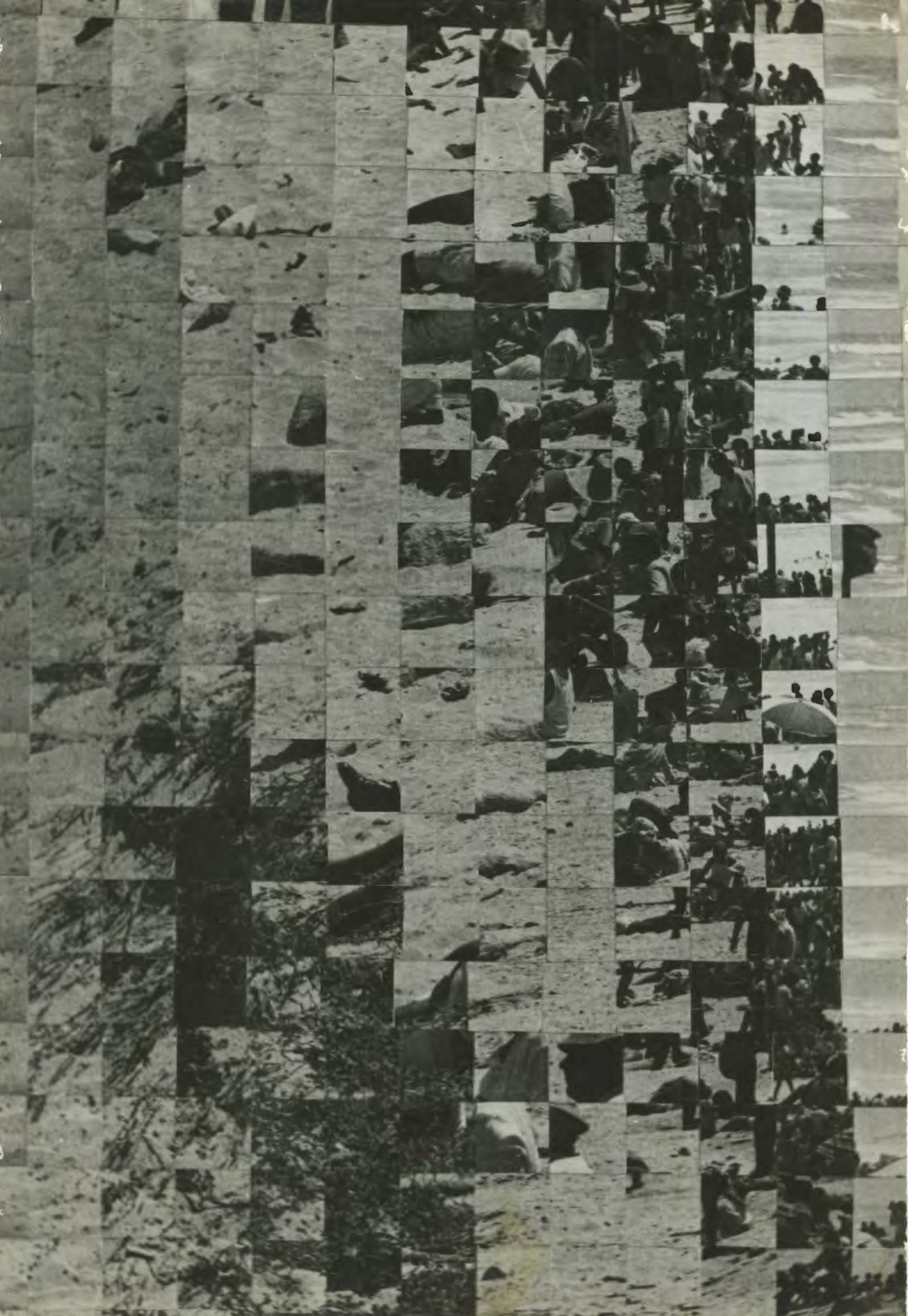


**Strandfontein
Coastal
Development**

David Daniels

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STRANDFONTEIN COASTAL DEVELOPMENT

..... proposals for a regional
recreation amenity.

DAVID P. DANIELS

A thesis submitted in partial fulfilment
of the requirements for the degree,
Master of Urban and Regional Planning.

University of Cape Town.

July 1978.

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1.0 INTRODUCTION

The basic aim of the planner -- stated in very simple terms -- is to create a better social and physical environment for mankind. With such a broad objective the planner has to be concerned with almost every field of human experience.

In the past certain aspects of planning, notably housing, have been strongly emphasised while other fields have been neglected. A field of planning which has often not been given sufficient attention both locally and overseas is recreation planning. This is a serious omission because if the planner is concerned with man's whole living environment, what people do in their leisure time should be of considerable interest to him.

Marion Clawson, one of the pioneers of recreation research, writes about this problem as follows:

"With a few notable exceptions, the various physical, economic, social, political and other problems relating to outdoor recreation, have not been the subject of serious research and study. In no small part, this has been due to the fact that recreation has been equated to a degree with play, and both have been considered beneath the dignity of serious research effort¹".

In the first place, therefore, the purpose of this document is to make a contribution to the field of recreation research and to stimulate further investigation. This writer believes that recreation should be seen as a positive and pleasurable activity which performs a key function in the living patterns of people. Any "quality of life" evaluation must include the opportunities available for recreation and the nature and rate of participation in recreation activities.

1. Clawson M, and Knetsch J.L. : Economics of Outdoor Recreation
Baltimore 1971.

From this general concern about the neglect of recreation as an activity, flows a much stronger concern for recreation within our particular context. It is generally agreed that the Cape Peninsula has some of the finest scenery in the world. The mountains, forests, vleis and fine beaches provide excellent opportunities for outdoor recreation and for people to have fun, to integrate and to associate with other people.

Unfortunately more than 65% of the metropolitan population - those classified as non-white - are denied the opportunity of full utilization of the variety of outdoor recreation resources for reasons of:

- . low income
- . limited time available for recreation
- . lack of mobility
- . poor transport facilities
- . beach apartheid - in terms of which the safest and most accessible beaches are allocated to the White population group.

This problem is particularly unfortunate if one considers that opportunities for involvement in wholesome recreation activities would be of considerable benefit in terms of alleviating many of the social problems endemic in the Blacks living environments:

"(recreation) is part of the educational process that strengthens men's minds as well as their bodies; that broadens their understanding of the laws of nature; that sharpens their appreciation of its manifold beauties; and that fortifies man's most precious possession - the spirit which gives life its meaning²"

-
2. ORRRC : A Report from the Outdoor Recreation Resources Review Commission to the President and the Congress. Washington 1962.

In view of the above, the second aim of this thesis is to analyse recreation as an activity more closely in order to understand more clearly what recreation means in the lives of people - and further to analyse what recreation means in the particular context of the Cape Town metropolitan region. A solution of some of the recreation problems will certainly help to generate better social and environmental conditions.

Thirdly - any recreation planning programme for the metropolitan region will have to take the Strandfontein coastline into account since this is one of the two major beach resorts for Coloureds in the metropolitan region. Strandfontein is also one of the few beach areas capable of being developed to any great extent. Furthermore the pressure of the adjacent new town of Mitchells Plain - expected to house 250 000 people by 1986 - as well as the rapid increase of the metropolitan population (3.67% per annum) makes it absolutely imperative that a development plan be formulated for Strandfontein. This plan will not only attempt to cope with the tremendous pressure of population but will also prevent further despoliation of a very sensitive and valuable natural resource.

Finally the plan for Strandfontein is not seen as an isolated event - it is a key input into a long term recreation planning programme for the entire metropolitan region.

2. THE PROCESS

The first stage in the planning process is a conceptual analysis of recreation. This will enable us to understand the role of recreation in the man - man , man - nature relationship.

Since this thesis is specifically concerned with the development of Strandfontein as a regional recreation amenity, a number of case studies will be analysed in order to clarify the concept of a regional recreation amenity. A series of common principles relating to the location, metropolitan relationship and structure of facilities will be extracted.

The third major area of investigation will be recreation in the Cape Town metropolitan region. The purpose of this analysis is to determine the present and future needs that exist for recreation in order to establish what the shortfall will be and also to obtain an indication of which facilities should be provided at Strandfontein.

The conceptual analysis, the analysis of the case studies and the metropolitan context should provide a very clear image of the type of development that would be appropriate at Strandfontein.

The site will then be analysed in detail in terms of its locational significance, its natural processes, existing facilities and use patterns. The opportunities and constraints on the site will then be matched against the image of regional recreation.

From all the above analyses flow a series of principles which will form the basis of the development plan for Strandfontein. This plan will not only make physical proposals but also proposals relating to funding, management and implementation of the plan.

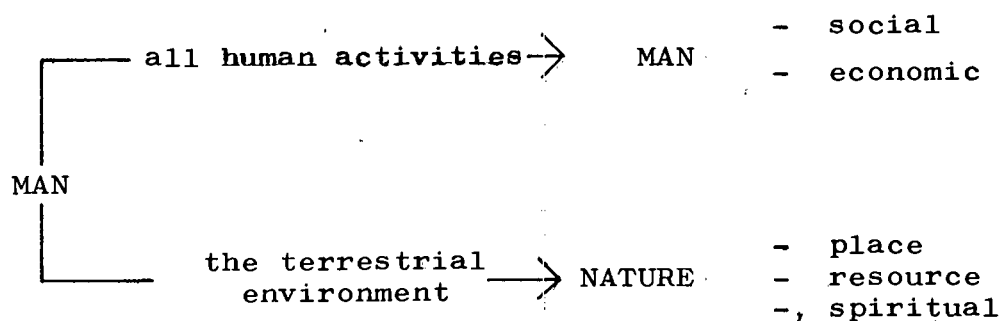
3.0 CONCEPTUAL CONSTRUCT of RECREATION

3.1 INTRODUCTION

The purpose of this study is to formulate proposals for the development of the Strandfontein coastline as a regional recreation amenity. In order to do this it is first necessary to understand, at a conceptual level, what recreation means and why it is necessary to plan for recreation.

Crucial to any planning exercise is a concern for man. The planner is not only concerned with the way in which man relates to his fellow man - and this relationship is reflected in man's social and economic needs - he is also concerned with the relationship between man and nature. The natural environment is not seen merely as a place or resource which serves as a backdrop for man's activities, it has deep spiritual significance because of its ability to revitalize and to enrich the life of man.

This philosophy can be diagrammatized as follows:



In this study the specific concern is recreation. In terms of the philosophy we have to look at recreation firstly as a social ACTIVITY which has significance for man. This will enable us to understand the nature of demand for recreational facilities and also the role of recreation as an activity in the living patterns of man. We also need to analyse the meaning of recreation as a FACILITY. In this respect we would be looking

specifically at the supply of places where recreation activities can or does occur in relation to demand for such facilities.

3.2 RECREATION as an ACTIVITY

3.2.1 WHY MUST MAN RECREATE?

In order to understand the importance of recreation as an activity and the need for man to recreate a brief outline of man's social and economic development since the Industrial Revolution is given.

Most industrialized countries have gone through very definite stages in the development of the present day attitude towards recreation.

*implication
but recreation
green*

Initially large numbers of peasants lost their close connection with the land by leaving their rural environment to concentrate in towns in order to seek employment. Very rapidly large urban settlements began to develop and the urban economic and political influence began to spread also to the rural areas. This led to a gradual deterioration of the rural landscape by deforestation, mechanization of agriculture, mining and the construction of power plants for the continuance of the urban system.

The Industrial Revolution produced a new set of conditions for man - long working hours, child labour, people living compressed in unhealthy conditions almost completely remote from the land. The urban population began to sense what it had lost and the rural and indigenous environment became for the urbanite, a recreational environment. The need for recreational facilities to maintain the health and efficiency of the urban population was now clearly recognized.

Man now began to exert tremendous pressure on the facilities in his urban environment and also on the remaining rural and indigenous places. Much of the land had already been destroyed as true resources for restful recreation. The problem of recreation should therefore be viewed in this wider context of concentrations of people in large metropolitan centres and the

utilization of resources.

The urge for outdoor recreation is evidence of the loss of environmental integrity. The ugliness of man's daily living environment has stimulated a yearning for "natural" and "beautiful" places. We can see in recreation the evidence that nature is an important resource of human life.

If we consider recreation as a biological need then it has a place in the life - maintaining functions in the same way as inhaling is necessary to the physical maintenance of life. It is a vital ingredient in the rhythm of life. In this respect any CHANGE acts as a counterbalance to the daily routine and therefore enhances the rhythm of life. There are so many ways in which this change can be achieved that we include in any enumeration of recreation activities as different as eating at a restaurant and walking in a park, swimming and visiting historical sites and gardening for pleasure.

In healthy communities people have a natural need and desire to recreate. It is the feeling of this writer, however, that many people living on the Cape Flats suffer from an abnormal recreational insatiability because they live in environments which are not planned to the human scale.

The proposals that will be put forward for Strandfontein, therefore, only become meaningful if they are seen within the context of an overall improvement in the quality of life in the Cape Flats living environment.

3.2.2 THE BENEFITS of RECREATION

We have now established the general principle that recreation as an activity is a vital element in maintaining a balance in the relationship between man and man and between man and his physical environment. The next step is to determine at a more specific level why recreation is beneficial to society and to the individual.

There are so many interrelated forces at work in any community, that it is very difficult to isolate any single one such as recreation and accurately assess how it contributes towards community or individual stability.

The individual who has a full and varied recreation life is more likely to be a healthy, well-balanced person. Recreation is not, however, a means for obtaining objectives such as health. It should merely be considered as an important by-product. The chief value of recreation lies in its power to enrich people's lives.

(a) RECREATION and HEALTH

references?
It is generally recognized that participation in recreation activities contributes to the physical and mental well-being of the individual. Recreation which is physically oriented and which is carried out in the open air is the best known means of developing and maintaining the body.

Certain forms of recreation contribute to emotional stability by affording rest, relaxation and creativity.

(b) RECREATION and CHARACTER DEVELOPMENT

references
Many forms of recreation, particularly competitive activities can help to develop personal attitudes and conduct of the participants. In recreation there are repeated opportunities for expression of the ideals of sportsmanship or for violating them. The social qualities involving the attitude of the

This requires research (particularly literature research)

individual towards organized society are also fostered because activities such as team games, drama and music require co-operation, loyalty and team play. Once again it is emphasised that character development is not an objective sought specifically by persons engaged in recreation activities; it can be a natural by-product of such activities.

(c) RECREATION and CRIME PREVENTION

Since participation in wholesome recreation helps to build character, recreation can obviously be an important factor in the prevention of crime and delinquency. Delinquency is less likely to flourish in areas where there are opportunities for recreation. It must be pointed out, however, that recreation in itself does not prevent crime. It must be allied with other agencies such as the home, the school, the church and work if this is to be accomplished. It is also not the function of recreation to prevent delinquency. Through its positive value in developing balanced personalities and social human beings it can help to create a situation in which it is difficult for anti-social behaviour to flourish.

It is important to note that recreation opportunities give people things to do in their leisure time. It is when people have nothing constructive to do with their time that anti-social behaviour is common.

(d) RECREATION and COMMUNITY SOLIDARITY

Many forces in modern society tend to separate people into distinct groups based on differences in their economic status, social position, ethnic groups, creed and educational backgrounds. The natural outcome of this must be a lack of neighbourliness and social intercourse, distrust and suspicion of others. Recreation provides the opportunity for these differences to be forgotten in the fun of participation or achievement. People who excel in games are recognized regardless of colour or creed by followers of the game.

There is perhaps no more effective means by which people come to a friendly understanding of each other than by taking part in recreation activities which require mutual cooperation.

(e) RECREATION and EDUCATION

Different meaning of recreation

In many respects the objectives and methods of recreation and education are similar. Both seek the fullest development of the individual but recreation gives immediate satisfaction whereas education aims at more distant goals. School authorities should be made to realize that recreation settings afford an excellent medium for carrying on the learning process and for achieving social and educational goals. Recreation should therefore be an important part of the whole education process.

(f) RECREATION and ECONOMY

One of the strongest arguments in favour of recreation is that the investment pays dividends in money as well as non-monetary terms. The principle here is the same as the one that applies in business and industry - where the way in which employees spend their leisure hours has a strong influence on productivity. Business leaders have often been willing to support recreation programmes.

references

Studies in a number of cities in the United States have indicated that recreation areas and facilities, if well maintained and wisely administered, have caused a marked increase in property values, thereby yielding correspondingly increased municipal incomes and have proved a potent factor in maintaining sound economic conditions and a high standard of livability in neighbourhoods or communities.

Surrounding?

3.2.3 THE NATURE of DEMAND for RECREATION FACILITIES

Since recreation as an activity is so important to man it is necessary to consider, briefly the factors affecting demand for recreation. People are theoretically free to engage in the recreational opportunities available to them. How they eventually recreate is often not, however, the result of free choice. While it is probably impossible to enumerate or to measure all the factors that effect people's choice in recreation, the following factors will influence participation in some degree.

- (i) Factors relating to the potential recreation users as individuals:
 - a) the total number of people in the surrounding area.
 - b) the distribution of people in relation to recreation resources.
 - c) socio-economic characteristics such as age, sex, occupation, family size and educational status.
 - d) average incomes.
 - e) the time available for leisure.
 - f) the different tastes of people for outdoor and indoor recreation.

- (ii) Factors relating to the recreation area itself:
 - a) its innate attractiveness as judged by the average viewer.
 - b) the quality of management at the resort.
 - c) climatic conditions.
 - d) the availability of alternative recreation opportunities.
 - e) the capacity of the area to accomodate recreationists.

(iii) Relationship between potential users and the recreation area:

- a) the time required to travel from home to the area
- b) the comfort or discomfort of the journey
- c) the monetary costs involved in a recreation visit to the area.
- d) the extent to which demand has been stimulated by advertising.

Sophistic

3.2.4 RECREATION INCOME and RESOURCE AVAILABILITY

Since income is one of the most important determinants of recreation in the Cape Town metropolitan region, experience gained and some of the research conducted overseas need to be considered very briefly.

Extensive research has indicated that participation in active recreation has positive correlation with social status as related to income. The higher income groups have more opportunity for spending leisure time in exclusive associations such as sports clubs and can afford to purchase leisure time opportunities from private agencies.

People in the lower income bracket find it difficult to avail themselves of such opportunities and generally depend on whatever is offered by local authorities or other public agencies

Mueller and Gurin carried out a study for the Outdoor Recreation Resources Review Commission (ORRRC) in 1962. They pointed out that the relationship between recreation and income is quite complex because it is so closely related to factors such as education and occupation. They found that participation in outdoor recreation tended to increase as the amount of education (and presumably occupational status) increased.

In another study for the ORRRC Philip M. Hauser indicated that besides cost, another important factor determining demand for recreation is the unavailability to the individual of suitable facilities. The basis of his reasoning was that participation

Planning attitudes & principles which result from that

is important

good grief -

rates in outdoor recreation vary directly with both cost and physical unavailability of outdoor recreation resources to the public. The higher the cost and the further removed outdoor recreation resources are from low income persons, the less these resources are available to them. In recreation research this is generally referred to as the "opportunity theory".

An important implication of this theory is that, if low cost opportunities are made available these opportunities will be fully utilized.

"It also suggests that groups long denied recreation opportunities, not only by virtue of their residence but because of poverty ignorance or segregation, might become participants in available opportunities if these barriers are removed³".

This hypothesis was tested by John J. Lindsay and Richard A. Ogle at a resort near Salt Lake City (USA). Their conclusion was that income and education may be negated completely if the recreation resource is located close to low income and poorly educated people and is cheaply available to them.

"..... if the de facto opportunities are approximately equal for all income levels, recreation use should be approximately uniform for all segments of the population⁴".

3 and 4 John J. Lindsay and Richard A. Ogle
Journal of Leisure Research. 1972 Vol. 4 No. 19
"Socioeconomic Patterns of Outdoor Recreation Use
near Urban Areas p.20".

3.3 RECREATION as a FACILITY

By recreation as a facility is meant the supply of facilities that are available in relation to demand. The facilities are the specifically built objects which are intended to satisfy the particular recreational needs of the individual and the community.

Recreation facilities are usually provided within very specific spatial frameworks - the family house, cultural centres providing mainly for daily recreational needs, the urban periphery with its coastline, parks and rivers where recreation is sought mainly over weekends. This time-space correlation can, in reality, become extremely complex.

In spite of this complexity it is still useful to think in terms of a hierarchy of recreational spaces - Such a classification will help to provide the evidence for the type of development which will be most appropriate for the Strandfontein coastline.

3.3.1 CLASSIFICATION of RECREATION SPACES

Cliff Tandy⁵ has classified leisure facilities into the following three categories.

(i) LOCAL SPACES

Local spaces could be

- None are mutually exclusive*
- (a) LINEAR parks linked open spaces
eg. the Liesbeek River, Happy Valley in Port Elizabeth
 - (b) NODAL..... where the facilities are provided at
central location eg. City squares.
 - (c) Recreation oriented housing developments
eg. Marina da Gama or Reston, Virginia.

FORM TERMS

NON-FORM TERMS

d) playgrounds and playing fields.

(ii) SUBREGIONAL SPACES

Subregional spaces include the following types:

- a) sports centres - complexes containing several indoor and outdoor games facilities grouped together.
- b) Rest and leisure parks - combined sports, arts and social centres catering for a whole variety of users eg. Central Park, New York.

(iii) REGIONAL SPACES

Regional leisure facilities include open spaces such as country parks and picnic sites, regional parks, weekend and annual holiday areas. These are described in detail in chapter 4 which deals specifically with regional recreation case studies. eg. the Lee Valley (UK) and Fronte Creek Park (Canada).

3.3.2 CATEGORIES of FACILITIES

Irrespective of the level of which recreation facilities are provided most recreation resorts would provide facilities which could be included in the following categories:

(a) FORMAL or INFORMAL

NOT CLEAR

The formal activities are those which function on a formally organized basis. These would include facilities for team games. The informal activities are usually less organized and are much more spontaneous. In most resorts the facilities would provide for formal as well as informal participation.

(b) ACTIVE or PASSIVE

The former makes provision for more intensive physical involvement and the facilities are mainly geared towards the youth and younger adults. This would include facilities for

formal team games, swimming and cycling. Passive recreation is less physical and involves watching other participants. Facilities for passive recreation would therefore include spectator facilities, park benches, pathways for quiet rambles and parking areas with good potential for viewing the scenery. The passive facilities should take into account the special needs of the aged and the handicapped.

(c) DAY and NIGHT

At most resorts the facilities are geared towards the day visitor - these would include facilities for outdoor games, cafes and restaurants. Where conditions are suitable provision is also made for night facilities. These facilities would include dance halls, cinemas, theatres as well as camping areas, caravan sites, holiday cabins and hotels which provide specifically for extended visits to a resort. Safety is often an important factor in the provision of night facilities.

(d) SEASONAL or NON-SEASONAL

Most resorts are highly seasonal i.e the facilities cater mostly for the peak holiday period during the summer months. Climatic conditions have a very strong influence on whether recreation facilities are used on a seasonal or non-seasonal basis. Our weather conditions is mild enough to allow participation in outdoor recreation activities all year round.

At American resorts the tendency is to provide facilities which can be used throughout the year. This also helps to ensure the economic viability of a resort.

(e) INTENSIVE or EXTENSIVE

An intensive recreation situation is one where a wide range of facilities are provided in a limited area. The emphasis here is on man made facilities rather than the natural landscape.

Extensive facilities are usually "natural areas". These facilities are provided where little damage must be done to the

natural environment. Movement of people and access is very strictly controlled.

(f) NODAL or LINEAR

Nodal facilities are those which are provided at one or more central places. A wide variety of activities are usually catered for in order to satisfy a comprehensive range of recreation needs in a limited area.

Linear facilities would include roads, bridleways, footpaths and waterways - Nodes of recreation facilities are often located at key location along the linear routes. The linear facilities usually have a very low environmental impact.

In addition to the above categories outdoor facilities could also be geared to serve the special needs of men and women, young people and children.

Very emphasizing to see what you are getting at

There is considerable variation in the activities made possible; in their construction and operation cost, space requirements, location, in the number of persons served, and in the amount of leadership or supervision required.

The following list includes most of the important and commonly provided OUTDOOR FACILITIES: (cf. page 18)

Many popular forms of recreation can be carried on most successfully indoors. Furthermore, outdoor activities are often limited for long periods because of weather conditions. Suitable buildings must therefore be provided if people are to have an opportunity to engage in recreation activities throughout the year

Buildings used primarily for INDOOR RECREATION are classified according to three groups. (cf. page 18)

OUTDOOR FACILITIES

GAME COURTS AND FIELDS	SPORTS AREAS AND FACILITIES	STRUCTURES	EQUIPMENT	SPECIAL AREAS
Badminton Courts	Athletic tracks	Bandstands	Braai pits	Bathing beaches
Basketball Courts	Bicycle tracks	Boat docks and ramps	Benches	Camps
Bowling Greens and alleys	Bridle trails	Dance Pavilions	Bicycle racks	Concert Areas
Cricket Fields	Golf Courses	Fishing piers	Fences	Gardens
Football Fields	Marinas	outdoor theatres	Amplification equipment	Hiking Trails
Hockey Field	Roller Skating tracks	Pavilions	Night-lighting equipment	Multiple use paved areas
Rugby Fields	Yacht harbours	Recreation piers	Playground apparatus	Nature trails
Softball Fields		Shows	Sand boxes	Parking areas
Tennis courts		Padding Pools	Tables for games	Picnic areas
Volleyball Courts,		Swimming pools		Playground for children
Netball Courts			and crafts, Picnic tables, benches etc.	

INDOOR FACILITIES

MULTIPLE USE BUILDINGS	SINGLE USE BUILDINGS	SERVICE BUILDINGS
Amphitheatre	Aquariums	Administration building
Arenas	Art museum	Boathouses
Art centres	Craft centres	First aid stations
Holiday cabins	Dance pavilions	Picnic shelters
Clubhouses	Museums	Restaurants
Multiple use recreation buildings	Observatory	Stables
Gymnasiums	Planetarium	
	Swimming pool	
	Theatre	
	Zoo	

3.3.3 COMPREHENSIVE PROVISION of FACILITIES

When recreation facilities are provided it is imperative that provision is made on an integrated and comprehensive basis. Facilities should not be provided or resorts planned in isolation. The Strandfontein Coastal Development Plan is therefore not seen as an isolated event. It forms part of an overall recreation planning programme for the entire metropolitan region.

reference [In order to illustrate exactly what is meant by comprehensive recreation planning at the metropolitan scale, the Huron-Clinton Metropark system which was planned for the city of Detroit in the USA will now be analysed briefly.

I don't understand Many of the population conurbations in the USA have had to cope with the problem of provision of recreation facilities. Much recreation has always been restricted to short distances from the home but since the rapid increase in mobility recreation needs can now be satisfied further away from the home.

Such thinking has led to an emphasis on the urban periphery - the area within half an hour or an hours drive from the metropolitan centre - as a place for satisfying the recreation needs of the urban population. This is part of the thinking behind the origin of the metroparks in the USA and Britain.

Pattmore⁶ describes one such system - the Metropark system of the Huron-Clinton Metropolitan Authority. The scheme, initiated in 1940 was made possible by the cooperation of the five major public authorities administering the Detroit metropolitan region.

The facilities are designed almost entirely for day use and are located within forty five minutes drive from the centre of the conurbation. The location of the park is therefore closely connected with the freeway system and each sector of the conurbation has a park within easy reach.

6. Land and Leisure p. 282 to p. 288

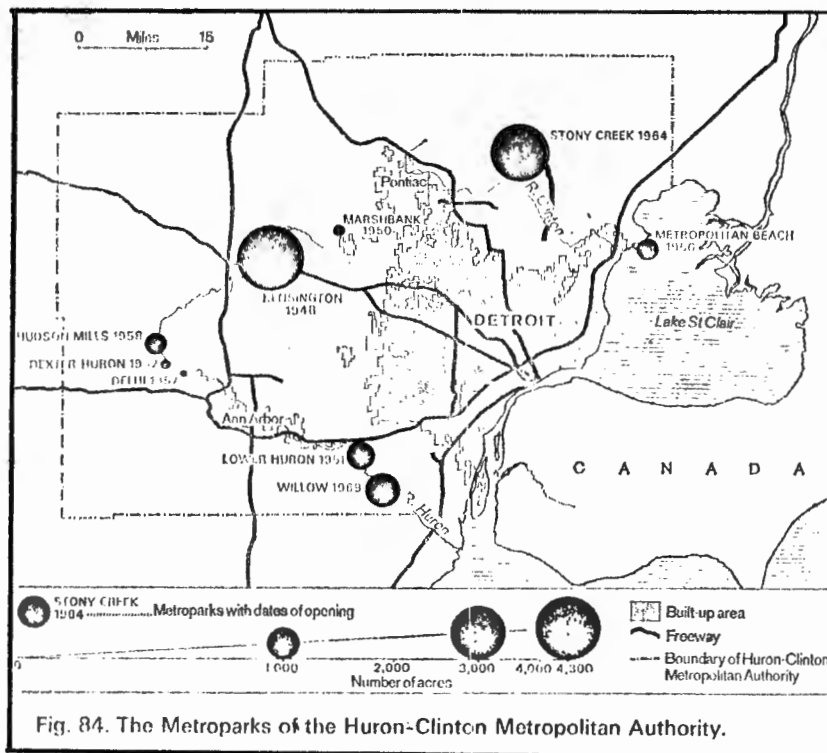
Because of their excellent accessibility the parks are well used by residents from all parts of the conurbation.

The facilities are designed in such a way that a wide range of activities are possible and also that each park maintains an individual character. All income groups are catered for since the facilities range in sophistication from simple picnic provision to expensive marina developments.

There is also considerable variation in the scale of the various parks. Kensington and Stony Creek (see map) cover over 4 000 acres whereas the smaller parks cover less than 1 000 acres.

Very irrelevant

(FIG. 1)



SUMMARY

Nonsense The Detroit Metropark System was described because it shows the value of comprehensive planning in satisfying the long term recreation and open space needs of a metropolitan population. Within such a planned system it is possible to provide a variety of facilities catering for different tastes and income and age groups.

The location of facilities can also be planned to provide access and maximum usage by people living in the urban complex.

The scheme also shows the value of a carefully planned financing system. The major part of the infrastructure is paid for by means of a tax-levy system and users help to finance development and maintenance by paying for the use of certain facilities.

