

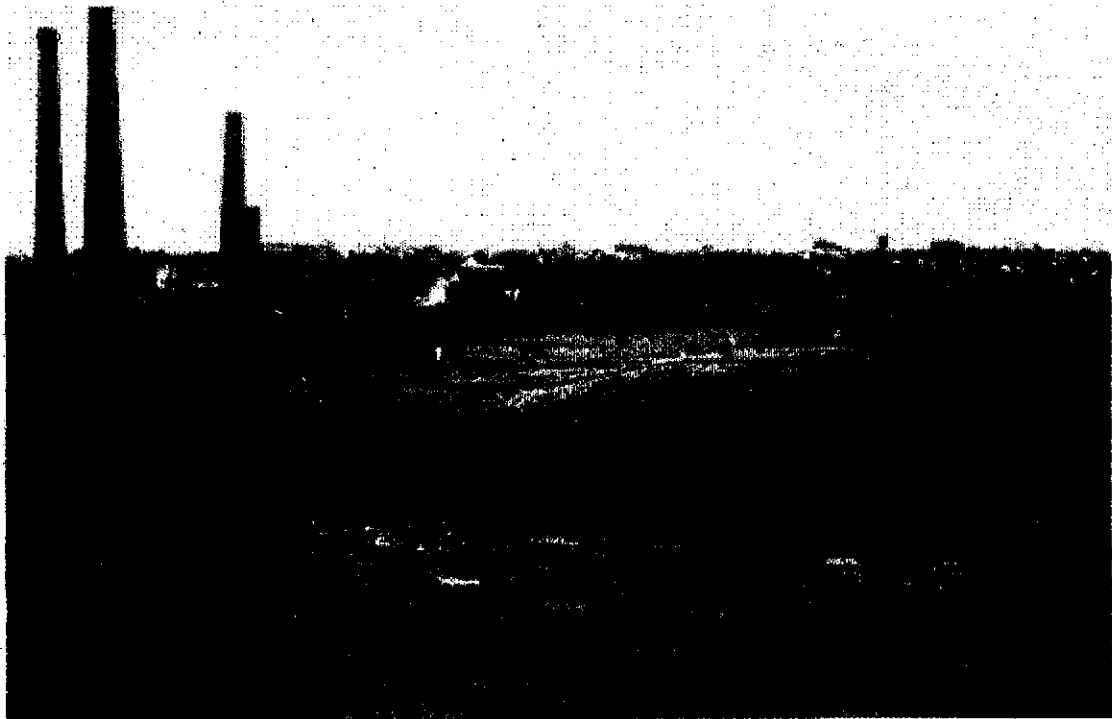


SOUTH SYDNEY CITY COUNCIL

# SYDNEY PARK

## PLAN OF MANAGEMENT

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**EDAW**

*August 1995*



SOUTH SYDNEY CITY COUNCIL

# SYDNEY PARK

## PLAN OF MANAGEMENT

**EDAW (Aust) Pty Ltd**

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*August 1995*

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- A. Recreation Survey Form & Summary of Responses

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## 1. INTRODUCTION

### 1.1 Background

Sydney Park is being developed by South Sydney City Council (SSCC) as a major public open space recreation facility of regional significance. The former landfill site covering about 44ha is located at St Peters approximately 4km south of the Sydney Central Business District (CBD) and 2km north of Sydney Airport. (Refer to Figure 1)

Responsibility for care, control and management of the site was transferred to SSCC from the Department of Planning (DOP) in 1991. Immediately prior to the transfer the DOP proposed a development strategy that would have involved selling 6 ha of the site to generate approximately \$14 million for construction of the Park. However, that strategy was not implemented and as a result the availability of funding for development of the Park has been constrained. Nevertheless SSCC is committed to development of the entire site over time as funding becomes available. Development of the Park by SSCC has generally been in accordance with the Plan of Management (POM) prepared in 1982 and the Master Plan prepared in 1989.

To ensure that future development of recreation opportunities effectively responds to community expectations and requirements, SSCC engaged EDAW (Aust) Pty Ltd to prepare this Plan of Management (POM) for the Park. A major focus in preparing this POM has therefore been an extensive community consultation process, the results of which are presented in section 3.

The primary role of the POM is to guide future development of the Park within the framework of community expectations and resources available to SSCC. The Plan aims to balance the unique site conditions with community requirements for open space recreation opportunities and facilities. Given that community expectations and requirements will change over time the POM incorporates a degree of flexibility that will allow it to be adapted to changing circumstances.

### 1.2 POM Preparation

Sydney Park has been the subject of extensive planning and design over a period of more than ten years. Consequently a thorough review of previous studies and other available information has been carried out to ensure the relevant aspects of those previous studies are taken into account in the POM.

Due to the history of the site as a largescale waste disposal facility, the physical conditions potentially create major issues that need to be addressed in development of the Park. Therefore a comprehensive review of physical site conditions was also carried out as part of the POM study process.

