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SURVEY OF OCCUPANT RESTRAINT: STAGE 2

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Abstract

This study was commissioned to provide information on seat belt wearing rates in the Northern Territory and in provincial towns in Victoria and New South Wales. Data was obtained through observation of restraint use in Alice Springs and Darwin and in six towns in each of Victoria and New South Wales. A strict sampling frame was followed that ensured as far as possible that a representative sample of road users in the surveyed towns was obtained. The results of this survey were found to be very similar to those of the Stage 1 survey. This lends credence to the conclusion that the results of the two surveys are representative of conditions in provincial towns in Australia.

Keywords

Seat belt, occupant, restraint, usage, compliance, survey, statistics, country, provincial, Australia

NOTES:

(1) FORS Research reports are disseminated in the interests of information exchange.
(2) The views expressed are those of the author(s) and do not necessarily represent those of the Commonwealth Government.
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    (a) reports generated as a result of research done within the FORS are published in the OR series;
    (b) reports of research conducted by other organisations on behalf of the FORS are published in the CR series.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

(i) EXECUTIVE SUMMARY

Major components of the study may be summarised as follows:

(i) Ove Arup and Partners was commissioned by the Federal Office of Road Safety to undertake surveys of seat belt wearing in rural areas in Victoria, New South Wales and the Northern Territory. The surveys were conducted in April and May 1988.

(ii) Overall, approximately 80% of vehicle occupants were observed to wear seat belts.

(iii) Overall wearing rates were substantially lower in the Northern Territory than in Victoria and New South Wales.

(iv) Significant differences in seat belt wearing rates occurred with seating position. Drivers and those passengers in the front left seat wore restraints at a higher rate than other vehicle occupants.

(v) Occupants of seats fitted with inertia reel belts wore them at a higher rate than occupants of seats fitted with static belts. Where child restraints were installed, they were worn at a higher than average rate.

(vi) Wearing rates in cars, station wagons and vans were higher than wearing rates in utilities.

(vii) No major difference in wearing rates was observed between large and small towns.

(viii) Major variation in wearing rates was observed with age. Higher than average wearing rates were observed amongst very young children. Rates were lower amongst 2 to 4 year olds, and 5 to 7 year olds, but rose uniformly with age group for older occupants.

(ix) Wearing rates for females was slightly higher than for males.

(x) The overall similarity of results in the two States and the Northern Territory and also the similarity of this survey's results with those

of Stage 1 lend some weight to the conclusion that the results are representative of conditions in rural towns in Australia.

1. INTRODUCTION

The use of occupant restraints is generally regarded as a successful means of increasing road safety. Requirements that seat belts be fitted and worn in passenger vehicles have existed throughout Australia for some time. However, the effectiveness of this measure depends on the extent to which occupant restraints are used and the standard of adjustment with which they are worn.

The Federal Office of Road Safety (FORS) has commissioned a programme of surveys of occupant restraint that has been undertaken in a number of phases. Pederson and Mahon (1983) developed a survey method to obtain data on seat belt wearing. This involved a combination of observation of seat belt wearing and interviews with car drivers. The method was applied in the Canberra - Yass area. Ove Arup and Partners (1986) was commissioned to develop the method further in surveys conducted in six rural areas in Victoria, South Australia and Western Australia. That study produced further recommendations regarding survey locations and methods suitable for surveys of seat belt wearing.

Following development of the method, surveys of seat belt wearing in rural areas have been undertaken in two stages. The first stage involved observation and interview surveys of seat belt wearing in the capital city, a provincial town and a country town in each of Queensland, South Australia and Western Australia. The results of that phase are reported in Cameron McNamara (1988). This report presents the results of the second phase surveys, conducted in Victoria, New South Wales and the Northern Territory.

The objective of this phase of the survey programme is to provide information on seat belt wearing rates throughout Victoria, New South Wales and the Northern Territory.

2. SURVEY METHOD

2.1 SURVEY SPECIFICATION

In contrast with the earlier surveys in the programme, the phase two surveys involved only observation of seat belt wearing. Drawing on the conclusions of earlier studies, FORS specified in some detail the form of the survey programme. The survey specification may be summarised as follows:

Survey sites.

Six sites were selected by FORS in each of Victoria and New South Wales and four sites were selected in the Northern Territory. In Victoria and New South Wales, sites were selected so that half the sites were towns of more than 10,000 population and half were towns of less than 10,000. A large and small site were drawn from three Statistical Divisions in each of Victoria and New South Wales. Because of the sparseness of population in the Northern Territory, a different basis for the selection of sites was used; instead, observations were conducted in Alice Springs (nominally one site) and Darwin (nominally, three sites). Sites nominated by FORS and included in the survey are shown in Figure 2.1.

Survey locations.

At each site, surveys were to be conducted at a number of locations. In light of previous surveys, FORS required that surveys be divided between service stations and intersections. Service stations have consistently been shown to be convenient locations for observation (Ove Arup and Partners, 1986), whilst signalised intersections (and to a lesser extent, intersections controlled by stop/give way signs) are also amenable to observation regarding seat belt use. FORS required that a total of ten survey locations be used at each site. A number of guidelines were provided for the selection of sites. Firstly, service stations should be selected on the periphery of towns and should be divided equally between those on major and secondary roads. Secondly,

Figure 2.1 Survey Sites

signalised intersections should be chosen in preference to intersections controlled by stop signs; intersections controlled by give way signs should be chosen only if an insufficient number of signalised or stop sign intersections were available. Within these guidelines, the selection of individual survey locations was the responsibility of the consultant and is described below.

Survey duration.

FORS required that surveys be conducted over a continuous seven day period between 8 am and 8 pm on each day. The surveys were to be conducted regardless of weather conditions.

Division of survey effort.

75% of the survey time was to be spent on surveys conducted at service stations. Surveys at each service station were to last 90 minutes; surveys at intersections were to last 60 minutes.

Sample selection.

Only passenger cars, passenger car derivatives and mini-buses were to be included in the survey. At signalised intersections, vehicles on the major road were to be surveyed. Where the traffic flow was heavier in one direction than the other, vehicles in the heavier flow were to be observed; where equally heavy flows occurred in each direction on the major road, survey time was to be divided equally between flows in the two directions. At intersections controlled by stop or give way signs, observations were to be made of vehicles on the minor road with the heavier flow. In general, vehicles in the traffic stream closest to the survey staff were to be observed; at signal controlled intersections, vehicles queued at lights were to be observed starting with the vehicle at the head of the queue.

2.2 SURVEY DESIGN

A candidate set of survey locations was established for each survey site through contact with local councils and other relevant authorities. Actual survey locations were selected by the Consultant's supervisors on their site visits. At some sites, the small number of suitable locations required that the guidelines regarding the choice of locations on the edge of town and the division of surveyed service stations between major and secondary roads could not be satisfied. At all sites, either six service stations and four intersections or five service stations and five intersections were surveyed. Survey locations for each site are shown in Appendix A.

FORS requirements regarding division of survey effort were satisfied by dividing each 12 hour day into three 4 hour shifts. Each shift was divided into ninety minute surveys at two service stations and a sixty minute survey at an intersection. Set sampling frames were used at each site, as shown in Appendix B.

Survey staff were recruited through the Commonwealth Employment Service. This source of survey staff had previously been used and found to be acceptable (Ove Arup & Partners, 1986; Cameron McNamara, 1988); no difficulties were encountered in the current project. Indeed, Commonwealth Employment Service staff provided valuable assistance throughout the project. A team of three staff was recruited at each site and a site supervisor selected from those three. The site supervisors were responsible for the day to day management at the sites and liaised with the Consultant's supervisors on a daily basis through the survey week. The site supervisors also performed creditably.

The survey form used is shown in Appendix C. That form provided for up to six vehicle observations per page. No problems were encountered in its use.

The surveys were conducted within a three week period in April and May 1988. The actual survey periods are shown in Table 2.1. When a session was missed, a catch up session was conducted at the same time on the corresponding day one week later. No surveys were conducted on public holidays or school holidays.

TABLE 2.1 SURVEY LOCATIONS AND DATES

State	Town	Town Type	Dates of Survey
Vic	Ararat	Large	27/4/88 - 2/5/88
	Avoca	Small	28/4/88 - 4/5/88
	Shepparton	Large	29/4/88 - 5/5/88
	Cobram	Small	30/4/88 - 6/5/88
	Mildura	Large	28/4/88 - 4/5/88
	Ouyen	Small	29/4/88 - 5/5/88
NSW	Moree	Large	3/5/88 - 9/5/88
	Walcha	Small	4/5/88 - 10/5/88
	Wagga Wagga	Large	3/5/88 - 9/5/88
	Junee	Small	4/5/88 - 10/5/88
	Lismore	Large	4/5/88 - 10/5/88
	Kyogle	Small	5/5/88 - 11/5/88
NT	Darwin Area 1	Large	6/5/88 - 13/5/88
	Darwin Area 2	Large	6/5/88 - 13/5/88
	Darwin Area 3	Large	6/5/88 - 12/5/88
	Alice Springs	Large	4/5/88 - 10/5/88

2.3 SAMPLING ISSUES

The survey methods adopted were designed to ensure as far as possible that a representative sample of vehicles in the surveyed traffic streams was observed. Although no evidence exists of sample selection bias, it is possible either that high occupancy vehicles were undersampled or that information was collected less reliably about all occupants of such vehicles than of low occupancy vehicles. Some bias away from vehicles driven by drivers who "race" lights may also have been introduced by the sampling method adopted (Job, 1983).

The survey method resulted in approximately equal numbers of observations being made in each four hour session, regardless of the time of day, day of week or survey location. As a result, surveys conducted at given times of day, or days when traffic

volumes were low, or on minor roads, may have been undertaken at a higher sampling rate than at other times or locations.

Apart from potential sources of bias of the kinds identified above, acceptance of the data set as being representative of seat belt wearing in rural areas of the surveyed States and Territory depends on a number of assumptions:

. that the sites selected are representative of the range of conditions that occur in rural areas. Survey sites were broadly selected on the basis of population and geographic area; this was done subjectively rather than on the basis of rigorous statistical analysis

. that the locations chosen at each site are representative of conditions at that site. At some sites, little choice existed in the selection of survey locations; at sites where such choice did exist, survey locations were chosen subjectively, albeit within the guidelines established by FORS

. that the occupants of the vehicles selected were representative of all vehicle occupants at the locations surveyed.

The means by which these assumptions could be tested lies outside the scope of this project. Accordingly care should be taken to avoid concluding that the survey sample is necessarily representative of rural seat belt wearing behaviour in the surveyed States and Territory.

2.4 PRACTICAL ISSUES

Several practical issues should be noted concerning analysis of the data:

approximately the last 90 minutes of each day's survey was conducted in darkness. As surveys during this period were scheduled to be conducted at a service station, the effect of

darkness on the reliability of the surveys was minimised; nevertheless, survey staff indicated in debriefing that they felt that seat belt wearing information collected at these times was less reliable than at other times.

. some service stations closed at weekends or in the evening and so could not be surveyed as scheduled. In general, weekend surveys were able to be rescheduled to accommodate closures; where service stations closed in the evenings, the survey staff member returned to the intersection previously surveyed. In such cases, problems caused by darkness previously noted become more important.

3. ANALYSIS

3.1 SAMPLE OVERVIEW

A total of 31830 vehicles were observed over all survey sites, with information for a total of 51561 occupants recorded. Of these, 694 occupants were observed to not have seat belts fitted in the vehicle, while a further 725 were excluded from analysis because survey staff were not sure if seat belts were in use, yielding usable observations regarding 50142 vehicle occupants. The distribution of observations across survey sites and vehicle types is shown in Table 3.1.

TABLE 3.1 SITE BY VEHICLE TYPE

Site	Utilities, Panel Vans		Cars, Station Wagons		Vans		Total
	Number	%	Number	%	Number	%	
Ararat	240	12.8	1566	83.4	71	3.8	1877
Avoca	124	21.8	413	72.6	32	5.6	569
Shepparton	194	14.5	1065	79.6	79	5.9	1338
Cobram	420	19.1	1682	76.3	102	4.6	2204
Mildura	503	22.3	1703	75.5	49	2.2	2255
Ouyen	323	20.9	1175	76.2	45	2.9	1543
Lismore	185	15.1	970	79.3	68	5.6	1223
Kyogle	341	11.3	2453	81.5	214	7.1	3008
Moree	416	21.8	1458	76.3	37	1.9	1911
Walcha	427	23.4	1323	72.6	73	4.0	1823
Wagga Wagga	304	12.0	2119	83.4	118	4.6	2541
Junee	328	16.9	1573	80.9	44	2.3	1945
Alice Springs	564	23.4	1715	71.0	135	5.6	2414
Darwin Area 1	544	23.2	1653	70.6	145	6.2	2342
Darwin Area 2	502	22.3	1432	63.7	313	13.9	2247
Darwin Area 3	819	31.6	1662	64.2	109	4.2	2590
Large Towns	4271	20.6	15343	74.0	1124	5.4.	20738
Small Towns	1963	17.7	8619	77.7	510	4.6	11092
All Sites	6234	19.6	23962	75.3	1634	5.1	31830

Counts of vehicles passing the survey locations were also undertaken. A total of 61310 vehicles were counted passing the survey locations during the survey. The number of observations at each site and the corresponding traffic count, divided into those

for service stations and those for intersections, are shown in Table 3.2.

