EIS 286

AA052632

Myuna and Cooranbong collieries : environmental impact statement

NEWCOM COLLIERY PTY LTD

MYUNA AND COORANBONG COLLIERIES

ENVIRONMENTAL IMPACT STATEMENT

NEWCOM COLLIERY PTY LTD

MYUNA AND COORANBONG COLLIERIES

ENVIRONMENTAL IMPACT STATEMENT

C O N T E N T S

1 Statement of object of project

1. STATEMENT OF OBJECTS OF PROPOSAL

Eraring Power Station is currently being built as part of the programme of power station construction to provide adequate generating capacity to meet the needs of the community. A significant factor in the location of this large coal-burning power station was the adequate reserves of economically extractable coal near to the site of the power station.

With the commissioning of the two generating units each of 660 MW rating planned to meet the winter loads of 1982 and 1983 the coal consumption capacity of the power station will rise to about three million tonnes by 1984. To meet this requirement it is proposed that the main portion of this coal will be supplied from two new underground mines which will be based on the coal reserves noted above.

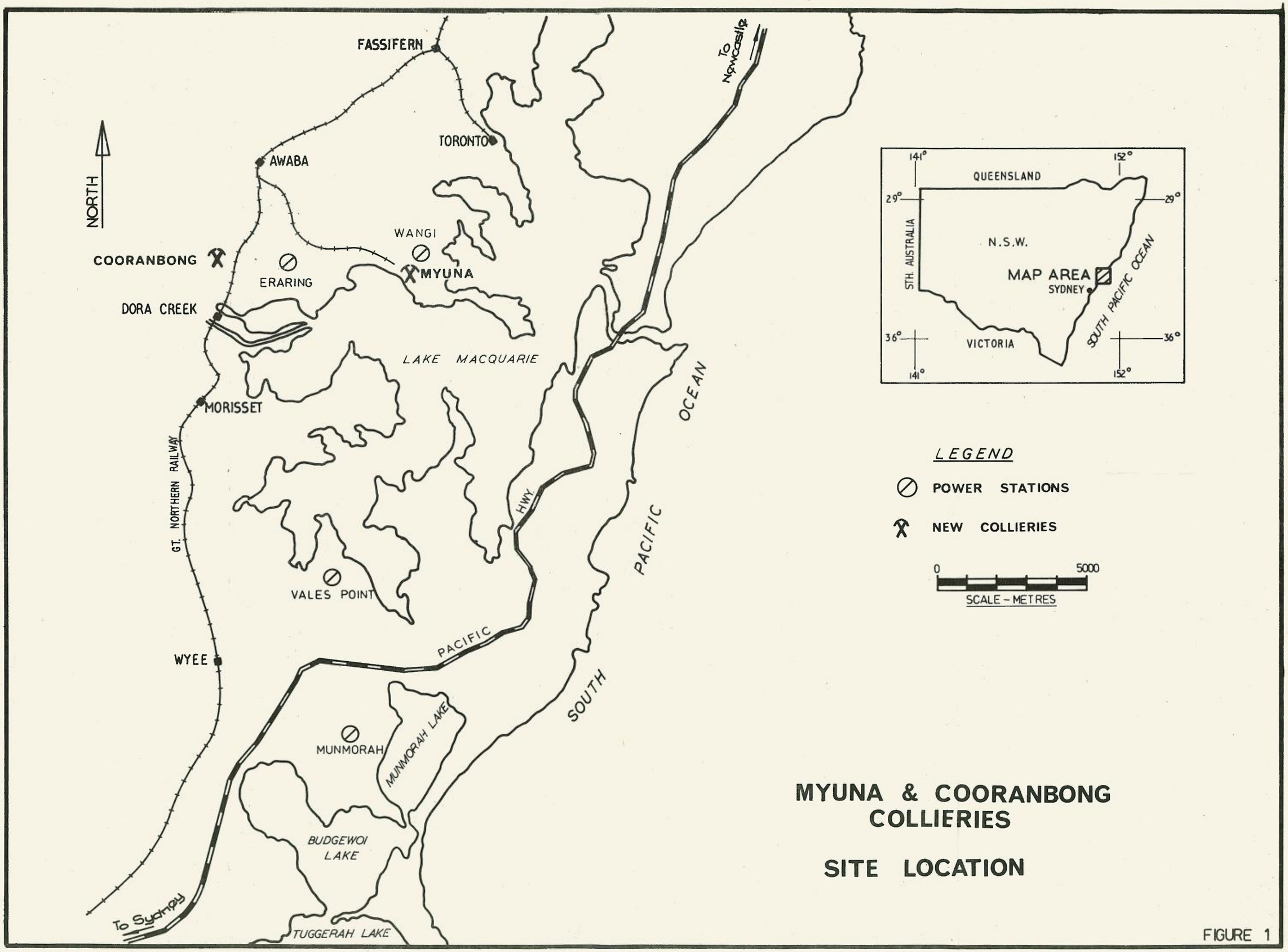
This statement deals with the design, construction and operation of these two new underground mines and associated coal transport systems. The mines are called Myuna Colliery and Cooranbong Colliery and their location is shown on Figure 1.

It is planned that initial coal production will commence in late 1980 and will be increased over a period of three years to about 6 000 tonnes per day for each colliery. The transport of the coal to the power station will be achieved from both collieries by the use of separate belt conveyor systems. The Cooranbong Colliery conveyor will be about two kilometres long and the Myuna Colliery conveyor will be about five kilometres long.

This statement describes the proposed development together with the relevant features of the existing environment. The development will be designed to safeguard the environment and

aspects of the development which relate to water, atmospheric discharges and noise will be subject to detailed applications and approvals from the State Pollution Control Commission. Relevant aspects of the development will also be co-ordinated with other appropriate authorities.

The object of this development is thus to provide a stable supply of coal to Eraring Power Station to allow it to meet its generating requirements within the State interconnected system.



MYUNA & COORANBONG COLLIERIES

SITE LOCATION

FIGURE 1

2 Statement of alternative plans considered

2. STATEMENT OF ALTERNATIVE PLANS CONSIDERED

2.1 GENERAL

It is proposed that the two new collieries to be developed will be Myuna Colliery located adjacent to the existing Wangi Power Station and Cooranbong Colliery which will be located about two kilometres to the west of the Eraring Power Station site.

2.2 COAL SEAMS

A number of separate coal seams are mined in the Lake Macquarie area to provide coal for mainly power or steel production. In the upper seams Great Northern seam coal, together with a limited quantity of Wallarah seam coal has been mined to provide the steaming coal used in Wangi, Vales Point and Munmorah Power Stations for many years. The Fassifern seam which lies directly below the Great Northern seam has properties which make it reasonably suitable for a steaming coal but it has not been recently mined in the vicinity of Eraring.

In the areas adjacent to Eraring Power Station a comprehensive diamond drilling programme both on land and under the lake has been undertaken to delineate the seams and assess quality and quantity. A graphic log of a core obtained from this drilling is shown in Figure 2 and the location of this drill hole is shown in Figure 3.

The results from this programme indicate that extractable steaming coal reserves will consist of Great Northern and Fassifern seams with a small quantity from the Wallarah seam and that a significant proportion of the reserves are to be found beneath Lake Macquarie. In respect of the latter it is to be noted that coal mining beneath Lake Macquarie has been carried out successfully for a number of years without adverse effect.

2.3 COLLIERY SELECTION

2.3.1 Number of Collieries

As previously indicated, it is proposed to develop two new collieries to supply the main portion of the capacity of three million tonnes of coal per year at Eraring Power Station. Two collieries are proposed because collieries with an average capacity of 6 000 tonnes/day (1.3 million tonnes/year) are amongst the largest in operation in New South Wales, and it is considered imprudent to plan for higher outputs to be obtained on a reliable basis from a single colliery. Also, with the necessity to ensure a continuous supply of coal to the power station, diversity is required to allow for the various factors inherent in the mining industry which can affect production.

2.3.2 Colliery Coal Reserve Areas

Coal reserve areas for the two collieries have been established on the basis of geological information to ensure adequate in-situ reserves at each colliery for the economic life of the colliery. The particular areas have been selected to provide a balance of mining conditions in the various seams so that reasonable overall levels of productivity and coal quality can be maintained over the life of each mine by working an appropriate mix of good and less favourable mining conditions. The two collieries are separated by an area where a natural thinning and deterioration of the seams has made mining impracticable. These two areas have been designated as Myuna Colliery proposed working area and Cooranbong Colliery proposed working area and are shown in Figures 3 and 4 respectively.

2.3.3 Myuna Colliery

This utilises the mainly underwater reserves of Wallarah seam, Great Northern seam and Fassifern seam coal under and adjacent to the Wangi Peninsula. The boundaries of the reserve area have been selected to provide adequate coal reserves that are within reasonable proximity to the pit bottom.

In the initial planning for this colliery three sites for the location of surface facilities were evaluated. However, the results of a closely spaced diamond drilling programme in the area revealed in more detail a general deficiency of extractable coal generally to the west of the existing Wangi Power Station and indicated the site to be developed should be as far to the east down the Wangi Peninsula as practicable.

This position was studied in conjunction with a review of the area in relation to the existing environment. A site utilising effectively waste land adjacent to Wangi Power Station and which is currently zoned industrial, was considered in detail. This site is shown in Figure 5.

This site had the benefit of a surrounding ridge to minimise a number of environmental effects. It would also permit the provision of a reasonable buffer area between the colliery major surface facilities and the residential area. The surface of the site had been disturbed by other uses and no environmental change to the site area would be brought about by the proposed use. A review of the underground arrangements associated with the use of this site indicated that a practicable arrangement could be attained and this site is now proposed.

2.3.4 Cooranbong Colliery

This utilises the reserves of Great Northern seam and Fassifern seam coal generally to the west of Eraring Power Station. The boundaries of the reserve area shown are selected to provide adequate coal reserves taking into account the geological features associated with this area.

Two main sites were investigated in this area the first just to the south of Eraring Power Station and the second to the west of Eraring Power Station. As before, a detailed drilling programme was undertaken to investigate the areas around these sites.

An assessment of the drilling programme showed that the disposition of the extractable reserves of coal required a site to the west of the railway line. Also, if access to this coal was attempted from the site south of the power station headings at sufficient depth to pass under the intake canal of the power station and

Muddy Lake would be required, and with the shallow coal seam levels practical mining difficulties would be encountered. Accordingly, the site to the west was selected.

The final selection of the site was based on a detailed consideration of environmental and mining factors. It was decided that to minimise various environmental effects the site should be placed as far north as consistent with the location of the power station transmission corridor. The site should permit effective water drainage control and treatment to be exercised to ensure no deleterious effects would occur in the area. In addition, the site should take advantage of various factors to minimise mine cost and construction period. The proposed site which is shown on Figure 6 basically meets these requirements. It is immediately adjacent to the transmission corridor, in reasonable proximity to the power station and well away from existing or proposed residential areas.

