EIS 1343

AB020271

Cadia Gold/Copper Project, New South Wales : planning focus document, December 1994

Newcrest Mining Limited

CADIA GOLD/COPPER PROJECT
NEW SOUTH WALES
PLANNING FOCUS
DOCUMENT

DECEMBER 1994

Newcrest Mining Limited
Cadia Project
C/- Post Office
South Orange NSW 2800

sampling, detailed ground magnetic traversing, trial IP and radiometric surveys and widely-spaced core drilling. The low-grade gold-copper mineralisation which has been intersected by this drilling is hosted in an envelope of discontinuous sheeted quartz veins which trend NW and dip moderately steeply to the SW. On the surface the mineralised envelope is expressed by a broad low-level (100 ppb) soil gold anomaly and a general coincident weak copper anomaly (500 ppm). The anomaly has general dimensions of 700x300 m and trends NW.

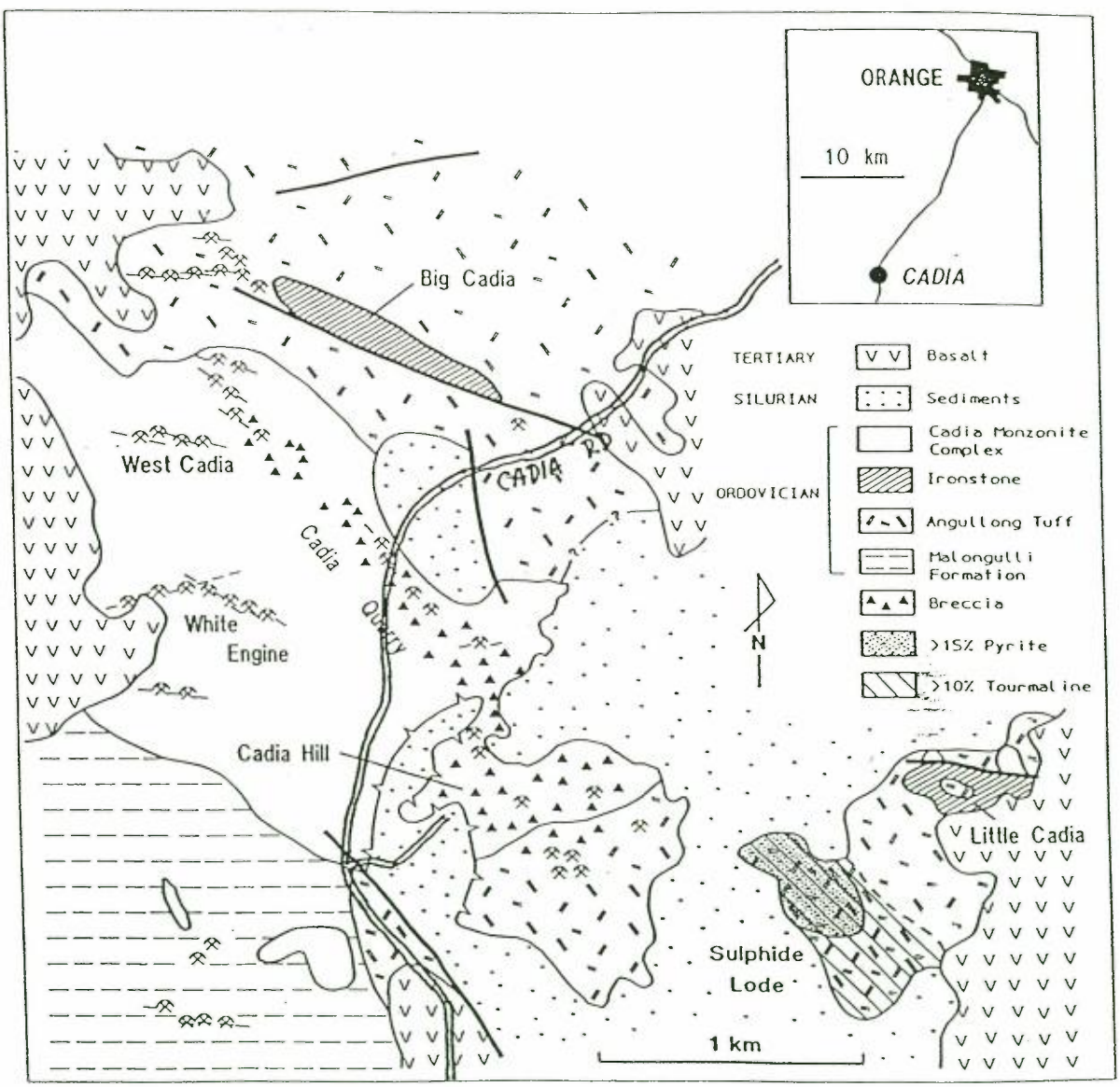

Figure 4 - Geological map of the Cadia area (after Holliday and Wood, 1993).

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1.0
BACKGROUND

1.1 INTRODUCTION

This information document has been prepared by Newcrest Mining Limited to provide information on the proposed mining development at Cadia Hill (the Cadia Project), New South Wales (NSW). An initial Planning Focus meeting has been requested with the NSW Department of Planning (DoP). The meeting will establish lines of communication between Newcrest and the NSW State authorities and Local Government organisations responsible for project assessment, approvals, licences, and operating permits and provide a basis for on-going consultation with the community at an early stage. Terms of Reference for the project Environmental Impact Study (EIS) will be confirmed during and immediately following the initial Planning Focus meeting.

The Planning Focus document provides Government personnel with information on:

- the development proposal itself; and permits focus on
- any issues of concern to the approving bodies and government.

The Planning Focus will assist the decision making processes of Government and help with the assessment of the Environmental Impact Study (EIS) when this is submitted. It will enable Newcrest to discuss the project at an early stage of its planning to best accommodate Government and community requirements.

In addition, the presentation of this document to the initial Planning Focus meeting is to help Newcrest and the DoP obtain co-ordinated advice on Government requirements for the Project. It is also designed to permit Newcrest to advise the community, and facilitate the early resolution of issues that may arise between the various participating Government organisations.

Typically (and for the benefit of readers not familiar with the regulatory process in NSW), the basic steps for Planning Focus are:

(1) The process is initiated by Newcrest approaching the DoP and the DMR advising them of the project's status and Newcrest's desire to formally initiate the assessment and consultation process.

(2) DoP/DMR invite persons from relevant Government authorities that have project assessment or approval responsibilities, to an initial Planning Focus meeting. This meeting will be held at the Cadia Hill site and will include a site inspection.

(3) Local or State Government participants will submit written comments on issues that they wish to have considered by Newcrest.

(4) Follow-up Planning Focus meetings will be arranged as required throughout the course of the EIS, to enable Newcrest to maintain contact with the relevant Government personnel and to present updates on the proposed development design to satisfy the requirements of the participating authorities.

The Planning Focus will therefore have the following benefits for the Cadia Project:

- Provide environmental considerations and final Terms of Reference to assist Newcrest in the preparation of the EIS.

- Enable the Government authorities and local authorities to be briefed in one group and thereby ensure that all parties gain a similar understanding of the proposed development.

- Identify the major concerns and issues related to the project to enable specific additional studies to be conducted if necessary.

- Involve the Government personnel in project planning to enable the design to best meet the needs of the Government and the community.

The sections encompassed in this document outline the project proposal and provide details of the studies currently underway or proposed in 1994/95.

1.2 PROJECT SETTING

The Cadia Project area is located 25 km south of Orange, in the Central Tablelands of New South Wales as shown in Figure 1. The project area covers approximately 700 ha along the Cadiangullong Creek valley which drains the southern portion of the Mount Canobolas State Forest (refer to Figure 2).

The Bathurst/Orange area has a population of approximately 60,000. The area is a focus of decentralised development and is a regional centre of industry, commerce, education and social services. The land is principally used for cattle and sheep grazing for meat and wool, with some dairying, horse breeding, mixed crops and bee keeping. Closer to Orange, plantation forests and fruit production occur. The Cadia Project will be one of the largest single capital developments to occur in the region.

The general landscape of the Cadia Project area is undulating, cleared and well grassed, gradually changing to steeper and less cleared terrain which rises to 1397 m at Mount Canobolas.

1.3 REGIONAL GEOLOGY AND ORE RESERVES

The regional geology of the Cadia-Orange district is shown in Figure 3.

