

73241

Sydney
Office
Master

March 1974

Centennial Park/Moore Park Residential Precinct C7

TRANSPORTATION STUDY



Prepared by **CLARKE GAZZARD VOORHEES**
on behalf of **THE COUNCIL OF THE CITY OF SYDNEY** • MARCH, 1974

THE COUNCIL OF THE CITY OF SYDNEY

TRANSPORTATION STUDY
CENTENNIAL PARK/MOORE PARK
PRECINCT C7

Prepared by
CLARKE GAZZARD VOORHEES PTY LTD
2nd Floor MLC Building
105 Miller Street
North Sydney NSW 2060

March, 1974

CONTENTS

PAGE

1.0	INTRODUCTION	1
1.1	Summary	
1.2	Complaints by Local Residents	
2.0	ROAD INVENTORY	5
3.0	TRAFFIC ANALYSIS	7
3.1	Traffic Volumes	
3.2	Origin and Destination	
3.3	Intersection Capacities	
3.4	Bus Service	
3.5	Accidents	
3.6	Internal Traffic Generation	
3.7	Noise	
4.0	CURRENT PLANS	23
4.1	Department of Main Roads	
4.2	Public Transport Commission	
4.3	RAS Showground and Sydney Sports Ground	
4.4	Sydney City Council	
5.0	TRAFFIC MOVEMENT SYSTEM	29
5.1	Implementation	
6.0	ACTION RECOMMENDATIONS	39
6.1	Traffic Movement System	
6.2	Bus Service	
6.3	Enforcement	
6.4	Showground, Cricket Ground and Sportsground	
6.5	Streetscape	
6.6	Further Study	

FIGURES

1. STUDY AREA
2. ROAD INVENTORY
3. ANNUAL AVERAGE DAILY TRAFFIC VOLUMES
4. MORNING PEAK HOUR TRAFFIC FLOW
5. EVENING PEAK HOUR TRAFFIC FLOW
6. BUS STOPS AND BUS ROUTES
7. TRAFFIC ACCIDENTS
8. NOISE SURVEY METERS
9. MAIN ROAD PROPOSALS
10. ROAD MARKINGS AND SIGNS, ALTERNATIVE NO 2
11. ROAD MARKINGS AND SIGNS, ALTERNATIVE NO 4

1.0 INTRODUCTION

This Transportation Study of the Centennial Park Area of the City of Sydney considers four aspects :

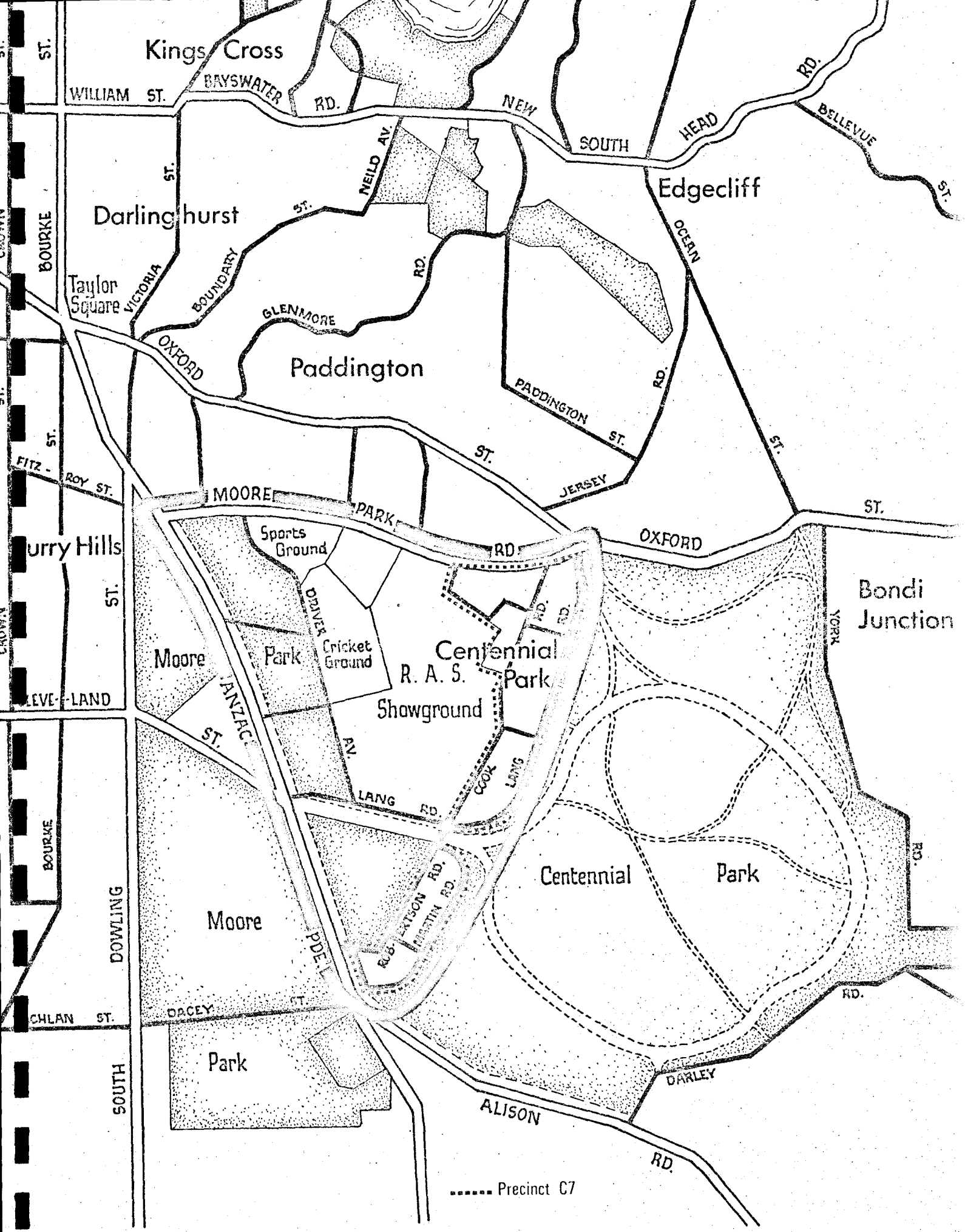
1. History of area and of its traffic;
2. Analysis of the existing situation;
3. Current plans;
4. Plans for action which Sydney City Council can take.

The background history of the area is contained in the Appendices, along with the more recent history of proposals for the area and resident reaction to them. Council has received several petitions from residents, and other complaints have been made less formally. These are all summarized in Section 1.2.

Outline descriptions of the residential neighbourhood, the Sportsground, the Cricket Ground, the Showground, Moore Park and Centennial Park are also contained in the Appendices.

The analysis of the existing situation shows the importance of several potential developments in the area, such as the future of the Showground. This study only considers the traffic implications of those developments which are considered likely within the next five years. Implications of any major changes in land-use are left for consideration in the overall Action Plan for the Centennial Park Area which is expected to follow the completion of this study. (See Section 6.6).

Figure No 1 illustrates the location and extent of the study area.



..... Precinct C7

**Centennial Park Residential Precinct
TRANSPORTATION STUDY
STUDY AREA**

1.1 Summary

There are no outstanding operational deficiencies in the transportation systems of the precinct.

There are, however, environmental deficiencies attributable to road traffic, but there is no simple, cheap way of diverting traffic around the precinct. Section 5 outlines one suitable short-term plan for reducing the effects of traffic and improving safety, and an alternative plan for ultimately removing traffic from the precinct.

The problems of congestion and parking associated with functions at the Showground, the Cricket Ground or the Sportsground cannot be removed overnight but must be considered when planning a future land-use policy for the area. Recommendations are made to alleviate some of the problems.

1.2 Complaints by Local Residents

The residents of the Centennial Park Residential Precinct have over the past two years made several complaints to Council about matters relating to traffic, both by petition and by letters from their two representative organisations, the Centennial Park Residents Association and the Centennial Park Progress Association. Some of the complaints have related to specific matters which could possibly be improved, and some have related to matters which are a growing source of annoyance to residents of inner Sydney as a whole. The complaints are as follows :

- 1.2.1 The speed and growing number of vehicles using Lang Road, Robertson Road and Cook Road (see Section 3.0) is seen as a hazard to local pedestrians and the source of disturbing noise and vibration, both during the peak traffic hours and during the night. Appendix A describes the recent history of resident action aimed at dead-ending Robertson Road or at closing the Anzac Parade median strip in order to reduce these problems in Robertson Road. Sydney City Council reconstructed Robertson Road quite recently in order to reduce vibration felt in the adjacent houses.
- 1.2.2 The gazetted status of Lang Road, Cook Road and Robertson Road as light traffic roads with a maximum weight limit of 3 tons is often disregarded by truck drivers either because of the existing poor restriction signs (a matter currently being dealt with by the City Engineers' Department, see section 4.4), or because of the lack of sufficient policing and prosecution to act as a deterrent.
- 1.2.3 The adverse super-elevation on the bend in Lang Road N. E. of Robertson Road is potentially dangerous and has caused at least one vehicle to hit the park railings. Similar adverse super-elevation at the sharp bend in Robertson Road east of Anzac Parade has caused the front wall of number 45 Robertson Road to be demolished several times by vehicles out of control.
- 1.2.4 Traffic noise from Anzac Parade, the bus roadway and the Anzac Parade/Alison Road intersection is said to be disturbing in houses at the southern end of Martin Road.

- 1.2.5 The use of roads in Centennial Park as a short cut for peak-hour traffic detracts from the role of the park as a peaceful retreat from the city turmoil.
- 1.2.6 The existing bus roadways and bus depot are considered by some to be an intrusion into Moore Park. A strip of land parallel to Alison Road is owned by the Public Transport Commission so there is the possibility of the bus roadway being extended along the line of the old tram track.
- 1.2.7 The Easter Show and sporting functions at the Sportsground, the Cricket Ground and E. S. Marks field all give rise to severe parking problems and congestion in the area. Cars are illegally parked, blocking Oxley Lane and Centennial Lane, and trucks park in Martin Road, which is not gazetted a light traffic road. The regular use of parts of Moore Park as a parking area is seen as the main reason for these areas being flat, barren, and of no appeal to local residents. Extensive parking in Centennial Park is also thought of as detracting from the park's major role.
- 1.2.8 Noise from functions within the Showground, especially the Speedway, and noise from vehicles leaving these functions during the evening is said to be disturbing to local residents.
- 1.2.9 The proposed county road widening shown on the Randwick Planning Scheme as connecting Alison Road, Martin Road, Lang Road and Oxford Street is seen as a threat to Centennial Park and to the preservation of historic buildings within the precinct..

2.0 ROAD INVENTORY

Traffic movements in the area are fully analysed in Section 3.0.

Lang Road has a 42ft carriageway and is extensively used by through-traffic moving between Cleveland Street and Oxford Street, carrying a daily volume of traffic comparable with many DMR 'Main Roads', despite its status as a 'light traffic road'.

Robertson Road and Cook Road have 42ft carriageways and each carry about half as much traffic as Lang Road, including a high proportion of through-vehicles, again despite their status as 'light traffic roads'. Following complaints by residents of excessive vibration in their houses caused by traffic, Robertson Road has recently been reconstructed.

Martin Road, Dibbs Street, Darvall Street, Mitchell Street, Furber Road and Poate Road are residential streets, free of through-traffic.

Driver Avenue varies in width and is largely under-used throughout most of the year. However, whenever there is a sporting fixture or an exhibition, Driver Avenue is congested with circulating cars and thousands of pedestrians. Consequently, it is quite unsuitable for the regular passage of through-vehicles on those particular days, in its present form.

Oxley Lane and Centennial Lane both have a certain "mews" character about them, giving access to the back entrances to properties and their garages (often old stables). The lanes are only wide enough (approximately 16ft) for access to the garages and for service vehicles, but suffer during Easter and at the time of sports fixtures from illegal parking causing congestion. The increasing use of Centennial Lane associated with access to the new high-rise development in Cook Road has led to some problems created by vehicles turning into or out of the lane, restricted by the tight geometrics of some of the buildings' gateways and having to contend with any vehicles already using the lane.

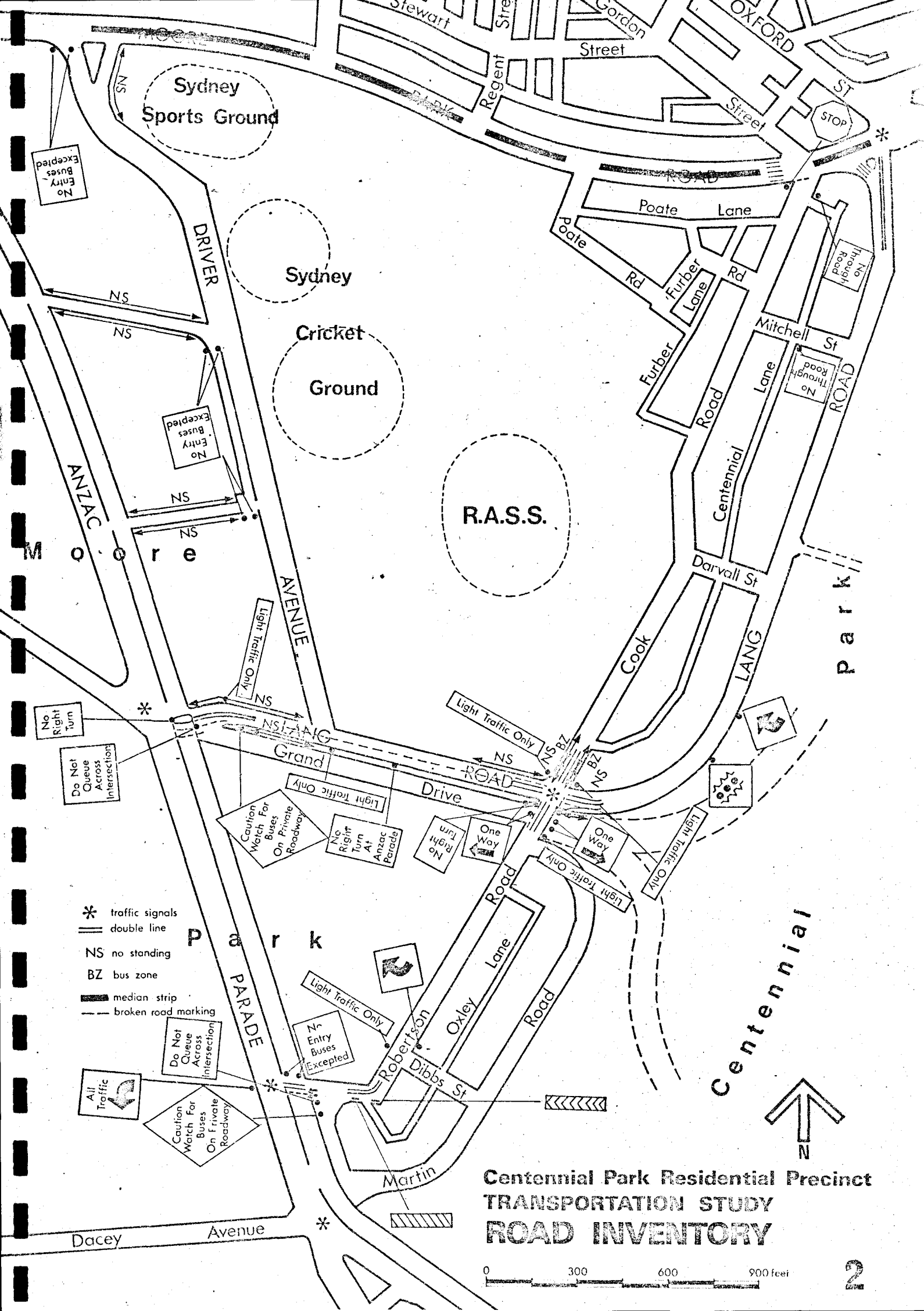
Centennial, Furber, and Poate Lanes all have "No Standing" restrictions on both sides. Oxley Lane has none.