3.4

THE PLANNER'S ROLE

The provision of recreation facilities at all levels - in the house, the residential environment, the regional or the national scale is essential for the harmonious conduct of urban life. The daily weekly and yearly frameworks of recreation are inter-dependent and all of them need to be provided for if the rhythm of individual and social life is to be maintained satisfactorily. Large parts of housing environments on the Cape Flats are characterised not only by lack of space but also by hordes of children and adults escaping their dwellings and filling the streets, courtyards and other public open spaces. This lack of space and privacy often causes friction.

These poorly planned urban environments often result in hordes of people flocking to the urban periphery in order to find recreation opportunities in more hospitable surroundings. This is one of the reasons why Strandfontein attracts up to 55 000 visitors daily during the peak holiday season. A considerable share of the recreation problem must therefore be solved in the city and

its suburbs so that the urge to leave the city is normalized. Regional recreation should not be a form of escapism but rather an harmonious meeting of man with man, and man with his regional environment.

This means that the provision of amenities along the Strandfontein coastal zone can only be meaningful if it is done in concert with the improvement of living conditions within the Black residential environments.

Recreation planning must also be wholistic in the functional sense. The home - work - trading - and circulation environment should also be a recreational environment. When we plan for recreation in an urban setting we therefore have to take into account housing - gardens - streets etc. Recreation must be comprehensively planned for since it is one of the most important elements composing habitability.

"To become a true source of recreation the whole of our regional surroundings has to be turned into an environment which provides for nourishment, occupation interest, enjoyment and health at the same time. Planning for recreation should be enlarged from compensatory or defensive zoning to planning for comprehensive purposes of higher environmental quality everywhere".⁷

The conceptual analysis has confirmed that recreation is a valuable element if people are to live full and rounded lives. The planner cannot, therefore, hold a laissez-faire attitude towards recreation since this would be in conflict with his whole philosophy of planning.

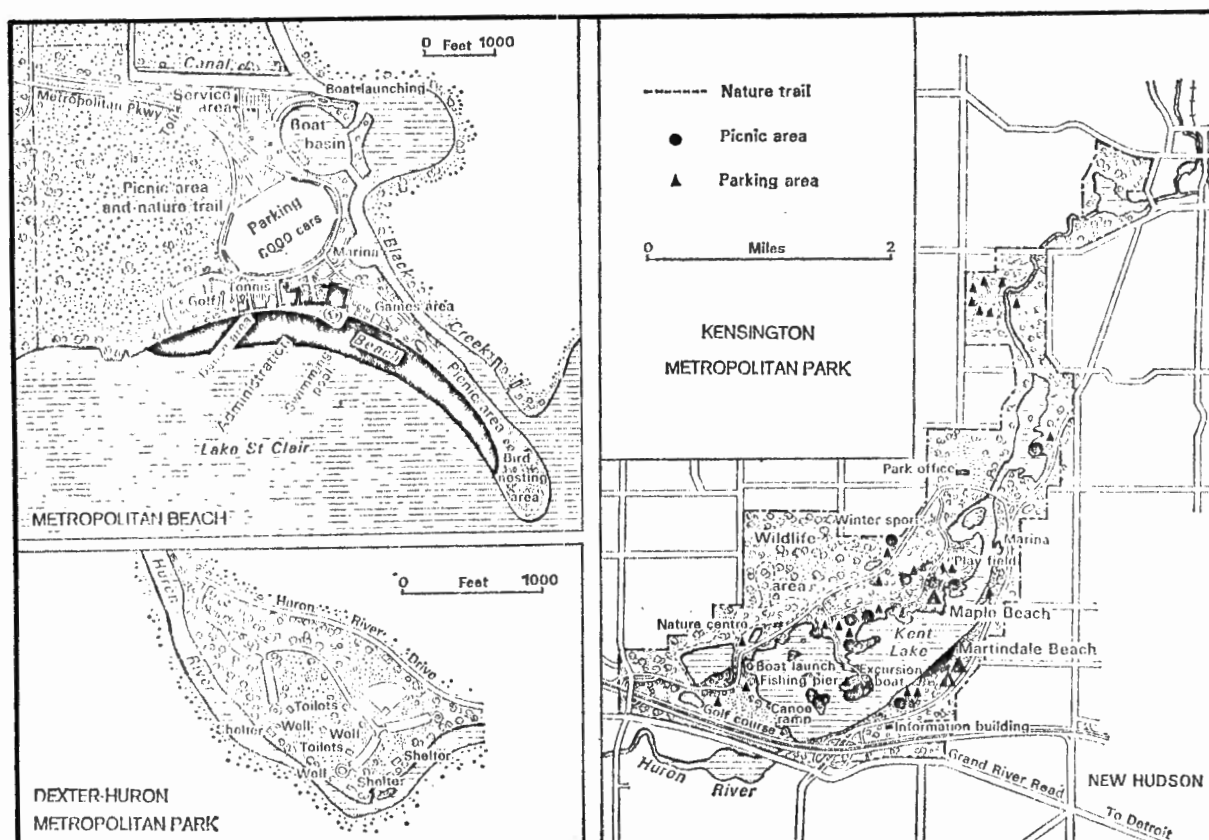
7. Arthur Glikson : The Ecological Basis of Planning p.27

It is, therefore, the responsibility of the planner to ensure that every community is provided with a comprehensive and varied range of recreation facilities.

In this study we are concerned with recreation facilities provided at a specific level - namely regional recreation facilities. In the following chapter a number of regional recreation case studies will be analysed in order to determine what recreation means at the regional scale.

W. C. W.

THE HURON-CLINTON METROPARK SYSTEM

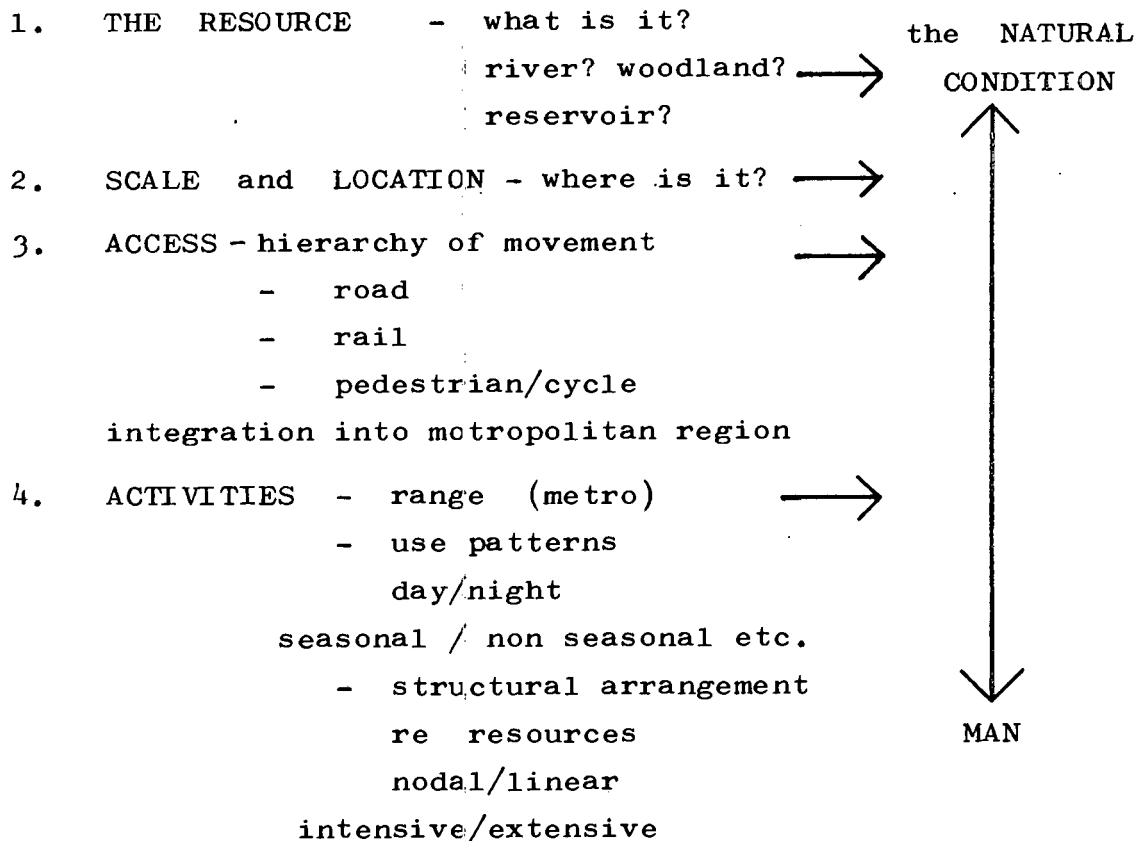


4.0 ANALYSIS of PRECEDENT

This study is specifically concerned with making recreation opportunities available at Strandfontein in order to improve the overall quality of life for people living in the metropolitan region. The facilities at Strandfontein will, therefore, have a very specific regional function.

It is; therefore, not only sufficient to know what recreation means (section 3.0) - we also have to clarify more specifically what a regional recreation amenity is. We are also trying to obtain a clearer conception of the physical form that regional recreation can take and the basic planning principles involved.

In order to reach this understanding four regional recreation case studies will be analysed in terms of the following framework:



The analysis will enable us to evaluate the concept of regional recreation and to extract the common planning principles related to:

- . The site
- . Its metropolitan context
- . The structure of its facilities

4.1 BRONTE CREEK PARK (Toronto - Canada)

4.1.1 BACKGROUND

This scheme was selected for analysis because:

- . It caters essentially for the urban and suburban population of a large metropolitan region.
- . It is located within 35 minutes driving distance from downtown Toronto and is therefore geared mainly towards the needs of the daily and weekend visitor.
- . The planners have had to provide recreation opportunities for a large number of people within a very sensitive natural environment.
- . The scheme is very comprehensive since it attempts to satisfy a wide range of recreation needs.

In respect of the abovementioned factors, Bronte Creek should have several elements which could be relevant at Strandfontein.

4.1.2 THE RESOURCE

Bronte Creek is a well wooded valley located within 35 minutes driving time from downtown Toronto. The major attraction is a perennial river flowing along the valley bottom (see fig.2). The valley is thickly wooded and includes a wide range of indigenous trees.

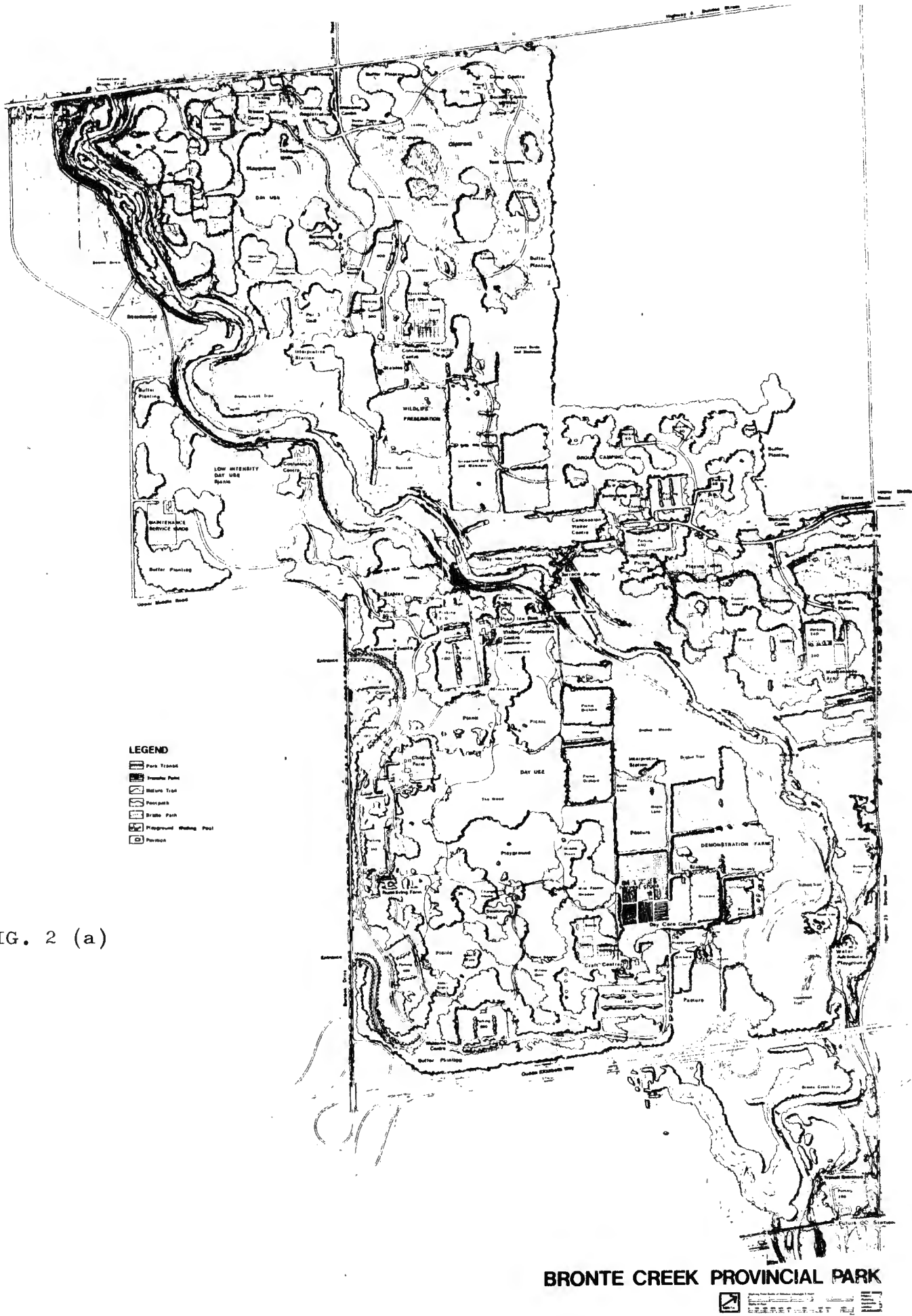


FIG. 2 (a)

4.1.3 LOCATION and SCALE

The resort is located within easy driving distance of the metropolitan population of Toronto. Population projections showed that the population of Toronto would reach 8 million by the year 2 000. Bronte Creek Park is designed to satisfy the recreation needs of a large percentage of this population.

The park is 5½ km. long from west to east and 2½ km. from north to south and the site covers 813 ha. The scale is slightly larger than that of Strandfontein.

4.1.4 ACCESS

The park is enclosed by the metropolitan freeway system along its eastern and northern perimeters. These freeways provide easy access to the Toronto metropolitan region.

A rapid rail transit terminal is located at the eastern edge of the site. This means that Bronte Creek also has a rail connection to its metropolitan hinterland. Surrounding communities are integrating their movement systems with that of the park. Bikeways have been constructed inside the park to the neighbouring communities. There are extensive hiking linkages inside the park which are connected with other trails outside the park.

4.1.5 ACTIVITIES

As shown on the following diagram the park has a very wide range of activities which are located in several well defined clusters. Each cluster has a different set of activities and when viewed together it is clear that the mix of activities is designed to satisfy almost every kind of recreation need.

The facilities provided within each cluster can be summarized as follows:

find this is purely descriptive - it tells you nothing

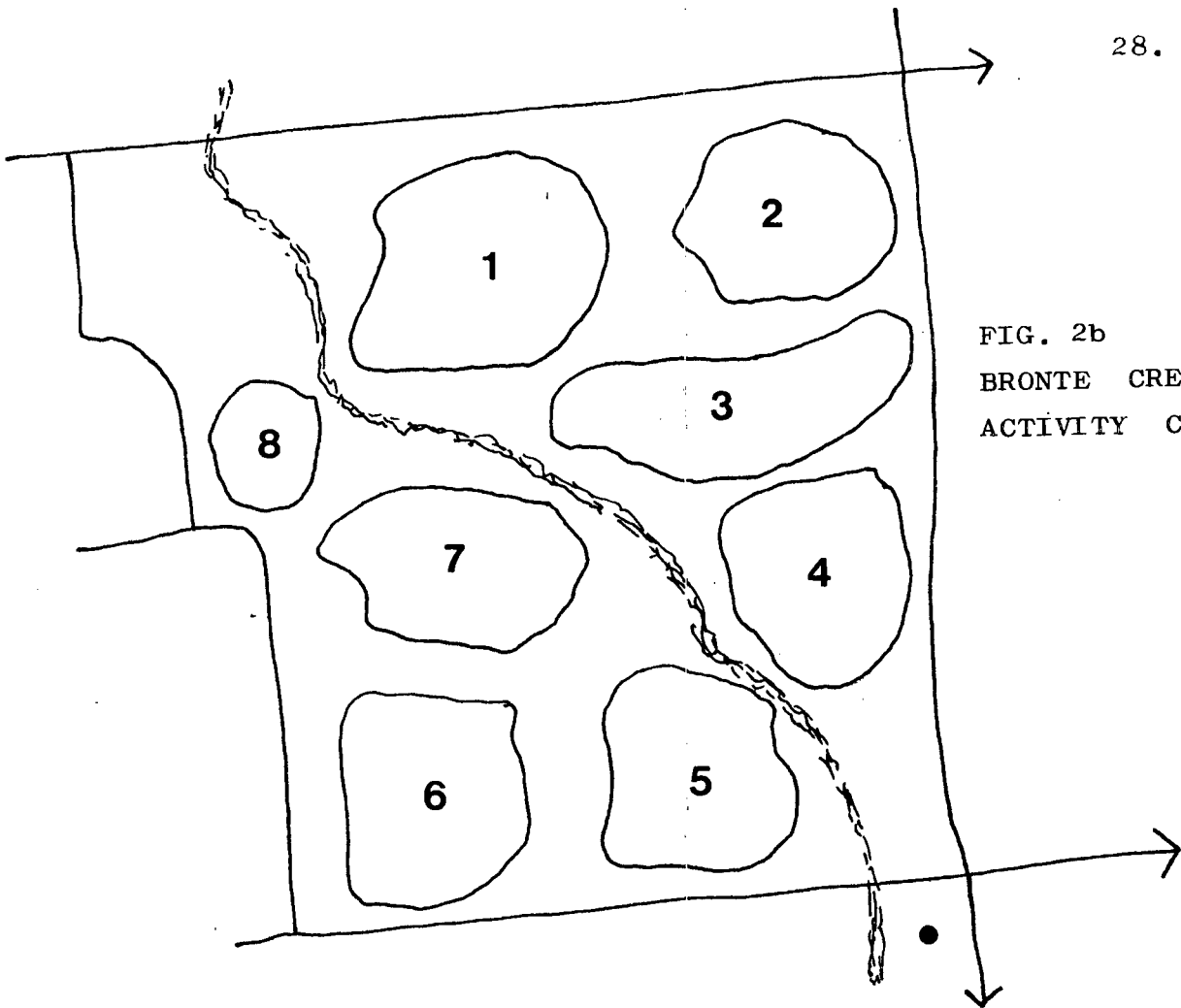


FIG. 2b
BRONTE CREEK PARK -
ACTIVITY CLUSTERS.

1. DAY USE - picnic, playground, toboggan, swimming pool.
2. CAMPING - trailers, tents with ancillary facilities archery, social centre bowls, basketball, tennis.
3. WILDLIFE PRESERVATION - forests, birds, mammals stables, interpretive centres.
4. GROUP CAMPING - mainly passive activities picnic, conference centre, swimming pool, playing fields
5. DEMONSTRATION FARM - pastures, orchards, picnic areas, wild flowers, farm house, water feature, day care centre and playground, interpretive station
6. RURAL LIVING AREA - picnic areas, children's farm. swimming pool, craft centre, bowls, tennis, volleyball

7. EQUESTRIAN CENTRE - stables, paddocks, pony ring
pool , ice rink
visitor / interpretive centre.
8. LOW INTENSITY DAY USE - conference centre
- picnic area.

The activity nodes are well connected by means of roads, bikeways and trails.

The activities are geared mostly to the needs of users over weekends and during holidays. The distance from the City precludes intensive use on a daily basis. The most intensive usage period is during the long summer vacation.

Bronte Creek also functions during winter and provision is made for a wide range of winter activities

The most significant features of the structure of Bronte Creek are:

- i) The location of activity clusters away from the valley bottom in order to minimise their impact on the resource base.
- ii) Only pedestrian traffic is allowed along the river valley.
- iii) Entry points to the site are limited and gives direct access to each cluster of activities. This minimises movement through the site.
- iv) Parking areas are related to the major entry points and are located away from the river.
- v) There is a considerable amount of buffer planting at the edge of the site which helps to prevent noise pollution from traffic using the freeways bordering the site.
- vi) In the arrangement of facilities care has been taken to preserve the natural condition as far as possible.

- vii) An important feature of the plan is the careful thought given to the circulation system. This allows for very intensive usage with minimum environmental disturbance.

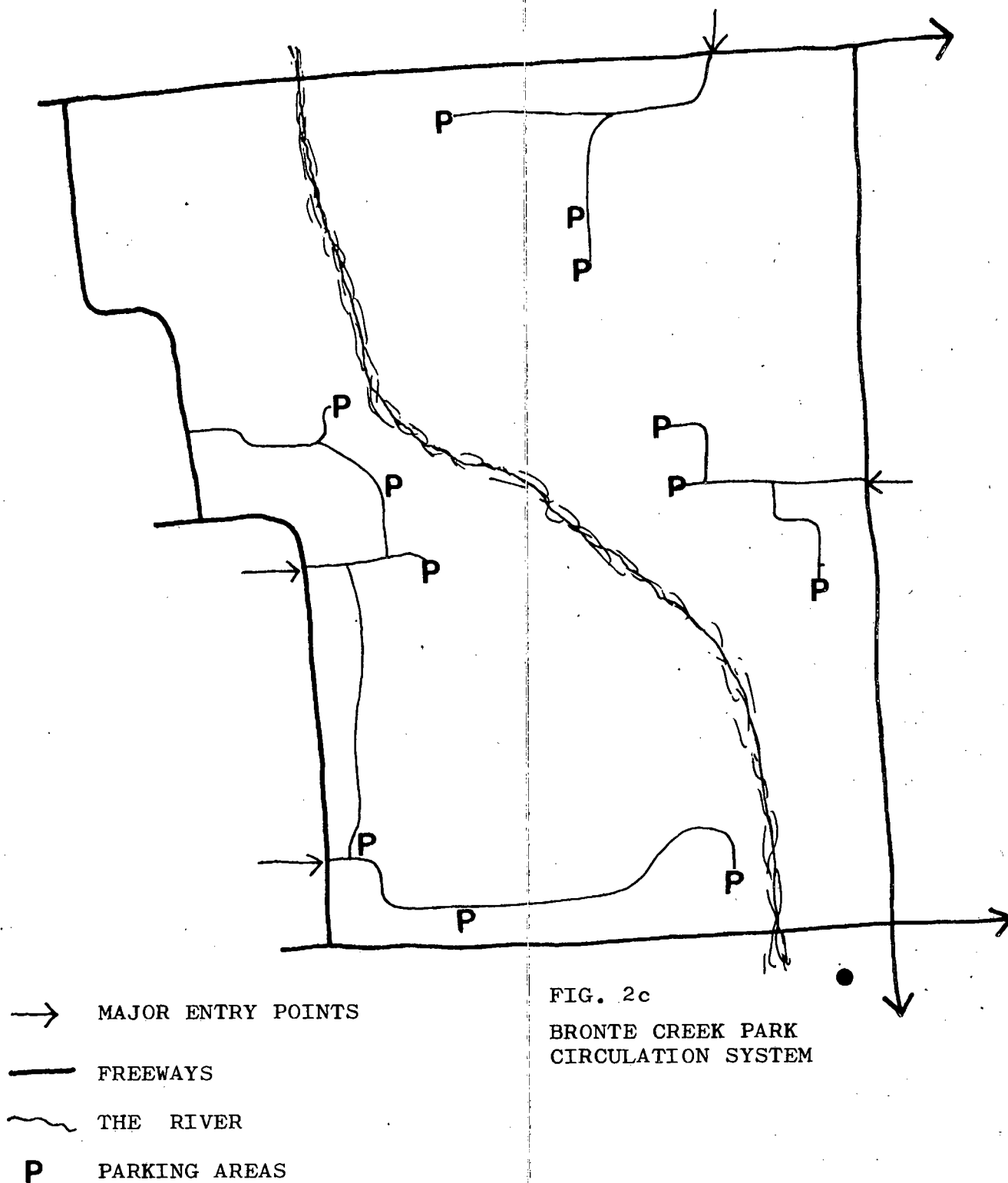


FIG. 2c

BRONTE CREEK PARK
CIRCULATION SYSTEM

4.1.6 EVALUATION

There are clear principles which evolve in an evaluation of the Bronte Creek recreation park namely:

- i) That the park is extremely well integrated into the Toronto metropolitan region.
- ii) Bronte Creek is also one of a series of parks that will be located within two hours drive of the city and is intended to satisfy the long term recreation needs of Toronto. It is therefore part of a recreation system for the region.
- iii) The sensitive physical environment has been utilized sympathetically. The planners saw the environment as an opportunity to heighten man's awareness of the land and of man and his heritage.
- iv) Facilities are located so that the major resource remain undisturbed.
- v) The motor car has been confined to the edges of the site.

*The new
points are
with
or may not want
to take to each*

4.2 THE LEE VALLEY REGIONAL PARK

4.2.1 BACKGROUND

The Lee Valley Regional Park is a 15 year plan designed to establish a range of recreation activities along the valley of the Lee River northeast of London.

The scheme has been selected for analysis because:

- . It was the first project of its kind in Britain and is still one of the major recreation planning projects in the world..
- . Lee Valley has already become a much quoted prototype in recreation planning.
- . The scheme is very comprehensive since it provides a wide variety of work, live and play opportunities.

- KEY
- park, road and intersections
 - car parking
 - viewpoints
 - existing roads
 - major road proposals and intersections
 - footpaths
 - bridleways
 - nature trails
 - railways and stations: BP, LTB
 - water
 - extension to flood relief channel
 - major recreational facilities
 - playing fields, open space, woodland
 - industrial areas
 - other built up areas
 - golf course
 - pitch and putt course
 - athletics
 - motor sports
 - motorcycling
 - cycling centre
 - drag racing
 - chalets, caravans
 - camping
 - riding
 - nature reserve
 - swimming
 - fishing
 - boating
 - playground
 - cultural activities
 - museum
 - historic building
 - information centre
 - public utilities

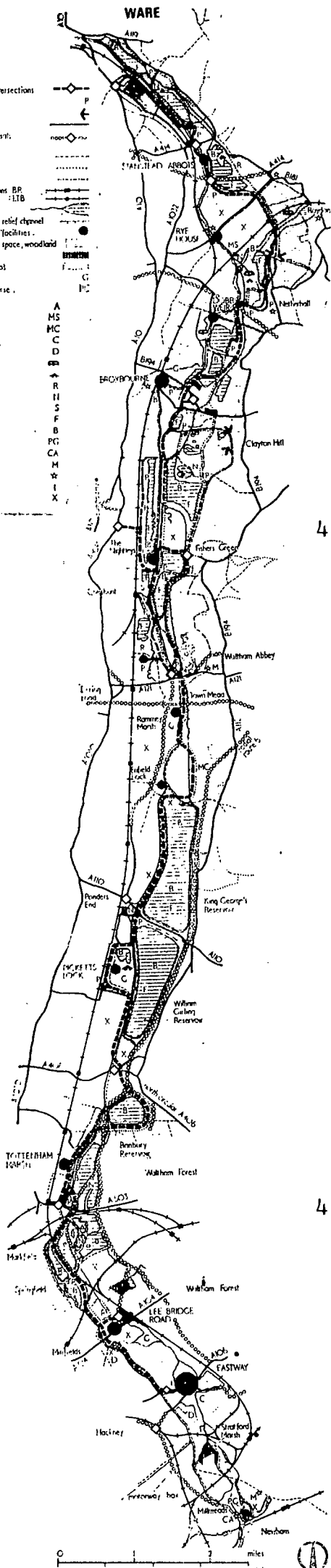


FIG. 3a)

Environmental improvement is one of the major objectives of the scheme.

In terms of its scale and structure Lee Valley differs markedly from the Bronte Creek project. In this respect there may be new planning principles involved - principles which could be applied at Strandfontein.

4.2.2 THE RESOURCE

The major resource is a 43 km. section of the Lee River between Ware and Millmead (at the London end of the river). There are several reservoirs which form the basis of outdoor recreation complexes. Along the river valley are a number of abandoned gravel pits and abandoned allotments as well as vast areas of marshland. The improvement in environmental quality of these areas is an important feature of the plan.

The valley is well wooded and has a rich variety of indigenous flora and fauna. The Lee Valley lends itself very well to the development of a regional recreation amenity.

4.2.3 LOCATION AND SCALE

The Lee Valley is located northeast of London and is intended to serve the huge population of metropolitan London. It is estimated that the

park will attract 1 million people at weekends when it is completed in 1985. The entire scheme will eventually cover an area of 4 000 ha.

Strandfontein covers 6 000 ha. but it has a much smaller service population.

4.1.4 ACCESS

The Lee Valley Regional Park is extremely well connected to its service population. There are existing north-south rail and road connections along the valley. In addition a special park road is being constructed, meant specifically for recreation traffic. This will be a toll road and it will be designed to follow the twists and turns of the valley.

There are also several east-west routes crossing the valley and in most instances clusters of recreation activity have been set up at these nodal points.

These cross routes also means that surrounding communities are well connected to the park.

4.1.5 ACTIVITIES

An extremely wide spectrum of facilities will be provided. The major resource is the river system with its reservoir - water based activities such as boating, fishing and bridleways alongside the waterways will be the major facilities.

Intensive recreation opportunities will be provided at nodes along the river. Some of the activity nodes are indicated on Fig. 3C which shows a section of the park in order to illustrate the clustering of activities.