The proposed Cadia Project is based on a large low-grade, porphyry-type gold/copper deposit. Currently a resource of 149 million tonnes of ore grading 0.96 g/t gold and 0.18% copper containing 4.6 million ounces of gold has been calculated. In-fill drilling and localised exploration is currently underway to define the limits of mineralisation and further regional resource potential.

1.4 HISTORY OF MINING IN THE CADIA DISTRICT

The Cadia area has a continuous history of exploration and mining dating back more than 140 years to the discovery of copper and gold in 1851, shortly after the first Australian gold rush at Ophir 40 km to the north. Extensive copper mining took place at Cadia (now called White Engine), Iron Duke (now Big Cadia), West Cadia and Cadia Extended (now Little Cadia) mines. The largest production came from the Iron Duke mine which by 1917 had yielded more than 100 000 tonnes of secondary copper ore (5 - 7% Cu). From 1918-1929 and 1941-1943 quarrying at Iron Duke also produced 1.5 million tonnes of low grade iron ore (50% Fe).

Carpentaria Exploration Company conducted exploration at Cadia in the mid 1960s. In 1968 Pacific Copper Limited acquired the area and completed drilling programs at Big and Little Cadia, which resulted in the discovery of low-grade copper-gold mineralisation.

In 1990, Newcrest investigated Cadia Hill (located 1500 m south-south-east of Big Cadia) on the basis of earlier exploration results, particularly the evidence of low-grade gold-copper mineralisation and a soil gold anomaly towards the north-west. Subsequent investigations centred on a ridge of quartz monzonite porphyry, have identified significant low-grade gold-copper mineralisation in quartz veins which trend north-west and dip to the south-west.

1.5 THE COMPANY

Newcrest Mining Limited is headquartered in Melbourne, and was formed in 1990 from the merger of BHP Gold Mines and Newmont Australia. Newcrest currently employs approximately 800 people in Australia. Newcrest operates three gold mines in Western Australia (including the Telfer mine), and has a 20% interest in the Boddington Gold Mine, Western Australia. Until their sale in 1993, Newcrest also operated successful gold mines in New South Wales, at Parkes and Browns Creek.

At the large open pit and underground Telfer Mine, Newcrest treat more than 10 million tonnes of ore per annum.

Elsewhere in Australia, Newcrest is actively exploring in Western Australia and Queensland. Offshore, the company has active exploration programmes in Indonesia, Greece and South America.

1.6 THE CADIA PROJECT

Newcrest propose to develop a gold/copper mining project at Cadia. The project would consist of open cut mining with ore processing expected to consist of staged flotation and leach extraction. The project would likely involve the processing of 15 million tonnes per annum (Mtpa) of ore, to produce in the order of 125,000 tonnes per annum of concentrate.

The copper/gold concentrate would be transported to plant(s) away from the mining and processing operations, for refining either within Australia or overseas.

1.7 PROJECT STATUS

Newcrest are currently undertaking a Feasibility Study, expected to be completed by the end of October 1995. At present the feasibility studies relate to determining the economics of the project, resources, metallurgical and mining assessments, potential effects of the mine, environmental management requirements and socio-economic issues for the local community.

The baseline environmental studies that are being conducted include:

- meteorological conditions;
- background dust monitoring;
- noise and blasting;
- geochemistry;
- surface water quality monitoring;
- water resource availability and management;
- flora and fauna surveys;
- land use capability and soil surveys;
- heritage and archaeology;
- socioeconomic studies;
- transportation;
- project layout options;
- mine design and waste management; and
- rehabilitation and agricultural studies.

An EIS is to be prepared to accompany a Development Application, planned for submission in 1995. A request for Terms of Reference for the EIS, and an application to the DoP to initiate the consultation process with State and Local Government authorities via a Planning Focus meeting have been made by Newcrest, in November 1994.

2.1 PROJECT DESCRIPTION

The Cadia deposit is a large, homogenous, low grade gold-copper orebody that remains open at depth. In 1994 the Company took the decision to proceed with a full feasibility study for the Cadia Project. The feasibility study involves confirming resources with infill drilling, mine design and pit optimisation, metallurgical testwork leading to a processing plan design, evaluation of water supply schemes and infrastructure and engineering studies.

The preparation of an Environmental Impact Statement (EIS) is being conducted in parallel, with the above feasibility studies. As the studies are being prepared in parallel detailed information in several areas is not yet available but will become available in time for inclusion in the EIS document.

The current programme on-site involves eight drill rigs conducting in-fill drilling of the Cadia deposit. A small exploration decline designed to provide a bulk sample for metallurgical testwork has been developed into Cadia Hill.

2.1.1 Mining

The geometry and low metal grades of Cadia mineralisation mean that it would be necessary to design a project that achieves economies of scale using large tonnage, low cost bulk mining methods.

Mining would involve drilling and blasting of rock with both ore and waste rock transported by haul trucks to their respective destinations. The proposed mine plan is shown on Figure 5.

2.1.2 Processing

The low grade sulphide mineralisation in the Cadia Project ore body is predominantly pyrite, with lesser amounts of chalcopyrite and minor amounts of bornite, digenite and chalcocite.

Testwork conducted to date indicates the majority of the gold can be recovered using a gravity - flotation process. A small carbon-in-pulp (CIP) circuit may also be used to extract gold from pyrite-rich ore. A conceptual flowsheet for the plant is shown in Figure 6.

The final product will consist of copper concentrate containing gold credits and, if the CIP is used, gold dore will also be produced. The copper concentrate would be transported off-site for refining.

2.1.3 Tailings Dam

An engineered tailings dam would be constructed from run-of-mine waste and material sourced from within the project area, to store tailings from the processing plant. A number of tailings dam sites have been considered and the proposed site is shown in Figure 5.

The tailings dam would be designed in association with the relevant New South Wales Authorities as a containment structure. Reclaimed water would be collected in a downstream collection dam and recycled to the processing plant.

2.1.4 Water Supply

Total site process make-up water requirements (after allowing for water recovery from the tailings dam) are estimated to be approximately 40 ML/day. This includes site dust suppression requirements of between 2-3 ML/day during the drier months.

A conjunctive water supply system involving ground and surface water would be proposed to provide water for the project (Figure 7). The feasibility of using treated sewage effluent from Orange is also being investigated.

Surface water would be provided by low level weirs established on Cadiangullong and Flyers Creeks with a water storage provided on Cadia Creek.

Groundwater would be used to augment surface supplies. Consultation with landholders and the Department of Water Resources has commenced.

2.1.5 Transport of Product

Preliminary options for transport of product are still being evaluated and could involve some form of road transport. Several options for product transport by road are available including:

- transport to Spring Hill 18 km;
- transport to Orange 20km;

followed by rail haulage to a port either in Sydney or Newcastle.

The road route to Spring Hill from the Cadia turnoff could possibly follow a similar route to that used by forestry timber trucks via the:

- Orchard Road junction with Forest Road at Spring Terrace; and
- Forest Road to Spring Hill.

Modifications to these options to minimise any potential traffic impacts are possible. Studies and consultation with Councils and RTA are to commence shortly.

If the above option was chosen a rail head would need to be established at Spring Hill utilising either the existing side track or developed at a new site. Concentrate product would be transported and stored in containers for ease of handling and to avoid spillage. Alternative options being considered include road/rail to Blayney and road transport to the east coast and slurry pumping to a rail head at either Orange or Spring Hill via a pipeline.

The project area is presently serviced by a loose surfaced road that is used by the public. Development of the Cadia deposit would necessitate closing the existing road. To provide an alternative access route for the public, as well as access into the site, it is proposed to develop a parallel road on the eastern side of the valley. This route would involve a small addition to the existing roads already in place and would provide access through to Panuara Road.

2.1.6 Power

Electrical power requirements for the Cadia Hill project have been estimated at 50 MW.

Given the relatively high power requirements and project life in excess of ten years, two principle options for providing power are being evaluated:

- sourcing from the New South Wales grid; or
- generation on site using gas fired turbines.

Discussions have been held jointly with Pacific Power and Ophir Electricity to:

- identify issues likely to influence power supply for the project;
- determine the supply options that are available; and
- determine potential capital and operating cost requirements.

2.1.7 Hours of Operation

Processing and mining operations would operate on two twelve hour shifts, seven days a week 365 days a year. Blasting would be restricted to daylight hours between the hours of 8 am - 5 pm.

