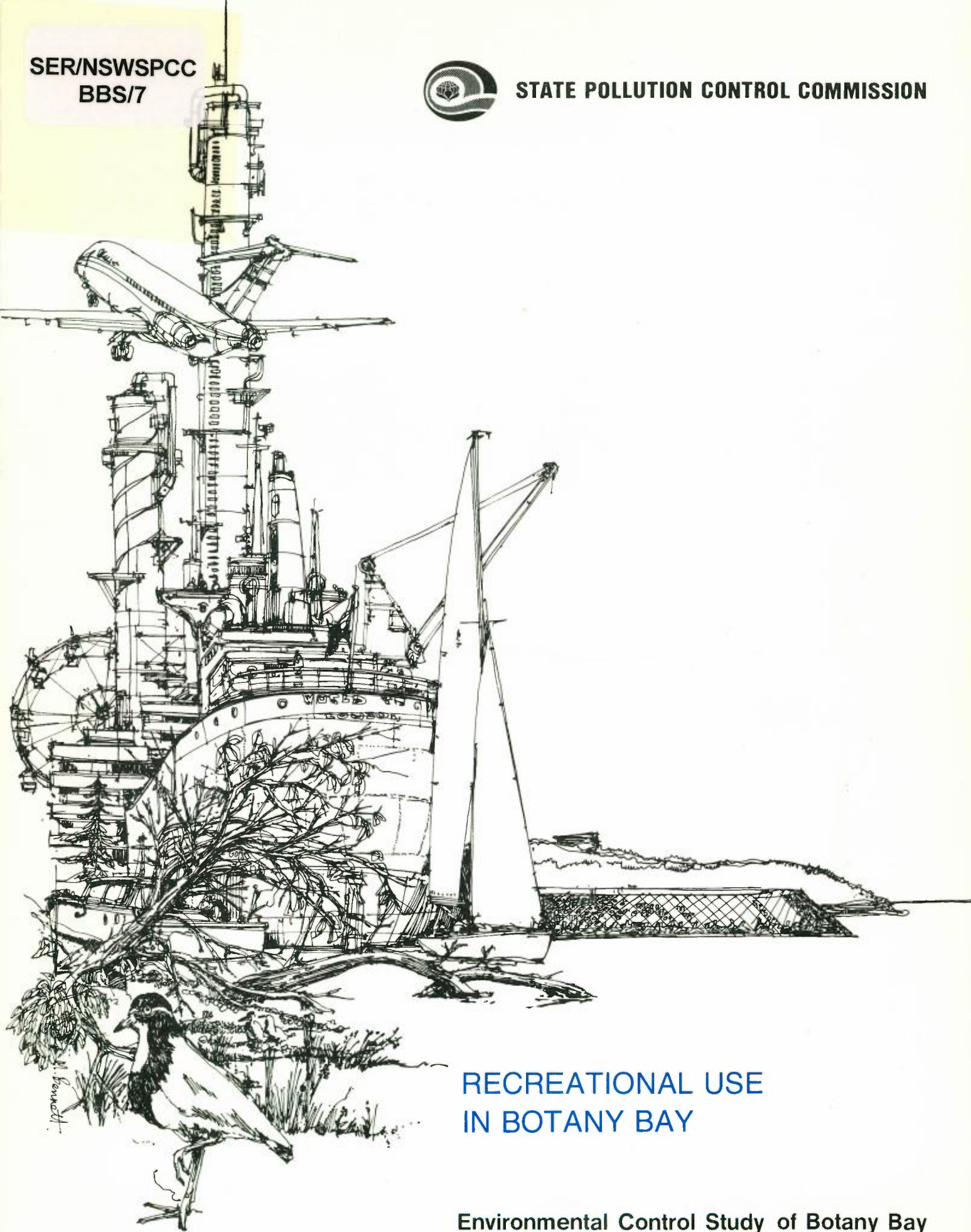


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RECREATIONAL USE IN BOTANY BAY

Environmental Control Study of Botany Bay



STATE POLLUTION CONTROL COMMISSION



RECREATIONAL USE IN BOTANY BAY

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Environmental Control Study of Botany Bay

BBS 7

ISBN 0-7240-4003-X

Sydney, Australia

November 1978

PREFACE

Arrangements were made in 1975 for the State Pollution Control Commission to carry out an environmental control study of Botany Bay and its tributaries. The study, which began in January 1976, developed from initiatives of the Maritime Services Board of New South Wales and the Board has contributed substantially to it.

The study primarily is of water and water-associated environments, so it covers land-based activities within the catchment only to the extent that these have an impact specifically on the water environment.

The State Pollution Control Commission is responsible for management of the study and for making recommendations developed from it, with advice from its Technical Advisory Committee. Throughout the study period, however, the Commission has been assisted by willing cooperation and communication with many other departments and authorities.

Particular elements of the study are being carried out by State Government instrumentalities, universities and consultants. Major elements are supported by technical consultative committees.

Investigations have aimed first to identify and describe the water-associated resources and the activities responsible for environmental change. The effects of activities on important resources can then be assessed and appropriate control measures indicated.

These investigations have led to a series of technical papers on specific aspects, of which this paper is one. Other papers in the series are listed below.

One of the principal objectives of the study is to recommend to the Government a comprehensive water-resource management plan for the bay and its tributaries. These technical papers will contribute to that objective.

This report has been prepared within the Commission's study team. It is based, in part, on a report prepared for the Commission by Planning Workshops Pty Ltd.

ABSTRACT

A survey was carried out to assess recreational use patterns along the foreshores of Botany Bay, taking into consideration the influence of environmental factors, recreation facilities and user interests. Due to the diverse nature of recreational use, each of the major water-based activities, ie picnicking, swimming, walking and relaxing, angling, sailing and power boating, is considered in detail. Results obtained from this survey indicate that Botany Bay is a regionally important site for water-based recreation and, in particular, for family recreation.

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1 INTRODUCTION

Little attention has been paid in the past to recreational behaviour patterns in Australia. This, together with the low priority given to recreational land use planning, frequently has resulted in the inadequate provision of recreational facilities.

Because of a greater demand for unstructured outdoor activities, attention has recently been focused in Australia and overseas on the increasing use of national parks and the naturalness they afford. However, the high growth rate forecast for such usage has not been achieved and the actual, moderate increase appears to be due to an increase in population rather than to changing recreational and/or environmental preference.

There appears, however, to be a clear preference for relatively passive outdoor pursuits, as shown by a Victorian survey (Mercer 1977) into people's preferred recreational activities (Table 1). Respondents were asked to select from a list of 40 the activities they undertook frequently.

Table 1. Recreational Preferences

<u>Activity</u>	Indicated preference (%)*
Barbecuing and/or Picnicking	40
Relaxing at Home	40
Pleasure Driving	38
Visiting Family or Friends	31
Playing or Watching Sport	15

* some respondents indicated more than one preference.

Similar preferences have also been observed in overseas surveys (Mercer 1977) which lends support to the conclusion that more recreation sites are needed within or near urban areas. Assessment of need must take account not only of changing urban populations but also trends towards unstructured recreation. These trends arise from factors such as greater leisure time, changing attitudes towards distance and costs of travel and a greater appreciation of the natural environment. Provision

or improvement of both recreational sites and the access to them leads, in turn, to growth in demand and changes in recreational behaviour.

Sydney's climate and the scenic attraction of its waterways together result in relatively high levels of participation in outdoor recreation. Since over 40 per cent of Sydney's population lives within the catchment of Botany Bay and its tributaries, this area provides many and important opportunities for recreational activities such as swimming, barbecuing, picnicking, relaxing, fishing and boating.