Local residents have ready access to their homes by car. There are no restrictions on vehicles turning into the precinct's roads from Anzac Parade or Moore Park Road, and the only restrictions on vehicles leaving the precinct are bans on turning right from Lang Road and Robertson Road into Anzac Parade. These existing restrictions cause little inconvenience to local residents driving to the City as they can proceed via Driver Avenue or via South Dowling Street.

A bus service operated by Lowe's Bus Company between Oxford Street and Newtown via Cook and Robertson Roads provides local access to the precinct, connecting with government bus services in Oxford Street and Anzac Parade. (See Section 3.4).

Figure No 2 illustrates an inventory of road markings and signs.

The prescribed Planning Scheme for the City of Sydney shows Martin Road and Lang Road as "existing county roads" (see section 4.1).



Centennial Park Residential Precinct
TRANSPORTATION STUDY
ROAD INVENTORY

3.0 TRAFFIC ANALYSIS

3.1 Traffic Volumes

3.1.1 Daily

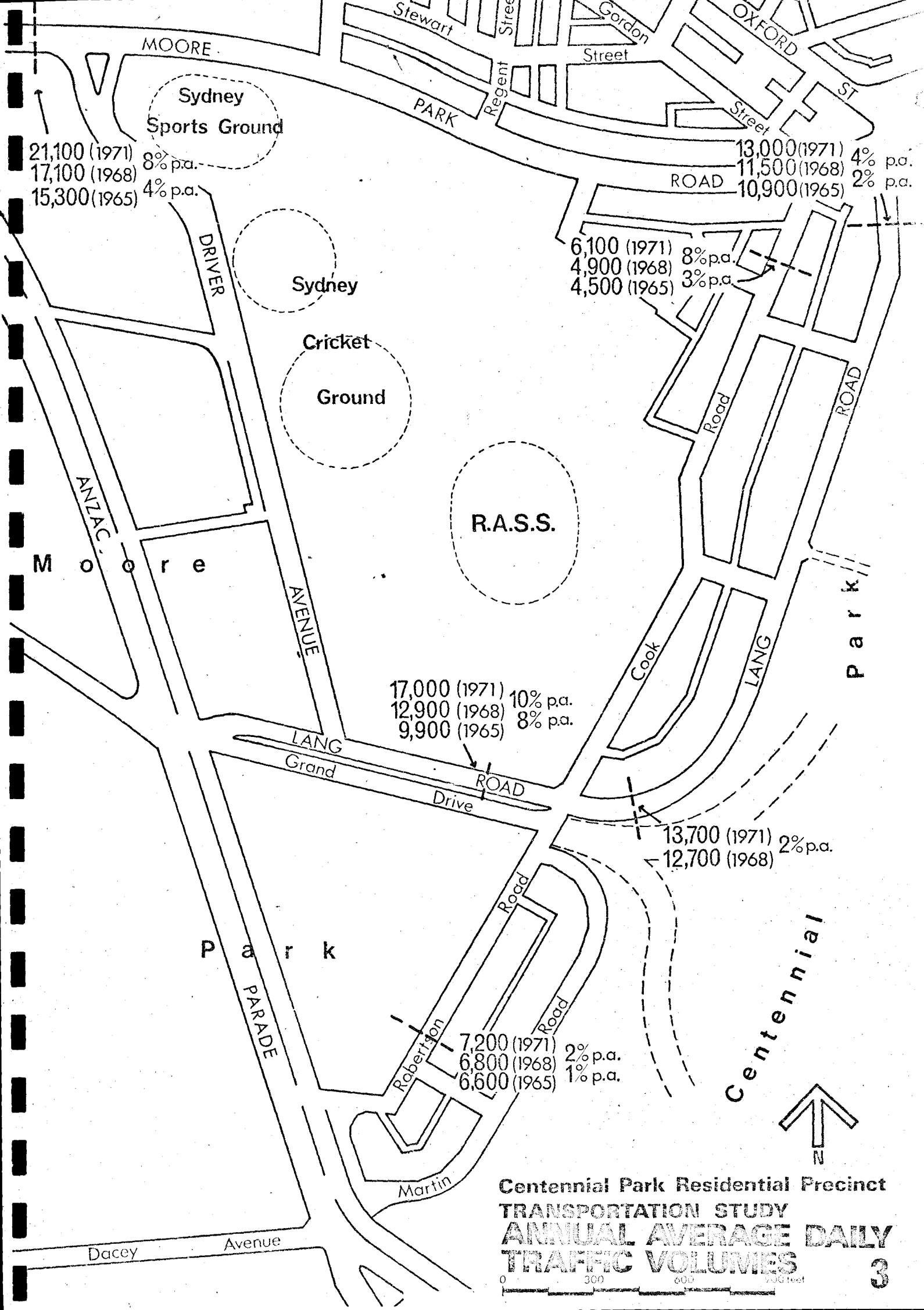
Fig No 3 illustrates the Annual Average Daily Traffic (AADT) volumes on roads in the area in 1965, 1968 and 1971, as surveyed by the DMR.

It can be seen that the rate of growth of traffic on the roads in this area appears to be accelerating, although the actual rates of growth up to 1971 are not significantly different from most others in the metropolitan area. It is well-known that the rate of growth on short cut routes is usually greater than the rate of growth on main roads, such as Oxford Street, which have already almost reached their capacity.

The 1971 AADT for Lang Road is very high for a residential street and is comparable with that of several roads in the vicinity classified as Main Roads by the DMR and maintained as such, ie. Abercrombie Street, Lachlan Street, Boundary Street and Bronte Road.

It can be seen that the rate of growth of traffic in Lang Road, west of Robertson Road, is greater than that east of Robertson Road, in Robertson Road itself, and in Cook Road, implying that the excess growth comprises an increasing number of vehicles using Grand Drive, Centennial Park.

It is possible that the daily traffic volume on Robertson Road has increased since the introduction of signals at the Anzac Parade intersection during 1973. The AADT for 1973 will not be available from the Department of Main Roads until the end of April, 1974.



3.1.2 A. M. Peak Hour (8.00 - 9.00)

Peak-hour traffic movements have been analyzed using traffic counts carried out by the DMT during 1972 and 1973 augmented by additional counts conducted where necessary.

Fig No 4 shows the traffic volumes for the a.m. peak hour.

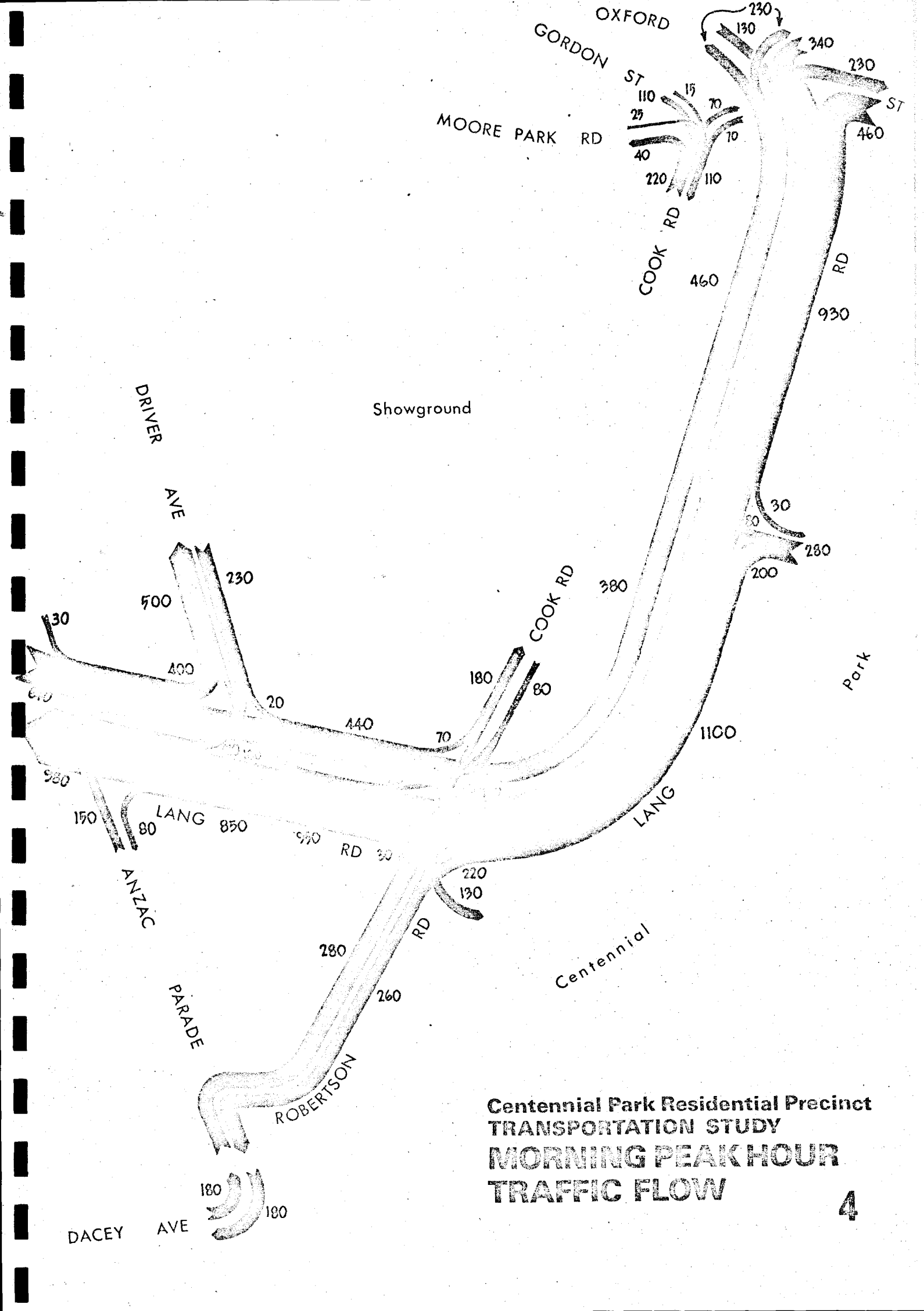
It can be seen that the major single movement in this period is from Oxford Street and Queen Street to Cleveland Street via Lang Road. Other significant movements are :

- 1) From Cleveland Street and Anzac Parade into Driver Avenue, via Lang Road;
- 2) From Cleveland Street and Anzac Parade to Oxford Street, via Lang Road;
- 3) From Oxford Street to Anzac Parade via Lang Road and Robertson Road;
- 4) From Anzac Parade to Oxford Street via Robertson Road and Lang Road or Cook Road.

Appreciably more vehicles use Lang Road (north-east of Robertson Road) than use Cook Road, despite the two roads being parallel. This can be attributed to north-bound traffic in Cook Road having difficulty turning right at Moore Park Road compared with north-bound traffic in Lang Road leading directly into a channelized and signalized intersection, and also to south-bound traffic in Cook Road having to make a right hand turn into Lang Road in order to reach Cleveland Street.

The relatively high number of vehicles turning northward into Driver Avenue reflects the use of Greens Road and Oatley Road as approaches to Darlinghurst and Paddington. Under normal conditions, when there are no sporting functions or shows, Driver Avenue is a fast route, with no congestion at either end, unlike Lang and Cook Roads.

Robertson and Cook Roads carry considerably fewer vehicles than Lang Road during the morning peak hour.



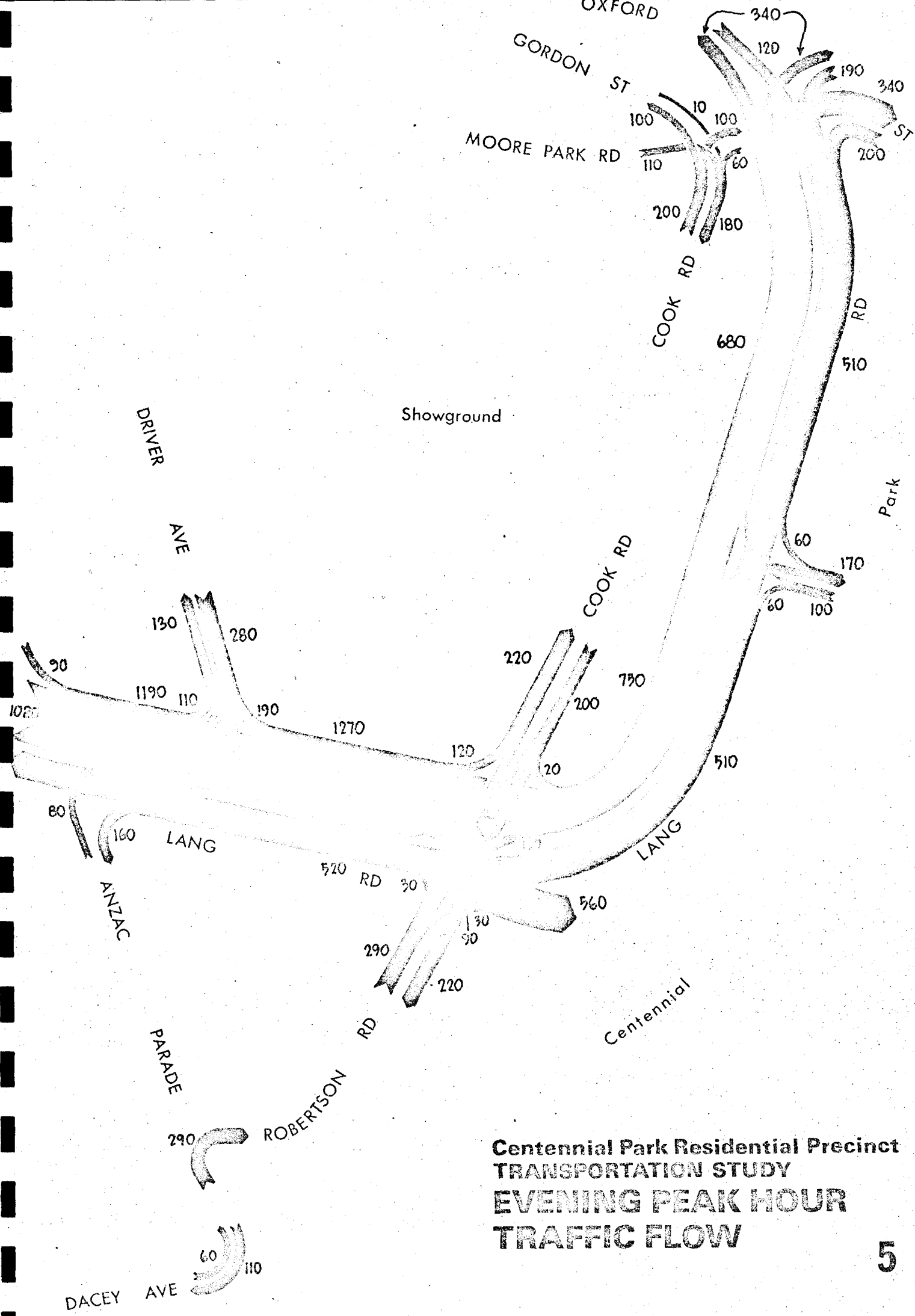
Centennial Park Residential Precinct
TRANSPORTATION STUDY
MORNING PEAK HOUR
TRAFFIC FLOW

A significant number of vehicles turn out of Centennial Park into Lang Road just north of Darvall Street, the majority turning left after having avoided the Oxford Street/Lang Road traffic signals by using the park roads. The vehicles turning right out of the park at that point create a potentially dangerous situation with north-bound vehicles in Lang Road giving way to them at the bottom of a dip.