2.2 MINE PLAN

The proposed mine plan shown in Figure 5 is based upon a milling and flotation circuit to produce a copper concentrate with gold credits.

Key attributes of the layout are:

- siting of waste dump and tailings dam to the south and south east of Cadia Hill where both a favourable haulage route and efficient tailings storage areas exist;
- potential to shape and rehabilitate the waste dump to form natural extensions to adjacent ridge lines;
- location of the tailings dam within the lower reaches of Rodds Creek valley to allow for water harvesting and limit visual impact;
- the potential to integrate site water management and process water circuits in a single corridor on the eastern bank of Cadiangullong Creek.

The preferred layout also uses the existing topography of the Cadia Valley to screen out or minimise the visual impact from viewing points along public roads.

3.0
ENVIRONMENTAL CONSIDERATIONS

This section summarises the environmental characteristics of the Project area and outlines the detailed studies currently being conducted.

3.1 LAND OWNERSHIP

Newcrest either own or have, in-principle options to buy all of the properties in the proposed mining area. Adjacent lands are owned by Newcrest, private landholders, the NSW Forestry Commission, Crown Land Reserves, Council, or the Canobolas Regional Parkland Trust.

3.2 REGIONAL TOPOGRAPHY

The regional topography around Cadia is dominated by the flow basalt plateau of Mount Canobolas. During the Tertiary Period, basaltic - trachytic lavas flowed from the Canobolas volcanic centre filling the drainage valleys radiating from Mount Canobolas and covering an area in excess of 400 km^2. Subsequent weathering and erosion between these basalt filled valleys has produced the moderate to steep incisions of Cadiangullong Creek and tributary valleys in which the older rocks containing the Cadia deposits are now exposed. The Cadia Hill and Big Cadia deposits are flanked by Cadiangullong Creek and the Little Cadia deposit occurs through the Copper Gully Creek. Cadia Hill is located on the eastern slopes of the valley to the east of Cadiangullong Creek.

The two main topographic units associated with the Cadia-Orange-Blayney Region are:

- a dissected ridge system of resistant volcanic rock lies to the southwest of Orange and encompasses the Cadia site; and

- gently undulating elevated plateau with low slope angles to the east of Cadia.

3.3 SOILS AND EROSION

The Cadia project area has a long history of grazing, in addition to numerous old workings including several historic mine sites. In addition to the abandoned open-cut at Big Cadia, there are numerous box cuts, trenches, adits and shafts throughout the area. Much of the existing erosional landscape is related to these early activities which date back over the past 140 years.

The soils in the area are variable, from stoney shallow soils to more fertile, well structured soils.

The most significant soil erosion process in the area appears to be that of surface wash. Past exploitation of natural woodlands for building materials and firewood, together with past grazing practices has led to an increased runoff velocity, with a subsequent loss of some topsoils.

Locally there is erosion associated with the former tailings deposits located around the White Engine Mine, where extensive gullying has eroded much of the tailings material to the drainage channel leading into Cadiangullong Creek.

3.4 HYDROLOGY AND WATER QUALITY

Hydrology

The hydrology of the Cadia area is dominated by Cadiangullong Creek, which is a tributary of the Belubula River which subsequently drains into the Lachlan River. Cadiangullong Creek flows in a southerly direction along the Cadiangullong Creek Valley, its source being about 1.6 km south of Mount Canobolas (1397 m).

Upstream of the Cadia site (within the Cadiangullong Creek and the Cadia Creek catchments) lies grazing land and the Canobolas State Forest. Downstream, the land is predominantly rural grazing, being generally cleared with scattered remnant trees. Water from the lower reaches of Cadiangullong Creek is used for irrigation and stockwatering, with some recreational fishing.

Cadiangullong Creek demonstrates a rapid response to rainfall events followed by a slow recession and a significant baseflow component. Cadiangullong Creek and the associated Cadia and Copper Gully Creek tributaries are characterised by near perennial stream flows sustained by a combination of surface runoff and "spring-flow" derived from groundwater.

Groundwater Hydrology

The only regionally significant aquifer identified to date in the area is associated with the Tertiary Basalts on the plateau area to the east of Cadia. Department of Water Resources (DWR) records indicate a small number of low yielding domestic and irrigation bores tap this aquifer in the region. Bore yields up to 5 litres/second have been indicated. Along the margins of the Cadiagullong Creek/Cadia Creek valley the basalt sequence outcrops on the exposure of the tableland plateau at elevations around RL 875 to 885m AHD. A spring line typically occurs at the base of this outcrop.

The basalt strata host rocks are less permeable in the fresh state, but become hydraulically more permeable in the weathered zone. Locally, some areas of very high permeability associated with cavities are present at or near the top of the limestone layer. Borehole logs have indicated cavities ranging in depth from 1.0 to 8.6 m at depths of between 30 and 123 m from surface.

Water Quality

Studies undertaken as part of the baseline program show that water quality in the Cadia area is dependent on streamflow and land use in the catchments, including the historical mining activities. Former mining reject disposal areas which are in proximity to the waterways have a dominating local effect on water quality.

A water quality monitoring program is currently underway and is to continue to provide baseline information. The locations of environmental baseline monitoring sites, including water quality, are illustrated in Figure 8.

It is recognised that the area surrounding the project site is subject to intensive grazing and generally comprises good quality grazing pasture. Both surface and groundwater resources are highly valued in the region, and the maintenance of existing regimes and acceptable water quality has been recognised as a key planning objective for the project.

3.5 FLORA

The project area and surrounds support some scattered areas of relatively undisturbed native woodland vegetation, and extensively modified agricultural land. Land cleared for pastures lies to the south, east and west of the site, while to the north are Monterey Pine (*Pinus radiata*) plantations of the Canobolas State Forest. A pine plantation also partially covers the current area of exploration at Cadia Hill. The Canobolas Parkland Trust Area of woodland occurs immediately to the east of this plantation.

Four vegetation systems are distinguished over the area of the site:

- cleared grazing lands, grasslands and savannah woodland (comprising the majority of the development site);
- native open woodlands and forests;
- regenerating woodland;
- drainage line and flats vegetation, primarily along Cadiangullong Creek.

Field surveys are currently being undertaken to fully assess flora characteristics and significance in the area, and a field herbarium is being compiled in association with local interest groups.

3.6 FAUNA

An initial fauna survey undertaken in April 1994 identified one fish, two amphibians, six reptiles, 39 birds and 14 mammals. A further summer field investigation is currently underway to locate migratory/nomadic species or any other species that may have been inactive during the April survey.

Generally most species were associated with the creeklines and remnant native vegetation.

None of the species identified during the survey were listed on Schedule 12 of the National Parks and Wildlife Service Act (NPWS). Following the Spring/Summer survey, work will be undertaken to assess the significance of site habitats to these species. These results, along with proposals for rehabilitation and re-establishment of woodland/forest areas will be considered in consultation with the New South Wales National Parks and Wildlife Service as a component of rehabilitation proposals.

3.7 LAND USE

3.7.1 Regional Land Use

Regionally, grazing on improved and semi-improved pastures is widespread on areas which possess limitations to cropping, such as topography (slopes in excess of 15%) and soil characteristics (depth, drainage, fertility, physical impediments). Grazing on native pastures typically occurs on the hilly topography where shallow top soils are encountered. On the flatter areas annual grain production may form a component of some farms.

Intensive farming (dairying, piggeries, poultry, high value cash crops, fat lambs and sheep and cattle studs) and cropping (orchards, small crops) occurs on the better class of soils with fruit production, particularly apples, a major industry in the Orange region.

Softwood production from forests including the Canobolas State Forest (4000 ha) and Marr's Private forest (146 ha) is based on Monterey Pine. Other major areas of forestry occur south of Kerr's Creek and the Mullion Range State Forest. Milling operations are centred at Raglan near Bathurst.

Native timber production also occurs in areas which are too steep and stony for grazing.

3.7.2 Local (Project Area) Land Use

Land use in the Project (Cadia) area is dominated by sheep and some cattle grazing, with some pine plantation on the Cadia mineralised area. Cropping is restricted in the project area due to slope, soil type and fertility. A plan of management for the rural land purchased by the Company is currently being developed.

3.8 AIR QUALITY

The existing air quality is typical of a rural environment, with seasonal agricultural activities and westerly winds resulting in increased dust generation from the land use activities.