TABLE 3.2 SAMPLE RATES

Site	Service Stations			Intersections		
	Observed	Count	Sample Rate %	Observed	Count	Sample Rate %
Ararat	718	752	95.5	1159	2282	50.8
Avoca	395	495	79.8	174	238	73.1
Shepparton	808	998	81.0	530	2506	21.1
Cobram	717	803	89.3	1487	2449	60.7
Mildura	795	909	87.5	1460	4266	34.2
Ouyen	582	659	88.3	961	1151	83.5
Lismore	618	648	95.4	605	821	73.7
Kyogle	1326	1584	83.7	1682	3579	47.0
Moree	851	943	90.2	1060	1652	64.2
Walcha	1048	1270	82.5	775	879	88.2
Wagga Wagga	965	1079	89.4	1576	5097	30.9
Junee	567	568	99.8	1378	1660	83.0
Alice Springs	1245	1521	81.9	1169	3523	33.2
Darwin Area 1	1270	1715	74.1	1072	6282	17.1
Darwin Area 2	1435	2994	47.9	812	2749	29.5
Darwin Area 3	1495	2119	70.6	1095	3113	35.2
Large Towns	10200	13678	74.6	10538	32297	32.6
Small Towns	4635	5379	86.2	6457	9956	64.9
All Sites	14835	19057	77.8	16995	42253	40.2

3.2 SURVEY RESULTS

All results are presented in the following tables as percentages of vehicle occupants (either for the whole sample or in a nominated group) who were observed wearing seat belts. Observations for which belt use could not positively be identified are excluded. In all cases, the sample size on which that estimate is based is also shown.

Overall, 79.8% of occupants were observed to be wearing seat belts. Wearing rates at individual sites and for each state are shown in Table 3.3. On average, highest wearing rates were observed in New South Wales (85.7%). The wearing rate in Victoria

(80.5%) was close to the average, whilst that in the Northern Territory (71.6%) was substantially below the average.

TABLE 3.3 WEARING RATES BY SITE AND STATE

Site	Number	%
Ararat	2698	83.0
Avoca	873	71.3
Shepparton	2106	81.9
Cobram	3363	79.9
Mildura	3740	83.8
Ouyen	2300	75.3
All Victoria	15030	80.5
Lismore	1968	83.3
Kyogle	4971	85.5
Moree	3093	81.6
Walcha	2785	89.8
Wagga Wagga	4018	89.7
	2929	82.8
All NSW	19764	85.7
Alice Springs	3834	67.3
Darwin Area 1	3439	74.6
Darwin Area 2	4113	65.3
Darwin Area 3	3962	79.8
All NT	15348	71.6
All Sites	50142	79.8

3.2.1 Seat Belt Wearing Rates: Position in Vehicle

Wearing rates by seating position are shown for each State and overall in Table 3.4. Over all States, drivers and passengers in the front left position had the highest wearing rates (82.5% and 81.4% respectively). **Wearing rates of passengers in the front** centre and rear side positions were significantly lower (70.2% and 68.0%), whilst only slightly more than half (54.8%) of passengers in centre rear positions were wearing restraints.

This pattern is evident in each State: the percentage wearing seat belts was higher in the driver's and front left position than elsewhere. In Victoria, those in the front left position had a higher wearing rate than drivers, whilst in New South Wales those in the front centre seat had wearing rates approaching those of other front seat occupants.

TABLE 3.4 WEARING RATES BY POSITION IN VEHICLE

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Driver	9686	81.3	12258	88.2	9486	76.2	31430	82.5
Front Centre	135	54.1	683	83.6	360	50.8	1178	70.2
Front Left	3506	83.9	4385	86.8	3470	72.0	11361	81.4
Rear Sides	1386	73.7	2011	74.0	1626	55.7	5023	68.0
Rear Centre	317	59.9	427	62.8	406	42.4	1150	54.8
All Positions	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.2 Seat Belt Wearing Rates: Belt Type

Wearing rates of each belt type by State and overall are shown in Table 3.5. Apart from the various types of child restraint, most observations were of inertia reel belts; passengers using inertia reel belts (83.3%) had a significantly (at the 95% level) higher wearing rate than those using static belts (66.4%). Usage rates of the various types of child restraint were uniformly high, reflecting the fact that the fitting of such restraints is tantamount to their use. Child seats were used at a lower rate than the other categories of child restraint. It should be noted that no assessment was made of the standard of belt use. These patterns are followed in each State and the Northern Territory.

TABLE 3.5 WEARING RATES BY BELT TYPE

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Inertia Reel	11365	83.4	14870	88.4	11740	76.7	37975	83.3
Static	3158	69.8	4094	76.4	3177	50.2	10429	66.4
Childs Seat	184	64.7	357	84.0	226	90.7	767	81.4
Harness	21	95.2	31	100.0	14	100.0	66	98.5
Booster Seat with Restraint	146	97.3	121	95.9	40	97.5	307	96.7
Booster Seat without Restraint	84	92.9	154	90.3	89	98.9	327	93.3
Approved Restraint	54	96.3	71	90.1	36	91.7	161	92.5
Type not recorded	18	50.0	66	19.7	26	34.6	110	28.2
All Belt Types	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.3 Seat Belt Wearing Rates: Vehicle Type

Overall, car and station wagon occupants had a higher wearing rate (82.1%) than those in utilities and panel vans (69.7%) or vans (77.7%). Table 3.6 shows that these differences occur uniformly across each State and the Northern Territory, although the difference between wearing rates for cars/station wagons and vans was less pronounced in New South Wales and the Northern Territory than in Victoria.

TABLE 3.6 WEARING RATES BY VEHICLE TYPE

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Utility/Panel Van	2310	67.5	2566	77.6	3250	65.1	8126	69.7
Car/Station Wagon	12068	83.2	16158	87.0	10754	73.5	38980	82.1
Van	652	77.1	1040	85.6	1344	71.9	3036	77.7
All Vehicle Types	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.4 Seat Belt Wearing Rates: Site Population

Table 3.7 shows wearing rates by site population. As discussed above, this distinction only relates to observations made in Victoria and New South Wales. **In Victoria, a higher overall** wearing rate was observed in large towns (83.0%) than in small towns (77.2%), whilst no real difference in wearing rates was detectable in New South Wales.

TABLE 3.7 WEARING RATES BY SITE POPULATION

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
>10000	8544	83.0	9079	85.5	15348	71.6	32971	78.4
<10000	6486	77.2	10685	85.9	0	0.0	17171	82.6
All Sites	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.5 Seat Belt Wearing Rates: Location Type

Wearing rates are broken down by location type, (intersections and service stations) in Table 3.8. It was uniformly observed that higher wearing rates occurred at service stations than at intersections. It is not clear why this occurred.

TABLE 3.8 WEARING RATES BY LOCATION TYPE

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Service Station	8772	82.8	11147	87.2	6564	75.2	26483	82.7
Intersection	6258	77.3	8617	83.9	8784	69.0	23659	76.6
All Locations	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.6 Seat Belt Wearing Rates: Day of Week, Time of Day

No major variation in wearing rates was observed by day of week (Table 3.9) or time of day (Table 3.10) either overall or in the individual States and Northern Territory.

TABLE 3.9 WEARING RATES BY DAY OF WEEK

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Sunday	2485	79.8	3639	85.6	2446	75.3	8570	81.0
Monday	1821	80.9	2477	85.7	1991	72.0	6289	80.0
Tuesday	1985	82.0	2246	87.0	2106	76.4	6337	81.9
Wednesday	1892	79.2	3028	84.3	2123	70.3	7043	78.7
Thursday	1999	77.1	3133	85.9	2109	70.3	7241	78.9
Friday	2418	82.5	2338	86.1	2380	69.1	7136	79.2
Saturday	2430	81.6	2903	85.9	2193	67.9	7526	79.3
All Days	15030	80.5	19764	85.7	15348	71.6	50142	79.8

TABLE 3.10 WEARING RATES BY TIME OF DAY

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
8 am - Noon	5055	82.1	7069	85.6	5119	70.8	17243	80.2
Noon - 4 pm	6068	80.2	6621	85.1	5176	70.8	17865	79.3
4 pm - 8 pm	3907	79.0	6074	86.6	5053	73.3	15034	80.2
All Times	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.7 Seat Belt Wearing Rates: Age

A strong pattern can be identified in wearing rates related to age, as shown in Table 3.11. Very young children (less than 5 months, 6 months to 1 years) in their own seats have very high wearing rates (95.1% and 89.2% overall), although the small number of observations should be noted. Wearing rates are progressively lower for 2 to 4 year olds (75.1%) and 5 to 7 years olds (54.1%).

Wearing rates are progressively higher for the older age groups: 8 to 16 year olds have an average wearing rate of 67.0%, 76.4% for 17-29 year olds, 83.2% for 30-49 year olds and 87.7% for those 50 years old and over. This general pattern is followed in each State and the Northern Territory.

TABLE 3.11 WEARING RATES BY AGE

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
0 - 5 Months	38	92.1	65	96.9	20	95.0	123	95.1
6 Months - 1 Year	102	93.1	222	86.5	65	92.3	389	89.2
2 - 4 Years	374	70.1	582	74.9	367	80.7	1323	75.1
5 - 7 Years	369	62.6	614	63.8	480	35.0	1463	54.1
8 - 16 Years	533	72.2	824	74.4	583	51.8	1940	67.0
17 - 29 Years	4990	76.5	5952	83.9	6519	69.5	17461	76.4
30 - 49 Years	6235	82.8	7831	88.9	6107	76.3	20173	83.2
50+ Years	2326	88.5	3614	89.8	1179	79.6	7119	87.7
Age not recorded	63	88.9	60	76.7	28	75.0	151	81.5
All Ages	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.8 Seat Belt Wearing Rates: Sex

Table 3.12 shows wearing rates by sex. In each State and the Northern Territory, females had a higher wearing rate (83.7% overall) than males (77.1% overall).

TABLE 3.12 WEARING RATES BY SEX

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Male	8563	77.7	10845	83.6	9057	68.8	28465	77.1
Female	6200	84.4	8544	88.4	5878	76.0	20622	83.7
Sex not recorded	267	78.3	375	86.9	413	69.7	1055	78.0
All People	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.9 Seat Belt Wearing Rates: Weather

No firm conclusions can be drawn regarding the effect of weather conditions on seat belt wearing rates (Table 3.13). Wearing rates in fine weather and during light showers were largely the same in each of the States and Northern Territory. In Victoria and New South Wales, some observations were made during heavy showers. A higher wearing rate was observed at those times, although it should be noted that only a small number of observations were obtained. Observations during storms were made only in Victoria; the small number of observations prevents firm conclusions being drawn about the effects storms have on wearing rates.

TABLE 3.13 WEARING RATES BY WEATHER

	Victoria		New South Wales		Northern Territory		Total	
	Number	%	Number	%	Number	%	Number	%
Fine	13616	80.5	17295	85.8	14568	71.7	45479	79.7
Light Showers	1238	80.5	2076	84.4	780	70.1	4094	80.5
Heavy Showers	109	85.3	393	89.3	0	0.0	502	88.4
Storm	67	76.1	0	0.0	0	0.0	67	76.1
All Weather Conditions	15030	80.5	19764	85.7	15348	71.6	50142	79.8

3.2.10 Seat Belt Wearing Rates: Sex by Age

Table 3.14 shows seat belt wearing rates by age and sex aggregated over all survey locations. As noted in Sections 3.2.7 and 3.2.8, strong patterns are evident in the rates of belt wearing in relation to age and sex. Further insight may be gained through consideration of Table 3.14. Reported wearing rates for children under 2 years old are regarded as unreliable because of the difficulty in identifying the sex of such children. Male and female wearing rates are similar for occupants aged less than 17 years; above that age, male wearing rates are markedly lower than those of females.