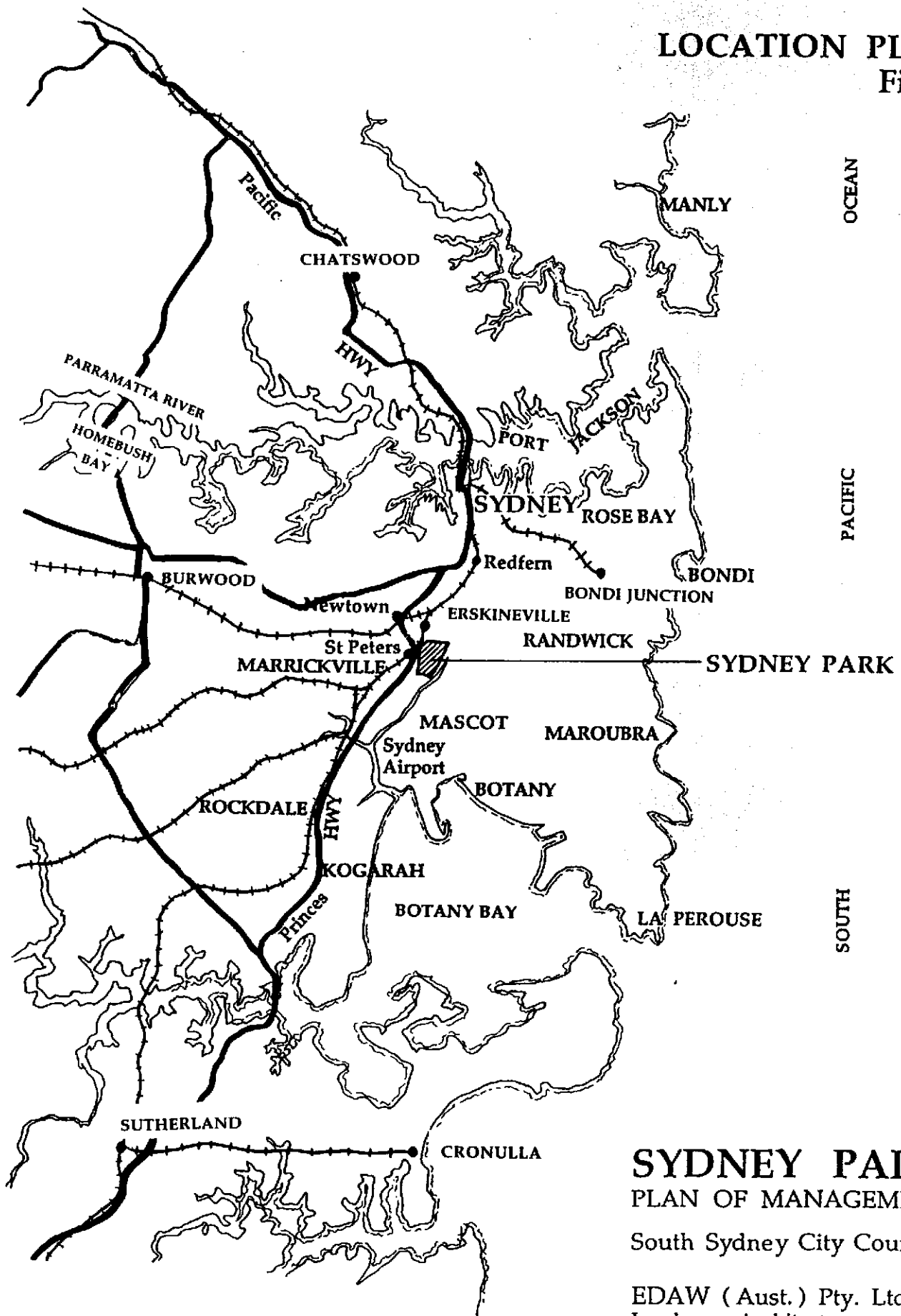
The POM has been prepared in accordance with the consultancy brief issued by SSCC. Specific objectives stated in the brief were to:

- preserve Sydney Park in perpetuity, exclusively for recreational use.
- ensure the identification and reinforcement of the distinctive industrial, architectural and symbolic characteristics of the Park and the precincts surrounding it.
- ensure the conservation and reinforcement of the Park's open space areas and items of cultural significance for future generations of users.
- ensure a consistent and responsible approach to the management and maintenance of the Park's resources.
- ensure the inviolability of the Park and it's resources for future generations of users.
- ensure the development of facilities in the Park that are community based and provide long term benefits to the community.
- address issues specific to Sydney Park such as methane gas contamination.

To achieve these objectives a systematic study process was followed, that incorporated community consultation as an integral component. The POM Preparation Process is illustrated by the following diagram.

# LOCATION PLAN

Fig. 1



## SYDNEY PARK PLAN OF MANAGEMENT

South Sydney City Council

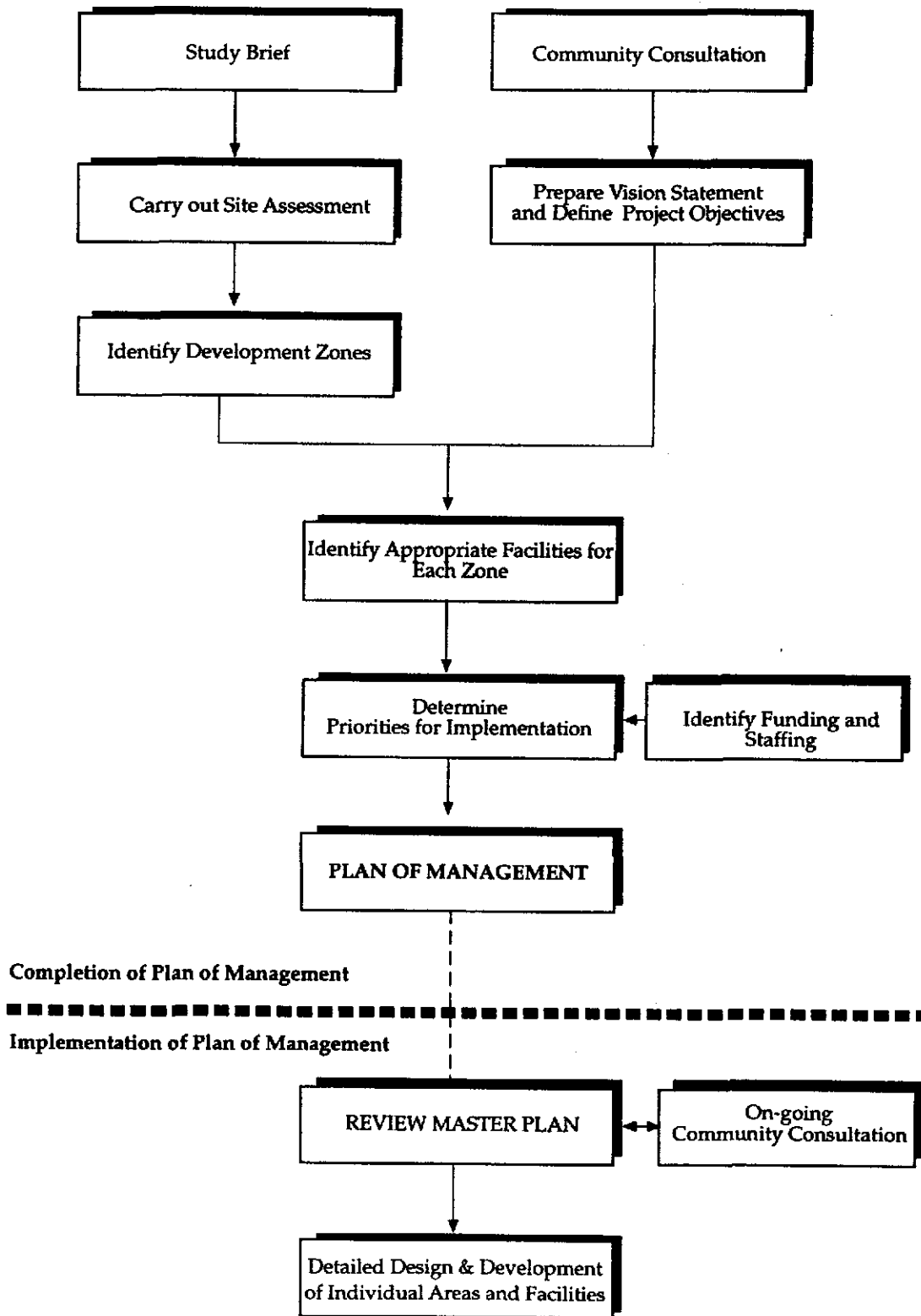
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## POM Preparation Process





