



EIS 1505

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Proposed hard rock quarry development, Part portion 87, Parish  
of Gladstone, Shire of Cooma-Monaro : statement of  
environmental effects

## Hard Rock Quarry



For **W. & A. Knowles**

Rock Flat

August 1999

Prepared by **I.T.S. Engineering Pty Ltd**

PROPOSED HARD ROCK QUARRY DEVELOPMENT

PART PORTION 87, PARISH OF GLADSTONE

SHIRE OF COOMA – MONARO

STATEMENT OF ENVIRONMENTAL EFFECTS

Prepared on behalf of

W. and A. Knowles

By

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August 1999

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## STATEMENT OF ENVIRONMENTAL EFFECTS

### INDEX

1. THE PROPOSAL
  - 1.1 General Description
  - 1.2 Consideration of Alternatives
  - 1.3 Description of Existing Environment
  - 1.4 Assessment of Environmental Effects
  
2. DETAILED DESCRIPTION OF THE PROPOSAL
  - 2.1 Aim
  - 2.2 Property Description
  - 2.3 Staging of Development
  - 2.4 Extraction of Material
    - 2.4.1 Type of Material
    - 2.4.2 Area and Quantity of Excavation
    - 2.4.3 Method of Extraction
  - 2.5 Haulage of Material
  - 2.6 Visual Concept
  - 2.7 Final Form of Quarry
  - 2.8 Hours of Operation
  
3. DESCRIPTION OF EXISTING ENVIRONMENT
  - 3.1 Regional Context
  - 3.2 Topography
  - 3.3 Soils
  - 3.4 Hydrology
  - 3.5 Vegetation
  - 3.6 Goulburn-Bombala Railway
  - 3.7 Land Use
  - 3.8 Zoning
  - 3.9 Planning Proposals
  - 3.10 Water quality
  - 3.11 Users of and Demand for Hard Rock Products
  - 3.12 Sources of Hard Rock Product
  
4. MITIGATING MEASURES
  - 4.1 Visual Impact
  - 4.2 Soil Erosion and Water Quality
    - 4.2.1 Diversion of Flows around the Quarry Area
    - 4.2.2 Sediment Traps
    - 4.2.3 Extraction of Material
    - 4.2.4 Protection of Cut Faces
  - 4.3 Truck Movements
  - 4.4 Dust
  - 4.5 Archaeology
  - 4.6 Rail movements

INDEX OF ILLUSTRATIONS

Plate 1	Location of proposal
Plate 2	Existing quarry layout
Plate 3	Proposed quarry layout
Plate 4	Position of photographs
Photo 1	The existing quarry as viewed from Monaro Highway
Photo 2	View from the rocky knoll showing existing quarry and stockpile area
Photo 3	View of the existing stockpile area showing site office
Photo 4	View of existing quarry face (South West)
Photo 5	Bitumen sealed road intersection with Monaro Highway
Photo 6	Proposed stockpile area (view South East)
	Proposed quarry site (view South)
Photo 7	Blue metal surfaced access track across line
	Access track to stockpile area
Photo 8 and cover	Aerial view of site

## 1.1 General Description of the Proposal

W & A Knowles propose to continue using the existing hard rock quarry on Portion 87 County of Beresford, Parish of Gladstone, next to Monaro Highway approximately 14 kilometres south of Cooma at Rock Flat. (see Photo 1)

Excavation will take place from a rocky knoll situated in the north-west corner of the site between the Goulburn-Bombala railway and the western boundary. The site will be excavated to a depth of approximately 20 metres. Up to 200,000 cubic metres of material will be obtained from the quarry. Annual production will be less than 30,000 cubic metres.

Drilling and blasting and front end loaders will be used to extract the material. Mobile crushing plant will be utilised to process the hard rock. The material will be loaded onto trucks for haulage off site. See Appendix 1 for proposed blasting details.

Haulage routes will all use an existing access road and railway crossing to Monaro Highway at the extreme north west corner of the property. Monaro Highway is the major and only road route to sites north and south of the quarry.

Quarrying will start on the south-eastern side of the existing quarry and progressively remove material. The remainder of the site will be restored to grazing land after the completion of the quarrying. The area to be disturbed is less than 2 hectares.

Extraction of material could extend over a period ranging from ten to twenty years, depending on the level of demand for the crushed rock product.

## 1.2 Consideration of Alternatives

There are many potential sites with similar material to Rock Flat in the Monaro District.

Distance from demand points, access infrastructure and the use of site and surrounding areas are determining factors in assessing suitable alternative sites.

The Monaro Plain is rural and introduction of further extractive industry would adversely impact on surrounding areas and minor roads.

Access to high quality roads is fundamental and many alternative sites lack this attribute.

Those alternative locations within the Monaro district have advantages and disadvantages when compared with the existing site. None of the advantages is sufficiently significant for an alternative to be favoured in place of the subject site.

### 1.3 Description of Existing Environment

The quarry site occupies part of the side slopes of the Spring Creek valley and varies in elevation from 910 metres AHD to 940 metres AHD. The quarry site is a rocky knoll with evidence of past surface mining and quarrying along benches.

The surrounding area consists of undulating hills rising to 1030 metres AHD. The Spring Creek valley passes the site at 890 metres AHD to 880 metres AHD. Spring Creek and Rock Flat Creek Converge downstream of the existing quarry site. The site is situated within the extreme downstream catchment of Spring Creek and partially within the catchment of Rock Flat Creek.

Soils on the site are classified as Prairie soils, Plastic Clays and Black Earths.

The site has been cleared and comprises quarry development which is currently disused and some grazing.

The disused Goulburn-Bombala railway line enters the site from the north-western corner and exits at the south western corner. The railway reserve divides the site into the western component which includes the existing quarry site and the eastern component which is used for grazing purposes.

Land use around the site has a history of extractive industry.

The land adjoining the site is zoned Rural 1(a) and a 400 metre wide strip adjoining Monaro Highway is zoned Rural 1(b). Extractive industry is permissible with consent of Council within both these zonings.

### 1.4 Assessment of Environmental Effects.

Issues identified include visual impact, soil erosion, water quality, truck movements, noise and dust impacts, heritage and archaeology and energy consumption.

## 2 DETAILED DESCRIPTION OF THE PROPOSAL

### 2.1 Aim

The aim of continuing to use the existing hard rock quarry is to supply crushed rock product to the A C T and local markets.

### 2.2 Property Description

The subject site lies within Portion 87 Parish of Gladstone County of Beresford, owned by Ronald Wilson Knowles and Alison Knowles.

### 2.3 Staging of Development

Extraction of material could extend over a period ranging from ten to twenty years. This time span is based on the maximum yearly extraction of 30,000 cubic metres.

