THE MELBOURNE BIKEWAY PLAN

DEPARTMENT OF YOUTH SPORT AND RECREATION, 570 BOURKE ST. MELBOURNE

Department of Youth, Sport and Recreation of Victoria

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The Melbourne Bikeway Plan was prepared by the Centre for Environmental Studies at the University of Melbourne.

The Department wishes to draw to the attention of the reader of this report, that the results presented in this report were not collected from a statistically random sample and thus should not be extrapolated to the total population of Melbourne.

The Department would welcome comments, suggestions and criticisms of the report.

Errata

P. 19 - 4th 1st line should read "A peak of 0.81 bicycles per capita..."

P. 93 - Glenhuntly should be deleted from the Hawthorn group as it is already included in the Caulfield group on Page 88.

THE MELBOURNE BIKEWAY PLAN

Jeremy Pike
Tony Conquest

Centre for Environmental Studies
University of Melbourne

July 1976

ACKNOWLEDGEMENTS

The Centre for Environmental Studies is grateful for the help provided by the thousands of people who completed the questionnaires and who supplied information. In particular, we would like to thank:

The Department of Youth, Sport and Recreation
Each of the cities and shires in the Melbourne Metropolitan area
The high schools, technical schools and primary schools
The universities and colleges
The Bicycle Institute of Victoria
The State Bikeway Committee
The Victorian Railways
The Country Roads Board
R.O.S.T.A.
Melbourne & Metropolitan Board of Works
Bicycle Manufacturers of America
Urban Systems Corporation
South Melbourne Record
Standard Newspapers
National Capital Commission, Ottawa, Canada

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send to Jeremy Pike
CENTRE FOR ENVIRONMENTAL STUDIES - UNIVERSITY OF MELBOURNE
Parkville, Vic. 3052.

The Victorian Department of Youth, Sport & Recreation has commissioned the Centre for Environmental Studies to prepare a bikeway plan for Melbourne. There are many problems to be solved and we need your help.

Please fill out this questionnaire and return it to the distributor or the Centre for Environmental Studies, University of Melbourne, Parkville, 3052. We would appreciate sharing your ideas, opinions and suggestions, so we can help make Melbourne safer and more enjoyable for motorist and cyclist alike.

In which suburb is your household? .....

Number of people in household .....

Number of bikes in household .....

Number of cars in household .....

map

If you use any routes that you consider safe mark them on a map and send them to us.

Complete a separate column for each bicycle rider in your household by filling in the boxes with the requested information or by placing an X in the appropriate box.

Bike riders in household		1	2	3	4	5	6	7
Age of bike riders								
Number of round bike trips per week								
Average length of round trip (miles)								
Usual destination	Work							
	School							
	Shopping							
	Recreation Area							
	No destination							
	Other							
Occupation of riders	Student							
	Manual work							
	Clerical/sales, etc							
	Professional work							
	Housework							
Bike used primarily on	Weekend							
	Weekday							
What prevents more use of bikes	Danger from traffic							
	Fear of theft							
	Lack of storage facilities							
	Weather - specify type							
	Other - specify							
Why do riders use bikes	Exercise							
	Fun							
	Economic reasons							
	Social reasons							
	Other - specify							
How far would you travel to link in with a safe bicycle route	¼ Mile							
	½ Mile							
	1 Mile							
	more - specify							

Non-bike riders in household		1	2	3	4	5	6	7
Age of non-bike riders								

Would cyclists in your household use bike paths YES/NO

P.T.O.

FIGURE 1 The Bicycle Questionnaire

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Two similar, though quite different, terms are used in this study to describe bicycle riding facilities; they are bicycle path and bicycle route. A bicycle path as described in this report is a path for cyclists to use which is completely separated from motor vehicle traffic. A bicycle route uses the existing street system.

As the plan was developed it was reviewed with representatives of the Department of Youth, Sport and Recreation and where relevant with representatives of the different cities and shires.

FIGURE 2 The Melbourne and Metropolitan Board of Works planning area and the extent of the urbanised area. 1971.

MELBOURNE: A BACKGROUND FOR THE BIKEWAY PLAN

Melbourne is a vast sprawling city. The area within the present Melbourne and Metropolitan Board of Works planning area boundary is 5028 square kilometres (1942 square miles). This is one sixth the area of Belgium and almost one third the area of Wales. Melbourne's 1971 population within the planning area was 2,455,519.

The city occupies a complex geological region. Low flat coastal plains in the south-east merge into the Dandenong Ranges to the east. Basalt plains rise to the foothills of the Great Dividing Range along the northern boundary of the metropolitan area. A series of rivers and streams dissect this area, converging at the head of Port Phillip Bay. The radial pattern of valleys and ridges thus formed has influenced the development of the city since its inception in 1835 as the early roads and later the railways tended to follow the ridge lines. In the late 1960's and 1970's freeways were either built or proposed along many of the river valleys. While this pattern of valleys, ridges and transportation routes has established Melbourne's radial pattern of development, it has been the north-south, east-west street system based on the one mile square grid established by Robert Hoddle in the 1840's that has given Melbourne its dominant, characteristic rectangularity. The relatively limited extent of the tramway system, completely electrified by 1940, consolidated the inner suburban growth but did not substantially alter the radial development of the outer suburbs.

Expansion of the city has been heavily accentuated towards those areas east and south of the central business district. Fifteen percent of the city's population is housed in the inner suburbs occupying only 5% of the area. The other 85% of the population is spread fairly uniformly throughout the middle and outer suburbs which were developed after the First World War.

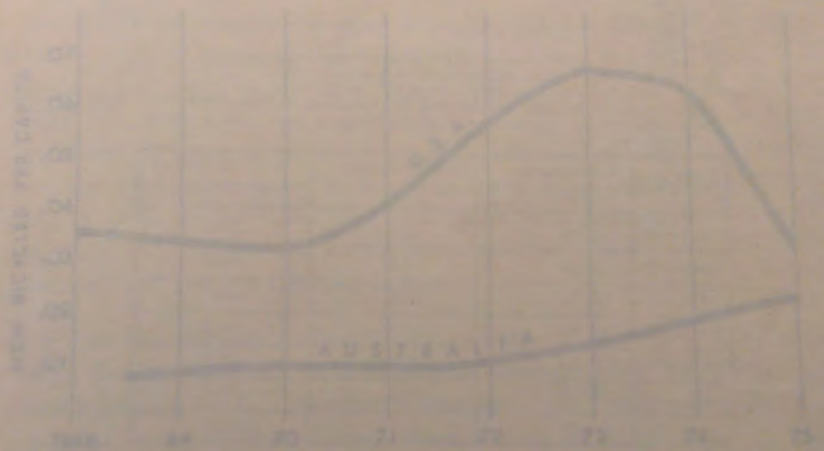
In 1971, open space and reservations accounted for 19.2% of the city's land area. This public land is scattered over the whole city although more or less continuous parkland strips are planned or have been developed along several river valleys, i.e. Yarra, Maribyrnong and Gardiners Creek. The bayside beaches are areas of extensive recreational and scenic value.

Industry is concentrated to the west of the city and around its core, while to the east it tends to be stretched along the major transportation routes. Since 1946, the more recently established industries have taken up land in the northern and south eastern suburbs. Retail development is concentrated in the central business district. In the middle suburbs, shopping centres have expanded in a linear fashion along the major roads. Since the late 1950's, several regional shopping centres have been built in places easily reached by car.

The central business district has been and still is the major employment centre. Other less significant employment centres are at Box Hill, Hawthorn, Oakleigh, Bentleigh, Dandenong and Frankston.

The climate of Melbourne is temperate. The mean daily maximum temperature is 19.8°C. and the mean daily minimum is 10.9°C. Temperature extremes increase as the distance from Port Phillip Bay increases. While there are approximately 150 wet days a year, there are only 123 when the rainfall is likely to be between .25mm. and 6.3mm. (.01 inch and .25 inch). There are only approximately 18 days a year when the rainfall is likely to be between 6.6mm. and 12.7mm. (.26 inch and .5 inch). Fogs can be expected 20 days a year. Wind gusts greater than 63 km/hour can be expected 60 days each year. This means that for most cyclists, there are between 270 and 330 cycling days a year.

As only approximately 5% of the urbanised area is too hilly for easy cycling, and as the climate allows cycling to be a year-round activity, Melbourne is a suitable city in which to develop a bicycle path network.



THE BICYCLE IN MELBOURNE

THE BICYCLE REVIVAL

There has been much comment and discussion on the current bicycle boom in Australia. Unfortunately there is little precise information on the characteristics of this boom. Typically, we see statistics from the United States being used to illustrate what is probably happening in Australia. This can be misleading, especially if one compares the actual sales and the per capita sales of bicycles in each country.

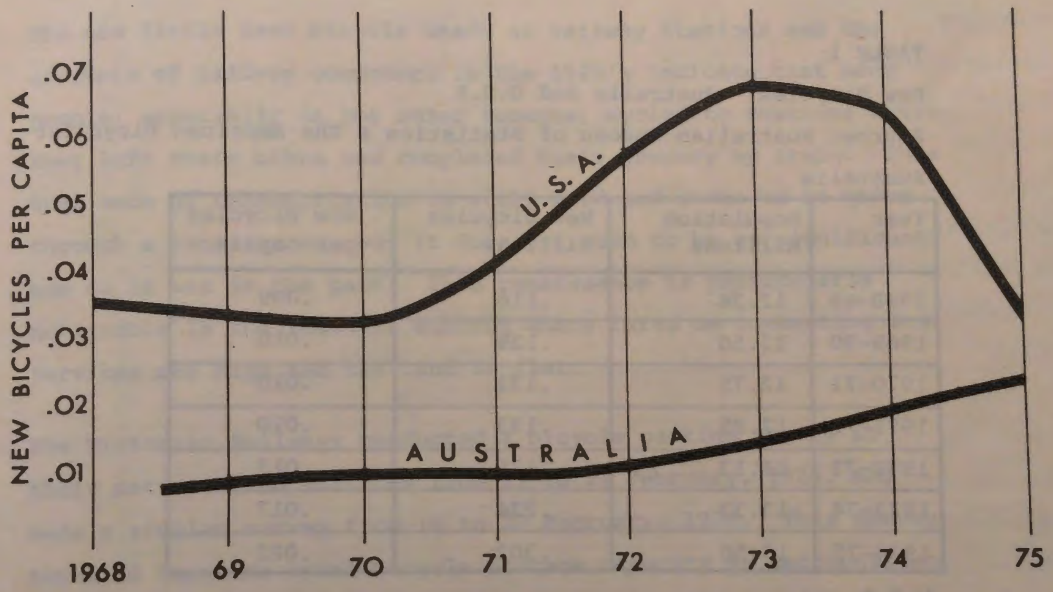


Figure 3 New bicycles per capita, Australia and USA
Source: Australian Bureau of Statistics and American Bicyclist

As is shown in Figure 3, the response to the bicycle boom has been much less explosive in Australia than in the United States. In Australia, the boom started later in 1971 compared with 1970 in the U.S. and does not show signs of collapsing quite as dramatically as it did in the U.S. after 1973. According to the Bicycle Manufacturers Association of America, the dramatic drop in U.S..bicycle sales was primarily caused by the economic slow down from 1973 to 1975. Although no Australian figures are available, discussions with bicycle manufacturers and retailers in Melbourne indicate that the greatest proportion of the

recent increase in bicycle sales in Melbourne at least, has been that of light weight, multi-geared bikes to teenagers and young adults.

Information published by the Australian Bureau of Statistics shows that Australian bicycle manufacturers and fabricators were only able to satisfy 71% of the local demand in 1974/75, whereas prior to 1972/73 they were able to satisfy over 90% of the demand. In 1974, imports from Taiwan, Japan and the U.K. accounted for 29% of the bicycle supply in Australia.

TABLE 1

New Bicycles - Australia and U.S.A.

Source: Australian Bureau of Statistics & The American Bicyclist

Australia

Year	Population Millions	New Bicycles Millions	New Bicycles per capita
1968-69	12.26	.116	.009
1969-70	12.50	.129	.010
1970-71	12.75	.132	.010
1971-72	12.95	.133	.010
1972-73	13.13	.175	.013
1973-74	13.33	.234	.017
1974-75	13.50	.302	.022

U.S.A.

Year	Population Millions	New Bicycles Millions	New Bicycles per capita
1968	200.8	7.5	.037
1969	202.3	7.1	.035
1970	205.3	6.9	.033
1971	207.0	8.8	.042
1972	209.5	13.9	.066
1973	211.3	15.2	.071
1974	213.4	14.1	.066
1975	215.1	7.3	.033

THE BICYCLE IN MELBOURNE

Since the late 19th Century, bicycles have been an integral part of the Melbourne scene. Although there is little documented information on the past use of bicycles in Melbourne, there is reason to believe that they were used much more for commuting to work and school than they are now.

The now little used bicycle sheds at railway stations and the accounts of railway commuters in the 1920's indicate that many people, especially in the outer suburbs, cycled to stations where they left their bikes and completed their journey by train. This dual mode of transportation is still used and seems to be going through a renaissance, but it does not seem to be as significant now as it was in the past. This renaissance is particularly noticeable in the southern suburbs where fares on connecting bus services are high and the land is flat.

The Victorian Railways conducted a bicycle parking survey at their metropolitan stations from 17 to 21 February, 1975, and made a similar survey from 16 to 20 February, 1976. This survey revealed that the total bicycle storage capacity at metropolitan stations increased by 8% from 2236 places in 1975 to 2425 places in 1976. The survey also showed that there had been a 14.6% increase in the use of these facilities from 1179 in 1975 to 1372 in 1976. A summary of railway station storage of bicycles per 1000 commuters by city and shire in Melbourne is shown in Table 2.

TABLE 2

Railway Station storage of bicycles per 1000 commuters by city and shire in Melbourne. Based on Victorian Railway Metropolitan bicycle storage figures for 1975 and commuter figures for 1974.

City/Shire	Bicycles stored at stations per 1000 commuters	City/Shire	Bicycles stored at stations per 1000 commuters
Frankston	17.35	Camberwell	1.27
Lillydale	14.02	Ringwood	1.15
Waverley	13.46	Northcote	.68
Springvale	11.71	Heidelberg	.57
Sandringham	11.59	Box Hill	.56
Chelsea	10.02	Footscray	.50
Sunshine	9.99	Brunswick	.45
Brighton	8.86	Essendon	.38
Moorabbin	8.82	St. Kilda	.13
Croydon	7.6	Prahran	.01
Knox	7.07	Collingwood	0
Mordialloc	7.06	Fitzroy	0
Oakleigh	6.49	Melbourne	0
Nunawading	5.60	Port Melbourne	0
Sherbrooke	5.26	Richmond	0
Whittlesea	5.11	South Melbourne	0
Broadmeadows	4.93	Berwick	N.A.
Diamond Valley	4.50	Bulla	N.A.
Eltham	3.70	Cranbourne	N.A.
Dandenong	3.65	Doncaster & Templestowe	N.A.
Coburg	3.15	Healesville	N.A.
Williamstown	2.84	Keilor	N.A.
Hawthorn	2.56	Kew	N.A.
Malvern	2.20	Melton	N.A.
Altona	1.85	Pakenham	N.A.
Caulfield	1.6	Werribee	N.A.
Preston	1.46		

For the 1929 Report of the Metropolitan Town Planning Commission, a census was taken of vehicles (including bicycles) crossing Queens Bridge and Princes Bridge in April 1924 and December 1926. The Victorian Police included a count of bicycles crossing these bridges in traffic surveys conducted from 1938 to 1950. A summary of these figures, which give some idea of the changing use of bicycles in Melbourne, is included in Table 3.

TABLE 3

A summary of bicycles crossing Queens Bridge and Princes Bridge, 1924-1950.

DATE	QUEENS BRIDGE	PRINCES BRIDGE
29/4/24	1921	1645
2/12/26	1894	1503
15/12/38	2315	3212
10/12/41	1995	1894
17/12/43	816	769
13/12/45	1070	1167
10/12/47	751	1100
14/12/49	541	605
13/12/50	731	779

Before the rapid expansion of suburban schools in the 1950's, it was not uncommon for primary and secondary schools to have catchment areas of up to 8km in radius. Storage sheds were provided at schools for the students who, in many cases, had to cycle to school. Now, with the catchment area radius down to 1.2km for many primary schools and from 3-5km for many high schools, school is within easy walking distance for most children. Heavy road traffic makes cycling to school extremely hazardous and dangerous in some locations. At the 535 state primary schools in the metropolitan area surveyed for this report, an average of 3.8% of the students rode bicycles to school. Table 3 summarizes the number of children riding to school compared with the primary school enrolment in each of the cities and shires in the metropolitan area. The highest use of bicycles ridden to primary schools was in Cranbourne. This was closely followed by the bayside suburbs of Mordialloc, Chelsea and Sandringham. The lowest use was in the inner suburbs of Richmond and Fitzroy where no children rode to school. In many instances, principals banned the riding of bicycles to school for safety reasons. However, there were many instances where bicycles were banned because they had continually been tampered with by children at school.

At the 177 state high and technical schools in the metropolitan area surveyed for this report, there were an average of 14.6% of the students cycling to school. Table 4 summarizes the number of students riding to school compared with the total enrolment at each of the state high and technical schools in the Melbourne metropolitan area. The highest use of bicycles ridden to these schools was in the bayside suburbs of Brighton, Sandringham, Chelsea, Moorabbin, Mordialloc and Williamstown. The lowest use was in Fitzroy where no students rode to school.

TABLE 4

Summary of children riding bicycles to school compared with total enrolment for State Primary Schools in each city and shire in the Melbourne Metropolitan area. June 1976.