Newcrest have undertaken static dust and automated meteorological monitoring since April 1994. To account for potential topographic variations in air flow, an additional wind monitoring station has been established on site. An air quality monitoring program is continually maintained by Newcrest staff. A program of high volume sampling for fine particles is to commence in 1994.

3.9 NOISE AND BLASTING

Noise

The proposed mine at Cadia is located in a predominantly rural setting. No operational mining or industrial activities are currently undertaken by specialists known to the EPA, within the Project area. Currently available background noise levels are low and consistent with a rural setting.

Detailed atmospheric and noise monitoring is currently being undertaken to determine the ambient noise environment of the Cadia area and the likely noise/ blast impact on adjacent properties. Terrain plays a significant role in noise attenuation by absorbing and re-directing noise waves. Modelling of noise emissions from the proposed development will be conducted using the monitoring data collected from the current site studies, physical characteristics (topography), atmospheric monitoring, and background noise project noise levels.

Blasting

The assessment of blasting effects will be conducted as part of the baseline studies and will involve trials and monitoring of vibration and overpressure at selected sites around the project area. The program will be conducted when the mine layout and open pit design criteria are finalised by the current drilling program and the feasibility studies.

3.10 EUROPEAN ARCHAEOLOGY AND HISTORY

The Cadia site has a 140 year history of mining. A Cornish Engine House and Chimney built in the 1860's remain today. Several studies of archaeology of the Cadia Area have been completed and include:

A jointly funded restoration program by Newcrest and the Heritage Council to arrest the effects of weathering on these structures has recently been completed. In 1989 a Permanent Conservation Order (PCO) issued under the NSW Heritage Act, (1977), was placed over an area containing the engine house and chimney.

To assess the European heritage aspects of the Cadia Project discussions have been held with the Heritage Branch of the Department of Planning. Consultants have been engaged to:

- prepare European archaeological assessments of the site;
- document the European history of the site; and
- prepare a conservation plan for the site.

Located within the boundaries of the site is an ungazetted cemetery that originally contained one hundred and three graves. The cemetery has been neglected and today only two headstones remain standing. The cemetery's location near Cadiangullong Creek has made it vulnerable to erosion and a number of graves have been lost.

Newcrest has held discussions with the Department of Health in Bathurst and has approached descendants of people buried in the cemetery and former residents of Cadia to obtain their consent to relocate the cemetery to the PCO area. As a component of this consultation programme an advertisement notifying the public of Newcrest's proposal to relocate the cemetery has been lodged in the print media. Newcrest has now received permission from the Department of Health to relocate the existing cemetery to the PCO area. At the PCO/Engine House area Newcrest proposes to establish an interpretive display highlighting the history of the Cadia area, with a viewing lookout from which both past and present mining activities may be viewed.

3.11 ABORIGINAL ARCHAEOLOGY

An Aboriginal archaeological survey of the Cadia area has identified little evidence of Aboriginal settlement over the site. Following consultation with the relevant authorities this aspect of the EIS will be completed in 1994/95.

3.12 VISUAL AMENITY

The Cadia site is located in a predominantly rural district and the visual landscape reflects these land use practices. The river flats and lower slopes have mostly been cleared of native trees and now support a variety of native and introduced pastures, weeds and introduced tree species. In contrast, however, the steeper slopes, which form visual boundaries support areas of woodland, regrowth and introduced forest vegetation.

Opportunities for public viewing of the site are minimal. The major travel routes within the area skirts around the valley, passing through Four Mile Creek to the west or Forest Reefs to the east. Various views of the site are afforded from the existing neighbouring grazing properties with only small portions of the site visible from some residences.

Post-mining rehabilitation planning will investigate landscape replanting schemes and the enhancement of mine landforms, commensurate with the existing visual amenity of the valley.

3.13 REHABILITATION PROPOSALS

The project will necessitate the modification of a considerable area of land in the Cadiangullong Valley. Land will be variously used for water supply development (dams and reservoirs), creek diversions, ore stockpiling and processing, ore/waste haulage and general traffic, tailings and mine waste disposal.

Rehabilitation studies and designs will take into consideration:

- the benefits of a progressive development - progressive rehabilitation plan over the operating life, mitigating potential impacts (e.g., from dust, leaching of exposed wastes etc) and taking account of landholder concerns;

- achievable targets for final land use (e.g., variable final land capabilities and rehabilitation standards);

- appropriate final landforms which are consistent with the existing topography, are acceptable to the key stakeholders but can be produced at reasonable cost as part of routine mining operations and are non-intrusive;

- acceptable and achievable discharge and/or receiving water quality targets for ongoing surface and subsurface discharges from the rehabilitated site.

- the establishment of wildlife habitats and re-forested areas on lands owned by Newcrest, and connecting remnant bushland.

3.14 LAND MANAGEMENT PLAN

Newcrest are currently preparing to conduct a management plan for lands owned by the Company in the vicinity of Cadia. This plan would include, but not be limited to, proposals for aspects such as:

(i) stocking rates;
(ii) pasture maintenance procedures and cropping cycles;
(iii) maintenance of water quality and stock water access;
(iv) agistment factors;
(v) soil erosion status and prevention;
(vi) bushfire management;
(vii) weed control;
(viii) Landcare and other similar initiatives.

The involvement of landholders surrounding the Cadia project area is considered important and is proposed throughout the preparation of the management plan.

3.15 SOCIO-ECONOMIC ISSUES

The Cadia Project will be a major mineral development for the region and New South Wales. The proposed project would be one of the largest operating metalliferous mines in the State. A significant flow-on employment multiplier could be expected, increasing employment and revenue in the Bathurst-Orange regions.

Detailed socio-economic and community services assessments are proposed during the EIS and community consultation phases of project assessment.

Newcrest intends to recruit the operations workforce from the surrounding area and provide the necessary training as required. The unemployment figure at the time of the last census (1991) was 3,172 people or 10.4%, however over the last two years the unemployment level has dropped to 9.6%, of the available workforce. These figures indicate that there is a large under-utilised labour pool in the district.

The employment numbers of other large private employers in Central West (refer Table 1) indicate that manufacturing, the retail industry and community services are currently the largest employment sectors.

TABLE 1
PRIVATE INDUSTRY EMPLOYMENT IN THE CENTRAL WEST

Employer	Nos. Employed
Friskies	310
Email	1,450
Burley (Lithgow)	120
Junction Reefs	80
North Parkes	220

4.0
PUBLIC CONSULTATION AND PARTICIPATION PROGRAM

Newcrest is committed to an on-going program involving the public and relevant government authorities in the Feasibility Study, and during the preparation of the Environmental Impact Statement and Development Application.

There are a variety of means by which the community and government agencies are to become involved, including:

- Newsletters/brochures/handouts/public announcements (two newsletters have been produced);
- Planning Focus Meetings;
- Liaison committee meetings;
- Meetings with interested groups (several have taken place already);
- General information exchange meetings (the first site open day was held in June 1994 and attended by 180 people);
- Community liaison and access to information.

It is intended that there will be a broad dissementation of, and easy access to, general information concerning the Project as it becomes available. It is considered likely that a broad range of the community, whether living in close proximity or in the nearby cities of Orange and Bathurst, would be interested in knowing of the Project's progress.