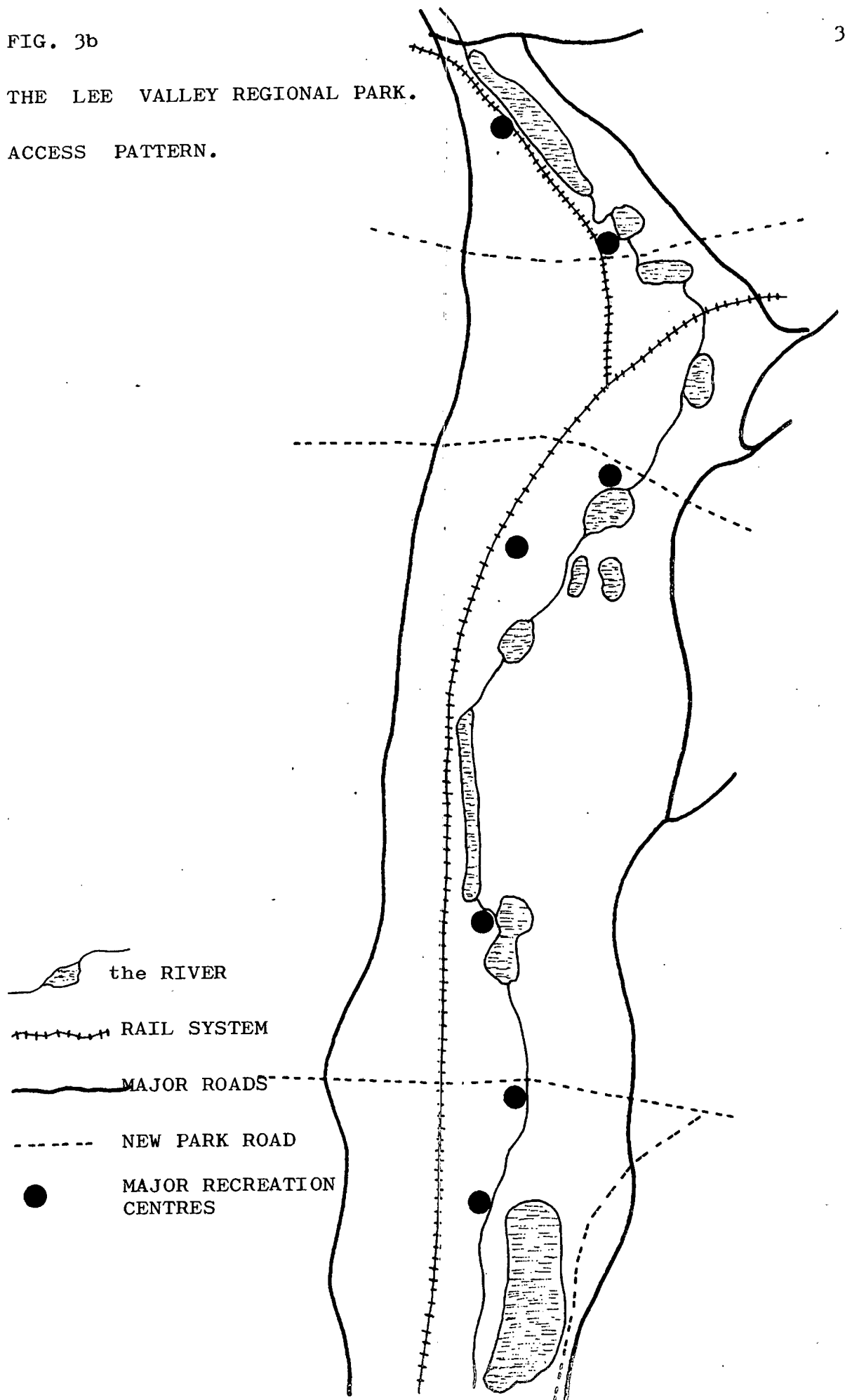
The facilities include the following:

- i) PICKETTS LOCK -- reservoir boating and fishing, golf course, largest sports hall in Britain, swimming pools, ice rink,

FIG. 3b

THE LEE VALLEY REGIONAL PARK.

ACCESS PATTERN.

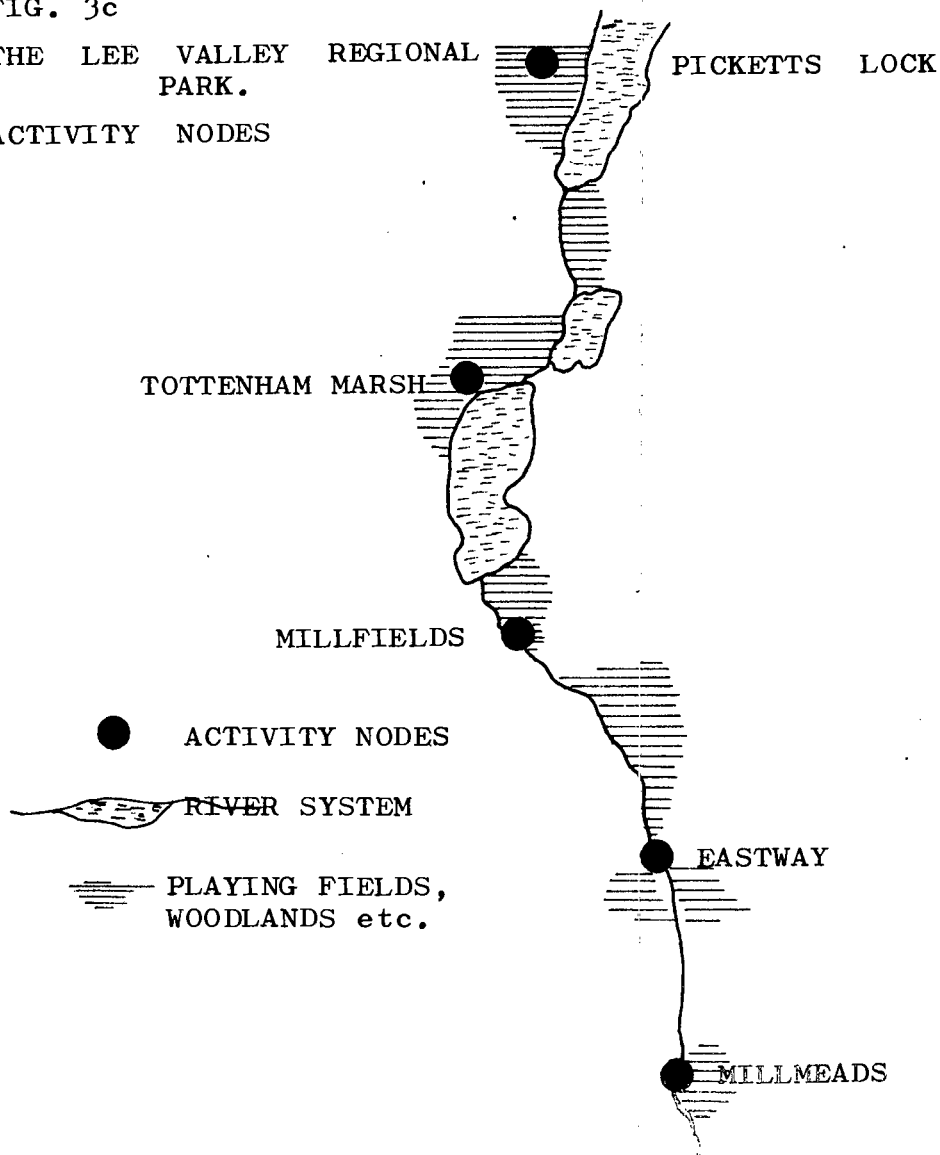


lido, floodlit all weather, camping courts, restaurants, saunas.

- | | | | |
|------|-----------------|---|---|
| ii) | TOTTENHAM MARSH | - | reservoir and forest, nature reserve, chalets, caravans, Strong emphasis on passive recreation activities |
| iii) | MILLFIELDS | - | golf course, dog racing, horse riding, playgrounds. |
| iv) | EASTWAY | - | comprehensive entertainment centre, cycling, dog racing, extensive environmental improvement, 110 soccer pitches. |
| v) | MILLMEAD | - | 3½ ha. development, play centre with all weather floodlit areas. Emphasis on cultural activities-museum, historical site. |

FIG. 3c

THE LEE VALLEY REGIONAL PARK.
ACTIVITY NODES



Lee Valley is a linear system of recreation activities with the major concentration of activity related to:

- . The environment resource base
- . Major movement intersections.
- . Concentrations of population.

The largest nodes are located near London where the most intensive use is anticipated. At the northern end of the Park are concentrated the less intensive activities.

The location of the recreation nodes at the major north/south - east/west intersections ensures good accessibility to surroundings communities.

4.1.6 EVALUATION

The scale of the Lee Valley project and the absence of detailed information on the design of the different recreation nodes, makes it very difficult to extract planning principles which could assist in finding a suitable structural solution for Strandfontein. The most important lesson that emerges is that recreation should be planned on a comprehensive basis. The random provision of amenities without references to a larger system shows a lack of understanding of the nature and importance of recreation.

Weir

4.3 NORTH ANNA RESERVOIR - (VIRGINIA, U.S.A.)

4.3.1 BACKGROUND

In the state of Virginia, the Virginia Electric Power Company is constructing one of the largest nuclear electric generating complexes in the country. As part of the project the company has dammed up the river at North Anna and created a large reservoir of 3800 ha. In the process the company has created a massive fresh water recreation resource.

4.3.3 LOCATION and SCALE

North Anna is located 1½ hour drive from Washington DC and less than a hour from Richmond. The new town of Columbia is also in close proximity to the reservoir. The artificial lake and its immediate hinterland covers an area of approximately 29 km from north to south and 14 km from east to west. The area with potential for recreation development is therefore much larger than Strandfontein or Bronte Creek.

4.1.4 ACCESS

The resort is connected to the large urban concentrations of Baltimore and Washington by road and rail. An important element in the internal movement system is a circumferential highway around the shores of the lake. A system of minor feeder roads leads off this highway to serve the residential and recreation centres. The circumferential freeway is seldom less than a mile away from the reservoir thus ensuring minimum environmental impact on the resource base. Three small business centres have been located at the major intersection points.

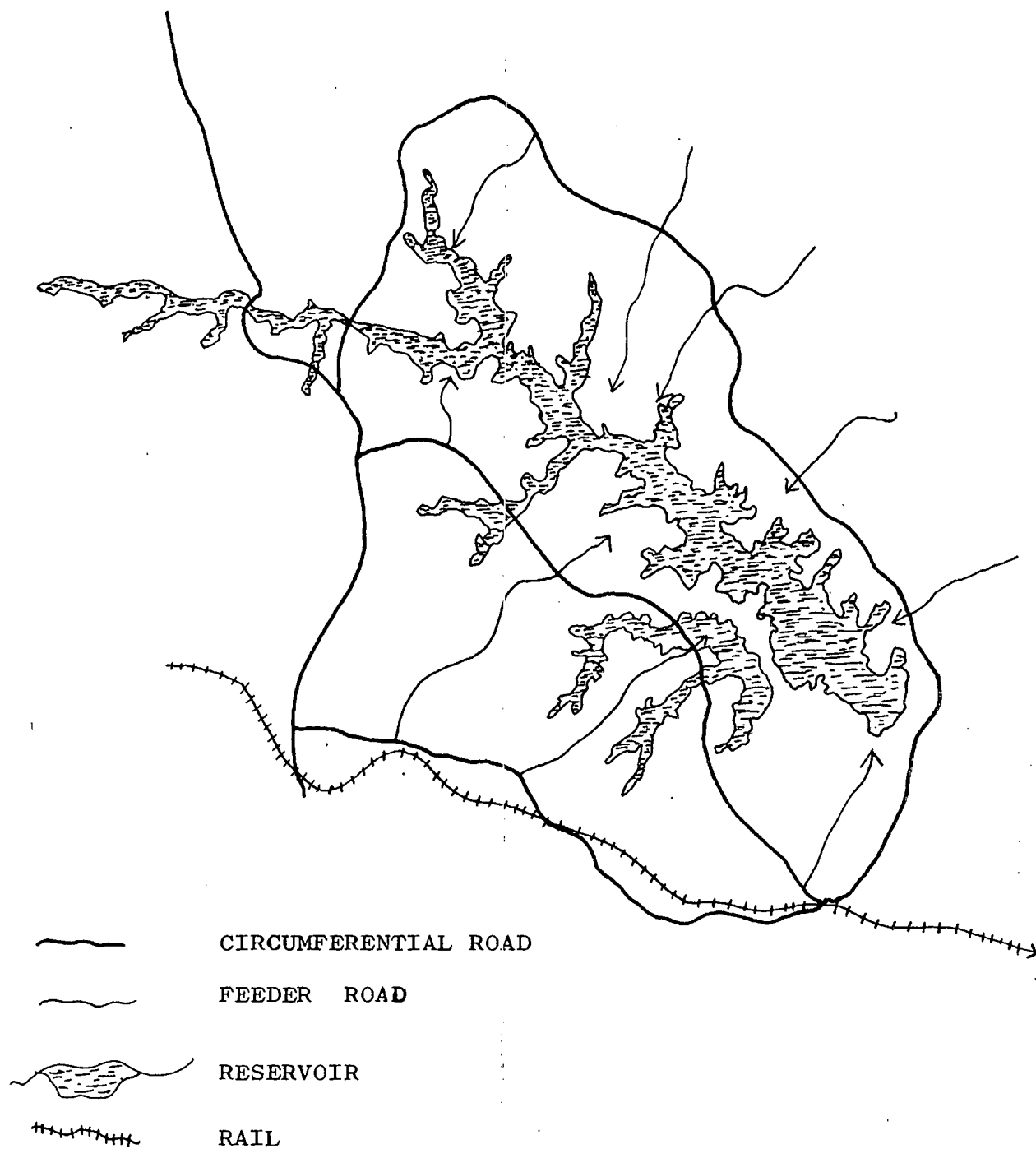
4.1.5 FACILITIES

The recommended public outdoor recreation facilities include a 1 000 ha. state park and two smaller county or regional parks with facilities for camping, picnicking, swimming and boat launching.

The design concept along the shoreline is the provision of a variety of park, recreation and resort opportunities at a number of locations throughout the reservoir, interdispersed with low density (one to four dwelling units per acre) residential developments. Conservation or other protective designations were proposed in the most sensitive areas.

More intensive recreation developments will occur at the three resort centres. These would include facilities such as marinas,

NORTH ANNA - CIRCULATION SYSTEM.



restaurants, lodges and golf courses. Hiking, canoeing and nature study activities would take place in and along the fingered headwaters of the reservoir. At each resort centre the major emphasis is on water based activities.

Large parts of the area have been reserved for mainly low density housing. There is a close correlation between the location of housing and the location of the main resort centres. Thus the major emphasis may be on weekend use but the proximity of the residential area will ensure regular use of the amenities throughout the year.

4.3.6

EVALUATION

In this project a thorough environmental analysis was undertaken. As a result of this analysis and the discovery of the sensitivity of the area the scheme has a strong conservation bias. The largest part of the area has been given over to conservation. Furthermore suggestions were made to further mitigate other environmental problems such as boat pollutants and erosion control. This emphasises the need for proper environmental analysis in recreation planning.

Another significant feature of North Anna is the integration of residential and recreation activities. Residential environment can be enhanced by being located within or in close proximity to recreation areas.

The road systems has been designed in such a manner that the shore of the artificial lake is undisturbed by traffic movement.

4.4 MILLER'S PARK (Mobile, Ala., U.S.A.)

4.4.1 BACKGROUND

As in most other American cities the planning authorities of the city of Mobile in Alabama has taken a long term overview of the recreation planning problems in their metropolitan region.

As part of their long term solution an abandoned site on the periphery of the growing Mobile metropolitan region was selected for development into a major new urban park. The recreation facilities would be financed partly by the sale of residential lots adjacent to a golf course development.

In terms of its function Millers Park is very similar to Strandfontein. The manner in which housing and recreation are integrate in this scheme is highly significant since a similar integration between Strandfontein and Mitchell's Plain will be necessary.

4.4.2 THE RESOURCE

The environment lends itself well to recreation development. A perennial stream flowing from northeast to southwest forms the southern perimeter of the resort. At the northern end of the stream is the abandoned reservoir and at its southern end it has been dammed up to form a water feature as part of the golf course development. North of the stream are several ridges with woodlands

4.4.3 LOCATION and SCALE

Millers Park is located on the edge of the metropolitan region of Mobile and is therefore not more than $\frac{1}{2}$ hour driving time away from the bulk of the population. In this respect its metropolitan relationship is similar to that of Strandfontein. The entire project will cover an area of 530 ha. - in terms of

size it is therefore also very similar to Strandfontein (6000 ha.)

4.4.4 ACCESS

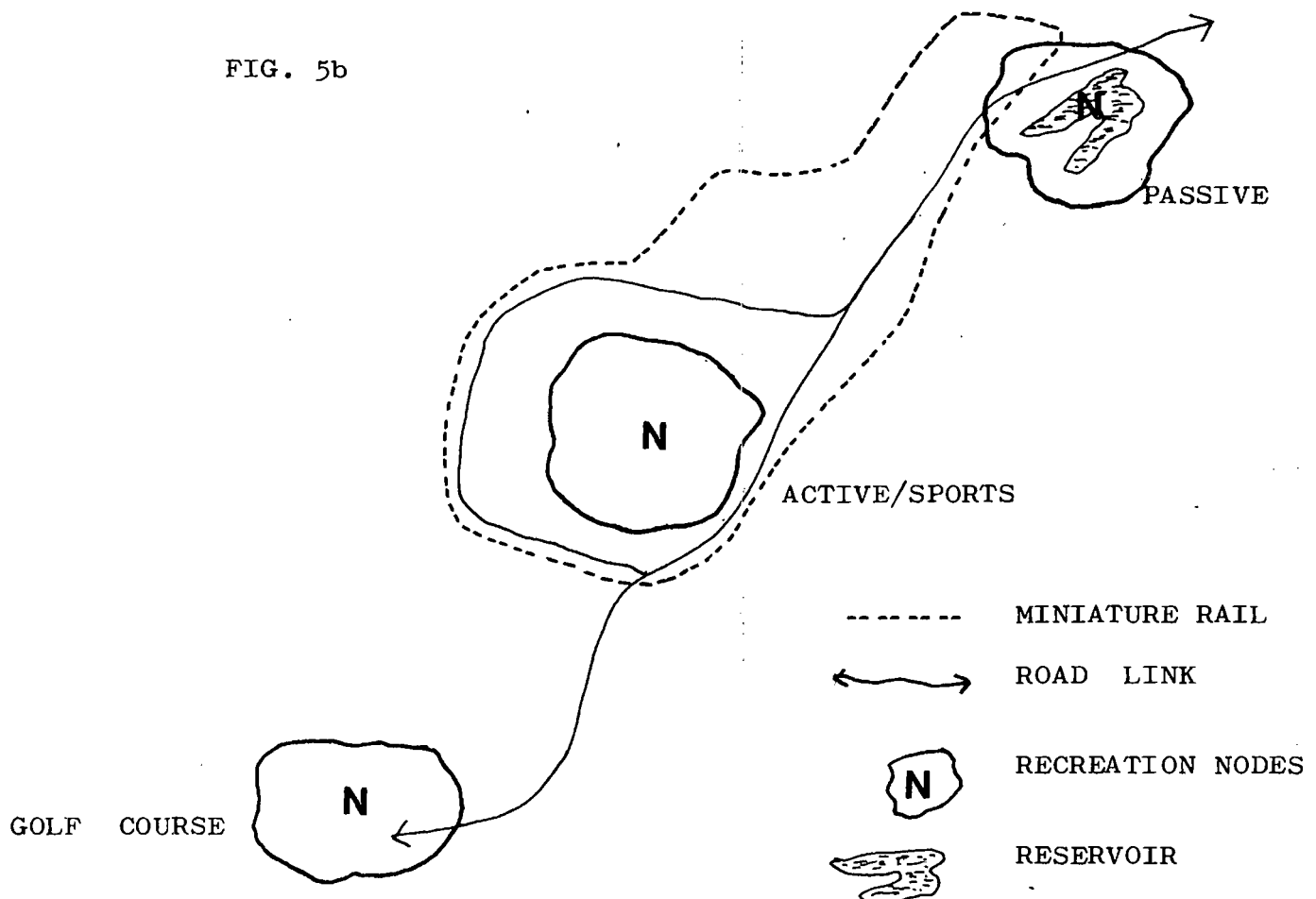
The park is extremely well integrated into the metropolitan region. The main rail connection from Mobile runs through the southern sector of the site. Millers Park is also served by one of the major interstate freeways in the area.

Internally the park has a miniature rail system which links the different recreation elements. The park also has its own boulevard which serves as an additional linkage system for the various facilities.

In the northeastern sector of the park is a system of bridle paths and nature trails.

The railroad separates the Golf course from the rest of the park but there is a road linkage between these areas.

FIG. 5b



4.4.5 FACILITIES

There are three clusters of activity:

- A. The area around the reservoir for camping, day picnicking walking and horse riding.

The emphasis here is on the more passive recreation activities. This area is linked to area B by a road and internal rail system.

- B. There is a clear emphasis on active sports activities in central sections of the park. The main activities catered for are baseball, soccer, football, track, tennis, motor bike tracks, swimming, child's playground and a jogging track. The absence of dense vegetation was one of the reasons for the choice of this area for intensive sports activities.

Extensive parking areas are provided on the edge of the area.

The southern section of the park (160 ha.) contains an 18 hole golf course occupying 93 ha., a 4 ha. lake as well as 8 ha. set aside for single residential and condominium developments.

The sale of the residential lots will help to finance development of the park. To further finance development the majority of the recreational facilities such as the tennis centre, gymnasium, community centre, stables, camping, miniature rail and golf course will be revenue producers, thus creating additional sources of income.

Because of the integration between housing and recreation intensive use of facilities throughout the year on a daily as well as a weekend basis is anticipated.

TABULAR COMPARISON of CASE STUDIES

		BRONTE CREEK PARK (TORONTO CANADA)	THE LEE VALLEY (LONDON)	NORTH ANNA (VIRGINIA USA)	MILLERS PARK (MOBILE USA)
SIZE	(STRANDFONTEIN 600 ha.)	800 ha.	4000 ha.	+2000ha.	530ha.
OVERNIGHT FACILITIES	Hotel	.	X	.	.
	Cabins	.	X	X	X
	Caravans	X	X	X	.
	Tent sites	X	X	X	X
DAY USE FACILITIES	Picnic areas	X	X	X	X
	Informal Play	X	X	X	X
	Children's play	X	X	X	X
EVENING ENTERTAINMENT		X	X	X	X
SPORTS FACILITIES	Formal game courts	X	X	X	X
	Floodlit game courts	X	X	X	X
	Indoor sport complex	X	X	X	X
	Outdoor sport	X	X	X	X
	Formal sportsfield	X	X	X	X
GOLF COURSE		.	X	X	X
WATER BASED ACTIVITIES	Fishing	.	X	X	.
	Swimming	X	X	X	X
	Boating	.	X	X	X
	Inland water feature	X	X	X	X
	Passive	X	X	X	X
SUMMER SPORTS	Indoor	X	X	X	X
	Outdoor	X	X	X	X
WINTER SPORTS	Indoor	X	X	X	X
	Outdoor	X	X	X	X
LINEAR and MOVEMENT RELATED FACILITIES	Footpaths	X	X	X	X
	Bikeways	X	X	.	.
	Mini-Rail	.	.	.	X
	Horse riding	X	X	X	X
	Parking	X	X	X	X
ACTIVITY NODES		X	X	.	X
THEATRE		X	X	.	X
CULTURAL and INTERPRETIVE FACILITIES	Historical sites	X	X	X	.
	Education centre	X	X	X	.
	Administrative-office	X	X	X	.
	Conference centre	X	X	X	.
SPECIAL PROVISION	Aged	X	X	X	X
	Handicapped	X	X	X	X
	Children	X	X	X	X
	Restaurant	X	X	X	X
	Cafes	X	X	X	X
	Hire shop eg. cycles	X	X	.	X
	Ablution	X	X	X	X
CONSERVATION AREAS		X	X	X	X
RESIDENTIAL COMPONENT		.	X	X	X

The nature of the approach must surely derive from the problem - its potential & what it can do in terms of a total problem. Be careful not to use it improperly - least 46. to clarify some ideas & issues.

4.5 WHAT IS REGIONAL RECREATION?

The analysis of the four regional recreation case studies has helped to clarify the image of what could be created at Strandfontein. There are common threads which runs through all four projects analysed - these common factors help to answer the questions " what is regional recreation?".

Table 1 is a comparison of the facilities provided in the different projects. In each case a very wide range of activities has been provided. In all four case studies provision is made for overnight accomodation mainly in the form of tent camping sites and caravan parks. Most of the activities are geared for participation during the daytime but in most regional resorts evening entertainment and sports facilities are also provided. A new development is the provision of floodlit all purpose game courts. A wide range of formal sports activities are provided for but spaces for informal games "kickabout spaces" are always provided. Most of the facilities are provided outdoors but indoor games are becoming increasingly popular particularly because it is not dependent on weather conditions.

All four case studies have provision for water based recreation activities such a swimming, boating and sailing. The water feature - man made in two cases - need not necessarily be used for active recreation - it often merely provides the backdrop against which other activities can be enjoyed.

In projects of this nature all age and income groups are provided for. Provision is made for the special needs of children, the aged and the handicapped. Although most of the activities are very much physically oriented, there are opportunities for more passive participation. These passive recreation areas are often separated (Millers Park and Bronte Creek) to ensure protection from noise and other interference.

Because of the living patterns of the user population i.e regular work patterns with fixed holidays - use of regional resorts

usually reaches a peak during weekends and particularly during the summer vacation. Although participation is highly seasonal most resorts provide recreation opportunities throughout the year. In Canada (Bronte Creek) and North Anna where there is a deep snow cover and water surfaces are frozen, winter sports are extremely popular. Our mild winter climate also allows for participation in outdoor recreation activities throughout the year. Regional recreation projects, therefore, need to provide facilities which can be used on a daily or more occasional basis (eg. weekends, public holidays) throughout the year.

important { In all the case studies there is a very particular attitude towards the natural environment. In the Lee Valley scheme environmental improvement is a very explicit objective. The environment is seen as an opportunity for man to renew and reinforce his association with nature. It is also recognised that sympathetic development of sensitive environments is in effect conservation.

Cultural and interpretive facilities are also provided. In recreation man can also be made aware of his cultural heritage - provided that opportunities for such facilities are available.

A very important common factor lies in the structure of regional recreation schemes. Linear elements such as roads, footpaths, waterways and bikeways do not merely have a recreation function - they serve as connectors which link the various parts of the recreation system. The linear routes could take the form of a loop so that circular walks or drives are possible. These paths also have a very low environmental impact and is an ideal way of controlling movement of people through sensitive areas. The Lee Valley is an excellent example of a linear recreation system.

Nodality is perhaps a more common structural feature of regional recreation projects. A wide variety of facilities are usually provided in a limited area. Emphasis is on the man made facilities rather than the natural landscape. Facilities located

principle? greater environmental protection through concentration?

together in this manner have the mutual benefit of agglomeration

The Bronte Creek project has clusters of activity as its major design concept. The central section of the Millers Park Development has an agglomeration of active sports activities.

Since regional recreation facilities cater essentially for metropolitan populations, accessibility is an important factor determining location. These schemes are usually located on the urban periphery within half hour to an hour's drive from the major population concentrations. The provision of easy access to the metropolitan hinterland is an important principle in regional recreation planning.

The comprehensiveness and wholistic attitude which characterises the Lee Valley, Bronte Creek and Millers Park projects is an important feature of regional recreation planning. The schemes were not planned in isolation but form part of an overall long term planning programme for the wider region. Residential and industrial components are included in the schemes.

There is considerable variation in the scale of regional recreation schemes. The number and size of facilities provided is dependent on the particular needs and the size of the catchment population. Bronte Creek Park is part of an overall scheme which will serve a population of 8 million by the year 2000. The Lee Valley has a potential user population of 10 million. Mobile has a metropolitan population of less than $\frac{1}{2}$ million in comparison the Cape Town metropolitan region will have a total population of approximately 3 million by the year 2000.

Because of their size, regional recreation projects usually fall under the jurisdiction of several local authorities.

Strandfontein lies in the local authority areas of the Cape Town City Council as well as the Divisional Council of the Cape. This requires cooperation between the different local authorities involved but the best solution appears to be the setting up of an independent authority (such as the Huron-Clinton Authority) to be responsible for the planning and management of regional recreation.

I want to see how this point is picked up

Now that the concept of recreation and regional recreation has been clarified - recreation as it functions within the context of the Cape Town metropolitan region will be analysed in the following section.

5.0 METROPOLITAN ANALYSIS

In this section the availability of recreation facilities in the metropolitan region - at the regional as well as the local scale - will be examined. The available facilities will be related to population size and distribution in order to develop a clearer picture of present and future demand for regional recreation facilities.

This analysis will also clarify the position of Strandfontein as a regional facility in terms of present and future metropolitan development.

5.1.0 REGIONAL RECREATION FACILITIES

Since most regional recreation facilities are very closely linked to the resource base, the availability of regional recreation resources will first be considered. Regional resources are distinguishable from local recreation resources on the basis of their larger size and wider service area.

Recreation facilities with metropolitan wide significance include the following:

- a) the coastline
- b) the folded mountain system - including nature reserves and forestry reserves available for public use.
- c) inland water surfaces such as Zeekoevlei - and including reserves such as Rondevlei (bird sanctuary)
- d) areas of historic, scenic, scientific and cultural interest.
- e) formal recreation facilities including mass stadia and large sports grounds.