City/Shire	Children riding bicycles to school	Total enrolment	Percent of riders to total enrolment
Cranbourne	165	976	16.9%
Healesville	30	204	14.7%
Mordialloc	380	2,783	13.6%
Chelsea	214	2,284	9.3%
Sandringham	280	3,062	9.1%
Springvale	824	9,505	8.6%
Melton	144	1,678	8.5%
Heidelberg	486	5,755	8.4%
Brighton	150	2,040	7.3%
Werribee	218	3,040	7.1%
Bulla	100	1,438	6.9%
Pakenham	57	862	6.6%
Frankston	488	8,145	5.9%
Croydon	201	3,450	5.8%
Moorabbin	405	7,190	5.6%
Knox	602	11,124	5.4%
Berwick	176	3,204	5.4%
Sherbrooke	114	2,254	5.0%
Williamstown	107	2,274	4.7%
Oakleigh	265	5,790	4.5%
Nunawading	447	10,368	4.3%
Box Hill	201	4,745	4.2%
Malvern	101	2,414	4.1%
Lillydale	238	6,057	3.9%
Altona	148	3,873	3.8%

	Children riding bicycles to school	Total enrolment	Percent of riders to total enrolment
Waverley	482	12819	3.7%
Keilor	334	9286	3.5%
Eltham	112	3434	3.2%
Doncaster & Templestowe	331	10429	3.1%
Caulfield	77	2705	2.8%
Camberwell	158	5836	2.7%
Whittlesea	183	6594	2.7%
Ringwood	100	4103	2.4%
Diamond Valley	141	5651	2.4%
Kew	22	960	2.2%
Hawthorn	47	2193	2.1%
Dandenong	120	6171	1.9%
Preston	149	8093	1.8%
Sunshine	156	8224	1.8%
Broadmeadows	191	13207	1.4%
Essendon	42	2981	1.4%
Footscray	42	4506	.93%
Prahran	21	2667	.78%
Northcote	36	4565	.78%
Port Melbourne	6	1015	.59%
Coburg	31	5311	.58%
South Melbourne	6	1535	.39%
St. Kilda	6	1897	.31%
Brunswick	9	3780	.23%
Melbourne	3	4048	.07%
Collingwood	1	1603	.06%
Fitzroy	0	1695	0
Richmond	0	1665	0

TABLE 5

Summary of High School Students riding bicycles to school compared with total enrolment for State High & Technical Schools in each city and shire in the Melbourne Metropolitan area. June 1976

City/Shire	Children riding bicycles to school	Total enrolment	Percent of riders to total enrolment
Brighton	550	1,320	41.6%
Sandringham	870	2,280	38.1%
Chelsea	1,160	2,803	35.8%
Moorabbin	1,160	3,350	34.6%
Mordialloc	500	1,453	34.4%
Williamstown	535	1,710	31.2%
Nunawading	1,025	3,655	28.0%
Springvale	770	2,887	26.6%
Melton	120	460	26.0%
Oakleigh	1,000	3,930	25.4%
Keilor	960	3,930	24.4%
Dandenong	430	1,880	22.8%
Altona	483	2,320	20.8%
Croydon	380	1,851	20.5%
Caulfield	380	1,980	19.1%
Cranbourne	50	262	19.08%
Knox	890	5,090	17.4%
Box Hill	465	2,820	16.4%
Ringwood	460	1,533	15.3%
Broadmeadows	1,271	8,572	14.8%
Waverley	767	5,204	14.7%
Frankston	805	5,500	14.6%
Diamond Valley	280	1,970	14.2%
Werribee	240	1,700	14.1%
Berwick	375	2,855	13.1%

City/Shire	Children riding bicycles to school	Total enrolment	Percent of riders to total enrolment.
Northcote	270	2,500	10.8%
Preston	720	7,430	9.6%
Camberwell	161	1,666	9.6%
Lillydale	430	4,461	9.6%
Hawthorn	96	1,000	9.6%
Coburg	351	3,660	9.5%
St. Kilda	90	1,150	7.8%
Heidelberg	389	5,020	7.7%
Bulla	50	650	7.6%
Sunshine	492	7,310	6.7%
Malvern	63	1,020	6.1%
Whittlesea	110	2,122	5.1%
Sherbrooke	85	1,641	5.1%
Brunswick	100	1,970	5.0%
Doncaster & Templestowe	110	2,237	4.9%
Essendon	113	2,360	4.7%
South Melbourne	73	1,825	4.0%
Eltham	42	1,300	3.2%
Melbourne	85	3,034	2.8%
Footscray	55	2,200	2.5%
Richmond	30	1,700	1.7%
Kew	12	760	1.5%
Prahran	30	2,107	1.4%
Collingwood	12	1,950	.61%
Fitzroy	0	1,210	0%
Healesville	-	-	-
Pakenham	-	-	-
Port Melbourne	-	-	-

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PER CAPITA BICYCLE OWNERSHIP

WHO RIDES BICYCLES IN MELBOURNE?

A graph of the estimated per capita use of bicycles in Melbourne is shown in Figure 4. This graph is based on information derived from questionnaires returned from 3413 households covering the cycling habits of 11,200 people. From this same source, it is estimated that approximately 20% of the population ride bicycles in Melbourne. This means that there are probably between 450,000 and 500,000 cyclists in the city.

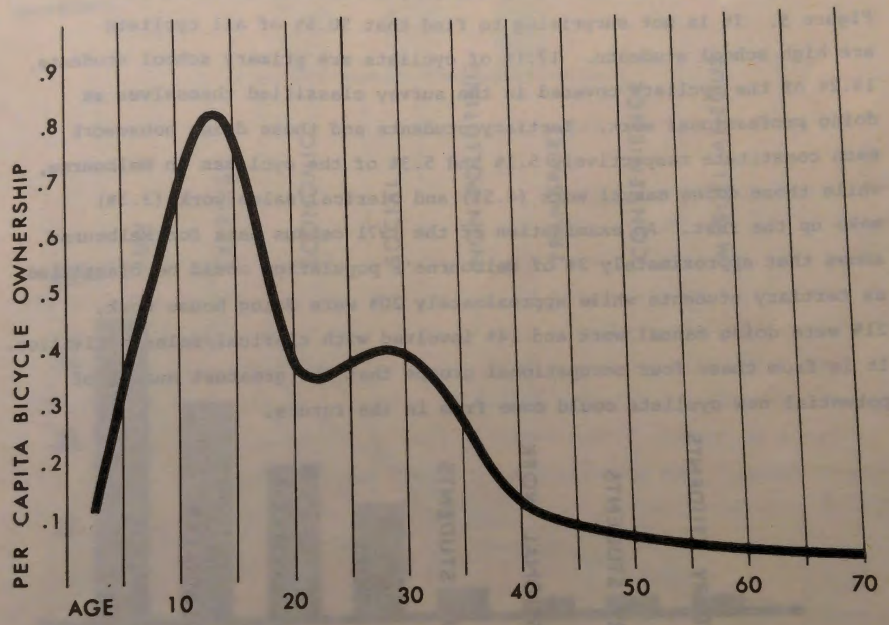

FIGURE 4 Estimated per capita bicycle ownership - Melbourne.
Source: Centre for Environmental Studies Survey

Figure 4 shows that bicycle ownership by children under 5 is minimal. They are not strong enough nor are they well coordinated at this age.

From age 5 to the mid teens, there is a steady increase in the ownership of bicycles. A peak of 8.1 bicycles per capita is reached at age 14 when the need for mobility is high and public transport is the only other means of independent travel. Bicycle ownership decreases in the late teens and early twenties as the ability to drive and own a car increases.

The ownership of bicycles continues to decline until it levels out at about .3 per capita in the early 20's age group. It then increases slightly to approximately .4 per capita in the late 20's. From the age of 30 onwards, the per capita ownership of bicycles gradually decreases. There is very little ownership of bicycles by people over 65 years of age. It would seem that the greatest potential increase in the ownership and use of bicycles can be expected in the 20-30 year age group.

Cycling seems now to be predominantly an activity of the comfortable middle class. A breakdown of cyclists by occupation is shown in Figure 5. It is not surprising to find that 50.5% of all cyclists are high school students. 17.1% of cyclists are primary school students. 14.2% of the cyclists covered in the survey classified themselves as doing professional work. Tertiary students and those doing housework each constitute respectively 5.1% and 5.3% of the cyclists in Melbourne, while those doing manual work (4.5%) and clerical/sales work (3.3%) make up the rest. An examination of the 1971 census data for Melbourne shows that approximately 2% of Melbourne's population could be classified as tertiary students while approximately 20% were doing house work, 21% were doing manual work and 14% involved with clerical/sales activities. It is from these four occupational groups that the greatest number of potential new cyclists could come from in the future.

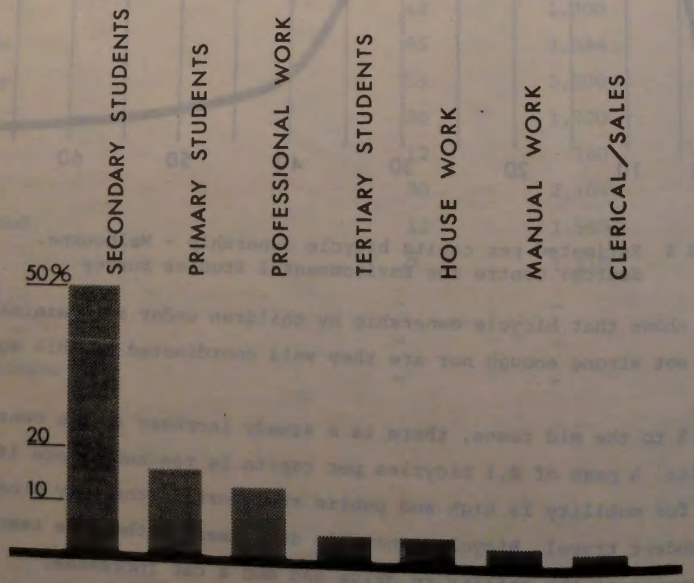

FIGURE 5 Cyclists and occupations - Melbourne.
Source: Centre for Environmental Studies Survey

WHY DO PEOPLE RIDE BICYCLES?

While cyclists ride bicycles for a great many reasons, our survey revealed that most people ride for fun or exercise. Thirty six percent indicated that they rode for fun and 28% cycle for exercise. Only 18% said that they cycle for economic reasons and 1.4% for transportation reasons. These facts summarised in Figure 6 probably differ considerably from pre 1940 when the need to cycle for economic and transportation reasons would have been more compelling and necessary.

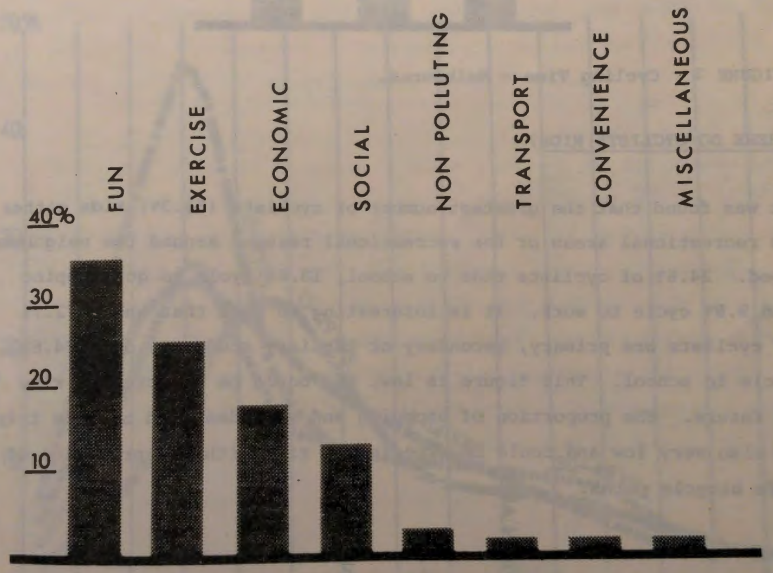

FIGURE 6 Reasons for cycling - Melbourne.
Source: Centre for Environmental Studies Survey

WHEN DO CYCLISTS RIDE?

As indicated in Figure 7, there is slightly more cycling done during the week than on the weekend. 39% of cyclists indicated that they ride primarily on weekdays while 34% ride primarily on the weekend. 27% of cyclists ride as often on the weekend as during the week.

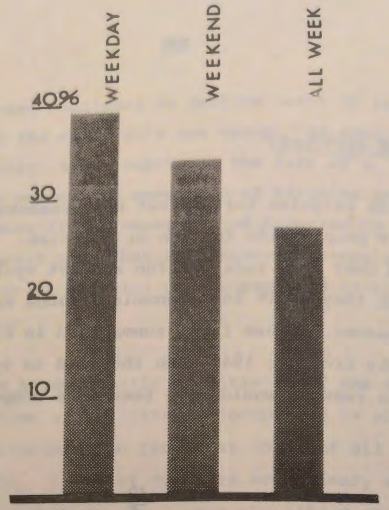

FIGURE 7 Cycling Time - Melbourne.

WHERE DO CYCLISTS RIDE?

It was found that the greatest number of cyclists (34.3%) ride either to recreational areas or for recreational reasons around the neighbourhood. 24.6% of cyclists ride to school, 18.8% cycle to go shopping and 9.8% cycle to work. It is interesting to note that while 72.7% of cyclists are primary, secondary or tertiary students, only 24.6% cycle to school. This figure is low, and could be expected to rise in future. The proportion of shopping and work destined bicycle trips is also very low and could be expected to rise with the provision of safe bicycle paths.

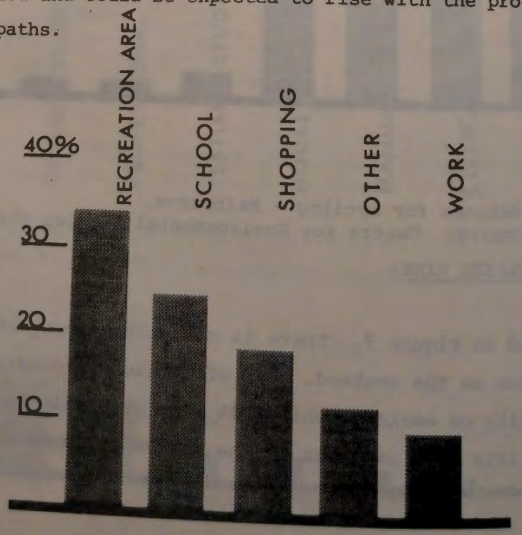

FIGURE 8 Cyclists' destination - Melbourne.
Source: Centre for Environmental Studies Survey

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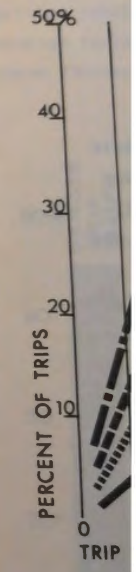

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TRIP LENGTH

the percent of one way bicycle trips by age group and distance is shown in Figure 9. The 0-9, 10-14 and 30-49 age groups all have the highest percentage of one way trips at 1.5km. The stronger 15-29 age group has the highest percentage of trips at 2.25km. No one way trips by the 0-9 age group was longer than 3km while for each other age groups, the percent of one way trips gradually falls off to 7km. Very few cyclists make trips over 7km. The average one way trip for all cyclists was 2.75km (1.73 miles).

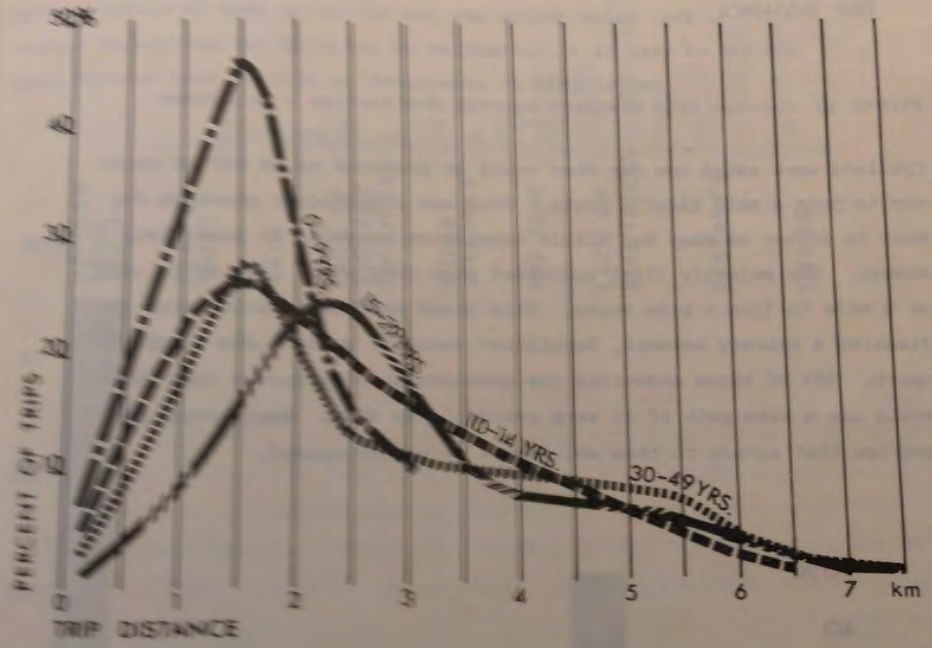


FIGURE 9 One-way trip distance by age - Melbourne.
Source: Centre for Environmental Studies Survey

The relationship between the destination of one way bicycle trips and the distance travelled is shown in Figure 10. The highest percentage of shopping trips and trips of no destination is 1.5km. Work and school trips peak at 2.5km, while trips to recreation ares peak at 1km, (the local park) then peak again at 3km (the local recreation reserve with sporting facilities). Work trips are the longest at 7km.

TRIPS PER WEEK

Figure 13 shows the variation in the number of bicycle round trips per week. Clearly the highest number of trips is five per week. This is made up primarily by those cycling to school and work.

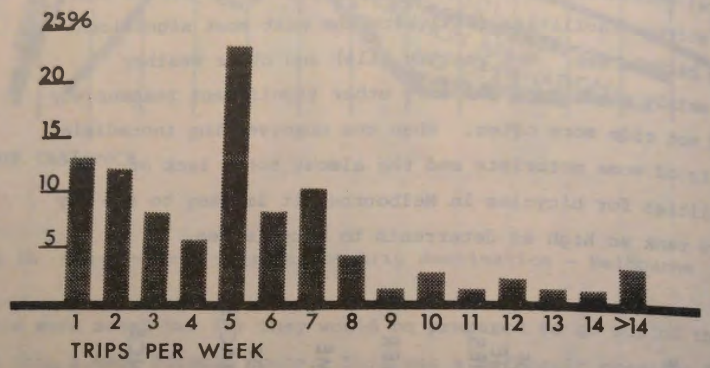


FIGURE 13 Number of round bicycle trips per week - Melbourne.
Source: Centre for Environmental Studies Survey

Map 1 gives an indication of the characteristics of bicycle use on Melbourne's street and path system. It is based on information from the returned questionnaires indicating the routes followed by cyclists. A failure to return the questionnaires by some groups and an inability to reach other groups made it possible to obtain only a partial coverage of the whole metropolitan area. However, the following observations can be made:

Bicycle trips to the central business district seldom originate beyond a radius of 10km from the G.P.O. Beyond that distance, bicycle trips tend to be locally concentrated towards schools, shopping centres and recreation areas.