Recreational demand is high and consequently there is competition for use of foreshores for recreation, residential and other purposes. In order to enable recreational potential to be developed fully, the Commission instigated a study to assess activity patterns within it. Kogarah Bay was included in the study because of its proximity and similarity in use. References to Botany Bay in the text of this report refer, therefore, also to Kogarah Bay.

Another report of this series (SPCC 1978a in press) provides an inventory of water-based recreational facilities in the study area and an assessment of its potential for these uses together with opportunities for their fuller realization.

2 RECREATIONAL RESOURCES AND FACILITIES

People engage in many forms of recreation and consequently place diverse demands on the environment and have need of different facilities.

2.1 Types of Recreational Activity

Outdoor recreational activities can be classified according to the requirements of participants.

Recreation associated with tidal waters of the Botany Bay catchment tends to fall within the full range between those dependent primarily on the natural resource (resource-oriented) such as bushwalking and birdwatching, to those where the provision of facilities is essential (facility-oriented) such as bathing within enclosures.

Recognition of these differences is important in recreational land use planning because it assists in the evaluation of environmental resources in relation to their recreational potential. Also, it highlights conflicts which may exist between amenity (the pleasantness experienced by people from natural surroundings and attractive views) and facility (equipment or other man-made provisions essential for the activity).

Facility-oriented activities are notable in that they require a relatively narrow range of environmental features and are not dependent on general environmental amenity and quality. The activity can be pursued providing the essential facilities are available.

Resource-oriented activities are characterized by the considerable importance placed on the quality of the natural environment rather than the provision of basic facilities such as tables or barbeques. This is particularly important from a recreational management point of view as some outdoor activities require a high level of amenity and the provision of facilities alone is not sufficient. Emphasis on the total environment is reflected in a desire for pleasant and interesting views, the presence of trees, landscaping of areas and absence of litter.

Typically, resource-oriented activities involve a greater use of area and a more total and flexible use of the local environment. For example picnickers may play informal sports, go swimming or go walking in the area.

Facility-oriented activities frequently are more readily catered for, and consequently outlets may be more frequent.

Areas with high quality amenity are less common and so resource-oriented activities require longer travel time and distance of travel. Consequently, participants tend to stay longer and make fuller use of each opportunity.

While environmental amenity may not be essential to the conduct of many facility-oriented activities, attractive surrounds make pursuit of these more enjoyable. Frequency of facility-oriented activities increases in areas of greater amenity.

2.2 Regional Characteristics

The bay's foreshores vary greatly in character and quality, resulting in different patterns of recreational use. Features of foreshore units (Figure 1) are defined in order to understand the pattern and characteristics of present recreational activities. These units are described in order of recreational usage.

2.2.1 Ramsgate - Kyeemagh (Figure 1, Zone b)

The available recreational area consists of a narrow strip of open space, backing Lady Robinson's Beach. There are four swimming enclosures along the beach. It is also used extensively for launching boats, rigging sail boats and fishing. There is a boat ramp at Sandringham, and a few picnic facilities are provided.

The entire foreshore is readily accessible by road and close to a large residential area containing multi-storey residential development. Only limited parking space is available so excess demand overflows into neighbourhood streets. Shops, kiosks, hotels and restaurants have been located behind the beach to take advantage of recreational crowds and the attractive waterside setting.

The narrowness of the foreshore reserve has prevented development of amenity although there are attractive views of the Kurnell Peninsula.

2.2.2 Dolls Point - Kogarah Bay (Figure 1, Zone C)

This foreshore contains a series of discrete recreational areas, the size and quality of which vary from small reserves (former road reservations) to the major picnic sites of Peter Depena and Carss Bush Parks where the amenity and facilities attract visitors from across Sydney. Although three swimming enclosures are available, this area is more notable for boating with a number of sailing clubs as well as the St George Motor Boat Club. The sand flats along the Sans Souci shore are used for

the rigging and launching of sailing boats. Kogarah Bay is the site for many boating activities, with two launching ramps, extensive moorings and a number of commercial boatsheds.

These features encourage a diverse range of water-based recreation activities throughout the area. Trees along the shoreline, particularly in open space areas, considerably improve general amenity and encourages picnicking. The residential development of the adjoining foreshore limits recreation opportunities for future expansion.

2.2.3 Kurnell Peninsula (Figure 1, Zone D)

The foreshore of the peninsula is largely undeveloped. It is vegetated along the entire length and forms one of the most significant visual elements in the Botany Bay landscape.

The Captain Cook Landing Site has a well developed picnic area whilst Silver Beach and Bonna Point provide ready water access for swimming and boating activities. Towra Point may become a nature reserve. The north-west beach is suitable for power boats and is used for picnicking by people who gain access by water.

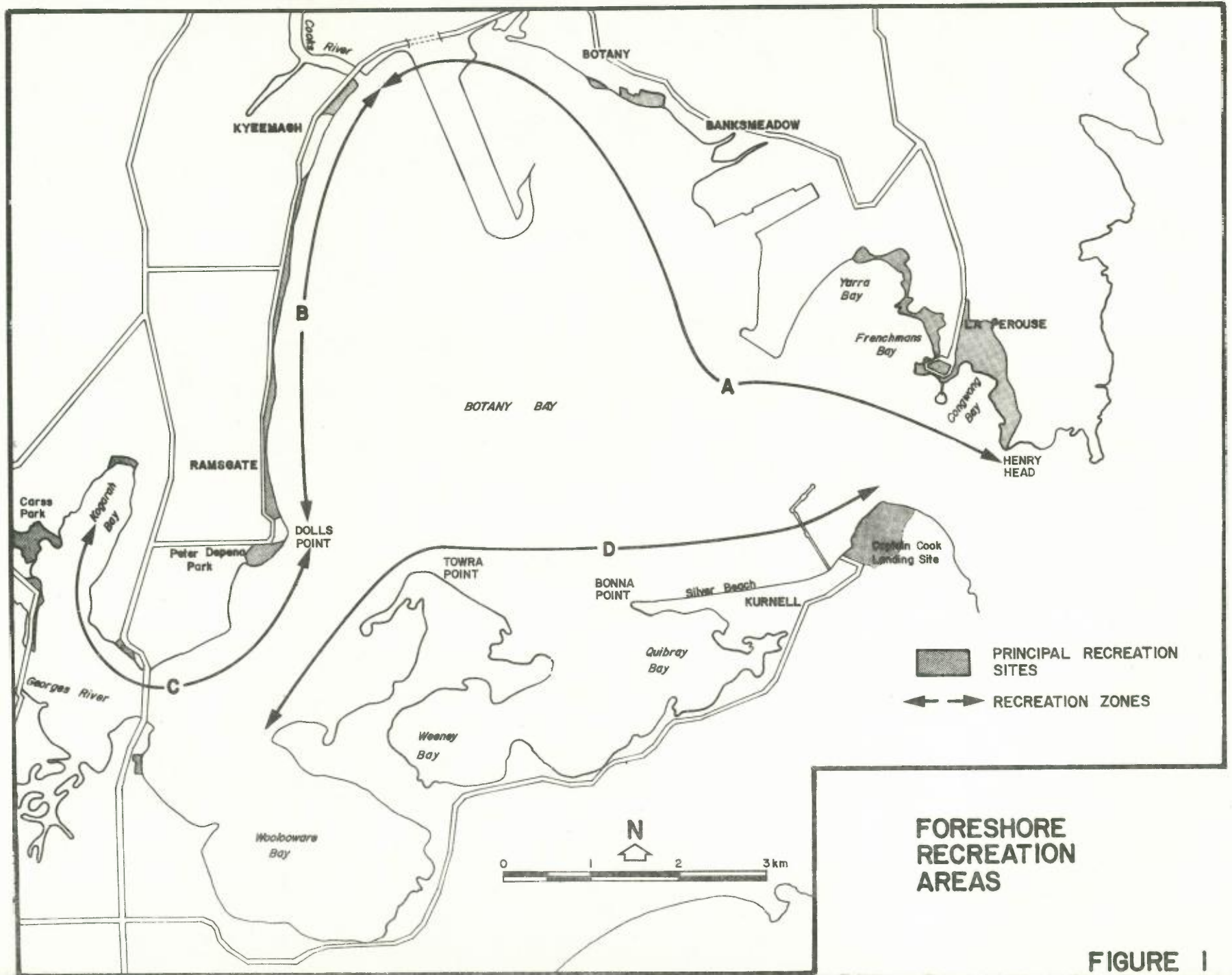
The Kurnell Peninsula historically has been remote from Sydney's population centres. This, together with its relative "naturalness", has predisposed use towards resource-oriented activities.