3.1.3 P. M. Peak Hour (4.00 - 5.00)

Fig No 5 shows the p.m. peak hour traffic volumes. By far the largest movement is east-bound from the Cleveland Street/Anzac Parade intersection, splitting at the Robertson Road intersection, with about half continuing along Lang Road towards Oxford Street and the other half turning into Centennial Park. This movement into the park is very substantial, virtually creating a main road of Grand Drive. The total east-bound movement is too great to be handled by the Oxford Street traffic signals without queuing in Lang Road and subsequent delays. Consequently large numbers of drivers either turn into Grand Drive or turn into the park just north of Darvall Street.

As during the morning peak hour, considerably fewer vehicles use Cook Road and Robertson Road than Lang Road.



**Centennial Park Residential Precinct
TRANSPORTATION STUDY
EVENING PEAK HOUR
TRAFFIC FLOW**

3.2 Origin and Destination

Surveys conducted for the Sydney Area Transportation Study in 1971 to determine travel patterns throughout the metropolitan area have been selectively analysed by computer to arrive at an understanding of traffic passing through the City of Sydney, with particular reference to the Centennial Park area.

Residents of Woollahra and Waverley own a relatively high number of cars, and because of the availability in non-CBD areas of all-day parking, use many of these cars to drive to work.

During the a.m. peak hour the following number of vehicles originating in Woollahra and Waverley cross a cordon from Rushcutters Bay to the South Dowling Street/Cleveland Street intersection :

- a) 620 to Harbour Bridge
- b) 3170 to City, excluding Pyrmont, Ultimo, Chippendale and University area
- c) 1180 to Pyrmont, Ultimo, Chippendale, University and Western suburbs via William, Burton, Oxford, Campbell, Foveaux and Cleveland Streets
- d) 280 to South Sydney via William, Oxford or Cleveland Street, then South Dowling, Bourke or Elizabeth Street.

Reference to Fig No 4 shows that 980 vehicles during the a.m. peak hour enter Cleveland Street from Lang Road. These 980 consist of vehicles from Woollahra and Waverley to the above destination (mostly (c) and (d)).

It can be seen that Lang Road and Cleveland Street are serving a very major role in providing a road link from Woollahra and Waverley to the western side of the city and western suburbs. In addition, this route is largely used to reach South Sydney and Mascot.

The large west to east movement during the p.m. peak hour represents the reverse journey home from work in similar proportion to the above figures.

Lang and Robertson Roads comprise another important route from Woollahra and north Waverley to the industrial areas of South Sydney, with 260 vehicles in the a.m. peak hour travelling this path.

It is important to note the lack of alternatives open to serve the a.m. peak movement of vehicles from Woollahra and Waverley to the south and west. Destinations to the west can be reached via Moore Park Road, Oxford Street and William Street, but the competition for this road space by vehicles destined to the CBD has encouraged motorists to use Lang Road in order to skirt to the south of the main congestion points. Destinations to the south can only alternatively be reached by detouring to Moore Park Road and South Dowling Street, or by using roads through Centennial Park. There are no continuous routes situated east of Centennial Park which could serve this movement to South Sydney.

Following the current construction of the North Western Freeway between the City and Glebe, and the associated widening of Drutt Street as an access ramp, along with the opening of the Kings Cross tunnels, it is anticipated that William Street will increase in importance as a major traffic artery between Woollahra and the City and points west. In order to help traffic movement, to protect the residential environment of Surry Hills, and to rationalize the present choice of east-west routes through the City, it is also anticipated that widening of Cleveland Street will receive high priority and that re-channelization of Taylor Square will allow Campbell Street to be upgraded as a major access to the southern end of the CBD.

The anticipated growth in traffic on Cleveland Street, in particular, would have severe repercussions on traffic movement through and around the Centennial Park area.

3.3 Intersection Capacities

3.3.1 Lang Road/Anzac Parade

Calculations based on traffic counts conducted by the DMT in November 1972 show that this intersection is already carrying morning peak hour volumes of traffic sufficient to cause serious congestion if upset. The ratio of traffic volume to capacity of the existing carriageway widths and channelization is above that recommended in the Australian Road Capacity Guide published by the Australian Road Research Board. This ratio could be slightly reduced during the morning peak hour by providing a right turn slot in the median strip and an exclusive signal phase for vehicles turning into Lang Road.

However, any large additional peak hour loadings could not be handled simply by altering the signal phasing without creating extensive queuing and delays in peak periods.

If Robertson Road were closed and all the vehicles turning right from Anzac Parade at this point were diverted to Lang Road, the ratio of traffic to capacity at this intersection would be significantly worsened, even after the provision of a right turn median slot and an additional phase in the signals.

However, it is possible that if Robertson Road were closed, not all the vehicles currently turning into it from Anzac Parade would turn right into Lang Road. A minority would be diverted to Alison Road, completely by-passing this intersection, or to Cleveland Street, passing straight through the intersection to Lang Road.

An increase in the capacity of this intersection sufficient to take all the vehicles which presently turn right into Robertson Road would require major roadworks, such as widening Anzac Parade to four lanes each way, or widening the Cleveland Street approach to four lanes.

The DMR proposal for the grade separation of this intersection (see section 4.1) will ultimately allow a far greater number of vehicles to turn right than can be presently accommodated, and so the opportunity to close Robertson Road would then be facilitated.

3.3.2 Lang Road/Robertson Road/Cook Road

From an engineering point of view this signallized intersection functions satisfactorily at all times.

The evening peak hour ratio is higher than that in the morning peak hour, largely due to the high number of vehicles turning right from Lang Road into Robertson Road and thence into Centennial Park. Nevertheless this movement is not opposed by a very great movement from the east, and so the capacity of this intersection does not act as a restraint on peak hour traffic passing through the precinct.

3.3.3 Anzac Parade/Robertson Road

This intersection is operating at a high level of service, handling a volume of traffic in each peak hour well below its total capacity. This is largely due to the throttling effect of the Anzac Parade/Alison Road/Dacey Avenue intersection, and also to the ban on turning right out of Robertson Road obviating the need for a third signal phase.

3.3.4 Lang Road/Moore Park Road/Oxford Street

This complex intersection operates with four-phase traffic signals. Current peak hour volumes of traffic are quite satisfactorily handled with a reasonably low ratio of vehicles to capacity. Vehicles entering the intersection from Lang Road enjoy uninterrupted movement for one of the four phases, allowing unopposed right hand turns into Oxford Street.

3.4 Bus Service

The residential precinct is well served by buses. There are frequent buses to the city in Oxford Street and in Anzac Parade, and buses to Waverley or Randwick in the opposite direction. In addition to these government buses, there is a service privately operated by Lowe's Bus Service Pty Ltd between Newtown and Oxford Street via Dacey Avenue, Robertson Road and Cook Road. Lowe's operate at peak hour intervals of 10 minutes, and at off-peak intervals of 30 minutes, providing the local residents with both an inter-suburban service and a local connection to the government buses in Oxford Street and Anzac Parade.

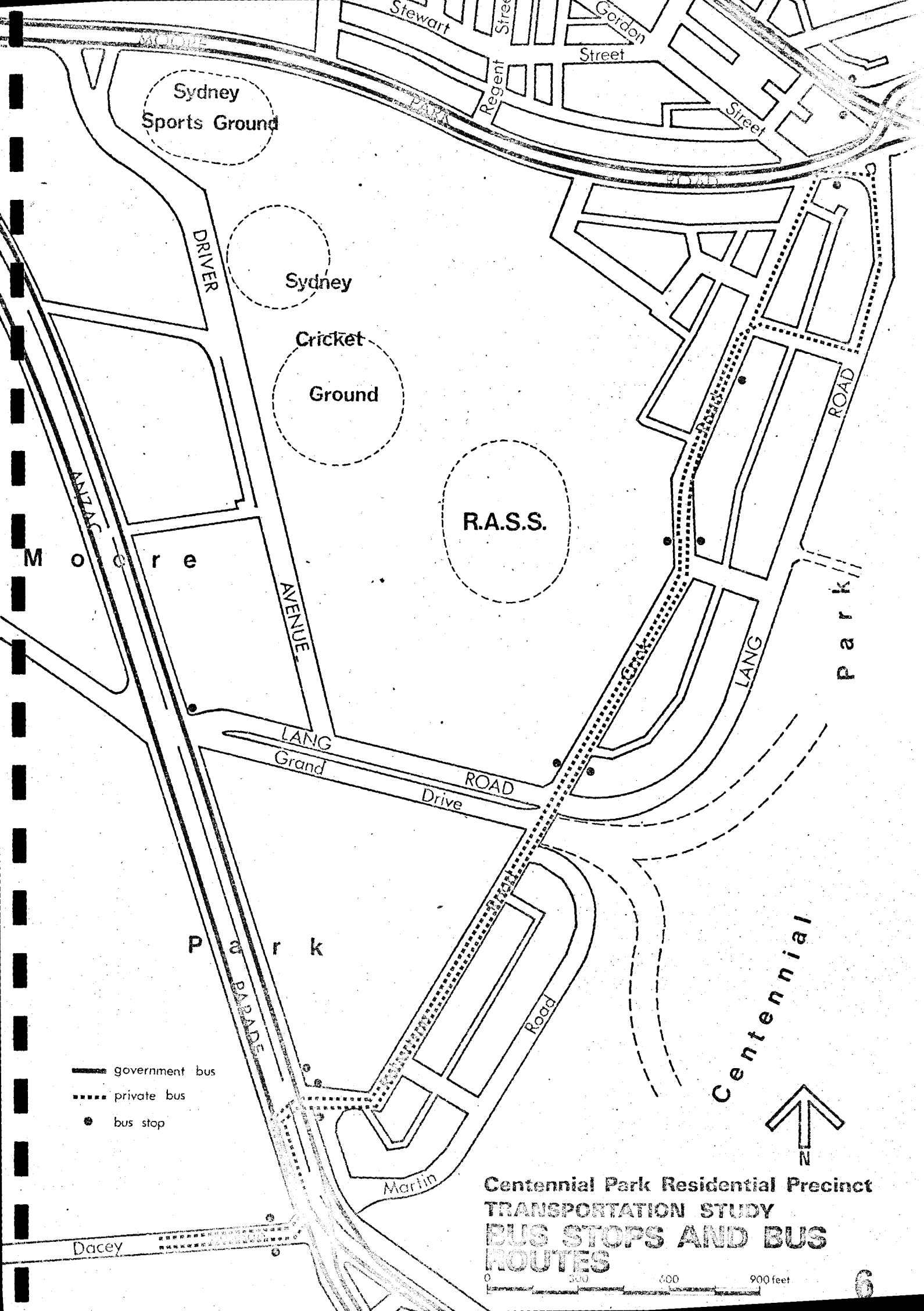
Fig No 6 illustrates the bus routes and bus stops in the area.

The bus roadway running parallel with Anzac Parade is used by south-bound government buses, and by city-bound peak hour express buses. South-bound buses continuing along Anzac Parade to Kensington emerge from the bus roadway midway between Robertson Road and Alison Road.

Randwick-bound buses enter Alison Road just south of the Anzac Parade intersection. A meal room and crew changeover point is located on the bus roadway just south of Robertson Road, and space is provided at this point for buses to be parked.

Appendix A outlines a recent history of controversy over the extension of bus roadways, and of maintaining the Lowe's Bus Service in Robertson Road.

Future plans for the bus roadways are discussed in Section 4.2



**Centennial Park Residential Precinct
TRANSPORTATION STUDY
BUS STOPS AND BUS
ROUTES**

3.5 Accidents

Motor vehicle accidents which have been reported by a police officer are recorded by the DMT Accident Research Unit in the form of a quarterly computer print-out. These records give the location of accident, type of vehicles involved, direction they were heading, time and date of accident, type of accident or manoeuvre involved, and reason for accident, if obvious. Such records for the Centennial Park Area's roads have been analysed for the period July 1971 to June 1973 to see if any pattern of behaviour can reveal safety defects.

Fig No 7 illustrates the location of traffic accidents within the precinct between July 1971 and June 1973, excluding those in Anzac Parade and Moore Park Road.

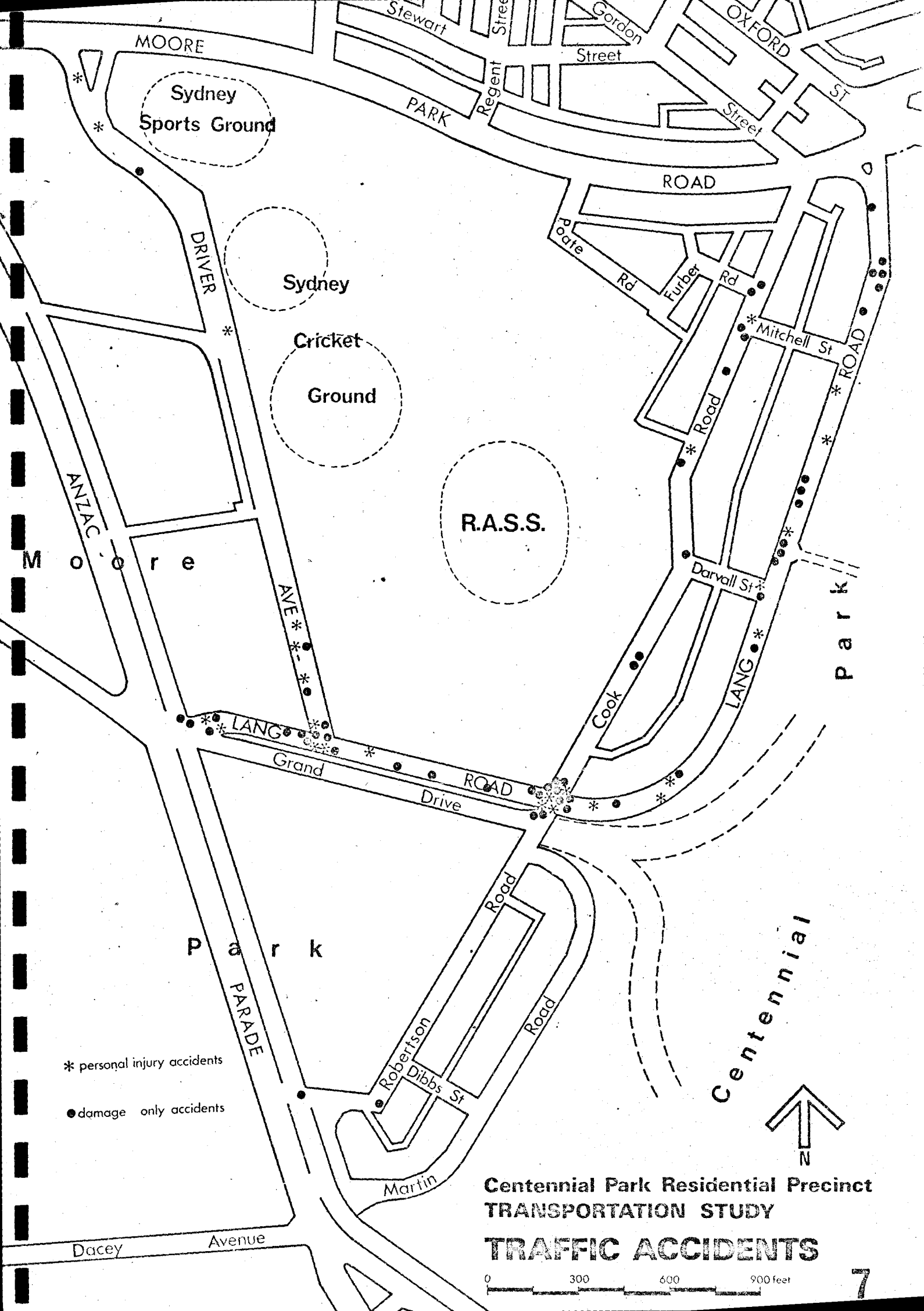
Table No 1 illustrates the time and type of accident at each general location, differentiating between injury accidents (denoted by an 'i') and damage only accidents ('d').