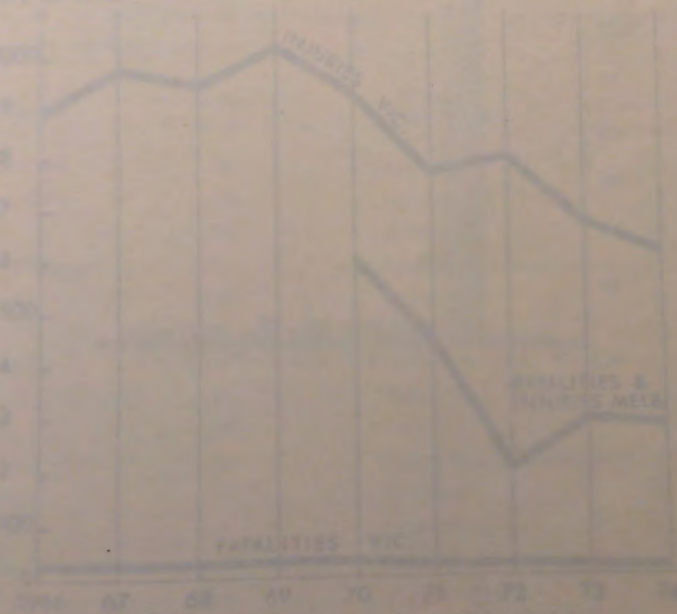
Bicycle movement to the CBD primarily comes from the inner southern and eastern suburbs. Very little bicycle traffic to the CBD comes from the western suburbs.

Short cuts are often made through parks.

Cyclists usually take the most direct route to their destination. This often means they use the heavily trafficked main roads. The significance of the Hoddle grid can be seen as can the significance of diagonal routes which cut across the grid.

The Yarra River Bikeway shows as being one of the busiest bicycle routes.

BICYCLE SAFETY



BICYCLE SAFETY

BICYCLE SAFETY

The very individual nature of cycling means that many bicycle accidents are never reported. Precise records of bicycle accidents in Melbourne over a long period of time are unavailable as the method of reporting them has changed several times. There was a 52% drop in the number of reported cyclist accidents involving fatalities or personal injuries in Melbourne from 615 in 1970 to 291 in 1974. This reflected a similar though smaller drop in cyclist accidents in Victoria from 1970 to 1974.

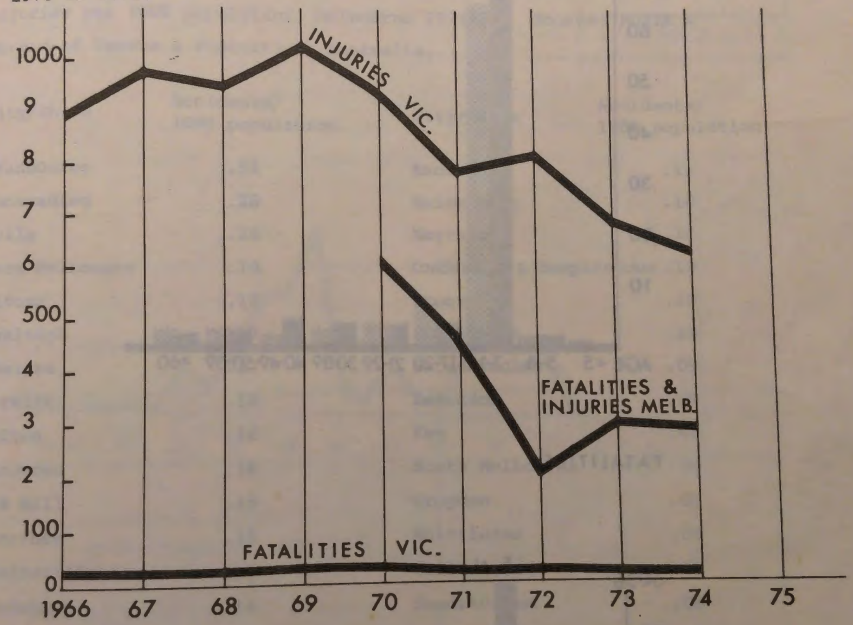


FIGURE 14 Cyclist fatalities and injuries - Melbourne and Victoria.
Source: ROSTA and Bureau of Census and Statistics - Australia.

TABLE 6

Pedal cyclists killed & injured in Victoria

Source: Australian Bureau of Statistics, Victorian Branch

YEAR	1966	1967	1968	1969	1970	1971	1972	1973	1974
KILLED	38	36	35	38	40	28	31	28	22
INJURED	907	986	958	1033	946	792	825	693	631

Statistics for the State of Victoria indicate that the age group 7-16 accounts for an overwhelming number of fatalities and injuries to both male and female cyclists. The proportion of fatalities and injuries to other age groups is relatively minor in comparison. In 1974 2.8% of the reported bicycle accidents involved fatalities, 85.9% involved personal injury and 11.3% involved property damage.

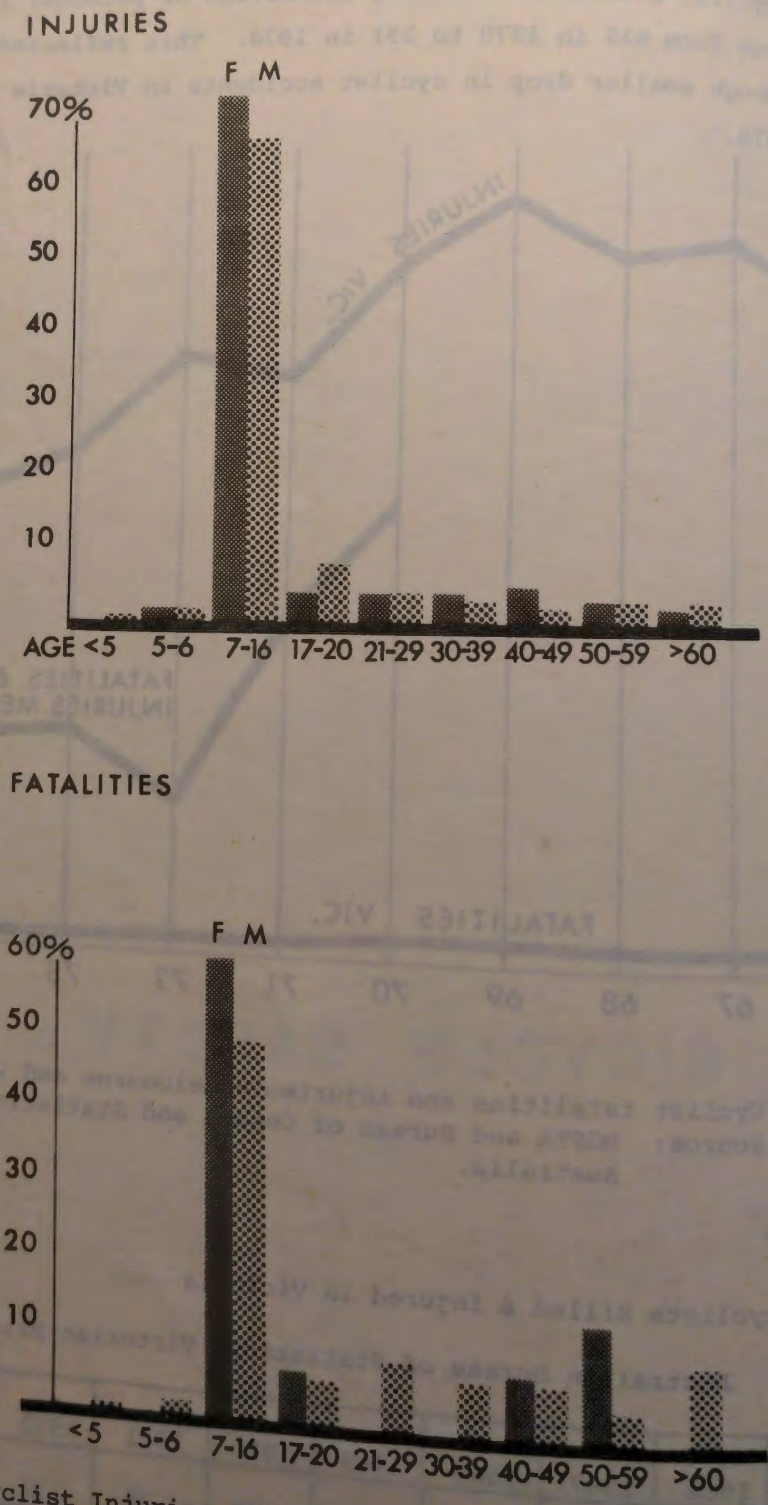


FIGURE 15 Cyclist Injuries and Fatalities by age groups Source: Bureau of Census and Statistics, Australia.

The bicycle accident rate per thousand population for each of the cities and shires in Melbourne is listed in table 7. Based on the reported accidents for 1972, 73 and 74 the Shires of Cranbourne, Bulla and the City of Nunawading had the highest accident rates. These are all areas of expanding population through which there are major traffic arteries. The suburbs of Prahran, Richmond and St Kilda, with a higher than average proportion of older people, have the lowest per capita bicycle accident rate.

TABLE 7 Reported bicycle accidents involving fatalities and personal injuries per 1000 population, Melbourne 1972-74. Source: ROSTA & Bureau of Census & Statistics, Australia.

City/Shire	Accidents/ 1000 population	City/Shire	Accidents/ 1000 population
Cranbourne	.51	Knox	.11
Nunawading	.28	Heidelberg	.10
Bulla	.28	Northcote	.10
Port Melbourne	.19	Doncaster & Templestowe	.10
Altona	.18	Brunswick	.10
Oakleigh	.17	Sherbrooke	.10
Chelsea	.17	Broadmeadows	.09
Berwick	.16	Essendon	.09
Melton	.16	Kew	.09
Ringwood	.16	South Melbourne	.09
Box Hill	.15	Croydon	.09
Werribee	.15	Whittlesea	.09
Healesville	.15	Collingwood	.09
Dandenong	.14	Sandringham	.08
Mordialloc	.14	Hawthorn	.08
Sunshine	.13	Camberwell	.07
Frankston	.13	Coburg	.07
Footscray	.13	Fitzroy	.07
Williamstown	.13	Malvern	.07
Moorabbin	.12	Preston	.06
Caulfield	.12	Brighton	.06
Springvale	.12	Diamond Valley	.06
Lillydale	.12	Waverley	.05
Eltham	.12	Prahran	.04
Melbourne	.11	Richmond	.04
Keilor	.11	St Kilda	.02

An analysis of the 1974 bicycle accident statistics for Melbourne shows that the most accidents occurred on Tuesday (21.7%) and Friday (20.8%) see table 8, Figure 16 shows that 18.9% of these accidents occurred between 3 pm and 4 pm.

TABLE 8

Percent of reported bicycle accidents involving a fatality or personal injury by days of the week - Melbourne 1974.

Source: ROSTA

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
% Accidents	11.3	21.7	16.0	12.3	20.8	11.3	6.6

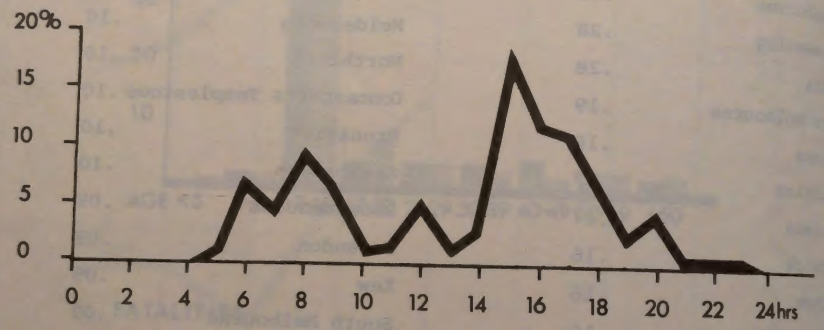


FIGURE 16 Percent of bicycle accidents by hour, Melbourne 1974.
Source: ROSTA

87.7% of bicycle accidents occurred when road conditions were dry while 12.3% occurred when road conditions were wet. It is significant to note that 84.0% of bicycle accidents occurred during the day, while 1.9% occurred at dawn, 6.6% at dusk and 7.5% at night.

March was the worst month for bicycle accidents when 18.2% occurred. The winter months of June and July had the lowest number of bicycle accidents. See table 9.

TABLE 9

Reported bicycle accidents involving a fatality or personal injury by months of the year - Melbourne 1974.

Source: ROSTA

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
% Accidents	12.7	10.9	18.2	7.3	7.3	5.5	5.5	7.3	9.1	1.8	9.1	5.5

A breakdown of the cause of reported 1974 bicycle accidents in Melbourne involving a fatality or personal injury is shown in table 10. 57% of these accidents occurred at intersections and 43% at mid-block locations. The greatest number of accidents occurred with a cyclist entering the path of an oncoming vehicle. A disturbing fact from the cyclist's point of view was that 16% of accidents were caused when cyclists were struck from behind. A system of bicycle paths could substantially reduce this figure.

TABLE 10

Reported bicycle accidents - Melbourne 1974. Fatalities and personal injuries.

Source: ROSTA

Type of accident	Total number reported	Percentage
Cyclist struck from behind	41	16%
Cyclist entering the path of oncoming vehicle	172	65%
Car turning right against oncoming cyclist	23	9%
Cyclist hitting car door	1	.3%
Cyclist cornering out of control	4	1%
Cyclist turning right against oncoming vehicle	7	2%
Cyclist hitting parked car or obstacle	2	.7%
Cyclist hitting rear end or overtaking vehicle	6	2%
Other including collision with trams	19	8%

In summary, the following generalisations can be made about cycling in Melbourne:

1) the greatest number of cyclists are in the 14 to 16 year old age group;

2) the greatest number of accidents occur to children in the 7 to 16 year old age group;

3) most accidents occur between 3 and 4 p.m. (the time school finishes) on weekdays when road conditions are dry.

4) most accidents occur with cyclists entering the path of an oncoming vehicle and occur at intersections;

5) as 72% of cyclists are students, but only 24% of trips are made to school, the greatest immediate increase in bike use is likely to be in trips to school;

6) the number of commuter and shopping trips is likely to increase as motor traffic increases, and as public transport costs continue to rise;

7) the danger of traffic and fear of theft are the main reasons why cyclists do not ride more often;

8) most cyclists ride because it is good fun and for the exercise;

9) bicycle trips are usually of a short distance. The average one-way trip is only 2.7km;

10) trips made by those in the 15-29 year old age group tend to be longest;

11) commuter trips tend to be longer than other trips;

12) most cyclists make 5 trips each week.

13) as bicycle sales began to increase significantly in 1972, so too did the number of bicycle accidents increase in Melbourne.

THE BICYCLE PATH NETWORK

MELBOURNE'S EXISTING BICYCLE PATHS

Bicycle paths and tracks have probably existed in Melbourne since bicycles were first used in the city. The earliest formalised bicycle path was 1.8km long, constructed along the north and south side of Dynon Road, Melbourne, from the Moonee Ponds Creek bridge to the overhead railway bridge near Kensington Street. This facility was built when Dynon Road was reconstructed in 1938. It was built to provide some degree of safety to the many workmen riding from Footscray to North Melbourne. This path was asphalt and was adjacent to the pedestrian path along the road and was separated from it by a low privet hedge. In the late 1950's, much of the path was destroyed when excavations for underground cables were made. When the excavation was filled the asphalt path was never replaced. A survey of bicycle users at the time showed that only one cyclist a day used the area and he cycled along the road. A very short length of this original bicycle path still exists near the railway yard entrance but the rest of the area formerly occupied by the path is overgrown and cannot be used.

Since the early 1960's, several other bicycle paths have been built in Melbourne. Several more facilities are under construction, are planned or proposed. The status of bicycle path planning in Melbourne is summarised in Table 11. A description of bicycle paths, their construction and planning in each city and shire in the Melbourne metropolitan area is outlined in Appendix A.

The paths built to date have been fragmented in their location and have shown a lack of co-ordination in their planning. All, except for the Yarra River bicycle path, have been located in the middle or outer suburbs and have had varying amounts of success and use. The gravel path along Cambridge Road in Lillydale failed because it was in hilly, sparsely populated country and was not signposted. The bicycle path along Mason Street, Altona, while leading to and passing several schools, is in a very heavily trafficked area and has not been a success. The gravel path along Croydon Road, Croydon,

FIGURE 17 The Yarra River bicycle track. Greater attention to detail is necessary in future bikeway planning.

passes Croydon primary school and is still used by an estimated 50% of the students cycling to Croydon High School. The paths in Caulfield, Eltham and Diamond Valley are in parks. The bicycle paths in Berwick, Coburg and Sunshine are all very new and it is too early to determine their success. The much publicised Yarra River bicycle path is probably the most well known and heavily used bicycle path in the city. A survey of this path by the Department of Youth, Sport and Recreation, during the week of 9 February, 1976, revealed that 613 cyclists used it between 6 a.m. and 8 p.m. An analysis of the users showed that 42% lived in the adjacent areas of South Yarra, Prahran and Toorak. This is not surprising and illustrates how effectively a barrier such as a river reduces the potential catchment area by half without sufficient cross connections. Many of the cyclists pointed out the problems caused by broken glass in the areas adjacent to the barbeques along the river.

The bicycle paths which are being planned or which have been proposed, seem to be continuing the fragmented approach to the subject. However, the rudiments of an inter-connected system of bicycle paths appears to be developing. This is illustrated in Map 4. Of the planned and proposed bicycle paths, those in three - the metropolitan parks, Chelsea, Collingwood, Essendon, Keilor and McLeans Road Reserve, in Whittlesea - are primarily for recreational purposes. The others serve a dual role, being recreational but also serving schools or employment areas.

The bicycle paths in Eltham and Diamond Valley which are under construction along the Plenty River form a curious combination. Here two paths are being built on opposite sides of the same river in a not too densely settled area.

Although not in Melbourne, the bicycle path built in 1973 in the city of Newtown in the Geelong urban area is of interest. In this instance a path 1km long was built along each side of Shannon Avenue from Prices Bridge to the entrance of the Balyang Sanctuary and was linked to a gravel path in the sanctuary. This facility is in an isolated location, at the base of a steep hill and is little used by cyclists.