TABLE 3.14 WEARING RATES BY SEX BY AGE

	Male		Female		Sex not Recorded		Total	
	Number	%	Number	%	Number	%	Number	%
0 - 5 Months	18	77.8	18	94.4	87	98.9	123	95.1
6 Months - 1 Year	102	85.3	108	89.8	179	91.1	389	89.2
2 - 4 Years	416	71.4	484	71.1	423	83.5	1323	75.1
5 - 7 Years	666	56.3	623	55.4	174	40.8	1463	54.1
8 - 16 Years	1002	66.1	895	68.7	43	53.5	1940	67.0
17 - 29 Years	9897	72.8	7516	81.1	48	81.3	17461	76.4
30 - 49 Years	12212	80.0	7912	88.1	49	95.9	20173	83.2
50+ Years	4101	85.5	3012	90.6	6	66.7	7119	87.7
Age not recorded	51	78.4	54	88.9	46	80.4	151	81.5

3.2.11 Seat Belt Wearing Rates: Position in Vehicle by Vehicle Type

Strong variation in seat belt wearing rates by vehicle type and seating position have been noted above (Sections 3.2.1 and 3.2.3). Comparison of results for the front seat positions (the only common and reliable basis of comparison) shows that the previously noted overall higher wearing rates in cars, when compared with other vehicles, occurs consistently in all three positions.

TABLE 3.15 WEARING RATES BY POSITION IN VEHICLE BY VEHICLE TYPE

	Utility, Panel Van		Car, Station Wagon		Van		Total	
	Number	%	Number	%	Number	%	Number	%
Driver	6109	71.6	23708	85.4	1613	79.9	31430	82.5
Front Centre	276	44.2	820	79.6	82	63.4	1178	70.2
Front Left	1572	67.2	9090	83.9	699	80.7	11361	81.4
Rear Sides	131	70.2	4397	67.4	495	73.1	5023	68.0
Rear Centre	38	60.5	965	53.3	147	63.3	1150	54.8
All Positions	8126	69.7	38980	82.1	3036	77.7	50142	79.8

3.2.12 Seat Belt Wearing Rates: Day of Week by Time of Day

Little interaction of day of week and time of day was observed in wearing rates, as shown in Table 3.16.

TABLE 3.16 WEARING RATES BY DAY OF WEEK BY TIME OF DAY

	Morning		Afternoon		Evening		Total	
	Number	%	Number	%	Number	%	Number	%
Sunday	2951	80.7	3421	81.4	2198	80.7	8570	81.0
Monday	2369	79.1	2000	79.2	1920	82.0	6289	80.0
Tuesday	2391	81.5	1997	81.5	1949	82.8	6337	81.9
Wednesday	2240	82.3	2443	77.2	2360	76.7	7043	78.7
Thursday	2344	79.4	2403	77.4	2494	80.0	7241	78.9
Friday	2396	78.8	2695	78.8	2045	80.2	7136	79.2
Saturday	2552	79.5	2906	78.9	2068	79.5	7526	79.3
All Days	17243	80.2	17865	79.3	15034	80.2	50142	79.8

3.2.13 Seat Belt Wearing Rates: Age by Belt Type

It was observed (Section 3.2.2) that inertia reel restraints were worn at a higher rate than static restraints. This holds true through all age groups; particularly low wearing rates were observed with children (2 to 16 years) in static restraints.

TABLE 3.17 WEARING RATES BY AGE BY BELT TYPE

	Inertia Reel		Static		Other		Type Not Recorded		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
0 - 5 Months	23	82.6	5	80.0	95	98.9	0	0.0	123	95.1
6 Months - 1 Year	44	72.7	25	60.0	317	94.3	3	33.3	389	89.2
2 - 4 Years	201	48.8	224	30.8	885	93.2	13	18.2	1323	75.1
5 - 7 Years	753	58.4	509	39.5	185	80.5	16	6.7	1463	54.1
8 - 16 Years	1241	73.2	652	56.3	35	65.7	12	20.0	1940	67.0
17 - 29 Years	13206	80.8	4189	63.5	40	15.0	26	88.5	17461	76.4
30 - 49 Years	16564	85.5	3556	72.7	32	68.8	23	39.1	20173	83.2
50+ Years	5858	89.2	1236	81.3	19	31.6	6	50.0	7119	87.7
Age not recorded	85	90.6	33	60.6	22	72.7	11	90.9	151	81.5
All Ages	37975	83.3	10429	66.4	1738	84.6	110	28.2	50142	79.8

3.3 COMPARISONS WITH PREVIOUS DATA

Comparisons can be made between the results of this survey and the Stage 1 survey conducted in Queensland, South Australia and Western Australia (Cameron McNamara Pty Ltd, 1987).

3.3.1 Seat Belt Wearing Rates: Position in Vehicle

Overall, the seat belt wearing rate observed in this study (79.8%) is very close to that observed in the Stage 1 survey (79%). Similar variations in wearing rate by position in vehicle were observed in the two studies, as shown in Table 3.18.

TABLE 3.18 WEARING RATES BY POSITION IN VEHICLE - STAGES 1 AND 2

Stage 1	%		Stage 2 %
Driver	84	Driver	82.5
		Front centre	70.2
		Front left	81.4
Front passenger	80	Front passenger	80.3
		Rear sides	68.0
		Rear centre	54.8
Rear passenger	63	Rear passenger	65.5
All occupants	79	All occupants	79.8

3.3.2 Seat Belt Wearing Rates: Belt Type

The observation that occupants of seats fitted with inertia reel belts had higher wearing rates than those with static belts (Section 3.2.2) is consistent with results of the Stage 1 survey. Both surveys also found that the various types of child restraint had a higher wearing rate than other restraint types. Results of the two surveys are compared in Table 3.19.

TABLE 3.19 WEARING RATES BY RESTRAINT TYPE - STAGES 1 AND 2

	Stage 1 %	Stage 2 %
Inertia reel	86	83.3
Static	69	66.4
Other	94	88.4
All restraints	82	79.8

3.3.3 Seat Belt Wearing Rates: Vehicle Type

Similar variations in wearing rates by vehicle type were observed in the Stage 1 and 2 surveys. These are shown in Table 3.20.

TABLE 3.20 WEARING RATES BY VEHICLE TYPE - STAGES 1 AND 2

	Stage 1 %	Stage 2 %
Utility/Panel Van	69	69.7
Car/Station Wagon	81	82.1
Van	80	77.7
All vehicles	79	79.8

3.3.4 Seat Belt Wearing Rates: Day of Week, Time of Day

There is a marked contrast between the results of Stages 1 and 2 in analysis of wearing rates by day of week and time of day. Whilst no strong variation in wearing rates was observed in the Stage 2 survey by day of week or time of day, strong variation was

observed in the Stage 1 survey. Results of the Stage 1 survey showed a general decline in wearing rates through the day to 4 pm between Monday and Thursday and throughout the day on Sunday. Lower rates were observed between 10 am and 1 pm and between 4 pm and 10 pm than at other times on Friday and Saturday.

3.3.5 Seat Belt Wearing Rates: Age

Similar patterns in restraint usage by age were observed in Stage 1 and 2 surveys (Table 3.21), although the lower wearing rates for the 1 to 7 year and 8 to 16 year age groups were more pronounced in the Stage 2 survey.

TABLE 3.21 WEARING RATES BY AGE - STAGES 1 AND 2

Age	Stage 1 %	Stage 2 %
Less than 1 year	89	90.8
1 - 7 years	73	64.1
8 - 16 years	74	76.4
17 - 29 years	78	83.2
30 - 49 years	87	87.7
50 + years	88	87.7
All Ages	82	79.8

3.3.6 Seat Belt Wearing Rates: Sex

The difference in wearing rates between males and females was more pronounced in the Stage 2 survey (Table 3.22)

TABLE 3.22 WEARING RATES BY SEX - STAGES 1 AND 2

Sex	Stage 1 %	Stage 2 %
Male	79	77.1
Female	81	83.7
All people	80	79.8

4. CONCLUSIONS

The Stage 2 survey successfully provided a data set regarding the use of occupant restraints in rural areas of Victoria, New South Wales and the Northern Territory in accordance with the nominated survey design. The design explicitly imposed a sampling framework to ensure as far as possible that vehicles observed were randomly selected and representative of the population of vehicles being driven in the areas included in the survey.

Nevertheless, there is some site to site variation in this survey that is not readily explicable by the factors recorded. This was also evident in the report of the Stage 1 survey. Accordingly, care should be taken in comparing the results for individual sites. However, the overall similarity of results in the two States and the Northern Territory and also the similarity of this survey's results with those of Stage 1 lend some weight to the conclusion that the results are representative of conditions in rural towns in Australia.

The major results of the survey may be summarised as follows:

overall wearing rates were substantially lower in the Northern Territory than in Victoria and New South Wales

significant differences in seat belt wearing rates occurred with seating position. Drivers and those passengers in the front left seat wore restraints at a higher rate than other vehicle occupants

. occupants of seats fitted with inertia reel belts wore them at a higher rate than occupants of seats fitted with static belts. Where child restraints were installed, they were worn at a high rate

. wearing rates in cars, station wagons and vans were higher than wearing rates in utilities

. no major difference in wearing rates was observed between large and small towns

. major variation in wearing rates was observed with age. High wearing rates were observed amongst very young children. Rates were lower amongst 2 to 4 year olds, and 5 to 7 year olds, but rose uniformly with age group for older occupants

. the wearing rate for females was slightly higher than that for males.

5. REFERENCES

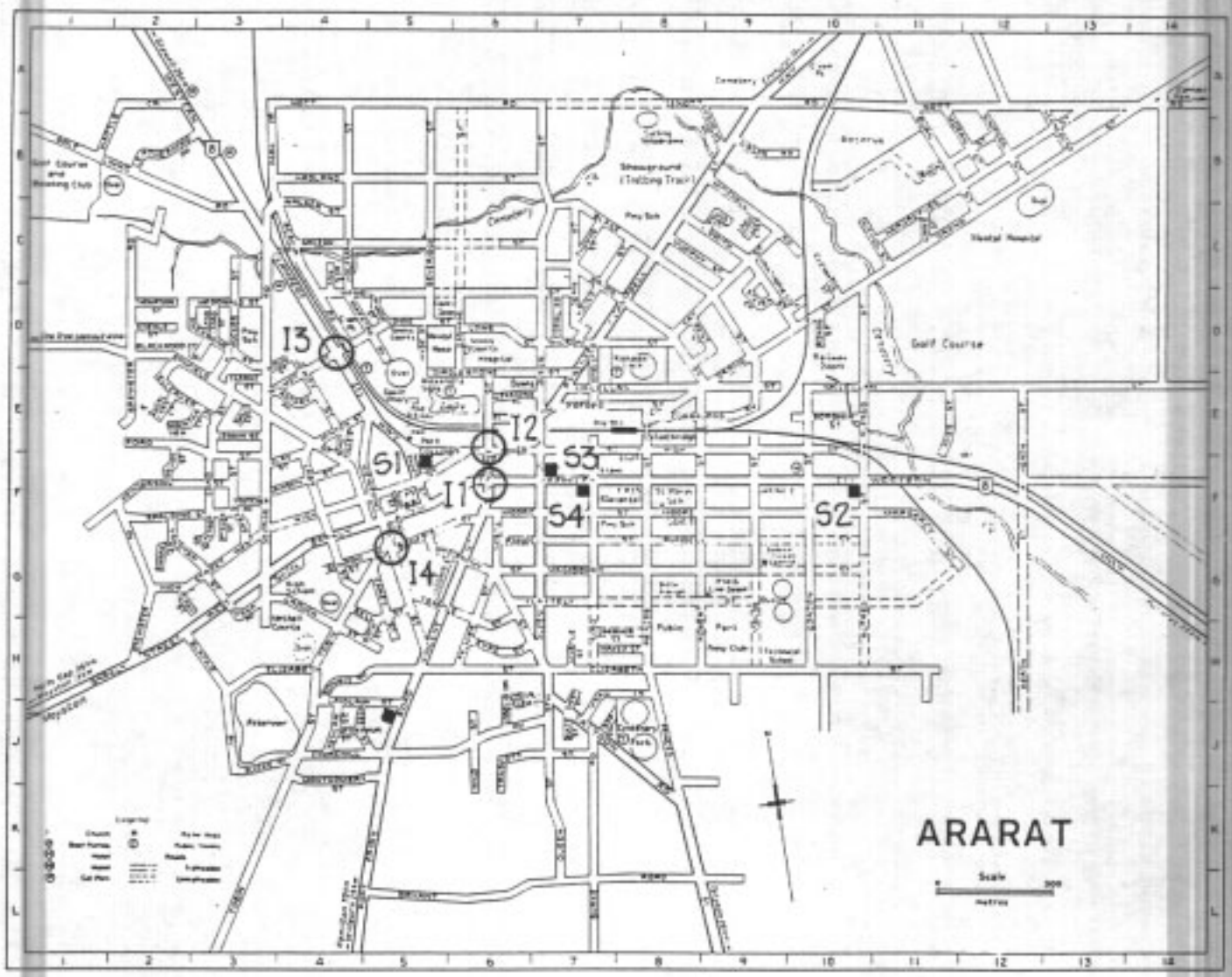
Cameron McNamara Pty. Ltd. (1987) "Survey of Occupant Restraint", Federal Office of Road Safety, CR49.