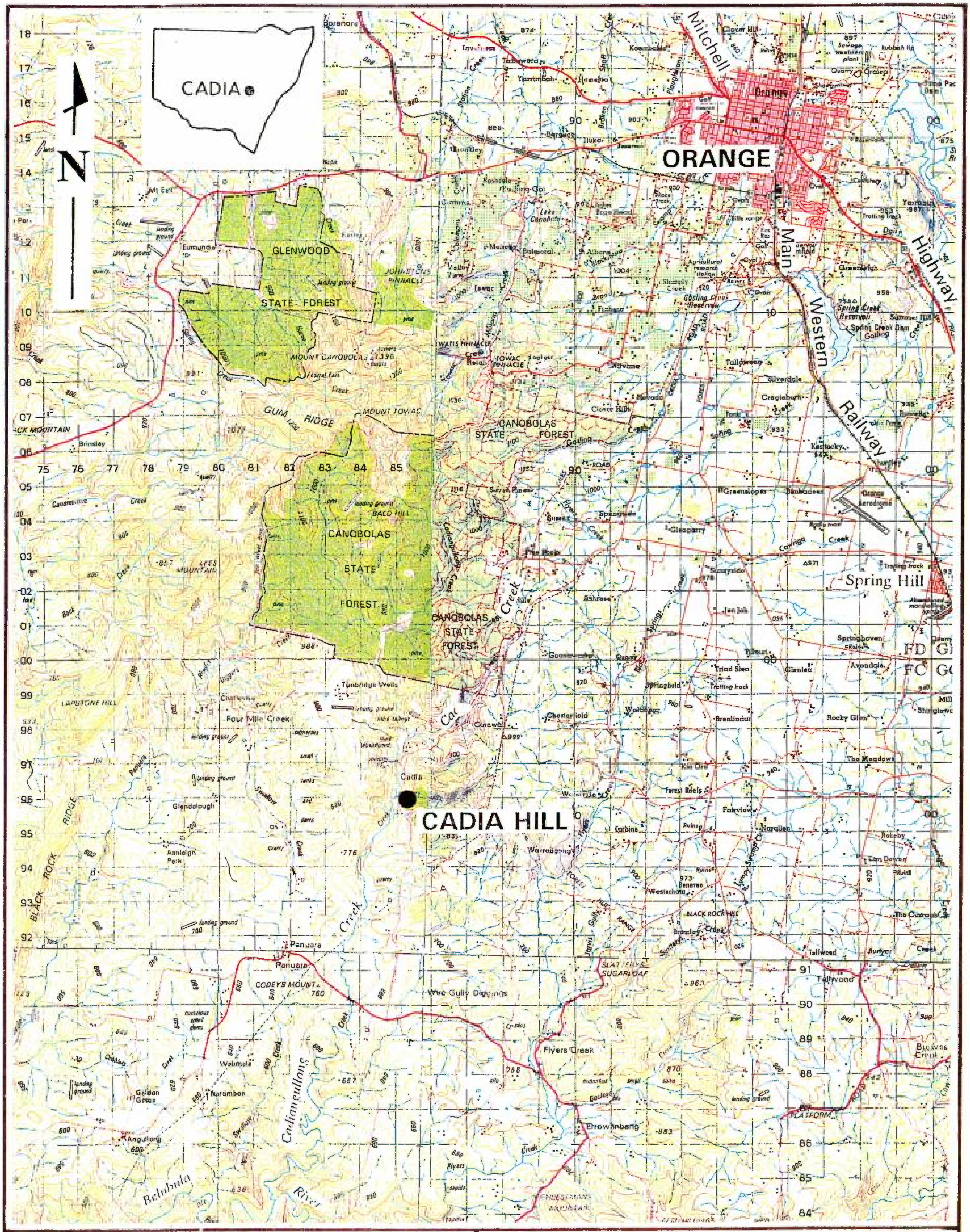
As well as the broad focus, it is intended that the local community and those landowners that feel that the project may effect them, be approached to establish a semi-formal Local Community Liaison Group. Such a group would provide opportunities for information exchange between the members and provide feedback to the consultants and Newcrest of the communities' concerns.

5.0
PROJECT TIMETABLE

In addition to the wide range of studies described in Section 3.0 and 4.0, future detailed consultation with Local and State Government authorities is proposed to confirm study Terms of Reference, set project milestone dates and obtain the on-going input of these authorities.

Currently the Project EIS, incorporating all the items raised in the EIS Terms of Reference and issues arising from the community consultation programme, will be produced in 1995.

FIGURES



0 5 km

Scale

Woodward-Clyde

CLIENT: NEWCREST MINING LIMITED

PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT

LOCATION MAP

DATE:	DWG No:	FIGURE:
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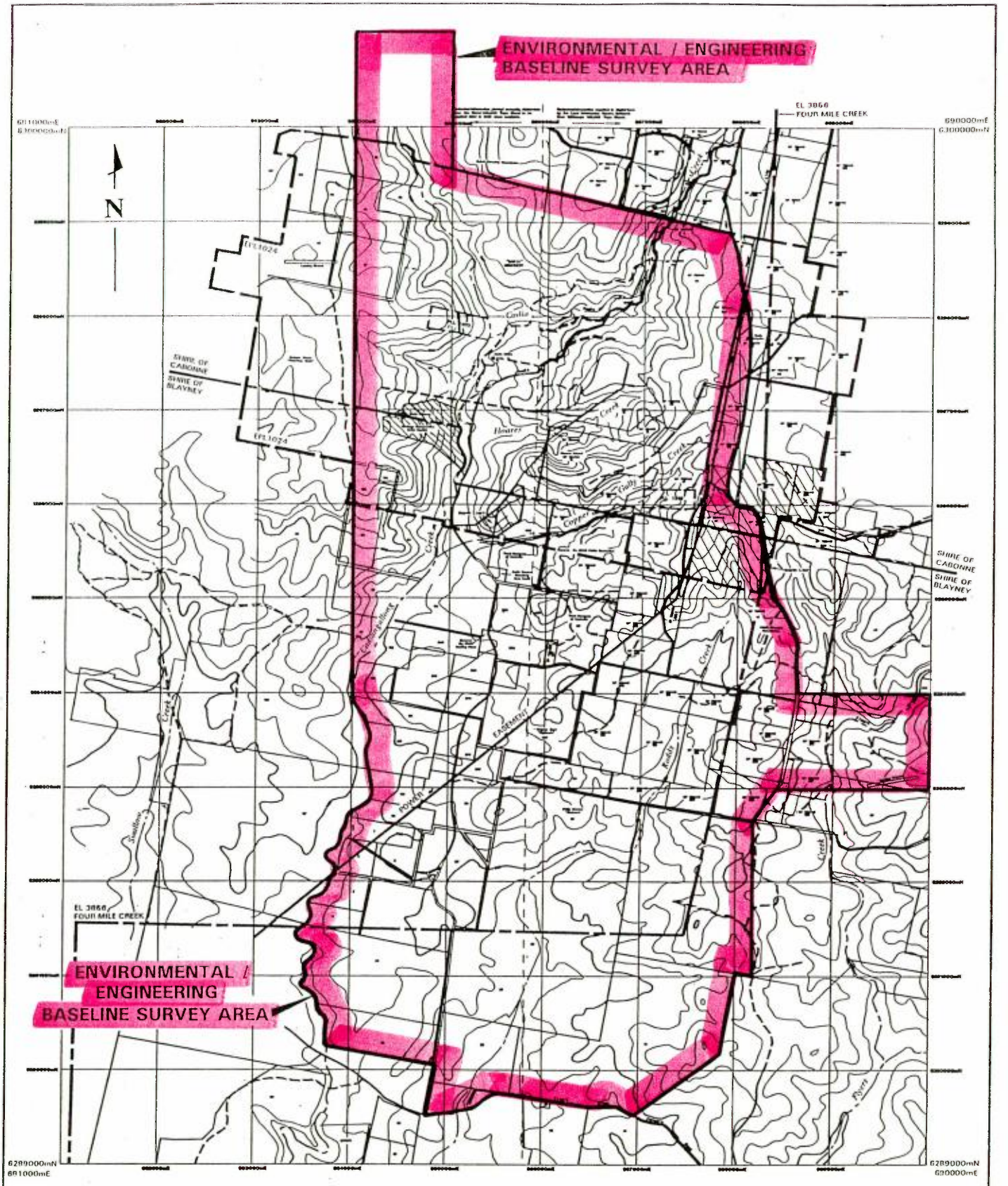