TABLE 11 Status of bicycle path planning in the Melbourne Metropolitan Area

City/Shire	Bicycle Paths in use and distance	Bicycle Paths under construction and distance	Bicycle Paths planned	Bicycle Paths proposed	Bicycle Paths to be investigated	Bicycle Paths discussed	Bicycle Paths to be incorporated in future development
Altona	● .68km						
Berwick	●7.2 km	● 1.4km		●8.6km			
Box Hill		● .3km				●	
Brighton				●			
Broadmeadows		● 3.2km		●8km			
Brunswick							
Bulla							●
Camberwell					●		● #
Caulfield	● .25km						
Chelsea			● .22km				
Coburg	●1km						
Collingwood				●2.5km			●
Cranbourne				●1.5km			
Croydon	● .5km .75km						
Dandenong							
Diamond Valley	● 1.5 km 1.25km						
Doncaster & Templestowe				●1.5km			
Eltham	● .45km .5 km	● 4.5km 1.5km					● #
Essendon							● #
Fitzroy			● .75km				
Footscray							
Frankston				●			
Hawthorn				●			
Healesville							
Heidelberg							
Keilor							
Kew						●	●
Knox				●			
Lillydale	●2.25*		● ##	●			●
				●.75km			●

City/Shire	Bicycle Paths in use and distance	Bicycle Paths under construction and distance	Bicycle Paths planned	Bicycle Paths proposed	Bicycle Paths to be investigated	Bicycle Paths discussed	Bicycle Paths to be incorporated in future development
Malvern			● 1.5km				
Melbourne	● 1.8* 2.2km						
Melton							
Moorabbin				● .8km			
Mordialloc							●
Northcote							
Nunawading					●		
Oakleigh							
Pakenham							
Port Melbourne							
Prahran			● 3km				
Preston							●
Richmond			● 3.5km				
Ringwood						●	
St. Kilda				●			
Sandringham					●		
Sherbrooke							●
South Melbourne				●			
Springvale					●		
Sunshine	● .3km			●			
Waverley			● ##	●			
Werribee				● 1.8km			
Whittlesea		● 1.6km		● 2km			
Williamstown				●			
Total	16.58km	12.5km					

* Disused facilities are not included in total

\# In the Yarra Valley Metropolitan Park

\## In the Dandenong Valley Metropolitan Park

BICYCLE USAGE

In the large, diverse Melbourne metropolitan area, the use of bicycles and the need for bicycle paths vary as does community interest in bicycle paths and local government willingness to allocate funds for their construction. Before developing a planned network of bicycle paths, an attempt was made to measure the level and pattern of bicycle usage in the metropolitan area. Also, because of the importance of safety in planning for future bicycle use, an attempt was made to determine if there is any significant relationship between these patterns of bicycle usage and available information about bicycle accident rates. These measures were examined in an attempt to establish a basis for determining priorities for the implementation of a bikeway plan.

Available statistics on bicycle usage are limited and incomplete. However, a useful indication of bicycle usage can be obtained by examining (i) the number of bicycles stored at railway stations expressed as a ratio per thousand commuters in each city and shire in the metropolitan area (Table 2); (ii) the ratio of the average number of students riding to school to the total enrolment for high and technical schools in each city and shire (Table 5); and (iii) the ratio of the average number of students riding to primary schools to the total enrolment of these schools in each city and shire (Table 4).

An index of bicycle usage in each city and shire was then derived by aggregating the normalised values (i.e. the values transformed to a scale from 0 to 1) for each of the previously mentioned components to form a weighted total. This can be expressed as follows:

$$b_u = \frac{W_1 S + W_2 h + W_3 p}{W_1 + W_2 + W_3}$$

where b_u = bicycle usage

S = bicycles stored at stations/1000 commuters in each city

h = the ratio of high and technical school students riding to school to the total enrolment at these schools in each city

p = the ratio of primary school students riding to school to the total enrolment at these schools in each city

W_1, W_2, W_3 = Weights. Since high school student use of bicycles is approximately 3 times as great as primary school and commuter use:

$$W_1 : W_2 : W_3 = 1 : 3 : 1$$

The index of bicycle usage thus calculated is outlined in Table 12

In addition to the inspection of these bicycle usage and accident rates separately in Tables 12 and 7, an attempt was made to investigate whether there was any joint association between these two measures. In particular, a preliminary correlation and regression analysis was carried out to see if accident rates were significantly related to the bicycle usage measures determined in this study.

For each city and shire, the normalised usage and accident scores were plotted in Figure 18. As can be seen from the scattered nature of these points, there does not appear to be any clear pattern between the two measures. This is confirmed statistically with a correlation coefficient of 0.50 which indicates only a low association between bicycle usage and accidents. In some respects, this might be considered a surprising result since, for example, total motor vehicle accidents are generally considered to be fairly closely related to vehicle usage and it seems reasonable to infer a similar relationship for bicycle usage. However, it is considered that in the case of bicycle accidents, there are likely to be other important factors apart from usage, which influence the accident pattern including for example, distance from the city centre, suburban population density, topography, traffic patterns, the proportion of young people in the area and so on. The measures of bicycle usage themselves developed in this study are based on limited available data and are capable of further refinement, although such a long term task is beyond the scope of this study.

TABLE 12

Index of bicycle usage by city and shire, Melbourne

City/Shire	User Index	City/Shire	User Index
Healesville	.87	Ringwood	.26
Sandringham	.79	Bulla	.24
Brighton	.79	Sunshine	.23
Mordialloc	.74	Heidelberg	.22
Chelsea	.74	Hawthorn	.19
Moorabbin	.67	Sherbrooke	.19
Springvale	.62	Camberwell	.18
Cranbourne	.60	Coburg	.18
Williamstown	.54	Preston	.17
Nunawading	.52	Northcote	.17
Oakleigh	.49	Malvern	.16
Keilor	.49	Whittlesea	.16
Frankston	.48	Doncaster and Templestowe	.14
Croydon	.45	Eltham	.13
Waverley	.41	St. Kilda	.12
Knox	.40	Essendon	.09
Dandenong	.39	Brunswick	.08
Pakenham	.39	Kew	.06
Altona	.37	South Melbourne	.06
Werribee	.36	Footscray	.05
Lillydale	.35	Melbourne	.04
Caulfield	.33	Prahran	.03
Berwick	.31	Port Melbourne	.02
Box Hill	.29	Richmond	.02
Broadmeadows	.29	Collingwood	.007
Diamond Valley	.28	Fitzroy	0
Melton	.26		

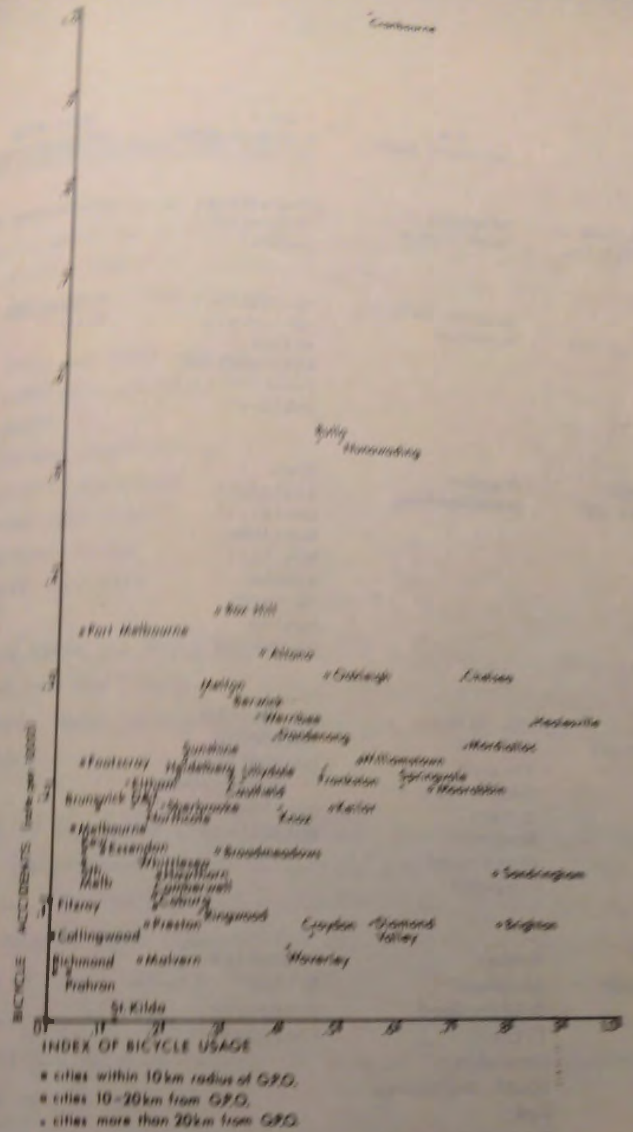


FIGURE 18 Relationship between Bicycle Accidents and Bicycle Usage

From the scatter of points shown in Figure 18, it can be observed that there are four broad groupings of bicycle use and within each of these groupings, there are several levels of accident rates. The groupings are as follows:

	LOW ACCIDENT RATE	HIGH ACCIDENT RATE	VERY HIGH ACCIDENT RATE
VERY HIGH BICYCLE USE	Brighton Sandringham	Healesville Mordialloc Chelsea	Cranbourne
HIGH BICYCLE USE	Diamond Valley Waverley	Moorabbin Springvale Keilor Williamstown Frankston Oakleigh	Nunawading Bulla
MODERATE BICYCLE USE	Croydon Broadmeadows	Knox Lillydale Caulfield Werribee Box Hill Altona Berwick Melton Dandenong	
LOW BICYCLE USE	St. Kilda Malvern Preston Camberwell Coburg Hawthorn Whittlesea Ringwood	Sherbrooke Northcote Doncaster & Templestowe Sunshine Heidelberg	
VERY LOW BICYCLE USE	Prahan Richmond Collingwood Fitzroy Essendon South Melbourne Kew Port Melbourne	Brunswick Eltham Melbourne Footscray	

THE PROPOSED BICYCLE PATH NETWORK

The aim of this study was to produce a planned network of off-street bicycle paths and to formulate a strategy for its implementation. There are a number of different corridors in which these bicycle paths can be located. They include:

1) river and creek reservations
2) beach park reserves
3) parks
4) railway rights-of-way
5) utility easements
6) road reservations
7) median strips
8) wide footpaths

Each of these corridors has its merits and problems. Several corridors already are the location of bicycle paths which have been built or proposed. Many corridors are informally used as bicycle paths at this time.

In most of the river and creek valleys where bicycle paths can be built, the problems of implementation are few and the grades are not too steep. In the beach park reserves there are few problems to hinder bicycle path construction, except in Chelsea, where wind blown sand is of major concern and in several scattered locations where boat handling facilities block the beach. Bicycle paths in parks are realistic in most suburbs as long as the pedestrian/cyclist conflict can be managed.

Railway rights-of-way at first glance seem to be good locations for bicycle paths. However, they do not offer a continuous uninterrupted passage as stations occupy the whole right-of-way. Because the available distances are short, bicycle paths in these corridors would be best used as linkages between more continuous paths or linkages to

specific destinations such as stations. Their location would have to be negotiated with the Victorian Railways.

Utility easements would also seem to offer satisfactory locations for bicycle paths across the city. The S.E.C. easements extend for long distances but in some locations cover very rugged terrain, unsuitable for bicycle use. In other locations, they do not lead to any significant destination. The MMBW pipe easements often run in straight lines providing a direct link between points but they too traverse varying terrain, some of which is quite steep. Drainage easements usually have grades which are negotiable on a bicycle. Many drainage easements cross desolate, sparsely settled land and only a few such as the secondary drain in Chelsea are located where there is sufficient population to justify the construction of a bicycle path. The Maroondah aqueduct north of the city is disused, has grades which are not steep, and runs approximately at right-angles to the other corridors in the area. It has much to recommend it as a bicycle path corridor. Bicycle paths in all these service easements would have to be negotiated with the controlling authority.

There are many road reservations in the metropolitan area in which roads have not yet been built. The future of some of these proposed roads is very much in doubt. Many of these proposed roads run along picturesque river valleys and other open space areas which would be ideal locations for bicycle paths.

Melbourne has many wide streets with grassed and treed median strips separating the carriageways. Several highways have quiet service roads running parallel to the carriageways. Some streets have a plantation strip up to 5 metres wide between the curb and the footpath. Along other streets there is no footpath but there is a wide grass edge between the curb and the property line. All are potential locations for bicycle paths.

The significant corridors along which bicycle paths could be located are illustrated on map 2. The location, grades, and potential cyclist destinations of these corridors, and the population densities of areas through which they pass were analysed to identify those which could realistically be the location for bicycle paths. From this information, along with the previously derived information on the characteristics of bicycle use, the generators of bicycle use (shown on map 3) and the location of all existing and proposed bicycle paths (shown on map 4), the proposed bicycle path network shown on map 5 was derived.

The bicycle path along the Yarra River to Warrandyte forms the major link in the system. From this spine, a series of shorter paths penetrate the northern and eastern suburbs, providing access to the centre of the city and also to specific destinations such as major parks, recreation areas and schools. The path along the eastern shore of Port Phillip Bay gives bicycle access to the beaches and also leads to the city and the Yarra system. The bicycle paths in the western suburbs link settled areas with each other and also provide access to schools, recreation areas and town centres. Cyclists do ride the 25+km from Sunbury and Melton to Melbourne but the numbers are so small and the distances such that it is unrealistic to link these centres to Melbourne with a bicycle path system. Therefore, the bicycle paths in these cities are internal only. As metropolitan growth in the west continues, the question of bicycle path connection from the outer centres to Melbourne should be reviewed. This plan should not be thought of as being rigid and unalterable. In fact it should be revised as and when conditions change and additional information becomes available.

While this bicycle path network does provide access to and from many schools, recreation areas, commercial centres and work places, there are many parts of the city, notably in the south-eastern suburbs, which do not have ready access to the system. Also, the connections between

FIGURE 19 On street bicycle routes will be necessary to link bicycle paths in some locations.

different branches of the network are not strong in places. These deficiencies can best be overcome by integrating the off-street bicycle path network with an on-street system of bicycle routes using the existing streets. A suggested bicycle route system is shown on map 5. An on-street system of bicycle routes would best be designed by people closely associated with the problems of roads and traffic such as the Country Roads Board.

IMPLEMENTATION

A suggested implementation plan is illustrated on map 6. Five categories of implementation are identified. They are:

1) Implementable high priority
2) Implementable low priority
3) Negotiable high priority
4) Negotiable low priority
5) Conflicting

The implemetable bicycle paths are all on land owned or controlled by local government. The negotiable bicycle paths are those on land owned and/or controlled by some government agency. The conflicting bicycle paths are in corridors in which other uses are proposed. They should not be built until the land use conflict has been resolved.

The high priority paths in the implementable and negotiable category are in settled areas where there is an observed need. The paths of low priority are in sparsely settled areas or else are links to parks or other destinations which will not be a reality for some time. An attempt has been made to establish a ranking criterion for those paths which are implementable and of high priority. This ranking criterion thus was determined by calculating the estimated cost per estimated rider for each path and then weighting the normalised resultant using the previously determined user index figures. The cost per rider was calculated in the following manner:

1) length of path determined

2) cost of path at $16,000/km (2m wide asphalt surface)

3) 'rider' catchment area for each path determined (generally assuming catchment extends ½ mile each side of path)

4) population of catchment (based on 1971 census data)

5) number of potential riders (20% of population) in area

6) the cost per rider = C/R

The priority ranking for implementable bicycle paths is shown in Table 13.

These priorities could, if desired, be arranged on a more specific geographical basis. For instance, the ranking could be established for paths in the northern, southern, eastern and western suburbs. The order of priorities is based on a cost/user relationship which is considered the most important criterion for allocating service resources most efficiently to the established measure of need. Social, political or other criteria could be applied to this ranking which could modify the result.

TABLE 13 Priorities for implementable bicycle paths

Rank	Path	Length km	Cost $	Cost per Rider	Normalised C/R	User Index	(N.C/R) x U.I.
1	Beach front, Brighton	6.75	103 100	33.25	.75	.79	.59
2	Elster Creek, Moorabbin	2.4	38 400	27	.86	.67	.58
2	Beach front, Sandringham	10.3	144 900	35	.73	.79	.58
4	Gardners Creek, Nunawading	1.3	20 800	18.57	.94	.52	.49
5	Mile Creek, Springvale	5.7	72 800	37.80	.69	.62	.43
6	Gardners Creek, Waverley	.93	14 880	14	1	.41	.41
7	Reserve Road, Tulip Street, Sandringham	3.8	53 200	53	.5	.79	.40
8	Foreshore Parks, Williamstown	3.75	60 000	36.92	.70	.54	.38
9	High School, Laverton	.48	7 850	12	1.02	.36	.37
10	Dandenong Creek, Dandenong	1	24 800	29.50	.79	.39	.31
11a	Blind Creek, Knox	5	88 000	33.52	.75	.40	.30
11b	Beach front, Frankston	9.5	133 000	43.67	.62	.48	.30
13a	Main Drain, Croydon	4.6	81 600	41	.65	.45	.29
13b	Sparks Reserve, Box Hill	.48	7 680	14.76	.99	.29	.29
15	Gardners Creek, Box Hill	1.3	24 800	19.13	.93	.29	.27
16	Elwood Canal, Brighton, St. Kilda	6.2	248 000	49.60	.54	.45	.24
17	S.E.C. Easement, Waverley	4.5	72 000	48	.56	.41	.23
18	Beach front, Altona	4.75	66 500	45.48	.59	.37	.22

TABLE 13 Priorities for implementable bicycle paths

Rank	Path	Length km	Cost $	Cost per Rider	Normalised C/R	User Index	(N.C/R) x U.I.
19	Maribyrnong River, Keilor	5.5	92 000	59.74	.41	.49	.20
20a	Kororoit Creek, Sunshine	5.8	104 800	32.24	.76	.23	.17
20b	Ashburton Creek, Camberwell	2.88	33 120	18.40	.94	.18	.17
22a	Mullum Mullum Creek, Ringwood	4	76 000	47.50	.57	.26	.15
22b	Edgars Creek, Preston	4.1	73 600	28.30	.81	.17	.15
22c	Gardners Creek, Camberwell	1.6	25 600	28.44	.81	.18	.15
25	Darebin Creek, Northcote Heidelberg	1.5	28 000	37.33	.70	.20	.14
26a	Edgars Creek, Whittlesea	4.25	76 000	29.23	.80	.16	.13
26b	Edgars Creek, Coburg	1.5	32 000	37	.70	.18	.13
28a	Ferny Creek Knox	3.5	60 000	68	.30	.40	.12
28b	Beaconsfield Parade, Lower Esplanade, St. Kilda	1.6	25 600	16	.97	.12	.12
28c	Darebin Creek, Preston	3.25	52 000	40	.66	.17	.11
29	Darebin Creek, Whittlesea	9.5	152,000	42.20	.64	.16	.10
31	Toolern Creek, Melton	7	112 000	65	.34	.26	.09
32a	Moonee Ponds Creek	5.6	104 600	59.16	.42	.16	.07
32b	Merri Creek, Broadmeadows	2.5	48 000	73.84	.23	.29	.07
34a	Yarra River, Richmond	3.2	128 000	42.60	.46	.12	.06
34b	Hyde Park, Kew	1.6	25 600	15.76	.97	.06	.06
36a	Glass Creek, Kew	1.6	29 600	22.68	.88	.06	.05

TABLE 13 Priorities for implementable bicycle paths

Rank Path Length km Cost $ Cost per Normalised C/R User Index (N.C/R) x U.I.