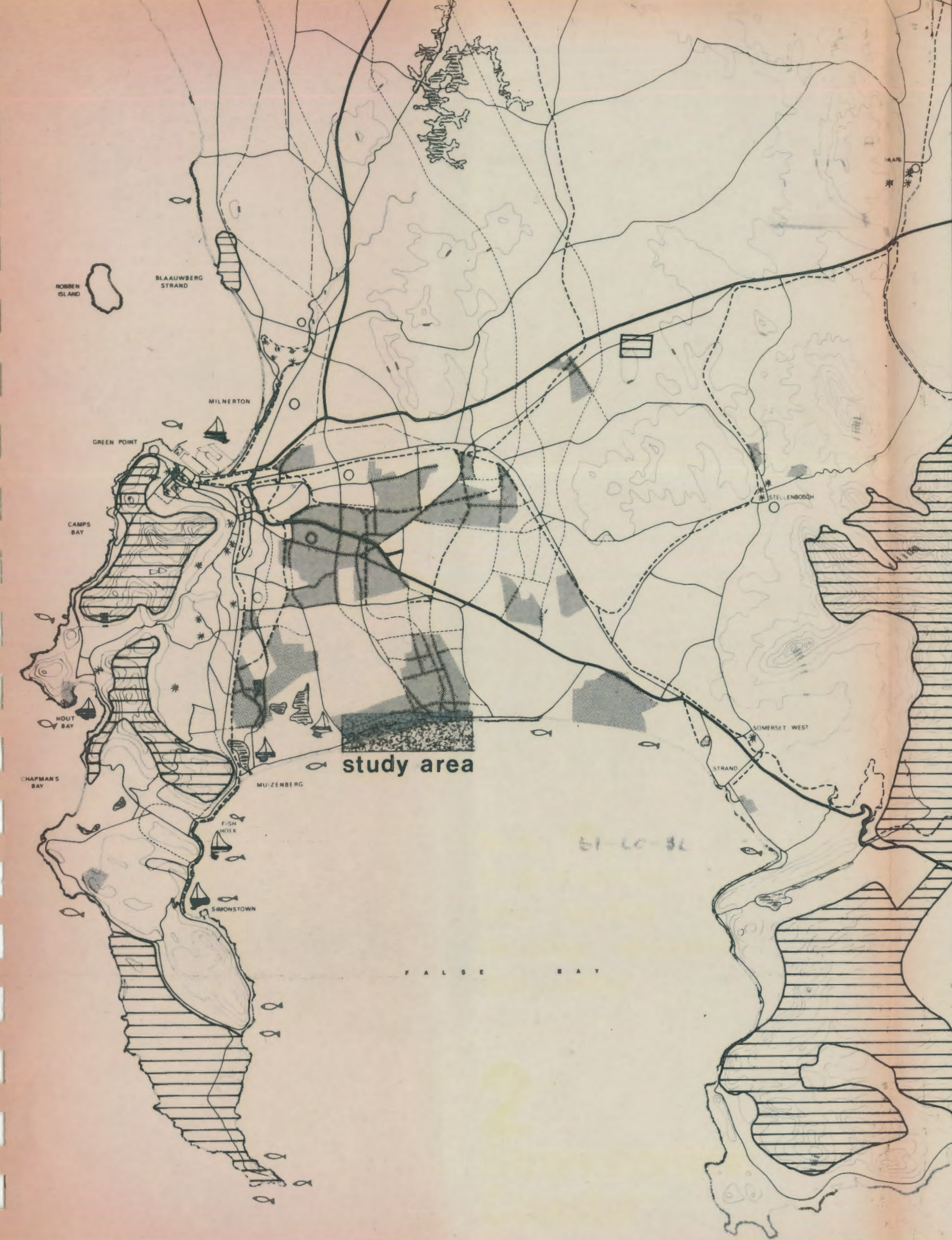
Map 1 shows the major regional recreation resources as well as the location of Coloured residential areas. The map also shows major future concentrations of Coloured people at Mitchells Plain and Macasar. One of the major problems related to Coloured recreation, namely the inaccessibility of Coloured residential areas in relation to those parts of the region having high amenity value is highlighted on this map.

The major regional recreation facilities allocated to Coloureds or to which Coloured people are allowed access, are listed in Table 2 below. This table has the same ~~format~~ as Table 1 in order to allow comparison between the local situation and regional resorts overseas.

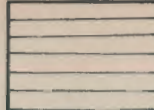
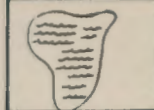
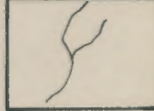
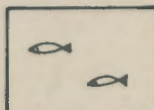

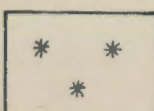
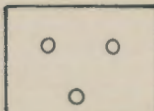

Table 2 shows very clearly that there is a serious shortfall in the provision of regional recreation amenities for Coloureds. (Compare TABLE 1)

The most important points emerging from this table are:

- a) Most of the regional resorts offer a very limited range of facilities.
- b) The regional facilities are generally not well connected to the residential areas by means of public transport.
- c) Strandfontein and Zeekoevlei are the only regional facilities located in close proximity to the bulk of the user population.
- d) Facilities for overnight and extended holidays are limited. eg. there are only 118 holiday cabins in the metropolitan region.
- e) There is not one hotel for Coloured patrons along the coastline.
- f) Only at one location (Strandfontein) can private organization lease sites for recreation purposes.
- g) There is only one restaurant - namely at Sonesta.
- h) Only Strandfontein and Sonesta have a wide range of recreational facilities.



Key

-  NATURE and FORESTRY RESERVES
-  INLAND WATER
-  RIVERS
-  ANGLING AREAS
-  BOATING
-  CULTURALLY SIGNIFICANT AREAS
-  MASS STADIA
-  BLACK RESIDENTIAL AREAS

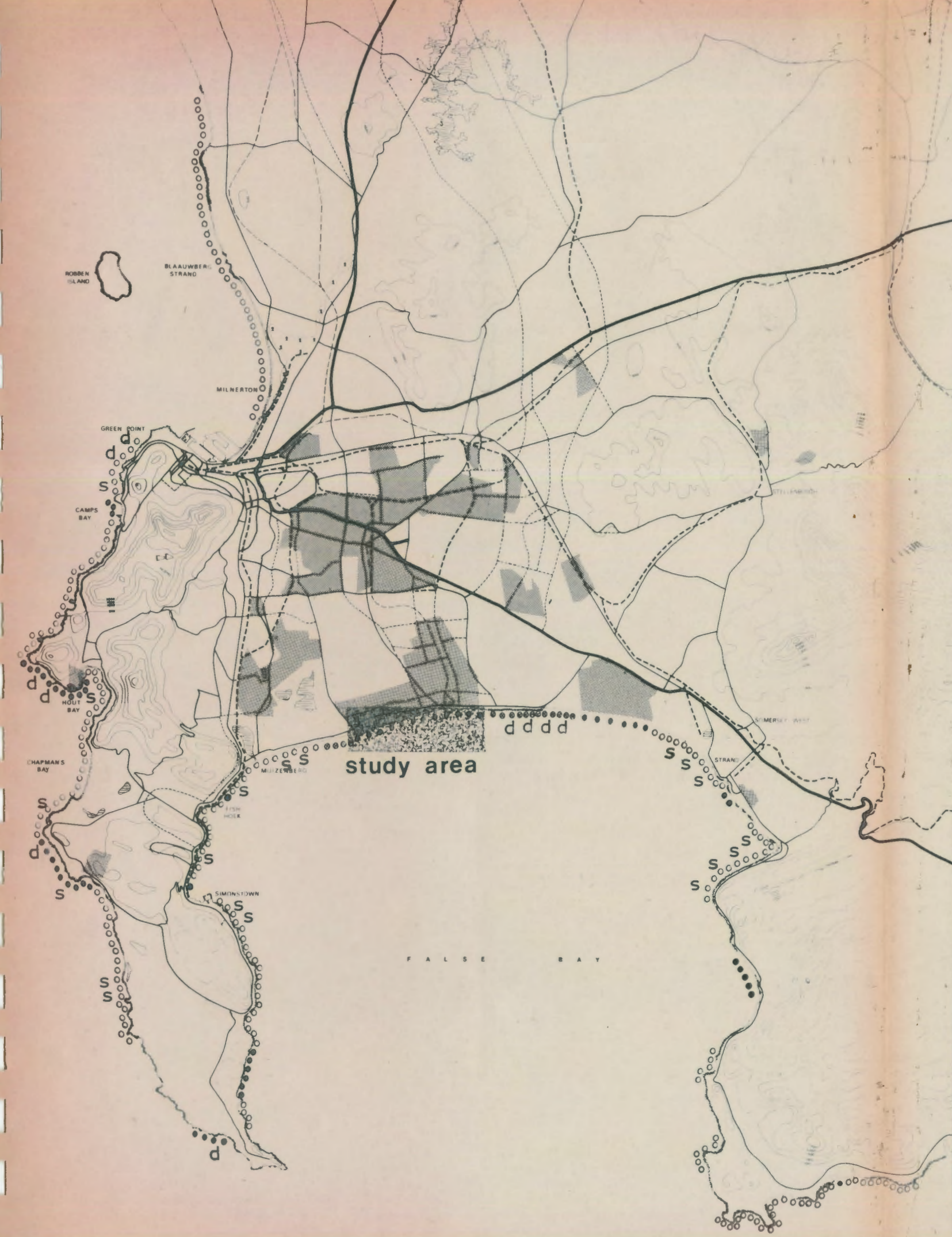
North ↑

Scale 1:300 000

Date July 1978

Regional Recreation Resources

1 Strandfontein Coastal Development



Key

○○○○○○○	WHITE BEACHES
●●●●●	BLACK BEACHES
S S	SAFE BATHING
d d	DANGEROUS BATHING
■	BLACK RESIDENTIAL AREAS

North ↑
 Scale 1:300 000
 Date July 1978
 Beaches - allocation
 and safety

2

Strandfontein Coastal Development

- i) Facilities for indoor recreation are only provided at Sonesta. *Maps are meaningless unless some of the important ones are included*
- j) The majority of beaches are unsafe for swimming and tidal pools are only provided at a few locations.
- k) The special needs of children (play equipment and toddler's pools) are not well catered for.
- l) Facilities to satisfy the more passive recreation needs of old and handicapped people are also limited.

There is not a single recreation area which can be compared with the case studies. The problem is even more serious if one considers that these limited facilities have to satisfy the regional recreation needs of nearly 750 000 people. The problem is likely to be aggravated by the rapid increase in population. By 1995 the population ^{of} will number over 1 million and by 1995 the present population would have doubled itself. The supply of recreation facilities is hopelessly inadequate and is not keeping pace with the increase in population.

Furthermore, the demand for recreation facilities is likely to increase as technology allows people the prospect of increased leisure time.

From Table 2 it is also evident that the major recreation resource to which the bulk of the metropolitan population is attracted, are the beaches. The whole question of the allocation of beaches to different race groups therefore warrants further consideration.

The distribution of beaches available to the Coloured group is shown on map 2. In 1975 there were 378 000 Whites and 598 000 Coloureds in the Cape Metropolitan region. In spite of this nearly two-thirds of the beaches were allocated to the White population group.

In addition most of the safe beaches have been allocated to Whites. Beach safety is a relative concept because factors such as the weather, lunar phases and currents are responsible for

a continual change in conditions prevailing along the coastline. Some beaches are, however, inherently safe or dangerous because of the configuration of the coastline or strong back currents. The distribution of relatively safe and dangerous beaches is shown on map 2 - it shows very clearly that most of the beaches allocated to Coloureds are relatively unsafe.

Because of the problem of uneven beach allocation Coloured beaches generally attract much larger numbers of people than White beaches. Since facilities at these beaches are already limited this often results in serious problems brought about by the frustration resulting from the overcrowded conditions.

On 2 January 1977 the City Engineer's Department of the Cape Town City Council undertook an aerial survey to determine the intensity of beach usage in the Cape Town metropolitan region.

The result of this survey is listed below:

<u>BEACH AREA</u>	<u>NUMBER OF PEOPLE ON BEACH</u>
Melkbosstrand	359
Bloubergstrand	497
Milnerton Beach	654
Graaf Pool Sea Point (pavilion and beach)	2619
* Sunset beach	1565
Saunders Rocks	1140
Clifton	3568
* Glen Beach, Clifton	1959
Camps Bay	2104
Sandy Bay	915
Hout Bay	1400
* Soetwater	<u>6913</u>
Cape Point Reserve (White and Coloured Beaches)	1382
* Long Beach (Simonstown)	720

<u>BEACH AREA</u>	<u>NUMBER OF PEOPLE ON BEACH</u>
Fish Hoek	1345
* Kalk Bay Harbour	1679
St. James and Danger Beach	535
Muizenberg	3083
* Strandfontein	<u>6614</u>
Swartklip	128
(* COLOURED BEACHES)	SOURCE: City Engineers Department Cape Town City Council.

The survey shows very conclusively that Soetwater and Strandfontein are the major Coloured beaches and also that Coloured beaches generally attract more users than White beaches.

The problem of beach allocation has been the subject of several official investigations the most comprehensive of which was the Commission of Inquiry into the Allocation of beaches to Whites and Non Whites in the Cape Province (1965 - the so called Torlage Commission). The Torlage Commission produced a very thorough report on the problem but their recommendations caused widespread resentment in the Coloured Community because they were considered to be grossly unfair.

Since 1968 when the Torlage Commission findings were published there has been no significant improvement in the allocation of beaches to Coloureds.

In April 1976 the Theron Commission report was published. This Commission sent questionnaires to various local authorities in the Cape Province who have sections of the coastline under their jurisdiction. The Commission found that:

- a) beaches for Coloureds were generally unsafe and that 60% of the unsafe beaches had inadequate lifesaving equipment.
- b) Coloured beaches have poor access. More than 50% of the beaches are located more than 15km from a railway

station.

66% of Coloured beaches have no bus service.

- c) Facilities at Coloured resorts are limited. Only
- 67% had water
 - 28% had refreshment facilities
 - 75% had ablution facilities
 - 14% had electricity supply
 - 3% had swings and other play equipment for children

These findings reinforce the conclusions drawn from Table 1.

In spite of these limitations the Commission reports that crowds of 20 000 to 25 000 daily visitors during the Christmans and New Year season are not uncommon. It has been estimated by the Cape Town City Council that Strandfontein attracts up to 55 000 visitors per day during this period.

Of the Coloured beaches only Strandfontein, Soetwater, Silberstroomstrand and Kogelbaai have areas of land adjacent to the beach reserved for recreation purposes. Of these beaches Strandfontein has the strongest case for further development.

- a) It has a large area that is still developable
- b) It is locationally suitable being closest to the bulk of Coloured residential areas.
- c) The Mitchells Plain development adjacent to the coastline will place tremendous pressure on the resources and facilities along the coast.

5.2.0 LOWER ORDER FACILITIES

These are facilities provided within the residential neighbourhoods. They are characterised by the fact that they are limited in terms of size and the user population is usually restricted to the immediate environment. Lower order facilities are also analysed because it gives us a more overall view of the availability of recreation facilities.

For most Coloured facilities the time available for leisure

TABLE 4 FACILITIES in RESIDENTIAL AREAS

AREA and POPULATION	INDOOR FACILITIES										OUTDOOR FACILITIES								
	PASSIVE					ACTIVE					PASSIVE			ACTIVE			WATER BASED		
	CINEMA	THEATRE	LIBRARY	MULTIPLE USE S/C COMMUNITY C. CIVIC H.	CLUB-HOUSES	SPORTS HALL	GAME COURTS	SQUASH	ADULT E. ACTIVITIES	HOTEL	WALKS	LOCAL PARK	OPEN AIR THEATRE	SPORTS FIELDS	TENNIS COURTS	PLAYGROUND	WATER FEATURES	SWIMMING POOL	BOATING
1. OCEAN VIEW 8040			x	x			x			x				x		x			
2. HANGBERG (HOUT BAY) 2500			x											x					
3. MATROOSFONTEIN 5300	x			x				x	x					x					
4. GRASSY PARK 66 500	x		x	x				x	x					x	x	x			x
5. ELSIES RIVER 80 000	x		x	x				x						x	x	x			
6. ATLANTIS + 1000				x										x					
7. ATHLONE 40 000	x	x	x	x				x	x					x	x	x		x	
8. BONTEHEUWEL 40 800	x		x	x				x						x	x	x		x	
9. FACTRETON 10 500			x	x				x						x	x	x		x	
10. HANOVER PARK 32 500	x		x	x				x						x		x			
11. HEIDEVELD 20 200			x	x				x						x		x			
12. LAVENDER HILL 12 500				x				x						x					
13. MANENBERG 34 100			x	x				x	x					x		x			
14. PARKWOOD 8 900			x	x				x						x		x			
15. RETREAT 20 400	x	x	x	x				x	x					x		x			x
16. WYNBERG 6 500	x		x											x	x	x			x
17. MITCHELLS PLAIN			x	x										x	x	x			

SOURCE: i) Council Housing in Cape Town. CCC.
 ii) COMMUNITY FACILITIES PROVIDED in COUNCIL'S DIVISION-DIVISIONAL COUNCIL of the CAPE.

is utilized either at home or in the immediate environment of the home. The facilities available in Coloured residential areas are listed in Table 4.

An analysis of Table 4 reveals that there are also serious problems related to recreation at the local scale. The most significant shortcomings are:

- a) the lack of a comprehensive range of facilities in all the Coloured residential areas
- b) the absence of facilities for indoor sports activities. Indoor games such as table tennis and badminton are played in the community centres.
- c) only at Mitchells Plain has provision been made for passive recreation in the form of a park which includes open air theatre.
- d) Cultural activities are not well catered for. There are no theatres in the Coloured areas.

In the provision of facilities at the local scale the emphasis has been placed mainly on team sports such as football and cricket. There does not seem to have been any attempt to provide a balanced range of facilities.

If the lower and higher order facilities available to Coloureds in the metropolitan region are viewed together it is obvious that there are severe shortcomings. Since recreation is so important in developing a balanced attitude towards man and environment, it is imperative that a short term as well as a long term strategy is evolved in order to overcome these problems.

This is not a synoptic position { The Strandfontein coastline is, therefore, not being planned in isolation. Its development is seen as an integral part of a comprehensive recreation planning programme for the entire metropolitan region. The categories of facilities available locally and regionally (table 2 and table 4 respectively) will help to indicate which recreation needs should be satisfied at Strandfontein.

Structuring effect of recreational facilities? - the way in which the development integrates & reinforces other conditions

5.3 SOCIO - ECONOMIC PROBLEMS

The shortage of local and regional facilities in the metropolitan region are not the only problems related to Coloured recreation. The demand for recreation facilities is also very strongly influenced by socio - economic factors. These are identified as follows:

5.3.1 DISPOSABLE TIME

Most of the Coloured residential areas are located at relatively long distances from the major employment centres such as the Central Business District, Salt River - Woodstock and Epping Industria. This means that a large amount of money and time is spent on the journey to work. Modal changes in the work journey as well as inefficiencies in the transport system further increase the time spent travelling to and from work.

The major part of the daily living cycle is taken up by work or the work trip which means that time for leisure pursuits is reduced. This phenomenon also results in greater participation in recreation over weekends.

This problem is not likely to be overcome in the short term. Within the next ten years a large percentage of the Coloured population will be living in Mitchells Plain. If no work opportunities are provided in Mitchells Plain almost 60% of the work force will be employed in the Salt River - CBD area nearly 30 kilometres away. Nearly four hours per day could be spent on the journey to work.

Recreation facilities must be located where optimum use can be made of the limited time available for leisure activities.

*So why
standpoint*

5.3.2 INCOME

The ability to make use of the time available for recreation is closely related to discretionary income i.e money left over after the basic living necessities (food, ^{wearing etc} clothing and housing) have been paid for.

In this respect the Coloured population has a serious problem since a large percentage of the population lives below the primary household subsistence level* (also known as the poverty datum live)

TABLE 5 ANNUAL COLOURED FAMILY INCOME

1970 ANNUAL FAMILY INCOME	% of TOTAL	ANNUAL INCOME UPDATED TO 1976	1976 MONTHLY INCOME	% OF TOTAL <i>What? families?</i>
R		R	R	
300	10,0	493	41	10,0
300	14,4	493	41	14,4
600	12,8	986	82	12,8
800	10,7	1315	110	10,7
1000	10,1	1644	137	10,1
1200	13,5	1972	164	13,5
1600	9,6	1260	219	9,6
2000	8,5	3288	274	8,9
2500	9,7	4110	343	9,7

SOURCE:

1970 Census figures updated by Coloured Development Corporation.⁸

In terms of these figures almost 70% of Coloured households still earn below R200 per month.

Nonsense | * Concept introduced by POTGIETER - UPE Research Institute

8 Commercial Development in Mitchells Plain. Coloured Development Corporation 1975.

TABLE 6

EXPENDITURE PATTERNS

This table shows how different sized families would cope financially with an income of R200 per month.

FAMILY TYPE	INCOME R	PHSL R	RENT R	TRANS- PORT DISTANCE R	HSL R	HEL R	SURPLUS ON HH/ INCOME R	DEF. HH INC. R
1 Child	200	48,47	50	14	112,75	169,12	30,88	
2 "	200	76,24	50	14	140,32	210,48		00,48
3 "	200	86,11	50	14	150,19	225,28		25,78
4 "	200	109,32	50	14	173,4	260,10		60,10
5 "	200	122,53	50	14	186,61	279,91		79,91

* Additional income i.e subtenants not included.

** P.H.S.L - Primary Household Subsistence Level - the barest minimum required for expenditure on food, clothing, fuel, lighting and cleaning.

*** H.S.L. - Household Subsistence Level - the barest minimum required for a family to maintain itself i.e. PHSL and rent and transport.

**** H.E.L. - Household Effective Level. H.S.L. and 50% to give a "reasonable" level of living.

SOURCE: Potgieter J.F. Institute for Planning Research UPE
Fact Paper No. 12 April 1975.

If one takes into account the fact that the average Coloured family is very large (Heideveld 6.2 Bonteheuvel 7.1)⁹, then it is obvious that the majority of families have very little money available for recreation.

9. S.S. Morris - A First Report on the Development of Mitchells Plain.

TABLE 7 shows the percentage of income spent on recreation by the average Coloured family.

TABLE 7 AVERAGE ANNUAL EXPENDITURE OF COL. HOUSEHOLDS
in PENINSULA 1970 and 1975.

ITEMS	% of HOUSEHOLD INCOME
Food	36,9
Clothing, Footwear and Accessories	10,9
Housing (+ electricity)	11,7
Fuel and Light	11,3
Transport	10,6
Medical and Dental	0,4
Education	0,2
Insurance and Funds	5,0
*Recreation Entertainment and Sport	1,2
Furniture and Household Equipment	6,1
Alcoholic beverages	1,9
Cigarettes and Tobacco	2,3
Washing and cleaning material	1,6
Dry cleaning and laundry	0,2
Personal care and patent medicine	3,1
Communication	0,4
Reading and stationery	0,9
Miscellaneous	0,9
Support of relatives	0,1
*Holiday expenses	0,1
Taxes	2,1
Savings	2,1
	100,0

SOURCE: Income and Expenditure Patterns of Coloured Household
in Cape Town.
Bureau of Market Research Report no. 50,5
1976 p. 12

According to these figures less than 2% of Coloured Household income is spent on leisure pursuits.

In planning recreation facilities for the Coloured population group one of the basic problems to be considered is the low income status of the majority of Coloured persons.

5.3.3 RAPID POPULATION GROWTH

The Coloured population of the O1 economic region of the Cape has one of the fastest growth rates in the world. From 1951 to 1970 the population increased from 297 000 to 599 000. This represents growth rates of

3, 87% between 1951 and 1960
and 3, 67% between 1960 and 1970

Table 8 shows the projected growth of the Coloured group relative to that of the White group.

TABLE 8 POPULATION PROJECTION

YEAR	COLOUREDS		WHITES	
	LOW	HIGH	LOW	HIGH
1970	620 980	620 980	386 300	386 300
1975	732 338	742 588	429 638	432 193
1980	857 939	888 255	474 886	481 362
1985	998 529	1062 369	521 198	532 659
1990	1152 649	1266 540	568 224	596 508
1995	1317 839	1500 869	615 611	643 593
2000	1493 426	1767 245	664 076	705 597

SOURCE: Cape Metropolitan Planning Committee and Technical Management Services (Cape Town City Council)

POPULATION PROJECTION : 01 ECONOMIC REGION.

(Cape Metropolitan Planning Committee and
Cape Town City Council M.S.O.)

(FIG. 6)

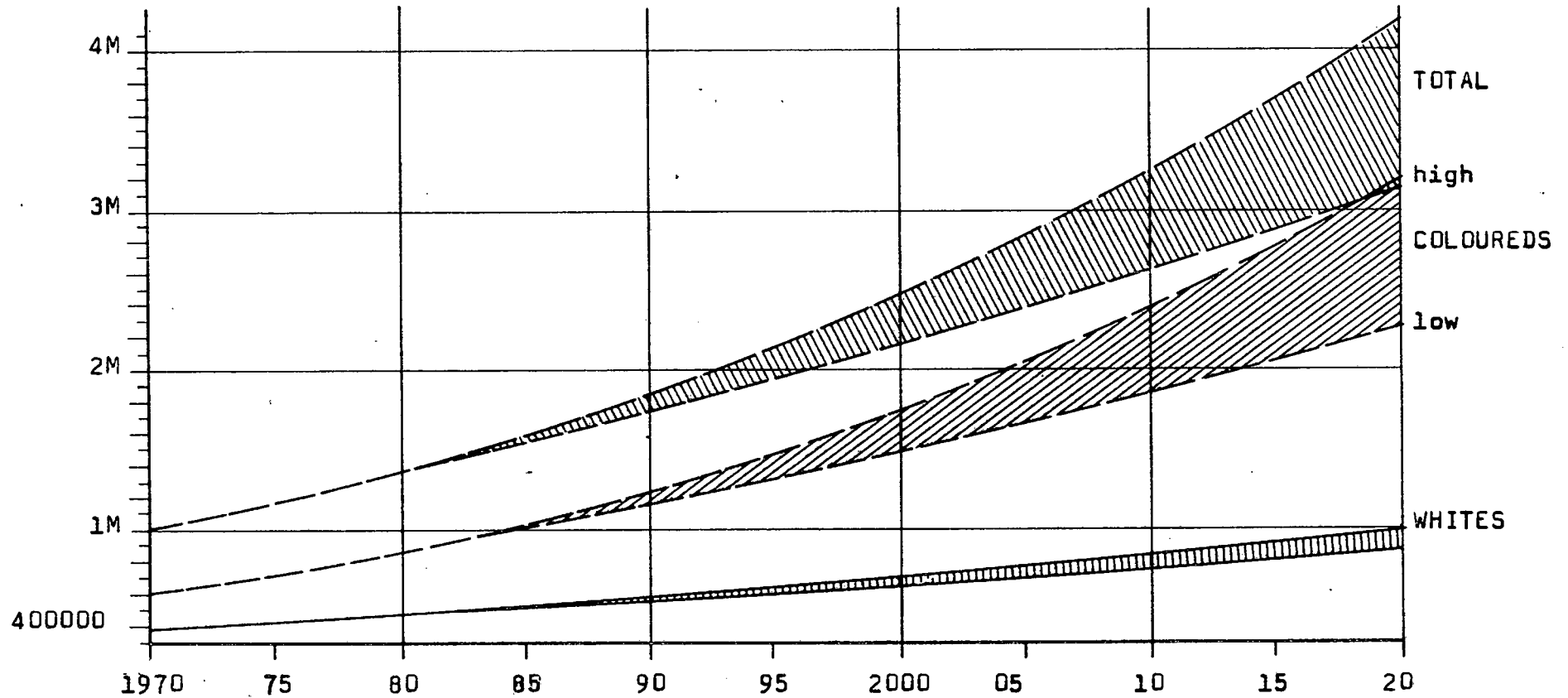
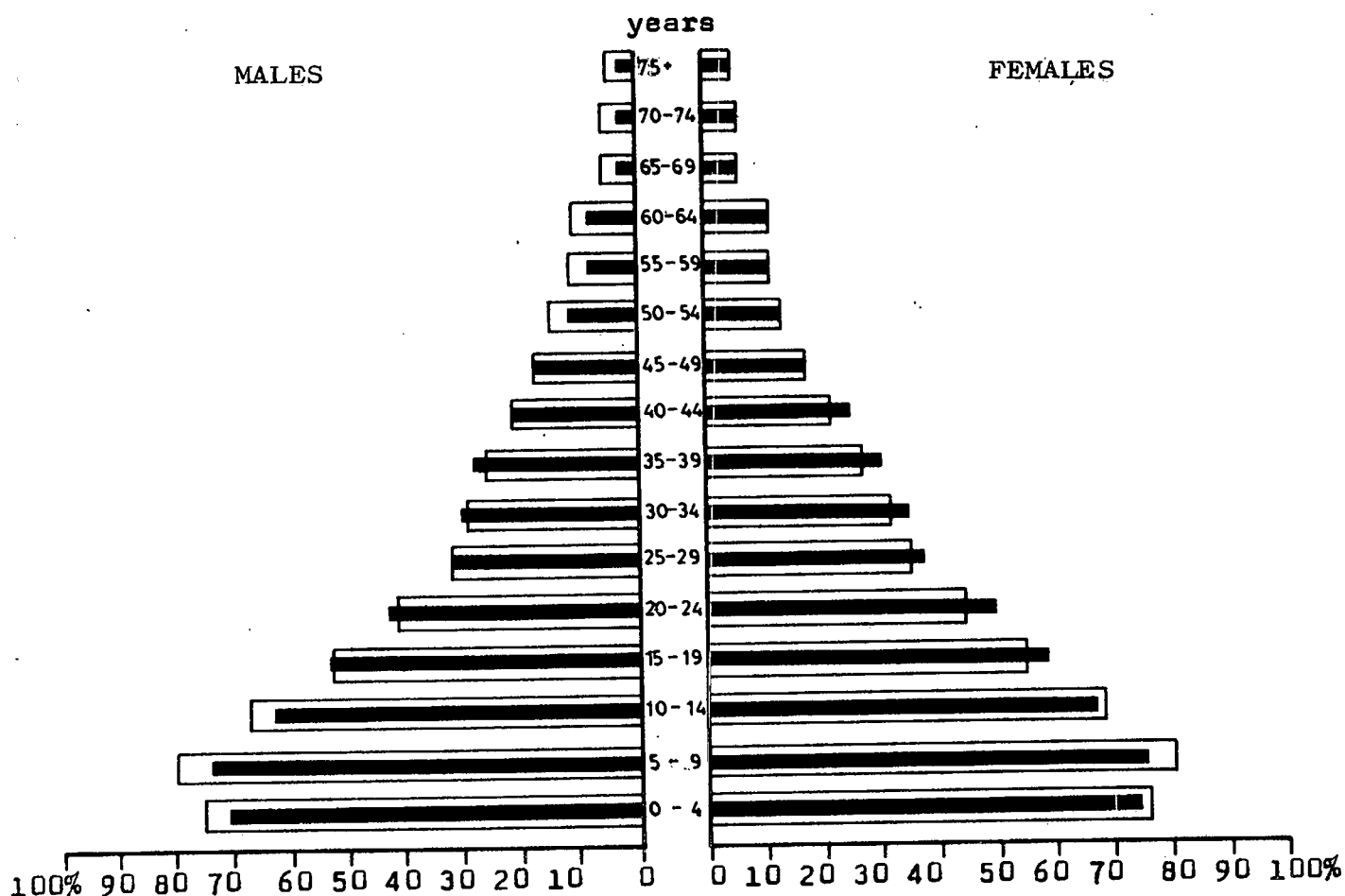


Table 8 and fig. 6 shows that by the year 2000 the Coloured population size will more than double and will be more than double the size of the White group. This phenomenal increase in population will place tremendous pressure on recreation facilities, which are already over-utilized.