### 1.3 Report Structure

The Report incorporates the following major sections:

***Section 1 Introduction***

Provides background information about Sydney Park as well as the objectives of the POM and the process followed in preparing it.

***Section 2 Context***

Presents information about the history and significance of the Park as well as existing physical conditions and relevant planning considerations.

***Section 3 Community Consultation***

Details the community consultation process followed in preparing the POM together with the community expectations identified through that process.

***Section 4 Plan of Management***

Presents details of the POM as well as the planning and design considerations that influenced its preparation.

***Section 5 Implementation***

Outlines various issues that will need to be addressed in the process of implementing the POM.

## 2. CONTEXT

### 2.1 Regional Significance

Covering an area of some 44ha, Sydney Park represents a major component of the open space/recreation resources of Southern Sydney. The relationship between Sydney Park and the open space areas within the region is illustrated on Figure 2. Not only does Sydney Park provide a regional destination park but it could potentially be connected to the open space corridor along Cooks River and Botany Bay to the south as well as to Moore Park and Centennial Park to the north-east.

The relative size of Sydney Park compared to the well established open space recreation areas of Centennial Park, Moore Park, Parramatta Park and the Royal Botanic Gardens is shown by Figure 3. It illustrates that Sydney Park is comparable in scale to these major open space recreation areas that are familiar to the majority of Sydney residents. While there are similarities in the scale of these major parks their landscape character and the range of facilities provided in them is very variable. Sydney Park currently has a distinctive landscape character as a result of its history as a landfill site and the landforms created by disposal of soil and other inert material. The POM seeks to reinforce the distinctive characteristics of the Sydney Park site.

Possible future development of open space incorporating parts of the current landfill and railway land to the south of Sydney Park would offer an opportunity to connect Sydney Park to the public open space at Tempe, forming part of the Cooks River Open Space Corridor.

Similarly the creation of an open space strip alongside Alexandra Canal could provide an opportunity to connect Sydney Park to the regional open space corridor along Cooks River.

Given the location, accessibility and relatively large size of Sydney Park it performs an important regional recreation role as well as serving the local community. This regional role was recognised by the Department of

Planning(DOP) at the time it purchased the site. The extent to which the Park has performed this regional role has to date been limited by the lack of significant recreation opportunities and facilities offered in the Park. However this situation should change now that land filling has been completed and SSCC is proceeding with development of the Park as quickly as possible within the constraints of available funding.