31	Toolern Creek, Melton	7	112 000	65	.34	.26	.09
32a	Moonee Ponds Creek	5.6	104 600	59.16	.42	.16	.07
32b	Merri Creek, Broadmeadows	2.5	48 000	73.84	.23	.29	.07
34a	Yarra River, Richmond	3.2	128 000	42.60	.46	.12	.06
34b	Wyse Park, Kew	1.6	25 600	15.76	.07	.06	.00
35	[illegible]	1.6	29 600	23.68	.08	.08	.01

TABLE 13 Priorities for implementable bicycle paths

Rank	Path	Length km	Cost $	Cost per Rider	Normalised C/R	User Index	(N.C/R) x U.I.
36b	Beaconsfield Parade, Kerford Parade, South Melbourne	4	64 000	32	.76	.06	.05
38a	Werribee	7	120 000	82	.12	.36	.04
38b	Maribyrnong River, Essendon	3.7	59 200	59	.42	.09	.04
38c	Botanical Gardens, Melbourne	1.6	25 600	36	.71	.04	.03
41	Gardens Route, Melbourne	5.2	156 160	50	.53	.04	.02
42	Maribyrnong River, Footscray, Sunshine	7.36	161 920	92	0	.14	0

SUPPORT SYSTEMS

The bicycle path network as proposed in this study will never be used to capacity unless there are adequate support systems. The following recommendations are based on the survey results and suggestions offered by cyclists.

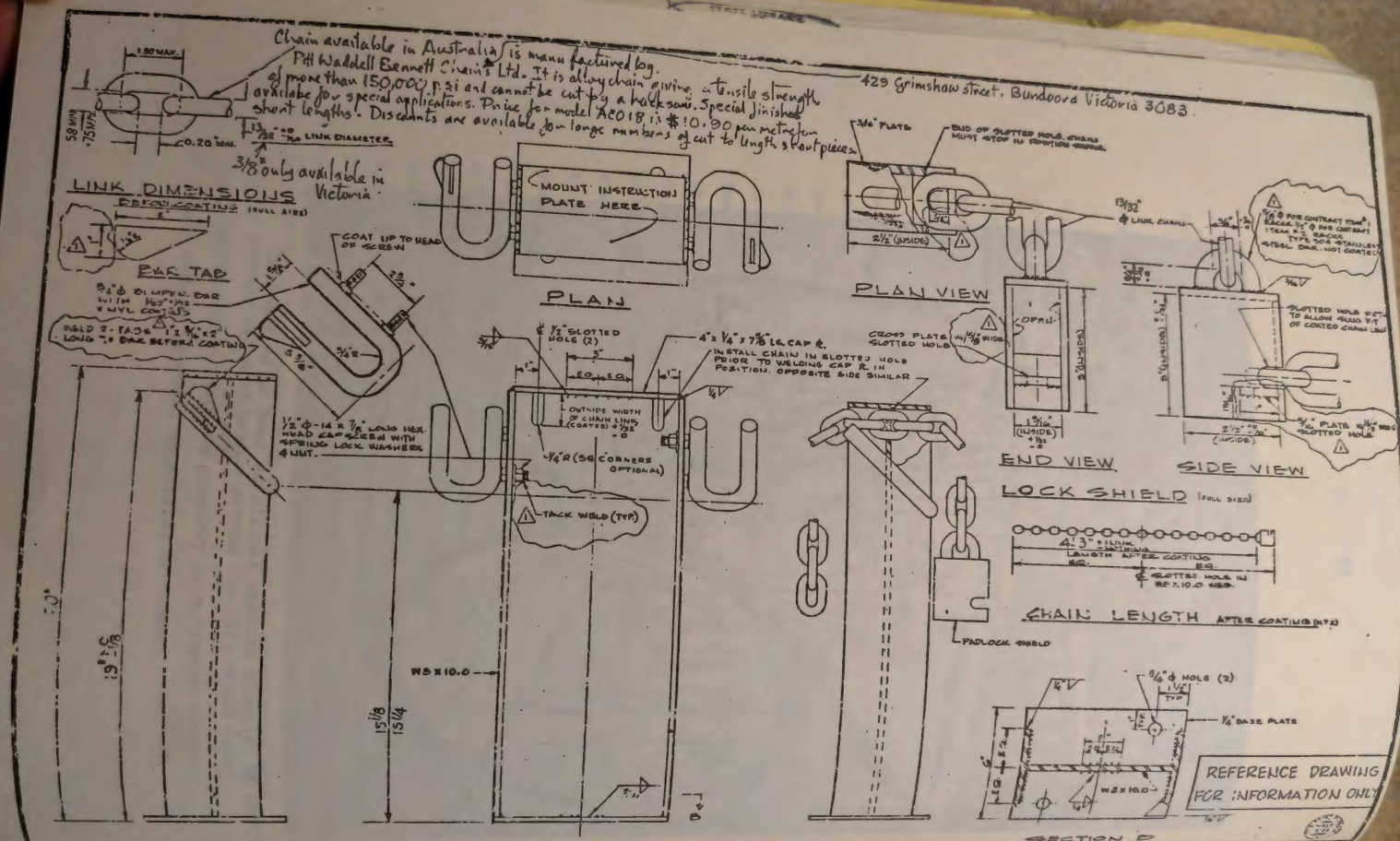
The most significant supporting mechanism is an on-street system of bicycle routes which is integrated with the bicycle path network.

Bicycle storage facilities need to be improved. The lack of storage facilities was second only to the danger of traffic as the reason why more people do not ride bikes. There are storage facilities at many schools and railway stations but at very few other locations. The security of storage facilities that do exist is often not adequate and presents no difficulty to an experienced thief. The provision of safe, strong storage facilities needs to be considered as much a part of the bicycle path network as signs and paint work. An example of the bicycle storage stands used by the BART transit system in San Francisco is shown in Figure 21. A heavy chain secures a bike to the stand and makes unlawful removal very difficult. Storage facilities should be provided at the termination of each bicycle path and at places of high bicycle use such as shopping centres and public buildings. Bicycle storage facilities should be included in all future public building projects. A recent proposal to provide bicycle storage facilities at the Victorian Arts Centre is an excellent idea.

The provision of changing room facilities in association with bicycle storage racks at points around the City would make commuting by bicycle tempting possibly to a greater number of people than at present; especially in summer.

FIG

FIGURE 20 Bicycle storage facilities need to be improved.



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The alarming number of accidents occuring to school children highlights the need for an active and continuous bicycle user education programme. Several schools provide bicycle safety instruction and some principals instruct students on safe ways to ride to school. This is the exception rather than the rule. It is suggested that a bicycle rider education course be introduced in schools with the proviso that no child be allowed to ride to school unless he or she has passed the course. Coupled with such an education course should be a much more rigorous law enforcement campaign to press home the rules of the road that many young cyclists are unaware of or do not understand.

Melbourne has thousands of kilometres of streets and paths which many cyclists use at present. For many other cyclists, the roads are too dangerous and hazardous. As it will probably take several years to have an extensive bicycle path network in Melbourne, immediate facilities for weekend recreational riding could be provided by closing roads to traffic through parks and recreational areas for certain times or days on the weekend. Lakeside and Aughtie Drive in Albert Park and Birdwood Avenue through the Botanic Gardens are roads which could be used this way. This type of temporary street closure has been done in New York and Ottawa where streets are closed all day or for part of the day on the weekend.

When building new bicycle paths, care must be taken to ensure that the best possible planning and detailing is used. Observation should be made of the existing pathways in Melbourne to check on their performance as many are built and planned quite differently. In the first stage of the Yarra River Bikeway, the path runs close to several barbeque pits. This has meant that glass from broken bottles left by the barbeque users is often scattered on the bicycle path causing unnecessary punctures. The beginning of this path is not clearly marked and if one

arrives on a bicycle, one must cross the very dangerous Jeffries Parade. These are three problems which should not occur with future bicycle paths.

CONCLUSION

CONCLUSION

Melbourne is a suitable city for a bicycle path network. The network suggested in this study represents an interconnected system of bicycle paths to which other paths can be linked in the future. The proposed network is 350 km in length. Only 16.5 km are built so far. However, an additional 163 km could be built at this time were funds available. The proposed network, if built, would cost in excess of $8,000,000, excluding the cost of any land acquisition. In reality, it will be many years before all the bicycle paths designated as being implementable are completed and it will be even longer before the whole system is built.

It is likely that requests for bicycle path funding from councils and community groups will continue in increasing numbers. These requests for funding will be for paths which form part of the proposed network and for isolated paths serving particular community needs. While requests for both types of funding usually represent strong local needs, it will be in the long term interest of the whole city to fund proposals which form part of the suggested system. The method used in this study to establish priorities for bicycle path implementation can be applied to future proposals.

If any significant increase to Melbourne's bicycle path network is to be made, the funding system has to be reviewed. The $1,000 maximum on a dollar for dollar basis available to councils at today's prices will pay only for approximately 60 metres of bicycle path.

There needs to be a change in attitude to the bicycle and bicycle use by many officials in local and state government. To many, the bicycle is just a toy worthy of little concern and its users an insignificant minority. The estimated 450,000-500,000 cyclists in

Melbourne hardly constitute an insignificant minority.

The bicycle is primarily used for recreation activity but is increasingly being used to make purposeful trips. It is the most significant (and in many cases the only) form of independent mobility for 13-16 year olds and is being used by those in their twenties in increasing numbers. These factors should be acknowledged and taken into account in future recreation and transportation planning.

The off-street bicycle path network as planned in this study is only one component of a totally integrated bikeway plan. Melbourne needs an on-street system of bike routes which will complement the off-street system proposed in this study; a system which will provide some degree of protection and safety to cyclists. This on-street system should be designed by an agency such as the Country Roads Board which has the capability to undertake such a task and for safety reasons should be combined with a 40kph (25mph) speed limit on residential streets.

The proposed bicycle path network should not be considered as being a static plan and should be regularly reviewed in the future as conditions change. For instance, Milton, Sunbury and even Warburton could be linked to the network.

There must be continuous supervision and control of the implementation of this plan. Unless mechanisms are established to ensure its implementation, Melbourne will continue to have a fragmented system of unrelated and unconnected bicycle paths.

APPENDICES

APPENDIX A

A description of bikeways, bikeway construction and bikeway planning in each city and shire of the Melbourne metropolitan area.

This description is based on correspondence, discussions and telephone conversations with the various town and shire clerks, city administrators, city engineers and city planners in the cities and shires of the Melbourne metropolitan area.

ALTONA

In 1965 when Mason Street was being enlarged into a divided street, a bicycle track .68 km long was built between Millers Road and Miles Street. Four to six bicycle storage racks were installed at ten shopping locations throughout the city. The use of the bicycle track and storage facilities has been low. Two underpasses for pedestrians and cyclists were built under Millers Road. One was located just north of Civic Parade primarily to serve the students at the Seaholme State School. The other was located just north of Macarthurs Road primarily for the use of students at Altona North High School. The one near Civic Parade is well used while the other is little used.

BERWICK

Berwick is an expanding city. There are three distinct, separate areas of development within the city, they are at Narre Warren, Endeavour Hills and Berwick. There are 2.8 km of bicycle path in Narre Warren in the open space system of a 'Radburn' type subdivision In the Endeavour Hills area, 4.4 km of bicycle path exist in linear park systems. Approximately 1.4 km of bicycle path are under

construction and 8.6 km are proposed in the future in Endeavour Hills. All these paths are in fact dual purpose cycle and pedestrian paths.

CRANBOURNE

There are no bicycle paths in Cranbourne. An application for funding a proposed bicycle path 1.5 km long on the unmade sections of John Street and Cranhaven Road, Langwarrin has been made to the Department of Youth, Sport and Recreation. A decision on this is pending. It is proposed to include a bicycle path in the stream and floodway zone east of Hallam Road in Hampton Park.

BOX HILL

A short (.3 km) experimental bicycle path is at present under construction from Eley Street to Broadman Close. It was earlier proposed to extend this path under Station Street and along Gardiners Creek to Bennettswood Primary School and Burwood High School. The proposed link under Station Street had to be abandoned because of possible liability, should the creek flood and a cyclist be injured. Despite the lack of not having a continuous link between the two paths, the track along Gardiners Creek to the schools would still be possible. A bicycle path was proposed along the Koonung Creek in the Champion,Thompson/ Paul plan for the Koonung-Mullum Forestway, an alternative to the Eastern Freeway.

BRIGHTON

There are no bicycle paths in Brighton. In 1974 the Council

considered the establishment of bicycle tracks along the foreshore and bicycle routes to the Landcox Street State School. The foreshore proposal was not pursued because it was considered that the provision of bicycle tracks for long distance commuting was impractical at that stage. The school bicycle route plan was not pursued as it was considered that routes designated with the sign "cyclist" gave a false sense of security, the signs were expensive and in the opinion of the Road Safety and Traffic Authority, "cyclist" was an indefinite sign conveying no particular message. A 1974 bikeway plan by the MMBW linking Brighton to the City was never implemented. In this plan, the path followed the foreshore through Brighton then on along Marine Parade, St. Kilda, through South Melbourne to the City.

BROADMEADOWS

There is a 3.2 km bicycle path under construction along Moonee Ponds Creek from Koala Crescent to Jacana Reserve. A bicycle path has been proposed continuing north along Yuroke Creek and south along Moonee Ponds Creek for approximately 8 km to John Pascoe Fawkner Reserve. This could be extended another 1 km to the Oak Park Sports Complex. A bicycle path along the Merri Creek was suggested by the Victorian Public Interest Research Group in their Merri Creek Study. A park was proposed along the Creek in this study as an alternative to the proposed F.2 Freeway.

BRUNSWICK

There are no bicycle paths in Brunswick nor are any planned at this time. In the Northern Melbourne Waterways Study by the Preston

Institute of Technology, it was suggested an investigation be made into the need for a bicycle path along Merri Creek from Moorland Road to May Street.

BULLA

Bulla is an outlying metropolitan shire. Craigieburn and Sunbury are the only significant urban areas in the shire. There are no bicycle paths in Bulla apart from a 100 yard facility in an adventure playground in Craigieburn Reserve. Land is being purchased along Aitken Creek in Craigieburn and along Blind Creek and its tributaries in Sunbury to form the basis of an open space network in each of the two centres. There are plans to include bicycle paths in these open space systems in the future.

CAMBERWELL

There are no bicycle paths in Camberwell. However, an investigation of potential bicycle paths is to be part of a city-wide recreation plan to begin soon. In the proposed Yarra Valley Metropolitan Park it is planned to have a bicycle path, part of the park and track would be in Camberwell. The Koonung-Mullum Forestway proposal had a bicycle path running along the Koonung Creek in Camberwell. There has been no action on the recommendations in this proposal.

CAULFIELD

There is a short (.25 km) bicycle track along the east side of East Caulfield Reserve built in the early 1960's primarily to serve students at Caulfield Institute of Technology. Caulfield

South and Gardenvale schools have approached the Council on possible bicycle routes to the schools. This proposal was not pursued because of the danger to cyclists at intersections and the false sense of security a bicycle route might give the students.

CHELSEA

There is a .22 km bicycle path planned in Regents Park. There is the potential for a bicycle path along the secondary drain at the eastern edge of the city, when the drain is roofed and covered. This could link in with a bicycle path proposed in Mordialloc along the Mordialloc Creek.

COBURG

There is a veledrome in Richards Reserve which is not available for public use. However, there is a cycling track around the perimeter of the reserve. The Council has constructed a walking track along Merri Creek from Carr Street to Keady Street for a distance of 1 km linking Parker Reserve and Lake Reserve. This facility is available to cyclists. This track will be increased by another 3.5 km when land acquisitions are completed and it is extended to Moreland Street. These extensions are dependent on the future plans for the F.2 Freeway. In the Merri Creek Study, a bicycle track was included in the proposed park along Merri Creek in Coburg.

COLLINGWOOD

There are no bicycle paths in Collingwood. A bicyle path is

proposed in a plan developed for the parkland extending along the Merri Creek from Queens Parade to just south of the proposed Eastern Freeway.

CROYDON

In the early 1960's a .5 km bicycle path was built along Croydon Road from Wicklow Avenue to Croydon High School. Students still use this path. Cyclists use a .75 km gravel path through Eastfield Park.

DANDENONG

There are no bicycle paths in Dandenong nor are there any planned at this time.

DIAMOND VALLEY

An extensive bicycle path is planned along the Plenty River. At present there is a 1.5 km section built from the Diamond Valley/Heidelberg border to Willinda Park and a 1.25 km section built from Greensborough Park to Booyan Crescent. These two sections will be joined when land is acquired along the river and the remaining 1.5 km of pathway is built. A long range plan is to extend this path 10 km to the 68 ha Youngs Land Park further upstream between Ashley Road and Athenson Crescent.

DONCASTER AND TEMPLESTOWE

There are no bicycle paths in Doncaster and Templestowe nor are

any planned. The potential does exist to build bicycle paths along creek beds in the city. The planned bikeway in the proposed Yarra Valley Metropolitan park is likely to pass through the part of Doncaster and Templestowe which will be in the park. The Koonung-Mullum Forestway proposal had a bicycle path running along the Koonung Creek in Doncaster and Templestowe.

ELTHAM

There are three short bicycle paths in Eltham. One .27 km path is in Eltham Town Park, another, .18 km long is in Eltham Central Park while the third, .5 km long is in Montmorency Park. Eltham also has two separate bicycle paths under construction. One path along the Plenty River runs for 4.5 km from Lower Plenty Road to George Court. The other, along Diamond Creek runs for 1.15 km from Dalton Street to Swan Street. The scheduled completion date for both these paths is June 31, 1976. The potential exists for continuing the Diamond Creek path another 5 km along Main Road to link with Research Park. The planned bicycle path in the proposed Yarra Valley Metropolitan Park is likely to pass through the part of Eltham which will be in the Park.