The population profile (fig. 7) for the O1 region shows a strong predominance of young people. This indicates a high dependancy ratio and also that the greatest demand for recreation facilities will come from that section of the population most likely to respond to physically oriented recreation activities.

COLOURED POPULATION PROFILE



5.3.4 MOBILITY

A mobile population can normally choose from a wide range of recreation opportunity.

Table 9 shows the present level of car ownership among the Coloured population relative to the other population groups.

TABLE 9 MOTOR VEHICLE OWNERSHIP RATES (SOUTH AFRICA)

	COLOUREDS	WHITES	ASIAN	BANTU	TOTAL
NUMBER OF VEHICLES per 1000 persons 1970	23,2	37,4	67,4	4,2	72,4

Impossible

SOURCE: REPORT of the COMMITTEE of INQUIRY into URBAN TRANSPORT FACILITIES in the REPUBLIC 1974 p.83

The Coloured population group is thus not very mobile but it is anticipated (Table 10) that the level of car ownership will increase by more than 50% in the next five years. *On what basis*

TABLE 10 PROJECTED COLOURED CAR OWNERSHIP for GREATER CAPE TOWN REGION

YEAR	POPULATION	CARS	CARS /1000 persons
1970	767 132	17644	23,0
1975	914 683	28355	31,0
1980	1092 458	67732	62,0

SOURCE: AUTOMATIVE TREND STATISTICS 1961 to 1981
DEPARTMENT of STATISTICS.

This anticipated rate of increase in car ownership could be reduced as a result of the tremendous increase in the cost of motoring in recent years. This is indicated by the current trend in the sale of new motor cars.

*you already
we not clear
in your mind
about the
role of planning
in this situation*

any people

When planning recreation facilities for the Coloured population the heavy reliance of this group on public transport will have to be taken into account. Facilities should, whenever possible, be provided in accessible locations.

5.4 PLANNING CONCLUSIONS.

The analysis of the recreation resource base (map 1) shows that the Cape Peninsula is unique in terms of the range of opportunities available for outdoor recreation. In addition the Mediterranean climate with its long summers and mild winters with moderate rainfall, favours outdoor recreation all year round.

In spite of these highly favourable environmental conditions very little has been done to develop a comprehensive recreation amenity of the scale or nature of Bronte Creek Park or the Detroit Metropark System (cf. case studies). This means that the bulk of the population is unable to fully enjoy the enriching benefits inherent in the natural environment.

The Metropolitan region urgently requires a long term strategy for recreation which will:

- a) prevent the despoliation of a unique natural resource.
- b) allow people's lives to be enhanced by the benefits inherent in the environment.
- c) accomodate the anticipated increase in demand for outdoor recreation.

The most important factor to be considered in any recreation planning programme for the Metropolitan region is the provision of facilities for the Coloured population both at the local and at the regional scale.

There is at this juncture a huge shortfall in the supply of recreation facilities for the Coloured population. With the population increasing at a rate of 3.6% per annum and very few new recreation projects being planned or developed there is no indication that the supply of facilities will even match the demand.

Strandfontein suggests itself for large scale development. Because of its location in the metropolitan region, ⁴ it can be regarded as the natural seafront of the Cape Flats region. In addition to metropolitan demand there is also the Mitchells Plain development ($\frac{1}{4}$ million people by 1985 - mostly low income and lacking mobility) which will place tremendous pressure on the recreation facilities at Strandfontein.

The analysis of regional recreation facilities available to the Coloured population suggests that the following facilities should be accommodated at Strandfontein:

- . Hotel or motel type facilities - there are no hotels for Coloureds along the entire Cape coastline.
- . Restaurant or similar eating - out facilities.
- . Facilities for indoor recreation.
- . Safe bathing areas - either in the form of tidal pools along the coast or swimming pools located away from the beach.
- . Opportunities for passive recreation
- . A wider range of play facilities for children.
- . An extension of the ranges of facilities available at Strandfontein and at other resorts.

The above facilities will form the central core of a much wider range of facilities that will be provided at Strandfontein. All the facilities at Strandfontein can be integrated with the housing development programme for Mitchells Plain. This will ensure the intensive use and consequently the viability of the facilities.

The connection between Strandfontein and the wider Cape Metropolitan region has now been established. In the following chapter the relationship between Strandfontein and its more immediate submetropolitan hinterland will be evaluated.

6.0 SUBMETROPOLITAN CONTEXT

6.1 The local context of the study area will be analysed with the purpose of indentifying major limitations and opportunities in the peripheral area which may have a bearing on the planning of the study area itself.

Land ownership, local authority boundaries, Group Areas as well as existing and future land uses including road infrastructure are shown on map 3.

The major local factors affecting the study area include the following:

6.1.1 THE MITCHELLS PLAIN HOUSING DEVELOPMENT

Mitchells Plain is being planned to house 250 000 people by 1985. The rapid development of Mitchells Plain will give the recreation area a northen urban edge within the next 10 years. The integration of the resort area with the urban condition will be an important consideration in the formulation of a development plan for Strandfontein.

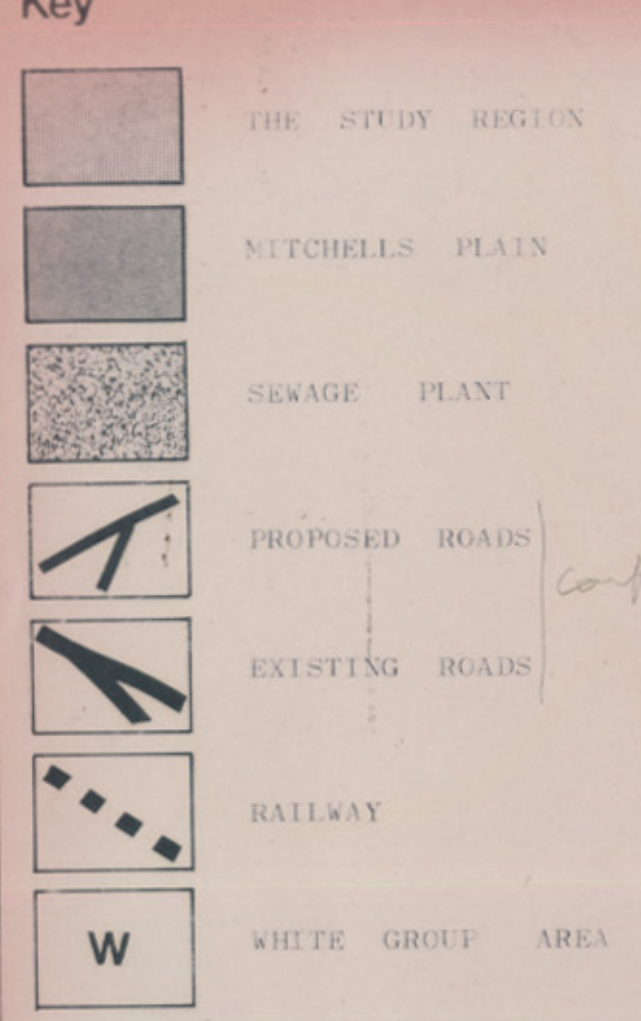
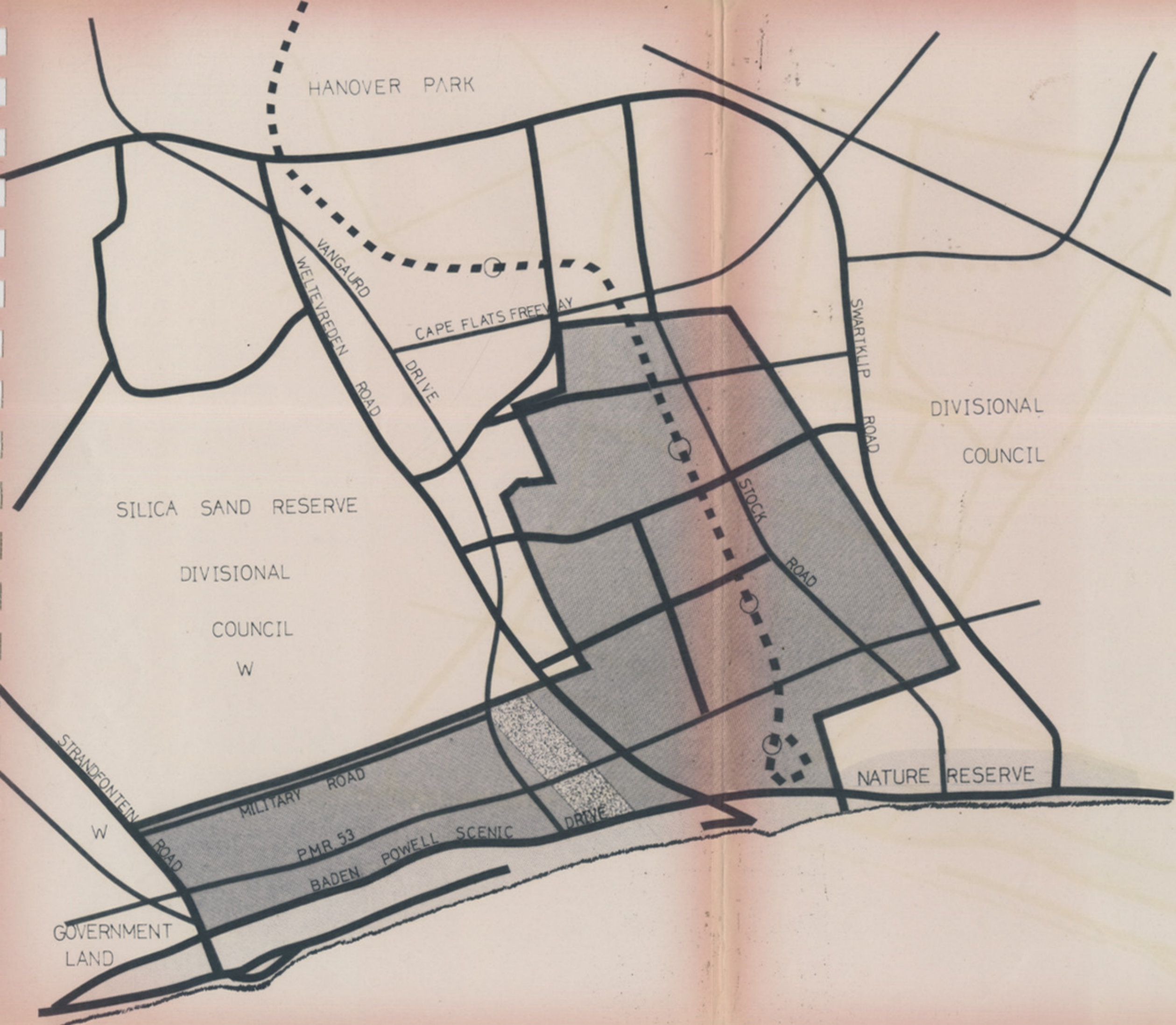
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consideration*

The existing facilities at Strandfontein will not be able to cope with the demand generated by the Mitchells Plain development.

6.1.2 TRANSPORTATION.

The following transportation proposals affect the study area:

- a) Railway line - the proposed commuter service for Mitchells Plain is indicated on the map. The railway line will make the resort area more accessible to the population concentrations on the Cape Flats.
- b) Realignment of Baden Powell Drive - the Cape Town City Council has approved plans for the widening of Baden Powell Drive in conformity with its proposed function as a major east - west distributor road. To the west



North ↑
 Scale 1:20 000
 Date July 1978
 Submetro Context

3

Strandfontein Coastal Development

of Strandfontein Road, the existing Baden Powell Drive will be retained as a scenic drive.

- c) Mitchells Plain Primary Road Structure : a number of the major roads planned for Mitchells Plain have implications for the study region. The major north south connector ~~servicing Mitchells Plain~~, the Vanguard Drive Extention will terminate at the coast. This freeway occupies a central location on the Cape Flats and therefore improves the accessibility of Strandfontein considerably. Two major east - west freeways are planned to serve the Cape Flats region - there are the Cape Flats Freeway and the Military Road Expressway. If these roads could absorb the major share of east - west traffic it should not be necessary to upgrade Baden Powell Drive. Consequently the impact of traffic on the resort area could be reduced. Baden Powell Drive therefore retain its function as a scenic drive with a number of viewpoints and day picnic places located along the route.

Two of the main roads presently serving Strandfontein, namely Strandfontein Road and Swartklip will be retained. In terms of the road plans for Mitchells Plain Weltevreden Road will be phased out. Mitchells Plain will have two further north south connectors namely, Eisleben Road and Stock Road - both of which terminate in Baden Powell Drive.

6.1.3 NATURE RESERVE

The Cape Town City Council is in the process of preparing an application for the proclammation of the southern portion of the Mitchells Plain Development (see map 3) as a Local Nature Reserve.

6.1.4 MUNICIPAL and GOVERNMENT PURPOSES

The municipality has reserved an extensive area northwest of Mnandi Beach for the construction of future sewage works.

An area of land adjacent to Strandfontein Road has been reserved by the Government for a future scheme for the re-cycling of purified sewage by the CSIR.

6.2 MAJOR IMPLICATIONS for the STUDY AREA.

6.2.1 The study area is geographically confined within the following land uses:

North	:	housing development (Mitchells Plain)
West	:	area reserved for proposed new scheme for reclamation of purified effluent.
	:	White Group Areas
East	:	land owned by Department of Defence
	:	White Group Area
	:	the land at the eastern edge is also in the area of jurisdiction of the Divisional Council of the Cape.

6.2.2 The Beaches to the west and east of the study area are not allocated to any racial group.

6.2.3 The greatest portion of the beaches within the study area are allocated to the Coloured population group.

6.2.4 Most of the study area falls within the Coloured Group Area. Because of the above two factors the development plans need not be delayed by application to the Group Areas Board.

6.2.5 The area of land covering 67 hectares at Mnandi Beach has been reserved for the exclusive use of the Bantu Population group in terms of the Local Authorities Ordinance of 1955. (Provincial Gazette 35,5 of 20 June 1969).

6.2.6 The major portion of the study area which measures approximately 600 hectares, has already been reserved for recreation purposes by the municipality.

6.2.7 The abovementioned transportation proposals will provide greater accessibility to the coastal area when implemented.

6.2.8 The Mitchells Plain development is likely to have a major impact on the facilities at Strandfontein. The population of Mitchells Plain will be severely restricted in terms of time, money, and mobility and therefore it can be assumed that they would satisfy most of their outdoor recreation needs at Strandfontein.

The importance of the location of Strandfontein both at the metropolitan as well as the submetropolitan level having been established, the natural environment at Strandfontein as well as the existing facilities will be analysed in the following chapters.

Metro study ~~focuses~~ fails to answer
fundamental question: Should the site be
developed or how should development occur.



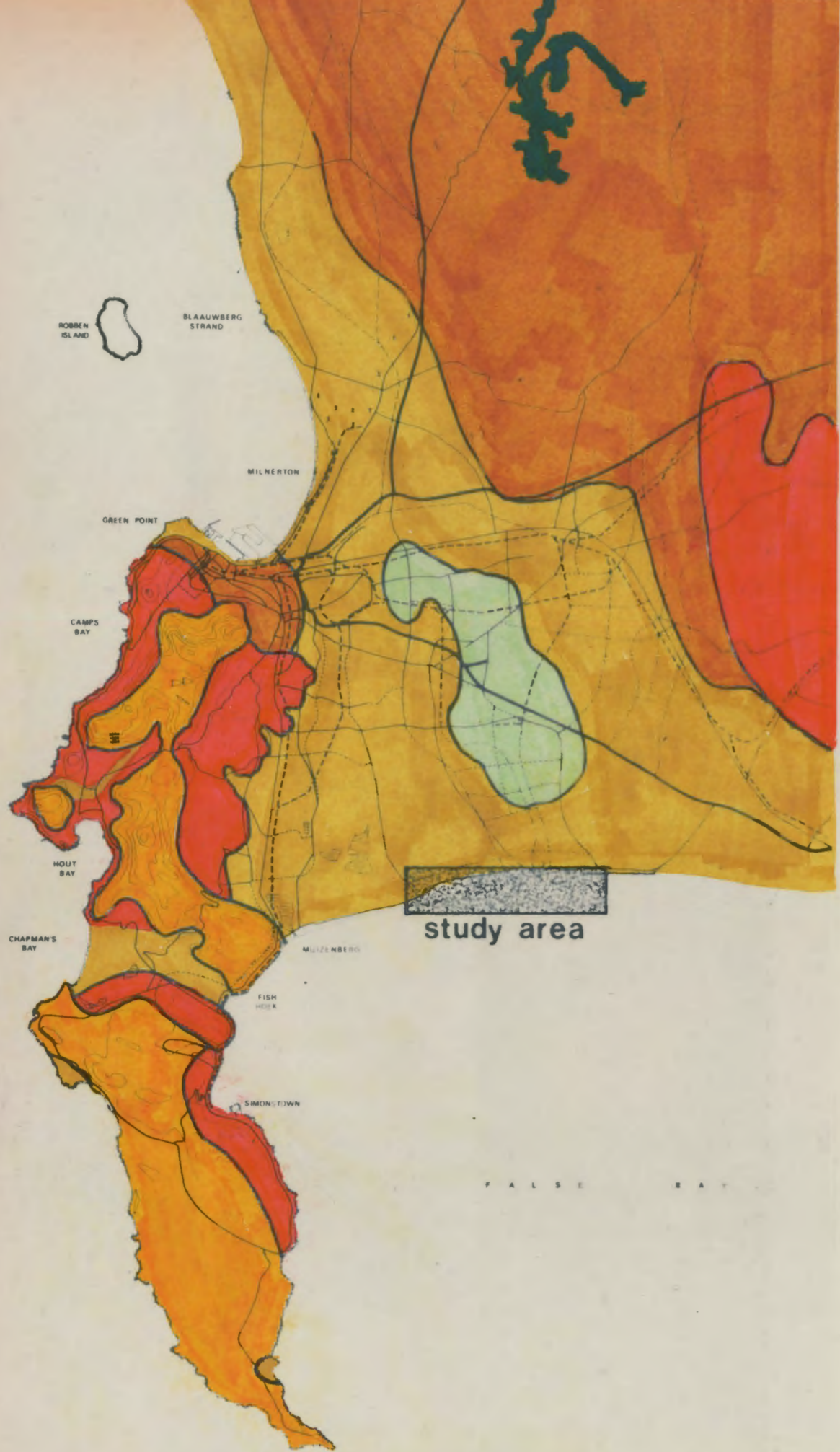
- Key**
- WELL SHELTERED AREAS
 - MODERATELY SHELTERED AREAS
 - EXPOSED AREAS
 - SUMMER WIND CONDITIONS
 - WINTER WIND CONDITIONS

How is this done

North ↑
 Scale 1:10 000
 Date July 1978
 Sheltered Areas

4

**Strandfontein
 Coastal
 Development**



Key

-  TERTIARY TO RECENT
DUNE & MARINE SAND
-  CAPE SYSTEM
- TAFELBERG SERIES
-  PRE-CAPE FORMATION
- MALMESBURY FORMATION
-  INTRUSIVE ROCKS
CAPE GRANITE
-  SAND COVERED
SURFACE LIMESTONE
-  CALCRETE OUTCROPS.

North ↑

Scale 1:300 000

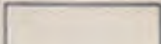
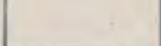

Date July 1978

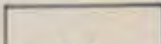



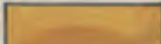
Geology of the
Cape Peninsula

5

Strandfontein Coastal Development



- Key**
-  1:20 MOST FLAT
 -  1:20 to 1:15 UNDLATING
 -  1:5 MAJOR DUNES


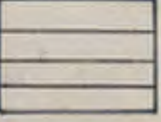





- BEACH and SURF CONDITIONS**
-  SAFE BATHING AREAS
 -  DANGEROUS BATHING
 -  SURFING AREAS
 -  BEACH ANGLING AREAS
 -  WIDTH of BEACH at HIGH WATER

North ↑
 Scale 1:10 000
 Date July 1978
 Physiography

6

Strandfontein Coastal Development




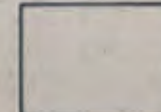
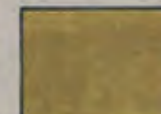
- Key**
-  METALASIA SHRUB
 -  METALASIA PASSERINA
 -  ACACIA STANDS (ALIENS)
 -  EHRHARTA GRASSLAND
 -  DUNE SHRUB
 -  MYRICA SHRUB
 -  WILLDENOWIA REEDLANDS

North ↑
 Scale 1:10 000
 Date July 1978
 Vegetation Distribution

7
 Strandfontein
 Coastal
 Development



Key

-  WELL COVERED AREAS - LEAST SUSCEPTIBLE TO EROSION
-  MODERATELY COVERED AREAS
-  EXPOSED AREAS - HIGHLY SUSCEPTIBLE TO EROSION

North ↑
Scale 1:10 000
Date July 1978
Vegetation Cover

8

Strandfontein
Coastal
Development

7.0 THE STRANDFONTEIN COASTAL ZONE

ENVIRONMENTAL RESOURCE ANALYSIS

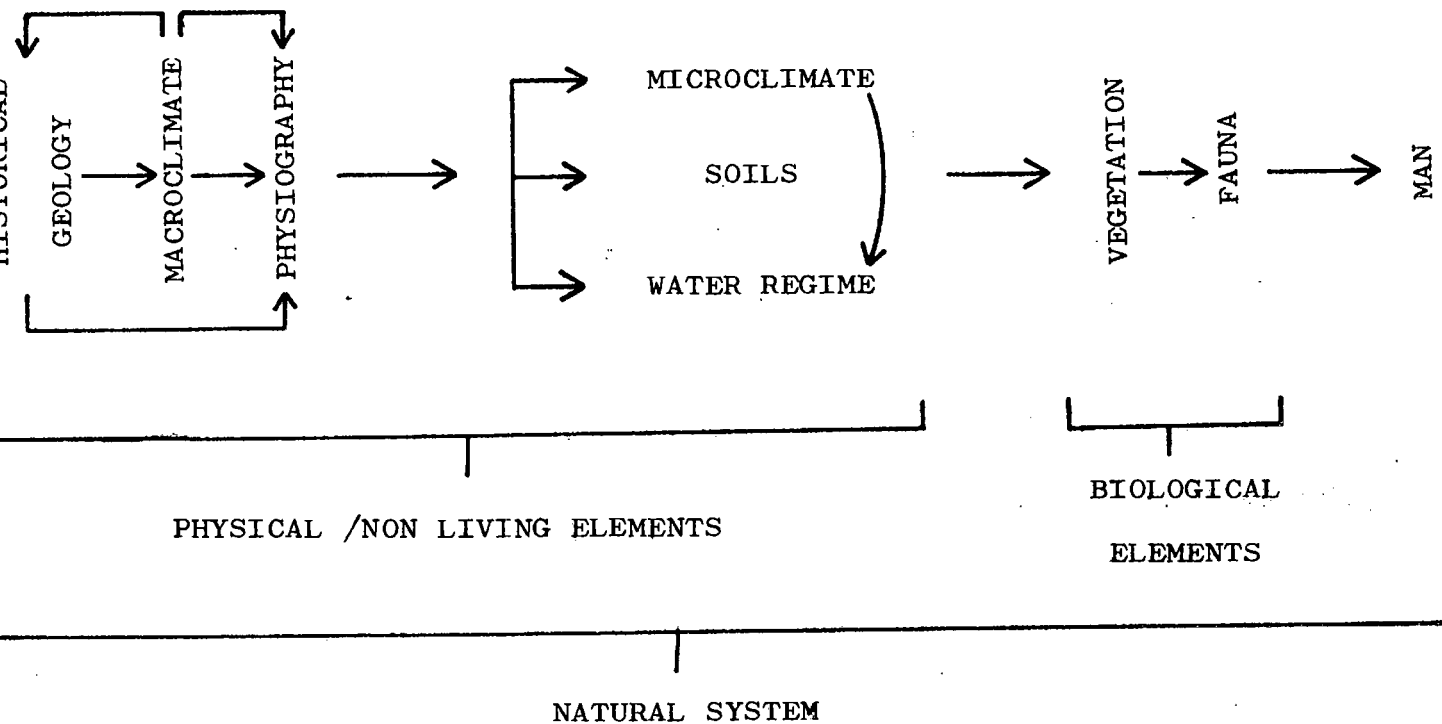
"Let us accept the proposition that nature is process, that it is interacting, that it responds to laws, representing values and opportunities for human use with certain limitations and even prohibitions to certain of these¹⁰".

This quotation is the underlying hypothesis in the environmental analysis of the study area. In the metropolitan analysis it became very clear that further development of the Strandfontein coastline is inevitable. If these demands are satisfied without taking the natural capacity and the inherent sensitivity of the land into account, very serious environmental losses could be incurred.

For this reason it is important that the coastline be understood in terms of its physical evolution. The historical geology and climatic conditions will first be analysed because these elements are mainly responsible for the current physiographic configuration of the place.

A knowledge of all the foregoing will enable us to understand the particular nature of the soils in this area. Since the plant communities are directly responsive to all the above environmental factors, we are now also in a position to understand the distribution of vegetation in the area. Animals are basically plant-related and therefore with all the above information at our disposal it will be possible to understand the nature of the animal population.

This ecological method of analysing the environmental resource base can be summarised as follows:



Mans' response to his environment should be based on the understanding of this evolutionary process in nature. In the following chapter the human response and impact on the environment will be analysed.

The above method is not a mere ecological inventory. The ecological method will allow us to:

- a) understand how nature operates as a process in order to know how the place has come to be.
- b) assess the suitability of the site and potential for development and simultaneously to evaluate the impact of people on the site.
- c) put forward proposals which respect the sensitivity of the environment on the one hand and optimise recreational requirements on the other hand.

For the purposes of this analysis the various natural elements will be dealt with separately. The inter-relation between these elements is, therefore, emphasised once again.

7.1 CLIMATE

7.1.1 INTRODUCTION

Every location has a very specific set of climatic factors and the planner must make the correct adaptive response in order to create habitat conditions which are amenable for man.

The Cape Region is unique because of its Mediterranean climate with dry warm summers and wet cool winters. The rainfall is of the continuous penetrating cyclonic variety. The extreme weather factor generally and at Strandfontein in particular is the strong and persistent southerly winds that blow for extended periods during the summer months.

7.1.2 REGIONAL CLIMATE

The climate of the Cape Peninsula is summarized below. The data was recorded at the D.F. Malan airport weather station approximately 5 kilometres north of Swartklip.

Conditions at Strandfontein will be very similar but there are local features which will modify the above conditions slightly. These are:

- a) the proximity of the relatively warm water of False Bay.
- b) the extensive dune area immediately adjacent to the coast.

TABLE 11

MONTHS	TEMPERATURE in °C	SUNSHINE average no. of hours per day	HUMIDITY %	RAINFALL
JANUARY	20,4	10,70	70	11,0 mm
FEBRUARY	20,2	10,69	71	14,9
MARCH	19,2	9,38	73	10,5
APRIL	16,5	7,71	76	53,1
MAY	14,0	6,44	81	74,4
JUNE	12,7	5,77	81	91,2
JULY	11,7	6,46	81	89,4
AUGUST	12,0	6,54	80	78,6
SEPTEMBER	13,4	7,51	77	43,6
OCTOBER	15,5	8,71	74	38,1
NOVEMBER	17,8	10,39	69	14,6
DECEMBER	19,5	10,18	70	11,1
MEAN	16,1°C	8,37	75,2%	530,5 mm

SOURCE : Republic of South Africa - Department of Transport
Weather Bureau

Report on Meteorological data of the year 1971

The influence of False Bay stems from the fact that its waters are relatively warm. Because of this there is only infrequent fog whereas Cape Town and coastal areas to the north are well known for their frequent fogs.

The influence of the flat duneland adjacent at the coast is that the local climate of the site does not vary from place to place and that very few, if any, places are well protected from the winds which sweep directly across it unobscured.

7.1.3 LOCAL CLIMATE

Local climate concerns itself with climatic conditions near the ground. It is sometimes also referred to as microclimate. In this section we should describe the climate of that zone in which people walk and live in, build their houses and practice

most of their recreation activities. Each factor will be discussed separately and then all the factors will be combined to determine how comfortable the conditions are for the various activities of man.

PRECIPITATION

Although it rains during every month there is a definite dry season during the summer months when there is greatest demand for outdoor recreation. The four summer months average less than 25 mm of rainfall. The average annual rainfall is 604,2 mm.

This means that the rainfall is adequate only for the maintenance of a sparse vegetation cover of shrubs. The rainfall will also be sufficient for the natural irrigation of the additional plant material which will have to be used for dune and sand stabilization.

All precipitation is in the form of gentle showers which occur over relatively long periods. This type of rainfall penetrates the soil very readily which means that the aquifer can be replenished very easily. This rainfall is also not very erosive and it cannot build up to flood volumes very readily.

FOG

Fog is rare along the Strandfontein coastline being reported there on the average only five days per year compared to 25 days per year at Cape Town docks and 111 days at Cape Point.

SUNSHINE

Sunshine occurs at Strandfontein approximately two thirds of the daylight hours of the year. During the four summer months daily sunlight occurs for more than 10 hours. These conditions are extremely favourable for outdoor recreation.

TEMPERATURE

Mainly destructive

The most important feature is the lack of extremes in temperature primarily because of the proximity of False Bay. It is warm during summer and cold during winter. Winters cannot be described as being cold. The southeast wind has the effect of reducing summer temperatures slightly. The practical implications of temperature and humidity conditions will be discussed under the section titled Bioclimatic Requirements.

WIND

Available wind data (table 12) indicate that relatively persistent and strong winds occur primarily from the north and south quadrants with a heavy emphasis on the southeast and the northwest. There is also a seasonal split, with the summer period characterized by winds from the south and the winter period having winds more frequently from the north. (see map 4)

Map 4 also shows the shelter conditions at Strandfontein. The zone immediately adjacent to the wind is very exposed. The primary dune does not help to create sheltered conditions because of its low profile. Where the dune system is well developed sheltered conditions can be found on the sides leeward to the southeast wind.