### 2.2 Cultural and Historical Significance

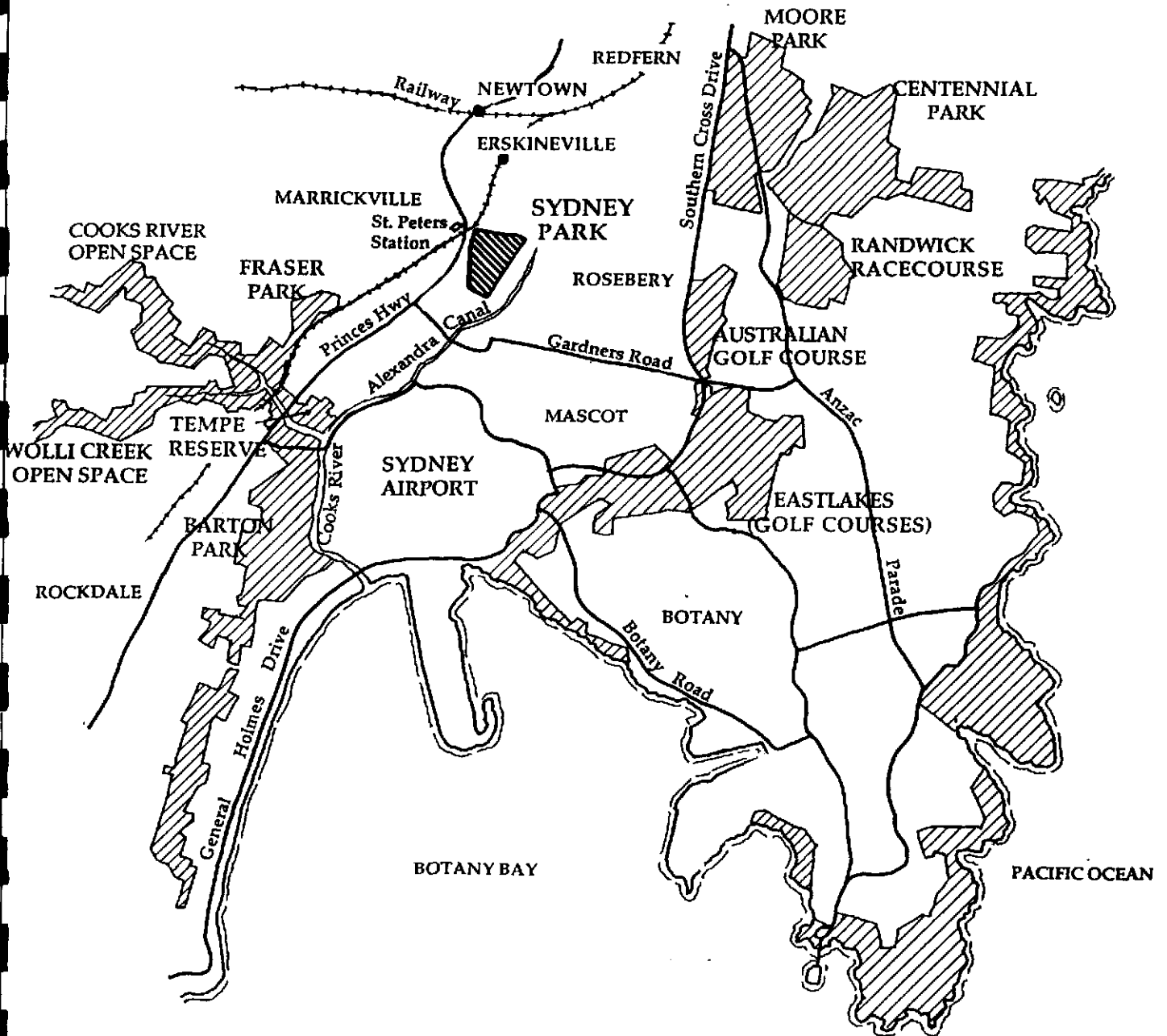
The Sydney Park site is located on the boundary between two district geological units. The north-west portion of the site consists of Wianmatta Shale from which the brick-making clay was extracted. Prior to European settlement it is most likely this area would have supported a forest cover of Turpentine-Ironbark association (Ref. Benson & Howell, 1990, *Taken for Granted*). The south-eastern portion is located on Botany Sands on which swamps, marshes and heath associated with Shears Creek had developed prior to European settlement. This low lying area was filled and drained through the construction of Alexandra Canal, to allow industrial development.

Agricultural use of the site apparently commenced with Thomas Smyth, marine sergeant with the first fleet, who cleared the forest cover to plant fruit trees and grain crops.




The Sydney Park site has played a significant role in the development of Sydney since the middle of the last century. That role primarily relates to brick making which commenced on the site in the 1840s when Henry Goodsell established the first brickworks on the site. Brickmaking subsequently became a major industry in 1871 with the introduction of machine manufactured bricks. Bricks manufactured on the site were used in construction of residential and commercial buildings throughout the Sydney Metropolitan Area over a period of more than 100 years. The first lot of machine-made bricks was used in the construction of the farmers building on the corner of Market Street, Sydney.

# REGIONAL CONTEXT

Fig. 2



## LEGEND

-  OPEN SPACE
-  MAJOR ROADS
-  RAILWAY


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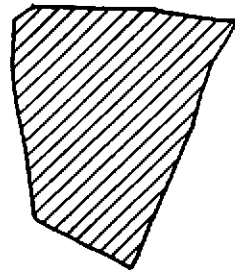
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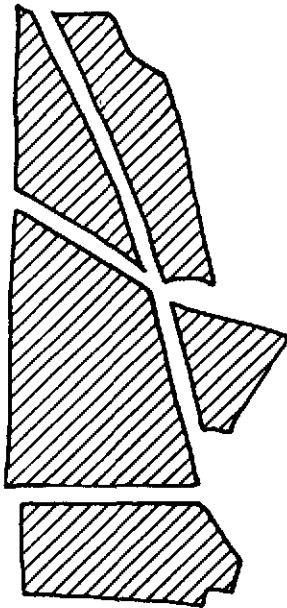


# RELATIVE SCALE OF MAJOR PARKS

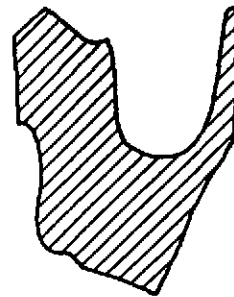
Fig. 3



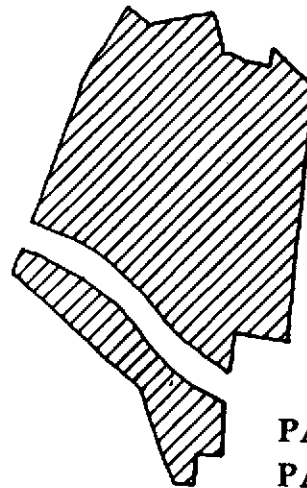
SYDNEY PARK



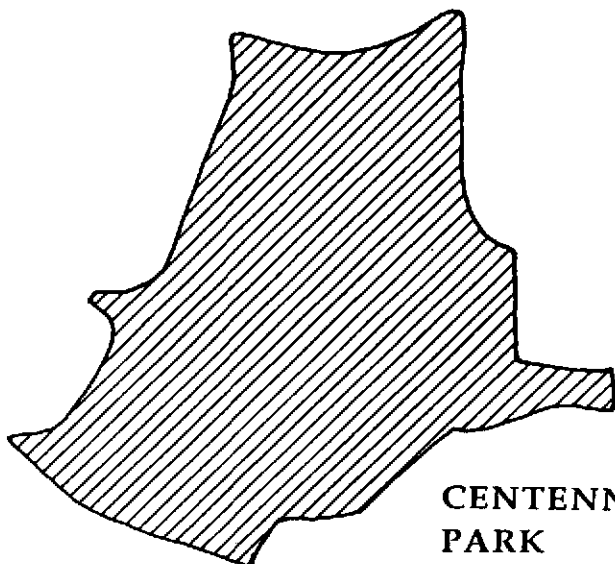
MOORE PARK



ROYAL  
BOTANIC  
GARDENS



PARRAMATTA  
PARK



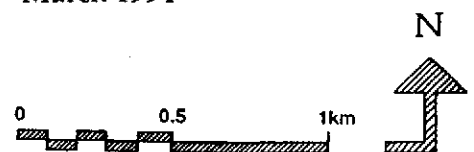
CENTENNIAL  
PARK

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The Sydney Park site has also been used for a range of other industrial developments including two gas storage tanks, manufacturing and warehousing.