Industrial developments, such as expansion of sand mining, may discourage resource-oriented activities.

2.2.4 Henry Head - Cooks River (Figure 1, Zone A)

The development of Port Botany has excluded water-based recreation from a considerable portion of this foreshore, as has airport development around the mouth of Cooks River. Parks are being developed to provide alternative recreational opportunities to compensate in part for this loss, but these are not being developed for water-based recreation.

Water-based recreational use has concentrated on Yarra, Frenchmans and Congwong Bays, ie areas east of the port. Little attention has been paid, however, to the development of these areas for recreation. These bays have good beaches, particularly Frenchmans and Congwong Bays, and afford spectacular views of the heads of Botany Bay and to the western and southern shores. Unfortunately, landscaping and facility development of the area is poor, discouraging resource-oriented uses to which they are most suited at present.



This foreshore is readily accessible from Sydney's eastern suburbs and provides good access both for swimming and fishing.

3 USER SURVEY

A study of recreational use was carried out:

- . To assess user characteristics in Botany and Kogarah Bays and their relationship with patterns of water-based recreation
- . To study the influence of environmental factors on water-based recreation in this area.

3.1 Survey Technique

3.1.1 Conduct of the Survey

Initially, a survey questionnaire was drafted to satisfy the aims of the study. A pilot survey resulted in a number of changes before the survey proper was conducted. The final, modified questionnaire used in the survey is appended (Appendix A).

A series of oblique, aerial photographs of the shorelands of Botany and Kogarah Bays were taken on 16 January 1977. The number of people, cars and boats at various recreation sites throughout the area were counted from the photographs. Using this information, the total foreshore was divided into 18 sections, which were later grouped into four zones (Figure 1). The number of interviews carried out in each zone was related to observed frequency of usage.

Students were engaged for the 1300 interviews which were carried out throughout the area on Saturday 29, Sunday 30 and Monday 31 January 1977.

3.1.2 Application Limitations

The method of interviewing resulted in sample bias. Interviews were conducted during periods of peak usage, ie midday on a summer holiday weekend, and in areas where the largest crowds were evident. For these reasons, users of the other foreshore areas as well as those who use the areas sampled outside peak periods were undersampled. The interview was restricted to people who used the foreshores for water-based recreation. As a result an insufficient number of water users such as sailors, power boaters, anglers and water skiers were interviewed to provide statistically reliable information on their use and their contribution to the overall pattern of water-based recreation in the area.

Unfortunately, lack of suitable transport prevented interviews from being conducted on the Towra Point beach, although this beach represents an important combination of boating and picnicking, not present elsewhere in the bay.

A most important bias resulted from difficulties in communication with many Continental European migrants. These migrants represented 23 per cent of the sample taken although they were estimated to account for about 60 per cent of the user population at the time of the survey. Analyses of the results indicate European migrants exhibit different recreational patterns which tend to be underestimated. Unlike other users, they come in larger groups and tend to favour picnicking over swimming.

3.2 Results

Bearing in mind the survey limitations, its major findings do clarify the overall pattern of recreational use of Botany Bay. The outstanding feature of this use is its diverse nature and the bay's obvious suitability for family recreation. These findings are discussed more fully in Section 4.

3.2.1 Major Water-based Activities

The major recreation activities surveyed (involving 99 per cent of the sample) were swimming, walking, relaxing, picnicking, angling and boat-related activities (Table 2). It should be noted that users frequently participate in more than one of these activities, for example swimming and picnicking or picnicking and walking/relaxing. Significantly, these activities fall into the group of relatively passive outdoor recreation (see Section 1).

Boat-related activities are more popular than indicated, as the survey was restricted to foreshore areas rather than to all people actually using the waters. Aerial photographs taken on 16 January 1977 showed 250 boats using the waters, 202 of which were onshore or immediately off-shore.

The pattern of recreation varies throughout the day, with activities like angling being proportionately more popular around dawn and dusk. Table 2 presents the situation at midday, when recreational use is highest.

Table 2. Percentage Distribution of Main Recreational Activities Around the Bay

Area	Swimming	Sailing	Boating	Water Skiing	Fishing	Picnicking	Walking-Relaxing	Games-Amusement	Other Participatory Sports	%
La Perouse - Botany	85.8 (15.2)	3.7 (10.6)	0 (0)	0 (0)	0.7 (1.1)	2.2 (2.1)	6.7 (4.3)	0 (0)	0.7 (14.3)	10.4
Brighton - Ramsgate	60.4 (47.3)	3.5 (44.7)	1.2 (58.3)	0.8 (100)	6.7 (44.9)	7.6 (31.3)	18.7 (53.1)	0.3 (40.0)	0.7 (57.1)	46.3
Sans Souci - Kogarah Bay	49.9 (23.6)	5.3 (40.4)	0.8 (25.0)	0 (0)	10.0 (40.4)	14.8 (36.8)	17.8 (30.6)	0.8 (60)	0.6 (28.6)	28.7
Kurnell	55.6 (13.9)	1.1 (4.3)	1.1 (16.7)	0 (0)	6.3 (13.5)	22.8 (29.9)	13.2 (12.0)	0 (0)	0 (0)	14.6
Regional Percentage	59.4	3.7	0.9	0.4	7.0	11.3	16.4	0.4	0.5	

Numbers in brackets indicate percentage of the total number engaged in that activity.

3.2.2 Spatial Distribution of Recreation Population

As discussed in Section 2.2, the recreational capacity of the foreshore areas, their suitability for various pursuits and their accessibility vary greatly. Consequently, they receive differing demands (Table 3). The level of usage reflects both attractiveness and accessibility of the various areas.