ESSENDON

There are no bicycle paths in Essendon. However, one is planned to run for .75 km from Woodlands Park along Five Mile Creek to Napier Street. There is a tentative proposal for an equestrian path from Flemington Race Course along the Maribyrnong River to Maribyrnong Road. A bicycle path could be part of this plan. There is the potential for a bicycle path along Moonee Ponds Creek from Evans Street to Mt. Alexander Road.

FITZROY

There are no bicycle paths in Fitzroy nor are any planned.

FOOTSCRAY

There are no bicycle paths in Footscray, nor are any planned. However, the bicycle track proposed by the MMBW in its 1975 report, did pass through Footscray as it followed the western bank of the river north from Footscray Park.

FRANKSTON

There are no bicycle paths in Frankston. However, a plan for a bicycle path network in Frankston and Mornington was submitted jointly by those two representative bodies in 1975 to the Department of Youth, Sport and Recreation. No action has been taken.

HAWTHORN

There are no bicycle paths in Hawthorn nor are any planned.

HEALESVILLE

There are no bicycle paths in that part of Healesville within the metropolitan area, nor are any planned.

HEIDELBERG

There are no bicycle paths in Heidelberg. There have been preliminary discussions with representatives from La Trobe University on developing bicycle paths and bicycle routes to the University. The planned bicycle path in the proposed Yarra Valley Metropolitan Park is likely to pass through the part of Heidelberg which will be in the Park.

KEILOR

There are no bicycle paths in Keilor. However, in the St. Albans Report prepared by the Keilor Planning Department in 1975, a 1.4 km dual purpose bicycle and pedestrian path was proposed in the Jamison Creek Reserve from Main Road West to Shirley Street. This plan has not been acted upon. A 7 km bicycle path is being planned along the river in the Maribyrnong Valley Metropolitan Park. The potential exists to continue this path along the Maribyrnong River and along Steele Creek and Taylors Creek. A bicycle path will be included in the SEC easement in the Taylors Lakes subdivision presently being planned. This path will run from Green Gully Reserve to Robertsons Road.

KEW

There are no bicycle paths in Kew. A preliminary bikeway plan was prepared early in 1976 but no action has been taken so far.

KNOX

There are no bicycle paths in Knox. There is the intention to

construct multi-purpose paths in the future. There will be a bicycle path of approximately 12 km in the planned Dandenong Valley Metropolitan Park in Knox. The potential exists for continuing this path along the Dandenong Creek to Bayswater Park. A path is also possible on the Blind Creek and Corhanwarrabul Creek.

LILLYDALE

There are no bicycle paths in Lillydale. A preliminary plan was proposed for a .75 km bicycle path through Hawthory and Kilaran Reserves from Hawthory Road to the Five Ways intersection. There are real potentials for other bicycle paths in the shire and there have been discussions on some of these. Included among the potential sites are -

The 5 km water works race owned by the Shire from Birmingham Road to McKillop Road.

The 4 km of disused aquaduct which the Council is negotiating to purchase from the MMBW. This aquaduct continues for another 5 km to Sylvan Reservoir.

The disused railway from Lillydale to Warburton.

The MMBW pipe reserves.

Land extending from Mooroolbark Heights Reserve across Cardigan and Hull Roads to the Mooroolbark Shopping Centre. This could continue along Brusby Creek through Estbe Park to Hughes Park and eventually to the Yarra River.

In 1973 a 2.25 km gravel bicycle track was built on the south side of Cambridge Road from Durham Road to Montrose Road. It is in a sparsely settled, hilly area, has had little use and is no longer maintained.

MALVERN

There are no bicycle paths in Malvern. A multi-use 1.5 km path is planned in the re-development of Kooyong Park. This path will run from Toorak Road to Glenferrie Road. Construction should begin in late 1976 and be completed in early 1977. The potential exists for a bicycle path along Gardiners Creek but the reality of this depends on the final plans for the proposed South Eastern Freeway.

MELBOURNE

There is a 2.2 km section of bicycle path along the south bank of the Yarra River. This track extends from the rowing sheds near St. Kilda Road to Hoddle Bridge. This path will be continued by a soon to be constructed path in Prahran extending from the Hoddle bridge to the MacRobertson Bridge. The 1.8 km bicycle path on the north side of Dynan Road from Moonee Ponds Creek to the overhead rail bridge near Kensington Street is in disrepair, is overgrown by vegetation and is unusable.

MELTON

There are no bicycle paths in Melton nor are any planned. The potential exists for a bicycle path along Toolern Creek where most of the land is a Crown reserve.

MOORABBIN

There are no bicycle paths in Moorabbin. The potential for several paths does exist. One is on the recently roofed Elster Creek Drain. This extends for .8 km from Thomas Street to Wheatley Road. This area is presently being grassed. A path will be built over this drain in the future. Another potential location is on the road reserve which forms the extension of

McGuiness Road. A third potential location is in Cheltenham Park from Weatherall Road to Cheltenham Station.

MORDIALLOC

There are no bicycle paths in Mordialloc. In the redesign of the Mordialloc Creek system, a path is planned on the north side of the Creek extending from Beach Road Reserve to Boundary Road. A bicycle path is proposed as part of this park with a bridge linking it to the Mordialloc-Chelsea High School and another bridge linking it to the high school sports ground. This path could link up with a possible path on the Secondary drain in Chelsea. The potential exists for a bicycle path on the bay side of beach road. However, the council recently spent in excess of $25,000 for a fence 6 feet from the curb to protect a planted barrier. This may make it difficult to have the proposal of a path in this area accepted by the Council.

NORTHCOTE

There are no bicycle paths in Northcote and none are planned. The potential exists for a path along Darebin Creek from Smith Street to Wargate Street.

NUNAWADING

There are no bicycle paths in Nunawading. A report on possible bikeways in Nunawading is about to be prepared for the Council. There is a requirement for a bicycle path in the brief for the redevelopment of Blackburn Lake Park. There is the potential for bicycle paths along several creeks in the municipality. The Koonung-Mullum Forestway proposal had a bicycle path running along the Koonung Creek in Nunawading.

OAKLEIGH

There are no bicycle paths in Oakleigh nor are any planned.

PORT MELBOURNE

There are no bicycle paths in Port Melbourne nor are any planned.

PRAHRAN

There are no bicycle paths in Prahran. A planned path of 3 km from Hoddle Bridge to MacRobertson Bridge should be under construction by late June 1976 and be completed by September 1976.

PRESTON

There are no bicycle paths in Preston and none are planned. The possibility of bicycle paths will be investigated in future. In the Northern Melbourne Waterways Study, it was suggested an investigation be made into the provision of a walking/cycling track along Darebin Creek from Clough Parade to Plenty Road. In the Merri Creek Study, a bicycle path was suggested running along the Merri Creek in Preston. There have been discussions with Latrobe University on developing bicycle paths to the University.

RINGWOOD

There are no bicycle paths in Ringwood nor are any planned. The potential for paths exists along Mullum Mullum Creek and Dandenong Creek. In the Koonung-Mullum Forestway proposal, a bicycle path ran along the banks of the Mullum Mullum Creek in Ringwood.

ST. KILDA

There are no bicycle paths in St. Kilda nor are any planned. The potential exists for a path along the foreshore parkland but leased land in places could cause problems. The 1974 MMBW bikeway linking Brighton to the City followed Marine Parade, St. Kilda. This proposal has not been implemented.

SANDRINGHAM

There are no bicycle paths in Sandringham. The Council is receptive to the idea of producing a bikeway plan. They have requested the city engineer to investigate overseas trends. On the receipt of his report and other information they will proceed towards developing a bikeway plan. The potential exists for a bicycle path along the west side of Beach Road from Cromer Road to New Street.

SHERBROOKE

There are no bicycle paths in Sherbrooke nor are any planned. An investigation of possible bicycle paths will be made in the future.

SOUTH MELBOURNE

There are no bicycle paths in South Melbourne. In the 1974 MMBW bicycle path proposal, a bicycle path linked the bayside suburbs then continued along Kerford Road and Albert Road passing through

the Domain and joined the existing Yarra bikeway. This proposed path also continued into Albert Park. There has been no action on this proposal to date. Bicycle paths are included in a planning study being prepared for South Melbourne.

SPRINGVALE

There are no designated bicycle paths in Springvale. Cyclists do use a recently completed path through Wachter Reserve. A bikeway plan is in the conceptual stage but no definite proposals have been made at this time.

SUNSHINE

There is a .3 km long bicycle path along Millbank Drive, Sunshine. Proposals have been made for a bicycle path along the west bank of the Maribrynong River to Dale Street. This proposed path could continue to the Ashby Street pedestrian bridge. The Millbank Drive path could continue along the Kororoit Creek to Main Road West. A bicycle path could be possible along the S.E.C. easement in St. Albans.

WAVERLEY

There are no bicycle paths in Waverley. A city wide bikeway plan has been produced but no action has been taken on it at this time. A bicycle path is included in that part of the Dandenong Valley park in Waverley.

WERRIBEE

There are no bicycle paths in Werribee. A proposal to the Department of Youth, Sport and Recreation for funding a 1.8 km path from Laverton Reserve along the rail easement, Watts Street joining Laverton High School is to be made in June 1976. Possibilities for bicycle paths exist along the Werribee River, in the drainage reserve crossing to Derremut Road and in the planned Werribee Park.

WHITTLESEA

There are no bicycle paths in Whittlesea. A 1.6 km bicycle path is under construction in the McLeans Road Reserve, Bundoora, and should be completed by September 1976. A proposal to the Department of Youth, Sport and Recreation for funding a 2 km bicycle path is to be made. This proposed path in the Edgars Creek Reserve extends from Robert Street to the Main Street Reserve in Thomastown. In the Northern Melbourne Waterways Study, a suggestion was made to investigate the need for a bicycle path along Edgars Creek from Mahoneys Road to Lynette Court in Whittlesea.

WILLIAMSTOWN

There are no bicycle paths in Williamstown. A proposal was made for a bicycle path along the park between the Strand and Hobsons Bay. This was rejected because of the cost. Street closures along Woods Street, Newport will reduce traffic considerably and this would be a likely place for a bicycle route to the schools in that area.

APPENDIX B

A listing of the number of students cycling to State Primary Schools in each city and shire of the Melbourne metropolitan area.

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
ALTONA			
Altona	16	530	
Altona East	20	600	
Altona North	20	800	
Altona West	50	801	
Altona Gate	12	730	
Seaholme	30	412	
Total	148	3873	3.8%
BERWICK			
Beaconsfield	15	131	
Doveton	20	612	
Doveton North	1	520	
Doveton West	6	480	
Hallam	6	405	
Hallam Valley	15	38	
Harkaway	10	85	
Narre Warren	40	125	
Narre Warren North	3	175	
Narre Warren Station	35	318	
Peel Street	35	400	
Total	176	3204	5.4%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
BOX HILL			
Box Hill	4	450	
Box Hill North	10	225	
Box Hill South	30	400	
Bennettswood	30	500	
Burwood	0	240	
Burwood East	0	660	
Burwood Heights	40	800	
Kerrimuir	25	540	
Killowa	0	230	
Koonung Heights	0	370	
Mont Albert	50	470	
Surrey Hills	12	360	
Total	201	4745	4.2%
BRIGHTON			
Brighton	40	640	
Brighton Beach	30	420	
Elsternwick	30	360	
Gardenvale	50	620	
Total	150	2040	7.3%
BROADMEADOWS			
Broadmeadows	0	213	
Broadmeadows Special	2	120	
Broadmeadows East	0	385	
Broadmeadows North West	0	287	
Broadmeadows West	0	580	
Campbellfield	0	270	
Campbellfield Heights	1	510	
Campmeadows	0	430	
Coolaroo South	30	980	

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
Dallas	0	440	
Dallas North	0	418	
Eastmeadows	0	190	
Fawkner	2	230	
Fawkner East	30	270	
Fawkner North	10	600	
Gladstone Park	0	660	
Gladstone Views	0	420	
Glenroy	2	363	
Glenroy North	0	490	
Glenroy West	30	500	
Gowrie Park	0	770	
Hadfield	20	506	
Jacana	0	210	
Moomba Park	0	700	
Oak Park	4	555	
Strathmore	12	380	
Upfield	0	380	
Westbreen	30	470	
Westmeadows	0	210	
Total	191	13207	1.4%
BRUNSWICK			
Brunswick	3	960	
Brunswick East	0	491	
Brunswick North	0	900	
Brunswick North West	0	330	
Brunswick South	6	297	
Brunswick South West	0	570	
Brunswick West	0	232	
Total	9	3780	.23%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
BULLA			
Bulla	2	42	
Craigieburn	20	430	
Greenville	3	38	
Mickelham	0	23	
Sunbury	35	385	
Sunbury West	40	520	
Total	100	1438	6.9%
CAMBERWELL			
Alamain	5	200	
Ashburton	10	380	
Balwyn North	10	420	
Balwyn West	20	370	
Bellvue	20	420	
Boroondara	5	270	
Boroondara North	0	379	
Camberwell	0	280	
Camberwell South	20	330	
Canterbury	0	670	
Chatham	0	280	
Deepdene	20	350	
Glen Iris	6	330	
Greythorn	40	465	
Hartwell	0	475	
Solway	12	217	
Total	158	5836	2.7%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
CAULFIELD			
Carnegie	20	475	
Caulfield	0	400	
Caulfield North	14	500	
Caulfield South	15	500	
Glenhuntly	12	400	
Ripponlea	16	430	
Total	77	2705	2.8%
CHELSEA			
Carrum	34	426	
Chelsea	35	506	
Chelsea Heights	35	460	
Bonbeach	60	240	
Edithvale	50	650	
Total	214	2282	9.3%
COBURG			
Coburg	2	590	
Coburg East	0	330	
Coburg North	6	600	
Coburg West	16	770	
Merlynston	1	335	
Moorland	0	940	
Newlands	0	590	
Pascoe Vale	0	416	
Pascoe Vale North	6	380	
Pascoe Vale South	0	360	
Total	31	5311	.58%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
COLLINGWOOD			
Abbotsford	0	225	
Aberfeldie	0	350	
Gold Street	0	420	
Spensley Street	0	418	
Collingwood	1	190	
Total	1	1603	.06%
CRANBOURNE			
Lyndhurst	0	40	
Skye	5	74	
Total	5	114	4.3%
CROYDON			
Croydon	30	650	
Croydon North	55	580	
Croydon South	50	860	
Croydon West	50	650	
Ruskin Park	6	510	
Yarra Road	10	200	
Total	201	3450	5.8%
DANDENONG			
Chandler Park	30	660	
Dandenong	0	306	
Dandenong North	0	510	
Dandenong South	0	550	
Dandenong West	10	350	
Greenslopes	30	590	
Lyndale	5	850	
Oakwood Park	15	860	
Rosewood Downs	10	400	
Wooranna Park	10	625	
Yarraman Park	10	440	
Total	120	6171	1.9%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
DIAMOND VALLEY			
Bundoora	0	101	
Diamond Creek	3	300	
Diamond Creek East	6	200	
Greensborough	24	430	
Green Hills	12	430	
Greenwood	30	830	
Grimshaw	20	440	
Plenty	0	110	
Sherborne	20	422	
Watsonia	20	560	
Watsonia Heights	0	658	
Watsonia North	0	653	
Watsonia South	2	460	
Wattle Glen	0	108	
Wattle Park	0	240	
Yarrambat	4	139	
Total	141	5651	2.4%
DONCASTER AND TEMPLESTOWE			
Ayr	10	549	
Beverley Hills	30	790	
Birralee	0	370	
Bulleen	30	650	
Donburn	20	300	
Doncaster	30	800	
Doncaster East	20	540	
Doncaster Heights	30	700	
Doncaster Park	25	400	
Donvale	10	800	
Manningham	15	630	
Ringwood North	17	420	
Templestowe	10	609	
Templestowe Heights	15	730	
Templestowe Valley	35	725	

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
Waldau	20	700	
Warrandyte	18	546	
Warrandyte South	6	170	
Total	331	10429	3.1%
ELTHAM			
Briar Hill	3	290	
Eltham	15	540	
Eltham East	10	400	
Eltham North	20	180	
Hurstbridge	4	227	
Kangaroo Ground	7	110	
Lower Plenty	15	411	
Montmorency	15	470	
Montmorency South	4	300	
Panton Hill	10	116	
Research	3	250	
St. Andrews	6	140	
Total	112	3434	3.2%
ESSENDON			
Ascot Vale	0	540	
Ascot Vale West	0	6000	
Essendon	12	371	
Essendon North	10	375	
Moonee Ponds Central	20	480	
Moonee Ponds West	0	615	
Total	42	2981	1.4%
FITZROY			
Fitzroy	0	535	
Fitzroy North	0	647	
Merri	0	513	
Total	0	1695	0%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
FOOTSCRAY			
Footscray (Geelong Road)	0	700	
Footscray (Hyde Street)	6	647	
Footscray North	12	527	
Footscray West	12	580	
Kingsville	12	620	
Wembley	0	350	
Yarraville	0	380	
Yarraville West	0	702	
Total	42	4506	.93%
FRANKSTON			
Aldercourt	0	410	
Armata	4	580	
Ballam Park	50	470	
Belvedere Park	20	700	
Carrum Downs	12	165	
Derinya	20	640	
Fairway	12	340	
Frankston	15	450	
Frankston East	15	700	
Frankston Forest	60	320	
Kananook	30	400	
Monterey	0	570	
Overport	40	900	
Seaford	100	500	
Seaford North	50	400	
Total	488	8145	5.9%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
HAWTHORN			
Auburn	0	480	
Auburn South	27	575	
Glenhuntly	12	400	
Glenferrie	8	378	
Hawthorn West	0	360	
Total	47	2193	2.1%
HEALESVILLE			
Yarra Glen	0	34	
Yarra Glen (Symmons Street)	30	170	
Total	30	204	14.7%
HEIDELBERG			
Banyule	12	580	
Bellfield	4	398	
Bellvue Avenue	3	424	
Golf Links	10	373	
Heidelberg	2	285	
Heidelberg Heights	2	400	
Heidelberg West	20	450	
Ivanhoe	3	336	
Ivanhoe East	20	420	
Olympic Village	0	750	
Macleod	10	344	
Macleod (Yallambie)	0	275	
View Bank	400	720	
Total	486	5755	8.4%