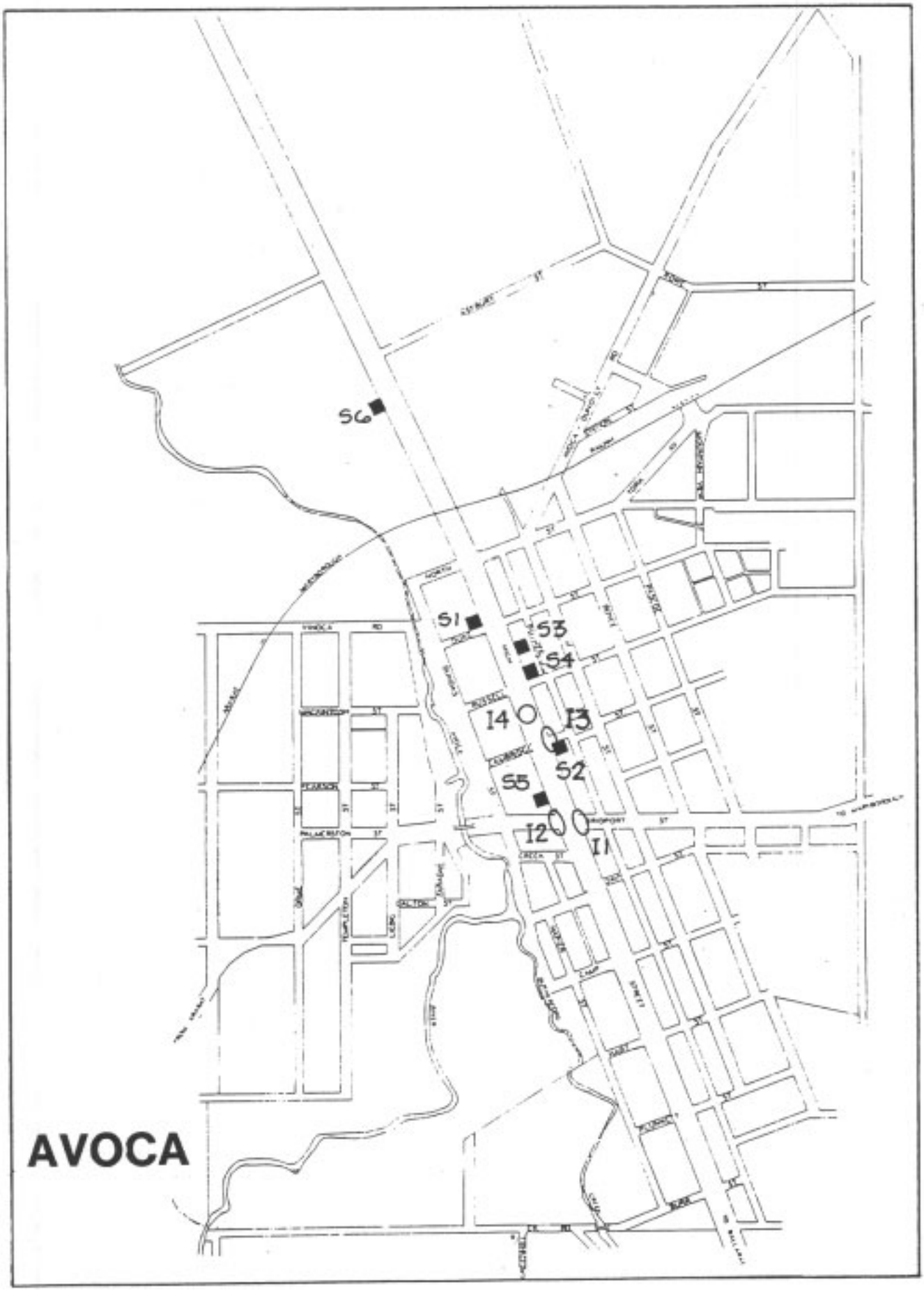
Job, R.F.S. (1983) "The Use of Seat Belts and Child Restraints: Survey Methodology" Traffic Accident Research Unit, RN 3/83.

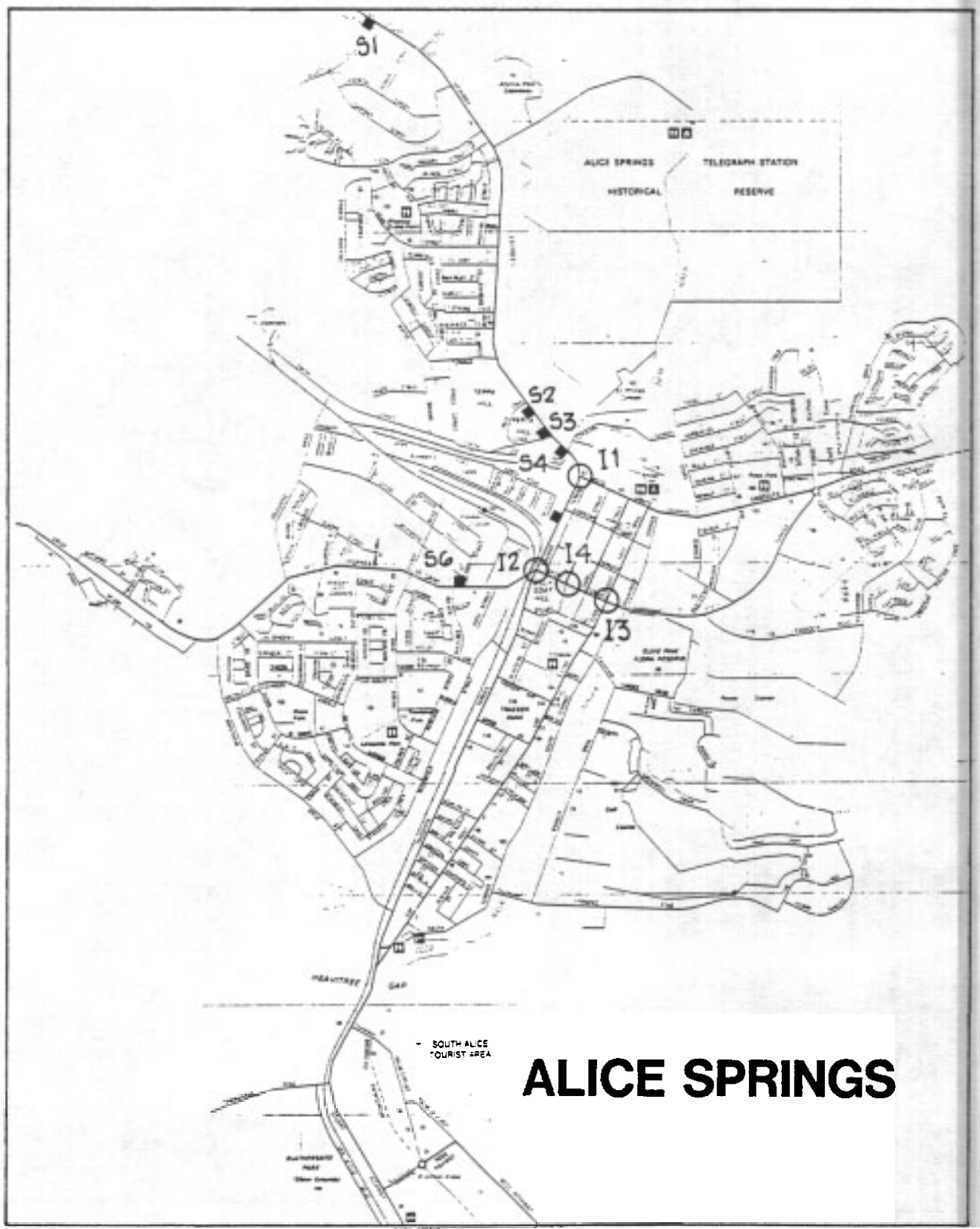
Ove Arup and Partners (1986) "Feasibility Study for a Survey of Occupant Restraint in Rural Areas", prepared for the Federal Office of Road Safety.

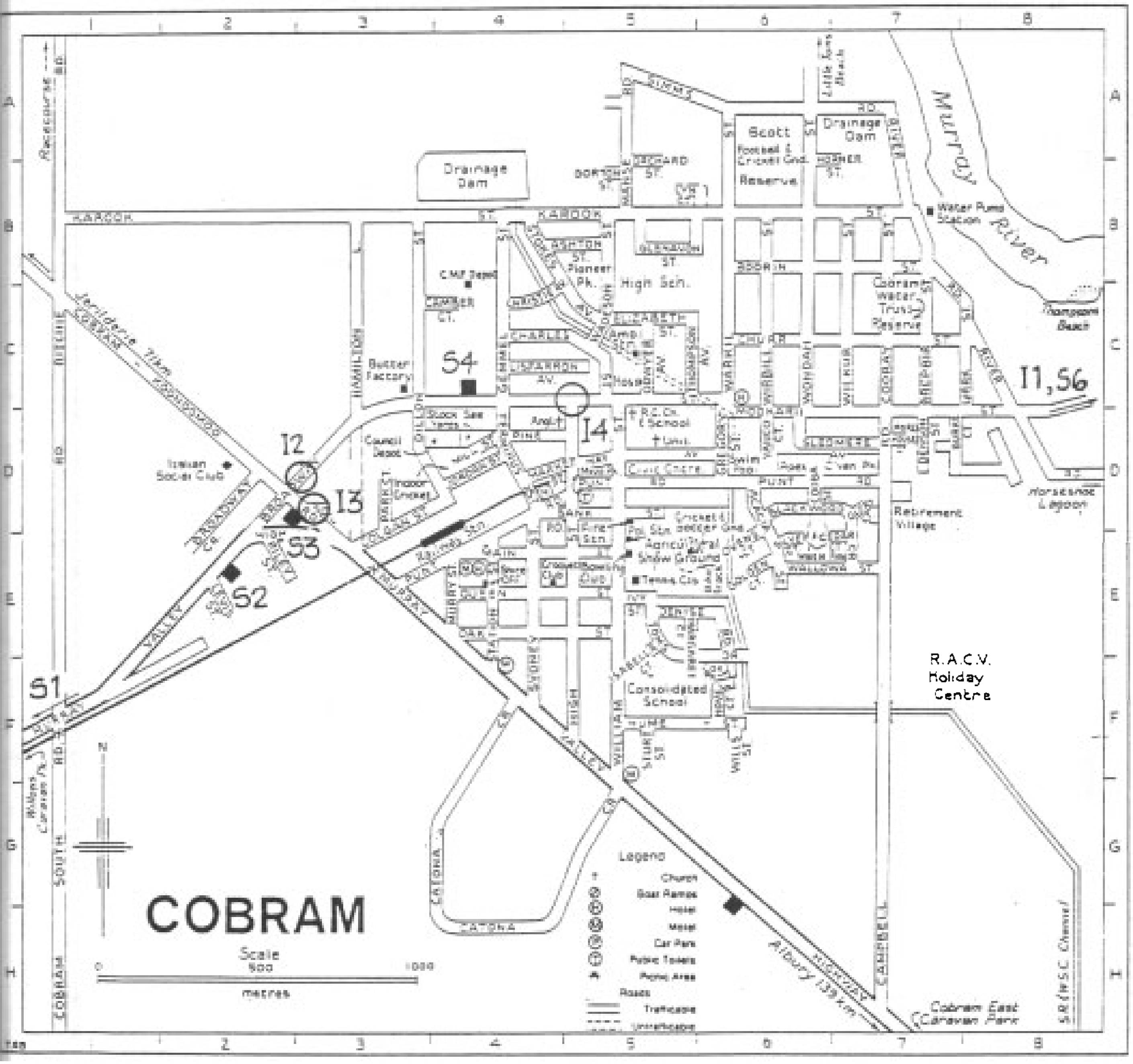
Pederson D.G. and Mahon H.C. (1983) "Seat Belt Wearing in the Canberra Region - Observation of Occupants and Interviews with Driver", Anutech Pty. Ltd., prepared for the Federal Office of Road Safety.