Winter wind conditions follow a different pattern. The prevailing winter wind (the northwesterly) is usually associated with rainfall which rules out outdoor recreation in any event.

TABLE 12

WIND VELOCITIES and DIRECTION at STRANDFONTEIN							
SPEED in KNOTS/HOUR							
WIND FROM	0-6	7-10	11-16	17-21	22-27	28-40	TOTAL
	ANNUAL	PERCENTAGE	FREQUENCY	of	OCCURENCE		
N		10,9	6,3	1,0			18,2
NE		0,3					0,3
E		0,4					0,4
SE		0,6	1,5	3,5	2,0	0,3	8,0
S		7,3	14,8	7,2	5,0	0,4	34,7
SW		3,5	1,8				5,3
W		1,2	1,0				2,2
NW		2,4	2,6	0,3	0,1		5,4
CALM	25,5						25,5
TOTALS	25,5	26,6	28,0	12,0	7,1	0,7	100,0%

SOURCE: Marina False Bay Schematic Landscape Plan:
The Office of Richard Reynolds. August 1970

There are some very significant points in the above table. Approximately 48% of the time strong winds in excess of 11 knots/hour are blowing and these come primarily from the south. At these velocities the fine exposed sands will be moved. The Low rainfall during summer (the peak recreation period) corresponds with the strong winds and this often causes extremely unpleasant conditions. It is imperative therefore that every effort be made to maintain a consistent vegetative cover.

Calm conditions (0 - 6 knots/hour) occur 25,5% of the year. The effect of these velocities ranges from no noticeable wind to what can be described as a gentle breeze. These velocities occur throughout the year although there is a greatest percentage of calms during the late autumn months of April and May.

To create human comfort for sedentary activities ranging from picnicking to sitting on the beach, wind velocities ideally must be kept below 4 knots per hour. Sedentary walking and similar more active play and work can be done comfortably in velocities below 7 knots per hour.

At the Marina da Gama near Muizenberg where similar wind conditions prevail much success has been achieved in the control of wind to comfortable velocities by a system of windbreaks to which all other major installations (rows of buildings and houses) were oriented.

It is fortunate that the summer wind blows are approximately opposite to the predominant winter winds. A system of windbreaks can, therefore, function efficiently simply by orienting the major axis of the windbreaks parallel to the beach shoreline. Maximum reduction of wind velocities can be obtained on this manner.

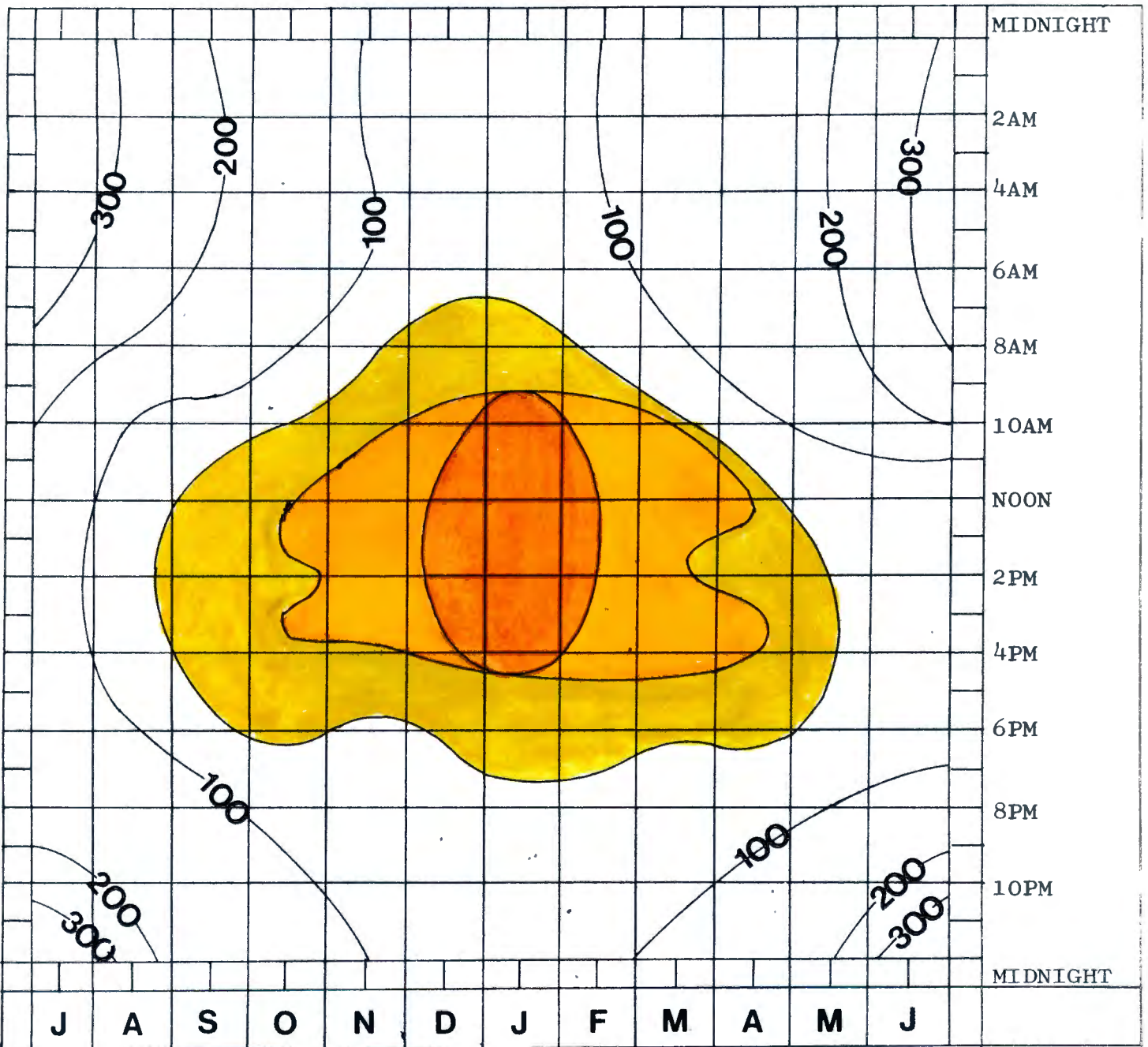
BIOCLIMATIC REQUIREMENTS

The combined effects of temperature and humidity on human comfort are reflected in the chart entitled Bioclimatic Requirements for Human Comfort (Fig. 8). The chart shows the times of day and month during a typical year when heating and cooling by shade and air movement is needed to produce comfortable environments for human beings.

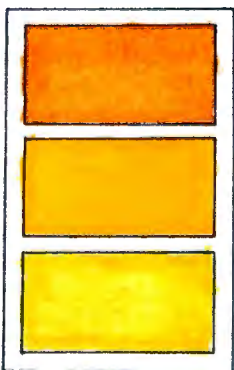
The chart was prepared from weather data recorded at D.F.Malan Airport and modified on the basis of local evidence at Zandvlei. The chart can however be applied to Strandfontein as well.

The most important implication of the chart is that for at least two thirds of the average year shade is desirable for sedentary human activity. This is during late spring, summer and early autumn. Conditions are, however, modified by the persistent summer winds. A system of windbreaks will therefore serve a dual function - namely controlling wind conditions

TIMETABLE OF BIOCLIMATIC NEEDS



Contours outside of "Shade Required" area show heating requirement in BTU's per square foot per hour of radiant energy needed for human comfort.



Shade required for human comfort

Shade plus air movement to 100 feet per minute (approximately 1 mph) needed for human comfort.

Shade plus cooling equivalent of air movement to rate of 300 feet per minute required for human comfort.

and providing shade in these shelter belts.

7.2

GEOLOGICAL HISTORY

A brief outline of the geological history of the area is relevant to this analysis because geology sets the physical backdrop for the other processes and with climate it is primarily responsible for the present topographic form of the coastal zone.

The geological history of the Cape Flats has not been clearly established but it is generally accepted that the area evolved as a sand bar (tombolo) which over time linked the Cape Peninsula mountains and the Hottentots Holland mountains.

This sand bar has been enlarged and reinforced both by building up of a deep sand layer and by recent stabilization of the sea level. The sea level has risen markedly during the past 20 000 years or so (see figure 9).

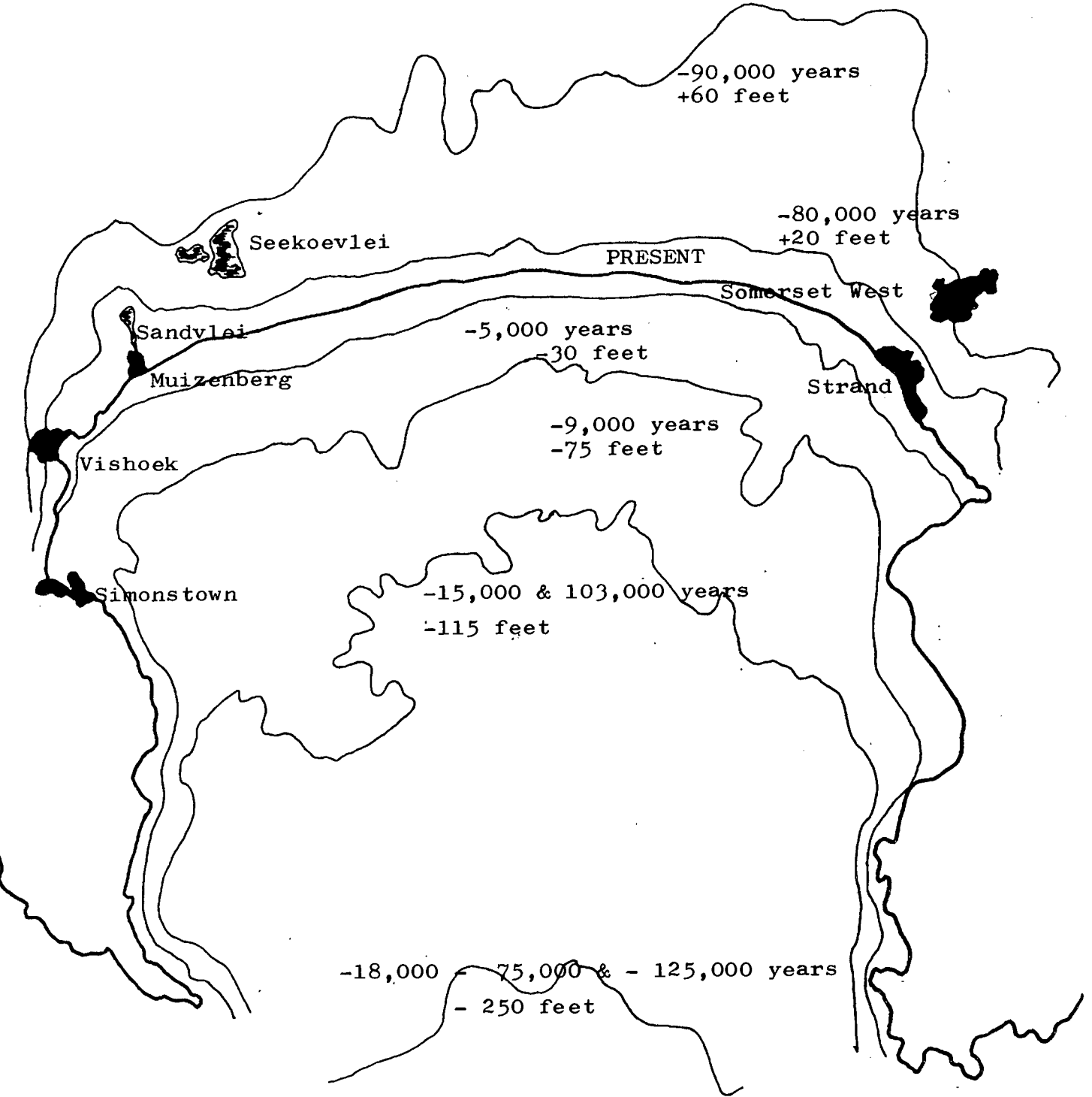
Available geologic evidence suggests that the area is underlain by Malmesbury shales in the east and Cape Granite in the west.

The significance of this history is that the sand overburden, which is both calcareous and siliceous, is relatively deep - perhaps 18 to 30 metres below sea level: (see map 5)

- a) The thick sand cover means that the water retention capacity of the soil is very low. This is one of the reasons for the sparse vegetation of the area.
- b) The high degree of porosity of the soil is responsible for the sustenance of the underlying aquifer.
- c) The nature of the soil is also a factor responsible for the absence of drainage and flooding problems.

The eastern edge of the coastline is characterized by very prominent cliffs which reach a maximum height of 50 metres above sea level. Swartklip is a headland some 18 metres high

APPROXIMATE TIME AND LOCATION OF PRESENT
AND PLEISTOCENE FALSE BAY SHORELINES.



Adapted From Bowie and Haughton

located on the eastern limit of the live of cliffs that occupy about 4km of the coast. The beach is very narrow below the cliffs and at high water the cliffs are exposed to the force of the waves.

The material of the cliffs is unconsolidated shelly sand which would be incapable of cliff formation were it not for a thin crust of well cemented calcareous tufar that blankets the deposit and protects it from erosion. Wave and wind action have undercut this hard capping and in places the beach is strewn with great blocks of calcareous sandstone which have collapsed from the upper levels of the undercut cliff face. No figures are available to indicate the rate at which the cliffs are retreating but people familiar with the area report significant changes within memory. The most recent estimate is 5 feet every 100 years.

Fragments of bone lie within the cliff sands. They are rare and typically occur as isolated broken fragments in a poorly preserved condition. In 1959, 61 skeletal specimens were found in a block of very coarse grained calcareous sandstone. The block was one of several that had collapsed as a result of undercutting of the cliff face. The specimens display a wide variety of animal forms. Their nature also indicates that they could well have been deposited on the floor of a small cave or rock shelter used as a lair.

Intensive development and use of this area should be avoided. The cliffs are visually interesting and add to the scenic value of the area. They are also extremely important geologically and archeologically

7.3

BEACH FORMATION

The question of wind and wave action along the beach zone and their implication for recreation on the beach will now be considered.

Beach stability refers to whether or not sand supply to the beach is positive or negative or in balance. When there is a positive supply, dune formation north of the beach can continue whereas if it is negative the beach would tend to wane and sea encroachment would occur.

During research work conducted for the Marina da Gama Project¹¹ it was found that presently sand along the whole coast of False Bay is being produced at about the same rate as it is being dispersed. Insofar as dune formation landward from the beaches is concerned, this means there is a shortage of sand supply. Therefore, it must be assumed that it is unlikely that beach barrier dunes can be grown, even if that were desirable.

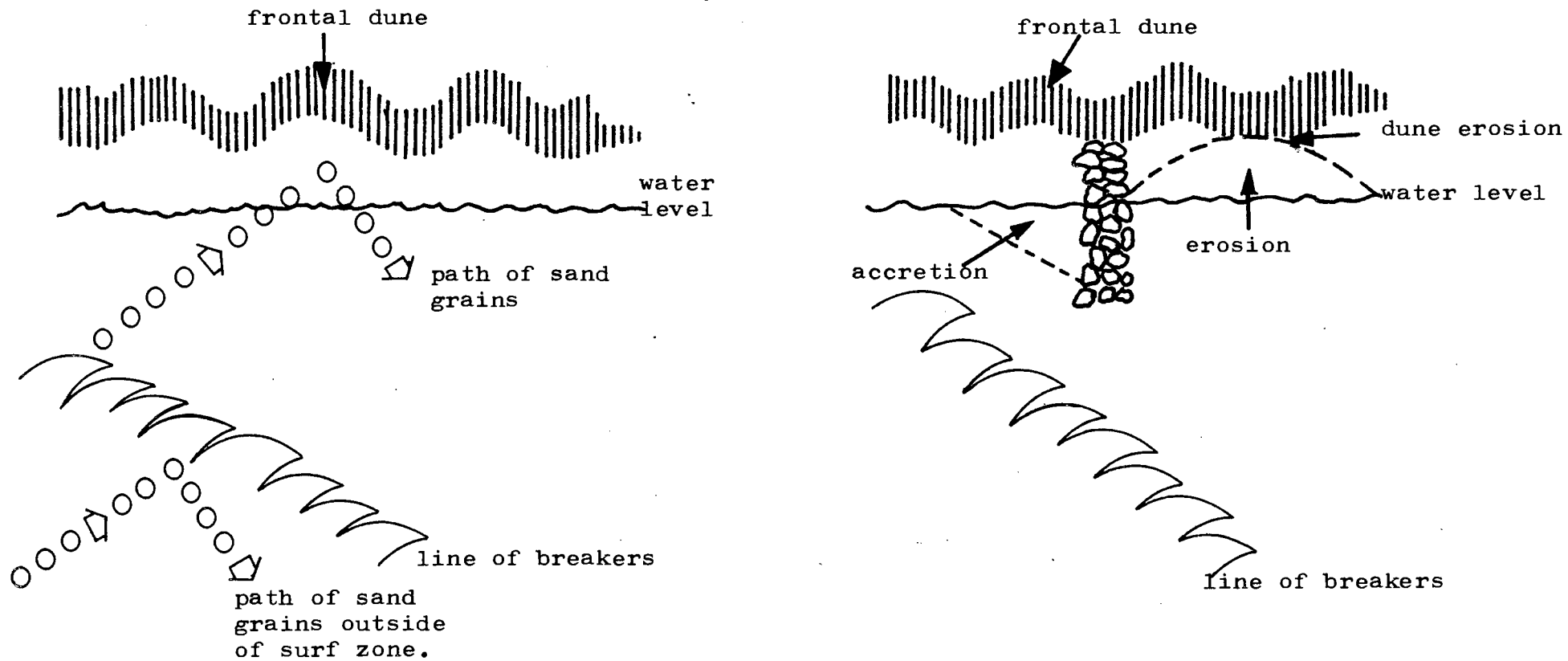
Local sea level rise in False Bay is estimated to be at a rate of approximately 1 mm per year or 10 cm per century. This is said to be a conservative estimate. The rise in sea level indicates that sand supply to the beaches is not and will generally not be great and this means that barrier foredunes along the beach can be stabilized with relative ease. It also indicates that stabilization of dunes and sand areas inland can be accomplished with relative ease because such stabilized areas are not likely to be overwhelmed by new dunes forming on the beaches and being driven into inland areas by strong prevailing summer winds.

The other significant process operating along the coastline is littoral drift. This process has been investigated by the Hydraulics Research Unit of the CSIR and their experiments confirm that littoral drift is occurring in a clockwise direction i.e the effects of easterly drift outweigh that which takes place in a westerly direction.

11. Marina False Bay Landscape Plan:
The Office of Richard Reynolds. August 1970 p. 31

Fig. 10

Littoral Drift and the effects of tangential construction on shore configuration



SOURCE: Mitchell (1975)

An implication of this process is that it would cause accretion of sand along man made structures that might protrude into the sea and would also cause erosion of the coastline on the eastern side of such constructions. (see fig. 10)

No scientific information is available on bathing conditions in the study area. Representatives of the National Sea Rescue Institute, lifesaving and angling clubs and the Bathing and Amenities Branch of the Cape Town City Council were interviewed to ascertain beach safety. On the basis of these discussion the beach and surf conditions shown on map 6 were compiled.

Angling conditions are excellent as evidenced by the number of anglers who frequent these shores. Areas with good angling potential are shown on map 6. Purse seine fishing has been permitted in False Bay since 1956 and this has led to a decline in the fish population. The False Bay Conservation Society is recommending that purse seine fishing be abolished so that a marine park can eventually be established in False Bay.

The potential of the coastline for harbour development has also been investigated.¹²

Natural conditions preclude harbour construction due to

- a) littoral drift which would require dredging on a large scale.
- b) High costs because of the absence of a rock foundation.

The fact that the development of a harbour for pleasure craft was considered unfeasible at the Marina da Gama, 8 km west of the study area, is relevant.

If any tangential construction such as a quay or launching ramp is to be built, it is suggested that a groyne be constructed first in order to test the impact of littoral drift.

12 False Bay Harbour Development - J.D. Gluckman

Conditions do allow the construction of a launching ramp but at the moment the demand for a facility of this nature is very limited.

7.4 PHYSIOGRAPHY

The vast subsurface of sand has provided the basic material from which the present landscape has been formed. The outstanding topographic feature of the area is the dune systems which were brought about by the prevailing winds - mostly the southerly winds in summer. There are two kinds of dunes along the coast namely transverse or beach barrier dunes aligned parallel to the coast and longitudinal dunes aligned more or less parallel to the summer wind belt.

These slopes are aesthetically important since they offer significant contrast in the landscape. They also serve as "Walls" which create outdoor "rooms" of varying scales. Within spaces interesting outdoor recreation activities can be made available. (see map 6)

The study area can be divided into a number of well defined physiographic zones. In terms of its potential for development each zone has a definite level of tolerance.

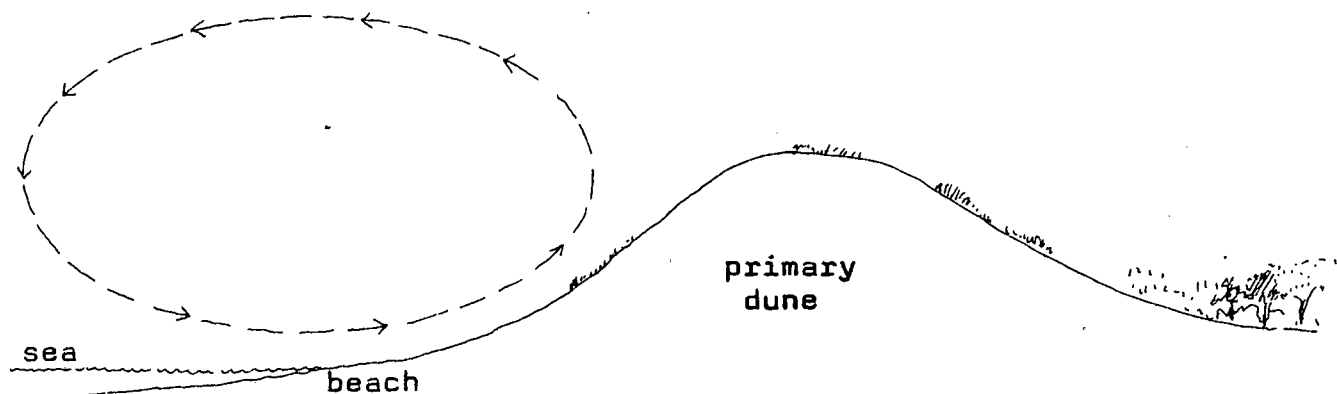
7.4.1 THE PRIMARY DUNE

This zone is absolutely intolerant. Aside from their aesthetic and recreational value the coastal dune serves as a protective buffer strip which prevents wind and waves from damaging public utilities and private buildings further inland.

The primary dune also provides a reservoir of sand which circulates between the dune; surfzone and the beach according to sea and wind conditions. This so called sand cycle, illustrated in fig. 11 is a naturally self generating system so long as the dune system is stable. However, if the frontal dune is destroyed by construction work or other factors,

sand is blown inland where it can cause damage and is lost permanently to the beach dune system.

THE SAND CYCLE



The barrier dune at Strandfontein and Mnandi has been highly disturbed or broken up mostly by pedestrian use of the area for recreational purposes (areas shown on map 6). Restoration of primary dune is important in view of its ecological function and it would also help to establish control over summer wind conditions. Methods of control are described under the subtitle "stabilization" and shelter.

At the eastern edge of the study area the dune ridges meet the shore in cliffs of sand and calcrete (see Geological History). Towards Muizenberg the primary dunes are younger and less well developed.

The planning guidelines for this zone:

- a) No development, no walking and no breaching should be allowed. If the primary dune is to be crossed this must be accomplished by bridges.
- b) The littoral drift must not be interrupted. If by the building of groins or any other tangential construction the littoral drift is arrested, the source of sand to supplement the dunes will be denied.

- c) The frontal dune system should be reserved as public land because of the need for a public authority to accept responsibility for preventing and controlling damage by wind, wave and human erosion.
- d) The groundwater level must not be lowered below a critical level or the stabilizing plants will die.
- e) The natural dune vegetation must be preserved since it is the most effective stabilizing agent.

7.4.2 THE TROUGH

This zone is more protected than the primary dune from winds and blowing sand depending on how well established the primary dune is. In the study area, the trough area does not have the advantage of a well developed primary dune and is therefore relatively unprotected.

Theoretically the trough is more tolerant of human use and development may occur here. Development is determined by groundwater withdrawals and its effect on the vegetation.

7.4.3 THE LONGITUDINAL DUNE RIDGES

These dunes are aligned at 90° to the coast. They are also intolerant of human use and should ideally not be developed. Since these dunes are almost parallel to the prevailing wind they offer little wind protection.

7.4.4 THE INLAND DUNE

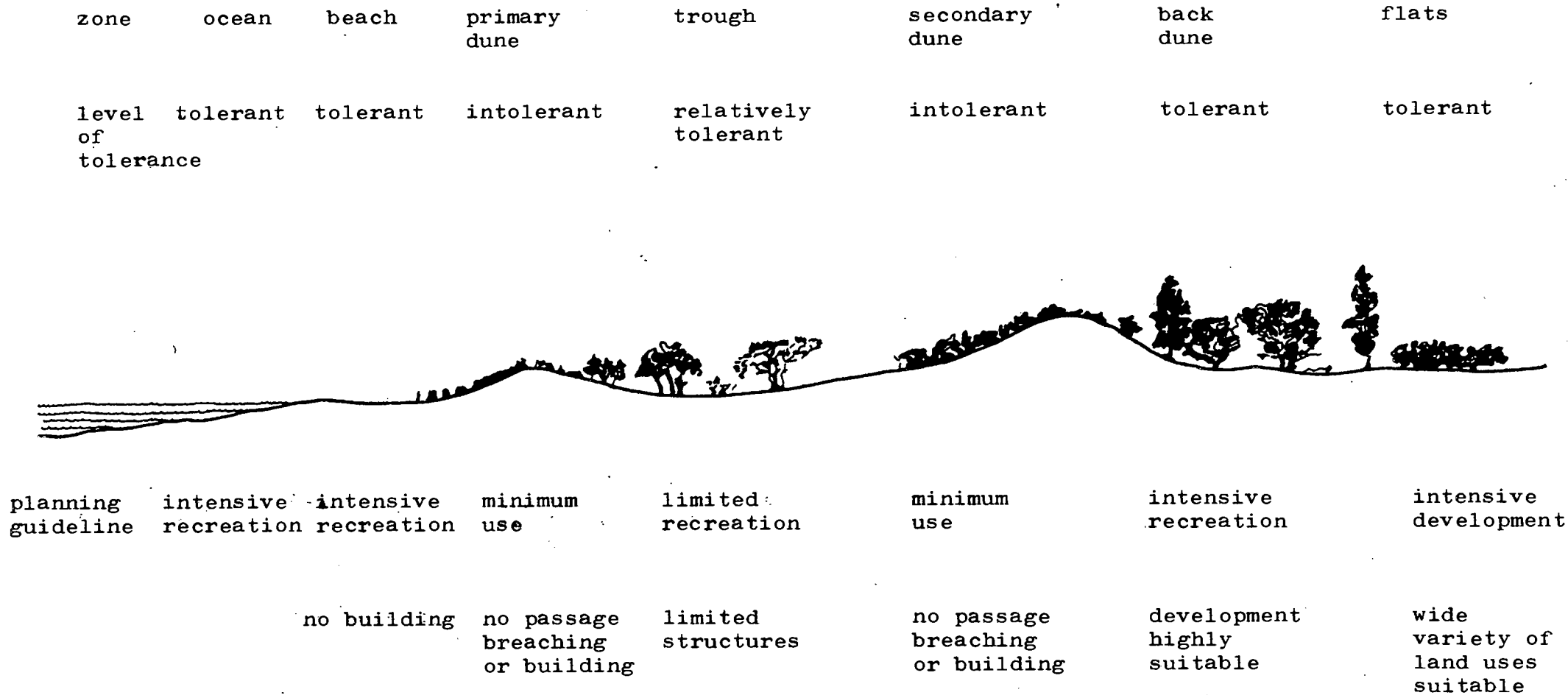
This zone generally supports a more substantial vegetation cover, has richer soils and offers greatest protection from winds and salt spray.

It is the most suitable local environment in the coastal area for development and offers maximum opportunity for the concentration of facilities such as a recreation node.

Figure 12 is a generalized cross section of this type of environment described above. The potential for development of the different zones are indicated on the diagram.

Fig. 12

Typical cross section through coastal area.



SOURCE: McHarg 1969 p. 14,15

7.5 HYDROLOGY

Rationale:

"Water no large place can be supposed, a little spot can hardly be imagined, in which it may not be agreeable; it accomodates itself to any situation; it is the most interesting object in a landscape, and the happiest circumstance in a retired recess; captivates the eye at a distance, invites approach, and is delightful when near; it refreshes an open exposure - it animates a shade¹³"

7.5.1 SUBSURFACE HYDROLOGY

Under geological history (7.2) it was stated that the area is a sand bar between the Peninsula mountains and the folded mountain system in the interior. This sand ~~is~~^{is} both porous and permeable and because the cyclonic rainfall can penetrate it very readily a huge underground reservoir has been formed. This body of sand between the bedrock and the surface is called an aquifer. The larger part of the Strandfontein site is located on this aquifer.

The Cape Flats aquifer is an extremely valuable resource and its water holding capacity is estimated to be larger than that of Steenbras and Voëlvlei reservoirs combined.

This natural system must be protected so that it can function as the natural system has planned.

This means that the aquifer has important design consequences for the study area. Very extensive high density development with large areas of hard surfaces would affect permeability and porosity and consequently replenishment of the aquifer. With this type of development an extremely valuable resource could be lost. No development which could possibly pollute the aquifer should be considered.

7.5.2 SURFACE HYDROLOGY

There are no perennial rivers in the study area. Flowing through the campsite at The Point is a valley which occasionally floods in the winter months (map 6)

No flood cycle information is as yet available for this area although the CSIR has been monitoring conditions over the last 7 years.¹⁴ These observations indicate that no flooding has occurred and that the possibility of flooding in this area is very remote.

Although there are no permanent surface water features in the area, there is an opportunity for developing inland water features in areas where the water table is close to the surface. A few such areas are shown on map 6.

The Parks and Forests Branch of the Cape Town City Council uses the fresh underground water for irrigation purposes. These surface ponds are fenced off but could possibly be used as landscape features for passive recreation.