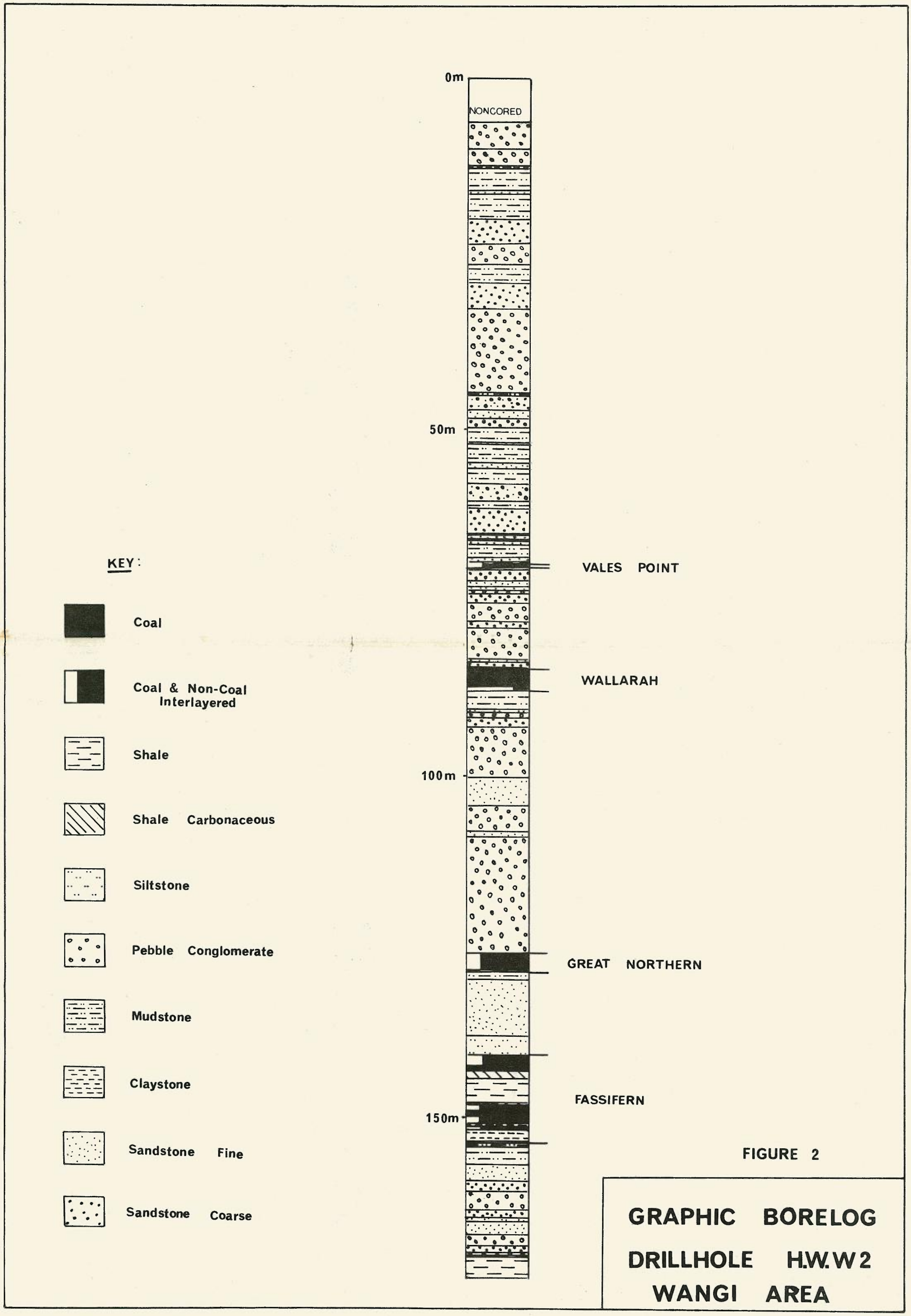


FIGURE 2

GRAPHIC BORELOG

DRILLHOLE H.W.W2

WANGI AREA

NEWCOM COLLIERY PTY LTD
MYUNA COLLIERY
SCALE 1:25 000

KILABEN BAY
COAL POINT
MARKS POINT
RATHMINES
DORRINGTON ROAD
WANGI ROAD
LAKE MACQUARIE
PELICAN FLAT
ERARING BAY
BUTTABA HILLS ROAD
ARCADIA VALE
Wangi P.S.
WANGI WANGI
COLLIERY SITE
Main Road 217
SWANSEA
MYUNA BAY
Drillhole HWW2
HIGHWAY
PACIFIC
PULBAH ISLAND

LEGEND
Proposed Extent of Colliery Workings

FIG. 3

NEWCOM COLLIERY PTY LTD
COORANBONG COLLIERY
SCALE 1:25 000

ERARING P.S. SITE
RAILWAY
TRANSMISSION CORRIDOR
Main Road 217
ERARING
COLLIERY SITE
LAKE ERARING
MUDDY LAKE
DORA CREEK
DORA CREEK
BONNELLS BAY
GARDINER ROAD
DOLERITE SILL
CURRANS ROAD
NORTHERN
BONNELLS BAY
STATION ST
COORANBONG
AVONDALE
MORISSET
GREAT
MARTINSVILLE RD

LEGEND
Proposed Extent of Colliery Workings

FIG. 4

3 Physical description of the proposal

3. PHYSICAL DESCRIPTION OF THE PROPOSAL

3.1 GENERAL

The colliery sites and their relationship to power station facilities are shown on the project works arrangement diagram - Figure 7. As previously indicated the coal from the collieries will be transported to the power station by covered belt conveyor and the proposed routes of these conveyors are shown. Power for the collieries will be supplied from a 33 kV substation local to the power station which will also be used for power station construction purposes. The proposed routes of the associated 33 kV transmission lines are indicated. The lines to the Myuna Colliery will possess additional capacity for use by the Shortland County Council to meet future power demands in this area.

The proposed surface layout plan for each colliery is shown on Figures 5 and 6. Care has been exercised in designing these layouts to obtain an arrangement which minimises any environmental impact. As the facilities which will be provided at each colliery are basically the same, a single description of the main components and their purpose is given.

3.2 UNDERGROUND

3.2.1 Transport Drifts

Each colliery will be provided with two drifts. One will be provided with a rail track of 1 067 mm gauge to be utilised for the transport of men, materials and equipment underground. The other will contain a belt conveyor for the transport of coal from the mine to the surface coal handling plant.

Both drifts at Myuna Colliery will be about 600 metres long and will be driven at a grade of about 1 in 3.5. With the shallower depth from the surface to the coal at Cooranbong Colliery the men and materials drift will be driven at a grade of 1 in 20 to allow

for direct locomotive haulage into the mine. The belt conveyor drift will be driven at a grade of 1 in 3.5 and will have a length of about 200 metres.

3.2.2 Men and Material Transport

The men and materials drift at Myuna Colliery will be equipped with a winch and rope haulage installation to enable mine cars and equipment to be raised and lowered from and to the bottom of the drift. At the drift bottom the transport through the mine will utilise battery and/or diesel locomotives. At Cooranbong Colliery the shallower grade of the drift can be used to permit the locomotives to proceed from the surface directly underground without the above interchange.

3.2.3 Ventilation System

Two concrete lined shafts of about six metres in diameter will be sunk at each colliery to provide the ventilation circuit. The downcast shaft together with the drifts act as an entry point for ventilating air to the mine and the upcast shaft is used to complete the ventilation circuit by drawing air from the mine by its connection to a fan installation.

The shafts at Myuna Colliery will be relatively shallow at about 200 metres total depth. The shafts at Cooranbong Colliery will be extremely shallow at about 40 metres total depth.

The downcast shaft at each colliery will be initially equipped with a small temporary fan installation to provide ventilation to allow the initial underground connection to be made to the upcast shaft at which time the main fans can be commissioned and the temporary installation removed.

3.3 SURFACE INSTALLATION

The main items provided for the surface facilities are described below:-

3.3.1 Coal Handling Plant

The coal produced from these collieries will be transported to the power station to be used in the fuel burning equipment. The only processing of the coal produced at the colliery is crushing to a nominal size of about 20 mm. This is achieved by an initial reduction of the 200 mm size coal from the mine (run of mine) to about 125 mm size in a rotary breaker and then to the final size of less than 20 mm in a crushing plant.

The design of these facilities will provide for the carrying out of the above operations in buildings which incorporate dust extraction systems. The conveyors will be contained within tubular sections which will achieve dust and noise containment whilst presenting a reasonable appearance. The above approach, whilst controlling dust also reduces noise emission from the plant.

Drift Conveyor, Drive Head and Building - Coal is transported underground to the bottom of the conveyor drift and then carried by the drift conveyor to the surface. A conveyor of about 1 100 mm width carried on steel structure will be installed for this purpose. The conveyor drive machinery will be housed on the surface in a building located adjacent to the drift portal.

Coal Surge Bin, Rotary Breaker and Building - From the drift conveyor, coal will be discharged into a 1 500 tonne surge bin. Coal will be fed from this bin to a rotary breaker which will break the coal down to a maximum size of about 125 mm. In addition, tramp iron and other foreign material which could damage the crushers will be separated. The quantity of material separated by the rotary breaker is quite small and disposal of the material does not present any problem.

Crushing Plant - Coal from the rotary breaker will be transported by conveyor to the crusher supply bin which will have a capacity of about 250 tonnes. The coal from the bin will be discharged into vibrating screens which will separate out coal larger than

20 mm size. The large coal will be reduced in size by the crushers and combined with the fine coal separated by the screens and the combined coal carried by conveyor to the finished products bin, which will have a capacity of about 2000 tonnes. The crushing plant equipment will also be fitted with necessary dust extraction equipment and enclosed in a building.

Coal Storage Area - An area has been allocated in the Cooranbong Colliery layout for the storage of coal. Adequate drainage and water treatment facilities have been incorporated as part of the overall water quality control scheme. This is a necessary precaution for whilst coal is normally transported directly to the power station provision must be made to allow for equipment breakdowns and other situations. It is inappropriate to close the colliery down in such situations and production is stored for these limited periods and then transported to the power station when the problems are overcome. If such coal storage is required it is anticipated that the coal stack will not exceed eight metres in height.

At Myuna Colliery use will be made of the existing Wangi Power Station coal storage area for such situations and the coal will be transported by motor truck to the stockpile from the colliery.

3.3.2 Bath House and Administration Building

This will be a structure which will contain amenities for all personnel both surface and underground. The building will be designed to comply with modern practice in industrial architecture and will be constructed to approved standards.

3.3.3 Maintenance Workshop, Store

An internally divided building will house the maintenance workshop and store. The building will be steel framed and utilise decorative steel sheeting. The workshop will be a size which is minimum to maintain the Colliery. The main work to be carried out in the workshop will be routine and breakdown maintenance associated with day to day operations as much of the mining machinery overhaul work will be carried out at off-site workshops.

3.3.4 Stores Compound

This will be an open storage area surrounded by a chain wire manproof fence. It will be used to store larger items of material not subject to weather damage.

3.3.5 Loco and Surface Equipment Maintenance

The above requirements will be incorporated within the main workshop building. It will be utilised for the servicing of certain underground equipment such as loco haulage engines and surface equipment used in material handling.

3.3.6 Materials Storage Area

This area will be located adjacent to the men and materials drift. Materials which are required to be transported underground such as pit timber, steel and roof bolts are stored in this facility. In addition, a sealed bulk stone dust hopper and bulk oil storage system will also be incorporated.

The area will be contoured to permit effective drainage with areas such as the bulk oil storage being specially treated. The area will be serviced by road access and a set of specially constructed rail shunts.

3.3.7 Car Park

A main car park will be provided local to the Bath House/Administration building. It will be adequate to allow for parking of about 200 cars. The area will be graded, bitumen sealed and drained.

3.3.8 Rail Tracks

All surface rail tracks shown will be steel rails secured usually to wooden sleepers. They will be ballasted and of standard 1 067 mm gauge.

3.3.9 Roads

All permanent roads in the site will be adequately graded, bitumen sealed and provided with kerbing and guttering.