### 2.4 Extraction of Material

#### 2.4.1 Type of Material

Material to be excavated is Basalt  
Grading tests were undertaken by R T A Cooma.

#### 2.4.2 Area and Quantity of Excavation

Excavation will be confined to a rocky knoll situated in the north-west corner of the site between the Goulburn-Bombala railway and the western boundary, measuring 120 metres by 50 metres, as shown in Photo 2.

The site will be excavated to a maximum depth of approximately 20 metres and the resultant form will be a flat low rise where a rocky knoll now exists.

Up to 200,000 cubic metres of material is winable from the quarry

#### 2.4.3 Method of extraction

The material will be extracted using mechanical excavators, drilling and blasting, and front end loaders. Mobile crushing plant will be utilized to process the hard rock. It will then be loaded onto trucks for haulage off site.

See Appendix 1 for proposed blasting methods.

## 2.5 Haulage of material

The existing entrance/exit point to and from the site is directly onto Monaro Highway. The haulage route within the site will cross the Goulburn / Bombala railway line. The crossing will be upgraded and maintained to S R A of N S W standards if the line becomes active, with particular regard given to sign posting for safety.

The connection to Monaro Highway has been used previously by quarry operators. A type 1 intersection, drainage culvert and sealing of the access road to the boundary has been undertaken. Formation width is 8 metres, sealed to 6.2 metres wide. See Photo 5..

Material from the existing quarry will transported by trucks along Monaro Highway, Kosciusko Road and Snowy Mountains Highway. The principal points of demand for this material will be within the Cooma-Monaro and Snowy River shires and the A C T. Minor demand may require haulage outside these shires.

The projected traffic along the Monaro Highway based on the maximum yearly excavation of 30,000 cubic metres is 92 trucks per week (1 truck/36 mins av.) The maximum capacity of the mobile crushing plant is 900 cubic metres est.(2160 tonnes) per week. Estimated traffic along the Monaro Highway at peak capacity would be 576 trucks per week (1 truck / 6 mins). These loaded trucks would travel from the quarry to the various locations of demand. Unladen trucks would return to the quarry along the same route as the outward journey. Traffic calculations include the return journey.

The haulage rates are based on trucks carrying approximately 15 tonnes of material. Trucks with dual rear axle and a gross laden weight of approximately 21 tonnes are envisaged.

## 2.6 Visual Concept

Quarrying will recommence on the south-eastern side of the existing quarry and progressively remove material.

## 2.7 Final Form of Quarry

The site will be restored to grazing land after quarrying. This will involve grading to gentle slopes with short rock fortyfive degree batters in the pit, restoration of topsoil and planting of pasture grasses,

## 2.8 Hours of Operation.

Hours of operation will be 7 am to 5 pm on weekdays and 7 am to 12 pm Saturday, normally. Should demand for the hard rock product increase then the hours of operation may increase to 4.30 am to 11.30 pm seven days per week.

Haulage operations would occur within the 7 am to 5 pm weekdays or 7 am to 12 pm Saturday, when haulage routes adjoin residential areas.

### 3 DESCRIPTION OF EXISTING ENVIRONMENT

In this section, those aspects of the existing environment are described which provide a context to the proposed development or which are likely to be affected by the proposed works.

#### 3.1 Regional Context

The site is located within the Monaro Plain on Monaro Highway approximately 14 kilometres south of Cooma, at Rock Flat. It is situated in the local government area of Cooma-Monaro Shire Council.

The operation will at first be powered by generators, but the operators intend to connect to three phase electricity in the future.

#### 3.2 Topography

Small lakes, flat topped basaltic caps and extensive treeless plains are characteristics of the Monaro Plain.

The quarry site occupies part of the side slopes of the Spring Creek valley and varies in elevation from 910 metres AHD to 940 metres AHD. The site is a rocky knoll with evidence of past surface mining and quarrying along benches. These benches occur on the southern side of the knoll at the 920 metres AHD and 930 metres AHD contours. Bench heights vary between one metre and five metres high.

The rocky knoll rises at slopes of one in eight to reach an elevation of 940 metres AHD.

The surrounding area consists of undulating hills rising to 1010 metres AHD. These hills connect to low ridge lines which run roughly north-south parallel to Spring Creek and Rock Flat Creek. The Spring Creek valley passes the site at 890 metres AHD to 880 metres AHD. Spring Creek and Rock Flat Creek converge downstream of the proposed quarry site.

A drainage line runs from the quarry site in a south-easterly direction to join Spring Creek. Three dams have been constructed by the owner along this drainage line. One dam is situated above the Goulburn-Bombala railway and the other two are situated between the railway line and Spring Creek.

#### 3.3 Soils

Extensive basalt flows of the tertiary period overlay the sedimentary rocks of the earlier periods to the south of Cooma. These flows have formed the dry-tussock grasslands of the Monaro Plain. Soils characteristic of the site are Prairie Soils, Plastic Clays and Black Earths. These soils are all relatively fertile, but whereas the prairie soil and plastic clays do not present significant erosion problems, the black earths are quite erodible. The existing quarry site has thin (less than 10 cm deep) prairie soils overlaying the parent basalt. Plastic clays and black earths exist over the remainder of the site.

### 3.4 Hydrology

The site is situated within the extreme downstream catchment of Spring Creek and partially within the catchment of Rock Flat Creek. Upstream of the site, the area of catchment is approximately 1940 hectares; the catchment of Rock Flat Creek is approximately 6075 hectares. The headwaters (top) of the catchment of Spring Creek are about 9.5 kilometres south-east of the site and rise to elevations of about 1130 metres AHD. The headwaters (top) of the catchment of Rock Flat Creek are about 11 kilometres south of the site and rise to elevations of about 1100 metres AHD. These levels are 220 metres and 190 metres higher than those on the site.

There is no possibility of flood discharges along Spring Creek and Rock Flat Creek encroaching upon the site.

### 3.5 Vegetation

The dry-tussock grassland of the Monaro Plain is the dominant vegetation component of the region with open savannah woodland on some ridges. Exotic tree species (particularly Pines) have been used as wind breaks around the homesteads in the area.

The site has been cleared and comprises the floors of quarry and stockpile areas with some improved grassland which is currently used for grazing sheep. See Photo 6.

The ridge immediately to the west of the site, Dangelong (1035 metres AHD), and the ridge on the eastern side of Rock Flat Creek has open savannah woodland on its top slopes.

These open savannah woodlands are typical of the original vegetation cover and are generally in poor condition, suffering from dieback.

The Spring Creek valley and Rock Flat valley adjoining the site have been cleared and comprise improved grassland which is currently used for grazing sheep.

### 3.6 Goulburn-Bombala railway

The Goulburn-Bombala railway line enters the site from the north-western corner and exits at the south-western corner. The railway reserve divides the site into the western component which includes the existing quarry site and the eastern component which is used for grazing purposes.