There were 79 accidents reported within this two-year period, including 26 personal injury accidents, occurring in Lang Road, Cook Road, Robertson Road and Driver Avenue. Thus on average, one person is injured within this precinct as often as every fourth week, and a damage-only accident is reported on average every second week. This high occurrence of accidents, especially injury accidents, is partly due to the roads having been laid out as residential streets and not as arterial roads, partly due to the almost inevitable minor collisions encountered in city driving, and partly due to such driver-irresponsibility as intoxication and excess speed. Night-time accidents slightly exceed daytime accidents in number, and grossly exceed them in proportion to the vehicle miles covered during each of these two periods.

The majority of night-time accidents occur between and not at, intersections.

Eight of the accidents at night were known to involve an intoxicated driver, and it could be assumed that some of the six hit-and-run drivers were also intoxicated.

The majority of occasions on which vehicles struck parked cars were at night, as were all instances of car striking fixed objects or overturning.



Centennial Park Residential Precinct
TRANSPORTATION STUDY

TRAFFIC ACCIDENTS

	Overturn	Pulled out from kerb	Into fixed object	Into parked car	Head-on	Not yield to right	Pedestrian	Reversing	U-Turn	Changing lanes	Rear end	Turning right into oncoming vehicle	Day	Night
Lang Road from Moore Park Road to Mitchell Street				3d					1d		2d		2d	4d
Lang Rd from Mitchell to Darvall		1d	1i	1d		1d			1i		2d		4d	1d
Lang/Darvall intersection						1d					1i		1i	1d
Lang Rd from Darvall to Cook	1i			2d 3i					1d				1d	2d 4i
Lang/Cook intersection								1d	1d	1d	2d	6d 4i	7d 4i	4d
Lang Rd from Cook to Driver				1d	1i						2d			3d 1i
Lang/Driver intersection						1d 1i	2i			1d	2d	2d	5d 2i	1d 1i
Lang Rd from Driver to Anzac				1i	1d	1d	1i	1d			1d		1d	3d 2i
Cook/Furber intersection				1d							1d			2d
Cook/Mitchell intersection					1d	1d 1i							2d	1i
Cook Rd from Mitchell to Darvall				2d			1i						1i	2d
Cook/Darvall intersection						1d								1d
Cook Rd from Darvall to Lang				2d									1d	1d
Robertson Rd			1d			1d							1d	1d
Driver Ave		1i			1d 2i	1d	2i	1d			1i		2d 5i	1d 1i
TOTAL	1i	1d 1i	1d 1i	12d 4i	3d 3i	8d 2i	6i	3d	3d 1i	2d	12d 3i	8d 4i	26d 13i	27d 13i

TABLE NO.1

In general, then, night-time accidents consisted of those which could be caused by inattentive or drunken driving, and by excess speed for the road conditions. Road conditions which could prove hazardous at night are - adverse super-elevation on bends; inadequate warning signs before bends; inadequate street markings; poor illumination to highlight bends, parked cars, signs and pedestrians.

Collisions generally attributable to high volumes of traffic and to inattention are predominant amongst the daytime accidents. Such accidents are:- turning right at an intersection into an oncoming vehicle; colliding with another vehicle whilst changing lanes; U-turning; reversing; or pulling out from the kerb.

Daytime accidents contain others, such as rear-end collisions, not yielding at an intersection to vehicles from the right, head-on collisions, and pedestrian accidents.

Lang Road between Moore Park Road and Cook Road has had a high proportion of collisions attributable to speed, such as parked cars being struck, and rear-end collisions.

The Lang Road/Cook Road/Robertson Road intersection has been the scene of nearly all the collisions caused by vehicles turning right. Reference to Fig No 5 illustrates the high proportion of turning traffic at this intersection. The right-turning movement from Lang Road into Robertson Road can be made safe by introducing an extra phase into the signal operation, thereby also increasing the capacity of this intersection.

Unfortunately, this modification to the signals would have the effect of directing more vehicles into Centennial Park with the possible effect of creating a hazardous situation in this recreational reserve, and so is not to be encouraged.

The Lang Road/Driver Avenue junction has been the scene of several accidents associated with non-signallized intersections, such as pedestrian injuries (two), drivers not giving way to the right, and rear-end collisions.

Lang Road about 50 yards east of Anzac Parade has been the scene of six collisions within two years, including one pedestrian injury, one driver not yielding to a bus on the bus roadway, and one driver crossing the centre line to cut off the corner.

Cook Road between Moore Park Road and Lang Road has been the scene of one pedestrian injury, three instances of not giving way to the right, and five instances of parked cars being struck.

Robertson Road has been relatively free of accidents with the exception of a vehicle destroying the brick fence to no. 45 after failing to negotiate the bend just east of Anzac Parade.

Driver Avenue has been the scene of a number of accidents, despite its width, its lack of cross traffic, and its own low volume of traffic. Six of the nine accidents resulted in personal injury, including two injured pedestrians. These personal injury accidents were a result of fast driving, including two head-on collisions caused by not keeping to the left.

Summary

Despite the number of accidents which occurred at Lang Road's intersection with Driver Avenue and Cook Road, the rate of accidents in proportion to the number of vehicles entering the intersection was not high enough for these locations to be clearly defined as deficient by the standards set by the Commonwealth Bureau of Roads. However, the safety standards of Lang Road and Driver Avenue are clearly deficient mid-block between intersections.

3.6 Internal Traffic Generation

The current volume of through traffic using the roads of the precinct is so high that the number of vehicles generated by the residential properties is small by comparison.

According to the 1971 Census Data there were at that time 1,865 people living within the area bounded by Moore Park Road, Poate Road, Lang Road, Cook Road, Martin Road and Robertson Road. The question arises as to whether or not there will be a traffic generation problem if the whole of this precinct is redeveloped.

The Residential Development Control Code submitted to the Sydney City Development Committee in December 1973 proposed a code for Precinct C7 (Centennial Park) such that if the whole area were redeveloped at the maximum density permitted, then the population would increase to 2,540. Since it is unlikely that the area zoned 2(a) will be redeveloped, or that all sites within the 2(b) area will be developed to the maximum possible density due to limited site areas, it is probable that the population of the precinct will increase only by about 20%.

Consequently, the traffic generated by residential properties will continue to be a small proportion of the total traffic using the precinct's roads and will not directly cause any problems on these roads. However, redevelopment of sites in the 2(b) areas will greatly increase the use of access roads such as Centennial Lane, Furber Lane, and Poate Lane, and consideration must be given to their adequacy.

Functions at the Showground and Sportsground generate large volumes of traffic, but usually at off-peak times, enabling special parking and policing arrangements to be made. No generalisations can be made for making these special arrangements as far as traffic management is concerned, and are best handled by the police who can make decisions to suit the size of crowd concerned and the rate of arrival of cars. For instance, exhibitions generate traffic throughout the day, whereas a football match generates peak loads of traffic.

Traffic arrangements for the Easter Show include the closure of Driver Avenue to through-vehicles except buses and taxis, and the opening of Moore Park for parking. At Easter 1974, it is intended to open all four of these parking areas simultaneously, to close the median gaps in Anzac Parade, and to reorganize the entrances in order to minimise queuing.

Complaints by local residents relating to traffic generated by functions at the Showground and Sportsground are outlined in Section 1.2.

3.7 Noise

Noise metering surveys conducted by Carr & Wilkinson, consulting acoustical engineers, between the winter of 1972 and the summer of 1972-73 show noise levels at ten kerbside locations in and around the precinct at various times of the day or night.

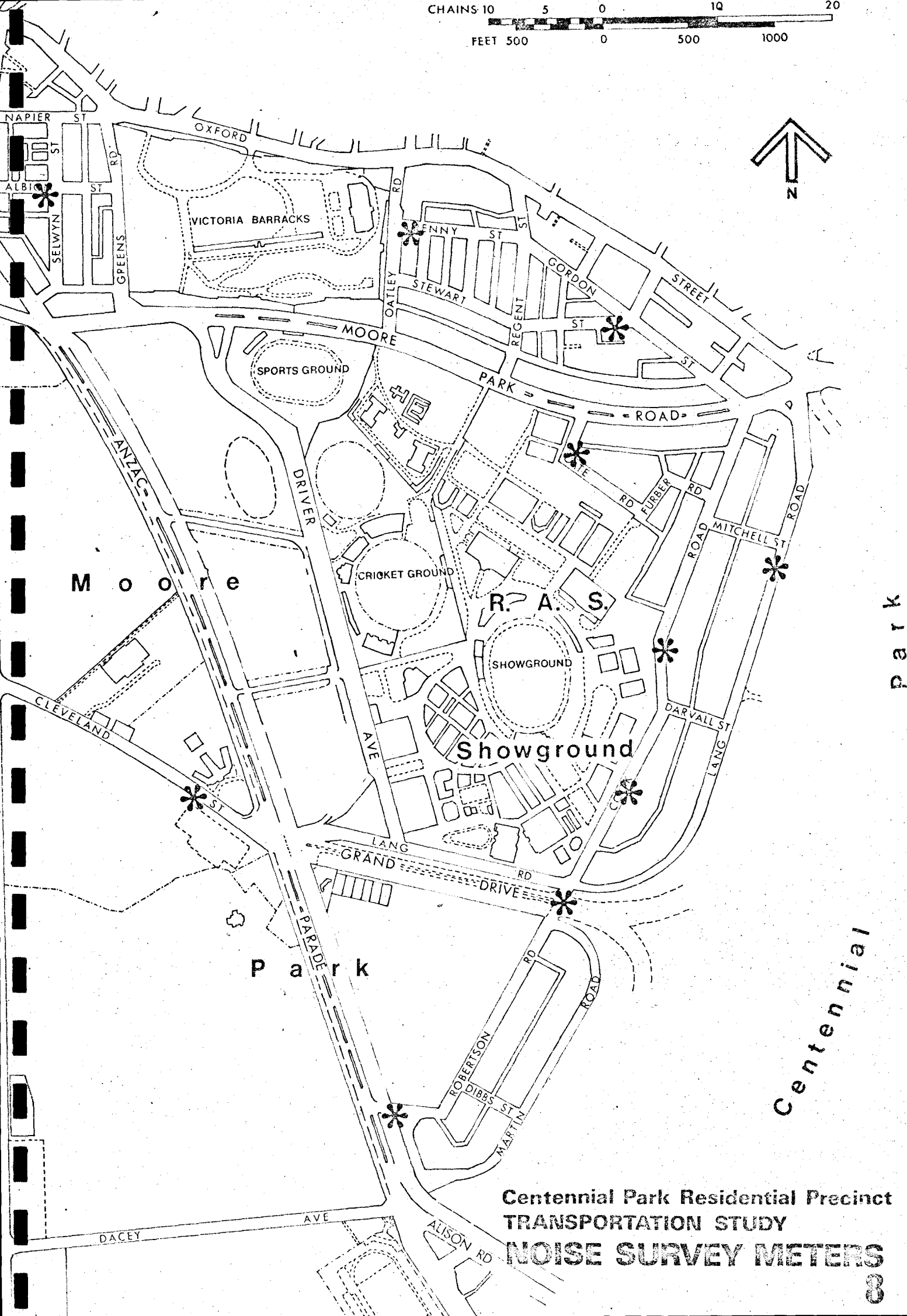
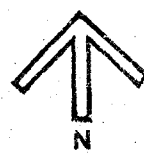
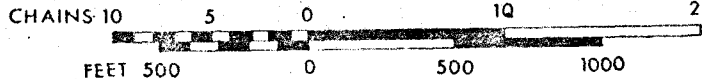
Fig No 8 illustrates the location of the metered sites.

Table no 2 gives the noise levels in decibels which were registered for 90%, 50%, 10% or 1% of the time period being surveyed, ie. L90 was the background noise level, L10 was a high noise level quite often registered, and L1 was the absolute peak level registered.

From these figures the noise level in the streets of the Centennial Park Residential Precinct can be compared with the noise level in neighbouring residential streets, and with the noise level on a main traffic arterial.

Peak traffic readings indicate that Selwyn Street, Penny Street, Stewart Street and Poate Road all had a similar noise level which could be taken as typical for truly residential inner-city streets. The two locations in Cook Road are noisier on average than these streets, having an L50 level similar to their L10 level, and an L10 level almost as high as Cleveland Street. The location in Lang Road just south of Mitchell Street had noise levels almost as high as Cleveland Street during peak traffic conditions. The two locations in Robertson Road had high background noise levels and peak levels almost as high as Lang Road and Cleveland Street, and were noisier on average than Cook Road and the other residential streets.

Evening readings taken between 7.30 pm and 10.30 pm on Friday and Saturday nights again indicate that Selwyn Street, Penny Street, Stewart Street and Poate Street all had similar noise levels during these periods. These levels were generally slightly lower than the peak hour readings. Cook Road was noisier on average than these streets and had an L10 reading similar to Lang Road and Cleveland Street. Lang Road just south of Mitchell Street had the highest peak readings of all the locations within the precinct on Friday and Saturday evenings, and was almost as noisy as Cleveland Street. Robertson Road, despite having a relatively high background (L90) level, had lower peak readings than Cook Road, Lang Road or Cleveland Street.



Centennial Park Residential Precinct
TRANSPORTATION STUDY
NOISE SURVEY METERS

TABLE NO 2

	PEAK Mon - Fri				EVENING Mon - Wed				EVENING Fri & Sat				EVENING Sunday				AFTERNOON Saturday			
	L90	L50	L10	L1	L90	L50	L10	L1	L90	L50	L10	L1	L90	L50	L10	L1	L90	L50	L10	L1
Selwyn Street	53	56	61	68	48	50	60	68	51	54	63	70	47	49	56	64	49	51	56	63
Penny Street	52	57	65	70	45	48	56	67	45	48	57	65	46	49	60	66	47	53	62	66
Stewart Street	52	55	62	69	43	45	50	59	47	50	55	61	46	49	57	64	47	53	65	71
Poate Road	49	53	61	67	43	46	55	65	47	52	57	66	45	49	56	64	47	52	59	62
Cook, N of Darvall	55	61	72	78	43	50	64	73	49	57	68	73	46	50	67	76	53	57	71	77
Cook, S of Darvall	57	64	74	80	48	57	70	76	54	59	72	74	51	57	69	75	52	58	70	75
Lang Road	60	67	76	79	47	55	70	76	54	61	72	80	55	63	72	77	53	63	72	75
Rob/Grand	62	67	72	77	53	62	70	74	55	62	69	75	54	61	68	72	57	62	68	74
Rob/Anzac	63	67	73	77	58	63	70	76	56	60	66	73	53	58	66	72	60	64	68	74
Cleveland	63	69	75	79	53	62	73	78	57	64	72	78	52	62	72	77	-	-	-	-

Evening readings on Mondays to Wednesdays were generally lower than the Friday and Saturday readings, with the exception of Robertson Road. The two locations metered in Robertson Road were both adjacent to busy intersections (Lang Road and Anzac Parade) and so had high background noise levels, but did not have correspondingly high peak noise levels.