3.3.10 Power Supply

A 33 kV power supply will be provided to each colliery from a substation local to Eraring Power Station. The route of the 33 kV line is shown in Figure 7 and the supply will be carried on wooden poles about 17 metres high similar to normal telegraph poles. The easements required for such relatively low voltage lines are reasonably small at about 20 metres width. Also, the routes have been planned to utilise as far as practicable easements used for existing transmission lines to minimise clearing.

At the colliery site, a substation will be established consisting of required transformers, structures, switchgear and associated equipment. Any oil filled equipment in the substation will be contained in enclosures of adequate size to prevent any oil escape. The remainder of the area will be compacted, gravelled and provided with adequate drainage.

Wangi Power Station was investigated as the source of power supply for Myuna Colliery but the power station did not have facilities to provide the colliery supply or the supply for future use by Shortland County Council to service the local area which has been incorporated in the present scheme. The overland coal conveyor power supply requirements also can be incorporated in the present scheme. A significant advantage in the provision of two separate lines providing a ring main system to Myuna Colliery is the ability to maintain supply to the large local load in the case of shutdown of one supply line for planned maintenance.

3.3.11 Water Supply

This will be obtained from the system that already services the general area. Fresh water is mainly required for surface requirements such as the Bath House and accordingly the average demands are relatively low being in the order of 2 l/s at each Colliery.

3.3.12 Sewage and Waste Water Disposal

As no sewage scheme exists in the area in which the collieries are proposed to be located, they will be equipped with adequately designed disposal systems. Alternatives are at present being investigated and the final scheme chosen will meet the requirements of the relevant authorities.

3.3.13 Main Fans

The fans will be located near the upcast shaft. The fans are connected to the discharge duct of the upcast shaft by horizontally mounted steel ducting. It is proposed to provide a twin fan installation to provide for limited capacity in case of a fan failure.

3.4 COAL TRANSPORT

Coal will be transported from the collieries to the power station by the use of overland covered belt conveyors. A typical arrangement diagram and cross-section of such a conveyor is shown on Figure 8. The use of the conveyor covering indicated and the use of dust suppressants to be sprayed on the coal before it leaves the colliery will reduce to a minimum any dust from the conveyor operation.

The conveyor from Cooranbong Colliery is planned to be a single flight conveyor with all drives and power supply located at the power station. The conveyor will cross both the existing Great Northern railway line and the route reserved for the proposed relocation of this line. In accordance with normal practice a crossing that meets the requirements of the Public Transport Commission will be provided.

The conveyor from Myuna Colliery is planned to be a three flight conveyor. This conveyor will cross Main Road 217 and it is proposed to provide an underpass that meets the requirements of the Department of Main Roads to carry this conveyor under the road. The two intermediate drive points are planned to be supplied with power from the colliery 33 kV supply line.

The conveyors do not pass over private land and accordingly with the arrangements noted will present no problems in relation to vehicle or stock movements within properties.

The conveyors for practical reasons are designed to follow the ground contours as closely as practicable and as such the usual overall height of the conveyors above ground level is less than two metres. As well, a relatively narrow strip of about 20 metres is required for the conveyor installation and with the low profile of the conveyor noted above, the conveyor will not present a significant visual effect.

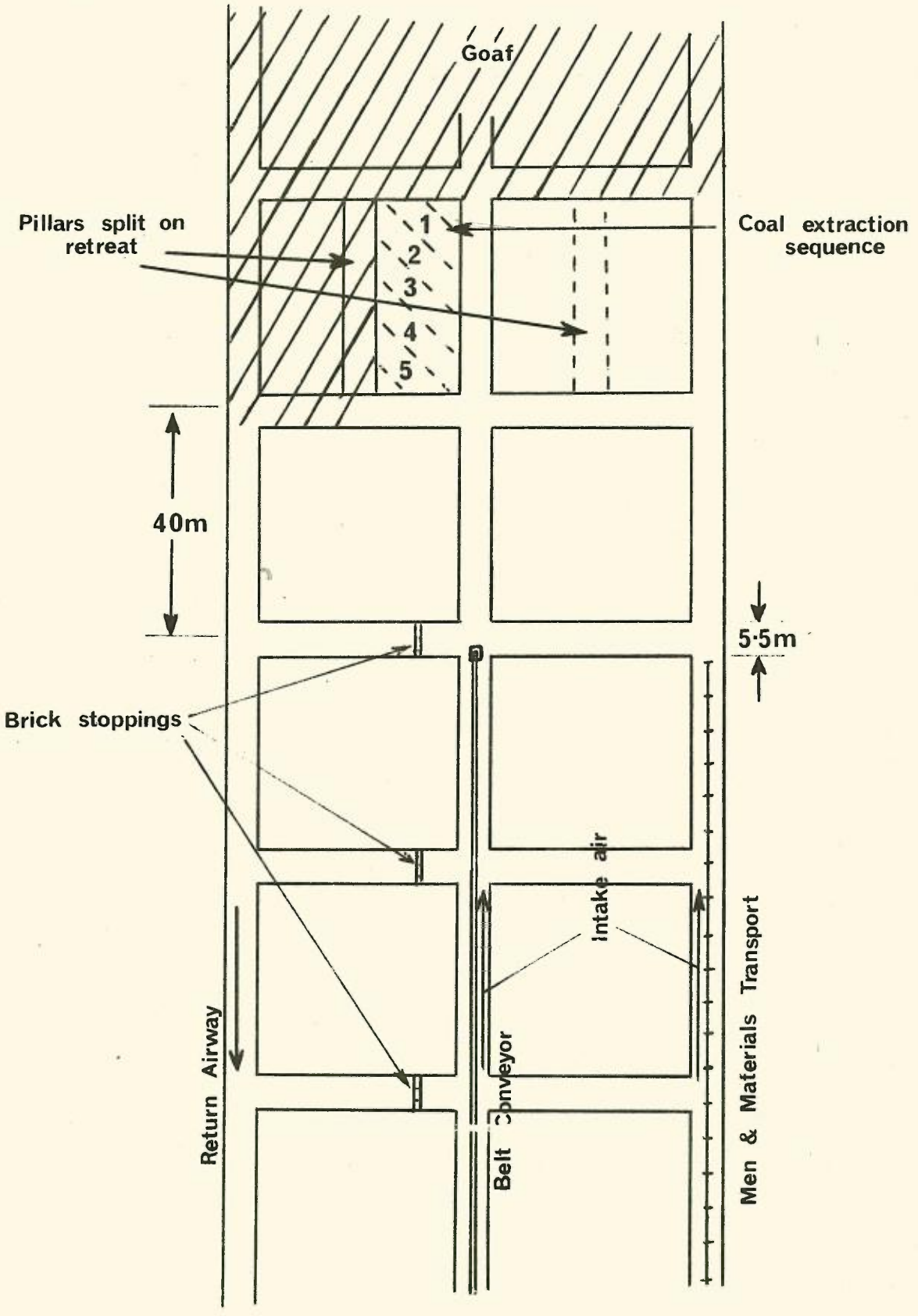
3.5 EXTRACTION OF COAL

The proposed areas of extractable coal reserves for Myuna and Cooranbong Collieries that are suitable for efficient underground mining are noted in Section 2.3. The mining in both areas will be subject to the requirements of the Department of Mines and the Mines Subsidence Board and these requirements are designed to ensure that adequate control in relation to the extent of coal extraction is maintained.

The reserves for Myuna Colliery are mainly under Lake Macquarie with only a limited proporiton occurring under land. The technique which it is planned to adopt in this area to ensure proper working conditions is known as "first workings". This arrangement will involve the removal of about 40% of the coal seam and large solid pillars of coal representing the remaining 60% of the coal will be left in position. These pillars support the upper stratas of material and with such a technique effectively no subsidence will occur. However, with this technique, a large quantity of valuable coal is not extracted. With the various constraints associated with the extraction of the reserves associated with this colliery it is envisaged that basically all coal extraction will utilise the arrangement.

The reserves for Cooranbong Colliery contain a significant portion over which the surface is covered by farming lots and undeveloped land. After careful consideration of the surface and mining conditions in conjunction with the Department of Mines and the Mine Subsidence Board in suitable parts of such areas to properly utilise the available coal reserve maximum extraction representing removal of about 70% of the coal will be planned. Accordingly, some subsidences must be anticipated in these suitable areas with the degree of subsidence depending upon the depth and thickness of the seams and the composition of the intervening strata and thus it may vary from imperceptible amounts up to about 1½ metres in extent. In any developed area the use of mining techniques as detailed for the Myuna Colliery can be used to ensure adequate control.

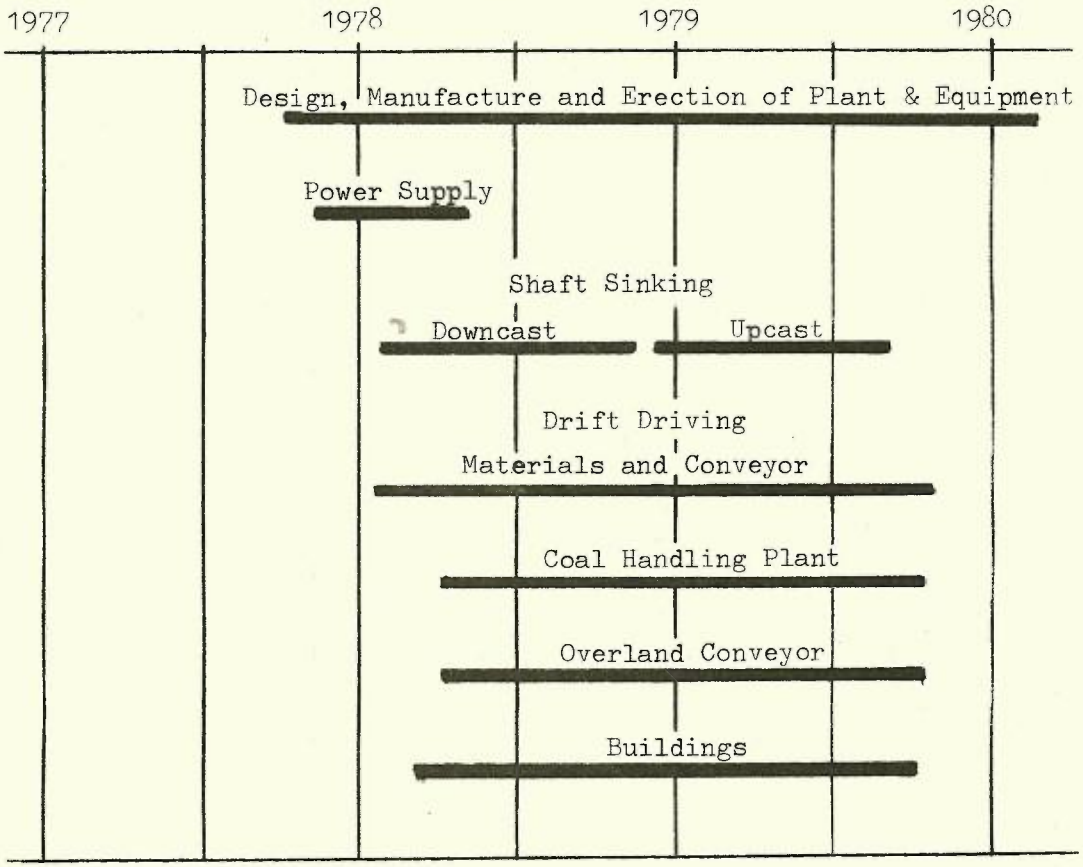
In both Collieries it is envisaged that initial operations will utilise continuous miners operating on a bord and pillar arrangement and a sketch detailing this mining technique is included. Initial operations from the pit bottom will allow an assessment of mining conditions and the determination of optimum mine planning. It is also planned, similar to a number of other collieries, that as these approach maximum production they will operate on a four shift basis.