The railway has not been used for ten years. The railway's future at this time is uncertain.

### 3.7 Land Use

The dominant land use of the area is rural with grazing of sheep the dominant activity. Land use around the site has a history of extractive industry.

An abandoned clay pit, which was worked to supply raw material to the Cooma Brickworks, is situated over the property boundary of Portion 87 (the existing quarry site) and Portion 61, County of Beresford, Parish of Gladstone.

An abandoned silicate mine is situated on the slopes to Rock Flat Creek, opposite the existing quarry site (on Part Portion 49, County of Beresford, Parish of Dangelong).

An abandoned gravel pit is situated on the western slopes of Dangelong ridge adjacent to the "Kaludah" road. (Portion 115, County of Beresford, Parish of Dangelong).

The existing quarry site is within 0.5 kilometres of the abandoned clay pit, 1.0 kilometres of the abandoned silicate mine and 3.0 kilometres of the abandoned gravel pit.

A mineral springs bottling operation has operated at Rock Flat adjacent to the site. Past operation occurred during 1984 and 1985.

The site itself was operated as a hard rock quarry from about 1990 to 1993 by a partnership known as Cooma Aggregates.

### 3.8 Zoning

The planning instrument controlling development on the site is the Monaro Planning Scheme Ordinance as amended. The zoning of this instrument is Rural 1(b) and Rural 1(a). Rural 1(b) extends in a strip 400 metres from the Monaro Highway. A draft L E P 1999 Rural addresses additional issues such as a 100 metre wide riparian zone each side of Rock Flat Creek.

Quarrying is a permissible activity requiring the consent of the Shire Council in Rural 1(a) and Rural 1(b) zonings.

Mining lease No 293 occurs upon Part Portion 49 County of Beresford, Parish of Dangelong which adjoins the site.

The railway reserve for the Goulburn-Bombala railway bisects the site.

The defunct Crown Village of Rock Flat straddles both Monaro Highway and Rock Flat Creek adjacent to the site.

### 3.9 Planning Proposals

Alignment options being considered by the V F T project include the ridge between Cooma Creek and Spring Creek approximately three kilometres to the west of the site and the Rock Flat Creek valley. These alignment options are subject to further terrain analysis before adoption of a preferred alignment.

### 3.10 Water Quality

Water quality within the Spring Creek and Rock Flat Creek may not be suitable for drinking purposes due to sheep and cattle faecal pollution. The length of both creeks is open to stock. The extent of faecal pollution depends upon the creek flows and the season.

During summer both Spring Creek and Rock Flat Creek may exceed the recommended water quality specification for drinking purposes, despite the fact that it is clean looking water.

Water quality monitoring was undertaken by the Cooma-Monaro Shire's Health Officer during the operation of the Mineral Springs bottling plant in 1984 and 1985.

One sample during this period included radiation levels which were marginally above the Health Department requirements.

There have been no known requests for water quality testing since.

### 3.11 Users of and Demand for Hard Rock Products

Users of any substantial quantities of Hard Rock Product within the Monaro District include :

R T A

Snowy River Shire Council

Cooma-Monaro Shire Council

Cooma Sand & Concrete

Various users in A C T

R T A uses hard rock product in heavy patching and reconstruction of the following roads :

Snowy Mountains Highway (State Highway no. 4) Snowy River Shire boundary north of Kiandra to Cooma, and Bombala turnoff to Bega Valley Shire boundary.

Kosciusko Road (Main Road 286). Inside the Kosciusko National Park.

The Alpine Way (T. R. 4043). Material supply and construction.

Monaro Highway (State Highway no. 19) A C T border to Bombala Shire boundary.

R T A's average yearly demand is 40,000 cubic metres.

Snowy River Shire Council ( S R S C ) used hard rock product for heavy patching, reconstruction and maintenance on the following roads :

Kosciusko Road (Main Road 286) Kosciusko National Park boundary to Snowy Mountains Highway at Fourmile.

The Alpine Way (T.R. 4034), Maintenance only.

All other roads within the Shire boundaries except those under R T A responsibility.

S R S C's average yearly demand is 2000 to 3000 cubic metres for heavy patching and maintenance.

Cooma-Monaro Shire Council (C M S C) uses hard rock product in heavy patching, reconstruction and maintenance on all roads within the Shire boundaries except those under the R T A's responsibility. C M S C's average yearly demand is 2000 to 3000 cubic metres.

The Very Fast Train (V F T) project, Cooma Section, will require 1.8 million tonnes of railway ballast (approximately 750,000 cubic metres) but currently there is no programme or decision to proceed.

R T A suspends roadworks in the area during the ski season (long weekend in June to long weekend in October). Demand for hard rock product during this period is only for supply as necessary to the Shire Councils and to the A C T.

### 3.12 Sources of Hard Rock Product

The current Snowy River Shire planning instrument is L E P 1997 1A & 7. Under its provisions, extractive industry is allowed in Zones 1A & 7.

Hard rock quarrying is now conducted at Deerson's Pit and Saddle Pit which are adjacent to the Alpine Way near the Kosciusko National Park boundary but the bulk of their requirement is probably being obtained from Schmidt's quarry between Rock Flat and Nimmitabel.

The hard rock quarry at Dalgety is currently not being operated.

S R S C gains its hard rock product from some pits within the shire, Deerson's Pit and Schmidt's quarry in Cooma- Monaro Shire.

Cooma-Monaro Shire Council gains its decomposed rock product from two pits at Bunyan , 12 kilometres north of Cooma along Monaro Highway.

The R T A of New South Wales gains its hard rock product from Schmidt's quarry.

D M R, S R S C and C-M S C all favour competition and nearest source of supply of hard rock product due to the substantial cost of transport and material.

#### 4 MITIGATING MEASURES

The following impacts of the proposed works were considered to be significant :

- Visual impacts, particularly during construction
- Soil erosion
- Water quality
- Truck movements, especially as a source of noise and dust.

Measures will be taken to reduce these and more minor impacts to ensure that the proposed works are carried out in an environmentally acceptable manner. The following subsections describe these measures.

##### 4.1 Visual Impact

A visual impact buffer is provided along the Monaro Highway frontage of the site as shown in Photo 4. This is achieved by siting and staging of extraction to the south side of the railway line, as shown in Photo 4. Sylvia Crowe, in her "Landscapes of Tomorrow" makes the point that the creation of cliffscapes by quarrying enhances the landscape.

##### 4.2 Soil Erosion and Water Quality

The following sediment control strategy will be adopted to minimise adverse impacts on soil erosion and water quality:

- Upstream flows to be diverted around the quarry area
- Sediment traps to control flow across the quarry site
- Construction will commence at the south-eastern end working towards the north end of the quarry
- The extent of working areas will be minimised.
- Areas not being worked will be revegetated.