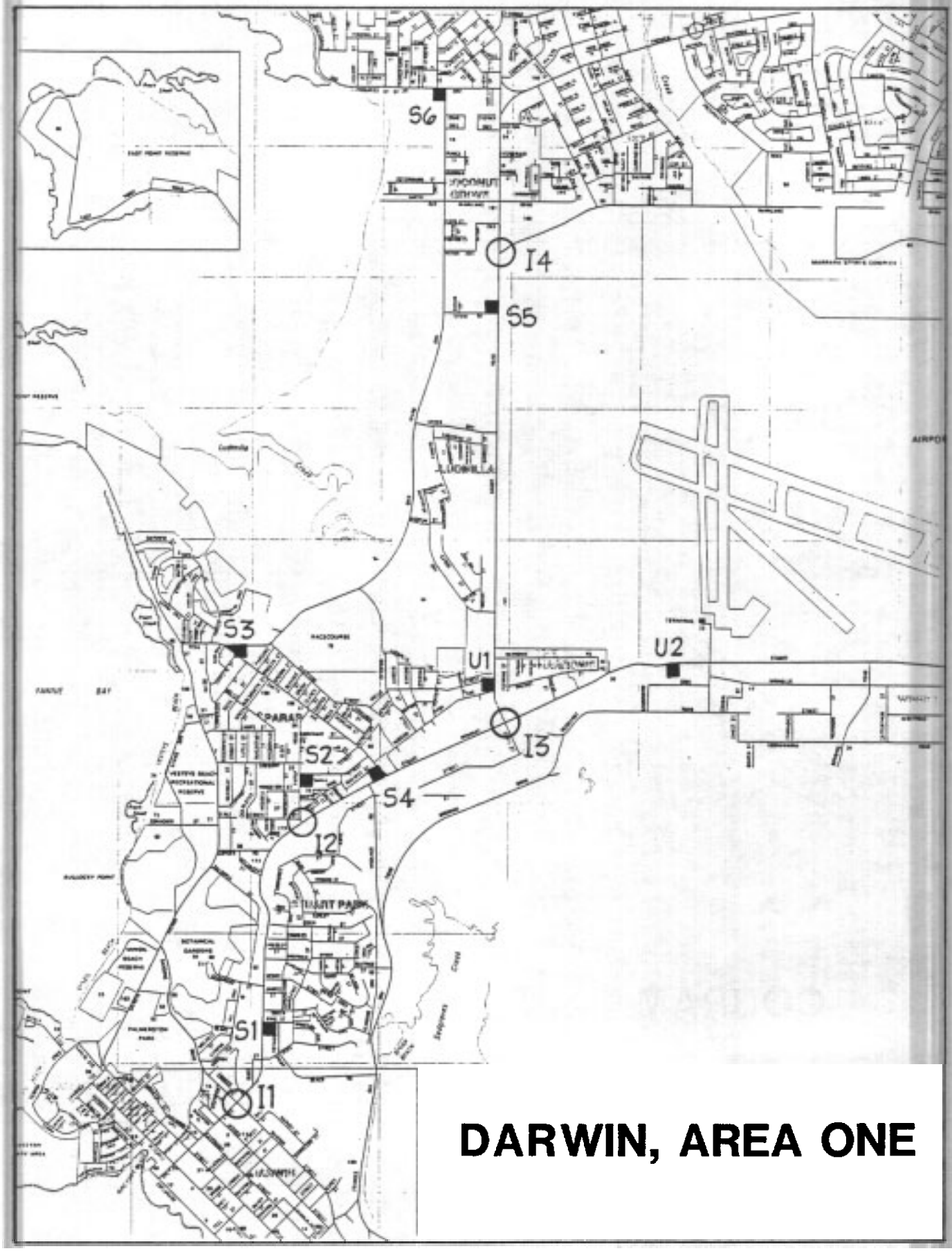
APPENDIX A: SURVEY LOCATIONS


I3
I2
I1
I4
S1
S3
S4
S2
Golf Course
ARARAT
Scale

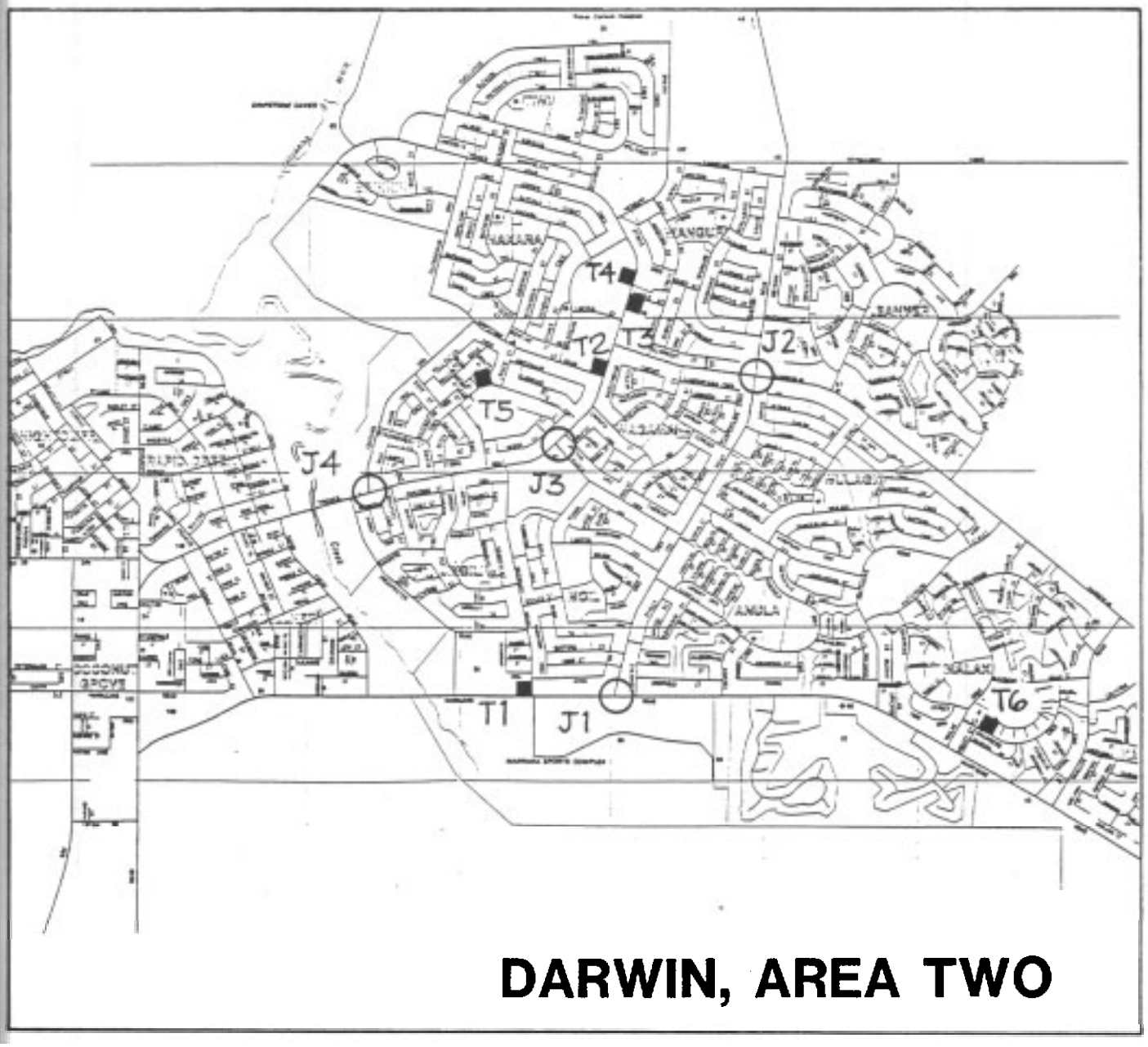

S6
S1
S3
S4
I4
I3
S2
S5
I2
I1
AVOCA


S1
S2
S3
S4
S6
I1
I2
I3
I4
ALICE SPRINGS
TELEGRAPH STATION
HISTORICAL
RESERVE
SOUTH ALICE
TOURIST AREA
ALICE SPRINGS

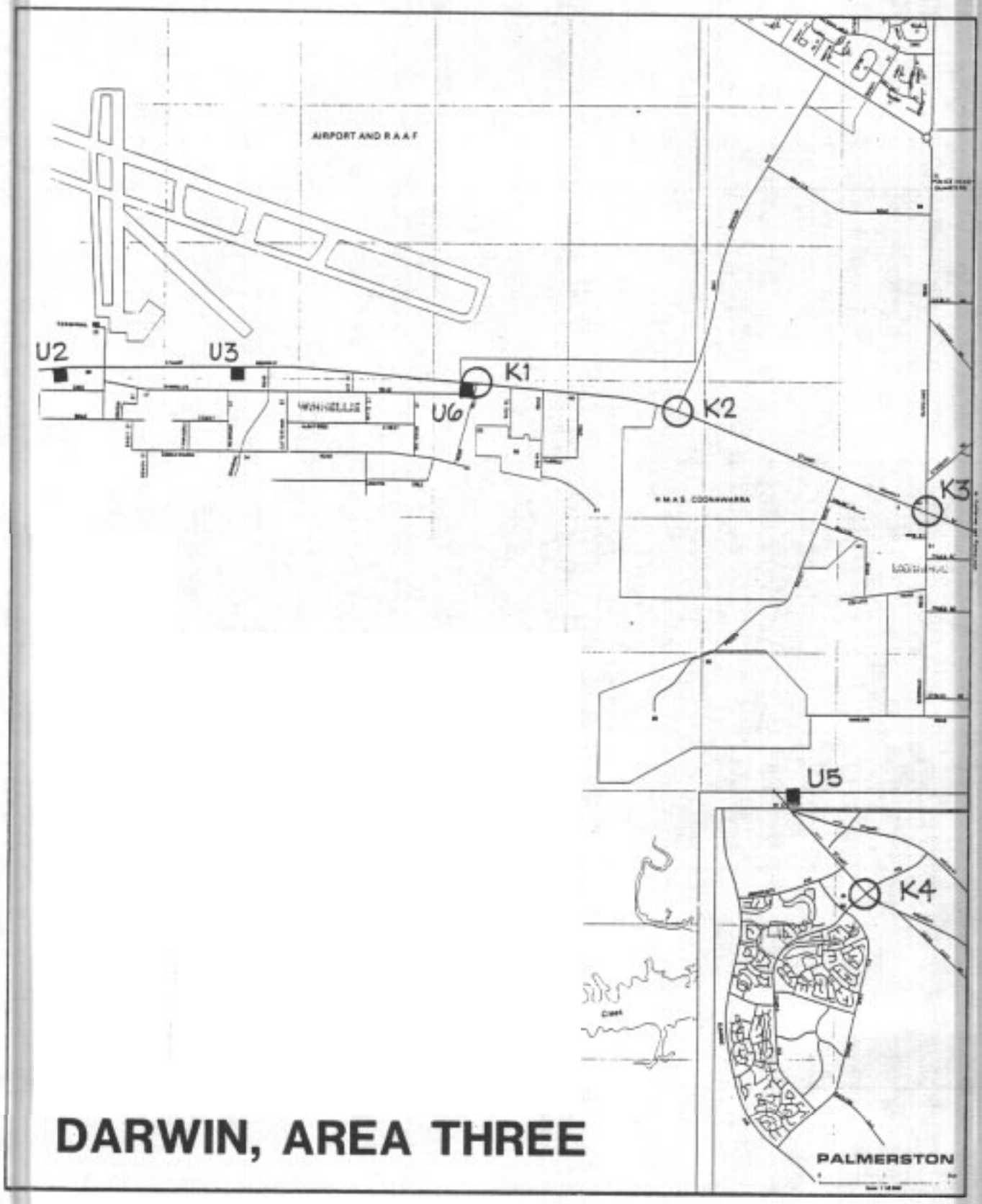

COBRAM
Scale
0
500
1000
metres
Legend
Church
Boat Ramps
Hotel
Motel
Car Park
Public Toilets
Picnic Area
Roads
Trafficable
Untrafficable
R.A.C.V.
Holiday
Centre
Murray River
Drainage Dam
Scott
Football & Cricket Gnd.
Reserve
High Sch.
Butter Factory
Italian Social Club
Council Depot
Civic Centre
Agricultural Show Ground
Tennis Cts
Consolidated School
Retirement Village
Cobram Water Trust Reserve
Water Pump Station
Thompsons Beach
Horseshoe Lagoon
Cobram East Caravan Park
Albury 139 km
Racecourse RD.
KAROOK
CAMPBELL
CATONA
S1
S2
S3
S4
I2
I3
I4
I1, S6