Sunday evening readings were slightly higher than those on evenings from Monday to Wednesday, except in Robertson Road.

Saturday afternoons generally had noise levels very close to those of Friday and Saturday evenings.

In conclusion, Cook Road, Lang Road and Robertson Road do have noise levels above those found in neighbouring residential streets. Background, or average, noise levels appear to be related closely to the number of vehicles passing a point, whereas peak noise levels are more related to gradients. Absolute peak noise levels were highest at the two sites in Cook Road and the one in Lang Road. Despite complaints from residents to the contrary, the vicinity of the Robertson Road/Lang Road intersection did not register unduly high peak noise levels in the evening.

There are no legally laid-down standards for acceptable road noise in NSW, although standards have to be stipulated for other noise sources such as industry and aircraft. Road traffic is the largest source of noise in Sydney.

Although there are no legal limits, a desirable maximum for background (L90) noise metered in a residential area at the kerbside would be 40-45 dbA, and an average level (L50) would be 45-50 dbA. Reference to table no 2 shows that these desirable levels are exceeded in Lang Road, Robertson Road and Cook Road during the periods illustrated. Even the 'quiet' residential streets exceed these levels during the peak traffic hours and on Saturday afternoons.

What can be done to reduce traffic noise in the precinct? Background levels of noise can only substantially be reduced by reducing the number of vehicles passing through the precinct. Tree or street planting along the footpath has very little real effect in reducing traffic noise, but can psychologically reduce the noise by visually screening the offending vehicles.

Peak traffic noises are largely due to gradients and to acceleration. Within the precinct nothing can be done to reduce gradients, and there are few opportunities to reduce the number of interruptions to smooth flow. One interruption in Lang Road would be removed if the park gate just north of Darvall Street were closed.

Enforcement of the light vehicle ordinance would help reduce peak noise levels.

4.0 CURRENT PLANS

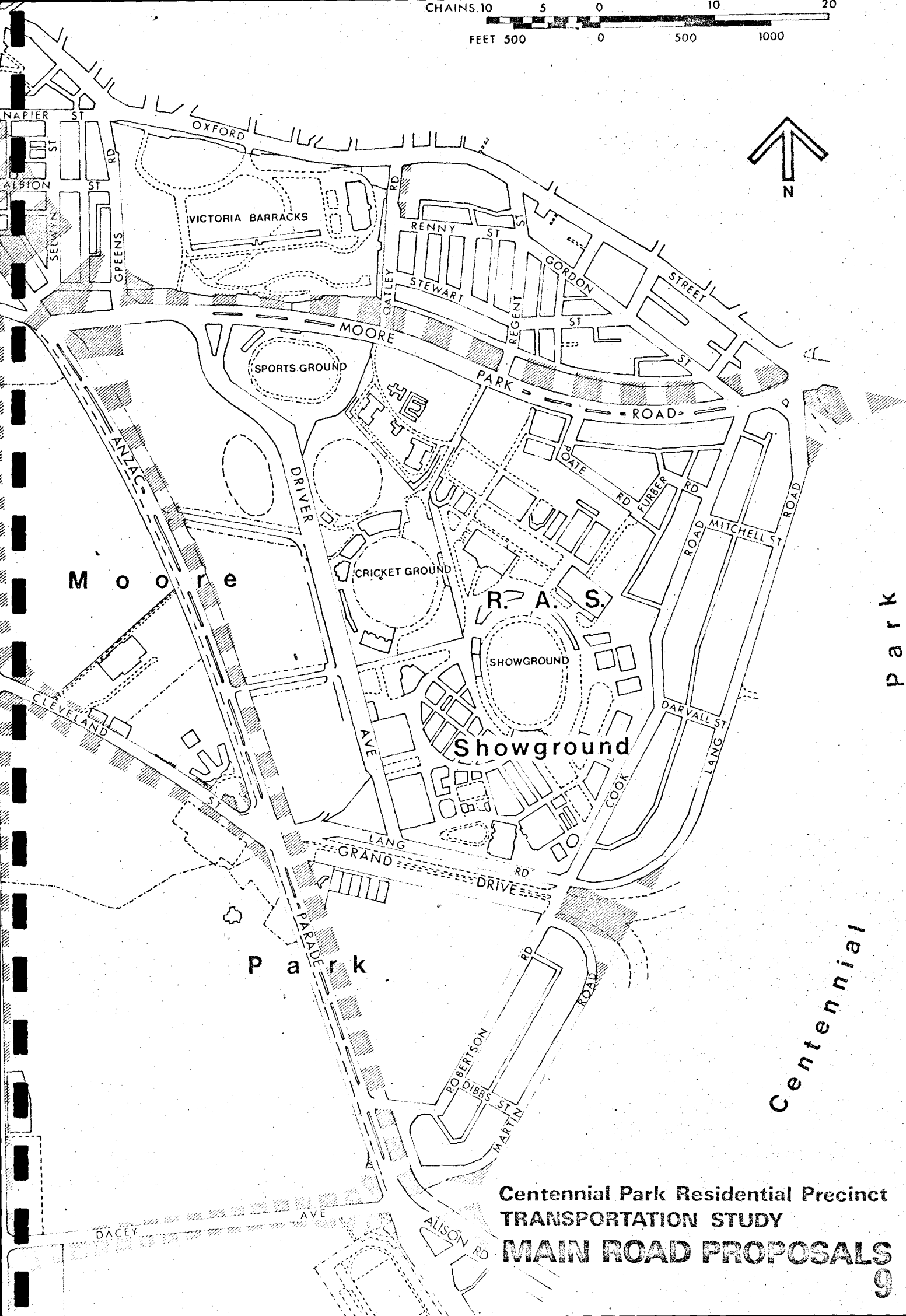
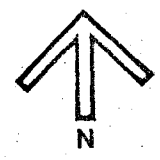
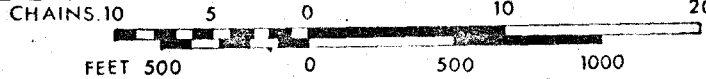
The NSW Government departments and the Royal Agricultural Society of NSW, currently have intentions to make various changes to their services in the Centennial Park Area. Although many of these proposals are not expected to be started for several years, and final designs have not yet been completed, their broad outlines and their implications on the area are known.

4.1 Department of Main Roads

The planning schemes for the City of Sydney and for Randwick show the location and extent of the DMR's proposed county road widening in this area, as illustrated in figure 9. No works in the vicinity of Centennial Park are programmed to be commenced within five years.

The widening and realignment of Moore Park Road and Anzac Parade are part of the proposed Eastern Freeway extending from the proposed Eastern Distributor through Woolloomooloo and Darlinghurst. This freeway is considered by the DMR to be a long range project with no work starting within ten years with the possible exception of a local underpass under William Street. Considering the current controversy over inner-city freeways, it is very likely that the Eastern Freeway will not be built within considerably more than ten years, if at all. The DMR are not, however, likely to lift their existing reserves on affected property, and it is possible that some form of bus roadway might be built through the Flinders Street area to extend the existing bus roadway parallel to Anzac Parade.

The proposed widening of Cleveland Street is likely to be commenced within ten years, but not within five years, as the DMR have not yet started to purchase the affected property. Associated with the widening of Cleveland Street is a plan to grade separate the Cleveland Street/Lang Road/Anzac Parade intersection. This scheme consists of a four lane north-south overpass to carry the through traffic on Anzac Parade, and will involve widening Anzac Parade by about twenty feet on the east side. In the context of metropolitan road planning, this would be of low priority and can be regarded as a long term project. The completion of this scheme will speed up traffic in Cleveland Street and Anzac Parade, and would allow Robertson Road to be closed to through traffic, if desired. However, an overpass at this location will destroy the avenue concept of Anzac Parade, which is one of the few parkland avenues in Sydney. The alternative of cutting an underpass



Centennial Park Residential Precinct
TRANSPORTATION STUDY
MAIN ROAD PROPOSALS

would be more expensive than building an overpass, but the possibility of having a restricted height underpass for cars only, should not be overlooked.

Associated with the DMR's plan to ultimately widen Anzac Parade, Dacey Avenue, and Alison Road, as shown on the planning schemes, there is a plan to provide a link from the Anzac Parade/Alison Road intersection to the Moore Park Road/Oxford Street intersection by connecting Martin Road to Lang Road. This would involve taking the south-west corner of Centennial Park, adjacent to the Anzac Parade/Alison Road intersection, and also a piece of park near the Grand Drive gates. Although there is no widening of Martin Road or Lang Road intended, these roads would have to be reconstructed to reach the necessary engineering standard of arterial roads.

4.2 Public Transport Commission

The PTC owns and control a strip of land parallel to and adjacent to the eastern alignment of Anzac Parade and Alison Road, varying between about 65 and 100 feet in width, containing a bus-only roadway. They also control the bus roadway which cuts across Moore Park from the Lang Road/Anzac Parade intersection to the showground and sportsgrounds entrances.

The bus roadway parallel to Anzac Parade currently has egress to Anzac Parade just south of Robertson Road, and egress to Alison Road just south-east of Anzac Parade (see Appendix A).

For most of its length, the surfaced roadway occupies only about 24 ft. of the strip owned by the PTC, except in the area just south of Robertson Road, where space has been provided to park buses adjacent to the staff meal room.

The PTC propose to extend the bus roadway further south, parallel to Alison Road, along the alignment of the disused tram track, as far as Doncaster Avenue. This proposal will not directly affect traffic in the Centennial Park Residential Precinct, but could have effects on the park itself which should be considered in any further planning studies made of the Centennial Park area.

The PTC are currently installing Stop and Give Way signs on the bus roadway where it crosses other roads. These signs will be replaced by traffic signal control if sufficient money is forthcoming in federal government grants.

Traffic signals at these crossings will improve their safety, especially at Lang Road and Robertson Road, where the closeness of the roadway to Anzac Parade is confusing to motorists not familiar with the area.

The PTC do not have any plans affecting the bus roadway to the showground, nor do they have any plans for re-locating the staff meal room at the west end of Robertson Road. If this room were removed altogether the PTC claim that extra staff would be needed to compensate for crews having longer walks to another meal room when relieved at a less convenient place on their route.

4.3 RAS Showground and Sydney Sports Ground

The controversy in 1972 following the announced proposal to build an olympic standard sports complex in Moore Park is outlined in Appendix A. Subsequent studies and reports have favoured the construction of such a sporting complex at Homebush Bay and not at Moore Park, but the question remains of what will happen to the existing facilities in Moore Park.

The existing function of the sports ground area is described in Appendix C.

Although the area currently is the venue of major rugby league, cricket, rugby union and soccer matches, it is conceivable that the likely development of a major sporting complex at Homebush Bay will reduce the regional importance of Moore Park.

The implications of such a development on the traffic arrangements for the Centennial Park area are slight, since special policing and traffic mangement arrangements are made for big match occasions. However, a reduction in the number of occasions on which there is a severe parking problem in the area would be a relief to local residents and would be good for the area of Moore Park used for parking.

The future of the RAS Showground area has greater implications on traffic conditions in the precinct.

The Royal Agricultural Society's report of September, 1972, entitled "Redevelopment of the RAS Showground at Moore Park, Sydney", outlines the society's intentions to upgrade the facilities of the $71\frac{1}{2}$ acres of showground in order to operate year-round commercially viable activities.

Stage One of the redevelopment was the creation of the multi-purpose Hordern Pavilion, which has proved financially successful.

Stage Two schemes are currently undergoing feasibility studies, and so no definite plans have yet been made. The type of facilities being studied would be self supporting and would operate for all or most of the year, replacing some of the buildings which are only suited for the once-a-year Easter Show. Proposals being considered are -

1. A flexible multi-purpose Dog Pavilion to house Sydney's weekly dog shows.
2. A "Merchandise Mart" for year-round industrial displays and seminars.
3. A convention centre including a motel.
4. Redevelopment of the Cattle Pavilion into a dual-purpose multi-level building used for cattle during the Easter Show and used for car parking at other times.
5. Expansion of administration facilities to provide office space for agricultural organisations at a lower cost than inner-city rentals.
6. A Disneyland style family entertainment centre operating throughout the year at recreation times.

The scale of these schemes and speed with which they are implemented is currently dependant on private finance. However, the type and scale of rejuvenation of the Showground could be influenced by additional government funding.

The area most likely to be redeveloped first by the RAS is the northern end of the Showground adjacent to Moore Park Road and Poate Road. This development would operate as a self contained commercial entity and would include the car park described above in item 4. The existing cattle pavilions which would be rebuilt as a car park are adjacent to Poate Road, but an access ramp directly from Moore Park Road might be included in the design.

Traffic implications of development in this area are considered in section 6.4.

The creation of a Disneyland style centre within the Showground could create continuous parking problems throughout the school holiday periods unless sufficient parking is concurrently provided within the Showground. Implications of possibly locating such a "theme park" and associated car park in the south-eastern corner of the Showground are discussed in section 6.4.

4.4 Sydney City Council

The City Engineer's Department are currently making nine "light traffic" signs to replace the existing signs in Lang Road, Robertson Road, and Cook Road. The signs will be larger and more prominent than the existing signs. The signs at the junction of Anzac Parade with Robertson Road and with Lang Road, will be placed to the west of the bus roadway so that drivers of heavy vehicles can see them before starting to turn into these light traffic roads.

The existing sign at the north end of Cook Road, directing traffic to Randwick, Coogee, Bondi, etc. via Cook Road, will be removed at the time of the new signs being erected.

The City Engineer's Department are currently designing the reconstruction of Lang Road between Moore Park Road and Robertson Road, involving resurfacing the carriageway, laying new kerb and guttering on the west side, and re-laying the old sandstone kerbs on the east side. The proposed resurfacing will not greatly alter the existing adverse superelevation on the bend just east of Robertson Road, which has a "safe speed" of 35 mph. In order to increase this safe speed, the eastern kerblines would have to be raised by approximately two feet for the length of the bend. This would allow sufficient crossfall for drainage towards the western gutter. The City Engineer's Department propose not to raise the kerblines so that the existing park railings and sandstone wall will be unaffected. See section 5.1.4.

Sydney City Council adopted Action Plan 26 - South Paddington, in December 1972. Recommendations made in Action Plan 26 relevant to this study were :

- i. the closure of Regent, Newcombe, Elizabeth, Ulster and Stewart Streets for the purposes of public reaction;
- ii. the making of Gordon Street one-way from Ulster Street to Moore Park Road in order that traffic may not be able to enter Gordon Street from Moore Park Road;
- iii. the abolition of the zoning "County Road Proposed" on any lands fronting Moore Park Road (see section 4.1).

5.0 TRAFFIC MOVEMENT SYSTEM

In order to improve the safety and environmental qualities of the residential precinct and of Centennial Park, it is desirable to remove or reduce the amount of through-traffic.

The problem is to provide a suitable alternative route from Cleveland Street to the Moore Park Road/Oxford Street intersection.

Four possible solutions are outlined on the following pages, each fulfilling the above objective by varying degrees and at varying costs.

Alternatives 1, 2 and 3 each involve comparatively high capital costs in order to remove through-traffic from the precinct for the benefit of the local residents. Noise levels would be reduced, safety improved and the precinct brought "closer" to the park. However, local accessibility would be disrupted by the closures, and Government or Council departments would become responsible for additional capital and operational costs.

Alternative 4 is a compromise. It allows some relief to the greatest number of residents, whilst requiring the minimum capital and operational cost.