Some of these elements are expanded in the following subsections.

###### 4.2.1 Diversion of Flows Around the Quarry Area

The area of the Spring Creek catchment directly above the quarry site is 6 hectares.

Flow upstream of the quarry is diverted around the site into the existing drainage line as shown in Photo 3. These flows do not require treatment, but they will pass through the sites' sediment trap. Water from the quarry would require treatment and will pass through sediment trap before entering Spring Creek.

#### 4.2.2 Sediment Trap

A sediment pond will be installed below the downstream end of the extraction area, within the drainage line to the south.

The total volume of the sediment pond will be about 2700 cubic metres which was calculated on the basis of 300 cubic metres storage per hectare of disturbed area. This volume is 2.5 times greater than that recommended by the Department of Land and Water Conservation.

The proposed pool (sediment trap) is trapezoidal in shape with a depth of about 1.5 metres. An embankment will surround the sediment trap. At the downstream end, this embankment will be protected to prevent damage by overtopping. The pond will be drained by an outlet pipe discharging into the downstream channel.

Flow into the drainage pipes will be controlled by a perforated vertical riser pipe wrapped in filter fabric. The vertical riser will allow the gradual release of water from the sediment trap, providing time for sediment to settle in the ponds.

#### 4.2.3 Extraction of Material

Extraction of material will commence at the south-eastern end of the proposed quarry site, and will progress gradually north. The sediment traps will be installed so that run-off from working areas passes through them. Some site grading may be required to facilitate drainage from the work areas into the silt traps, and the existing overburden and stockpile area of approximately 1.4 hectares will be re-used.

#### 4.2.4 Protection of Cut Faces

Once the required material has been removed, cut slopes will remain along the western boundary of the extraction area. This slope could be subject to minimal erosion.

Erosion will be mitigated by removal of prairie soil overburden from slopes within the proposed site draining into the quarry area.

#### 4.3 Truck Movements

The following measures will be taken to minimise the impact of trucks hauling material along local roads :

- Trucks will operate only between 7 am and 5 pm on weekdays and 7 am to 12 pm on Saturdays, when haulage routes adjoin residential areas.
- Trucks will be maintained and checked to ensure that silencers are operating effectively.
- The weights of loads will be controlled so that damage to road surfaces is minimised.
- Blue metal has been placed in the access road connecting the bitumen intersection with the Monaro Highway. Traffic in the blue metal will not raise dust to be carried on to the Highway See Photo 7..

Some damage to road pavements along the haulage routes is anticipated. The precise location and frequency of pavement failure, however, is not easy to predict. This is because of variations in local rainfall (which will affect saturation and weakening of the pavement) and intermittent operation of the quarry (dictated by demand for hard rock product).

In order to identify and rectify possible damage, road pavements will be inspected by the quarry owner and Cooma-Monaro Shire Council engineers both before and after each period of quarry operation.

#### 4.4 Dust

The previous application required 100 metres of bitumen sealing from the intersection to control dust. The operators placed blue metal on the road instead, and this is considered to be satisfactory. The following measures will be applied to minimise the generation of dust :

- Covering of truck loads
- Spraying of water onto cut faces and access roads within the quarry site if necessary.
- \* Application of blue metal to access roads

#### 4.5 Archaeology

If any aboriginal relics are uncovered during excavation, the National Parks and Wildlife Service will be contacted immediately.

#### 4.6 Rail Movements

Rail movements are not expected as the line has been closed for about ten years. Working will stay out of railway reserve land and will not undermine that land.

APPENDIX 1 PROPOSED BLASTING METHODS

The applicants wish to continue to implement the blasting methods previously approved by Council and employed by the previous operators of the quarry.

Briefly, blasting would be undertaken by a licensed blasting contractor on a maximum of one day every two months. Several blasts at different locations within the quarry would be undertaken on the same day.

Responsibility for designing the blast to comply with the relevant guidelines of the Environment Protection Authority, with Australian Standard 2187.2 (SAA Explosives Code Part 2: Use of explosives) which is adopted by the Department of Minerals and Energy, and the Environment Protection Authority's Noise Control Guideline 154 (Blasting) dated 9/5/85 lies with the blasting contractor.

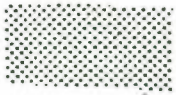
The applicants propose to use ammonium nitrate – fuel oil (ANFO) as the explosive.

All blasting operations would comply with AS 2187.2 (Use of explosives).

The blasting contractor would be responsible for all details of the blasting operation, including transport to and storage on site of explosives, and supply and operation of drilling equipment to prepare the rock for blasting.

Further details can be obtained from the Environmental Assessment report prepared by David Hogg Pty Ltd for R Snowden in January 1993. A copy is held by the Cooma- Monaro Shire Council.