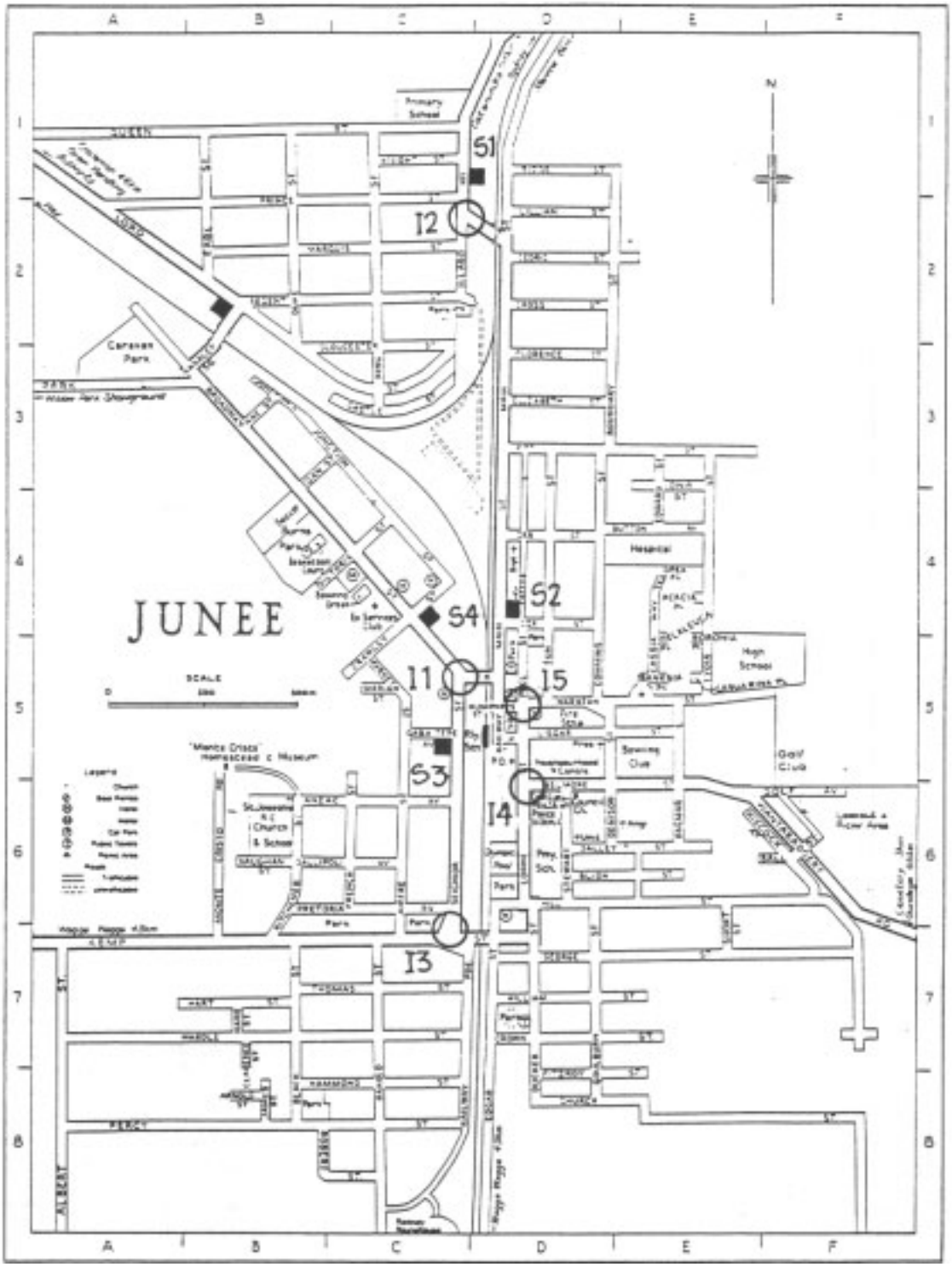
DARWIN, AREA ONE

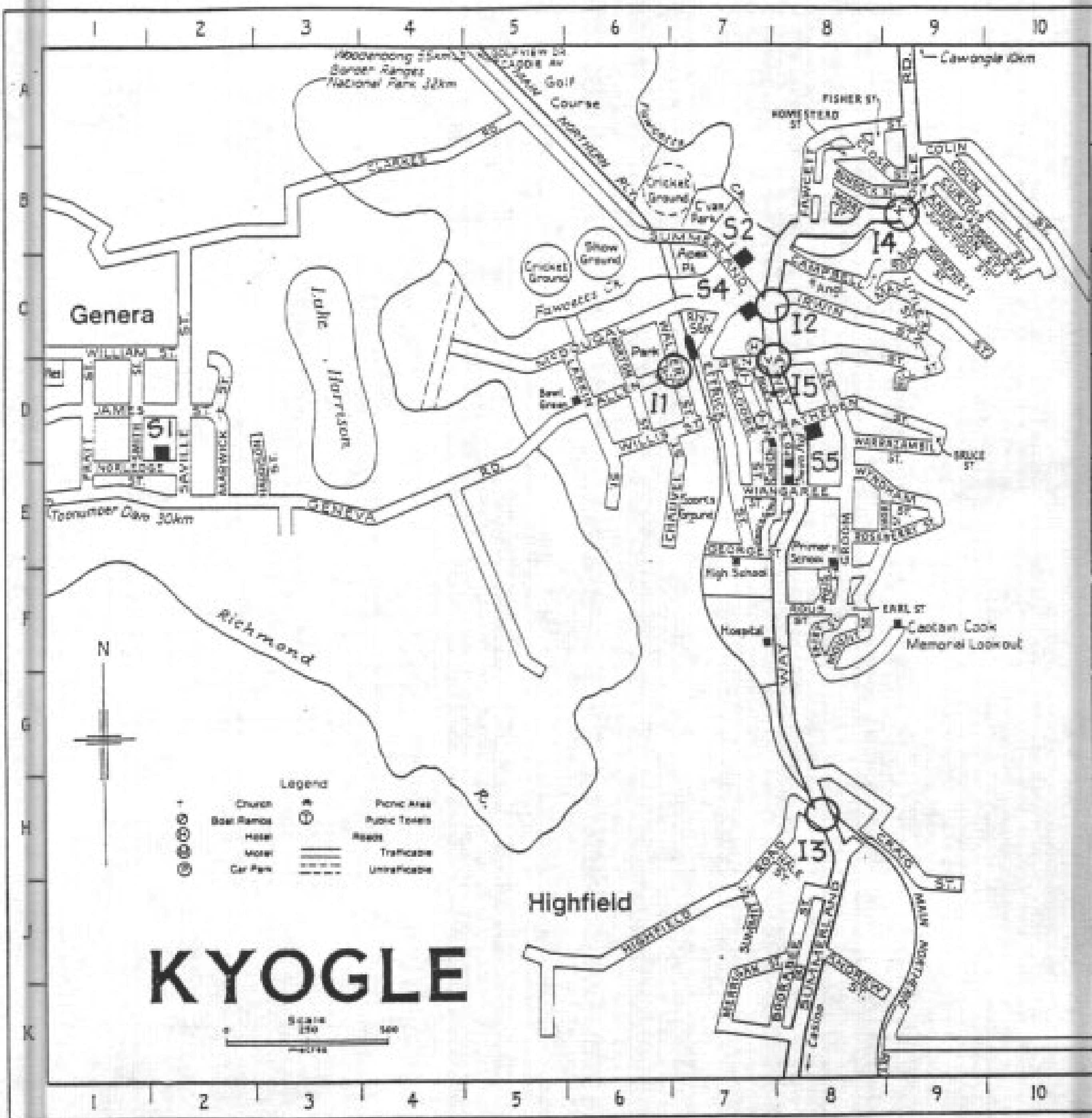


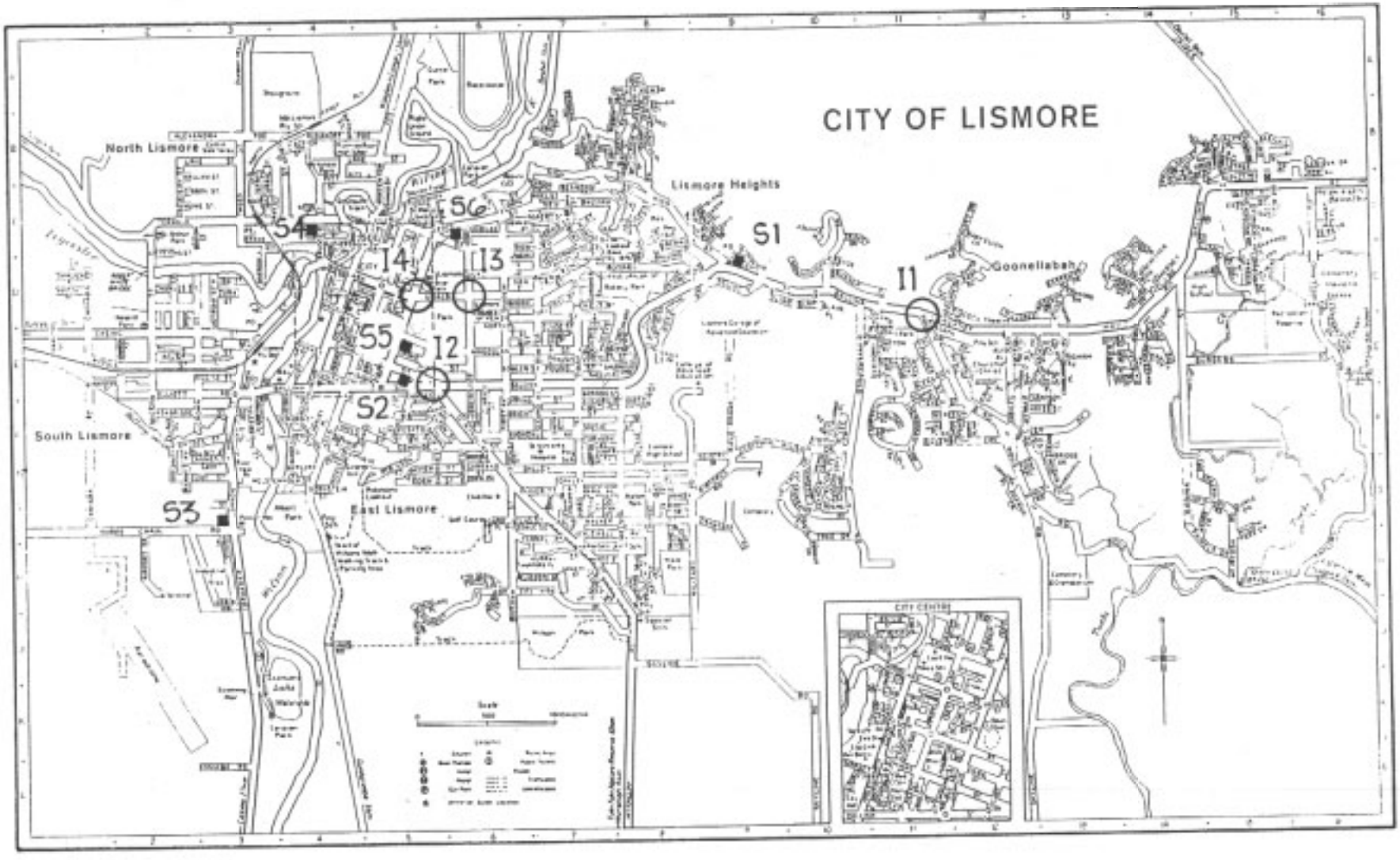
DARWIN, AREA TWO

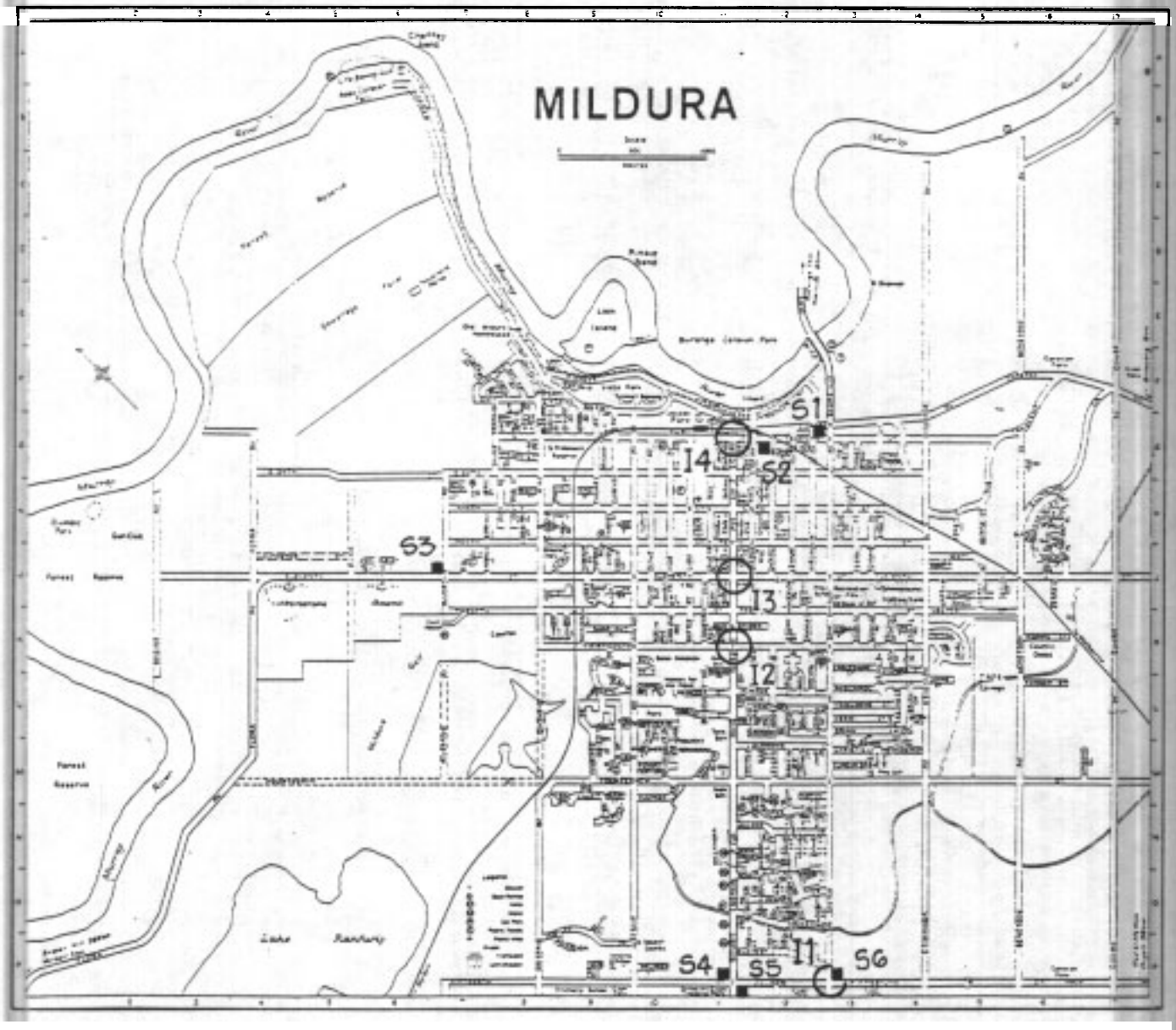


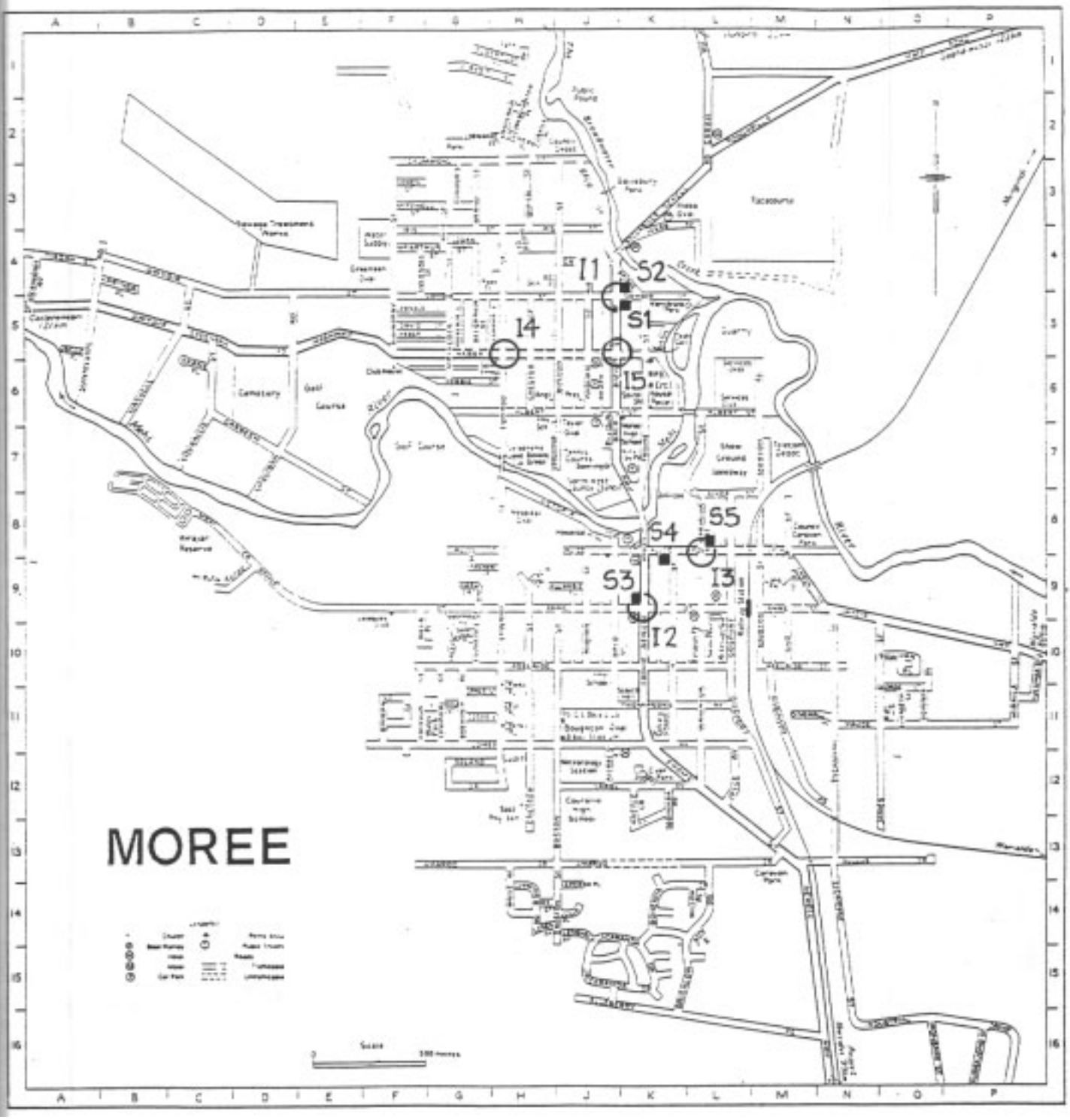
DARWIN, AREA THREE

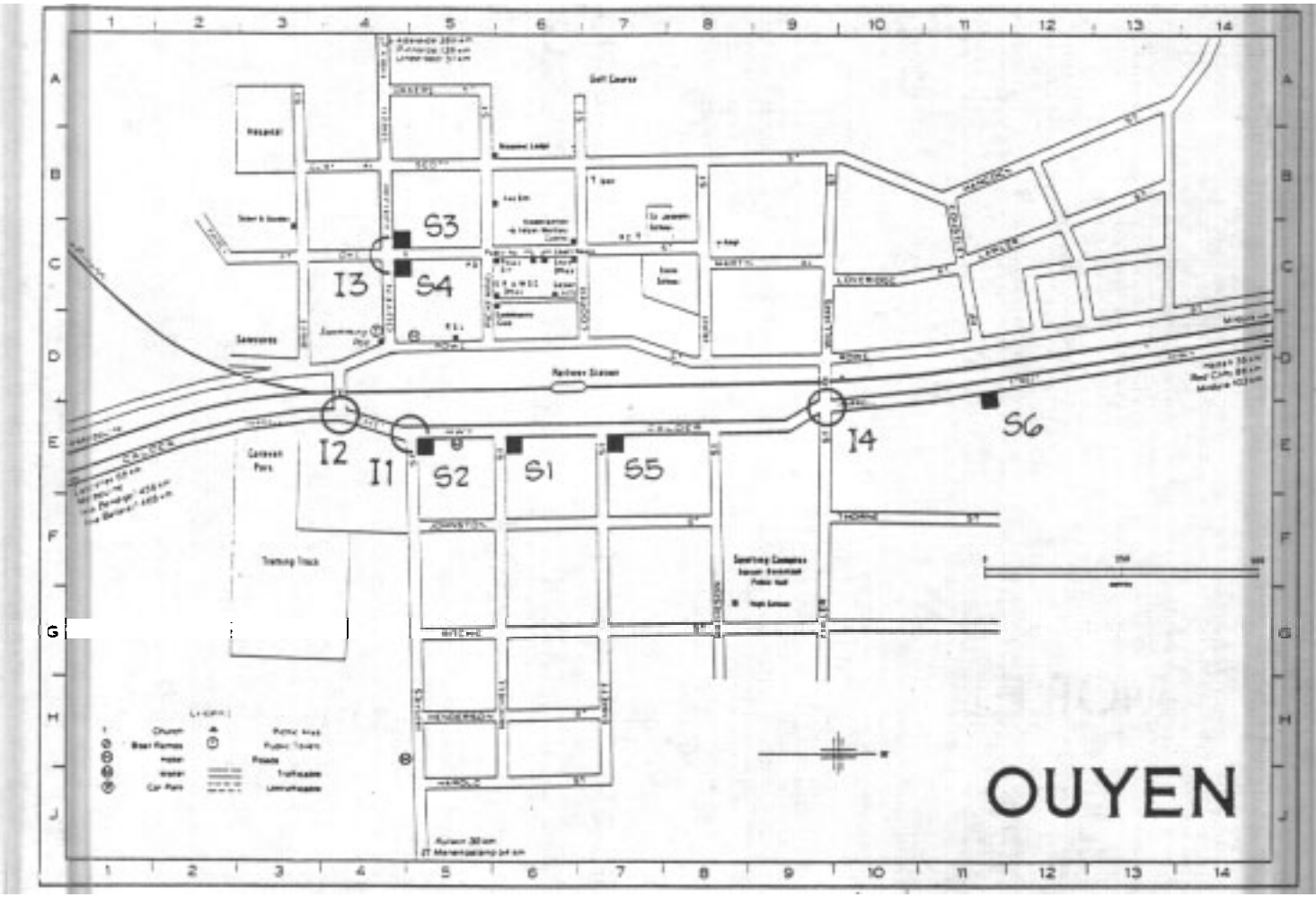

JUNEE
S1
S2
S3
S4
I1
I2
I3
I4
I5
Caravan Park
Primary School
Hospital
High School
Golf Club
Bowling Club
SCALE
N


KYOGLE
Genera
Highfield
Lake Horrison
Richmond R.
Golf Course
Cricket Ground
Show Ground
Sports Ground
High School
Primary School
Hospital
Park
Bowl. Green
Captain Cook Memorial Lookout
Cawongla 10km
Toonumbar Dam 30km
Border Ranges National Park 38km
Fawcetts Ck.
Apex Pk.
C'van Park
Legend
Church
Boat Ramps
Hotel
Motel
Car Park
Picnic Area
Public Toilets
Roads
Trafficable
Untrafficable
Scale
Metres
N
S1
S2
S4
S5
I1
I2
I3
I4
I5
Casino