Table 3. Distribution of Recreation Population

Area	Total Population (%)
Cooks River - Henry Head	10.4
Kyeemagh - Ramsgate	46.3
Dolls Point - Kogarah Bay	28.7
Kurnell	14.6

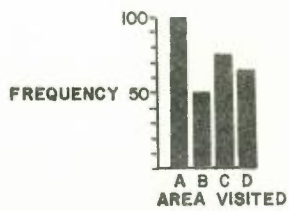
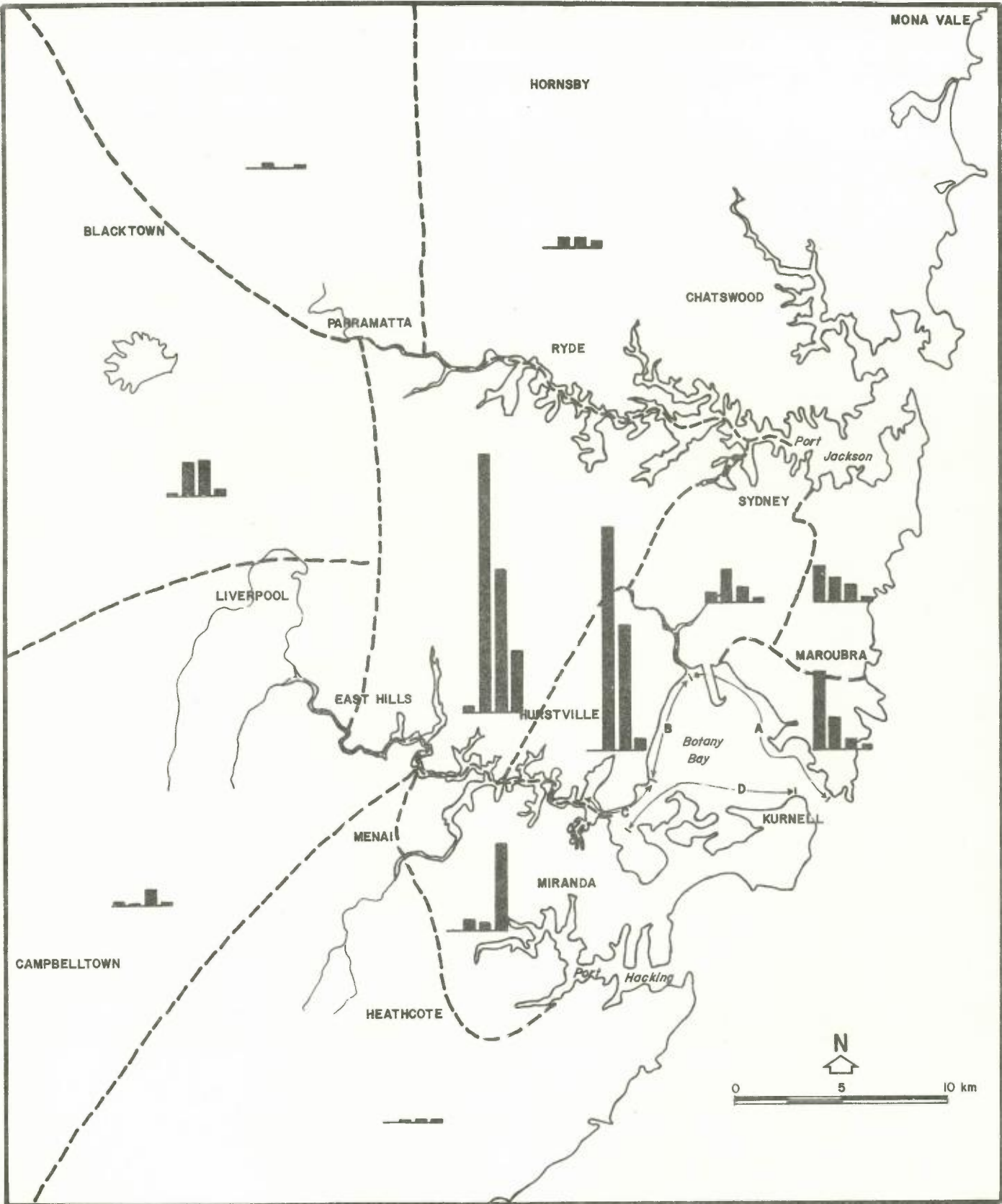
3.2.3 Recreational Travel Time

The time people are prepared to spend in reaching a recreational venue is a good measure of the attractiveness of that site. Travel time is a better estimate than travel distance as people generally do not have an accurate idea of how far they have travelled and place greater emphasis on the ease of travel.

Visitors are drawn to Botany Bay from all suburbs south of the harbour, although numbers decrease with travel distance (Figure 2). Generally up to 70 per cent of visitors are prepared to travel for up to 30 min to a recreational area (Table 4). Others travel much further particularly to a specific site such as Kurnell, where 24 per cent had travelled for more than 45 min. Some indication of the regional appeal of Botany Bay can be gained by comparing these results with those obtained for a similar survey of beach use at Maroubra, undertaken for the Department of Public Works. More than half of the visitors to Maroubra Beach took less than 10 min to reach the area compared to less than 43 per cent visiting Botany Bay. Similarly for Maroubra 85 per cent of trip times were 30 min or less compared with 83.7 per cent for Botany Bay. Botany Bay appears to have a similar, and slightly stronger drawing power than this popular surf beach.

Table 4. Distribution of Travel Time to Recreational Areas Around Botany Bay
(% Distribution)

Area	Up to 5 min	6 to 10 min	10 to 20 min	20 to 30 min	30 to 45 min	46 to 60 min	More than 60 min	%
Henry Head - Cooks River	41.8	20.9	23.1	8.2	1.5	3.7	0.7	100
Ramsgate - Kyeemagh	23.2	20.4	32.3	12.4	6.9	3.2	1.7	100
Dolls Point - Kogarah Bay	20.8	22.9	26.4	14.3	7.5	5.9	2.2	100
Kurnell Peninsula	12.7	10.1	16.4	21.2	15.9	17.5	6.3	100
Total Visitors to the Bay (%)	22.9	19.7	27.3	13.8	7.8	6.1	2.4	
Cumulative Frequency (%)	22.9	42.6	69.9	83.7	91.5	97.6	100.0	



AREAS VISITED IN RELATION TO DISTRICT OF RESIDENCE

FIGURE 2

Figure 3 shows the difference in travelling time for participants in swimming, fishing, picnicking and walking/relaxing. The number of people visiting the area to swim and fish decreases quickly with increased travel time. Those visiting Botany Bay to picnic or to engage in walking/relaxing are relatively constant, when compared to swimming and to a lesser extent angling, with only a slow decline in numbers as time travelled increases. This suggests that those engaged in picnicking and walking/relaxing are less concerned with the distance or time spent in reaching an appropriate site. This confirms the observation that people are prepared to travel further to engage in resource-oriented activities. The dominance of swimmers should be treated with caution in the light of sample bias.

Eighty-five per cent of people rely on private motor vehicles for travel (Table 5). Those who live close-by walk to their recreational destination, in part because of parking limitations. Very little use is made of public transport.

Table 5. Mode of Transport

Mode	Frequency (%)
Car	84.8
Walk	10.9
Bus	2.5
Motor Bike	0.6
Bicycle	0.3
Train	nil
Multiple Mode	0.7
Other	0.2

3.2.4 Frequency of Visit

The frequency of recreational visits to Botany and Kogarah Bays (Table 6) is fairly evenly distributed. Most visitors (72 per cent) use the area at least monthly as their main recreational venue, others use it for special outings (one or two visits a year).