Landfill operations commenced on the site in 1948. It involved backfilling the pits that had been created by clay extraction for brick manufacturing. In the 1970s the site became a major regional waste disposal depot under the Control of the Council of the City of Sydney. The site therefore contains waste material from various parts of the Sydney Metropolitan Area. This role as a regional waste disposal facility adds another dimension to the cultural significance of the site which should be reflected in the development of Sydney Park.

Disposal of putrescible waste is reported to have ceased in 1976. Since then a final layer of material including soil and building rubble has been placed over the site to create a final landform that is generally in accordance with the 1989 Master Plan Concept.

This landform consists of a series of visually prominent hills combined with flat recreation areas and ponds. The rounded hills that provide opportunities for panoramic views of the city skyline and Sydney Airport, are recognised as unique landscape elements by those people passing the Park along the Princes Highway and Sydney Park Road as well as those using the Park for recreation. The hills, combined with the remnant elements of the brickworks (chimneys and kilns), form cultural landscape elements of regional significance.

The cultural and historical significance of Sydney Park reflects the diversity of major uses that have occurred on the site over a period of more than 100 years. This provides a rare opportunity to incorporate references to elements of cultural and historical significance in future development of the Park. Those existing elements that are relevant should be incorporated while opportunities to create new elements should be sought. The aim should be to provide an integrated set of references to the site's varied history and cultural significance.

## 2.3 Previous Studies

Early in 1980 the Sydney Park Steering Committee was formed to coordinate the development of the Park. Since then the Park has been the subject of a series of studies and investigations which are summarised below.

### Sydney Park Plan of Management, 1982

The Department of Environment and Planning, now the Department of Planning (DOP), commissioned Conybeare Morrison and Partners and Bruce McKenzie in association with Ove Arup to prepare a Plan of Management for the Park. The 1982 Report recommended a Plan for Sydney Park that incorporated the following aspects:

- the basic purpose of the Park was to provide the local community with a cross-section of recreation opportunities close to home.
- limited facilities for organised, active sports.
- opportunities for learning about the history of the site and environmental education.
- opportunities for performances and exhibitions.
- creation of a new 'naturalised' environment incorporating landforms that introduce drama and interest to the site by contrasting with the generally flat surrounding areas.
- development of an urban farm and agricultural activities.
- a surface drainage system integrated with the proposed natural landforms and providing for ponding to simulate an eco-system providing opportunities for activity and visual benefits.
- a planting theme primarily incorporating indigenous species and reflecting some of the pre-settlement character of the site as well as aquatic and rainforest species plantings associated with drainage ways and ponds.
- a casual, self-sustaining character with woodland and forest interspersed with clearings and tracks.

# SYDNEY PARK PLAN OF MANAGEMENT

- staged development in accordance with detailed plans to be prepared for each area within the Park.
- management provisions and a framework for management of the Park.
- a proposal for the State Government to eventually purchase all land within the Park 'superblock' bordered by Sydney Park Road, Euston Road, Campbell Road, Barwon Park Road and Princes Highway and incorporate that land within the overall Park development.

## Stage One Development

On the basis of the concepts presented in the 1982 Plan of Management Report, Stage 1 of the Park development was implemented and included:

- restoration of the kilns and chimneys on the site of the former brickworks at the corner of Sydney Park Road and the Princes Highway together with associated landscaping.
- development of the car park and playing field in the north-east corner of the site adjoining Euston Road.
- construction of a pond and associated landscape works in the south-east corner of the site adjoining the Euston Road/Campbell Street intersection.

## Stage Two Development

Stage Two development of the Park involved a strip of land approximately 200m wide immediately south of Sydney Park Road. These works were carried out by the Public Works Department of NSW on behalf of the Department of Environment and Planning between January 1984 and December 1987.

The development was generally in accordance with the original Plan of Management concepts and included:

- earthworks and final grading
- topsoiling, grassing and planting

- car park and pedestrian/cycleway path construction.

## Landfill Gas Study 1987

This Study was carried out by the Public Works Department on behalf of the Department of Environment and Planning. It involved drilling 58 shallow bores within the north-east section of the site and examined the presence of landfill gas and its impact on vegetation at Sydney Park. The findings of this Study included:

- generally the percentage of landfill gas increased with depth, although in some areas gas was constantly observed at shallow depths.
- oxygen content of the soil decreased as the landfill gas increased.
- the areas containing large volumes of landfill gas included Stage 2 (north-east section) and the north-west section of the site.
- landfill gas was not detected outside the Park boundaries.

On the basis of these findings, the Report recommended that only species which are known to be tolerant of landfill gas be used in the Park.

## Soil Properties and Amelioration Requirements, 1988

Sydney Environmental and Soil Laboratories Pty Ltd was engaged to carry out an assessment of soil properties at Sydney Park. This information was used for preparation of the Master Plan and concept sketches for Sydney Park on behalf of the Department of Planning.

The assessment confirmed the harsh growing environment prevailing on the Sydney Park site due to the very poor physical and nutrient conditions of the imported soil cover. Recommendations were made on suitable procedures to overcome these poor conditions in specific areas.