7.6 VEGETATION

Something which hasn't come through

In the introduction to this chapter the causal relationship within the natural systems in the environment was emphasised. The vegetation element at Strandfontein is the result of such causality. Because of the low rainfall (annual average 604mm) and the porous sandy soils the vegetation generally has a very low profile. The persistent summer winds has also resulted in pruning the vegetation and growth is stunted. The growth is therefore minimal in this area.

The vegetation has also adapted to the different topographic conditions that have evolved in the area. Each topographic region has a different set of vegetation types.

14 Personal communication - Mr. Andre Gerber CSIR

These zones are described below: (also see map 7)

Along the coastline the vegetation has adapted to withstand salinity, wind exposure and low nutrient levels of the soils. Most of the plants are low growing succulents or hairy forbs, herbaceous shrubs or grasses and *metalasia passerinia*. The vegetation cover is extremely sparse and is the most effective form of stabilization. Disturbance of the vegetation will retard the development of the primary dune and should be kept to an absolute minimum.

On the exposed dune slopes - inland and along the coast the vegetation has also adapted to the poor soils, saline conditions and the strong winds. The most common species are *Metalasia*, *Passerinia palacea* and *Rhus glauca*. The vegetation becomes progressively more dense on the moderately and well sheltered dune slopes.

In the flats and valleys the indigenous vegetation species are *metalasia* and *metalasia muricata*. These areas, however, are very heavily infiltrated with acacia species notably *acacia cyclops* and *acacia saligna*. The vegetation cover varies from 20% to 90% again depending on the degree of wind exposure.

In the camping areas and around the established nodes at the Point, Middelbank and Mnandi the natural vegetation has been disturbed and replaced by non indigenous plant species, mainly extensive stands of *acacia cyclops*

These alien shrubs grow rapidly even where conditions are dry and windy and where soils are sandy, saline and low in nutrients. They are excellent for stabilizing sand and for use as windbreaks but will oust the indigenous vegetation in the long run. Once these species are established they are extremely difficult to control or eradicate. It is considered undesirable to use these aliens in areas where they are not already established or in areas where conservation of the natural vegetation is deemed priority.

Certain parts of the study area are characterized by high species diversity which represents climax vegetation for the specific environmental conditions prevailing in the area. These areas have scientific value and have been recommended for conservation as witness areas. These are shown on map 7.

7.6.1 STABILIZATION and SHELTER

The combination of exposed sands and strong southerly winds in summer often results in very unpleasant conditions during the peak recreation period. An important planning priority is, therefore, the stabilization of these sand areas and the provision of areas which are sheltered effectively.

The landscape consultants for the Marina da Gama project researched the use of stabilization materials in Mediterranean climatic regions overseas¹⁵. They found that considerable success has been achieved in Australia, Greece but particularly in central coastal California. For example the entire west coast of San Francisco including the beautiful Golden Gate Park was once a zone of constantly shifting sands similar in character to the northern shores of False Bay. Stabilization in Golden Gate Park was accomplished by the use of European beach grass (marram grass). After initial stabilization a variety of trees was introduced.

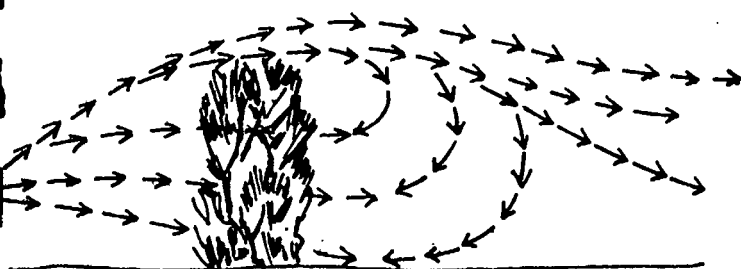
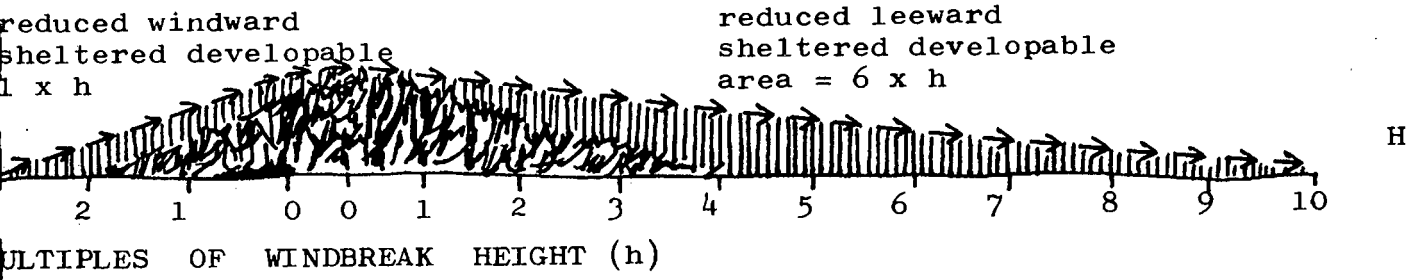
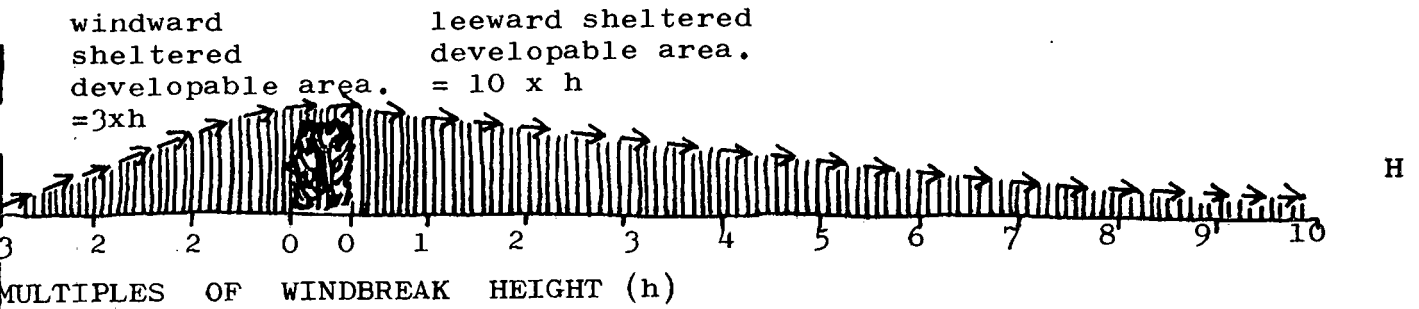
The most obvious and traditional method the world cover for the provision of shelter, is to utilize a row of trees to "break" the wind. This method is not only the least costly, but it has other advantages as well. For example the trees of windbreaks can be used as an aesthetic backbone to the overall visual impact conveyed by the developed site.

In addition the vegetation used as windbreaks can ameliorate microclimatic conditions in a number of desirable ways.

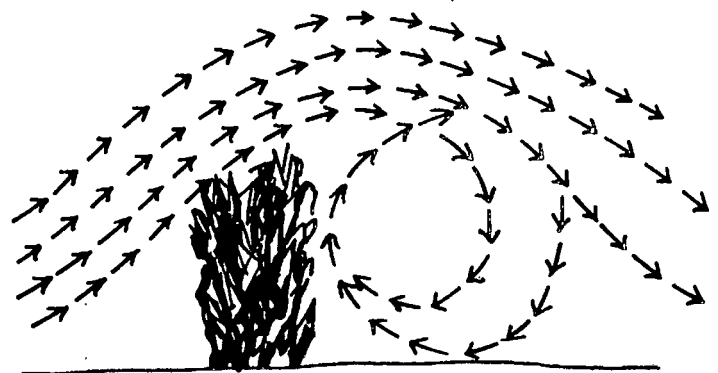
15 Ibid p.48

FIG. 13

BASIC SHELTER BELT PRINCIPLES.



Semi-permeable windbreak
 some air flow through trees
 reduces turbulence on the lee
 of the windbreak



Very dense windbreak
 severe turbulence can occur
 on the lee of dense windbreaks
 or buildings.

One of these is to provide cooling during the summer months by both shading as well as evaporative cooling.

The most important use of trees in this area will be the control of ground level winds - trees can do this more effectively than anything yet devised by man. Areas where windbreaks should be planted as a matter of priority are indicated on map 8. The drawing (fig.13) shows the most effective means of planting shelter vegetation.

A list of trees suitable for use as windbreaks is appended (appendix 3).

7.7

FAUNA

The area has a very rich avifauna. There are two main bird habitats:

- a) the beach and coastal cliffs
- b) coastal fynbos and shrubs

The birds in the area are an important link in the ecological system in view of their function as seed carriers.

A checklist of bird species likely to be found in the area is given in Appendix 4.

The gull colony located on the cliffs to the east of the study area is unique as it is the only known breeding site of the Black Backed Gull on the southwest Cape mainland. This breeding ground is situated close to Baden Powell Drive and is inadequately protected from human interference. Poaching of eggs is known to occur. In order to preserve this colony minimum controlled access must be ensured.

Large numbers of steenbuck and grysbok inhabit the area. These buck are small, nocturnal mammals and not therefore highly suitable for observing in game reserves. They do not require drinking water and therefore little management is necessary



North ↑
Scale 1:10 000
Date July 1978
Synthesis of Natural Systems

9

Strandfontein
Coastal
Development



- Key**
-  SHELTERED AREAS
 -  GOOD VEGETATION COVER
 -  SAFE BATHING AREAS
 -  FLAT LAND

North ↑
Scale 1:10 000
Date July 1978
Synthesis of Natural
Systems

9

Strandfontein
Coastal
Development

If large areas are to be developed it may be necessary to leave "wilderness areas" in which these animals can roam freely so as to preserve original or indigenous ecosystems for posterity.

Besides the gull colony there are no other unique habitats within the study area.

A checklist of fauna found in the area is attached (see appendix 5).

7.8 SYNTHESIS of NATURAL SYSTEMS

When the different elements comprising the natural systems are synthesised a number of important areas can be identified.

These are:

- . sensitive areas where minimum intrusion of people should be allowed.
- . problems areas which will need special management.
- . areas of opportunity for active recreation (read with map 9).

7.8.1 SENSITIVE AREAS

a) GULL SANTUARY at WOLFGAT

It has already been pointed out that this is the only breeding site of the Black Backed Seagull on the southwest Cape mainland. The gulls also occupy a very important position in the food chain operating along the coastline. If any one of the components of this food chain is interfered with there are likely to be very serious ecological repercussions.

In addition, if people are allowed into the gull sanctuary it is certain that breeding would cease almost immediately¹⁶.

16 Professor Siegfried - Department of Ornithology U.C.T.
(personal communication)

b) THE PRIMARY DUNE SYSTEM

No buildings should be erected on the primary dune. At Mnandi Beach ablution buildings have been located on the primary and erosion has already become a serious problem.

Access must be provided OVER the frontal dunes and all movement must be controlled very strictly.

The frontal dune must be reserved as public land because the local authority will have to accept responsibility for preventing and controlling damage by wind and wave erosion.

c) THE LONGITUDINAL and INLAND DUNES

These dunes were formed by the strong southeast winds and have only become stabilized in recent geologic times. Large scale trampling could destroy the stabilizing vegetation which, in turn, would result in widespread erosion.

The secondary dunes are not as sensitive as the primary dune system and limited access is permissible. Viewpoints with benches for seating could be located on the crests of some of the dunes but access to these places will have to be designed very carefully to avoid any possibility of erosion.

d) EXPOSED AREAS

These are areas which have become highly susceptible to erosion because the vegetation cover has been removed. The strong summer wind blowing over these areas could cause extreme discomfort to holidaymakers.

All exposed areas (except those that will be set aside for intensive recreation) are set aside for conservation so that the vegetation can establish itself again. Suitable vegetation species will be planted to ensure that adequate soil cover is provided as soon as possible.

access must be prohibited and if funds are available these areas should be fenced in. Once the vegetation is firmly established these areas can be utilized again.

e) SPECIAL VEGETATION AREAS

These are areas with

- . dense stands of indigenous flora
- and/or . a large variety of indigenous flora

Because of their good vegetation cover these areas are also suitable for recreation activities such as camping and caravanning.

Where climax vegetation zones i.e areas with the greatest diversity of indigenous flora, occur the possibility of proclaiming these areas as nature reserves will be considered.

7.8.2 AREAS with POTENTIAL for RECREATION.

These areas are also shown on map 9. The determination of areas with potential for recreation is more complex because of the wide range of recreation activities possible and the diversity of their locational requirements. It is accepted as a general principle that the following are the "best" condition for both active and passive recreation:

a) SHELTERED AREAS:

Because of the strong summer wind conditions shelter is an important criteria for outdoor recreation.

b) GOOD VEGETATION COVER:

These areas have a low erosion potential. Activities such as camping and picnicking require pleasant vegetation conditions.

c) SAFE BATHING AREAS:

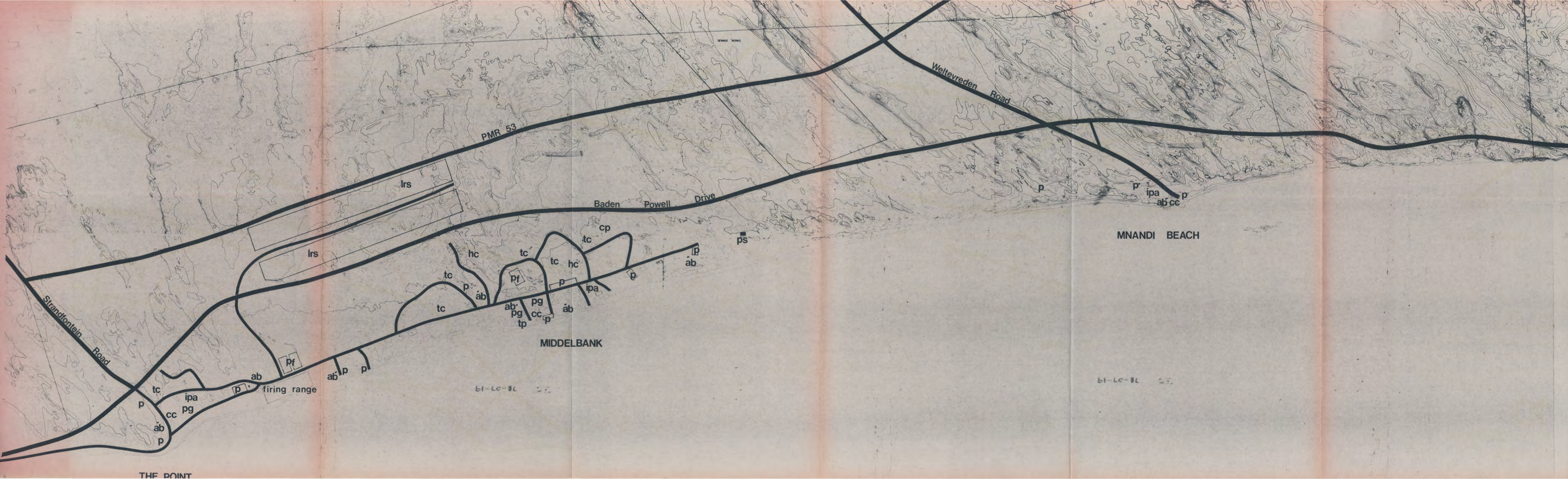
Such areas are limited and where they do occur their immediate hinterland should be developed. This may

help to attract people away from areas which are known to be unsafe.

d) FLAT LAND:

Steep slopes are eroded very easily. Flat areas are highly conducive to development and considerable savings in terms of building costs can be affected.

The analysis of the natural systems has given a very clear indication of the opportunities and constraints inherent in the site. The analyses of existing facilities at Strandfontein and their use patterns will reveal the extent to which environment has been taken into account.



- Key**
-  MAJOR ROADS
 -  MINOR ROADS
 -  PARKING AREAS
 -  TENT CAMPSITES
 -  HOLIDAY CABINS
 -  CARAVAN PARK
 -  PLAYGROUNDS
 -  PLAYING FIELDS
 -  INFORMAL PLAY AREAS
 -  ABLUTION
 -  TODDLER'S POOL
 -  LEASED RECREATION SITES
 -  CAMPERS CAFE
 -  PUMPSTATION

North ↑
 Scale 1:10 000
 Date July 1978
 Existing Land Use

10

Strandfontein
 Coastal
 Development

8.0 THE STRANDFONTEIN COASTAL ZONE:

8.1 EXISTING LAND USE

As shown on map 10 the distribution of the recreational activities is concentrated at three locations along the coastline.

- . The Point
- . Middelbank
- . Mnandi Beach

8.1.1 THE MOVEMENT SYSTEM

The transportation system has the following components:

a) ACCESS POINTS

Access to the Point and Middelbank is from Strandfontein Road and Baden Powell Drive and access to Mnandi Beach is along Weltevreden Road.

b) LOCAL COASTAL ROAD

A local road system connects Middelbank to The Point and provides access to the camping areas. A minor road system at Mnandi Beach serves to provide access westwards of the main activity centre.

c) PARKING

Most parking takes place in the form of on street parking throughout the local road systems. Formal parking spaces are provided but these have a limited capacity:

. Mnandi	320
. Middelbank	670
. The Point	310
TOTAL	1300

The parking spaces consist of levelled areas, mostly

tarred, located adjacent to the road system or at nodes on the edge of the beach. Parking spaces are also provided within the camping areas and in the holiday cabin areas.

8.1.2 OVERNIGHT FACILITIES

a) CAMPING FACILITIES

The camping areas have a total capacity of about 1600 sites distributed as follows (see map 4)

CAMPSITE	DESIGNATION	CAPACITY	AREA
A	The Point	80 - 100 sites	4,7 ha.
B	Middelbank West	450-500 sites	18,4ha.
C	Middelbank East	1000 sites	30,5ha.
	TOTAL	1600 sites	53,6ha.

The camping areas are fenced off landscaped and provided with ablution facilities.

The overnight camping tariff is R1,50 per tent and 15c per person per 24 hour period.

b) LEASED RECREATION SITES

To the north of Baden Powell Drive is an area leased by the City Council to various churches, schools and welfare organizations.

In terms of Ordinance No. 19 of 1951, various areas of land at Strandfontein may be leased to the above associations for 25 years at a rental of R2,00 per annum for holiday camp purposes, and if required, the erection of ancillary buildings, subject to all expenses in connection with the matter being defrayed by the association.

The lease states that the lessor must have begun development of the land concerned within twelve months of the agreement (development could mean fencing, levelling and/or ancillary buildings). If not the land may be leased to another association.

In terms of the above definition nine of the twenty six sites are "undeveloped".

c) HOLIDAY CABINS

The City Council has constructed 54 holiday cabins which can be leased by the general public. The location of the cabins is shown on map 10. The cabins are semi-detached and have a maximum capacity of 6 persons per cabin.

The tariff is as follows:

In-season (September to April)	R6,00 per cabin per day
Off-season	R4,00 per cabin per day

d) CARAVAN SITES:

There is no official caravan site. Caravans are permitted to park in the camping areas.

e) MNANDI BEACH

There are no overnight facilities provided at Mnandi Beach.

8.1.3 DAY FACILITIES

a) THE POINT

The Cape Town City Council has provided a camper's cafe, a dance floor, grassed playgrounds and caretaker's accommodation. A clubhouse used by lifesavers and surfers and a boathouse used by the National Sea Rescue Institute have been constructed on the beach. The boathouse is leased to the NSIR for three year periods.

At The Point the local road network provides a convenient opportunity for day visitors to park right on the edge of the beach sand. As there is no effective traffic control extremely congested conditions occur.

Considerable damage has been done to the primary dune as a result of uncontrolled vehicular and pedestrian movement in this area.

b) MIDDELBANK

The City Council has provided a dance floor, landscaped playgrounds with standardised play equipment, a paddling pool, a cafe, changing and ablution and first aid facilities. In addition two sites have been leased by Council to private organizations and these sites have been developed as "fun" facilities primarily for children.

A temporary police post is situated at Middelbank operating over peak holiday periods.

The three sportsgrounds to the west of Middelbank are currently used by sportsclubs from the Cape Flats residential areas.

c) MNANDI BEACH

The facilities here include informal grassed play areas, ablution and changing facilities, a cafe and a paddling pool. Barbeque facilities are also provided behind the foredune.

8.1.4 NON-RECREATIONAL LAND USES.

a) THE DEPARTMENT of DEFENCE

As shown on plan 10 the Department of Defence owns a section of land which is used for anti-aircraft firing operations. This use is highly incompatible with the recreation environment and is also occupying a location on the primary dune system. Environmentally the location of the firing range is highly undesirable.

b) SEWAGE WORKS

Northwest of Mnandi Beach an area of 93ha. has been set aside for the sewage works to serve the Mitchells Plain development.

c) SERVICES

The coastal area has water and electricity supplies and a main sewer which runs from west to east across the site. The area at The Point has no sewer connections.

The city Council reports that the area surrounding the pumpstation (indicated on map 10) may suffer from occasional smell pollution when power cuts occur.

8.2 ANALYSIS of EXISTING USE

8.2.1 TYPES of RECREATION ACTIVITIES

The activities are mostly of an informal, outdoor nature. They include camping, caravanning, picnicking, swimming, sunbathing and other beach activities, fishing, walking and driving.

Provision is made for more formal activities such as the soccer fields and holiday cabins.

8.2.2 FREQUENCY of USE

The recreation pattern is highly seasonal with the peak use period falling between 16th December to 4th January and over the Easter weekend.

There are generally more people during the summer months. The strong southerly winds in summer has definite negative effect on outdoor recreation .

The two major factors affecting frequency of use are

- a) the weather
- b) the occurrence of school and public holidays and weekends.

8.2.3 MEASUREMENT of RECREATION USE

Broadly speaking two measures were taken to assess recreation use of the Strandfontein area.

- a) Participation rates in the various facilities in an attempt to quantify recreation use
- b) On site surveys of the coastal area, particularly during the peak summer season
- c) Discussions with various persons and organizations involved in the Strandfontein area.

8.2.4 OVERALL PARTICIPATION

The Cape Town Council has attempted several estimates of use intensity at Strandfontein. Participation rates in the different facilities were combined to give a total figure representing maximum number of people on a peak day at Strandfontein.

These figures have relevance because they give an indication of current demand for existing facilities, which is helpful for future planning of recreation development of the area.

It has been estimated that on a peak day about 75 000 people visit the Strandfontein area (excluding Mnandi). No user or car counts have ever been done at Mnandi Beach but unofficial estimates indicate about 10 000 persons on a peak day at Mnandi.

TABLE 13 OVERALL RECREATION USE. STRANDFONTEIN AREA

DAY USE	MAXIMUM PERSONS ± 55 000
Overnight use:	
Camping (Campsites, leased sites) caravans	± 20 000
TOTAL USE	± 75 000

The use figures have greater relevance for future planning if they are split according to day and overnight use.

8.2.5 DAY USE

The intensity of daily use was calculated on the basis of traffic counts undertaken by the Parks and Forests and Town Planning Branches of the City Council. These traffic counts are shown on table 14.

* All figures used in this section obtained from City Engineers Department Cape Town City Council
a) Town Planning Branch b) Parks and Forests Branch

TABLE 14

PEAK DAY USE - vehicles - persons

DATE	CARS	BUSES	PICK-UPS/	LORRIES	TOTAL VEHICLE	TOTAL PERSON	TOTAL PRIVATE VEHICLE	% OF BUSES OF TOT. VEHI.	% OF VANS OF PRI. VEHI.	% OF LORRIES OF PRIV. VEHI.	% OF VANS & LORRIE PRIVATE VEHI.	% OF PEOPLE ARRIV. BY PRI. CAR	% OF PEOPLE ARRIV. BY TRUCK/VAN	% OF PEOPLE ARRI. BY BUS
75-12-26 Vehicles Persons	2 080 10 400	10 500	200 2 000	150 3 000	2 440	15 900	2 430	0,4	8,2	6,2	14,4	65,4	31,4	3,2
76-01-01 Vehicles Persons	3 400 17 000	20 1 000	400 4000	250 5 000	4 070	27 000	4 050	0,5	9,9	6,2	16,1	63,0	33,3	3,7
76-01-02 Vehicles Persons	6 300 31 500	30 1 500	650 6500	575 11 500	7 555	51 000	7 525	0,4	8,6	7,6	16,3	62,0	35,3	2,9
76-12-26 Vehicles Persons	3 405 17 025	17 850	277 2770	97 1 940	3 796	22 585	3 779	0,45	7,3	2,6	10,0	75,4	21,0	3,8
76-12-27 Vehicles Persons	6 070 30 350	25 1 250	500 5000	475 9 500	7 070	46 100	7 045	0,4	7,1	6,7	13,8	66,0	31,5	2,7
77-01-01 Vehicles Persons	6 500 32 500	30 1 500	1000 10000	550 11 000	8 080	55 000	8 050	0,4	12,4	6,8	19,3	59,1	38,2	2,7
77-01-03 Vehicles Persons	4 800 24 000	30 1 500	750 7500	350 7 000	5 930	40 000	5 900	0,5	12,7	5,9	18,6	60,0	36,3	3,8
AVERAGE								0,44	9,7	6,3	16,0	63,2	33,7	3,1

SOURCE: Parks and Forests : Strandfontein Section - 1977-03-03

Vehicles entering the Strandfontein resort area were counted at the intersection of Baden Powell Drive and Strandfontein Road.

The following occupancy rates per vehicles were assumed (Estimate based on observation of recreation traffic for several years)

- 5 persons per private vehicle
- 10 persons per van or pickup truck
- 20 persons per lorry
- 50 persons per bus

TABLE 15 SCREENLINE COUNT

DATE	TOTAL VEHICLES PER DAY	TIME PERIOD	TOTAL VEHICLE PER PEAK HOUR	PEAK HOUR
274-12-15	2 076	10 hours: 08h00 - 18h00	390 enter 471 leave	15h00-16h00 17h00-18h00
75-12-16	2 884	6 hours: 12h00-	412 enter 517 leave	15h00-16h00 15h45-16h45
76-01-04	2 027	6 hours: 12h00-18h00	417 enter 182 leave	14h15-15h15 14h15-15h15

SOURCE: Town Planning Branch Traffic Survey Screenline Count.

FIGURE 13.2 PEAK DAY USE

- Vehicles

An analysis of the traffic figures reveal the following:

- a) Over the last two years the peak has been about 55 000 persons per day
- b) The bulk of day visitors to Strandfontein (97%) use some form of private transport.

- c) Of the total number of private vehicles entering Strandfontein, about 84,5 are private cars, 9,8% are vans or pickups and 6,3% are lorries
- d) Only about 3% of the total number of day visitors to Strandfontein arrive by bus.
- e) Approximately 8000 vehicles enter the Strandfontein area on a peak day.
- f) Approximately 500 vehicles per hour constitutes the hourly peak flow.
- g) The bulk of the traffic flow is along Strandfontein Road. Baden Powell Drive carries a much lower share of the Strandfontein traffic.

8.2.6 OVERNIGHT USE

Estimates of overnight use at Strandfontein were made by calculating the known capacity of overnight facilities and relating these figures to participation rates.

a) CABINS

Camping is extremely popular particularly over the festive season. Figures for camping over the festive season for the past two years are as follows:

1975/1976 season	54 000 campers
1976/1977 season	19 500 campers

The 1975/1976 figures are considered to be more representative of the actual situation. The low figures for the 1976/1977 season can be attributed to:

- . uncertain weather conditions prior to the holiday season
- . the unstable political situation, particularly the rioting in the townships.

Camping officials estimate that campers stay at the resort for long periods - in many cases for the whole festive season.

It has been estimated that during the peak period (between Boxing Day and New Year) there may be 20 000 persons camping at Strandfontein.

c) LEASED SITES

Several lessors of leased sites were contacted telephonically for information regarding intensity and pattern of use of the leased recreation sites. A few sites are used throughout the year but the majority are used mainly on school holidays and over weekends.

Assuming that the peak use of the leased sites occur when all the sites are used at their estimated average capacity, the resultant population would be about 1000 persons.

d) CARAVANS

During recent years up to ten caravans have been parked at the camping area on a peak night. Assuming an occupancy rate of 5 persons per caravan, the total peak caravan use would be about 50 persons.

In the past dances were held in the evening at Bluewaters cafe and at the open air dance floor. These have now been discontinued because they were not financially viable. At the moment night life at Strandfontein is virtually non-existent.

A comparison of available facilities with use intensity reveals a tremendous shortfall in supply over demand.

If Mitchells Plain and increased demand is taken into account the number and range of facilities at Strandfontein will have to be extended.

8.3 CRIME and VANDALISM

Crime and vandalism are very serious problems in the Strandfontein area. If large scale developments in the future are to be considered these problems will have to be overcome.

It is extremely difficult for landscaping, particularly trees to become established when vandalism is so prevalent. The result of this is that the overall aesthetics of the recreation area suffers. In 1973 the Parks and Forests Branch of the City Council spent an estimated R250 000 to repair and combat the effects of vandalism in the municipal area. Crime takes place at Strandfontein mainly at night during the peak recreation period and vandalism takes place mainly during the off peak period.

The causes of such deviant social behaviour are to be found in the social, political and economic problems related to the Coloured community. These problems therefore have wide ramifications and their solution is wider than the scope of study.

The present control measures consist of four patrolling staff at each of the three camping areas during the day and at night.

The following additional control measures can be considered:

- the removal of shrubs with low, thick foliage which gives protection to criminals and giving preference to taller trees which have the additional benefits of wind protection as well as shade.
- improved lighting
- involving the user population in recreation planning.

Simplify

8.4 CONCLUSIONS

Several important facts emerge from the analysis of facilities and their use patterns:

1. The range of facilities provided at Strandfontein is extremely limited - as a recreation environment Strandfontein lacks variety and interest.
2. The existing facilities cannot cope with demand and the anticipated increase in demand could result in problems of congestion.
3. The location of facilities does not bear any relationship to opportunities and constraints inherent in the environment.

The location of ablution facilities on the primary dune at Mnandi is sufficient evidence of this.

4. There is no evidence that attempts have been made to overcome the severe summer wind problem.
5. The Mitchells Plain development and Strandfontein are being planned as two separate entities
 - no thought is being given to the integration of the housing and recreation environments.

8.5 ESTIMATE of FUTURE DEMAND

In this section an attempt will be made to estimate the future demand for recreation facilities at Strandfontein. This exercise is necessary in order to obtain some idea of the scale of facilities that will have to be provided in future.