Table 6. Frequency (%) of Visits for Major Foreshore Users

	Swimming	Sailing	Boating	Water Skiing	Fishing	Picnicking	Walking/ Relaxing	Others	Overall
Number in Sample	756	47	12	5	89	144	209	7	?
Greater than Weekly	23.5	12.8	8.3	-	28.1	6.9	14.8	14.3	19.8
Weekly	32.8	38.3	41.7	60.0	29.2	12.5	27.3	42.9	29.9
Monthly	20.9	27.7	50.0	40.0	21.3	24.3	22.5	28.6	22.1
2 or 3 Per Year	13.2	4.3	-	-	10.1	29.9	14.8	14.3	14.9
Yearly	9.5	17.0	-	-	11.2	26.4	20.6	13.4	13.3
	100	100	100	100	100	100	100	100	100

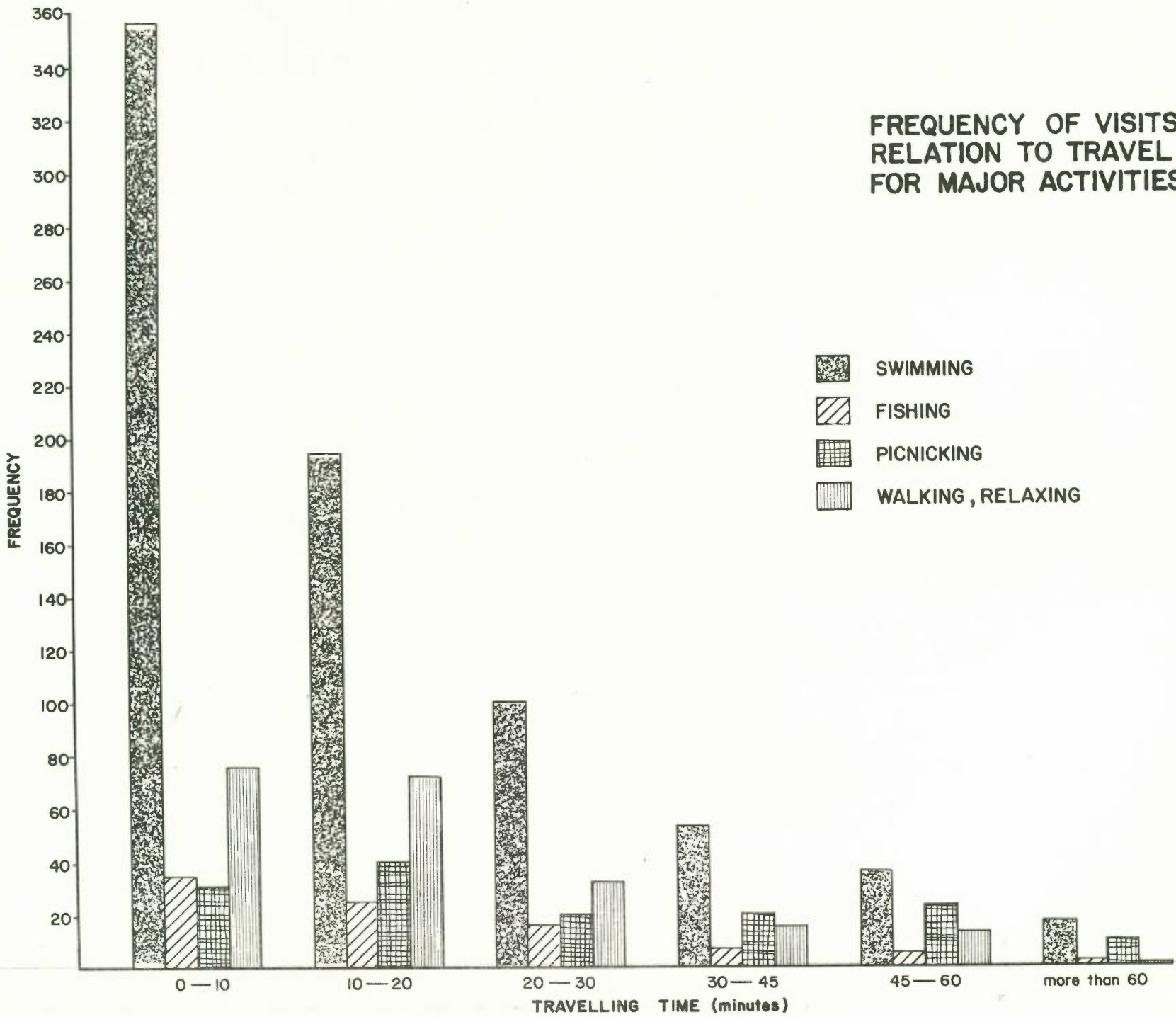


FIGURE 3

The number of visits made by individuals to an area for recreational purposes depends primarily on the activity they are pursuing. Linked with the frequency of visits is the time spent during each visit and the distance travelled. For instance, during summer people commonly make many short visits to gain relief from the hot weather. Picnickers, on the other hand, make greater preparation for their visit and spend longer at the site making greater demands on its resources for a more total recreational experience. (This is discussed in more detail in Section 4).

The variation of recreational resource offered by the foreshore (see Section 2.2) is apparent when comparing the frequency of visits (Table 7). The differences are due mainly to the activities which predominate in each area, such as swimming along Lady Robinson's Beach and the northern shore and picnicking at Kurnell or Dolls Point - Kogarah Bay.

Table 7. Frequency (%) of Visits to Main Foreshore Recreation Areas

	Henry Head- Cooks River	Ramsgate- Kyeemagh Shorelands	Dolls Point- Kogarah Bay	Kurnell Peninsula
Greater than Weekly	32.8	23.7	12.4	12.7
Weekly	38.1	37.9	22.9	12.7
Monthly	13.4	22.1	24.0	24.3
2 or 3 Per Year	9.0	8.1	21.8	27.0
Yearly	6.7	8.2	18.9	23.3

Users were asked to indicate how frequently they visited the area during the seasons of the year. As shown in Table 8, use is concentrated in the summer months. Differences between season and activities should be viewed with some scepticism as it is unlikely that people could quickly give a true indication of their annual visit pattern.

Table 8. Frequency (%) of Summer Visits

	Frequency (%)
Swimming	86.2
Sailing	71.0
Boating	84.6
Water Skiing	82.8
Fishing	62.5
Picnicking	72.6
Walking	80.2
Circus Carnival	73.6
Other Participatory Sports	49.3
Other Spectator Sports	63.5

3.2.5 Group Size and Characteristics

Botany and Kogarah Bays are major family recreation sites. Nearly one half of the users surveyed were from family groups and most (95 per cent) were in groups of up to ten persons. Groups comprising family, relations and friends account for nearly 90 per cent of users. This pattern remains remarkably constant amongst the activities sampled with the exception of competitive sailing (Table 9).

The largest groups are associated with picnicking - both proportionately and in absolute terms (Table 10). Swimming is also markedly a group activity. Fishing and walking and relaxing are typically pursued by smaller groups of people and have a more pronounced number of individual users.

The age structure of the sample (Table 11) indicates that most use comes from that section of the population with families at home. The low proportion of children indicated (when compared with the normal population) suggests a sampling bias and throws some doubt on these figures.

Table 9. Recreational Group Characteristics

	Family	Club	Friends and Relations	Friends	Alone	Total (%)
Swimming	52.2	0.5	18.1	19.0	10.2	100
Sailing	21.7	17.4	15.2	37.0	8.7	100
Boating	58.3	-	16.7	16.7	8.3	100
Water Skiing	-	-	40.0	60.0	-	100
Fishing	47.2	-	7.9	20.2	24.7	100
Picnicking	41.0	-	47.2	11.1	0.7	100
Walking/Relaxing	50.2	1.0	10.5	22.0	20.0	100
Amusement	40.0	-	-	40.0	20.0	100
Other	50.2	14.3	-	14.3	28.6	100
% of Total Use sampled	48.9	1.2	19.2	19.5	11.2	

Table 10. Relationship Between Group Size and Main Activity
(% Distribution)

No. in group Activities	One	Two	Three	Four	Five	6-10	11-15	16-20	21-30	31-40	Over 41	Sample Size
Swimming	56.1	61.0	67.5	61.9	61.3	56.1	40.0	33.3	28.6	0	50.0	757
Sailing	2.0	1.3	4.2	5.6	3.6	3.9	4.4	0	14.3	75.0	50.0	47
Boating	0.7	0.7	0.5	2.5	0.7	0.9	0	0	0	0	0	12
Water Skiing	0	0	0	0	1.5	0.9	2.2	0	0	0	0	5
Fishing	14.9	9.2	7.9	3.6	4.4	3.9	2.2	11.1	0	0	0	89
Picnicking	0.7	5.6	4.7	8.6	11.7	23.5	44.4	55.6	57.1	25.0	0	144
Walking/Relaxing	23.6	21.3	14.1	16.8	15.3	10.9	6.7	0	0	0	0	209
Games/Amusement	0.7	0	0.5	1.0	0.7	0	0	0	0	0	0	5
Other	1.4	1.0	0.5	0	0.7	0	0	0	0	0	0	7
% of Total Interviewed	11.6	23.9	15.0	15.5	10.7	18.0	3.5	0.7	0.5	0.3	0.3	

Table 11. Age Structure of Sample (% Distribution)

	Respondents	Sydney's Population (1976 census, preliminary processing)
0 - 14 Children	3.6	25.3
15 - 19 Adolescents	10.8	8.4
20 - 34 Young Adults	44.2	24.2
35 - 64 Adults	29.4	32.8
Over 65 Elderly	1.7	9.3

The age structure reflects family involvement in relatively passive outdoor pursuits. Botany Bay obviously has an important role to play in this regard, and requires careful management to ensure its optimal utilization.