## **Methane Gas Control Report, 1989**

Mr Robert Amaral was engaged as a specialist geotechnical engineer on behalf of the Department of Planning to address the issue of methane gas at the Sydney Park site. (Report to Land Systems EBC on Methane Gas Control Measures for Proposed Sydney Park, St Peters, June 1989). The Report prepared by Mr Amaral included an assessment of the likely presence of methane gas and the implications of such gas for development and management of the Park. It also made recommendations on gas treatment and control methods to allow the safe development of Sydney Park.

## **Methane Gas Survey, 1989**

Mr Amaral was subsequently engaged to carry out a survey to detect methane gas around the perimeter of the site and identify combustible levels of gas in areas of Sydney Park accessible to the public. (Preliminary Report to Land Systems EBC on Perimeter Gas Survey at Sydney Park, November 1989).

On the basis of tests at 77 sites around the perimeter of the Park, it was concluded that there should be no significant danger to the general public. It was noted however, that the potential existed for lateral movement of gas into buildings around the perimeter of the site.

The report recommended checking of the leachate/gas monitoring wells as an indicator of lateral gas migration.

## **Gas Survey/Monitoring Report, 1990**

Mr Amaral was engaged on behalf of the Department of Planning to carry out a gas monitoring survey within eight leachate/gas wells within the Park over a period of five months. The survey indicated elevated levels of methane and carbon dioxide together with depressed oxygen levels in the five monitoring wells located on deep waste fill. (The Report to Land Systems EBC on Gas Survey/Monitoring of Sydney Park, May 1990).

The well near the residential terrace along Campbell Road had slightly elevated levels of methane (with no carbon dioxide) and a slightly depressed level of oxygen. This indicated some lateral migration of methane through the sandy soils which have a high water table.

The two other wells in the area (not located on the area of Botany sands) that were not used for waste disposal (along eastern edge of Harber Street and near southern boundary of McPhersons site) showed negligible methane levels indicating minor lateral migration of landfill gas. The Report concluded that insignificant movement of leachate had occurred in the groundwater.

## **Master Plan, 1989**

The Department of Planning engaged Land Systems Pty Ltd in association with Binne and Partners Pty Ltd in 1989 to prepare a Master Plan for development of the whole of Sydney Park.

A design review was carried out to reassess the recommendations of the 1982 Plan of Management. It placed a good deal of emphasis on park development and maintenance budgets as well as opportunities to minimise capital expenditure.

The Review concluded that the original concept of an urban woodland incorporating informal passive landuses was still valid and could be achieved despite the substantial environmental and economic constraints.

The design review reinforced and extended the concept of Sydney Park as an urban woodland dedicated primarily to informal, passive uses with natural landforms and drainage patterns. Indigenous plant communities were to be established where possible to reflect the pre-settlement character of the Site.

The concept incorporated a series of stormwater detention ponds which were to be designed as an inter-connected wetland and lake system. This system was to provide wildlife habitat as well as a visual landscape resource for the enjoyment of recreational users of the Park.

On the basis of this design review, the consultants prepared a Master Plan for the Park together with a set of sketch design drawings. These drawings included grading contours, layout of facilities and general planting structure.

South Sydney City Council has used these sketch design drawings to guide the formation of the final landform and the layout of initial structure planting which has largely been carried out by volunteer community labour.

The original proposal was for the Department of Planning to acquire the whole site, develop it as a park and then to transfer management responsibility to South Sydney City Council.

However, as a result of the State Government's determination that future development of the Park should be self-funding, it was proposed to sell publicly owned land to the north and south of the McPhersons site. This included the former gasometer site and industrial land between McPhersons and the Metro Mix batching plant. Sale of land was anticipated to generate approximately \$14 million and the intention was to use this revenue to fund the development of the Park.

In 1990 South Sydney City Council approached the NSW State Government to forego the sale of public land to transfer the land already purchased by the Department of Planning to the Council for development and maintenance of park facilities.

When SSCC took over responsibility for development of the Park in 1990 it adopted a policy to develop all of the land purchased by DOP, including the 6 ha of land DOP had proposed to sell. As a result of that policy decision the potential revenue from land sales was not available to SSCC. Consequently the rate of Park development has not been as rapid as anticipated by the 1989 Master Plan.

### Services Master Plan, 1990

The Department of Planning engaged Binnie and Partners to prepare a Services Master Plan so that the conceptual design could take into account the location and capacity of all serv-

ices. The Report also outlined the procedures and costs required to extend those services and to connect to them.

The Report concluded that as the site is located within an established industrial/residential area, services requirements for development of the Park are relatively minor (except for stormwater drainage). Existing services were considered to be adequate to allow Park development. As the stormwater drainage in adjoining streets was considered inadequate particularly in the south-east corner, it was recommended that retention of runoff from the site be maximised.

## 2.4 Physical Site Factors

### 2.4.1 Introduction

The original site conditions prior to excavation of brick making clay reflected two distinct geomorphological systems.

- the eastern portion of the site drained to a low lying system of swamps and marshes developed on alluvial sands and draining into Botany Bay via Sheas Creek which is now Alexandra Canal.
- the western portion of the site composed of gentle slopes rising from the low lying swamp areas to a high point in the north-west corner of the site.

These natural systems have largely been eliminated on more than half of the site through excavation of clay material for brick making over a period of more than a hundred years. Backfilling the pits with waste and cover material has created a man-made site that presents a complex set of physical conditions that must be addressed in the Park development process. These physical conditions and their implications for Park development and management are discussed in the following sections of the Report.