**Legend**



URBAN AREA



MAJOR ROADS



KILOMETRES

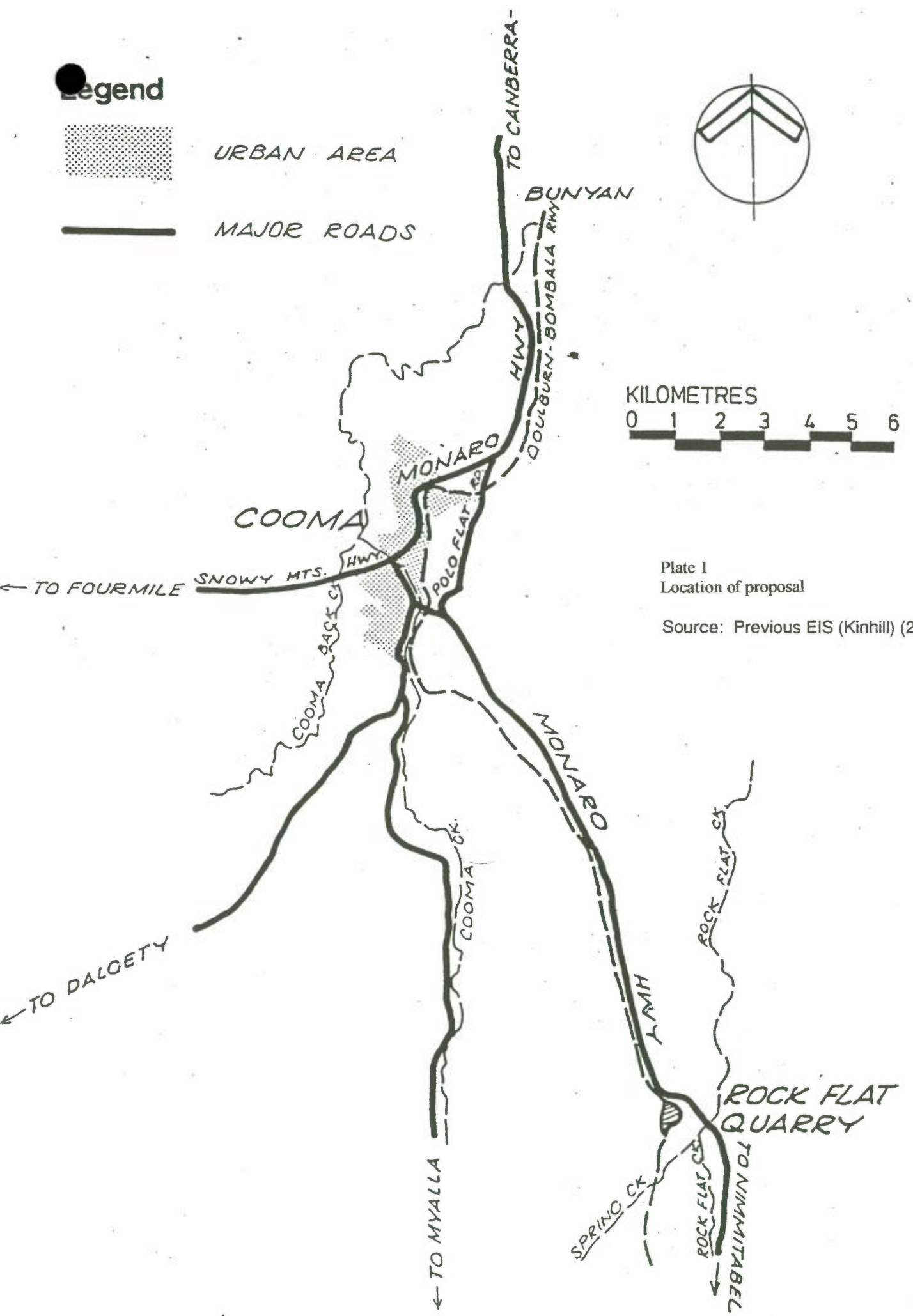


Plate 1  
Location of proposal

Source: Previous EIS (Kinhill) (2)

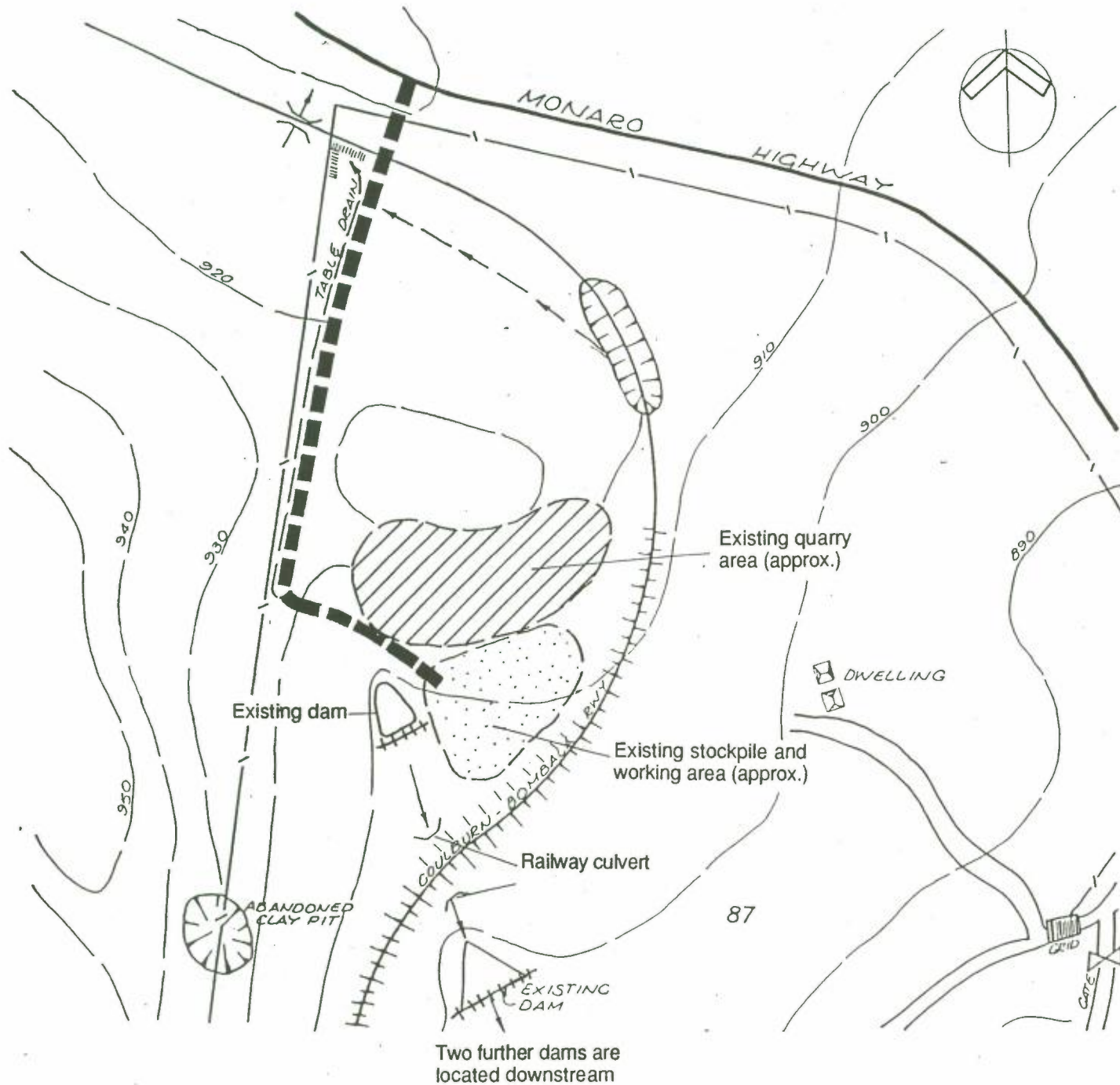


Plate 2  
Existing quarry layout

Base map from previous EIS (Kinhill)