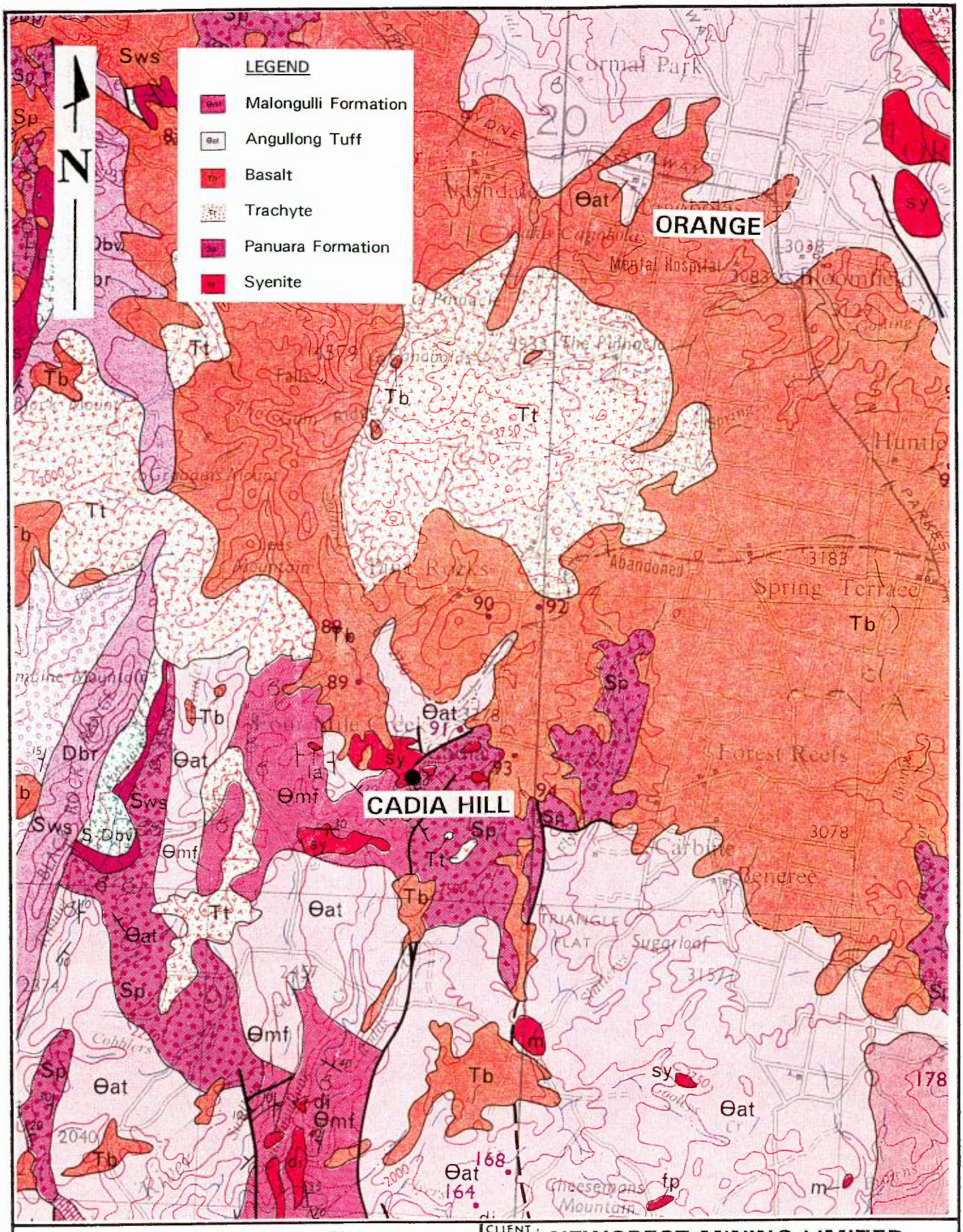
Woodward-Clyde

CLIENT: NEWCREST MINING LIMITED

PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT

PROJECT STUDY AREA

DATE:	DWG No:	FIGURE:
AUG 1994	4542-5.G.002	2



Woodward-Clyde

CLIENT: NEWCREST MINING LIMITED

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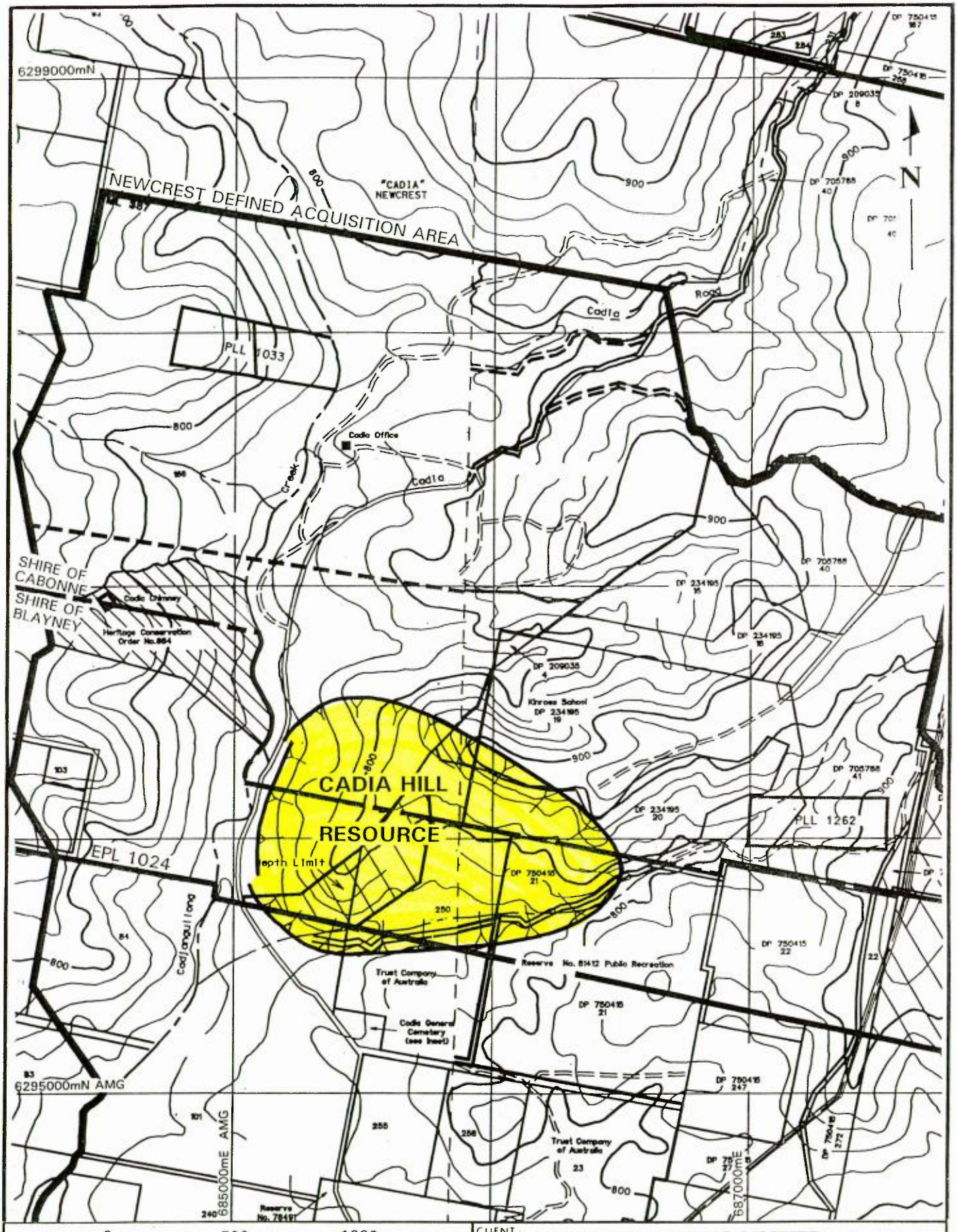
REGIONAL GEOLOGY