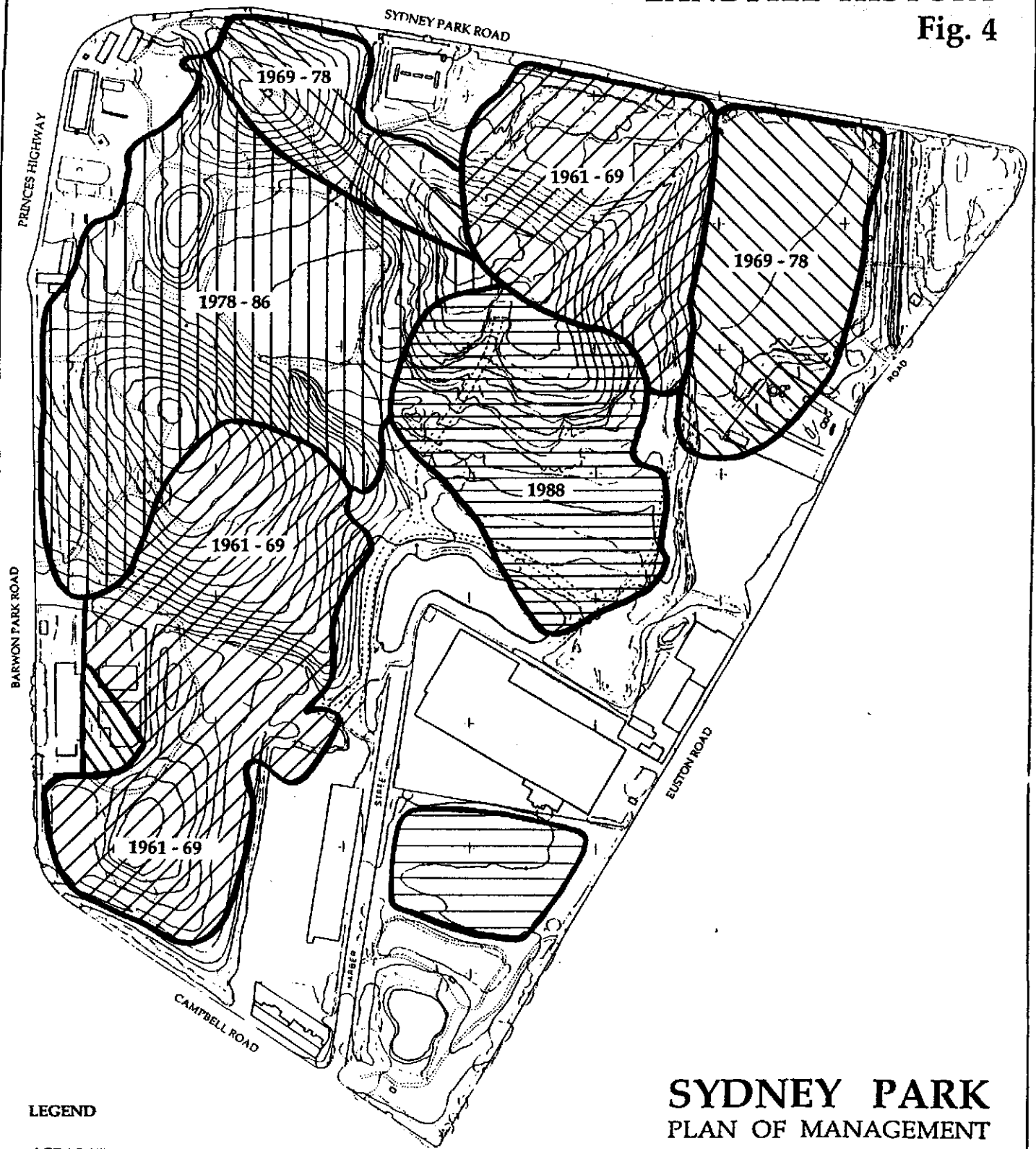
### 2.4.2 Landfill History (Figure 4)

Landfill operations commenced on the site in 1948 and involved backfilling the pits which had been created by clay extraction for brick








# LANDFILL HISTORY

Fig. 4



**LEGEND**

**AGE AS AT 1994**

- |   |                       |   |                            |
|---|-----------------------|---|----------------------------|
|  | GREATER THAN 25 YEARS |  | LESS THAN 6 YEARS          |
|  | 16 - 25 YEARS         |  | AREA NOT USED FOR LANDFILL |
|  | 8 - 16 YEARS          |   |                            |