Solution, Alternative 1

Close Lang Road, Cook Road and Centennial Park to through-traffic; provide the necessary intersection capacity at Flinders Street to allow the diverted vehicles to turn from South Dowling Street to Moore Park Road.

* The problems of through-traffic in the Centennial Park Precinct must be considered as part of an overall planning strategy for the eastern part of the City. The heavy movement of vehicles between

the Cahill Expressway and South Sydney conflict with the east-west movements along Oxford Street and Moore Park Road. If a solution is to be found to accommodate this traffic without building the controversial Eastern Distributor, then an additional loading on the critical South Dowling/Flinders Streets/Moore Park Road intersection is to be avoided.

The diversion of Lang Road traffic to this critical area would end all possibilities of diverting north-south traffic from Surry Hills to South Dowling Street, notwithstanding the roadworks which would be required to accommodate the diverted Lang Road traffic.

Solution, Alternative 2

Close Lang Road, Cook Road and Centennial Park to through-traffic; upgrade Driver Avenue.

- * Driver Avenue has the physical and environmental capacity to carry the diverted traffic on most occasions. However, the problems inherent in using Driver Avenue as a through route on exhibition days or sporting days are sufficiently serious and numerous to warrant special provisions.

Pedestrians crossing Driver Avenue from the parking areas to the Showground, the Cricket Ground or Sportsground would have to be separated from the through-traffic by means of bridges, tunnels, or signalised crossings.

The area of Moore Park used for car parking would have to be fenced off from Driver Avenue to ensure that pedestrians use the bridges, tunnels or signalised crossings.

The footpath on the eastern side of Driver Avenue would have to be fenced off from the road.

The intersection of Moore Park Road and Driver Avenue would have to be realigned, channelized, and possibly signalised.

The intersection of Driver Avenue and Lang Road would have to be realigned and channelized.

Solution, Alternative 3

Close Centennial Park to through-traffic; close Lang Road and Cook Road with movable barriers; upgrade Driver Avenue.

- * As in Alternative 2, Driver Avenue would, on most days, be used by traffic diverted from Lang Road. On the occasion of any functions at the Showground, the Cricket Ground or the Sportsground, the barriers in Lang Road and Cook Road would be removed and traffic would revert to its current routing.

The intersections of Driver Avenue with Lang Road and with Moore Park Road would have to be realigned.

Adjustable signs in Lang Road, west of Driver Avenue, and in Moore Park Road would direct motorists via Driver Avenue or via Lang Road on the appropriate days.

Staff would be required to move the barriers and to adjust the direction signs on affected days.

Solution, Alternative 4

Close Cook Road and Centennial Park to through-traffic; limit through-traffic to Lang Road.

- * Through-traffic would be limited to Lang Road to the benefit of residents of Cook Road. Lang Road would be recognized as an arterial road and alterations described in section 5.1.4 made to improve the road's accident record.

The peak hour traffic currently using the park, as shown in figure nos 4 and 5, would not all divert to Lang Road if the park were closed to through-traffic. Those vehicles heading for the Darley Road exits would use Alison Road, and some of those heading for the York Road or Oxford Street exits would use Moore Park Road, especially those coming from the City.

Motorists will always find their quickest route: if Cook Road and the park are closed to through-traffic, then Lang Road will not carry all the diverted traffic. The long signal cycle time at the Oxford Street intersection is already a deterrent to motorists using Lang Road (hence the use of the park) and any further increase in queueing at this intersection will be followed by motorists voluntarily diverting around the residential precinct.

5.1 Implementation

The necessary action required to implement any of the preceding alternatives,

5.1.1 Solution, Alternative 1

In the light of Council's adopted policy of attempting to reduce through-traffic in Surry Hills, and the vital role South Dowling and Fitzroy Streets play in such an attempt, and with regard to the cost of the necessary grade separation of the South Dowling Street/Moore Park Road intersection if the Lang Road traffic is to be diverted through this area, Solution Alternative 1 is not recommended.

5.1.2 Solution, Alternative 2

- i) Erect barriers across Lang and Cook Roads at the intersection with Moore Park Road. Northbound vehicles will be allowed to turn left only, and south bound vehicles will be excluded. The "barrier" in Cook Road could be in the form of a raised, ramped length of road surface accompanied by regulatory signs showing "No Entry, Buses Excepted", thus causing no diversion to Lowe's Bus Service. All barriers and signs would be of a movable nature to allow special conditions during the Easter Show.
- ii) Close the median strip in Moore Park Road opposite Cook Road. The closure will prevent northbound traffic from passing through the precinct.
- iii) Erect direction and information signs as shown in figure no 10.
- iv) Realign, challenize and signalize the Driver Avenue/Moore Park Road intersection. Driver Avenue is presently divided at this intersection and would require alteration in order to safely handle large numbers of diverted vehicles.

- v) a - Widen the Driver Avenue/Lang Road intersection on the western side

The existing tight radius of curve will have to be widened to handle a heavy left turning movement, involving the removal of a mature fig tree and encroachment on to parkland.

- or b - Purchase from the Public Transport Commission and upgrade the bus-way from Lang Road (near Anzac Parade) to Driver Avenue (near the Hordern Pavilion)

Widened and reconstructed, this road will provide a geometrically satisfactory route, as an alternative to (a) above.

- vi) a - Construct two pedestrian bridges across Driver Avenue

The large number of pedestrians in the vicinity of Driver Avenue whenever there is a function at the Showground, Cricket Ground or Sportsground, justifies their grade separation if Driver Avenue is to be used as a through-traffic route. The bridges would be near the Showground and Cricket Ground entrances.

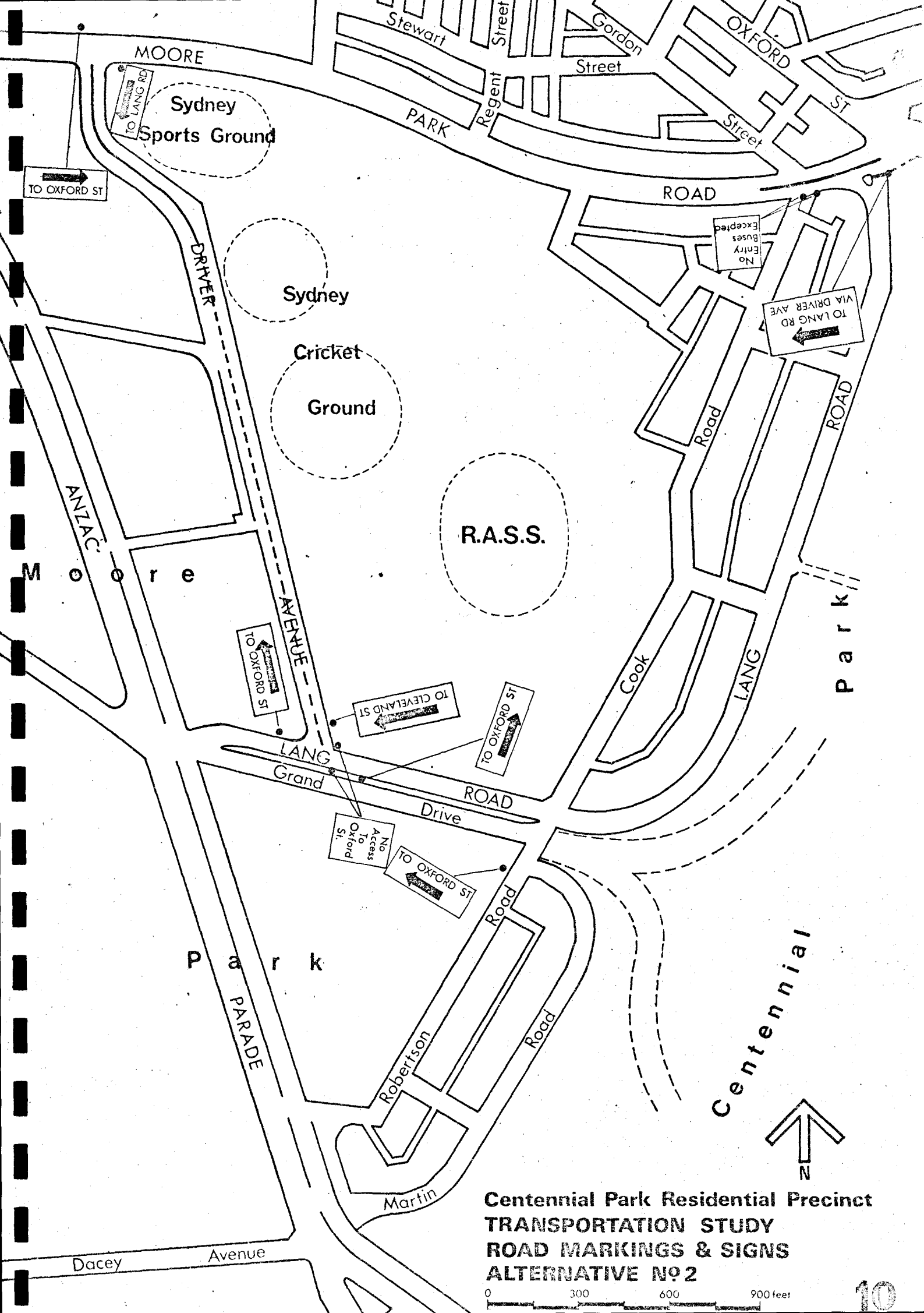
- or b - Provide two signalised pedestrian crossings

- vii) Erect fences six feet high on either side of Driver Avenue. Pedestrians will have to be kept off the road and encouraged to use the footbridges.

- vii) Closure of Centennial Park to through traffic
See section 5.1.4 (ii)

- ix) Upgrade the street lighting in Driver Avenue
Driver Avenue would require lighting to the standard of the A.S. CA19 Street Lighting Code, Part 1 - Traffic Routes.

- x) Mark a centre line on Driver Avenue



5.1.3 Solution, Alternative 3

- i) Erect movable barriers across Lang Road and Cook Road at the intersection with Moore Park Road. Northbound vehicles will be allowed to turn left only, and southbound vehicles will be excluded (as in figure no. 10).
- ii) Erect an adjustable sign at the north end of Lang Road. Southbound traffic will be directed to Driver Avenue. (as in figure no 10).
- iii) Erect an adjustable sign at the south end of Driver Avenue. All through-traffic to Oxford Street will be directed via Driver Avenue and Moore Park Road (as in figure no 10).
- iv) Realign the Driver Avenue/Moore Park Road intersection. Driver Avenue is presently divided at the intersection and would require alteration in order to safely handle large numbers of diverted vehicles.
- v)
 - a - Widen the Driver Avenue/Lang Road intersection on the western side. Provide a suitable radius curve for a heavy left turning movement as in 5.1.2 (v) (a).
 - b - Reconstruct the bus-way as in 5.1.2 (v) (b).
- vi) Provide staff to alter diversion signs and remove the road barriers. Required on all occasions of functions at the Showground, Cricket Ground and Sportsground.
- vii) Seek the cooperation of the Department of Motor Transport. Required to alter the number of signal phases at the Oxford Street intersection and to revert the signals to the existing phasing whenever the barriers are removed.

5.1.4 Solution, Alternative 4

- i) Close the median strip in Moore Park Road, opposite Cook Road. Following the Action Plan for South Paddington, it is already Council policy to make Gordon Street one-way south towards Moore Park Road. Closing the median strip will not cause much further loss of local accessibility, but will prevent northbound through-traffic using Cook Road as a by-pass to the Lang Road traffic signals. Southbound through-traffic from Paddington will use Driver Avenue (see figure no. 11).

- ii) Seek the cooperation of the Department of Agriculture in closing Centennial Park to peak hour through-traffic. Any action which Sydney City Council takes to reduce traffic in the residential precinct will have the detrimental effect of diverting the traffic to Centennial Park, unless a plan is adopted to prevent this.

Even if no action is taken to reduce traffic in Lang or Cook Roads, Centennial Park could become increasingly used as a peak hour "short cut" so that what is not only a minor problem may in a few years become a major annoyance and hazard to authentic park users.

The problem is to maintain a reasonable number of access points for genuine park users, whilst reducing the number of attractive through-routes, either by closing gates or by introducing a circuitous internal one-way system.

The simplest way to obtain this compromise is to close the Grand Drive entrance from Robertson Road between 4 pm and 6 pm, having closed the gate north of Darvall Street as recommended in section 5.1.4 (v),

If it is considered that the closure of this gate would cause an unwarranted diversion to genuine park users approaching from the west, then a more complicated scheme would have to be developed if an increase in through-traffic is to be prevented.

Specific recommendations for excluding through-traffic from Centennial Park would arise from a meeting between representatives of Council and the Department of Agriculture following the adoption by Council of this general principle.

- iii) Reduce "green time" of the Lang Road approach to the Oxford Street traffic signals. A reduction of "green time" offered to northbound traffic in Lang Road will create longer queues and delays during the pm peak period. Since motorists invariably choose the quickest route home, rather than the shortest (within limits), this measure will divert some traffic to Driver Avenue and Moore Park Road. It is important that this measure is accompanied by the closure of Cook Road and Centennial Park to through traffic.
- iv) Erect direction and information signs as shown in figure no. 11.

If Solution, Alternative 4 is adopted as the preferred alternative, then any or all of the following action recommendations can be made to improve the accident record of the precinct :

- v) Closure of the park gate north of Darvall Street. Close the park gate north of Darvall Street at all times to vehicles, with the cooperation of the Department of Agriculture.

This dangerous scene of rear-end and side-on collisions can be easily removed from Lang Road. Egress to Lang Road and Moore Park Road will still be available from the north-west gate.

- vi) Upgrade the street lighting in Lang Road and Driver Avenue. The high proportion of night-time accidents is not untypical for metropolitan roads, but can be reduced by bringing the street lighting up to modern standards. The Guide to Traffic Engineering Practice, published by N. A. A. S. R. A. states that improvements in lighting are associated with reduction of the night accident rate by 20 to 30 percent.

It is recommended that the lighting of Lang Road, Driver Avenue, Cook Road and Robertson Road be brought up to the standards of the A.S. CA19, Street Lighting Code, Part 1 - Traffic Routes.

- vii) Mark centre lines on the roads as shown in figure no. 11

The lack or brevity of double yellow lines on the bends in Lang Road, Driver Avenue and Robertson Road, together with a general lack of broken centre lines, contributes to the current accident toll. Skid marks on Driver Avenue south of Moore Park Road indicate the incidence of vehicles crossing the centre of the road through the S-bend. (Compare the proposed markings with the existing markings shown in figure no. 2).