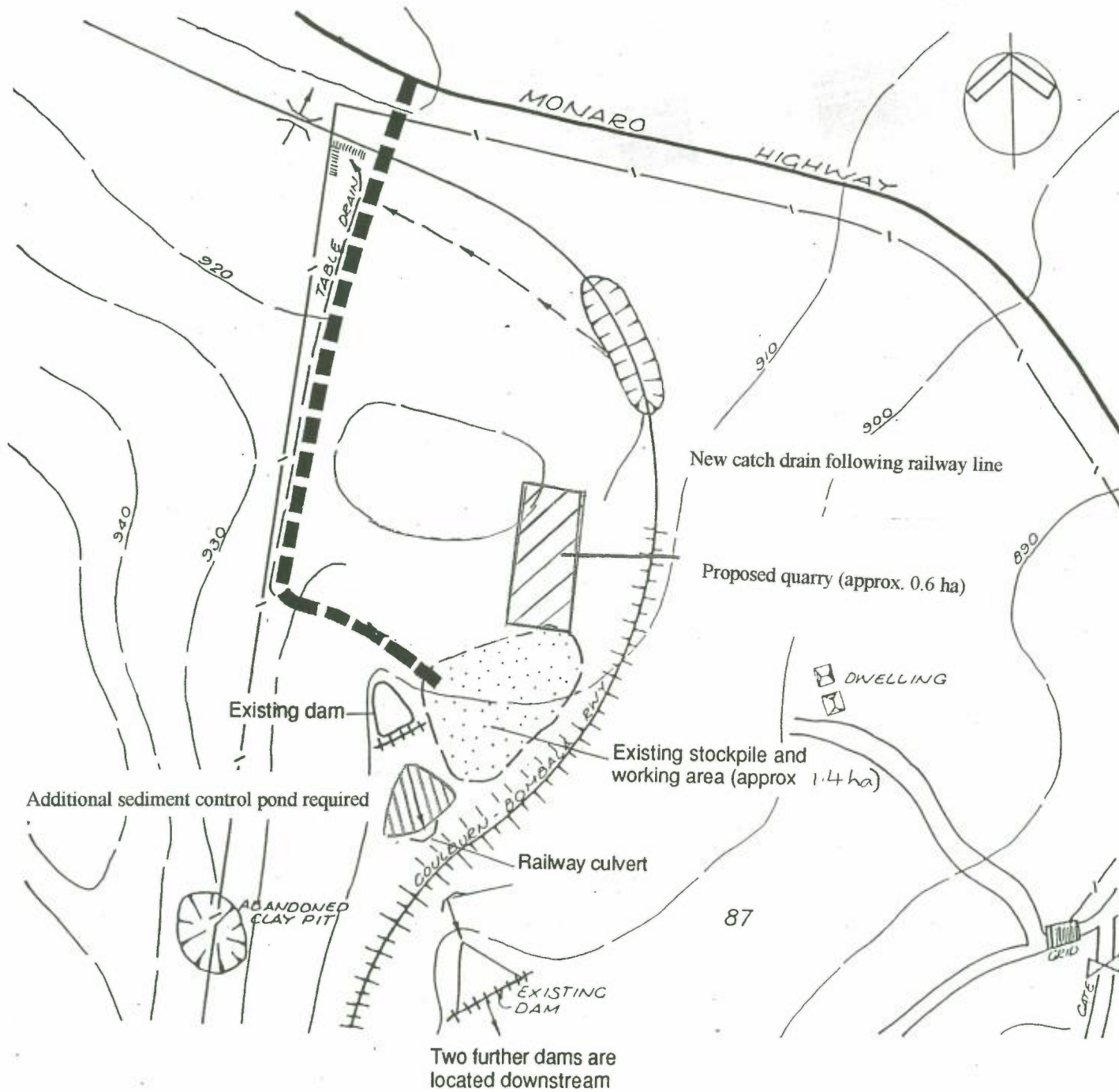


Plate 3  
 Proposed quarry layout  
 Base map from previous EIS (Kinhill)