3.2.6 Reasons Given for Visiting Botany and Kogarah Bays

From eight possibilities, visitors were asked to select the main reason for choosing Botany Bay for recreation. The ranking of replies (shown in Table 12) indicates that the area is popular because it is accessible to a large population, it is safe for family recreation and provides good general amenity.

Table 12. Ranking of Reasons for Choosing to Use the Area for Recreation

Ranking	Reason
1	Easy to get here
2	Safe place
3	Parking available
4	Pleasant and interesting views
5	Lack of crowds
6	Clean environment
7	Available facilities
8	No factories close by

Table 13. Ranking of Reasons According to Activity

	Swimming	Sailing	Boating*	Water Skiing*	Angling	Picnicking	Walking/Relaxing
Easy Get Here	1	1	1	2	1	2	1
Parking	4	3	5	1	3	6	4
Available Facilities	7	8	8	3	8	5	7
Safe Place to Enjoy Yourself	2	2	2	5	2	1	2
Lack of Crowds	3	5	7	4	5	8	6
Clean and Pleasant Environment	6	6	3	5	6	4	5
No Factories or Industry Close-by	8	7	5	7	7	7	8
Pleasant and Interesting Views	5	4	4	8	4	3	3

* Sample small - results questionable.

These reasons were ranked somewhat differently by participants in the various activities sampled (Table 13). The significance of this is discussed in Section 4.

3.2.7 Ranking of Environmental Characteristics

Environmental features considered commonly to be of importance were identified by the ranking of 18 nominated characteristics (Table 14) (there was little difference in frequency response given for the last nine characteristics). The area is highly valued for its cleanliness, safety and general amenity.

Table 14. Relative Ranking of Environmental Characteristics

Overall Ranking	Characteristic
1	Cleanness of water
2	Safe water
3	Litter
4	Rubbish/seaweed in water
5	Weather
6	Plenty of shady trees
7	Wide open space
8	Presence of fish and birds
9	Air pollution
10	Able to watch planes/boats
11	Places to go walking
12	Width of beach
13	Erosion of beach by storms
14	Noise from traffic, boats
15	Slope of beach
16	Presence of rock walls, drains
17	Noise from planes
18	Coarseness of sand

The strong attitudes towards a litter-free environment is of interest because recreational use of the bay foreshores is the major generator of litter there. A separate study of the foreshore litter problem is being made at present.

3.2.8 Ranking of Facilities

Visitors were asked to rank the importance of various facilities available for their use (Table 15). This ranking is dependent on the frequency of each activity and consequently does not necessarily reflect demand for any particular facility.

Table 15. Relative Ranking of Facilities

Overall Ranking	Facility
1	Enclosed swimming
2	Kiosk, food shops, hotels
3	Parking
4	Picnic facilities
5	Children's playground
6	Boat ramp
7	Any other major facility
8	Trails or footpaths
9	Other entertainments, etc.

3.2.9 Expenditure on Recreation

Users were asked how much money they and their group were likely to spend on food, drinks, petrol and the like (Table 16). Unfortunately, the question did not make clear exactly what costs were being examined and it is likely that people only gave immediate costs and hence under-estimated their total expenditure. This is supported by the fact that expenditure levels were greatest for those using Lady Robinson's Beach which is the area best supplied with kiosk facilities.

Table 16. Percentage Distribution of Recreation Expenditure

	Respondents Cost		Total Group Cost	
	Frequency	Cumulative Frequency	Frequency	Cumulative Frequency
Less than \$1	28.9	28.9	24.2	24.2
\$ 1 - 2	37.5	66.4	25.7	49.9
\$ 3 - 4	12.5	78.9	12.7	62.6
\$ 5 - 6	12.3	91.2	12.2	74.8
\$ 7 - 8	1.7	92.9	4.8	79.6
\$ 9 - 10	5.0	97.9	7.9	87.5
\$11 - 15	1.3	99.2	4.1	91.6
\$16 - 20	0.6	99.8	3.6	95.2
More than \$20	0.2	100.0	4.8	100.0

4 USER PROFILES

To gain a full appreciation of recreational behaviour in Botany Bay each activity needs to be considered in detail. The material presented previously forms the basis for this discussion.

4.1 Swimming

Swimming is the predominant summer recreational use, accounting for more than one half of day time use. With its ready accessibility, long beaches and calm water, Botany Bay is a highly valued family swimming site.

Swimming in Botany Bay is dominated by family groups, with most in family groups of up to ten, or perhaps with friends, and few by themselves.

Swimming is a pleasurable means of gaining relief from summer heat. Most swimmers visit Botany Bay at least weekly, the majority are strongly facility-oriented (use of enclosures and dressing sheds) and are concerned to have safe swimming conditions. Accessibility was another main reason for their using the area. This is reflected in the use of this area being concentrated on the most accessible areas, ie Lady Robinson's Beach, La Perouse and Dolls Point, and in a marked decrease in the number of visits made by swimmers travelling longer than 30 min to reach the bay.

The gently sloping, sandy shores of Botany Bay are particularly suitable for good swimming. Beaches comprise a large proportion of the bay's foreshores providing ample opportunity for swimming within easy reach of a large population.

The most important conditions for safe swimming are the absence of strong currents, rough water and sudden areas of deep water, satisfactory water quality including the absence of floating debris, and protection against shark attacks. For this latter reason swimming enclosures were rated highly (Table 15) and swimming use tends to concentrate at the enclosures that have been provided. The present enclosures have deteriorated, both with age and foreshore changes; they need to be upgraded for future recreational use.

The demand for high water quality for swimming is indicated in Table 14. The risk of swimmers contracting water-borne disease is very small, except immediately after heavy rain where urban runoff might carry pathogenic organisms into some sites (SPCC 1978 b and c in press). Of possibly greater significance, the waters

near the foreshores become turbid and unattractive during storm periods. It is likely, also, that turbidity will increase in the future if increased nutrient levels result in greater algal growth.

Seaweed and floating debris also act as a strong disincentive to swimmers. Many swimmers have specific needs related to water quality, safety or other characteristics of the bathing area. They are not necessarily dependent upon the overall environmental amenity, although obviously can derive benefits from it.

Swimmers seem to accept high density usage provided this does not affect accessibility (for example, through traffic, congestion and parking problems). The northern foreshores between Henry Head and Port Botany provide the most direct opportunity for increase in usage, but access to the beaches needs to be improved before this can be fully utilized.

Swimmers make considerable use of kiosks and shops for food and refreshments, particularly along the western waterfront (Lady Robinson's Beach). This is in contrast to more resource-oriented users such as picnickers.