DATE:	DWG No:	FIGURE:
AUG 1994	4542-5.G.003	3



0 500 1000m

Scale

Woodward-Clyde

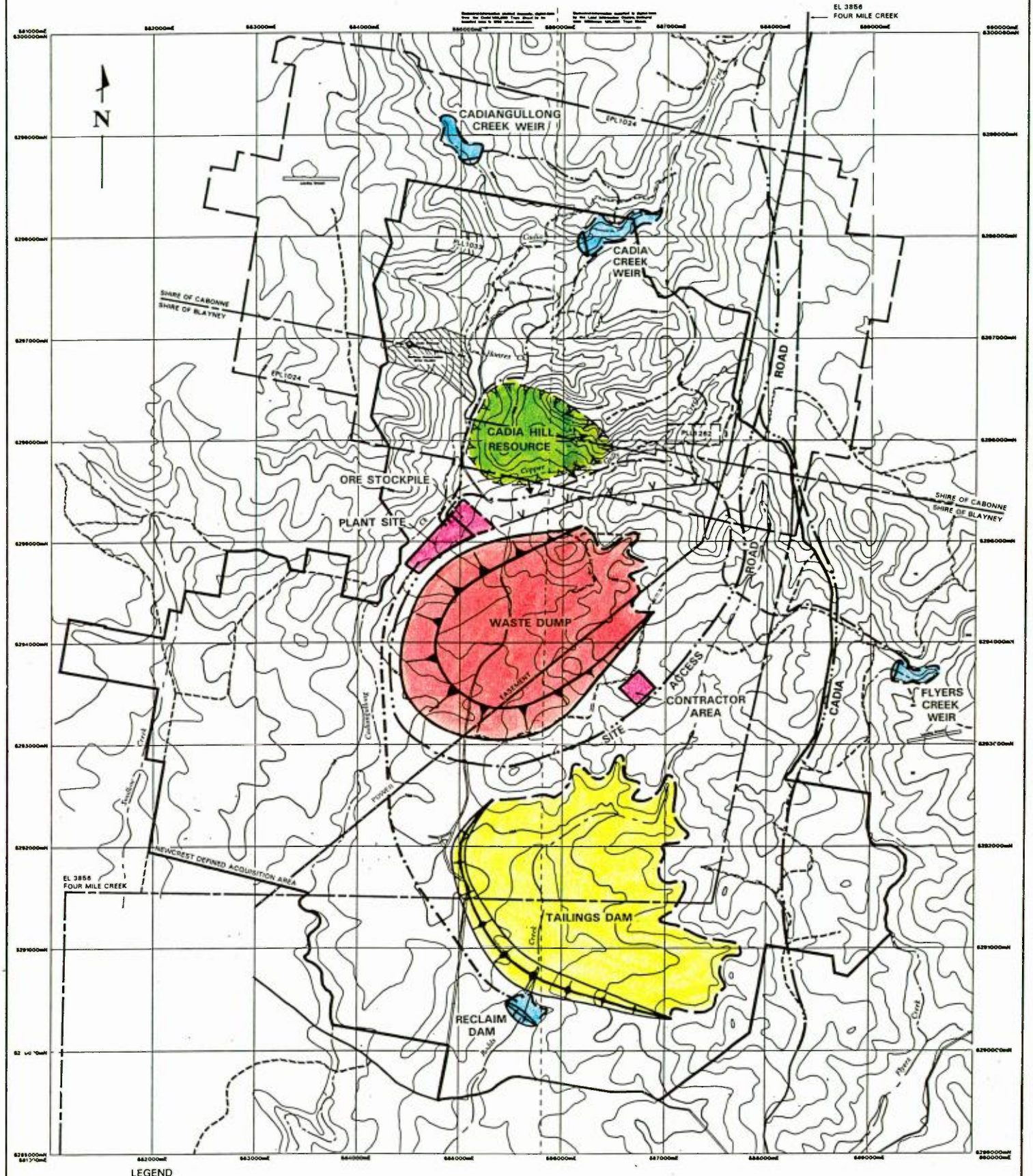
REV.A Cadia Hill Resource boundary revised. Other Resources removed (Nov. 1994).

CLIENT: **NEWCREST MINING LIMITED**

PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT

LOCATION OF CADIA RESOURCES

DATE:	DWG No :	FIGURE:
AUG 1994	4542-5.G.004	4



REV.B Cadia Hill Resource boundary revised (Nov. 1994).

REV. A Pipelines Relocated (Nov 1994).

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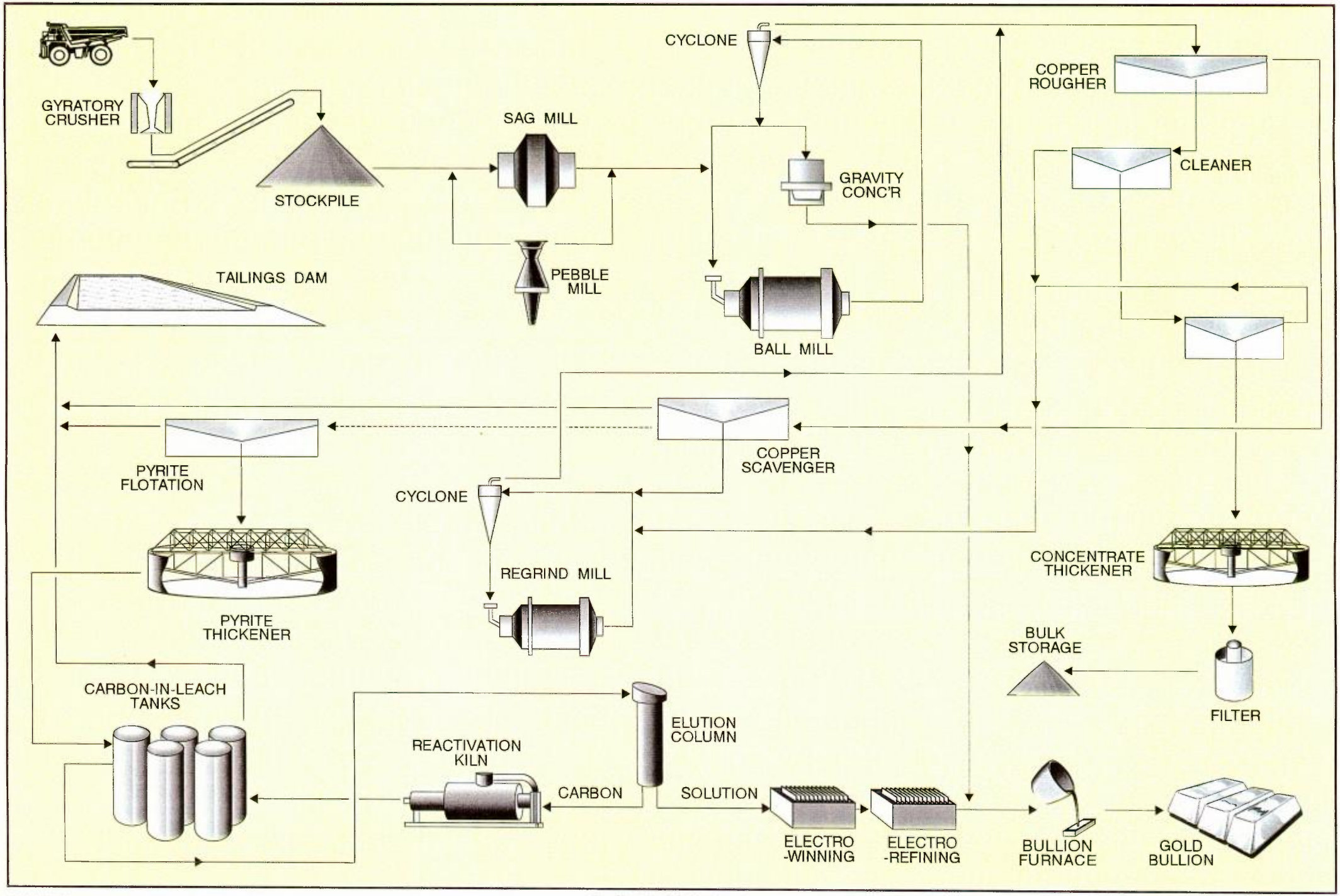
PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT