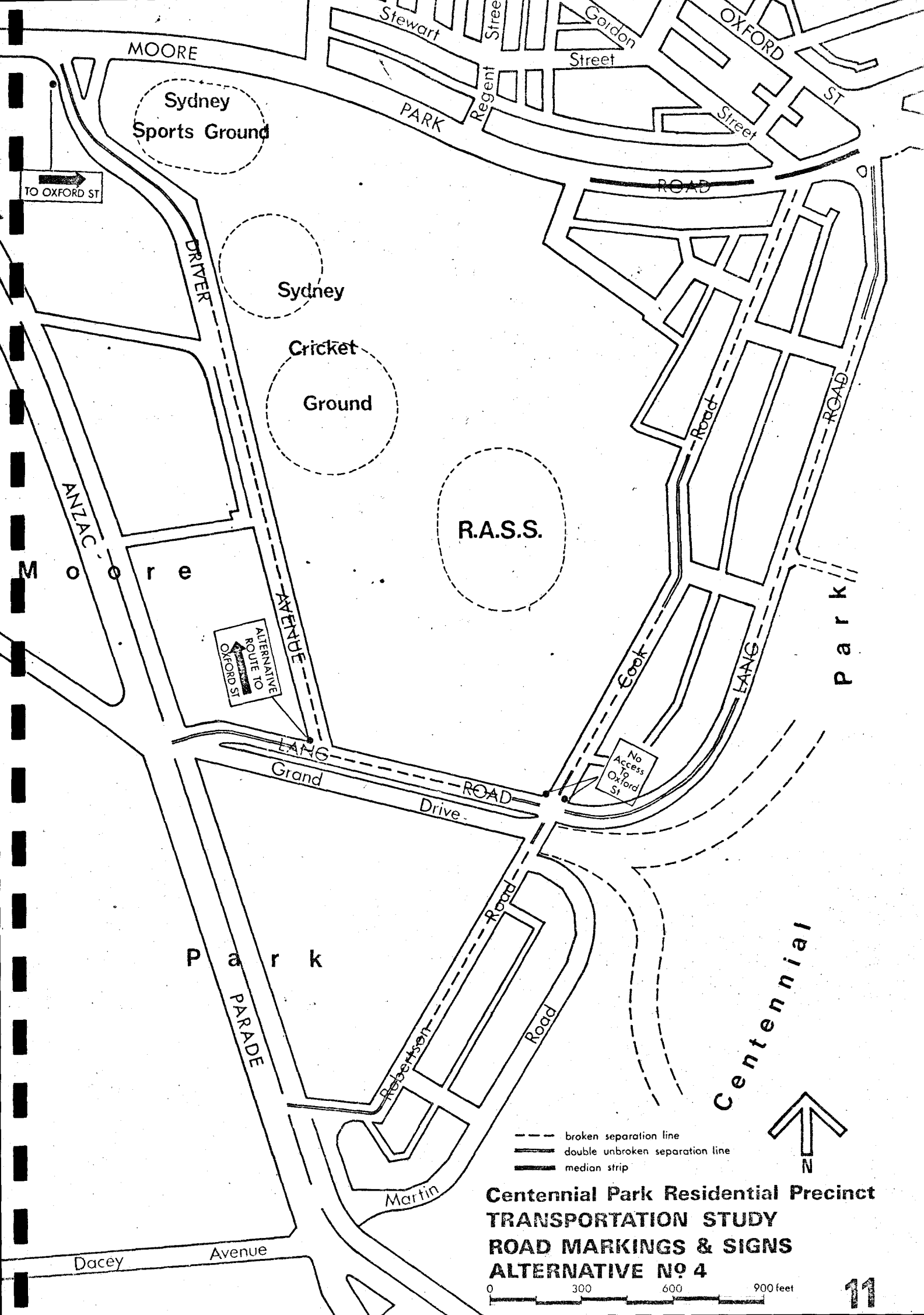
- viii) Stop Signs
Erect stop signs at the junctions of Mitchell Street and Darvall Street with Lang Road.

- ix) Super-elevate the bend in Lang Road north of Robertson Road. Despite the need to raise the eastern kerbline by approximately two feet (see section 4.4), and so the need to raise the park wall by the same amount to retain its current appearance, it is considered that the volume of traffic carried by Lang Road justifies the super-elevation of this bend. Section 3.5 shows that one south-bound vehicle overturned at this bend during the two years studied. The existing adverse camber is aggravated by being on a downward gradient: the gradient and the effect of braking on the gradient both add to the magnitude of adverse camber, which can be dangerously deceptive to an unwary motorist, particularly in wet weather.

Super-elevation of the southbound carriageway, allowing for the effects of gradient, can be incorporated in the reconstruction of Lang Road currently undergoing design by the City Engineer's Department.

- x) Extend the crash barrier at the bend in Robertson Road.
The bend in Robertson Road east of Anzac Parade, has a sub-standard radius of curvature, improvement of which would require an encroachment on Moore Park. Robertson Road has only recently been reconstructed by the City Council, so a proposal to upgrade the radius of curvature or to super-elevate the bend would be untimely.

However, an additional crash barrier should protect the garden wall of number 45 Robertson Road, at the corner with Oxley Lane. In addition, the continuity of the Robertson Road kerblineline at the bend should be strengthened by road markings or by reflectors imbedded in the road surface.



**Centennial Park Residential Precinct
TRANSPORTATION STUDY
ROAD MARKINGS & SIGNS
ALTERNATIVE NO 4**

0 300 600 900 feet

6.0 ACTION RECOMMENDATIONS

The foregoing analysis of the existing situation has revealed that there are no outstanding operational deficiencies in the transportation system of the Centennial Park area, yet there are several ways in which the accident record can be improved.

However, there are environmental deficiencies in the existing system :

- * Kerbside noise levels are higher than desirable for a residential precinct due both to high volumes of traffic and to accelerating traffic, but in many cases are offset by the setback of the building line.
- * Part of the precinct is divorced from Centennial Park during peak hours by the continuous stream of traffic in Lang Road, and the park itself is no longer a refuge from peak hour traffic.
- * Functions at the Showground, the Cricket Ground and the Sports Ground create problems of congestion and parking throughout the precinct.

A representative group from the Centennial Park Residents' Association expressed in discussion their preference for Alternative 2, described in section 5.1. They consider that the expense involved in upgrading Driver Avenue is justified in order to preserve the existing quality of the neighbourhood and its buildings.

6.1 Traffic Movement System

Recommendations:

6.1.1 Adopt one of the Alternatives 2, 3 or 4 outlined in section 5.1

It is considered that the working arrangements and maintenance requirements of Alternative 3 are too complex to be recommended. The choice between maintaining the existing movement system or introducing Alternative 2 or Alternative 4 is a matter of comparing capital costs with social benefits.

Alternative 4 is a scheme which can be implemented both cheaply and quickly to bring some benefit to the local residents and to improve the safety record of the precinct. This scheme, Alternative 4, is to be recommended as a short-term plan.

Alternative 2 is more desirable from the local residents' point of view, but involves Council in quite appreciable capital costs. Consequently it could be considered more as a long-term objective to be worked towards.

6.1.2 Review the possible closure of Robertson Road.

It is recommended that government buses continue to be able to turn from Anzac Parade into the bus roadway, and that Lowe's Bus Service Pty Ltd maintain their service along Robertson Road.

However, the question of whether or not to close Robertson Road to other traffic hinges on the capacity of the Lang Road/Anzac Parade intersection - see section 3.3.1. If Council considers that the environmental quality of Robertson Road justifies its closure to traffic, then the very minimum of works required would be the provision of a right turning slot in the median strip of Anzac Parade at the Lang Road intersection, and the provision of a right turn phase in the signals. The number of vehicles actually directed to this intersection and the extent of ensuing delays during the peak hours (see section 3.3.1) can only be determined by closing Robertson Road for a trial period, (see Appendix A, June-July 1973).

Reference to Appendix A reveals that neither the Department of Main Roads nor the Department of Motor Transport are willing to pay the cost involved in modifying the Lang Road/Anzac Parade intersection.

Some reduction in peak hour traffic in Robertson Road will be achieved by adopting either Alternative 2 or Alternative 4.

6.1.3 Erect 'No Parking' signs on both sides of Oxley Lane

Oxley Lane is the only lane in the precinct which does not have parking restrictions, thereby creating access problems for local residents during busy functions at the Showground and E.S. Marks Field.

6.1.4 Widen Centennial Lane to 20 feet as part of any redevelopment

The length and importance of Centennial Lane as a vehicular access to several blocks of home units requires it to be wider than the usual nominal 16 feet. Any further redevelopment backing on to Centennial Lane should be accompanied by a widening of the lane at that point to 20 feet, at a cost to the developer.

6.1.5 Review the County Road Widening of Martin Road and Lang Road

The proposed connection of Alison Road, Martin Road, Lang Road and Oxford Street would severely detract from the Strategic Plan's objective of protecting residential neighbourhoods. Council could support the Minister for Agriculture in his reported promise to not allow "even one square foot" to be cut off Centennial Park. (Daily Telegraph, 30/10/69).

6.2 Bus Service

Recommendations:

- 6.2.1 Lowe's Bus Service Pty Ltd should maintain their route along Robertson and Cook Roads.

Inter-suburban bus services are scarce in inner-Sydney and should be encouraged as an important part of the city's transport system. Mr Lowe of Lowe's Bus Service Pty Ltd has expressed his wish to continue operating along Robertson Road (see Appendix A).

- 6.2.2 The Public Transport Commission should maintain their use of the bus roadway parallel to Anzac Parade

Encouragement should be given to bus users, and priority given to buses wherever possible. Council should continue to co-operate with the Public Transport Commission in their endeavours to operate express bus services.

6.3 Enforcement

Objective: to enforce existing laws and ordinances designed to ensure the safety and convenience of motorists and residents.

Recommendations

6.3.1 The Police Department should enforce the speed restrictions

This would require regular, and obvious, patrols of Lang Road and Driver Avenue, both of which have a bad accident record (see section 3.5). The use of radar and the erection of a "radar in use" sign would act as a strong deterrent to speeding motorists.

6.3.2 Council should enforce the light vehicle ordinance

This would require regular patrolling of Lang Road, Cook Road and Robertson Road and prosecution of offenders. The new signs shortly to be erected will remove the possibility of driver-ignorance, and prosecutions will deter would-be offenders.

6.3.3 The Police Department should enforce kerbside parking restrictions during Easter.

Also, on the occasion of any other major event at the Showground, the Cricket Ground, the Sports Ground or E.S. Mark's Field. Illegal parking, especially in Centennial, Oxley, Poate and Furber Lanes which are the only accessways to certain buildings, is particularly inconvenient to local residents.

6.4 Showground, Cricket Ground and Sportsground

Objective: to reduce the disturbance to local residents caused by major spectator events, without greatly reducing the operational efficiency of current traffic arrangements.

Problem: the whole question of the future of the Showground and the sporting facilities must be studied further (see section 6.6).

Recommendations are made here relating to the existing facilities and to those facilities described in section 4.3 which can be expected within the near future.

Recommendations

- 6.4.1 Any upgrading of the Showground facilities should be accompanied by the provision of additional parking within the Showground

This particularly applies to facilities expected to attract continuous numbers of visitors throughout the year.

- 6.4.2 Access to the proposed car park at the north end of the Showground should be from Moore Park Road

If additional access is required from Poate Road, then it should be at the western bend in Poate Road. A barrier to the east of this access would prevent Showground traffic using Furber Road and Cook Road. Access would be from Moore Park Road alone.

- 6.4.3 Access to any other new car parks in the Showground should be from Driver Avenue or Moore Park Road

Access should not be from Cook Road.

- 6.4.4 The Showground vehicular entrances and exits in Cook Road should be closed except during the Easter Show

Vehicular ingress and egress should only be from Driver Avenue and Moore Park Road, whenever possible.

6.4.5 The practice of parking on Moore Park should be reconsidered

The area bounded by Anzac Parade, Driver Avenue, Gregory Avenue and Lang Road could be landscaped if the practice of parking cars on it were phased out. This would require the Showground to become self-sufficient in parking spaces, which could also be used during sporting events.

It would be very difficult for the Showground to become self-sufficient during the Easter Show, but if Moore Park were used for parking only once a year, a significant improvement could be made to the above area. See section 6.6.

In addition, a policy of improving and publicising the bus service to the area, especially from Central Station, should be pursued and accompanied by a gradual reduction in parking spaces.

6.5 Streetscape

The opportunity exists for some footpath widening and landscaping in Martin Road, Mitchell Street Darvall Street and Dibbs Street. If parking were restricted to one kerbside, then the existing 42 ft. carriageway could be reduced by a width of about 13 ft. and still permit two-way flow. Thus, one footpath could be widened from 12 ft. to about 25 ft. Grass and trees could be planted, and seating provided.

Observation of traffic flows in Cook Road following the implementation of recommendations 6.1.1. to 6.1.5 will show whether or not it will be possible to widen one of the footpaths in this street. The high residential density along Cook Road, along with the associated high pedestrian flow to and from Oxford Street, makes it most desirable to widen one of these footpaths if possible. However, the existing inadequacy of off-street parking facilities may prevent any worthwhile improvements.

In the most south-easterly corner of Martin Road, there is a rather untidy area where rubbish is sometimes dumped and potential burglars loiter in cars (according to local resident complaint). It would be a simple matter to re-align the boundary fence to follow the curve of the roadway, thus preventing car access to this area.

Some trees have recently been planted in the footpaths, which, when mature, will greatly improve the appearance of the Showground walls. Further opportunities exist for tree planting throughout the precinct to enhance its parkland setting and to provide a psychological (if not actual) relief to traffic noise.

Recommendation

A further study should include the identification, design, and implementation of the above opportunities, and should compare the costs incurred with the benefits gained.

6.6 Further Study

It is anticipated that this transportation study of the Centennial Park Residential Precinct will be followed by an overall Action Plan study of the area.

This study has touched on several planning aspects which are fundamentally important to the area, yet outside the scope of recommendations which can be made in this report. Section 4.0 and Appendices A to C give a background to some of the issues.

The following are a few of the points to be considered -

- 6.6.1 The role of Moore Park and Centennial Park, their current use, their potential and their current management.
- 6.6.2 The future role of the 71.5 acres of Showground and the implications of possible redevelopment.
- 6.6.3 The future of the Cricket Ground and Sportsground.
- 6.6.4 The future of the Royal Engineers Depot.
- 6.6.5 The merits and demerits of the PTC extending its busway to Doncaster Avenue.
- 6.6.6 The merits and problems of preserving the Edwardian buildings.
- 6.6.7 Design details of streetscaping outlined in section 6.5.

APPENDIX A

RECENT HISTORY OF PROPOSALS FOR THE AREA, AND
RESIDENT REACTION TO THEM

APPENDIX ARECENT HISTORY OF PROPOSALS FOR THE AREA, AND
RESIDENT REACTION TO THEM

March 1971:

Council concurred to a DMT scheme to signalise the Anzac Parade/Lang Road intersection to improve its bad accident record, pending the grade separation of the intersection proposed by the DMR but not expected to be commenced for at least three years.

December 1971:

DPRA, consultants, submitted a proposal to the State Government of NSW for a National Sports Centre at Moore Park

June 1972:

Council received a petition with 1,649 signatures from the Centennial Park Residents Association (CPRA) and a number of other petitions with 3,753 signatures from Aldermen Devine, Miller, McMillan and Draper protesting against the Moore Park Sporting Complex.

July 1972:

The NSW Minister for Lands commissioned Walter Bunning to review the Moore Park Sporting Complex as proposed by CPRA in the light of comments by interested bodies, and to compare the Moore Park site with alternatives.

September-October, 1972:

CPRA submitted to Bunning for his consideration reports they had commissioned from G.W. Smith & Co, W.D. Scott & Co, G. Angelides, Prof. N. Runcie and J. Weirick.

September, 1972:

DMT proposed to install traffic signals at the Anzac Parade/Alison Road/Dacey Avenue and the Anzac Parade/Robertson Road intersections, because of their bad accident records and due to the delay of at least five years before the proposed DMR widening of these intersections.

October, 1972:

Council received 177 petitions with 3,182 signatures protesting against the proposal by the State Government of NSW to establish a National Sports Centre at Moore Park. Council carried a motion opposing the National Sports Centre at Moore Park proposed by CPRA, and reaffirming its policy that there shall be no reduction in the amount of open space available to the public.

October, 1972:

City Engineer recommended that Council raise no objection to the DMT proposals following a meeting of representatives of the DMR, Police Traffic Branch, DGT, Randwick Municipal Council and The Council of the City of Sydney.