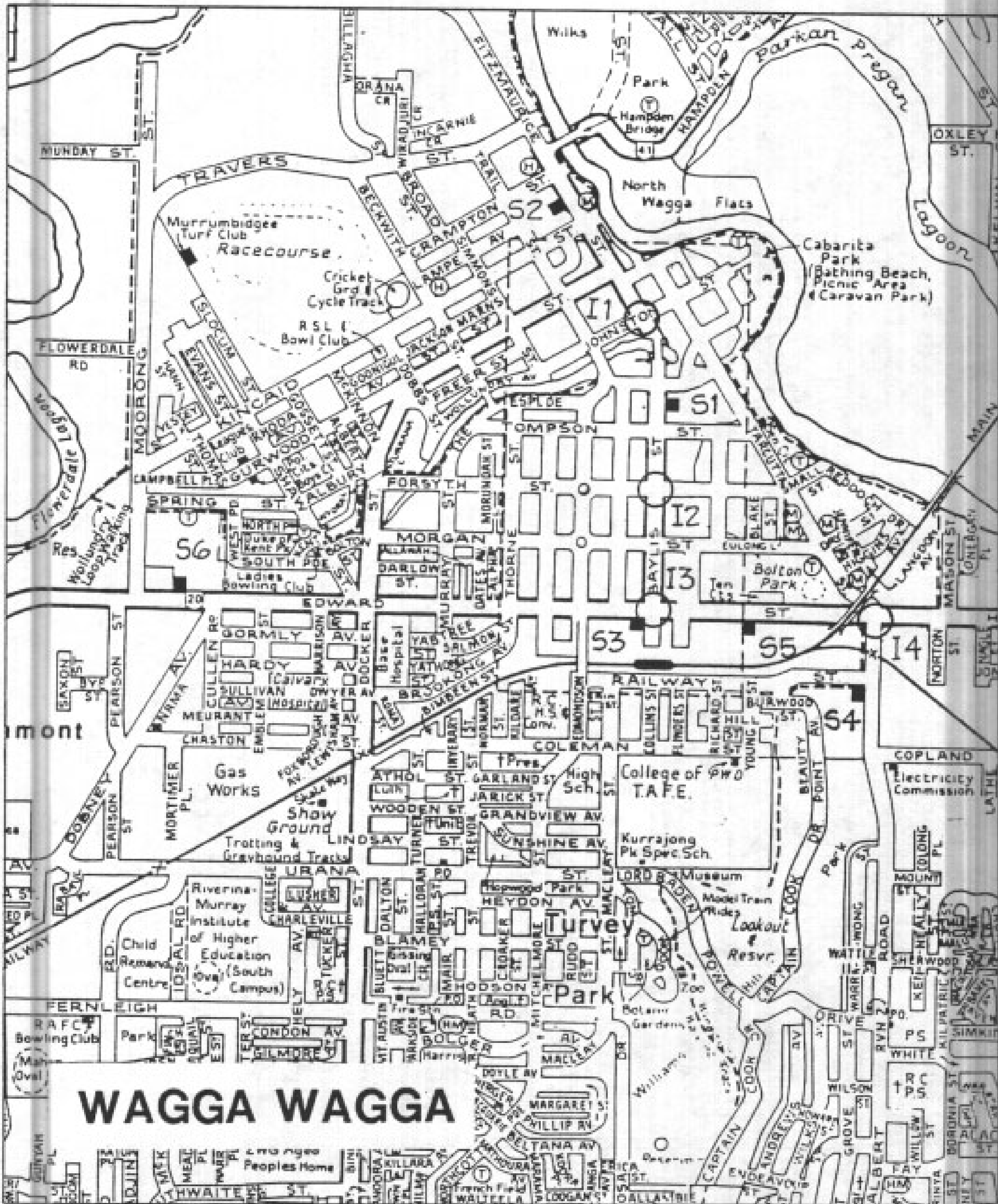

CITY OF LISMORE
North Lismore
Lismore Heights
Goonellabah
South Lismore
East Lismore
S1
S2
S3
S4
S5
S6
I1
I2
I3
I4

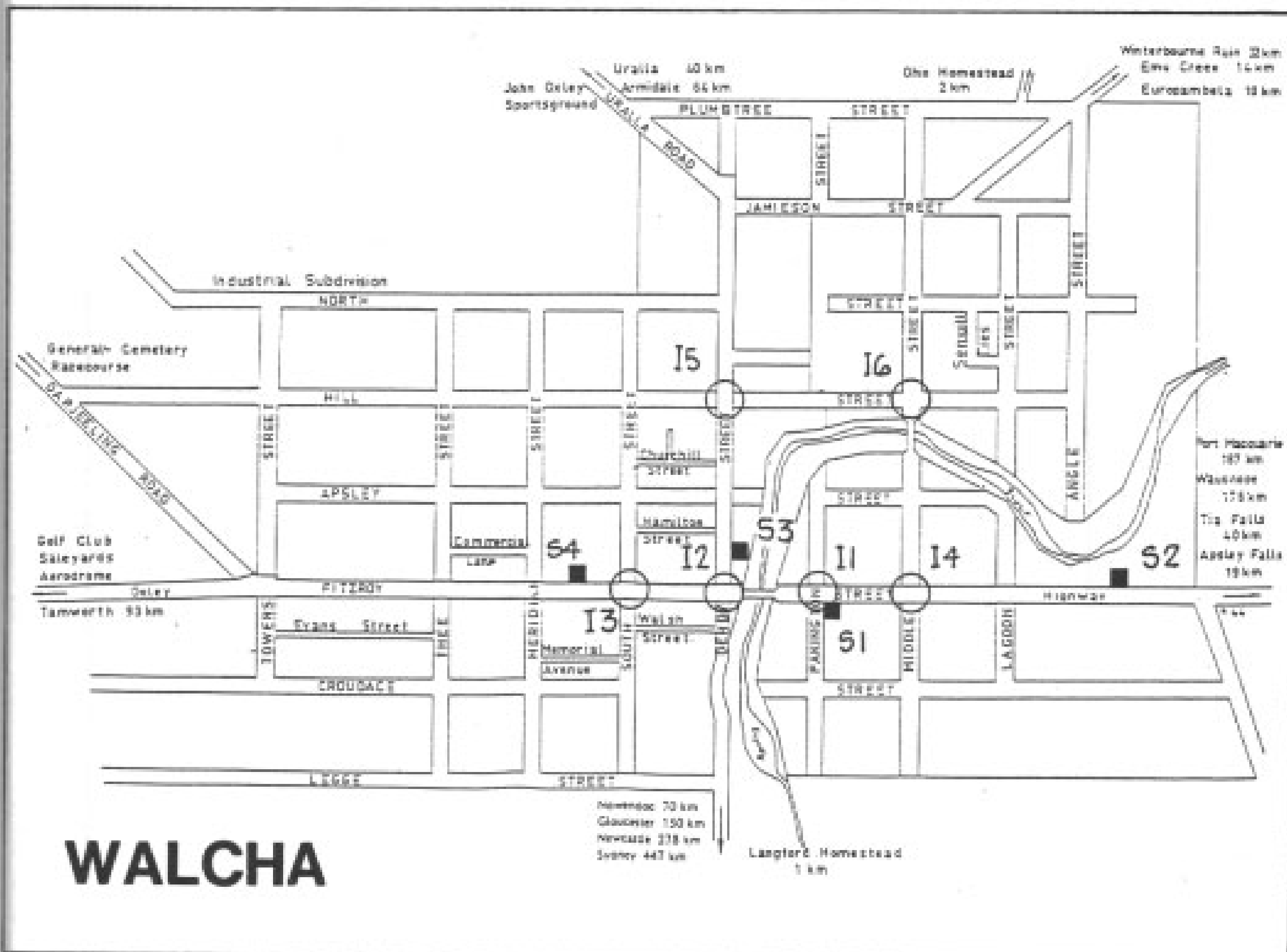

MILDURA
S1
S2
S3
S4
S5
S6
I1
I2
I3
I4


MOREE
I1
S2
S1
I4
I5
S4
S5
S3
I3
I2


OUYEN
S1
S2
S3
S4
S5
S6
I1
I2
I3
I4


S1
I1
S2
I3
I2
S6
I4
S5
S3
S4
SHEPPARTON


WAGGA WAGGA
Wilks Park
Hampden Bridge
North Wagga Flats
Cabarita Park (Bathing Beach, Picnic Area & Caravan Park)
Parkan Pregan Lagoon
Murrumbidgee Turf Club
Racecourse
Cricket Grd & Cycle Track
R.S.L. & Bowl Club
TRAVERS
MUNDAY ST.
FLOWERDALE RD
Flowerdale Lagoon
Wollundry Lagoon Walking Track
MOORONG
KINCAID
GURWOOD
CRAMPTON
FITZMAURICE
FORSYTH
MORGAN
THOMPSON ST.
EDWARD
SPRING ST.
S1
S2
S3
S4
S5
S6
I1
I2
I3
I4
Res.
Ladies Bowling Club
Bolton Park
Ten Cts.
GORMLY AV.
HARDY AV.
SULLIVAN
MEURANT
CHASTON
DOCKER
Base Hospital
Calvary Hospital
RAILWAY
COLEMAN
COPLAND
Electricity Commission
Gas Works
Show Ground
Trotting & Greyhound Tracks
URANA
High Sch.
College of TAFE
Kurrajong Pk Spec. Sch.
Museum
Model Train Rides
Lookout & Resvr.
Riverina-Murray Institute of Higher Education (South Campus)
Child Remand Centre
Oval
FERNLEIGH
RAFC Bowling Club
Park
Turvey Park
Botanic Gardens
Zoo
BLAMEY
HEYDON AV.
LINDSAY
SUNSHINE AV.
GRANDVIEW AV.
ATHOL
WOODEN ST.
BOLGER
MACLEAY
DOYLE AV
MARGARET ST.
PHILLIP AV
BELTANA AV
Aged Peoples Home
THWAITES ST.
CAPTAIN COOK DR.
EDWARD ST
BEAUTY POINT AV.
WATTLE
SHERWOOD
WHITE
WILSON
GROVE
ALBERT
FAY
DRIVE
R C P.S
OXLEY ST.
MAIN
Lagoon


WALCHA
Uralla 40 km
Armidale 64 km
John Oxley Sportsground
URALLA ROAD
PLUMSTREE STREET
Ohs Homestead 2 km
JAMIESON STREET
Industrial Subdivision
NORTH STREET
General Cemetery
Racecourse
HILL STREET
APSLEY STREET
Churchill Street
Hamilton Street
Commercial Lane
Golf Club
Saleyards
Aerodrome
Oxley
Tamworth 93 km
FITZROY STREET
Highway
Evans Street
Walsh Street
Memorial Avenue
CROUDACE STREET
LEGGE STREET
TOWERS
TREE
MERIDIAN
SOUTH
DERBY
MIDDLE
LAGOON
ANGLE
Langford Homestead 1 km
I1
I2
I3
I4
I5
I6
S1
S2
S3
S4

APPENDIX B: SAMPLING FRAME

SITE ALLOCATION TABLE 1

6 SERVICE STATIONS
4 INTERSECTIONS

		DAY						
Session	Time	1	2	3	4	5	6	7
1	0800-0930	S1	S4	S3	S5	S2	S1	S6
	0930-1030	I1	I4	I1	I2	I3	I4	I1
	1030-1200	S2	S6	S5	S1	S3	S2	S4
2	1200-1330	S3	S2	S4	S4	S1	S4	S5
	1330-1430	I2	I2	I3	I1	I1	I3	I4
	1430-1600	S4	S5	S1	S2	S6	S3	S2
3	1600-1730	S5	S1	S6	S3	S4	S5	S3
	1730-1830	I3	I3	I4	I4	I2	I2	I3
	1830-2000	S6	S3	S2	S6	S5	S6	S1

SERVICE STATIONS	INTERSECTIONS
S1	I1
S2	I2
S3	I3
S4	I4
S5	
S6	

SITE ALLOCATION TABLE 2

5 SERVICE STATIONS
5 INTERSECTIONS

		DAY						
Session	Time	1	2	3	4	5	6	7
1	0800-0930	S1	S2	S4	S2	S5	S3	S1
	0930-1030	I1	I4	I3	I2	I4	I5	I2
	1030-1200	S2	S3	S2	S5	S1	S1	S4
2	1200-1330	S3	S4	S5	S1	S2	S4	S2
	1330-1430	I2	I5	I4	I5	I3	I4	I1
	1430-1600	S4	S5	S3	S2	S3	S2	S5
3	1600-1730	S5	S1	S4	S3	S4	S5	S4
	1730-1830	I3	I1	I2	I3	I1	I5	I4
	1830-2000	S1	S3	S1	S4	S5	S3	S5

SERVICE STATIONS	INTERSECTIONS
S1	I1
S2	I2
S3	I3
S4	I4
S5	I5

APPENDIX C: SURVEY FORM

Location

Count

Time

Vehicle Type

1=ute/panel van
2=car/station wagon
3=van (3 seats)

DRIVER

Belt Use | Belt Type | Sex | Age

NURSED CHILD