	Students cycling to schools	Total Enrolment	Percent riders to total enrolment
KEILOR			
Avondale Heights	0	854	
Doutta Galla	10	270	
Keilor	50	235	
Keilor Heights	12	757	
Keilor Park	0	400	
Keilor South	0	667	
Lincolnville	0	330	
Milleawa	192	605	
Overland	0	372	
Parklands	12	654	
St. Albans	2	600	
St. Albans East	1	800	
St. Albans North	20	600	
Stevensville	0	1000	
Sydenham	2	29	
Sydnenham West	1	15	
Tullamarine	12	696	
Watt Street	20	402	
Total	334	9286	3.5%
KNOX			
Bayswater	80	700	
Bayswater North	30	370	
Bayswater South	30	370	
Bayswater West	0	360	
Boronia Heights	40	727	
Boronia West	50	740	
Fair Hills	30	830	
Ferntree Gully	30	502	
Ferntree Gully North	6	500	
Knox Park	20	400	
Knoxfield	30	552	

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
Lysterfield	0	24	
Mountain Gate	30	501	
Rangeview	20	600	
Rowville	30	370	
Scoresby	15	260	
Studfield	50	700	
Studfield East	0	620	
The Basin	30	430	
Upper Ferntree Gully	23	340	
Wantirna	6	200	
Wantirna Heights	25	458	
Wantirna South	12	150	
Wattletree	15	420	
Total	602	11124	5.4%
LILLYDALE			
Gladesville	10	360	
Kilsyth	15	640	
Kilsyth East	0	270	
Lilydale	10	480	
Lilydale West	6	632	
Manchester	30	640	
Monbulk	2	381	
Montrose	15	640	
Mooroolbark	50	450	
Mount Dandenong	6	165	
Mount Evelyn	50	450	
Olinda	6	153	
Pembroke	20	426	
Sylvan	1	103	
Sylvan South	12	50	
Wonga Park	5	97	
Yering	0	120	
Total	238	6057	3.9%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
MALVERN			
Chadstone Park	15	437	
Gardener	20	420	
Malvern	12	32-	
Malvern Central	4	597	
Malvern East	50	640	
Total	101	2414	4.1%
MELBOURNE			
Carlton (Neill Street)	0	584	
Carlton (Rathdowne Street)	0	106	
Debney Meadows	0	500	
Flemington	0	312	
Kensington	0	750	
Melbourne East	0	220	
North Melbourne (Boundary Road)	0	400	
North Melbourne (Errol Street)	0	330	
Princes Hill	0	530	
Yarra Park	3	250	
West Melbourne	0	66	
Total	3	4048	.07%
MELTON			
Diggers Rest	10	48	
Melton	65	440	
Melton South	25	330	
Melton West	40	770	
Rockbank	0	48	
Tintern vale	4	42	
Total	144	1678	8.5%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
MOORABBIN			
Bentleigh East	25	280	
Bentleigh West	20	436	
Cheltenham	40	435	
Cheltenham East	40	750	
Cheltenham Heights	15	478	
Cheltenham North	0	330	
Coatesville	50	680	
Eastmoor	20	440	
Heatherton	20	400	
Highett	25	308	
Moorabbin	30	340	
Moorabbin Heights	10	440	
Moorabbin West	20	400	
Ormond	25	390	
Ormond East	20	380	
Strathmore	15	463	
Valkstone	30	240	
Total	405	7190	5.6%
MORDIALLOC			
Aspendale	90	620	
Barkley	60	340	
Braeside	0	11	
Mentone	15	412	
Mentone Park	150	412	
Parkdale	35	503	
Parktone	30	485	
Total	380	2783	13.6%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
NORTHCOTE			
Alphington	5	200	
Fairfield	28	700	
Fairfield North	0	380	
Northcote (Helen Street)	0	600	
Northcote (Wales Street)	0	750	
Thornbury	9	730	
Thornbury East	3	405	
Westgarth	0	800	
Total	36	4565	.78%
NUNAWADING			
Antonio Park	15	266	
Blacktown	14	278	
Blacktown East	20	540	
Blacktown Lake	20	435	
Blacktown North	20	360	
Blacktown South	20	300	
Eastmont	30	476	
Heatherdale	24	360	
Laburnum	30	330	
Middlefield	12	500	
Mirribooka	5	380	
Mitcham	35	850	
Namara	0	750	
Nunawading South	10	520	
Park Orchards	40	470	
Parkmore	60	803	
Springvale Road	0	521	
Springview	50	661	

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
Verdale	20	440	
Vermont	10	600	
Warrawong	12	450	
Winlaton	0	78	
Total	447	0368	4.3%
OAKLEIGH			
Amstel	20	581	
Clarinda	50	350	
Clayton	15	430	
Clayton North	12	553	
Clayton South	20	700	
Clayton West	40	300	
Hughsdale	30	630	
Huntingdale	5	286	
Oakleigh	10	482	
Oakleigh East	3	510	
Oakleigh South	30	440	
Westall	30	528	
Total	265	5790	4.5%
PAKENHAM			
Beaconsfield	15	132	
Pakenham	30	650	
Officer	12	80	
Total	57	862	6.6%
PORT MELBOURNE			
Graham Street	6	365	
Nott Street	0	650	
Total	6	1015	.59%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
PRAHRAN			
Armadale	15	290	
Hawksburn	5	820	
Prahran	0	550	
Toorak Central	1	407	
Windsor	0	600	
Total	21	2667	.78%
PRESTON			
Burbank	40	440	
Bell	12	419	
Duffy Street	20	385	
Gowerville	0	230	
Keon Park	5	550	
Kingsbury	14	460	
Lakeside	0	294	
Merrilands	20	570	
Preston East	0	480	
Preston North East	0	730	
Preston South	0	440	
Preston West	0	500	
Reservoir East	0	630	
Reservoir West	6	440	
Rosebank	12	250	
Ruthven	10	645	
Tyler Street	10	630	
Total	149	8093	1.8%
RICHMOND			
Brighton Street	0	300	
Burnley	0	370	
Cremorne Street	0	275	
Davidson Street	0	355	
Richmond Central	0	365	
Total	0	1665	0%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
RINGWOOD			
Eastwood	25	700	
Everard Street	19	410	
Greenwood Avenue	12	305	
Heathmont	20	400	
Heathmont East	0	585	
Millum	10	513	
Narwood	4	435	
Ringwood Heights	0	455	
Southwood Avenue	10	300	
Total	100	4103	2.4%
SANDRINGHAM			
Beaumaris	70	700	
Beaumaris North	50	400	
Black Rock	35	365	
Hampton	30	475	
Hampton Park	15	272	
Sandringham	30	440	
Sandringham East	50	410	
Total	280	3062	9.1%
SHERBROOKE			
Belgrave	30	375	
Ferny Creek	15	100	
Kalista	5	270	
Menzies Creek	3	65	
Narre Warren East	1	34	
Sassafras	10	180	
Selby	30	140	
Tecoma	10	374	
Upwey	8	406	
Upwey South	2	310	
Total	114	2254	5.0%

	Students cycling to school	Total Enrolment	Percent riders to toral enrolment
SPRINGVALE			
Bangholme	0	30	
Chandler	50	724	
Coomoora	70	625	
Dingley	70	550	
Forest Hill	2	250	
Harrisfield	25	600	
Heatherhill	25	650	
Keysborough	15	75	
Noble Park (infants)	12	350	
Noble Park (senior school)	60	631	
Sandown Park	10	470	
Southvale	60	720	
Spring Valley	25	280	
Springvale	10	600	
Springvale North	40	515	
Springvale South	200	620	
Springvale West	20	610	
Wallarano	100	880	
Whiteside	30	325	
Total	824	9505	8.6%
SOUTH MELBOURNE			
Albert Park	0	435	
Middle Park	5	500	
South Melbourne (Dorcas Street)	0	390	
South Melbourne (Eastern Road)	1	210	
Total	6	1535	.39%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
ST. KILDA			
Elwood	0	700	
St. Kilda	6	870	
St. Kilda Park	0	327	
Total	6	1897	.31%
SUNSHINE			
Albion North	20	520	
Albion	20	400	
Ardeer	5	340	
Braybrook	6	400	
Brooklyn	12	178	
Deer Park	50	600	
Deer Park West	10	330	
Maidstone	0	393	
Maribyrnong	0	290	
St. Albans Heights	10	836	
St. Albans South	0	330	
Sunshine	2	400	
Sunvale	16	270	
Sunshine East	0	407	
Sunshine Heights	0	650	
Sunshine North	0	614	
Sunshine West	0	619	
Tottenham	5	150	
Tottenham North	0	497	
Total	156	8224	1.8%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
WAVERLEY			
Ashwood	1	513	
Bayview	0	360	
Brandon Park	100	778	
Brentwood	40	650	
Cooinda	30	440	
Essex Heights	70	817	
Glen Waverley	5	440	
Glen Waverley Heights	20	542	
Highvale	40	800	
Jordanville	0	372	
Mimosa	15	490	
Monash	12	500	
Mount View	40	759	
Mount Waverley	10	686	
Mulgrave	1	19	
Park Lane			
Pinewood	35	759	
Syndal	0	645	
Syndal North	28	554	
Syndal South	3	504	
Sussex Heights	0	375	
Waverley North	20	680	
Waverley Park	0	351	
Wellington	12	785	
Total	482	12819	3.7%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
WERRIBEE			
Duncans Road	6	26	
Exford	0	28	
Glen Devon	50	587	
Laverton (Armstrong Street)	15	300	
Laverton (Epsom Street)	12	300	
Laverton Heights	0	362	
Laverton North	0	300	
Mossfield	50	510	
Werribee South	15	80	
Woodville	70	550	
Total	218	3043	7.1%
WHITTLESEA			
Arthurs Creek	6	50	
Doreen	1	27	
Epping	40	491	
Kalkallo	6	30	
Lalor	12	605	
Lalor East	5	900	
Lalor North	12	750	
Lalor Park	10	800	
Lalor West	8	580	
Mernda	20	90	
Morang South	12	142	
Strathewen	0	19	
Thomastown East	0	690	
Thomastown West	20	600	
Whittlesea	10	290	
Whittlesea (old Plenty Road)	14	37	
Wollert	2	33	
Total	183	6594	2.7%

APPENDIX C

A listing of the number of students cycling to State High Schools and Technical Schools in each city and shire of the Melbourne metropolitan area.

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
ALTONA			
Altona	120	740	
Altona North	63	840	
Paisley	300	740	
Total	483	2320	20.8%
BERWICK			
Doveton	90	700	
Doveton Technical	200	800	
Doveton North Technical	50	380	
Hallam	35	975	
Total	375	2855	13.1%
BOX HILL			
Box Hill Technical	180	450	
Burwood Technical	200	650	
Wattle Park	80	520	
Whitehorse Technical	5	1200	
Total	465	2820	16.4%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
BRIGHTON			
Brighton	450	820	
Brighton Technical	100	500	
Total	550	1320	41.6%
BROADMEADOWS			
Broadmeadows Technical	300	600	
Broadmeadows West Technical	120	500	
Fawkner	6	906	
Fawkner Technical	150	896	
Gladstone Park	80	640	
Glenroy Technical	300	1100	
Hadfield	130	930	
Oak Park	50	900	
Strathmore	85	1000	
Upfield	50	1100	
Total	1271	8572	14.8%
BRUNSWICK			
Brunswick	40	930	
Brunswick East	20	640	
Brunswick Technical	40	400	
Total	100	1970	5.0%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
BULLA			
Sunbury	50	650	7.6%
CAMBERWELL			
Greythorn	150	916	
Canterbury Girls	11	750	
Total	161	1666	9.6%
CAULFIELD			
Caulfield	100	800	
Caulfield East Technical	150	480	
Murrumbeena	130	700	
Total	380	1980	19.1%
CHELSEA			
Aspendale	300	546	
Bonbeach	256	757	
Mordialloc/Chelsea	200	750	
Seaford Carrum	250	750	
Total	1006	2803	35.8%
COBURG			
Coburg	5	700	
Coburg Technical	150	600	
Moreland	6	700	
Newlands	40	860	
Pascoe Vale Girls	150	800	
Total	351	3660	9.5%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
ESSENDON			
Buckley Park	10	800	
Essendon	38	930	
Essendon Technical	65	630	
Total	113	2360	4.7%
ELTHAM			
Eltham	40	750	
Hurstbridge	2	550	
Total	42	1300	3.2%
FITZROY			
Exhibition	0	310	
Fitzroy	0	900	
Total	0	1210	0%
FOOTSCRAY			
Footscray Girls	0	650	
Footscray High	30	850	
Footscray Technical	25	700	
Total	55	2200	2.5%
FRANKSTON			
Ballam Park Technical	250	950	
Frankston	100	1215	
Frankston Technical	60	1415	
Karringal	120	1120	
Monterey Technical	275	800	
Total	805	5500	14.6%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
HAWTHORN			
John Gardener	76	350	
Swinburn Technical	20	650	
Total	96	1000	9.6%
HEIDELBERG			
Banyule	60	580	
Heidelberg	3	785	
Heidelberg Technical	90	490	
La Trobe	40	400	
Macleod	40	895	
Macleod West Technical	100	900	
Rosanna	50	650	
Waterdale	6	320	
Total	389	5020	7.7%
KEILOR			
St. Albans Technical	400	670	
Kealba	100	700	
Keilor	150	870	
Niddrie	60	1040	
Niddrie Technical	250	650	
Total	960	3930	24.4%
KEW			
Kew	12	760	1.5%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
KNOX			
Boronia	140	920	
Boronia Technical	170	600	
Fair Hills	50	760	
Ferntree Gully	100	800	
Knoxfield	250	600	
Mitcham	120	1150	
Scoresby	60	260	
Total	890	5090	17.4%
LILLYDALE			
Lilydale	12	750	
Lilydale Technical	40	886	
Monbulk	8	625	
Mooroolbark	70	520	
Mooroolbark Technical	200	800	
Pembroke	100	880	
Total	430	4461	9.6%
MELBOURNE			
Debney Park	5	460	
Flemington	0	798	
University	30	990	
Princes Hill	50	786	
Total	85	3034	2.8%
MALVERN			
Chadstone	60	720	
Malvern Girls	3	300	
Total	63	1020	6.1%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
MELTON			
Milton	120	460	26%
MOORABBIN			
Cheltenham	200	970	
Highett	140	570	
McKinnon	400	800	
Moorabbin Technical	350	550	
Moorleigh	70	460	
Total	1160	3350	34.6%
NORDIALLOC			
Mentone	300	743	
Parkdale	200	710	
Total	500	1453	34.4%
NORTHCOTE			
Northcote	20	700	
Northcote Technical	160	800	
Thornbury	90	1000	
Total	270	2500	10.8%
NUNAWADING			
Blackburn Technical	300	600	
Nunawading	250	1000	
Mitcham Technical	325	1100	
Vermont	150	955	
Total	1025	3655	28.0%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
OAKLEIGH			
Clayton Technical	250	820	
Huntingdale	300	800	
Huntingdale Technical	200	600	
Oakleigh	150	840	
Waverley	100	870	
Total	1000	3930	25.4%
PRAHRAN			
Melbourne	6	1040	
Prahran	12	1000	
South Yarra Annex	12	67	
Total	30	2107	1.4%
PRESTON			
Keon Park	60	650	
Keon Park Technical	300	800	
Kingsbury	130	600	
Lakeside	70	905	
Preston College	10	800	
Preston Technical	30	840	
Preston East	30	570	
Preston East Technical	40	800	
Preston Girls	0	820	
Macleod West Technical	100	900	
Reservoir	20	650	
Total	720	7430	9.6%
PAKENHAM			
Pakenham	30	652	4.6%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
RICHMOND			
Richmond Girls	0	400	
Richmond	30	900	
Richmond Technical	0	400	
Total	30	1700	1.7%
RINGWOOD			
Norwood	120	1050	
Ringwood	90	1000	
Ringwood Technical	250	950	
Total	460	3000	15.3%
SANDRINGHAM			
Beaumaris	250	800	
Hampton	250	650	
Sandringham Technical	370	830	
Total	870	2280	38.1%
SHERBROOKE			
Ferntree Gully Technical	75	791	
Upwey	10	850	
Total	85	1641	5.1%
SOUTH MELBOURNE			
Albert Park	0	870	
McRobertson Girls	10	650	
South Melbourne Technical	63	305	
Total	73	1825	4.0%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
SPRINGVALE			
Heatherdale	200	1000	
Keysborough	190	317	
Noble Park Technical	250	670	
Springvale	130	900	
Total	770	2887	26.6%
SUNSHINE			
Braybrook	12	900	
Deer Park	60	640	
Maribyrnong	40	850	
St. Albans	40	1200	
Sunshine	40	870	
Sunshine Technical	50	900	
Sunshine North Technical	200	760	
Sunshine West	50	1190	
Total	492	7310	6.7%
WAVERLEY			
Brentwood	60	1000	
Glen Waverley	200	1100	
Jordanville Technical	100	500	
Mount Waverley	50	874	
Syndal	257	1030	
Wellington	100	700	
Total	767	5204	14.7%
WILLIAMSTOWN			
Point Gellibrand	35	380	
Williamstown	250	780	
Williamstown Technical	250	550	
Total	535	1710	31.2%

	Students cycling to school	Total Enrolment	Percent riders to total enrolment
WERRIBEE			
Laverton	40	600	
Werribee	100	400	
Werribee Technical	100	700	
Total	240	1700	14.1%
WHITTLESEA			
Lalor	60	1300	
Thomastown	50	822	
Total	110	2122	5.1%