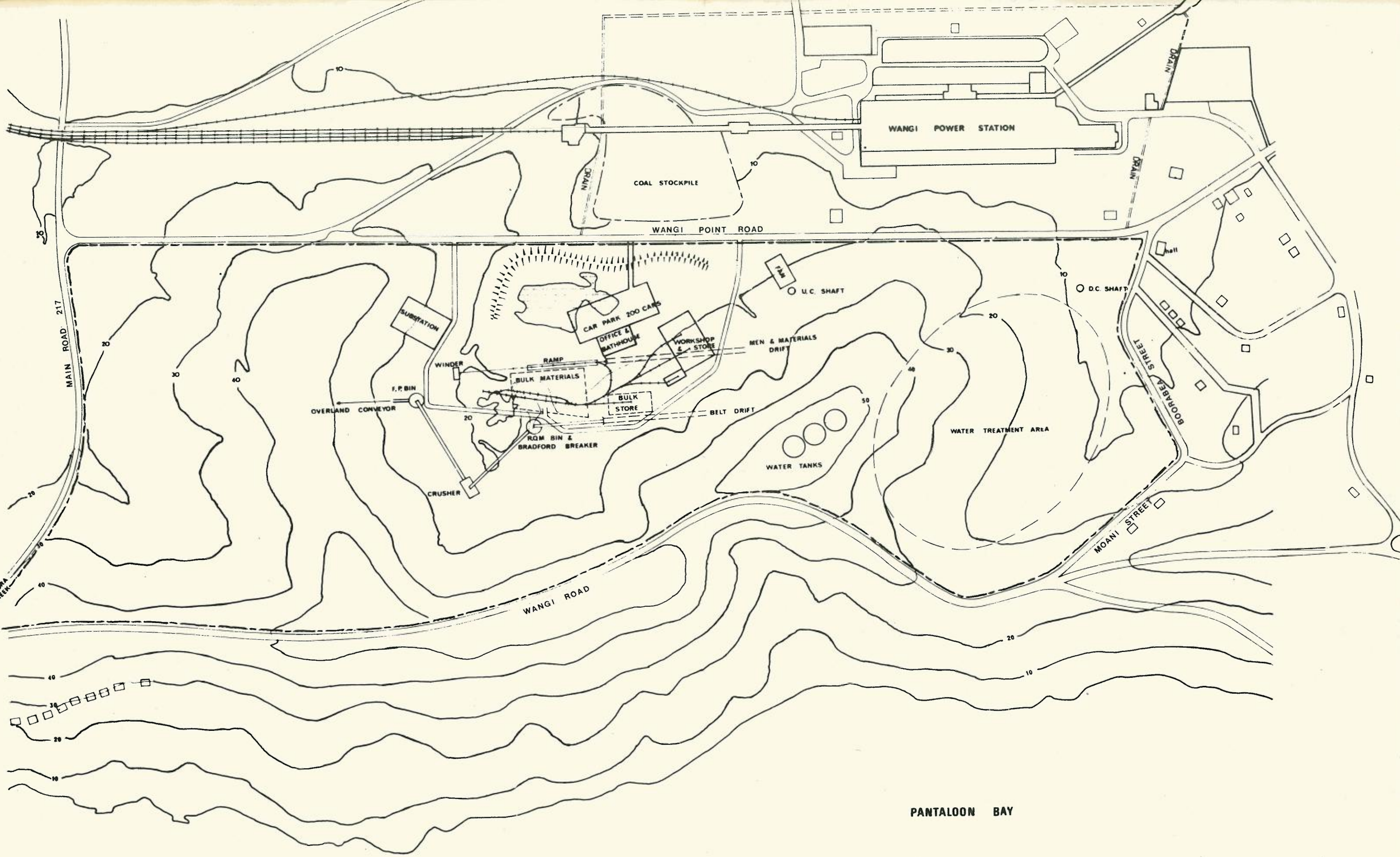


BORD & PILLAR MINING METHOD

3.6 PROGRAMME

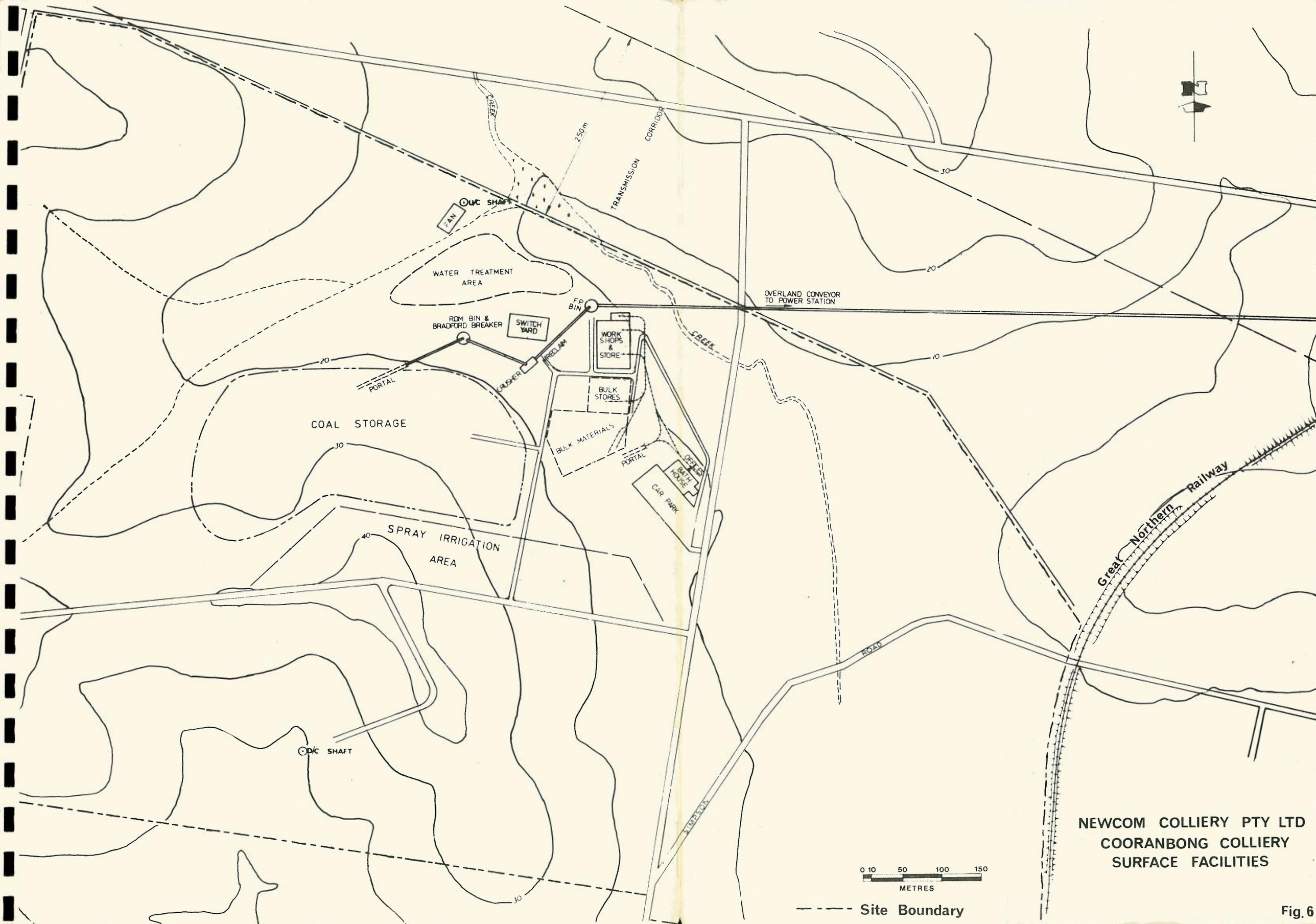
The broad construction programme for the main areas of work is shown in the table reproduced below.





NEWCOM COLLIERY PTY LTD
MYUNA COLLIERY
SURFACE FACILITIES

Fig.5



NEWCOM COLLIERY PTY LTD
COORANBONG COLLIERY
SURFACE FACILITIES

Fig. 6

33 kV Substation

Ash disposal point

ASH DISPOSAL AREA

Fly Ash disposal point

TRANSMISSION CORRIDOR

COAL STORAGE AREA

COORANBONG COLLIERY MAIN SURFACE FACILITIES

SWITCH YARD

POWER STATION

National Fitness Camp

MYUNA COLLIERY MAIN SURFACE FACILITIES

WANGI POWER STATION

TUNNEL

MYUNA BAY

OUTLET

Overpass and interchange

OUTLET CANAL

GREAT NORTHERN RAILWAY

INTAKE CANAL

PROPOSED ROUTE OF MORISSET – TORONTO ROAD (MR 217)

ROCKY POINT

MUDDY LAKE

LAKE ERARING

DORA CREEK RAILWAY STATION

MORISSET

Water discharge from Muddy Lake

Submerged conduits

DORA CREEK

INTAKE

BONNELL'S BAY

LAKE MACQUARIE

N

LEGEND –

33 kV TRANSMISSION LINE

BELT CONVEYOR

HOUSE NEAR DEVELOPMENT

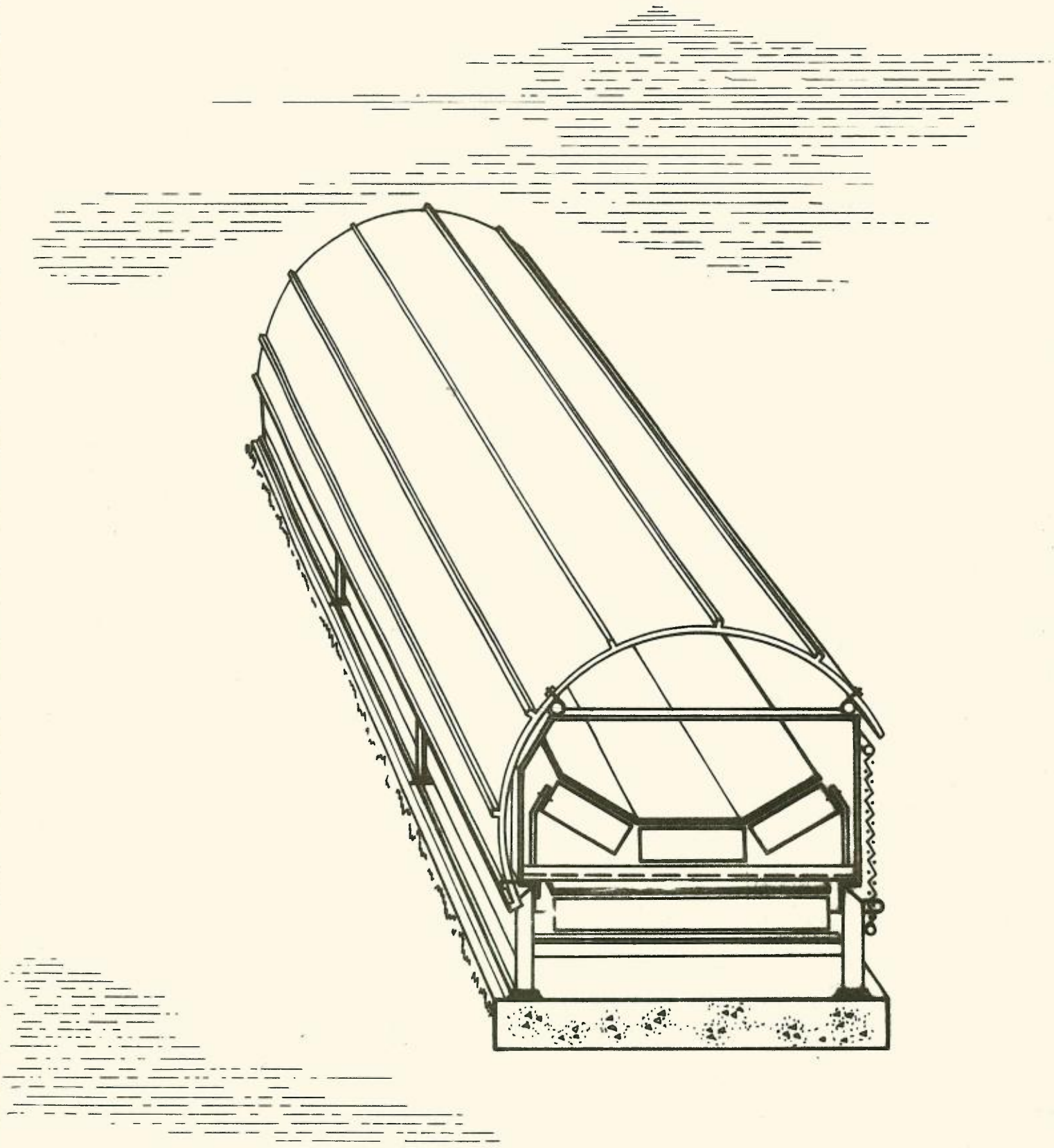
NEWCOM COLLIERY PTY. LTD.