PROPOSED MINE PLAN

DATE	DWG No.	FIGURE
AUG 1994	4542-5.G.005	5



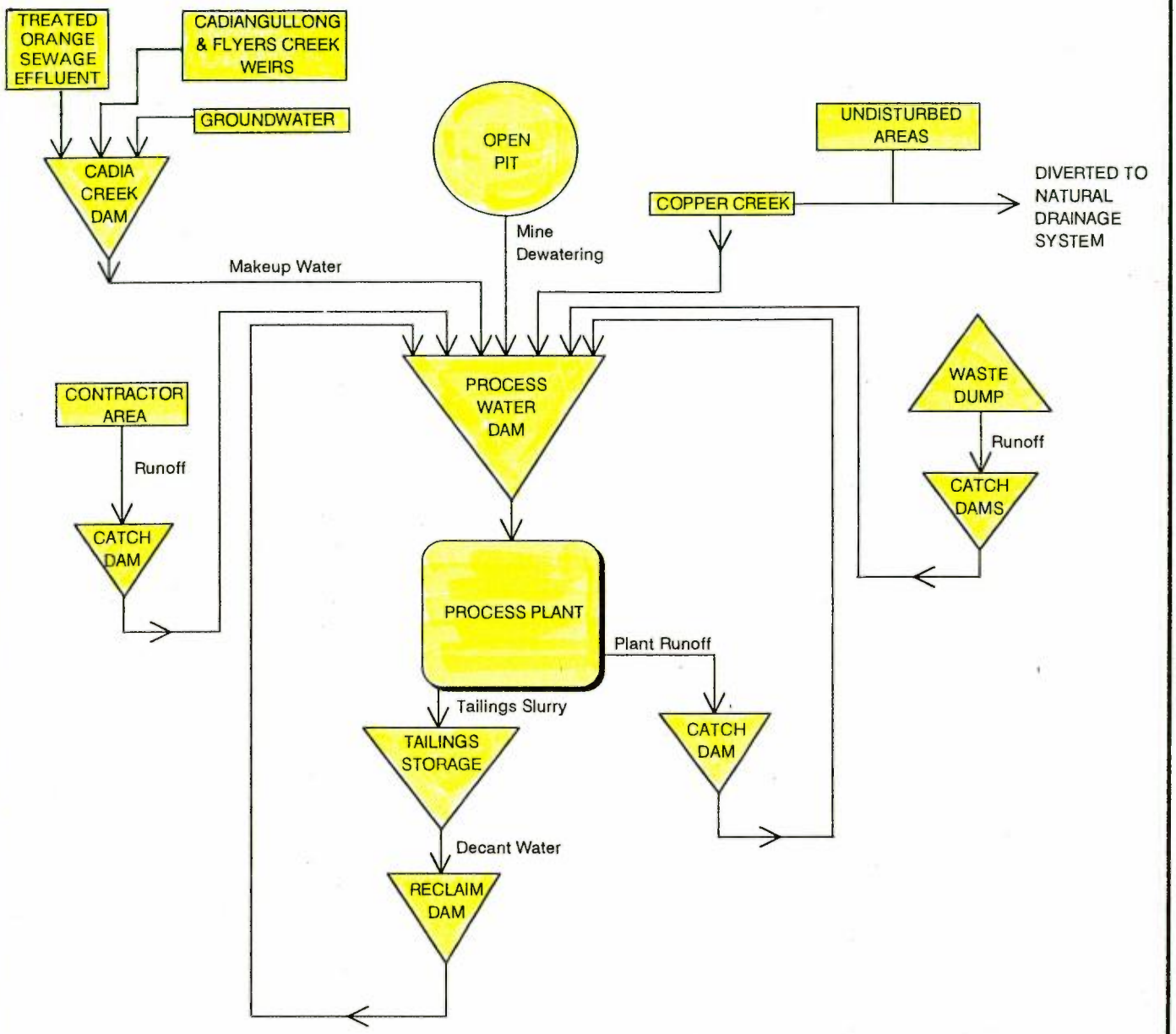
RDNOV88.cdr
August 1994

REV. A Title Changed (Nov 1994).

Cadia Gold Project

CONCEPTUAL FLOWSHEET

PLANNING FOCUS DOCUMENT
WOODWARD-CLYDE Dwg 4542-5.G.006



Woodward-Clyde

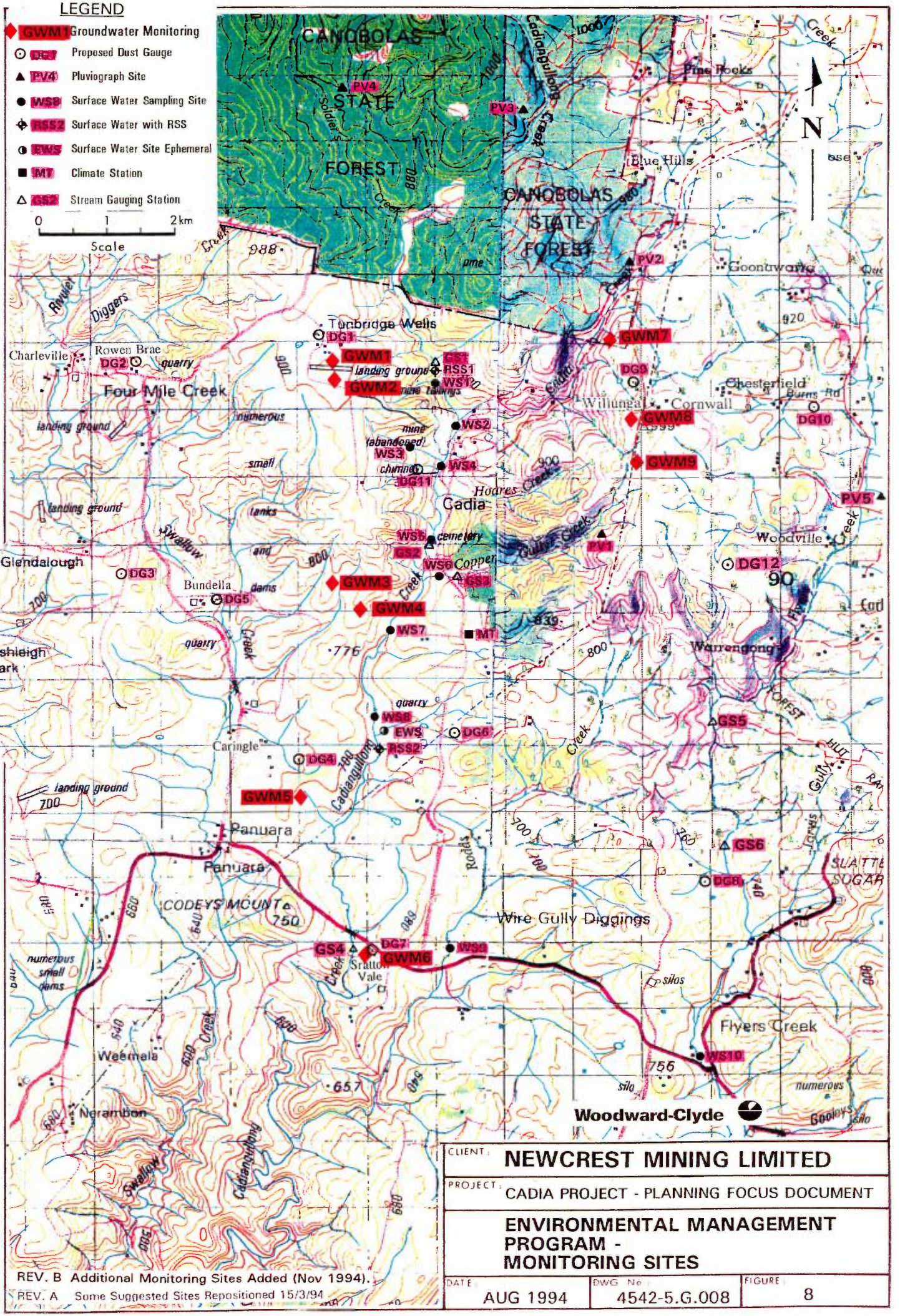
REV. A Flow Chart Amended (Nov 1994).

CLIENT: NEWCREST MINING LIMITED

PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT

CONCEPTUAL WATER SUPPLY SCHEME

DATE:	DWG No:	FIGURE:
AUG 1994	4542-5.G.007	7


LEGEND
GWM1 Groundwater Monitoring
DG1 Proposed Dust Gauge
PV4 Pluviograph Site
WS8 Surface Water Sampling Site
RSS2 Surface Water with RSS
EWS Surface Water Site Ephemeral
MT Climate Station
GS2 Stream Gauging Station
0 1 2km
Scale
N
CANOBOLAS STATE FOREST
Pine Rocks
Blue Hills
Goonumbla
Tunbridge Wells
Charleville
Rowen Brae
Four Mile Creek
Wiliunga
Cornwall
Chesterfield
Cadia
Hoares Creek
Gully Creek
Woodville
Glendalough
Bundella
Ashleigh Park
Caringle
Panuara
CODEYS MOUNT
Wire Gully Diggings
Stratton Vale
Weemala
Nerambon
Flyers Creek
Warrengong
Woodward-Clyde
CLIENT: NEWCREST MINING LIMITED
PROJECT: CADIA PROJECT - PLANNING FOCUS DOCUMENT
ENVIRONMENTAL MANAGEMENT PROGRAM - MONITORING SITES
DATE: AUG 1994
DWG No: 4542-5.G.008
FIGURE: 8
REV. B Additional Monitoring Sites Added (Nov 1994).
REV. A Some Suggested Sites Repositioned 15/3/94