REFERENCES

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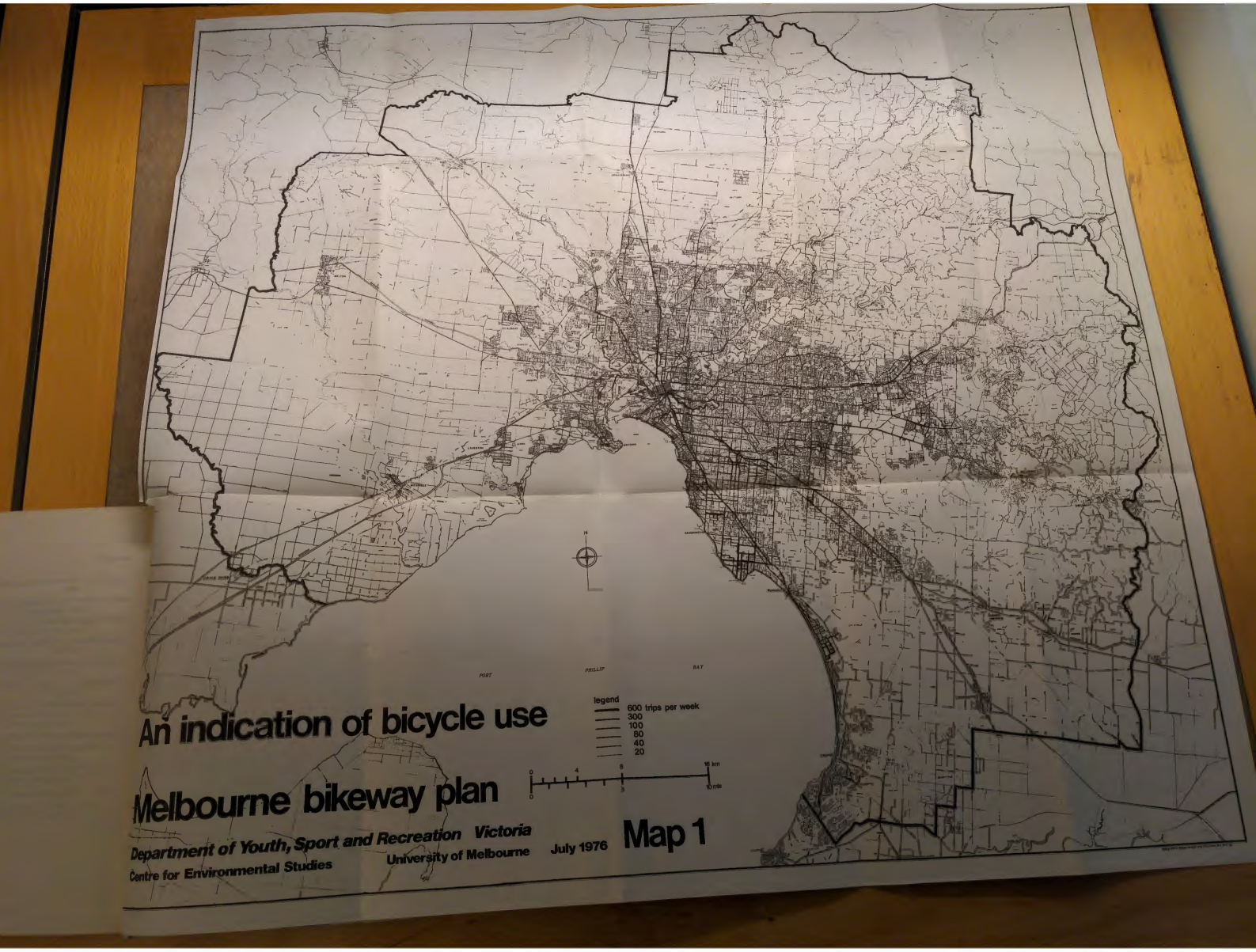


An indication of bicycle use

Melbourne bikeway plan

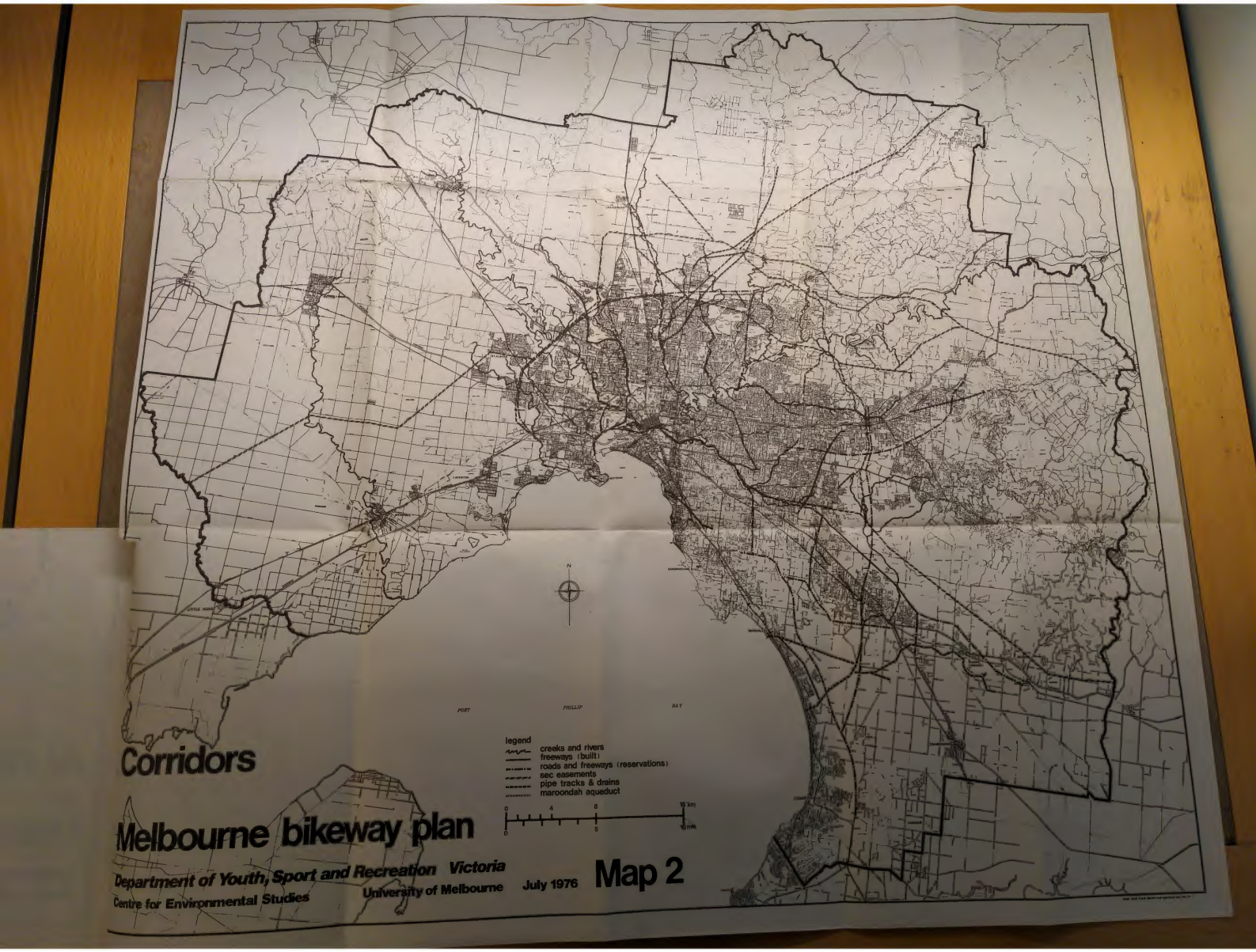
Map 1

Department of Youth, Sport and Recreation Victoria

Centre for Environmental Studies

University of Melbourne

July 1976



Corridors

Melbourne bikeway plan

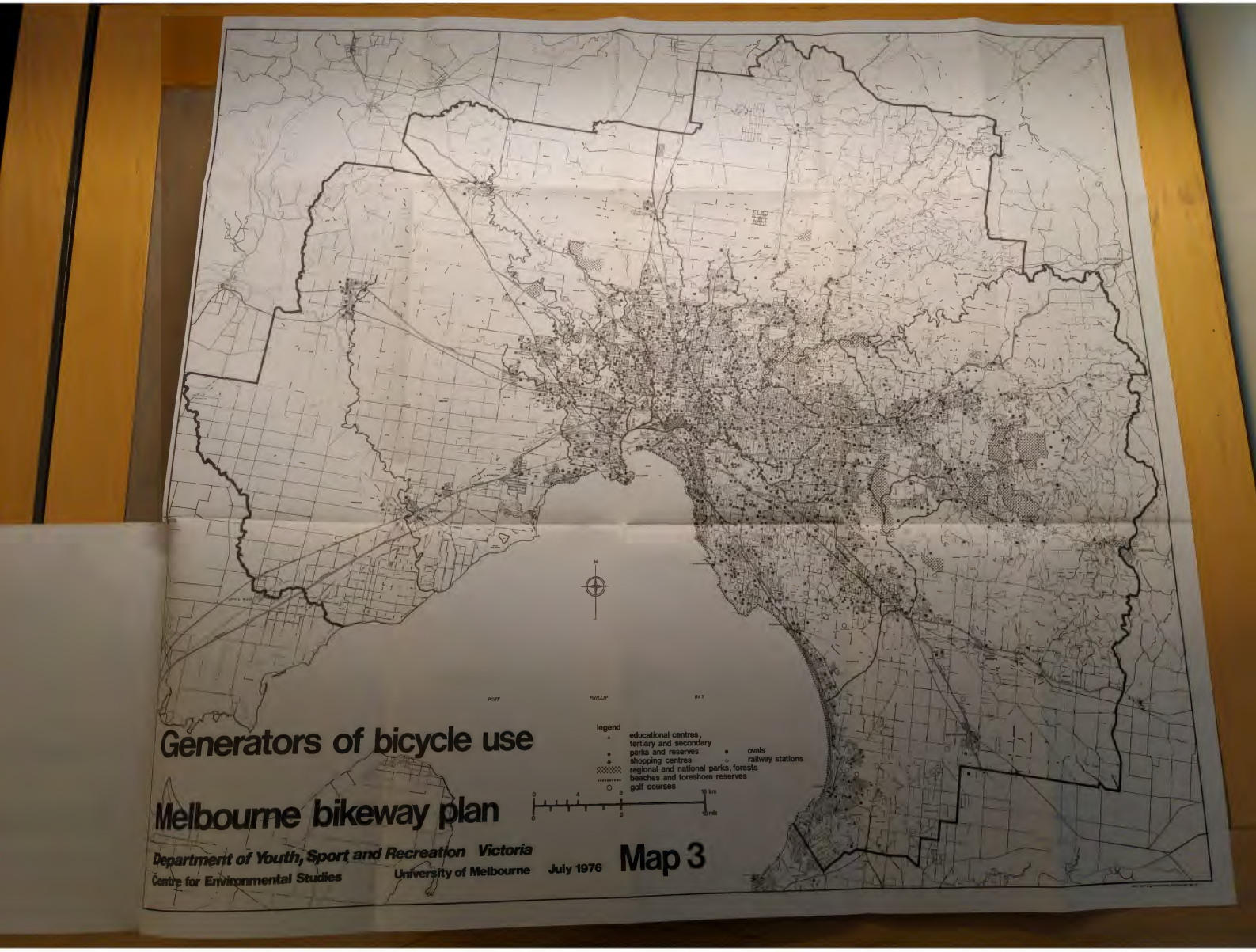
Department of Youth, Sport and Recreation Victoria

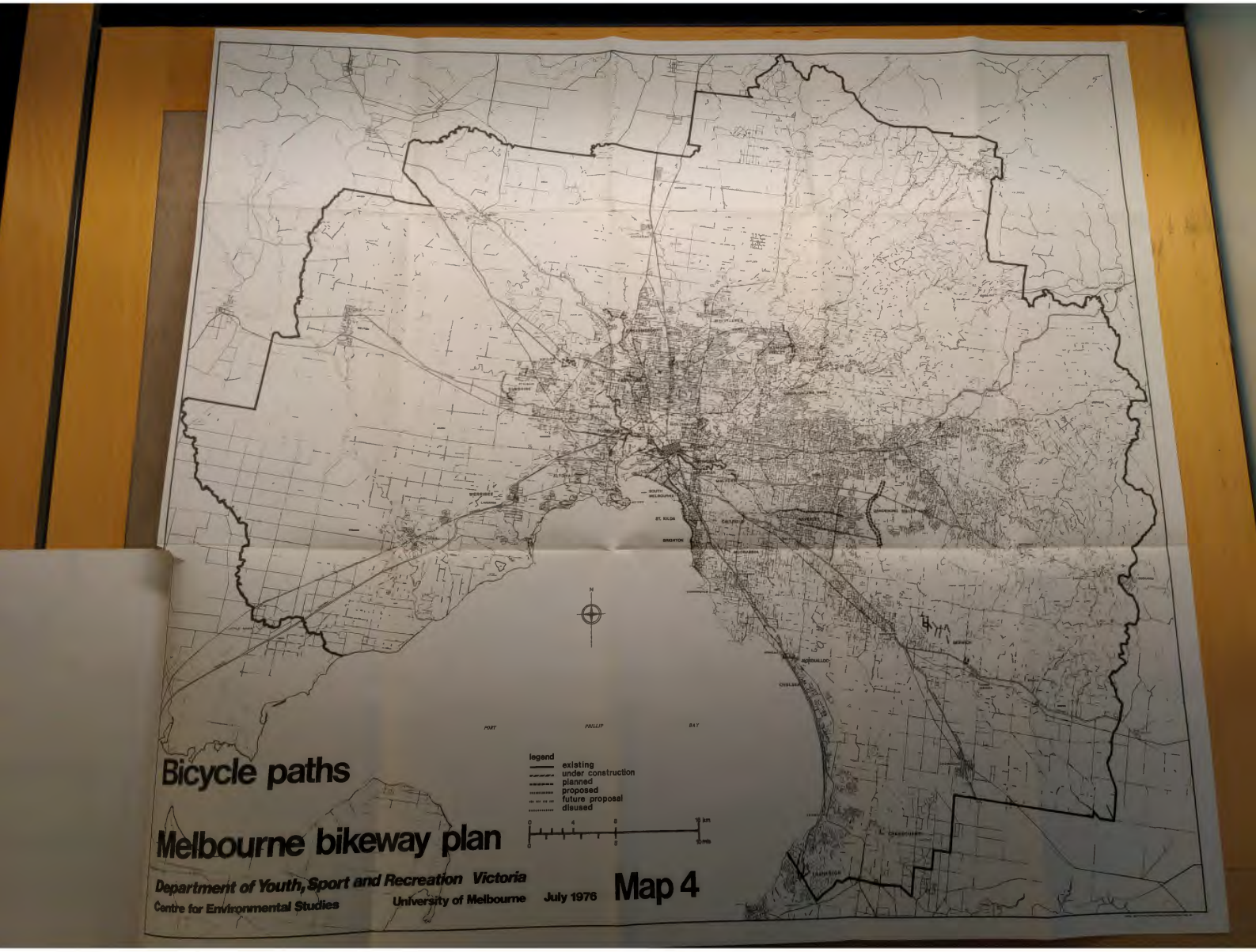
Centre for Environmental Studies

University of Melbourne

July 1976

Map 2


PORT PHILLIP BAY
legend
educational centres, tertiary and secondary
parks and reserves
shopping centres
regional and national parks, forests
beaches and foreshore reserves
golf courses
ovals
railway stations
Generators of bicycle use
Melbourne bikeway plan
Department of Youth, Sport and Recreation Victoria
Centre for Environmental Studies
University of Melbourne
July 1976
Map 3



Bicycle paths

Melbourne bikeway plan

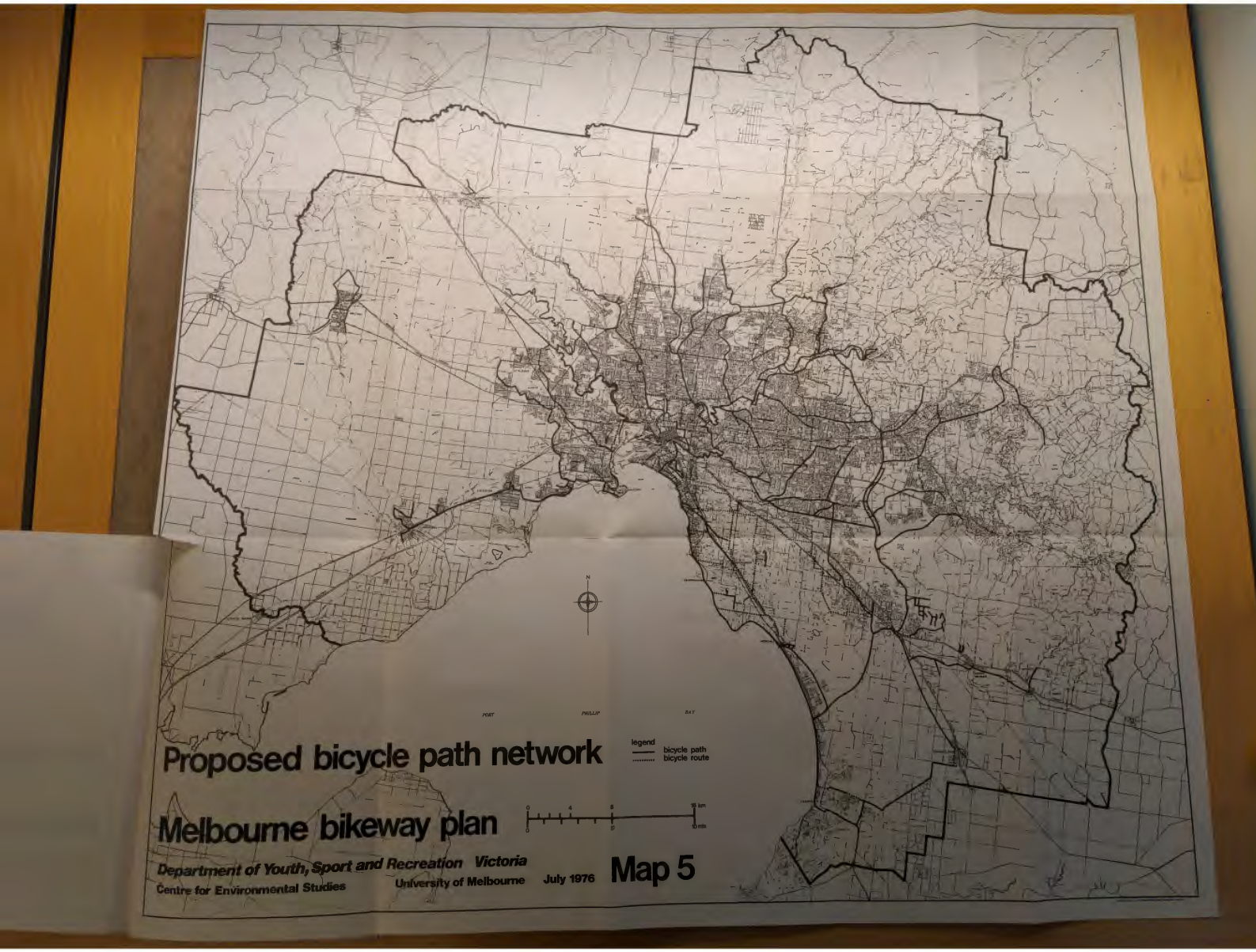
Department of Youth, Sport and Recreation Victoria

Centre for Environmental Studies

University of Melbourne

July 1976

Map 4


PORT PHILLIP BAY
Proposed bicycle path network
legend
bicycle path
bicycle route
Melbourne bikeway plan
Department of Youth, Sport and Recreation Victoria
Centre for Environmental Studies
University of Melbourne
July 1976
Map 5