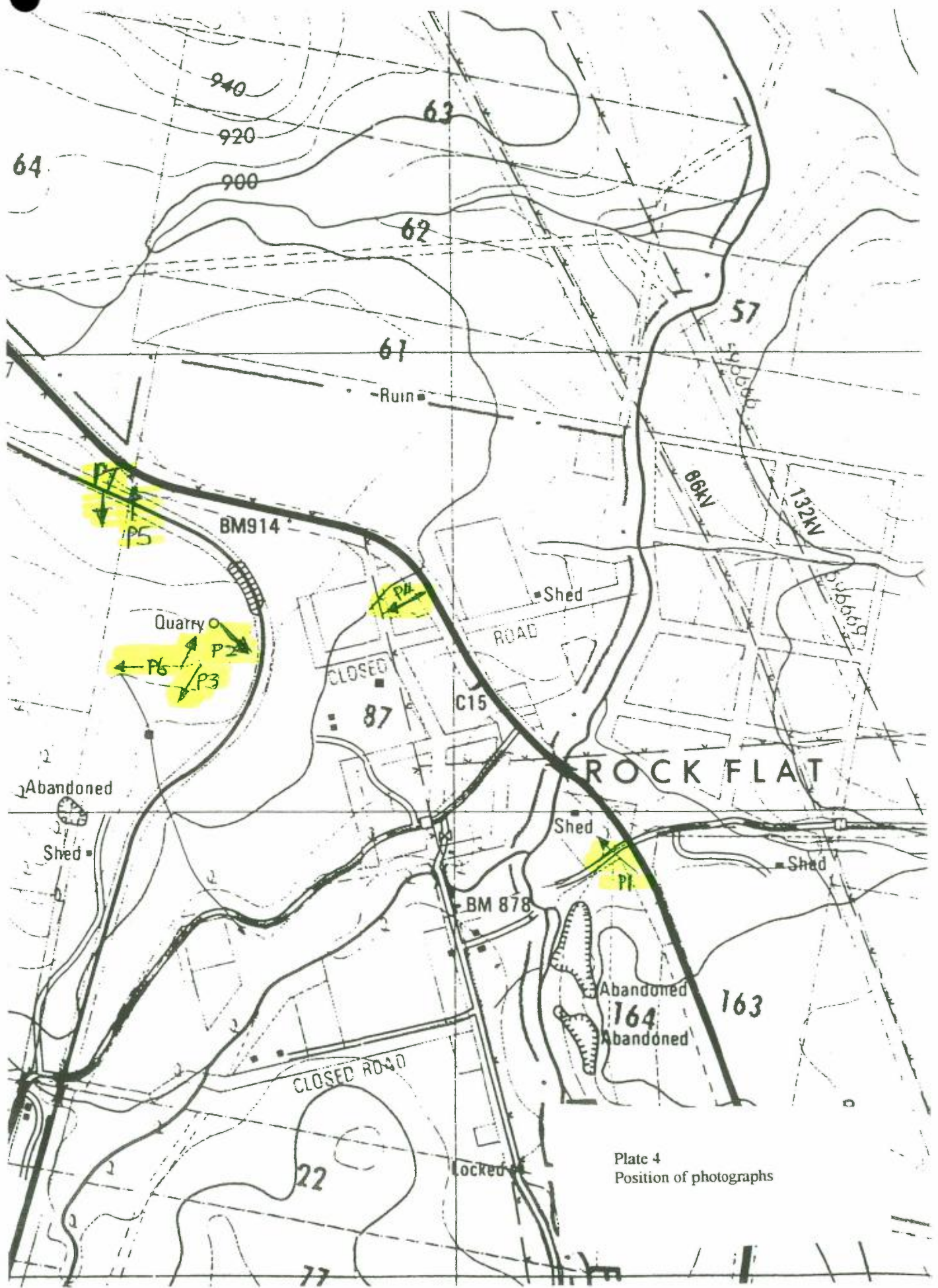


Plate 4  
Position of photographs

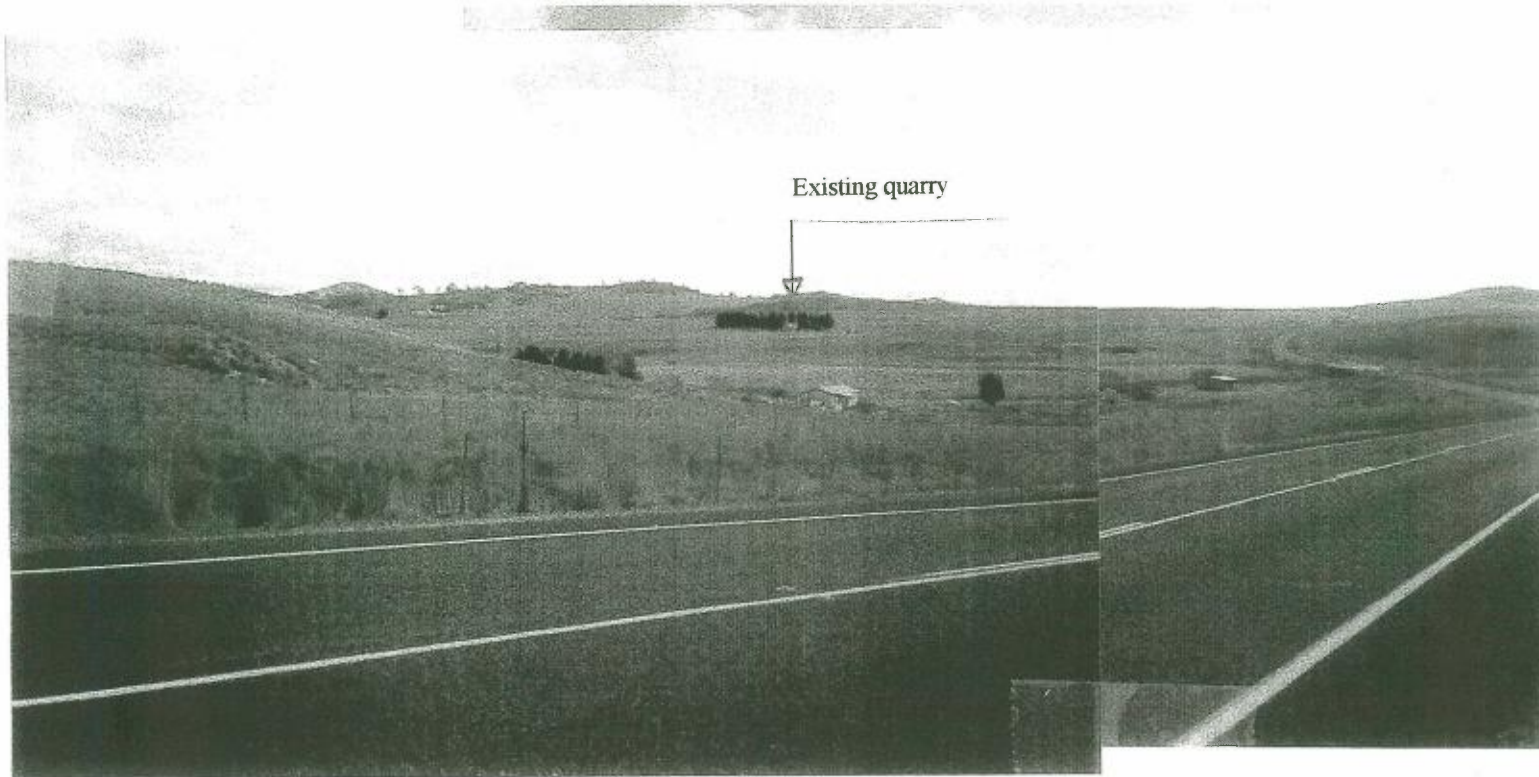
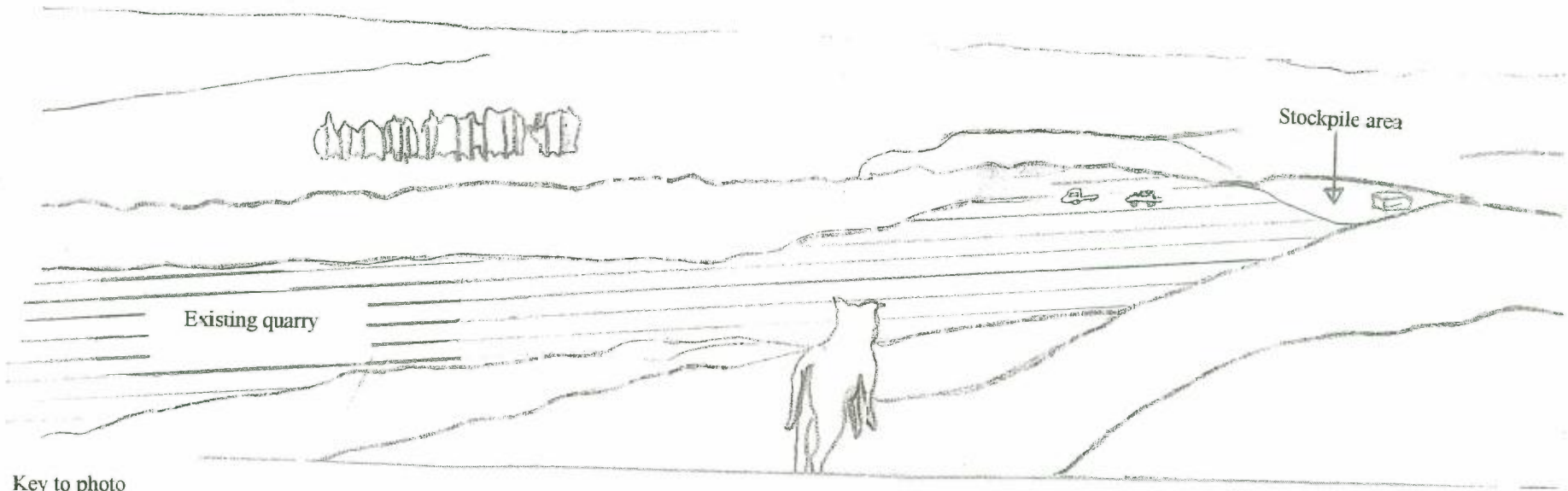