Project Works Arrangement

SCALE · METRES

0 1000

FIG. 7



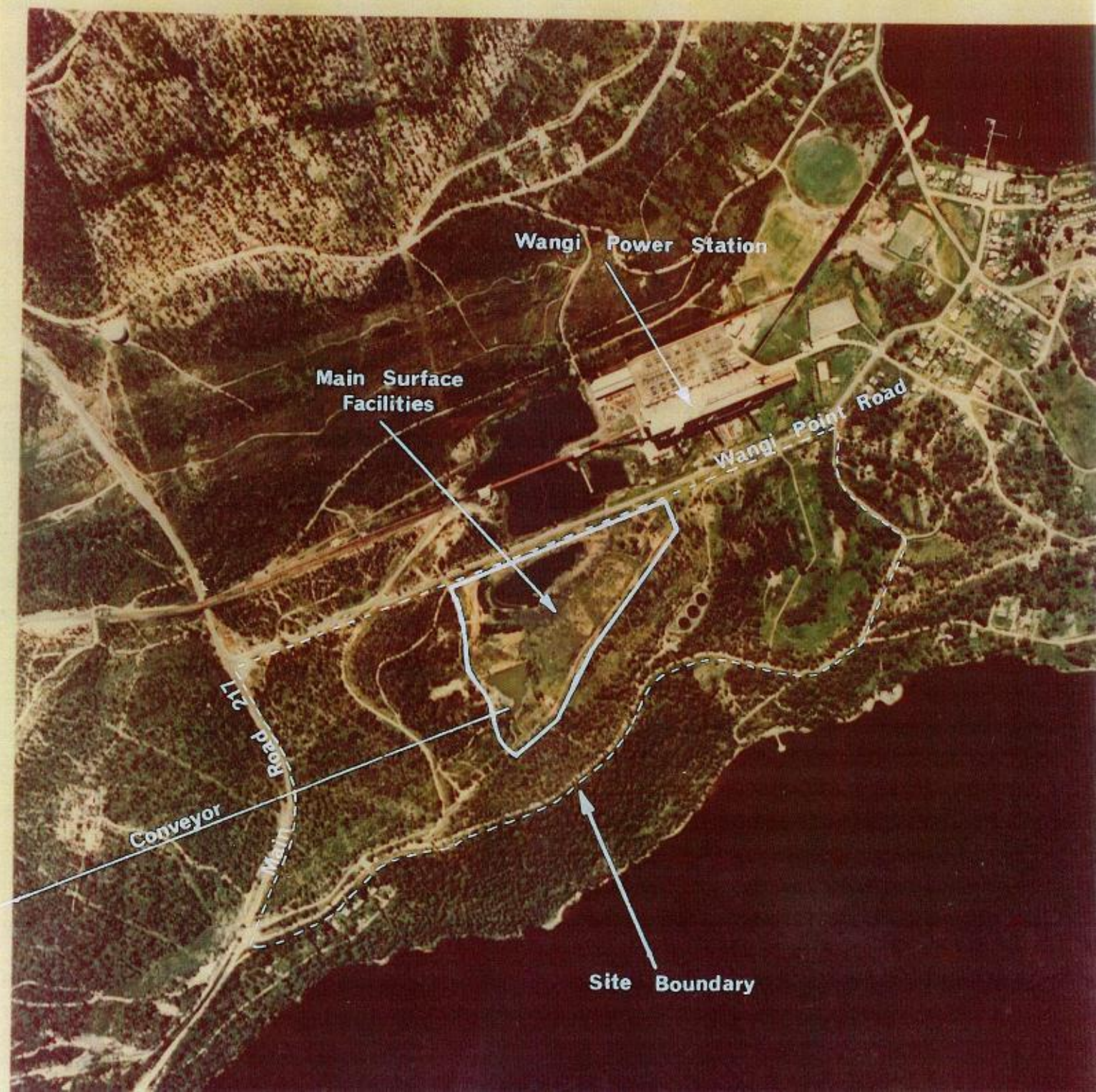
OVERLAND CONVEYOR GENERAL ARRANGEMENT

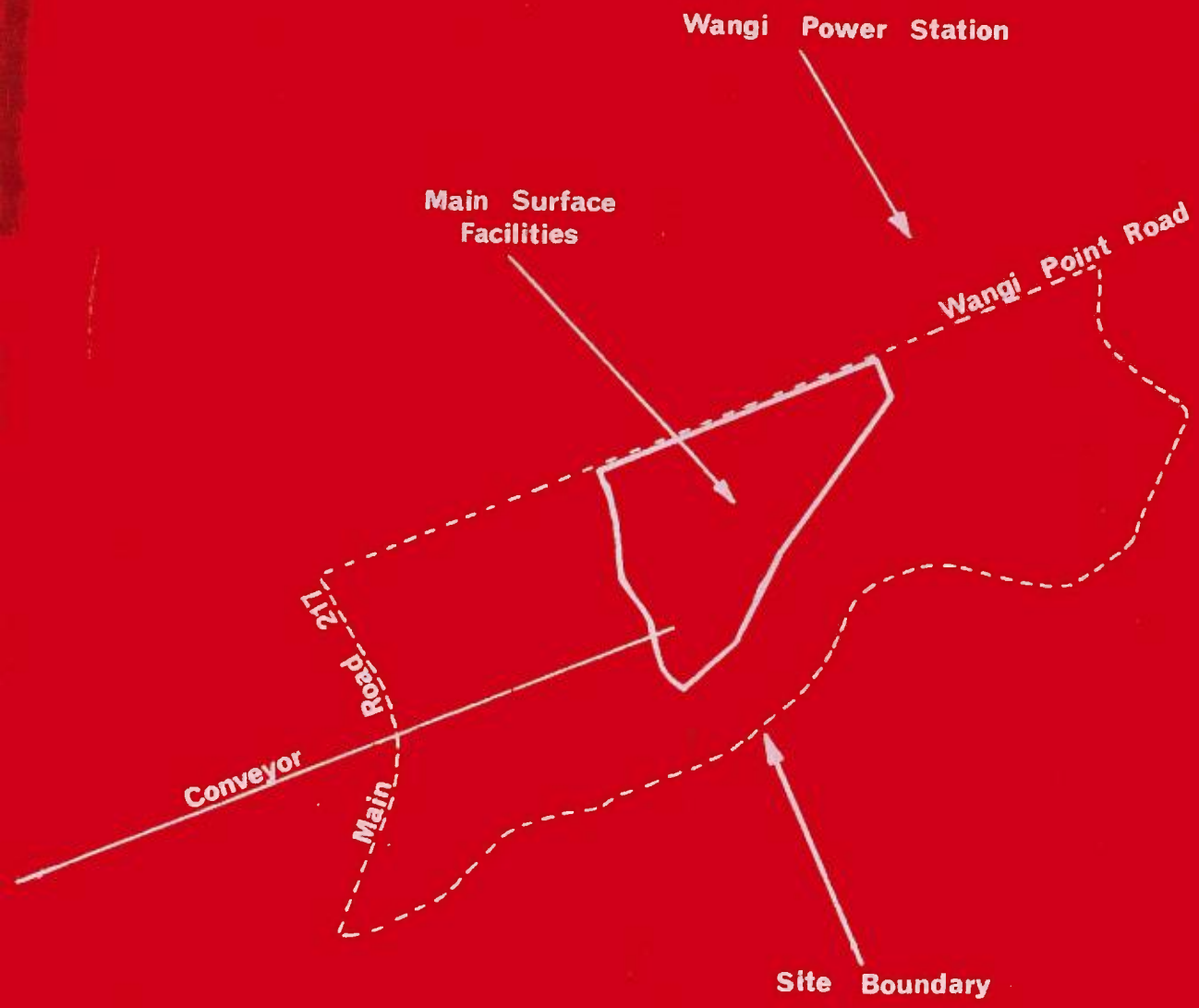
FIG 8

4 Statement of characteristics & conditions of existing environment

Aerial Photograph

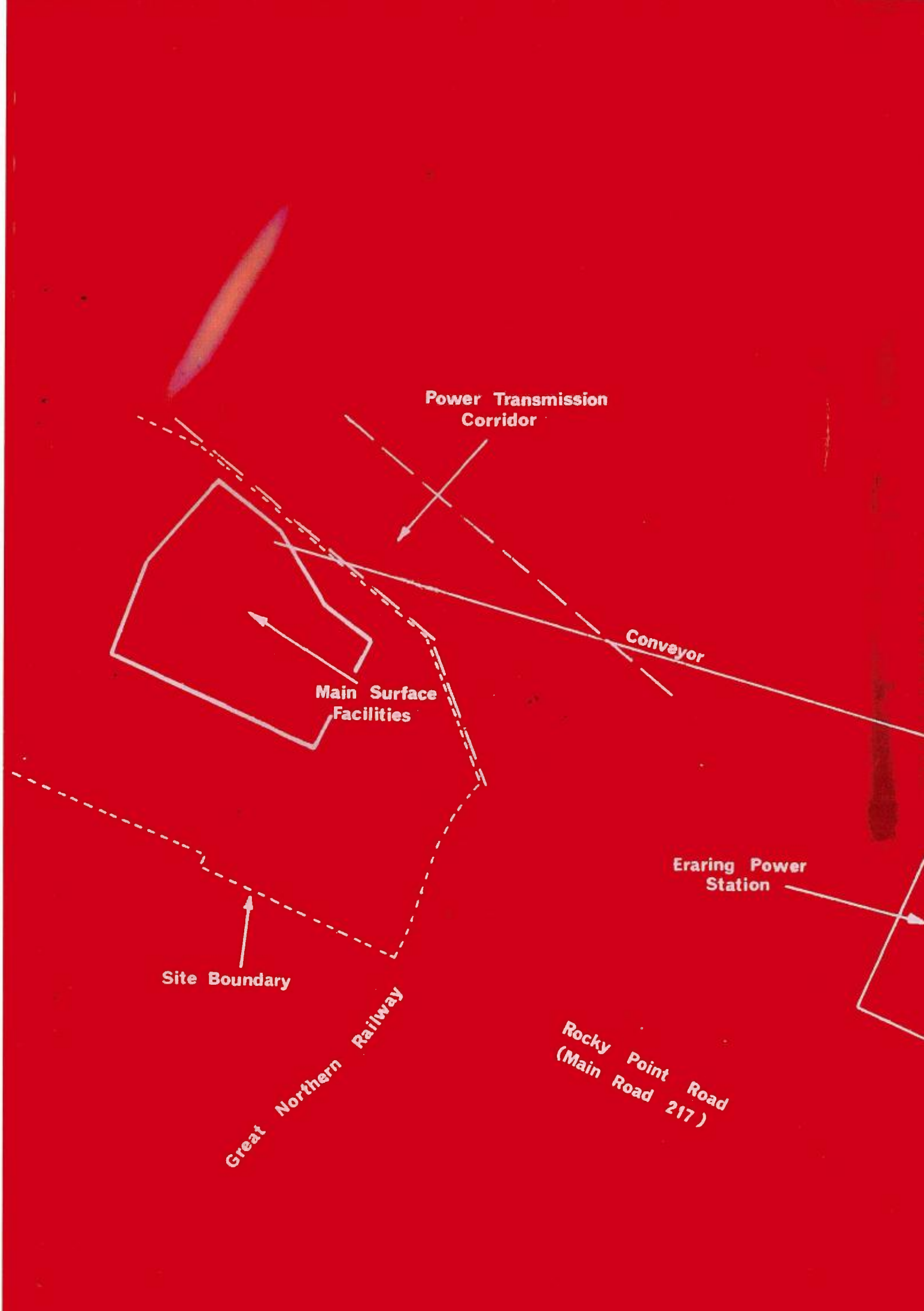
Myuna Colliery Site




Wangi Power Station
Main Surface Facilities
Wangi Point Road
211 Road
Conveyor
Main
Site Boundary