The most important considerations for future management of the swimming resource are: maintenance of foreshore, accessibility, water quality and provision of swimming enclosures in good condition. Swimmers also make use of foreshore shade to gain relief from midday heat. Benefits would be derived in many areas by tree planting for shade, particularly along Lady Robinson's Beach, where the number of swimmers is high and access to shade is low.

4.2 Walking and Relaxing

Walking and relaxing refer to a range of activities, including sunbathing, promenading, admiring the bay views, serious bush walking and horse riding. The nature of this use at each bayside location is strongly influenced by the character of that location. This group of activities accounts for one fifth of surveyed use in all areas except the northern shore.

Kurnell, Dolls Point and foreshore parks in Kogarah Bay have considerable amenity and so encourage much resource-oriented activities. Usage of Lady Robinson's Beach for walking and relaxing also is high. While the overall attractiveness of these foreshores is possibly less, this is offset by greater access and facilities. The lesser amenity of the Henry Head -

Cooks River foreshore is reflected in the lesser use of these foreshores for general relaxation.

Users of Kurnell, Dolls Point and Kogarah Bay foreshores place considerable emphasis on overall environmental amenity, such as pleasant and interesting views, clean debris-free water, absence of litter, presence of shade trees and lack of crowds. Experience additional to the survey indicates that users often combine walking and relaxing with picnicking, as shown by their interest in picnic facilities. Most visit the area monthly or less frequently and are prepared to travel considerable distances.

Use of Lady Robinson's Beach foreshores for walking and relaxing is of markedly different character. The large beach expanse encourages activities like sunbathing. Most survey participants live locally and visit the area monthly or weekly. They make extensive use of the well-developed infrastructure of shops, kiosks, hotels and restaurants and are, in part, attracted to the area by it. This use of facilities is, however, complemented by an appreciation for the environmental amenity, including pleasant views and surroundings and restful atmosphere.

Congwong, Frenchmans and Yarra Bays are little used for walking and relaxing. While these areas (particularly the former two) provide panoramic views without equal elsewhere in the bay, the beach areas are small, facility provision is rudimentary and the overall amenity of the foreshore is low.

4.3 Picnicking

Picnicking is one of the most popular forms of family recreation, amply shown by the survey. Picnickers accounted for about one fifth of the survey usage. Continental European migrants comprised about 60 per cent of all users but accounted for only 23 per cent of those surveyed. They comprised 35 per cent of all picnickers sampled, so overall picnicking usage is probably underestimated.

Picnickers value environmental amenity, particularly pleasant and interesting views, the presence of shade trees, the absence of industry, and general cleanliness (absence of litter on foreshores and in the water).

Picnic trips to the area are major recreational trips. Picnickers travel considerable distances in order to use the area, some from across Sydney. The majority of picnickers come from Sydney's southern and south western regions.

The size of picnic groups indicates an important social role as well as its undoubted significance for family recreation (See Section 1). These groups consist primarily of immediate family, friends and relations. Picnic groups formed by Continental Europeans are typically larger than groups of Australian groups.

Appropriate facilities such as seats, tables and barbecues are a necessary prerequisite for the majority of picnickers. However, they are more flexible than other users such as swimmers and can adapt their activities to the characteristics of the site. Picnickers are self-reliant and have little need for facilities such as kiosks and shops. They usually spend relatively long periods on the site and commonly also engage in other activities, such as family games, walking and relaxing, angling and swimming. For these reasons, picnickers may value the presence of swimming enclosures. Carss Bush and Peter Depena Parks, two of the most popular areas, have swimming enclosures. Sailing and boating activities are combined with picnicking at Towra and Bonna Points.

This diverse use demonstrates the advantage of having associated access to both the natural resource of Botany Bay and picnicking facilities to ensure that full use and benefit is derived from each location. Picnicking facilities should be planned with these diverse needs in view. Developments should be planned to preserve both local and overall amenity.

The diverse nature of picnicking use is further emphasized by different expectations of picnickers with regard to foreshore areas. For example, picnickers at Kurnell value the large open space areas and relative lack of crowds; users of other areas were not so worried by these factors.

Maintenance, and where possible, improvement of environmental amenity (together with the retention of the current open space foreshores) is important for encouragement of picnicking.

4.4 Angling

Anglers have different needs and different behaviour patterns. They tend to use foreshore areas which are less favoured or ignored by others, such as bridges, breakwaters and cliffs, and other sections of water such as near mangroves, seagrass beds and embayments. Anglers favour times outside the midday peak recreational period; rather angling is more common around dawn and dusk and during summer nights.

The recreation survey was conducted during daylight hours, was concentrated towards the major foreshore recreational sites and did not include those recreating away from the foreshore. Thus the survey design inevitably resulted in anglers not being adequately represented. Nevertheless, information derived from it and other observations allow some general comments to be made.

The two categories of fishing, namely from the shore or by boat, have rather different requirements. It should be noted that angling has increased with the growth of boating in the area (SPCC 1978a in press).

Accessibility to water is of concern to both groups. Foreshore anglers need access, not only to foreshore areas which might not be used by others but also at different times of day and throughout the year. Boating anglers need access to ramps and other facilities such as wharves, moorings and marinas and, again, these facilities may be needed at a time or season when other recreational use is low.

Angling trips are commonly made on a weekly, or more frequent, basis. Angling is characterized by smaller group size and more individual activity. Moreover, the survey indicated a strong male domination.

Anglers expressed much interest in general environmental amenity, particularly as deterioration of the foreshore is in evidence due to the close proximity of factories and industries. They also express concern for unpolluted, uncluttered water.

Additional information on recreational fishing is being examined and a specific report is to be prepared within this series on this topic.

4.5 Sailing

Little can be said about the particular characteristics of yachtsmen because they were not fully represented in the foreshore survey. Sailing is dominated by club activities, and hence shows a less marked family involvement. Non-competitive sailing tends to involve the family and comprises about 30 per cent of use (Yachting Association of New South Wales 1978).

Botany Bay's important role as the major sailing area for Sydney's southern suburbs is indicated by the preparedness of yachtsmen to travel considerable distances to it. Botany

Bay is a favoured site for small sailing boats. Lady Robinson's beach provides a long stretch of beach ideal for rigging and launching boats. This is enhanced by the provision of parking areas along this entire length, together with the convenient location of toilets and shower facilities. No other foreshore area in Sydney is as well favoured in this regard.

During the sailing season, October - April, most yachtsmen are involved in competitive sailing but sailing continues at a high level throughout the year as a leisure activity.

Weather conditions (mainly winds) are of considerable importance together with clean, unpolluted water and the absence of litter and rubbish in the water. The yachtsmen interviewed also expressed a strong interest in preservation of the bay's amenity and were apprehensive particularly of factories or industry close to the foreshores.

4.6 Power Boating

Power boating use was not included in the foreshore survey as little information is available, particularly considering the diverse range of activities carried out by people using power boats, such as fishing, waterskiing, cruising and power boat racing. A link between power boating and picnicking, as well as swimming, was indicated.

5 SUMMARY

The preceding discussion highlights the variety of recreational activities in and around Botany and Kogarah Bays. People visiting the bays for recreation tend to be attracted by either its natural environmental resources or the facilities provided. Frequently, however, enjoyment of the activity is enhanced by both the amenity and the availability of facilities. The capacity of the area to cater for this diversity of use is an indication of its importance for recreation. Proper management of the foreshores and their use should therefore attempt to maintain the diversity of recreational opportunities offered in the bays.

Recent trends in recreational behaviour have indicated an increasing demand for the provision within urban areas of sites suitable for relatively passive outdoor activities. These activities are important particularly for family groups (or groups of family and friends) and there is a strong indication that Botany Bay can accommodate this demand.