November, 1972:

Council resolved (a) to raise no objection to the DMR proposals for signals at the Anzac Parade/Alison Road/Dacey Avenue intersection and the associated DGT proposal to modify the bus road egress into Anzac Parade and to provide a new egress into Alison Road by extending the bus road along a length of the old tramway, but (b) to defer the proposed signals at Anzac Parade/Robertson Road pending a report on the question of closing the median gap to prevent a right turn into Robertson Road.

November, 1972:

CPRA submitted to the Town Clerk an objection to the proposed signals at Anzac Parade/Robertson Road intersection and put forward an argument for the dead-ending of Robertson Road or the closing of the Anzac Parade median strip opposite Robertson Road.

November, 1972:

City Engineer reported on the possible closure of the Anzac Parade median strip opposite Robertson Road, following a meeting of representatives of the DMT, Police Traffic Branch, DGT, DMT. The crucial implication of closing this gap would be the increased number of vehicles turning right from Anzac Parade at the Lang Road intersection, and the DMT delegate indicated that "consideration had been given to the possibility of modifying the signal layout and channelisation at the Lang Road intersection in an attempt to improve the capacity, but that even with the introduction of all the possible avenues of improvement, the injection of additional volumes of traffic right-turning from Anzac Parade into Lang Road would overtax the operational capacities of the intersection and produce an intolerable level of congestion for all traffic".

The delegates from the DMR and the Police Traffic Branch indicated that they would normally support the proposal to close a median gap, but in view of the DMT's representation they would not like to encourage an adverse situation at Lang Road by improving the situation at Robertson Road. In addition, the DMR and DMT delegates indicated that even if a modified Lang Road intersection were to be accepted from a congestion point of view, neither department would be willing to pay the extra cost involved in modifying that intersection as opposed to installing signals at Robertson Road. The DGT delegate indicated that the department would object to the closure of the median gap on the grounds of denying his access to the bus terminus facilities and of affecting the operation of the private Lowes Bus service. Also, he indicated that the provision of signals at this location to protect

pedestrians would divert possible industrial activity threatened by bus employees who have to cross Anzac Parade.

Future construction by the DMR of an overpass at the Lang Road intersection would allow the right-turning vehicles in question to be diverted from Robertson Road to Lang Road, but even then the DGT requirements of bus access via a median gap and the provision of pedestrian signals would still apply.

November, 1972:

The Save the Parks Campaign made representations to the NSW Minister for Transport, Mr. Morris, to prevent an extension of the bus roadway to provide bus egress into Alison Road, and also to transfer ownership of the old tramway adjacent to Alison Road from the Department of Government Transport to the Department of Agriculture, who administer Centennial Park.

November, 1972:

The NSW Minister for Transport decided that work should go ahead to build a temporary bus road extension pending further investigation.

January, 1972

CPRA appealed to Council to dead-end Robertson Road at the bus roadway.

February, 1973:

Traffic signals were installed at the Anzac Parade/Alison Road/Dacey Avenue intersection, and the bus road remodelled with exits to Anzac Parade and to Alison Road.

February, 1973:

Bunning reported to the Minister for Lands that having reviewed the original CPRA scheme and having considered interests expressed by CPRA, the Olympic Games 1988 Committee, the SPA, the DMR, Sydney City Council, Clarke-Gazzard, RAIA, National Trust of Australia, Professor Blunden, Police Traffic Branch and the Sydney Transportation Study Management Group, he favoured Homebush Bay as the site for any major new sporting complex in Sydney, and not Moore Park. However, based on general objectives of the RAS, Bunning made detailed recommendations for the redevelopment of the RAS Showground.

March, 1973:

City Engineer confirmed the findings of his November, 1972, report and recommended that Council raise no objection to the installation of traffic signals at the Anzac Parade/Robertson Road intersection as proposed by the DMT in September, 1972.

April, 1973:

Council resolved (a) to no longer raise objection to the proposed signal control and channelisation at Robertson Road and to inform the CPRA of their decision not to dead-end Robertson Road owing to the effect of diverting traffic to the Lang Road intersection, but to review the situation following the implementation by the DMR of an overpass at Lang Road, and (b) that the City Engineer consult the Police Traffic Branch and report on the possibility of providing a right-turn phase for north-bound traffic at the existing Anzac Parade/Lang Road signals.

May, 1973:

Alderman Draper, Fegan, McMillan, Devine, Calpis and Molloy gave Notice of Motion to rescind the Council's resolution of April, 1973 relating to the proposed installation of traffic signals at the Anzac Parade/Robertson Road intersection, on the grounds of the proposal encouraging non-local traffic through the Centennial Park residential area.

May, 1973:

Council received letters from Public Transport Commissioner Dr. R.S. Nielsen and from the Secretary of the Australian Tramway and Motor Omnibus Employees' Association, urging that Council give their consent to the proposed installation of signals at the Anzac Parade/Robertson Road intersection.

June, 1973:

Council resolved to close the median gap in Anzac Parade opposite Robertson Road for a trial period of two weeks to ascertain the effects of such a closure.

June, 1973:

City Engineer reported on a conference convened to prepare for a trial closure of the median strip and attended by representatives of the Police Traffic Branch, DMT, DGT, and Mr. Lowe of Lowe's Bus Service. The police were against the proposal because of the necessity to provide police supervision at the Anzac Parade/Lang Road intersection at a time when they were understaffed. The DMT were also opposed to the temporary closure but were prepared to make the necessary adjustments to signals at any affected intersections. The DGT were opposed to the closure on the grounds that their buses would have to make a hazardous U-turn at Lang Road into the bus roadway, which could be subject to strong opposition from the bus unions. Mr. Lowe indicated that the diversion of his buses to Lang Road would necessitate the purchase of three new vehicles to compensate for the lengthened journey time, would require passengers to walk across Anzac Parade in order to connect with the government buses in the bus roadway, and would inconvenience residents of Robertson Road and Martin Road who use the service, especially school children who would have to cross Anzac Parade to reach a bus stop.

July, 1973:

Council received a petition from residents in the Centennial Park area with 36 signatures opposing the closure of the median strip opposite Robertson Road, opposing any restriction on turns into or out of Robertson Road, and supporting the installation of pedestrian signals across Anzac Parade at that location.

Council received a petition from 68 residents in the Centennial Park area requesting the closure of the median strip.

Having regard to the petitions and to a letter from Mr. P. Lowe of Lowe's Bus Service Pty Limited, the Lord Mayor instructed Council's officers to take no action to instigate the trial closure of the median strip, pending further consideration by the City Development Committee.

July, 1973:

Council rescinded its June, 1973, resolution to close the median strip in Anzac Parade opposite Robertson Road for a trial period of two weeks.

July, 1973:

Council received a petition from residents of Robertson Road with 38 signatures requesting Council to dead-end Robertson Road at the bus road, or to close the Anzac Parade median strip, or to gazette Robertson Road as a light traffic road with a two-ton limit, and to have a right-turn phase and bay installed at the Lang Road intersection.

Council received a petition with 121 signatures requesting that Martin Road be gazetted as a light traffic road with a 2-ton limit.

Council received a petition with 116 signatures requesting that the speedway at the RAS Showground be closed due to excessive noise.

Council received a petition with 133 signatures requesting that immediate action be taken to police the light traffic restrictions in Robertson Road, Cook Road and Lang Road.

August, 1973:

Council received a petition from the CPRA with 121 signatures requesting Council to proclaim Martin Road a light traffic road.

APPENDIX B

HISTORY OF PARKS AND RESIDENTIAL PRECINCT

APPENDIX B

HISTORY OF PARKS AND RESIDENTIAL PRECINCT

A brief background to the area is abstrated here from J. Weirick's report to the Centennial Park Residents' Association, entitled "Environmental quality in the Centennial Park residential precinct and the surrounding parklands".

The Centennial Park Residential Precinct has been recognized as "the last remaining area in the city ... which is still purely residential in use and character" (City of Sydney Strategic Plan, Sydney, 1971, p.122). The Precinct may be seen as part of the major park system for Sydney's Inner and Eastern suburbs and it adjoins a number of regional sporting and entertainment facilities.

The early land-use decisions in this part of Sydney were based on Colonial decree and concerned with the problems of food production, health standards and essential services. With the horse as the speediest mode of transportation, Sydney remained compact and defined. Most of the population lived in the terrace housing of the inner suburbs within a half hour's walk of the town.

In the 1860's there was significant physical and social restructuring of Sydney and the Mayor of Sydney from 1867 to 1869, Charles Moore, caused 490 acres of the old Sydney Common to be vested in the Municipal Council of Sydney. Moore Park Road and Randwick Road (now Anzac Parade) were laid out, and grass and trees were planted.

In the 1880's football was played in Moore Park and the Carrington track for foot racing was located. The Australian Golf Club laid out its first course in 1882. In 1838, the Victoria Barracks became the first encroachment on the Sydney Common. What is now known as the SCG was established in 1854. A racecourse was cleared on the southern boundary of the Sydney Common in 1832.

The other major entertainment facilities in Moore Park were the Zoological Gardens opened in 1879 and the Royal Agricultural Society Showground in 1882. Access to these facilities was provided by a system of suburban tramways.

The area of terrace housing between Oxford Street and Moore Park Road was sold for residential development in 1866, thus forming the precedent of selling common lands. In the same year, Sir Henry Parkes decided to convert the Lachlan swamps into a grand public park as an appropriate way of celebrating the centenary of the Colony.

Parkes planned to create a public park and "to establish it for all time in one of the most lovely and favourable suburbs in the City of Sydney".

The favourable suburb was to be created by the sale of about 100 acres of land on the boundary of the park. Proceeds from this sale were to finance the building of a State House on a commanding site in the park, but the idea was later abandoned.

In 1904, the NSW Premier authorised the sale of land surrounding Centennial Park at auction in the following year. All the purchases were subject to a protective covenant which, in Lang Road, Martin Road and Robertson Road, specifically excluded terrace housing, wooden buildings, hotels, stores, dairies, or any other purpose than individual dwellings. Standards of construction were established by specifying that the houses had to be of brick or stone with a slate or tile roof. The minimum cost of the houses erected on the lots was laid down as £12. 10. 0 per foot frontage. This was to be under the supervision of the Minister of Lands, who also had to approve the design of the front fences.

On the eastern side of Cook Road the covenant permitted semi-detached housing at a minimum cost of £7. 10. 0 per foot frontage.

It was planned in 1888 that the layout of "elegant mansions with gardens and railings in front" would define the boundaries and provide a fine setting for the park (Parkes). The residential precinct is close in spirit, if not in detail, to a number of garden suburb developments in Europe and America at the turn of the century.

Most of the houses were built in the period 1905-1925 and almost all were designed by architects for individual clients. The terraces and semi-detached houses in Cook Road, since developed into apartment buildings, and some of the bungalows in Robertson Road, were built by speculative builders. There is a wide range of architectural styles - the main theme being strong roof forms and verandahs. In social terms, the precinct with its open space has functioned as an admirable family environment. Many of the houses are large and current property values are high.

APPENDIX C

EXISTING STATUS OF THE RESIDENTIAL NEIGHBOURHOOD,
THE SPORTSGROUND, CRICKET GROUND AND SHOWGROUND,
MOORE PARK AND CENTENNIAL PARK

APPENDIX C

EXISTING STATUS OF THE RESIDENTIAL NEIGHBOURHOOD, THE SPORTSGROUND, CRICKET GROUND AND SHOWGROUND, MOORE PARK AND CENTENNIAL PARK

The Centennial Park Residential Precinct still retains many of the architectural and neighbourhood characteristics with which it was endowed in its early history, despite the encroachment of high-rise development in Cook Road. The large detached houses in Robertson Road, Martin Road and Lang Road are generally well kept examples of Australian Edwardian architecture, having been maintained as rather prestigious single family homes. A few of the buildings have been divided into flats, generally leading to their slow deterioration, and having a degenerative effect on the neighbouring houses.

In this age of a rapidly expanding metropolitan Sydney and the associated transportation problems endured by most Sydneysiders, the residents of the Centennial Park Residential Precinct are most fortunate in being able to live only two and a half miles from the city centre and yet be in the centre of a large park complex. This enviable location has, of course, given these large properties very high real estate values and has led to pressure from developers who know that they can profitably build and sell home units in this desirable area.

The construction of high-rise home unit blocks in Cook Road has caused a certain loss of privacy to the owners of the detached homes which are now overlooked, and has drastically changed the western skyline as seen from Centennial Park.

Despite this influx of new construction and new residents, there is a particularly strong feeling of neighbourhood identity among the residents of the precinct, which is refreshing to see in an urban society which tends to isolate individuals, and as such is worthy of support.

The Sydney Sports Ground, the Cricket Ground and the E.S. Mark's Memorial Field still serve a regional need for a spectator-sporting complex despite the increasing remoteness of their location from the metropolitan centre of population and despite the lack of public transport to the area. Consequently, there are car parking and traffic congestion problems in the area whenever there is a major sporting fixture on any of the grounds. The report by Walter Bunning for the Minister of Lands and Tourism entitled "Report and Review of Moore Park and alternative sites in Sydney for a major sports complex", supports the need for a new metropolitan sporting complex and highlights the inherent problems in any regionally important complex at Moore Park. However, Bunning does say that the Sports

Ground area together with the northern end of the RAS grounds "is in need of functional and visual improvement and is the area most suitable for the upgrading of Moore Park to begin".

It is important that any proposal to upgrade the sports area should not compound the existing problems of parking, noise and congestion inflicted on residents of South Paddington and the Centennial Park Precinct, but should help solve these problems incorporating public transport improvements and adequate parking provision, allowing the desolate areas of Moore Park to be freed from their role as parking areas and be landscaped as usable recreation parks or local sports grounds.

The Royal Easter Show attracts approximately two million people each year, but many of the buildings within the Showground are only suited to Easter Show activities, and so large parts of the grounds are under-used for the rest of the year. The major halls are however, already fully used throughout the year for exhibitions such as the motor show, the boat show and the furniture exhibition. These shows each attract about 150,000 visitors, a large proportion of whom arrive by car.

The Showground currently has the capacity to park about 1,500 cars at any one time during these exhibitions. The surplus cars are parked on Moore Park to the west to Driver Avenue. The 40 cent charge for parking on Moore Park is collected by the Sydney City Council.

Although adjacent to each other, Moore Park and Centennial Park are physically, if not functionally, different. Centennial Park is extensively landscaped and planted, both with ornamental trees and borders, and with areas of native bush and swamp carefully preserved. Moore Park, on the other hand, has a much less cultivated look about it, and apart from the golf course and the area around Kippax Lake, is generally flat and barren. These differences between the two parks can be attributed to their respective controlling authorities and to their current use.

Centennial Park is administered by the Department of Agriculture, who have successfully developed the park primarily as a passive recreational retreat from the surrounding city environment, whilst combining areas of natural reserve and other areas for active sport. The park's major threats are from the motor car, in the form of proposed road widenings encroaching on it, of peak-hour traffic using the park's driveways as a short cut, thereby destroying its peaceful nature, and of extensive car parking within the park during functions at the Showground, the Sportsground and Randwick Racecourse.

Moore Park is administered by Sydney City Council, apart from the bus roadways parallel to Anzac Parade and from Anzac Parade to the Showground entrance which are controlled and maintained by the Public Transport Commission. Much of the park is laid out as playing field fulfilling the need for active recreational facilities in an inner city area, but it is felt that a certain amount of tree planting and landscaping could be carried out without upsetting these facilities, thereby making the park more attractive for casual use by local residents, especially the area between Anzac Parade and South Dowling Street. The frequent use of the park for car parking during sporting functions could be phased out when and if the Sports Grounds area is remodelled.