Aerial Photograph

Cooranbong Colliery Site


Power Transmission Corridor
Conveyor
Main Surface Facilities
Eraring Power Station
Site Boundary
Great Northern Railway
Rocky Point Road (Main Road 217)

4. STATEMENT OF CHARACTERISTICS AND CONDITIONS OF THE EXISTING ENVIRONMENT

4.1 GENERAL

The construction and operational activities associated with this project will be essentially confined to two distinct areas encompassing the:-

- Myuna Colliery Site
- Cooranbong Colliery Site

The land on which the mine surface installations will be established is situated in the Municipality of Lake Macquarie and it is envisaged that about fifty hectares at Myuna Colliery and a similar area at Cooranbong Colliery will be directly utilised for the facilities.

The Myuna Colliery Site is located on land zoned "Industrial B" under the Lake Macquarie Zoning Plan and is in close proximity to the Wangi Power Station. Much of the area to be occupied by surface facilities is of a very disturbed nature, having been used for activities associated with Wangi Power Station. It is intended to retain the majority of the industrial land to act as a buffer zone and aesthetic screens.

The Cooranbong Colliery is located on land zoned "Non Urban A" on a site about 2 kilometres to the west of Eraring Power Station. The surrounding area consists of large allotments with a limited number of permanent residences. Consistent with the Myuna Colliery site the undisturbed areas will be retained as far as practicable to serve as buffer zones and aesthetic screens.

4.2 THE COMMUNITY

The Myuna Colliery will be located about two kilometres from the main township of Wangi. Based on figures from the Australian Bureau of Statistics the Wangi/Rathmines area in June, 1976 had a population of about 3 300 persons. The Wangi township comprises residential and

industrial development, the main industrial development being Wangi Power Station.

The Cooranbong Colliery Site is located about three kilometres from Dora Creek Railway Station. The Dora Creek township in June, 1976 had a population of about 600 persons and this resides mainly in a strip of residential development along the northern foreshore of Dora Creek and adjacent to the Dora Creek Railway Station.

4.3 LAND AND LAND USE

As noted Myuna Colliery will be sited on land that is currently being used for activities associated with the operation of Wangi Power Station. The land is zoned for industrial uses and is close to an existing industrial complex. The layout of the plant is such that the majority of the undisturbed land will be retained.

The Cooranbong Colliery will be sited on land in an area zoned "Non Urban A" and accordingly it consists of relatively large allotments. The proposed site is on land which has been partially cleared and is used for agricultural purposes such as stock grazing.

4.4 NOISE

4.4.1 General

The facilities which could have a noise impact are the Myuna Colliery, the Cooranbong Colliery and the coal transport system. The existing environment at each of these proposed locations is described below.

4.4.2 Myuna Colliery

The proposed Colliery site is shown on Figure 5. The site is bordered by Wangi Power Station to the north and Main Road 217

to the west. A residential development commencing at Boorabea Street is at the east with a small residential area over the ridge line to the south west of the site.

The existing acoustic environment is influenced by the operation of Wangi Power Station. With regard to Australian Standard AS1055-1973 "Noise Assessment in Residential Areas" it is considered that an R5 area classification - "In the city or commercial areas or residences bordering industrial areas" would be appropriate in view of the proximity of industrial areas to residential areas. However, an ambient noise level survey carried out in the vicinity of residences close to the Myuna Colliery site shows that the effect of Wangi Power Station operation on the acoustic environment is substantially less than the level appropriate to an R5 classification. On this basis it would appear that a significantly lower noise level rating utilising the R3 classification - "In general suburban areas with medium density transportation" would be appropriate to the area. The relative noise levels associated with the noise areas noted above are indicated in the following table. As the night-time noise level is the lowest level to be achieved this basically sets the design requirement. This level is indicated with some comparison levels included.

Noise Area	Description	Acceptable Noise Level dB(A)		
		Night-time	Evenings	Daytime (Mon. - Fri.)
R5	In city or commercial areas or residences bordering industrial areas.	50	55	65
R3*	In general suburban areas with medium density transportation	40	45	55

* Level to be used in design.

As will be seen in Section 5 with the measures proposed to be incorporated into the plant this development will meet the requirements of this classification.

4.4.3 Cooranbong Colliery

The proposed site of Cooranbong Colliery is shown on Figure 6 and is in an area which is in the vicinity of the Great Northern Railway Line and Main Road 217. In addition, the area is in reasonable proximity to Eraring Power Station. As such the two colliery sites will be very similar in their acoustic environment. Accordingly, it is considered that an equivalent noise level rating should be used at each site.

4.4.4 Coal Transport

The overland coal conveyor routes from the mines to the Power Station are shown in Figure 7. The areas, in which the conveyors will have acoustic significance is firstly where the conveyor from Myuna Colliery passes about 250 metres from a small residential area to the south-west of the Myuna Colliery and a similar distance from the Myuna Bay National Fitness Camp.

In the first case any noise from the conveyor will be significantly reduced at the residences by the natural ground contours. In any case, the system will be designed such that any noise contribution from the conveyor will not increase the noise level over the R3 area classification levels referred to previously.

The Myuna Bay National Fitness Camp is separated from the conveyor route by Main Road 217 and this road provides a significant noise source in the area. The Camp is adjacent to this main road which is subject to medium to high density traffic flows. A noise level survey carried out at the National Fitness Camp indicates the existing ambient noise levels are in agreement with the most appropriate classification from AS1055-1973 "Noise Assessment in Residential Areas" which is the R3 classification which refers to proximity to medium density transportation. As shown in Section 5 by the use of appropriate measures, the conveyor will meet the requirements of this classification.

4.5 FLORA

The flora of the areas under review have been studied by Dr. J. C. Turner, Senior Lecturer in Geography at the University of Newcastle (N.S.W.)

His report reference is:

Turner, J. C. (1977)
"Report on Existing Vegetation on Proposed Mine Sites Close to Eraring and Wangi Power Stations".

The report indicates that there are no rare or endangered flora species in the areas directly affected by the works. Attention is drawn, however, to locations where it would be desirable to retain existing vegetation in an undisturbed state. As a matter of policy, the design and construction of the project will be such that areas recommended for minimum disturbance will be recognised to the greatest extent practicable.

4.6 FAUNA

The fauna of the areas have been comprehensively surveyed by Dr. R. C. Jones (Senior Lecturer) and Mr. A. C. Driscoll (Research Student) of the Department of Biological Sciences, University of Newcastle (N.S.W.).

Their report reference is:

Jones, R. C.
Driscoll, A. C. (1977)
"Impact Study on the Effects on Vertebrates of Coal Mining for the Eraring Power Station".

The report indicates that none of the animals found in the study are considered rare or endangered species.

A recommendation is made in the report for the preservation of an area north-west of the Myuna Mine Site, and, as is the case with areas highlighted in the flora study, the works will be planned where practicable to accommodate this recommendation.

4.7 ABORIGINAL RELICS

Associate Professor L. K. Dyall of the Department of Chemistry, University of Newcastle (N.S.W.) has examined the project areas from the archaeological viewpoint.

His report reference is:

Dyall, L. K. (1977)
"Eraring Power Station Development - Mine Sites
Environmental Impact Studies : Aboriginal Relics".

Associate Professor Dyall does not record the finding of aboriginal sites or artifacts of any archaeological importance. The areas are essentially devoid of aboriginal material and as such will not require archaeological consideration.

4.8 NATURAL DRAINAGE

The proposed sites of the two collieries are both effectively drained by existing drainage systems. The Myuna Colliery site drainage is discharged through two existing main drainage channels through the Wangi Power Station area and then directly into the power station outfall canal from where it flows into Lake Macquarie.

The Cooranbong Colliery site drains to a natural watercourse passing through the northern part of the site. This watercourse enters the northern end of Muddy Lake which also drains into Lake Macquarie. Tests of Muddy Lake have indicated that it has a maximum salinity approaching that of lake water but it appears this fluctuates and in periods of run-off after rain this salinity level may be reduced.

5 Statement of interactions between the project & the environment

5. INTERACTION BETWEEN THE PROJECT AND THE ENVIRONMENT

5.1 GENERAL

This section of the statement describes the changes which the construction and operation of Myuna and Cooranbong Collieries are anticipated to cause to the environment. Various features as described in this section will be incorporated into the development to ensure effective methods are utilised to provide an aesthetic arrangement and control noise emissions and discharges to achieve the maximum protection of the environment.

An impression of the Myuna Colliery has been incorporated in Figure 9 and this indicates the visual effect of the facilities associated with this type of development. Whilst the arrangement of facilities at Cooranbong Colliery varies it is considered a similar overall effect will be achieved.

5.2 THE COMMUNITY

Construction activities involving the use of men and machinery are planned to begin in late 1977 and to continue until early 1981. The maximum number of men employed in the construction period at each site is expected to reach a peak of about one hundred. It is expected that the majority of these would be drawn from the surrounding region.

The number of permanent employees required for the operation of each colliery will total up to 350 employees. The build-up of employees will be gradual over a period of three years from the commencement of production planned for late 1980.

It is expected that most of the miners to be employed will come from the surrounding areas and as the collieries are in reasonably close proximity to their homes they would elect to travel from their homes to work. With this arrangement it is considered that existing community facilities will not be greatly affected as a result of this proposed development.

5.3 LAND AND LAND USE

The change in the use of land to be utilised for the mine surface facilities and appropriate buffer zones from its present usage should not be noted by the surrounding district. The Cooranbong Colliery surface facilities will remove about fifty hectares of mainly grazing type of land from this usage. This land is estimated to be capable of carrying on improved pasture no more than about one beast per hectare. This loss of production is not of community significance.

The Myuna Colliery surface facilities will be located in an area utilised for industrial purposes and thus no major change will arise.

The main areas of the sites to be utilised for facilities have already been significantly cleared, but a policy of minimum disturbance to the remaining vegetation will be followed.