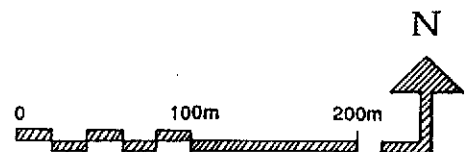
Source: Plan provided by SSCC

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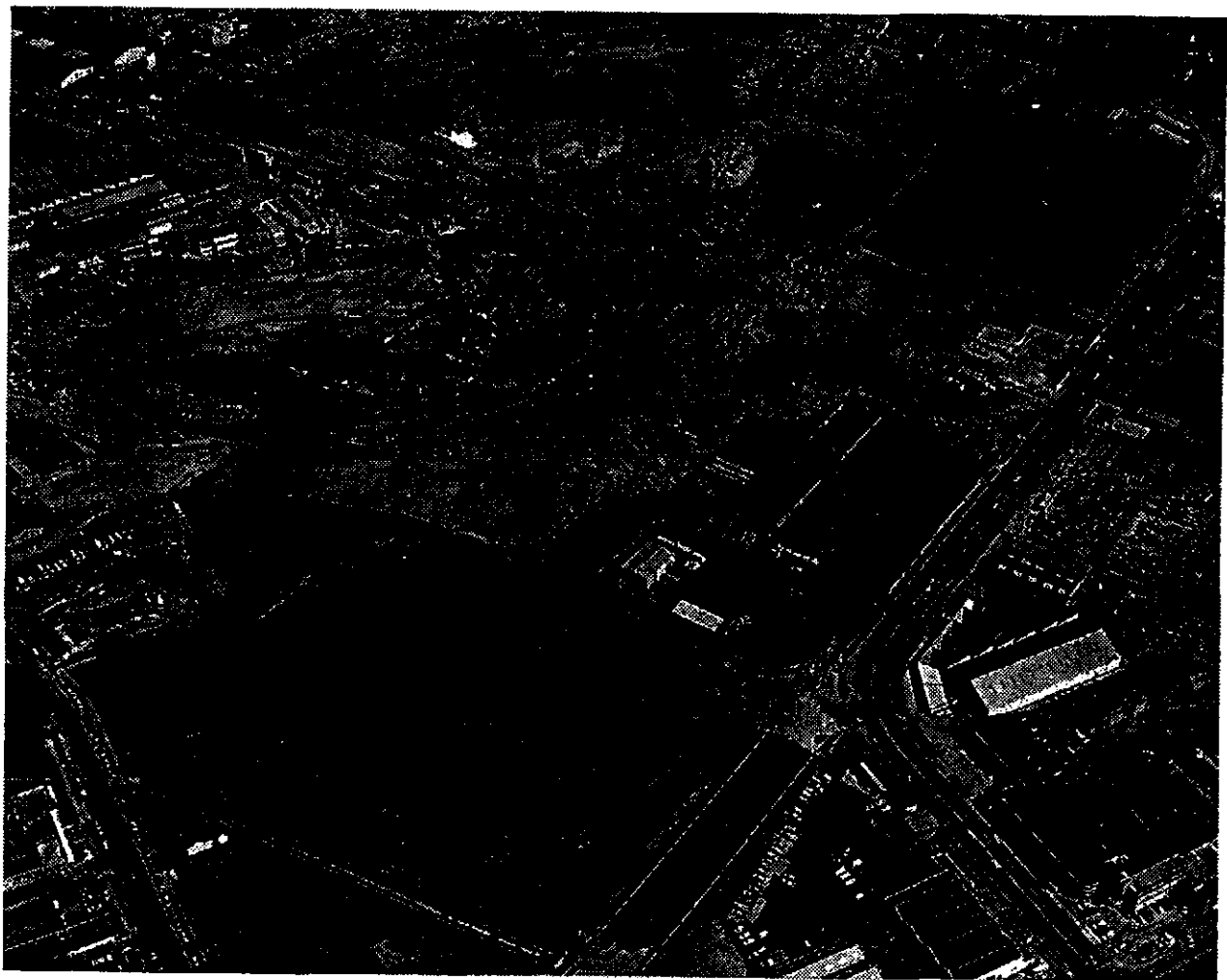
making. Disposal of putrescible waste generally ceased in 1976 (Ref. Conybeare Morrison Plan of Management, 1982). After that date it appears that no significant amount of putrescible material was disposed of at Sydney Park.

Since SSCC took charge of the filling operations in 1990 cover material consisting predominantly of natural material and some building rubble and soil excavated from construction sites has been placed on the Park to create the final landform and capped with a clay layer. This material has been brought on to the site from various locations throughout

the Sydney Metropolitan Area and is therefore very variable.

Timing of the landfill operations was also variable and depended on the availability of particular portions of the clay pits in which the waste material was placed. Consequently the age of landfill material is also variable. This is illustrated by Figure 4 which is based on information provided by SSCC and indicates the age of landfill in various portions of the site.

The landfill operations have created a unique combination of physical site conditions due to the nature of material placed in the former



*Aerial photo at time of landfill operations in former clay pits showing Euston Road and Metromix site in bottom left corner, McPhersons site in top left corner, Sydney Park Road to the right, playing field in foreground and kilns/chimneys in top right corner; the plant nursery adjoining Sydney Park Road/Mitchell Road intersection was subsequently relocated to the south-west corner of Sydney Park.*

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clay pits and the methods used to place it. During the initial years of landfilling, the site was operated as an open tip without the daily placement of a cover of soil. During the later years of operation the landfill process generally would have involved the placement of a soil cover over the waste material, on a daily basis. As a result of this filling process the material within the former clay pits is a mixture of waste material and soil which is highly variable in composition and the degree to which it has been compacted. As the organic component decomposes and soil is washed into voids within the waste material, a high degree of settlement occurs. Not only does the whole site settle but there is a high degree of differential settlement at the ground surface reflecting the variability of the waste material below.

This settlement has a number of implications for development of the Park including:

- interference with surface drainage on flat areas and a reduction in the gradient of drainage channels and pipes.
- potential damage to hard surfaces as well as buildings and structures constructed on the landfill areas.
- potential damage to underground services including sewerage, water, and drainage pipes as well as power and telephone lines.

While many of these constraints can be overcome by appropriate design, the cost and maintenance implications must be considered during the planning process and the necessary design solutions applied.

The biological degradation of organic material within the landfill by microbes, either under aerobic (with oxygen) or anaerobic (without oxygen) conditions, creates methane and other gases as by-products. Methane in its pure form is colourless, odourless and lighter than air. However, as a by-product of biodegradation methane is only one of many gases which together are referred to as landfill gases. This mixture of gases almost always has an unpleasant odour and is generally lighter than air.

Methane mixed with air at about 5 to 15 percent will explode if ignited. Below this level it will not ignite or explode. Above 15 percent the mixture will burn with a blue flame without exploding.

The rate of methane production varies greatly depending upon the:

- proportion of organic material in the landfill
- moisture content of the waste material
- temperature
- availability of oxygen following compaction, soil cover and relation of the waste material to the water table

Methane has been detected on other landfill sites up to 50 years after the placement of organic material had ceased. However, EPA has apparently informed SSCC that methane gas is only likely to be a problem at Sydney Park for a period of about 20 years after the cessation of the tipping of putrescible waste.

Because it is lighter than air, methane will rise to the surface of the landfill, following the path of least resistance. Given the highly variable nature of the landfill material and the presence of cracks and fissures created by settlement, the pattern of gas movement is extremely variable. If the passage of gas is blocked by a surface cover of impermeable material then it is likely to move laterally until it finds an escape route. In the case of Sydney Park this escape route is most likely to occur along the interface between the landfill and the vertical face of the former clay pit.

The implications of methane gas escaping through the surface of the landfill area include:

- creation of a potential explosion/fire hazard if the methane is trapped within a confined space (buildings, drainage pipes etc)
- an impact on plants resulting from the displacement of soil oxygen that can result in plant damage or death as a result of oxygen starvation of plant roots.