressive clearing of coastal land, with subsequent progressive revegetation. It will also result in construction of coal handling equipment which will be removed when the coal leases are worked out. When this occurs, the land will revert to coastal open space in accordance with Government objectives.

During the transient life of the development, additional jobs and substantial export earnings will result, with important benefits to the community at large. This is recognised as an expected development in the Hunter Regional Environmental Plan and as an important contribution to the regional economy.

The proposed development is considered to have a positive impact because it will maintain employment in the coal mining industry, which is historically tied to the Catherine Hill Bay area, and will increase both direct and indirect job opportunities in an area where employment is restricted. This is important in a region like Wyong Shire and the City of Lake Macquarie, where current unemployment levels are high. In Wyong, unemployment in June 1986 was estimated as 18% (some 5,300 people). Unemployment in the city of Lake Macquarie although estimated to be lower than in Wyong Shire is still above 10%. This development, in both the construction and operational phases, will provide new job opportunities in both local government areas.

12.11 Social and Economic Conditions

At present Coal & Allied employ about 750 people (directly) in the area and must improve their coal preparation facilities in order to remain competitive in the export market. The Stage 1 development will increase this employment to approximately 850 people and this Stage 2 development will progressively increase employment to about 1,250 people. This development is necessary for the Company to maintain and progressively increase their current (direct) employment levels. Failure to proceed with the development will lead to a reduction in employment.