5.4 AESTHETICS

Primary aesthetic control of the project will be achieved by a policy of minimum disturbance of existing vegetation. This, with site landscaping, tree screens and buffer areas will create an attractive visual setting. Special care will be taken in the design of buildings and other facilities to ensure they are attractive and fit in with the surroundings and as previously indicated an impression of this arrangement is shown in Figure 9.

5.5 WATER DISCHARGES

The development of these two collieries will be so designed and organised that effective control of the quality of the water discharges will be achieved through the construction and operational phases.

To ensure appropriate levels of water quality are being attained a programme of sampling and testing will be instituted at each site during its construction programme. This testing will be continued during the operational phase of the collieries.

5.5.1 Construction Phase

A basic drainage system incorporating cut-off drains will be provided to minimise precipitation run-off from passing onto the site. Catch drains will be provided to intercept precipitation falling on areas disturbed by the construction activities at the mine sites and a similar arrangement will be provided at the drift and shaft sites. Water thus intercepted will be directed to settling basins to remove any particulate matter. In addition the small amount of hydraulic oil contamination that may occur in this type of operation will be removed by the use of an absorbent filter material.

Any temporary oil storage on site will be enclosed within a "bund" type arrangement with any spills or precipitation flowing to a small tank which will be pumped out to a road tanker for disposal.

Special arrangements will be provided to properly drain existing areas at the Myuna Colliery prior to major construction activities.

5.5.2 Operational Phase

The potential for water pollution at these sites is greatly reduced since coal washing will not be carried out. In addition, the basic colliery site layout, the use of sealing on permanent roads, and the use of proper design principles in the plant will minimise site areas subject to pollution.

A flow diagram Figure 10 is incorporated indicating the sources of water to be discharged from the development and the types of treatment proposed to be used to ensure the maintenance of water quality.

Clean Water - Water discharged from roofs, gardens and roads will be discharged to the clean water drainage system. In addition, water from the clean areas of the site will also utilise this system. The water disposal system will be so designed to ensure that the discharge of this water is diffused so that local scouring effects will not occur.

The effect of the development will be to increase the run-off from precipitation to a small extent from sealed parts of the site area but, for example, at the Cooranbong Colliery site this effect when compared to the total catchment system will be insignificant. At Myuna Colliery the discharge is through direct drainage channels to Lake Macquarie and again any increase in run-off will have a negligible effect.

Sewage Treatment Waste Water - It is proposed that the water from showers, basins and toilets in the bathhouse, workshops and offices will be collected in a holding sump. It is anticipated that the daily volumes of sewage effluent to be treated at each mine (based on 350 employees) will be:

(i) Shower Water	60 000 l/day
(ii) Basins, toilets, urinals	6 000 l/day
(iii) Underflow from workshop sump	14 000 l/day
Total system	80 000 l/day

This is a small quantity of water and is equivalent to about 0.9 l/s or about 12 gallons per minute. The holding sump is designed to average out the peak flows at change of shift periods to permit a small average flow to be treated.

The final system to treat the above waste water is still subject to detailed investigation but will probably consist of a treatment plant utilising extended aeration of which two basic types are the Pasveer channel or a package treatment plant. The treated discharge from this plant will then be held in stabilisation lagoons from where it is sprayed over a special irrigation area for final disposal. Cut off drains will be provided to prevent normal precipitation from running over these areas. As previously noted the final system will be subject to detailed approval by the State Pollution Control Commission but with the type of treatment detailed above this waste water should present no environmental problems.

Dirty Water - The contaminants which affect surface water quality at the collieries are mainly oil and coal based particulate matter. These occur in varying concentrations on the site and to achieve effective control, the site layout must isolate the various areas of the site to enable appropriate water quality treatment to be applied. The final techniques of treatment are subject to detailed investigation but the following section outlines the types of systems that could be used.

Areas that are subject to significant oil contamination, such as the mining machine cleaning and wash down area, will drain the contaminated water to a holding sump. From there it will be pumped to a Corrugated Plate Interceptor (C.P.I.) unit which will separate the oil phase from the water phase. The separated oil will be stored in a sump for disposal.

Areas that are subject to generally light oil and some coal dust contamination, such as the workshop hard standing area, will drain the contaminated water to a separating tank which will allow the particulate matter to fall to the bottom of the tank from where it will be removed on a periodic basis. The low transport velocity in the tank will also allow oil to separate and float to the surface. At a baffle wall this oil will be removed by a belt type oil skimmer. This more concentrated oil/water mixture from the belt skimmer will again be treated by Corrugated Plate Interceptor.

Areas that are subject to coal dust contamination will be drained to settling lagoons and filter lagoons to ensure particulate matter removal.

Coal Storage Area - A dual system of perimeter drains will be constructed around the temporary coal storage area at the Cooranbong Colliery. The outer system will collect run off from the adjacent clean areas and divert it around the storage area. The inner system will collect water running off the coal stack. This water may contain fine coal at certain times and it will be discharged through a settling basin.

Mine Water - The quality and the characteristic of the water that will be encountered in the mine workings depends upon the mining conditions being encountered and may vary in the two collieries. Of the water encountered a significant quantity is reused underground for dust suppression and other uses.

It is usual, however, that a proportion of this underground water will be surplus to mine usage and will require to be discharged. This water will be treated by settling basins or filter dams to reduce any particulate contamination to an acceptable level. Tests have been carried out on similar colliery operations in other areas to indicate the likely quality of the water to be discharged. A table designated as Table 1 is included showing the likely water quality before and after treatment. The water to be discharged from the Myuna Colliery may have some chloride content but as this will be discharged directly to the saline waters of Lake Macquarie through drainage channels this will present no environmental problems.

The Cooranbong Colliery is anticipated to have a water discharge of a quality suitable for drinking with a relatively low chloride content. The water will combine with other drainages and pass into Lake Macquarie through Muddy Lake. It is considered that the quality of the water is such that with the proposed treatment it will also present no environmental problems or disruption to ecological systems.

5.6 ATMOSPHERIC DISCHARGES

The plant and facilities will be designed to minimise coal dust discharge into the atmosphere. The use of totally enclosed conveyors within the site, the use of buildings around various equipment and the inclusion of dust extraction equipment will effectively achieve this. Control features will be provided on equipment to prevent overflows.

The use of dust suppressant chemicals on the crushed coal and the use of a steel sheet covering on the overland conveyor will also virtually eliminate any dust problem in the conveyor system. The emergency coal storage stack at Cooranbong Colliery will also normally benefit from the use of the dust suppressant chemicals and the use of rubber tyred vehicles to form a surface skin which will be resistant to producing coal dust.

The permanent roads in the site will be sealed and therefore present no dust problems. The main access road to Myuna Colliery is already sealed and sealing of the existing formed road to the Cooranbong Colliery will be carried out in conjunction with the Lake Macquarie Municipal Council.

5.7 NOISE

The incidence of noise from these developments will fall into two main categories, firstly relating to the long term situation that will accompany the operational phase, and also the relatively short term situation associated with the construction phase.

5.7.1 Operational Phase

As previously indicated in Section 4.4, the areas to be considered were those associated with Myuna Colliery, Cooranbong Colliery and the coal transport system. Similar to a number of other colliery operations, it is planned to operate these collieries on a four shift basis. As shown, the acoustic environment in the areas noted above, based on a study of the various factors affecting each location, has been assessed as an equivalent to an R3 rating (from Australian Standard AS1055-1973 "Noise Assessment in Residential Areas"). It should be noted that this is a relatively low noise level rating and would be typical of the noise levels experienced in an ordinary suburban area.

An initial study to determine the effect of the above developments on each area has been carried out. The study utilised mathematical modelling of noise contours for each site based on equipment locations and previously measured noise levels for equivalent types of equipment. Such a study allows the selection of a plant layout that will meet, in operation, the noise criteria noted above. On the basis of this study certain equipment such as the exhaust fans were relocated from their initial positions to ensure the noise levels indicated will not be exceeded.

It is thus considered that from the study outlined above the operation of these collieries will not lead to any significant change to the acoustic environment in the surrounding areas.

5.7.2 Construction Phase

The sites, because of their location and features such as buffer areas, topographic details and tree screens will generally minimise the effect of any construction noise. However, the organisation of the construction arrangements will be so designed to ensure that all practicable measures will be incorporated to achieve the minimum noise levels at the sites. In particular, activities such as drift and shaft sinking have been considered in detail to include features to minimise this aspect and these works will be so arranged to ensure that the location and operation of these activities benefit as far as practicable from the above features.

In this respect, the location of the down-cast shaft at the Myuna Colliery is the only activity reasonably close to a number of residences. As no permanent equipment or facilities will be required on this shaft the only aspects are those associated with the construction phase. It is noted that this activity is subject to various constraints on the selection of the location. Of the limited locations available, this position has the advantage that with its proximity to the pit bottom and the relatively low ground contour the period for construction will be reduced as far as practicable. In addition, the location with its relatively low level and the associated tree screening, together with the surrounding higher topographical features will minimise the effect of construction activities on the surrounding area. The location whilst meeting engineering constraints also maintains a distance of about one hundred metres from the residences.

With the advantage of the location and the relatively short term nature of the work no significant environmental effects should be experienced. The residual construction works at Myuna Colliery will be located behind a ridge line and should not present any major noise problem. Also construction equipment such as air compressors will be specified such that silenced equipment will be provided.

At Cooranbong Colliery the depth of the shafts at about 40 metres will be very shallow and the shafts will take a relatively short time to sink. The use of a simpler technique of shaft sinking may also be utilised. The remaining site construction activities again receive the benefit of the site location in respect of a ridge and tree screening.

5.7 TRANSPORT

It is anticipated that a peak of about 80 vehicle movements over existing roads would occur in the 6.00 a.m. - 7.00 a.m. period and

again in the 2.00 p.m. - 3.00 p.m. period which corresponds to the beginning and end of day shift. This is a relatively low traffic incidence and should not create any problem.

5.8 OVERLAND CONVEYOR

With the low profile of this facility and the use of natural colours in the steel covering this facility will present very little visual impact. This is assisted by the screening offered from public roads by existing trees and vegetation.

The degree of clearing required for the conveyor is reasonably minimal as only a 20 metre strip is required and sections of the route have been cleared for previous farming purposes.

Matters such as dust and noise suppression have been discussed in an earlier section and measures to control these aspects have been incorporated in the design.

With these features it is considered that this proposed method of transport of the coal represents an environmentally acceptable solution.