Water-based activities require suitable water access. One of the great attractions of Botany Bay is the extensive water access available along its foreshores for many activities but in particular for swimming, sailing and angling.

Little quantitative information has been gathered on usage of various locations. Observations can be made of usage in relation to capacity. Those locations with high amenity and ready access, eg Lady Robinson's Beach, are used intensively and in peak summer periods are used to full capacity. This is indicative of the strong and frequently unsatisfied demand for unstructured outdoor recreation. In many locations the small numbers of people, or small range of activities enjoyed, reflect the constraints to fuller utilization. These constraints include poor access, poor amenity or lack of facilities (tables, barbecues etc).

Water access from Lady Robinson's Beach is good for foreshore activities and the launching of small boats. The area is somewhat deficient in facility provision (particularly seats and barbecues) and its amenity could be upgraded by tree planting.

Access along the northern shoreline (Henry Head - Cooks River) is generally poor, particularly after the construction of Port Botany. A launching ramp is promised for the area. Tree planting and landscaping of the areas behind the remaining beaches, together with the provision of tables, seats and

barbecues would encourage a level and type of usage more in keeping with the considerable potential of the area for water based recreation.

Access along the Dolls Point - Kogarah Bay foreshore is generally good. The Dolls Point to Sans Souci shoreline is somewhat deficient in facility provision and its amenity could be further improved by tree planting.

The Kurnell Peninsula is less accessible than the other foreshores because of its relative remoteness to major residential areas. Towra Point is accessible by boat only. Amenity and facility provision is good apart from Silver Beach.

Botany Bay possesses considerable amenity, derived in large part from the remaining foreshore vegetation, foreshore recreational areas and large expanse of beaches. Retention of the bay's appeal for recreation is dependent upon the preservation of this amenity. This can only be achieved by considered management of the whole area (particularly visible residential and industrial areas) and not just by consideration of existing open space areas. Essential elements include the maintenance of clean water, removal of litter from foreshore areas and the water, foreshore tree planting and compatible foreshore development.

The full range of activities required by visitors to the bay can be pursued only through provision of the various essential support facilities where appropriate, according to the potential of each site. This is necessary to allow for optimal development and use of each site and the bay as a whole. In this context, there is opportunity for improvement in recreational potential through: well maintained swimming enclosures along Lady Robinson's Beach; picnic facilities - tables, chairs, and barbecue facilities at Silver Beach, Congwong and Frenchmans Bays and along Lady Robinson's Beach.

An over-riding feature for water-based recreation in Botany Bay is the necessity for maintenance of acceptable water quality. This is a prerequisite for water-based activities, particularly those that involve direct water contact such as swimming. This requires water that appears visually clear and also, that does not present a threat to the health of users. Failure to meet these conditions will result in a significant reduction in the recreational resource of the area and discourage the current high level of usage.

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APPENDIX A

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ROTARY BAY RECREATION AND ENVIRONMENTAL STUDY
for State Pollution Control Commission

1. How many people are in this group? _____

2. What type of gathering or group is this?

Family	<input type="checkbox"/>	Friends	<input type="checkbox"/>
Club	<input type="checkbox"/>	Bus tour	<input type="checkbox"/>
Family/friends/relations	<input type="checkbox"/>	Individual	<input type="checkbox"/>
Other	_____		

3. How often do you come here with this same group?

Once a week	<input type="checkbox"/>	More than once a week	<input type="checkbox"/>
Monthly	<input type="checkbox"/>	Once a year	<input type="checkbox"/>
2-3 times a year	<input type="checkbox"/>		

4. What is the main activity that you will be undertaking today?

Swimming	<input type="checkbox"/>	Sailing	<input type="checkbox"/>
Boating	<input type="checkbox"/>	Water skiing	<input type="checkbox"/>
Fishing	<input type="checkbox"/>	Picnicking	<input type="checkbox"/>
Walking/relaxing	<input type="checkbox"/>	Amusement and games	<input type="checkbox"/>
Other participatory sports	<input type="checkbox"/>	Other spectator sports	<input type="checkbox"/>

5. In what suburb do you live? (postcode if possible) _____

6. How far is it from here? (in miles or kilometres) _____

7. How long did it take you to get here? (in minutes) _____

8. How did you get here?

Car	<input type="checkbox"/>	Bus	<input type="checkbox"/>	Train	<input type="checkbox"/>	Motorbike	<input type="checkbox"/>
Bicycle	<input type="checkbox"/>	Walk	<input type="checkbox"/>	Multiple mode	<input type="checkbox"/>	Other	<input type="checkbox"/>

9. How much money (in total) are you likely to spend here today (including petrol costs from home, food and drink, etc)? _____

10. How much money (in total) is the group likely to spend here today (including petrol, food, drinks, etc)? _____

11. What is your age? _____

12. What are the ages of the other members of this group? _____

13. What is your occupation? (choose from one of the following categories)

Professional	<input type="checkbox"/>	Administrative	<input type="checkbox"/>
Clerical	<input type="checkbox"/>	Sales	<input type="checkbox"/>
Labourer	<input type="checkbox"/>	Tradesman	<input type="checkbox"/>
Transport/service	<input type="checkbox"/>	Housewife	<input type="checkbox"/>
Student	<input type="checkbox"/>	Unemployed	<input type="checkbox"/>
Other (please specify)	_____		

14. Where were you born?

Australia/New Zealand
 Europe
 Asia

United Kingdom
 America
 Other

15. In the space provided write number 1 against your most important reason for coming here, 2 against the next most important reason and continue to 8 for the least important reason.

- Easy to get here
- Parking available
- Available facilities (eg kiosks, barbecues)
- Safe place to enjoy yourself
- Lack of crowds
- Clean and pleasant environment
- No factories or industry close by
- Pleasant and interesting views

Any other major reasons _____

16. Are the following aspects of the natural surroundings important to you when visiting Botany Bay?

	Yes	No	Not Sure
Cleanness of water			
Rubbish and/or seaweed in water			
Presence of fish and birds			
Litter			
Erosion of beaches by storms			
Wide open space			
Weather			
Width of the beach			
Pollution of the air			
Noise from traffic and speed boats			
Plenty of shady trees			
Places to go walking			
Noise from planes			
Safe water for swimming			
Slope of beach			
Coarseness of sand			
Being able to watch planes and boats, etc			
Presence of rock walls and concrete drains			

Rank from 1 to 5 the five most important aspects to you when visiting Botany Bay.

17. Is having the following facilities located nearby important when visiting Botany Bay?

	Yes	No	Not Sure
Kiosks, food shops and hotels			
Boat ramp			
Enclosed swimming pools			
Picnic facilities, eg barbecues			
Children's playground			
Other entertainments, eg circus			
Marked trails or footpaths for walks			
Parking			
Any other major facility			

Rank from 1 to 3 the three facilities which are most important to you when visiting Botany Bay.

18. What have been your major activities at Botany Bay over the past year?

Activity	Where	Miles/ km. from home	How often	Average length of stay	Average number of people	Total hours per annum
Swimming						
Sailing						
Boating						
Water skiing						
Fishing						
Picnicking						
Walking						
Circus/carnival						
Other participatory sports						
Other spectator sports						

9. Do these activities differ over summer or winter months?

Activity	Swimming	Sailing	Boating	Water skiing	Fishing	Picnicking	Walking	Circus/carnival	Other participatory sports	Other spectator sports
How often										
November to April										
May to October										

10. What do you particularly like about this place? _____

11. Is there anything you dislike about this place? _____

12. Is there anything you would like to see improved? _____