Photo 1  
The existing quarry as viewed from Monaro Highway



Key to photo



Photo 2  
View from the rocky knoll showing existing quarry and stockpile area

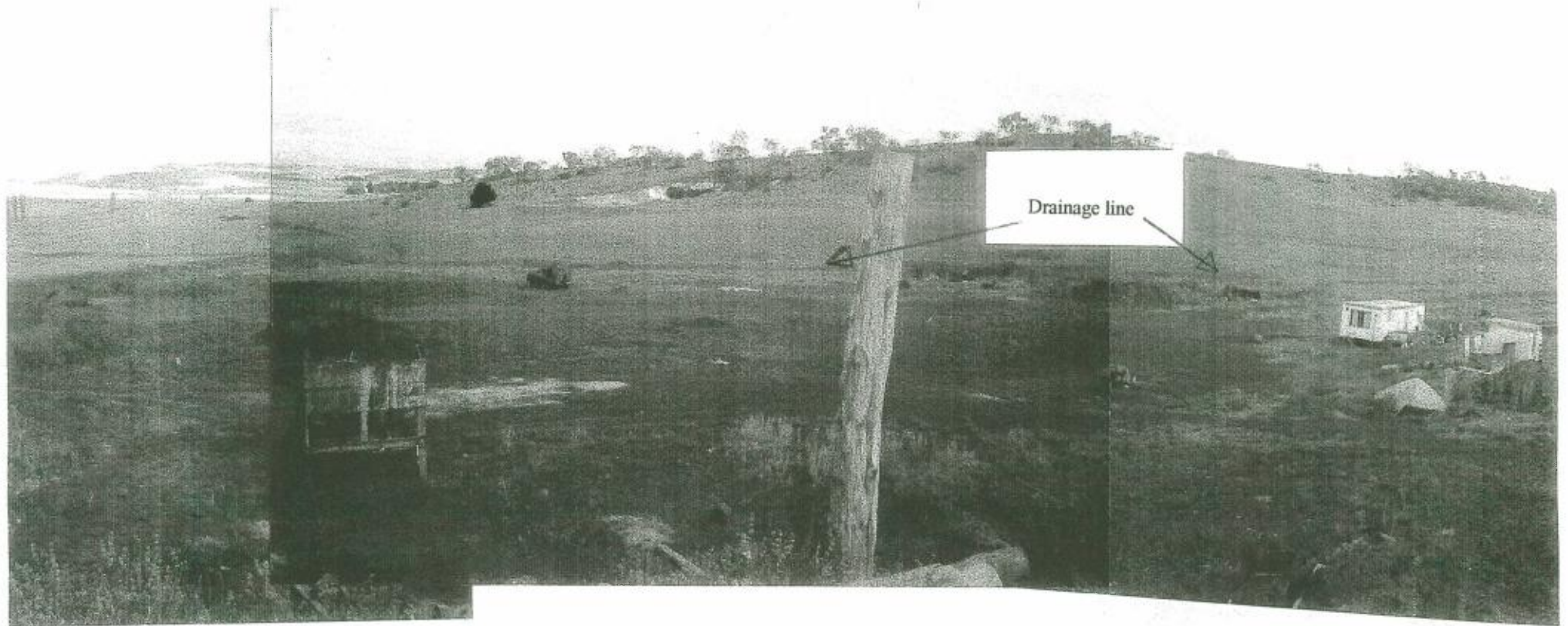


Photo 3  
View of the existing stockpile area showing site office

Photo 4  
View of existing quarry face (South West)



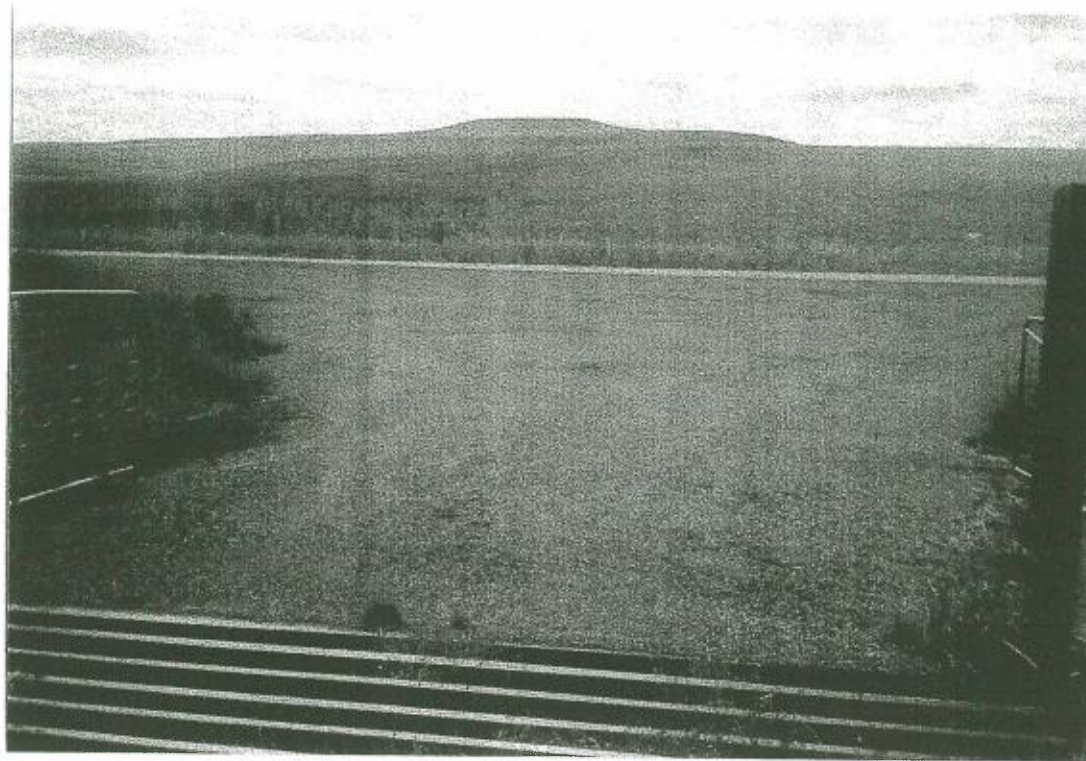


Photo 5  
Bitumen sealed road intersection with Monaro Highway



Photo 8 and Cover  
Aerial view of site  
CMA ref. Jillamatong 8725-111-N Topographical Map  
97.2 E 75.4 N