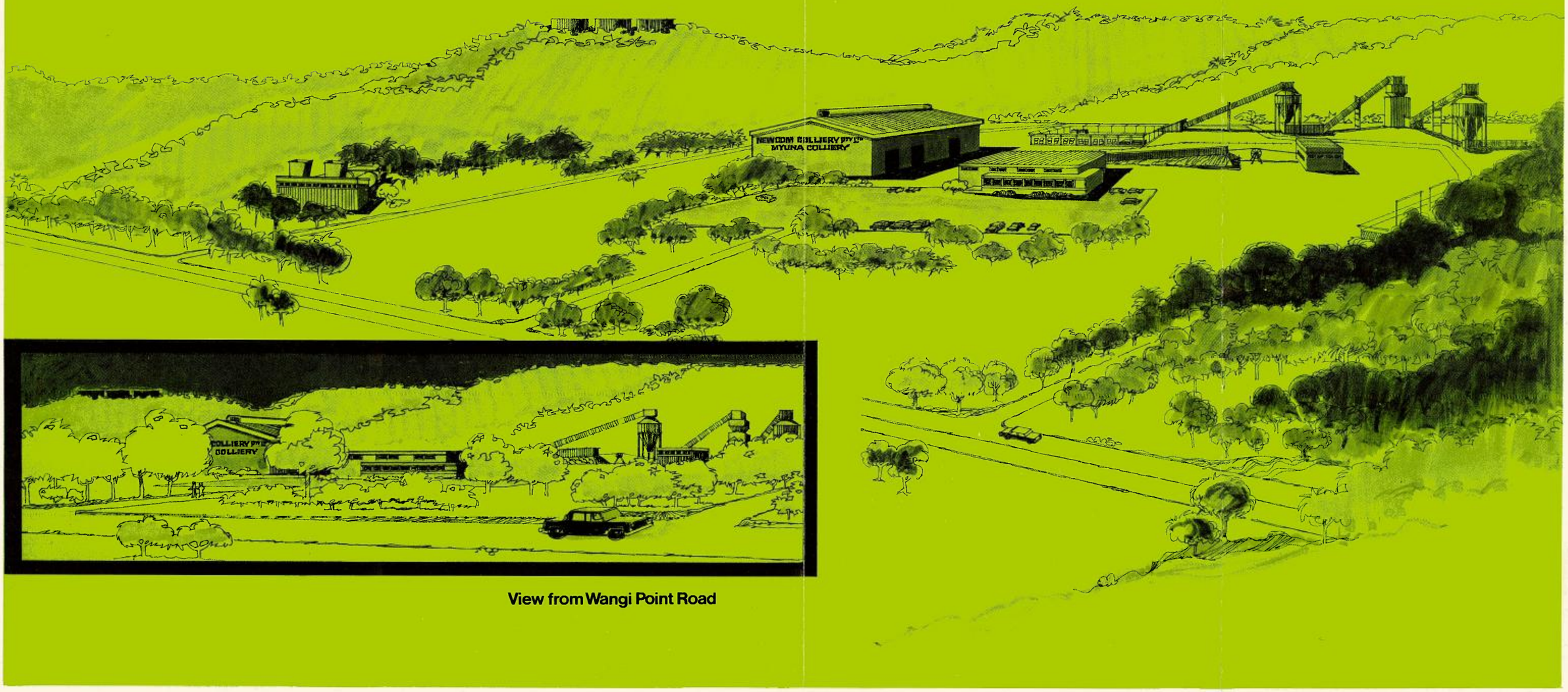
5.9 POWER SUPPLIES

The 33 kV power supply lines will also have a marginal visual impact. These supplies will mainly pass through areas distant from any public access and with no local habitation. Total easement widths required are only about 20 metres and by selective use of existing easements clearing will be minimised. In addition where practical the overland conveyor and transmission line will utilise the one easement.

5.10 FLORA AND FAUNA

The studies carried out into these matters indicate there are no rare or endangered species of flora or fauna in the proposed working area. Also, a large amount of the area for the location of the proposed surface facilities has been previously cleared. As indicated, however, the amount of additional clearing will be the minimum required for the development.

ARTIST'S IMPRESSION OF MYUNA COLLIERY



View from Wangi Point Road

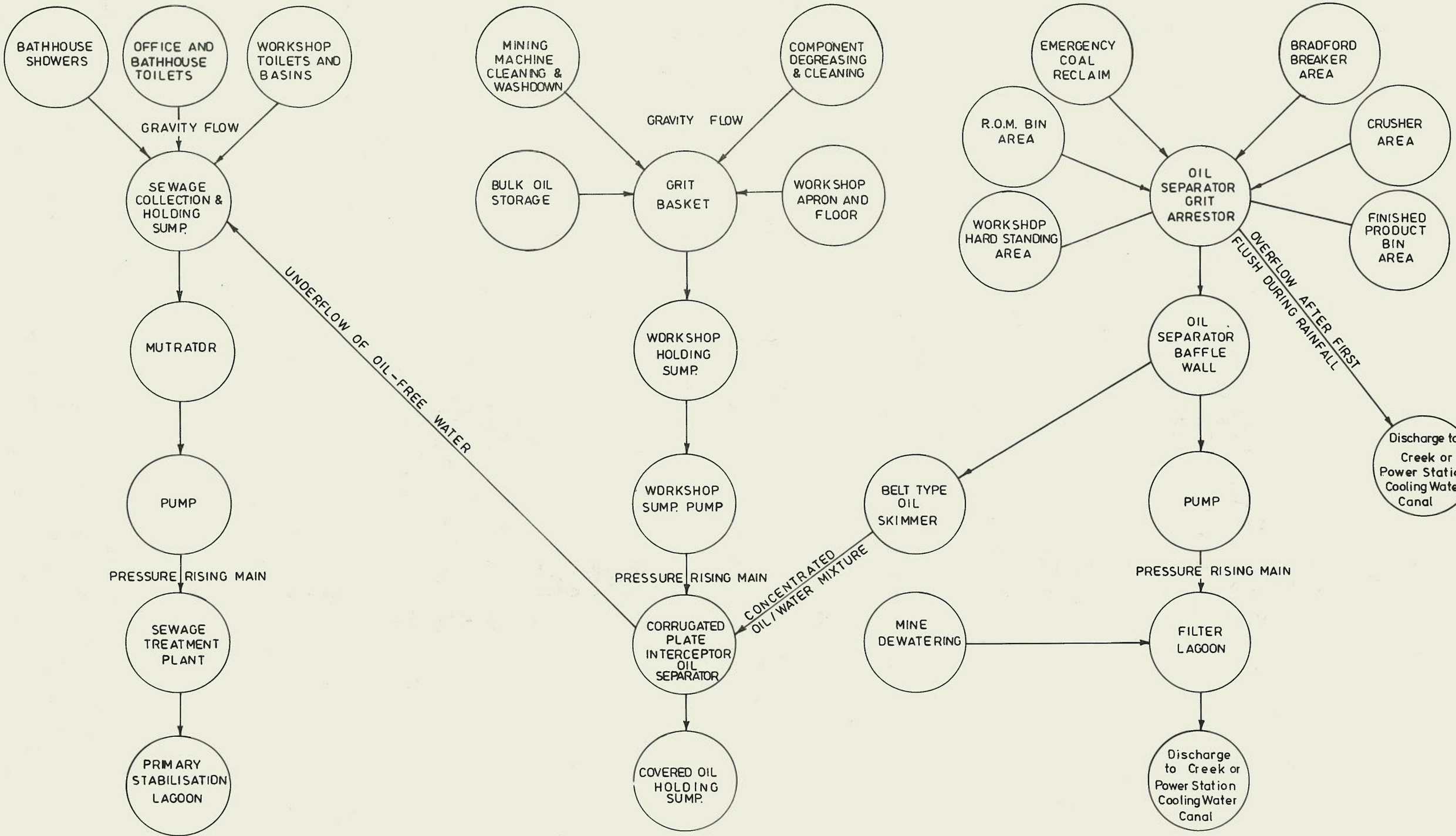
TABLE 1

MYUNA AND COORANBONG COLLIERIES

MINE WATER QUALITY

	Cooranbong Before Treatment	Cooranbong After Treatment	Myuna Before Treatment	Myuna After Treatment
pH	7.8	7.8	8.0	8.0
Suspended Solids mg/l	50	<30	80	<30
Total Dissolved Solids mg/l	1397	<1400	3886	<4000
Chloride mg/l	588	<600	1960	<2000
Sulphate mg/l	200	200	130	130
Hardness mg/l	451	451	784	784
Calcium mg/l	138	138	31.4	31.4
Magnesium mg/l	26.2	26.2	172	172
Iron mg/l	Tr	Tr	Tr	Tr
BOD_5 mg/l	<1	<1	<1	<1
Nitrate mg/l	0.6	0.6	15.4	15.4

Tr = Trace



NEWCOM COLLIERY PTY. LTD.
MYUNA & COORANBONG COLLIERIES
SCHEMATIC LAYOUT OF WATER POLLUTION CONTROL SYSTEM

FIG. 10

6 Assessment of environmental impact

6. ASSESSMENT OF ENVIRONMENTAL IMPACT

The construction and operation of Myuna and Cooranbong Collieries will bring some changes to the existing environment but these changes will be relatively minor.

The change in the use of the proposed sites will not be of major significance to the community. The sites are already extensively cleared and further clearing will be minimised. The flora and fauna has been studied and no rare or endangered species exist in these areas and as the area of disturbance will not be great the existing fauna will only be marginally affected and should readily relocate. The surface facilities will be designed to provide an aesthetic arrangement and to fit in with the sites.

The provision of adequate water quality control measures at each site will ensure that there will be no significant changes in the existing water quality. Also, attention has been given to the effects of noise from the site and whilst the colliery will operate on a four shift basis the effects of the noise level associated with colliery operation at the nearest residences is likely to be imperceptible.

The coal will be transported to the power station by covered belt conveyor and the use of this system together with the use of dust suppressant chemicals on the coal leaving the colliery will reduce any environmental effects associated with coal transport to a minimum.

There will be minimal dust emissions from the colliery plant with the features incorporated and effects of an intermittent nature such as dust created from mobile plant will not be a significant problem.

The development will provide stable employment opportunities for up to 350 persons at each colliery. As it is envisaged that the majority will come from the surrounding existing residential areas the associated demand on local service industries should not present any problems.

It is therefore considered, based on the investigations associated with this development, that it will be environmentally acceptable.

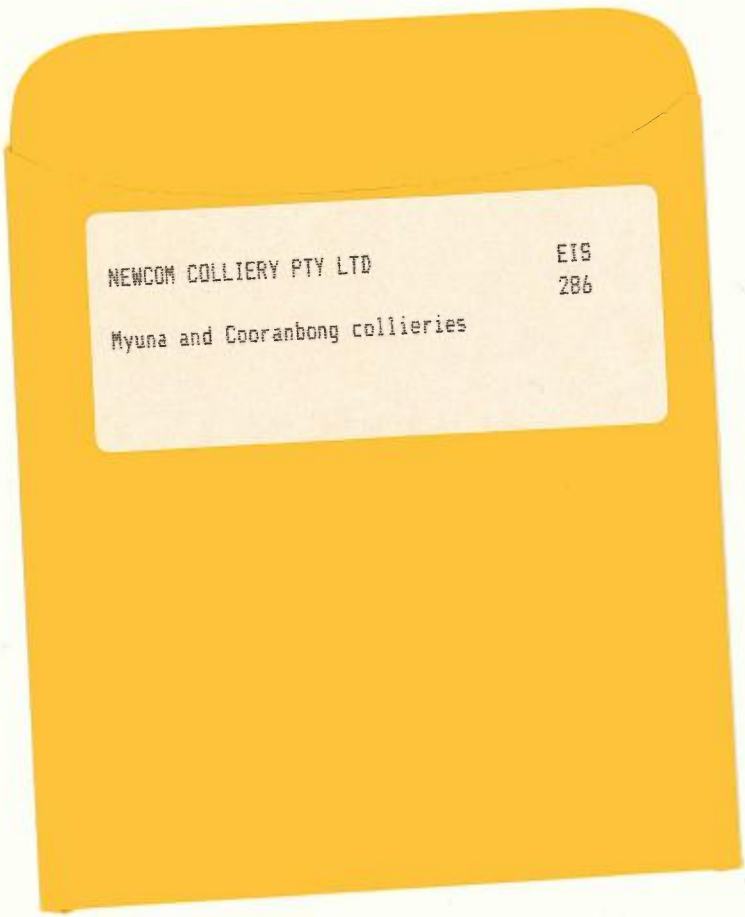
NEWCOM COLLIERY PTY LTD

EIS
286

Myuna and Coorabong collieries

Borrower's name	Date	Ext

RAECO


NEWCOM COLLIERY PTY LTD
EIS
286
Myuna and Cooranbong collieries