It is extremely difficult to predict demand for recreational facilities because recreation behaviour is very changeable and can be influenced by a complete array of interrelated factors. This particular projection is complicated by the fact that very little research has been undertaken to determine Coloured recreation patterns.

The policy of beach segregation will have a very strong influence on demand for recreation facilities at Strandfontein. The current high population densities at Strandfontein are largely due to the short supply of beaches for Coloureds. If present allocations of beaches changes so that more beaches are available to Coloureds, the demand for recreation at Strandfontein may either be reduced, remain at the same level or increase if conditions at other beaches are very unfavourable. If the present beach allocation remains, demand for facilities at Strandfontein will increase because of the high population growth. Most of the demand pressure will be on Strandfontein because of:

- a) The Mitchells Plain development.
- b) The accessibility of Strandfontein to the other population concentrations on the Cape Flats.

There are also other variables such as the fuel price, changes in income, changes in recreation patterns which could affect the future demand for recreation.

It is hypothesized that demand for coastal recreation at Strandfontein will double by the year 2000 if the following assumptions hold true:

- . present beach allocation remains the same.
- . current coastal recreation patterns remain the same.
- . recreation demand increases proportionately to population increase
- . the Mitchells Plain development reaches its target population of 250 000 people.

If the demand for recreation facilities at Strandfontein doubles by the year 2000, there will be between 150 000 and 200 000 people on a peak day at Strandfontein (including Mmandi Beach).

8.5.1 REQUIREMENTS of FUTURE ESTIMATED DEMAND

The projected population of 150 000 to 200 000 users by the year 2000 was subdivided into two broad categories of day and overnight facilities.

a) OVERNIGHT FACILITIES

The following assumptions were made regarding future numbers and capacity of overnight facilities:

- . Cabin accommodation will increase to three times its present capacity. The occupancy rate will remain at 6 persons per cabin.
- . Approximately 150 caravan sites will be required with an occupancy rate of 6 persons per caravan.
- . The number of campers will double. The proximity of the Mitchells Plain urban environment may have a negative affect on the demand for camping facilities.

The following guidelines for space requirements for overnight facilities were based on theoretical standards and standards

applied in other coastal resorts in the metropolitan region
(see appendix 6 - SPACE STANDARDS for RECREATIONAL FACILITIES

FACILITY	DENSITY per HA.
Cabins	30 cabins
Caravans	25 sites
Camping	30 sites

On the basis of the above projections and space standard table 16 was drawn up.

TABLE 16 PROPOSED OVERNIGHT FACILITIES for the STRANDFONTEIN AREA, INCLUDING MNANDI

PRESENT				ESTIMATED FUTURE		
FACILITY	NUMBER	CAPACITY (persons)	SPACE (ha.)	NUMBER	CAPACITY (persons)	SPACE (ha.)
CABINS	54	324	1,5	150	900	5,0
CAMPING	+1600	+20 000	54,0	2500	+40 000	80,0
CARAVANS	no official sites	50	-	150	900	6,0
TOTALS		+20 000	55,5		+40 000	91,0

Additional overnight facilities such as a hotel or motel are not extensive and will be discussed when future uses for Strandfontein are indentified more specifically.

b) DAY USE FACILITIES

The number of peak day visitors to Strandfontein could vary between 100 000 and 150 000 if the above reasoning is applied.

The extent to which the residents of Mitchells Plain will make use of Strandfontein is a critical factor in assessing future demand.

Of all the day facilities parking has the most critical spatial requirements. The proposed standard for parking is

can it take this amount without destroying its attraction

333 parking spaces per hectare. Parking is a problem because of its space extensive nature and because it has very specific locational requirements such as proximity to major facilities. Parking is also not fully compatible with the environment and there is some level of parking provision beyond which the environment loses its amenity value.

An attempt was, therefore made to estimate the amount of parking that will be required for 120 000 day visitors to the coastal area. The assumptions and the methodology are listed in appendix 7. In terms of this calculation approximately 50 ha. will be to required for formal landscaped parking areas.

It is also hypothesized that future use of public transport for day visits to the beach is unlikely to increase to any great extent and that therefore the demand for parking space may be even higher than estimated.

*Why?
It should
be more
essential*

8.5.2. CONCLUSIONS

The predictions of future demand were based on a number of assumptions. This emphasises the difficulty in formulating a long-term planning strategy for the Strandfontein coast line. In view of the difficulties involved in long term planning for recreation, a short term, flexible programme appears to be a better policy.

*But at what
point do real
problems appear*

However, the above attempt to project future pressure on the coastline revealed some valuable facts.

- a) Proportionately fewer users of the coastal area stay overnight and the locational requirements for holiday cabins, caravans and camping are such that they can be accomodated at Strandfontein for the next 20 years.
- b) Most of the users are day visitors and they require facilities, particularly parking in close proximity to the beach.

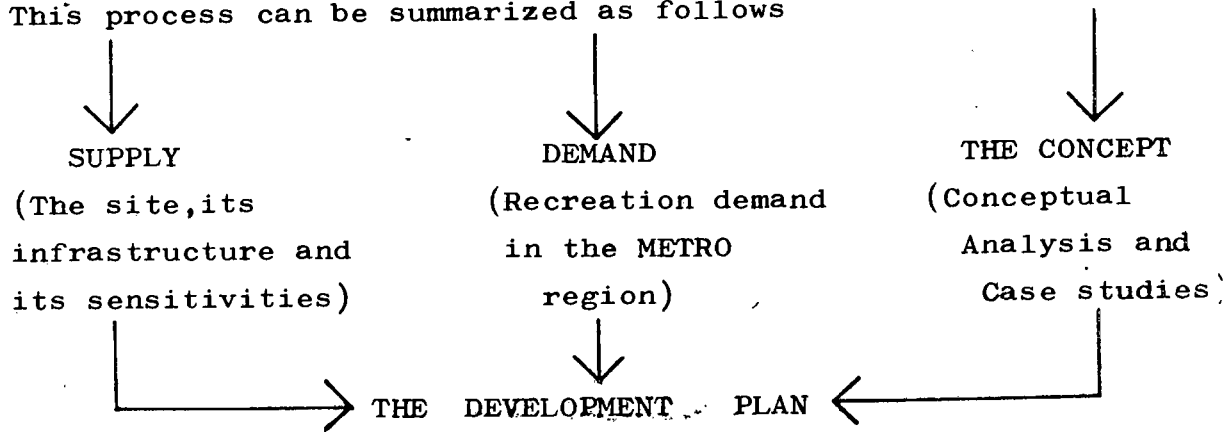
- c) The provision of adequate parking facilities will be a critical factor in determining the recreation capacity of the area.
- d) The area will at some stage reach (environmental) capacity. If development use of the area is controlled and the impact of the motor vehicle is restricted it will take longer for the area to reach environmental capacity.

In the following section the different components will be tied together in order to formulate the development plan for Strandfontein.

9.0 THE DEVELOPMENT PLAN

During the analytical process a number of guidelines for the development of Strandfontein emerged. These guidelines or principles are derived from the conceptual analysis, the analysis of the site and its sensitivities as well as the study of recreation demand in the metropolitan region.

This process can be summarized as follows



9.1 PLANNING PRINCIPLES

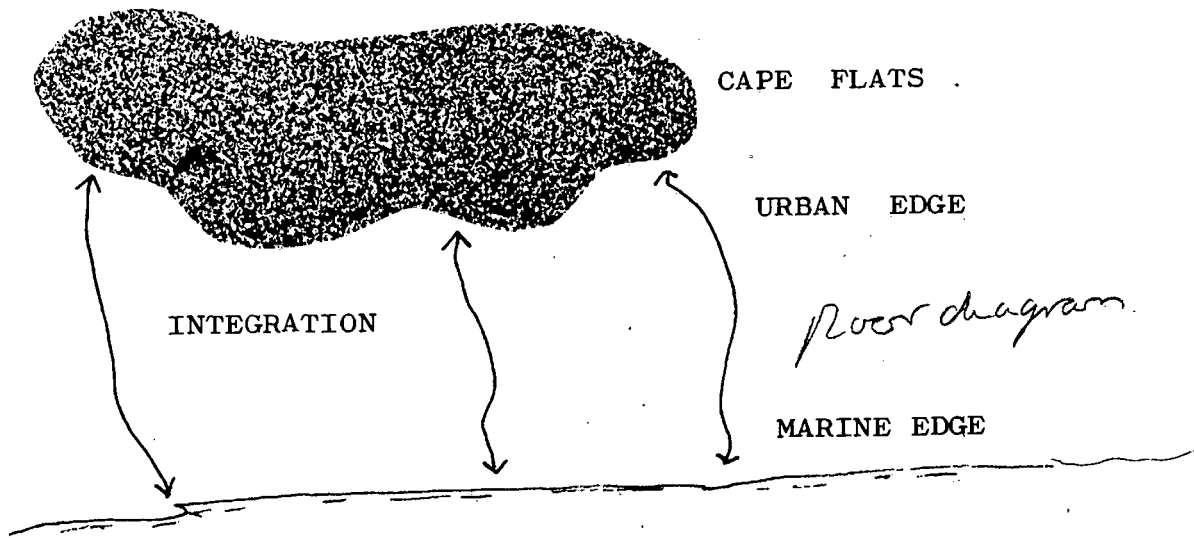
The principles guiding the formulation of the development plan are outlined below. Most of the planning principles have very clear structural implications and whenever possible these will be diagrammatised.

The development plan for Strandfontein operates at three levels:

- . The metropolitan scale
- . The local or submetropolitan scale
- . The scale of the site itself

9.1.1 PRINCIPLES of METRO INTEGRATION

In terms of its location Strandfontein is the natural seafront to the whole Cape Flats. The movement system for the resort should therefore be well integrated with the metropolitan movement system. Final proposals for integration into the metropolitan movement system will be made at a later stage.



The recreation facilities proposed for Strandfontein derived from Table 2. Strandfontein therefore satisfies a large percentage of the metropolitan demand for recreation.

Because of its metropolitan function Strandfontein cannot be developed in isolation. In this study it has been assumed that the problem of recreation is being solved at the metropolitan scale. Strandfontein is one input into the solution of this problem.

Weekly done

9.1.2 PRINCIPLES of SUBMETROPOLITAN INTEGRATION

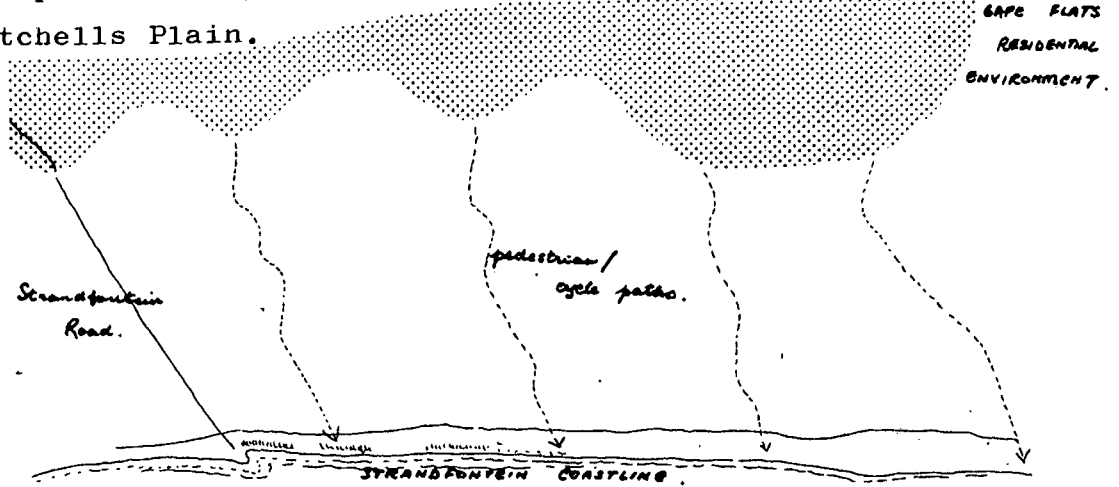
The Strandfontein site has two edges - a marine edge and Mitchells Plain - an urban edge. The integration into the marine edge condition will be dealt with when site principles are considered. Proper integration between Strandfontein and Mitchells Plain is crucial to the success of the development plan.

Edge condition and way it is handled is vital

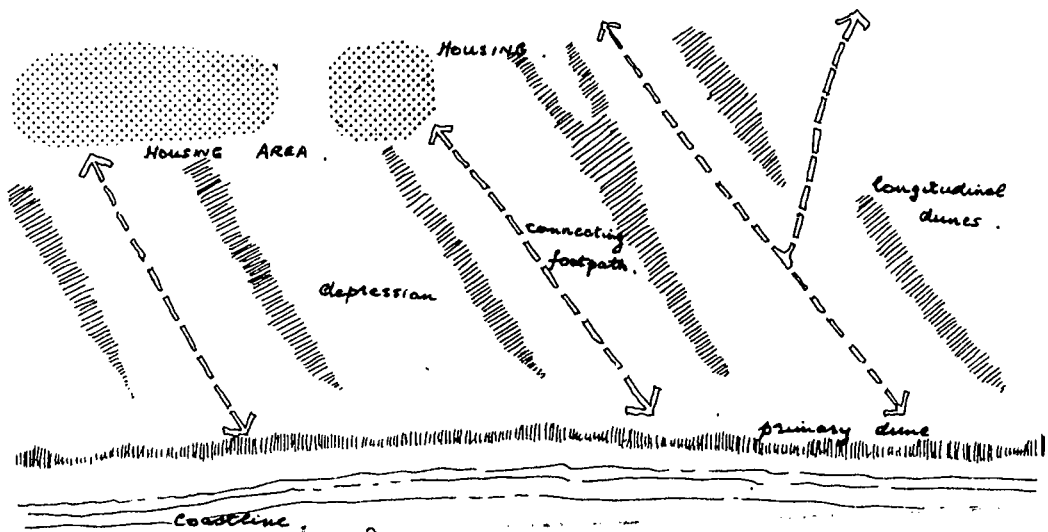
At the edge housing and recreation are not seen as separate entities. (cf. Case studies - Millers Park).

Philosophy to this

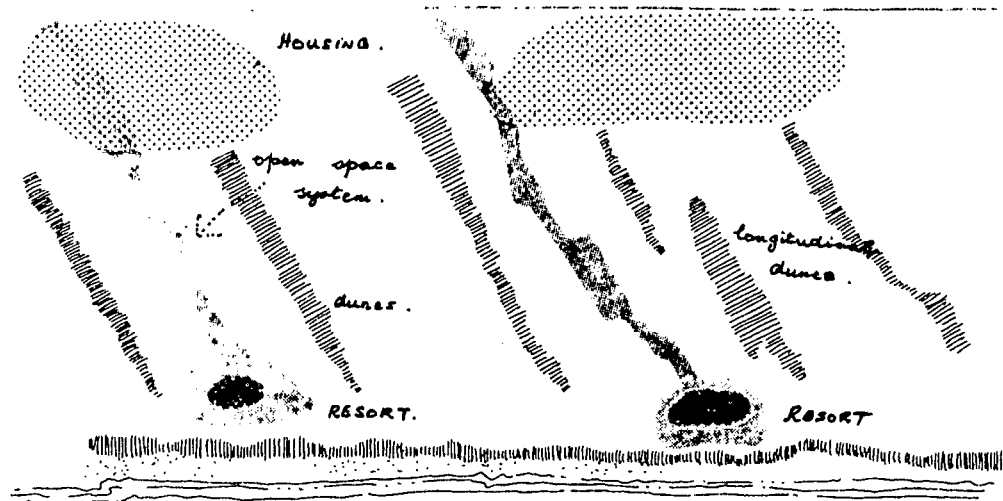
Footpaths and cycle tracks will connect the resort to Mitchells Plain.



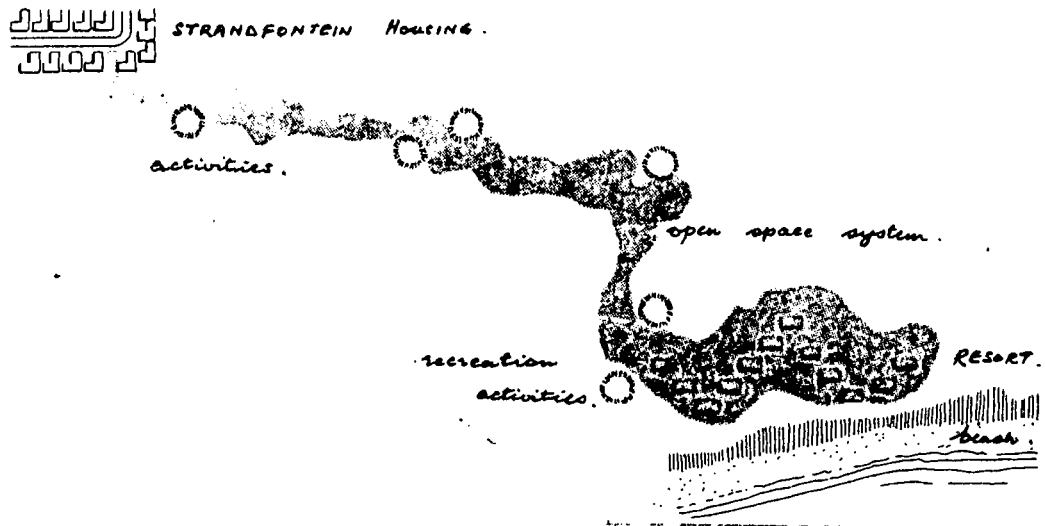
Depressions between the dunes serve as north-south connectors



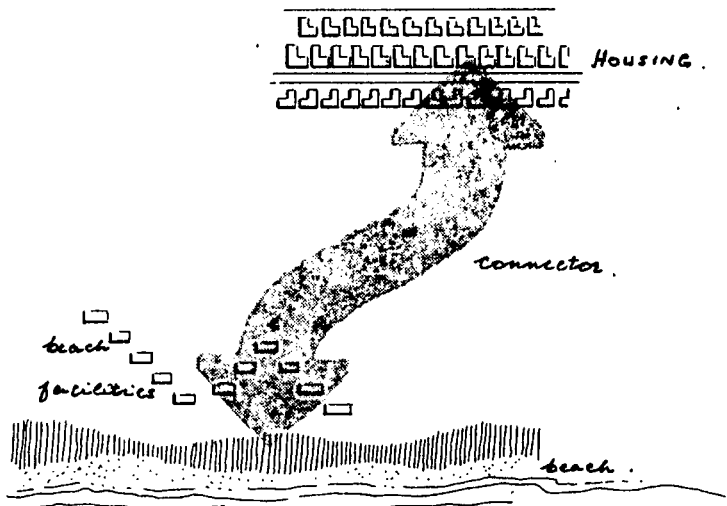
These links can take the form of an open space system.



The open space system is a linked system of activities serving both residential and recreation communities.

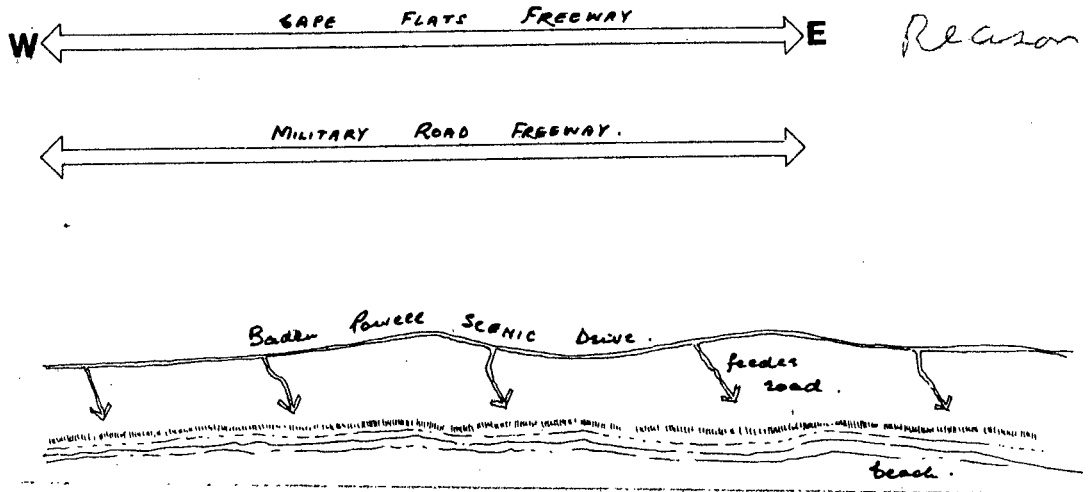


This connection now also makes the beach and its facilities part of the residential environment

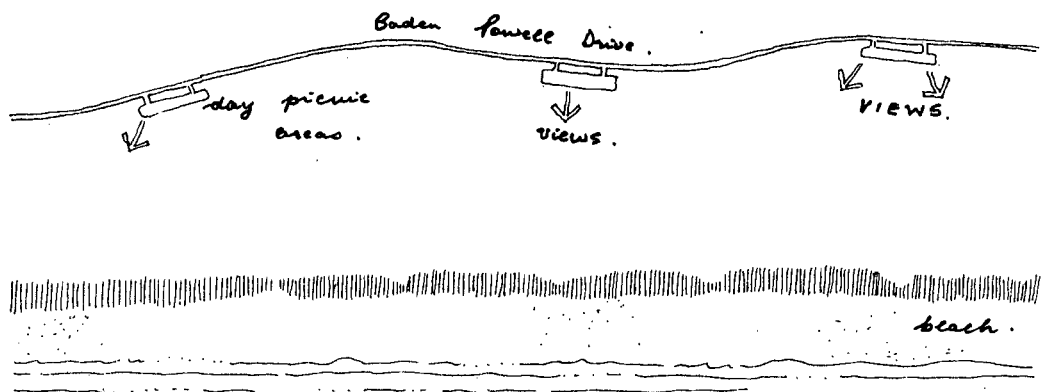


9.1.3 SITE PRINCIPLES

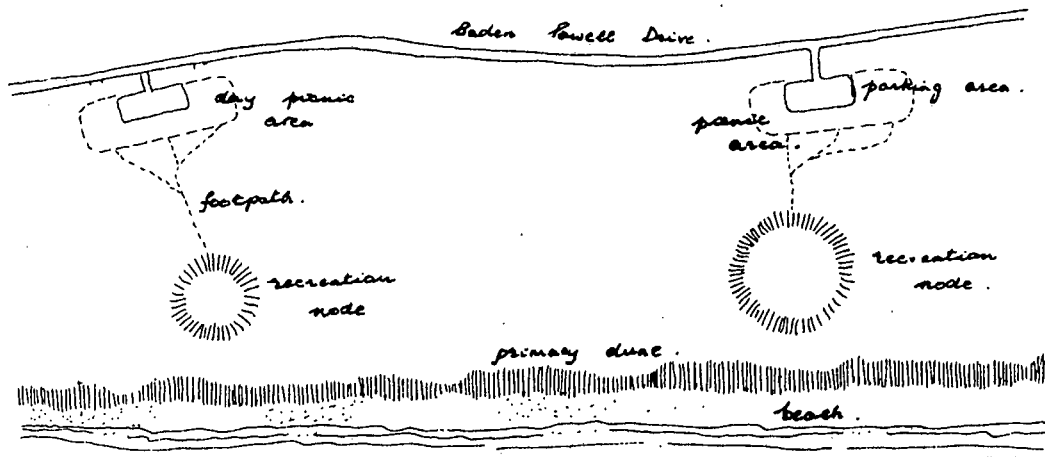
Baden Powell Drive will be downgraded to function as a scenic drive. The Cape Flats Freeway and Military Road Freeway will carry the major share of east west traffic.



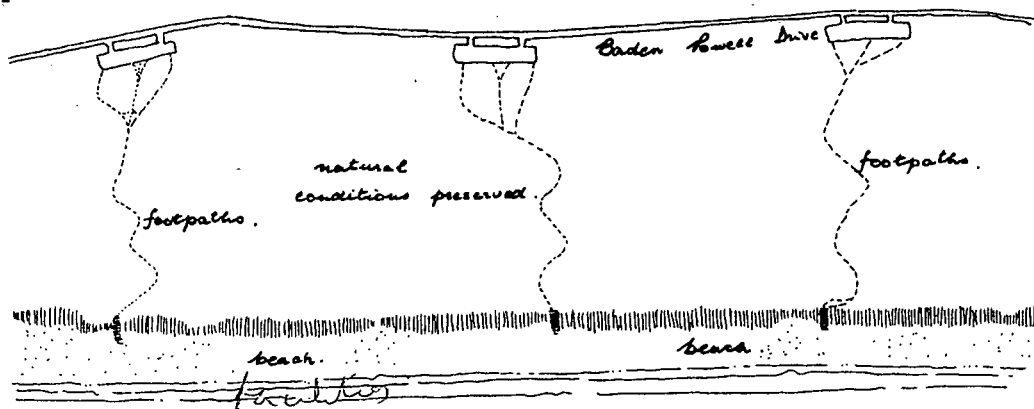
Day picnic areas can now be provided along the scenic route.



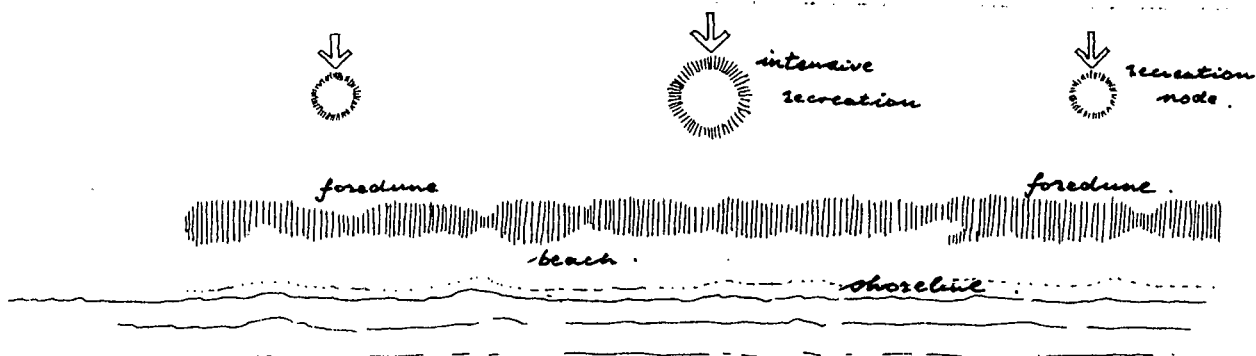
The picnic areas along Baden Powell Drive will be off the road to facilitate traffic flow



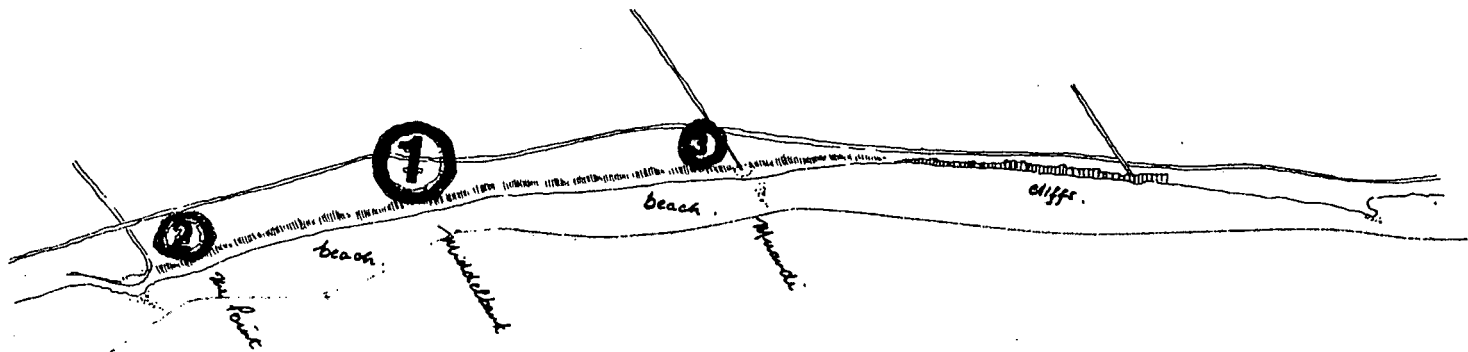
These picnic areas are connected to the beach by pedestrian paths which ensures controlled movement.



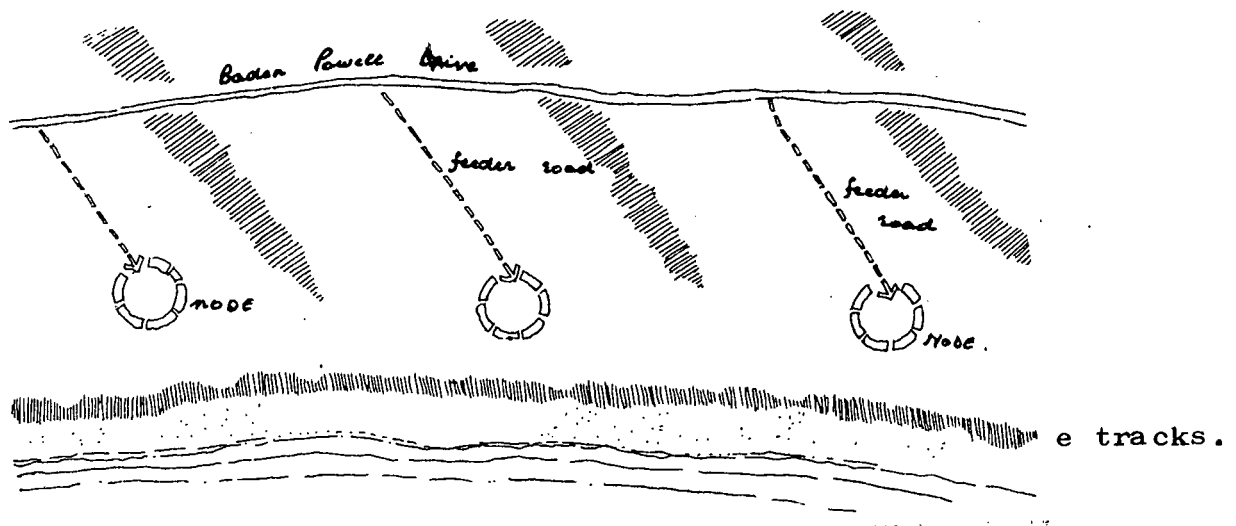
Recreation activities will be confined to specific areas behind the foredune to minimize environmental impact.



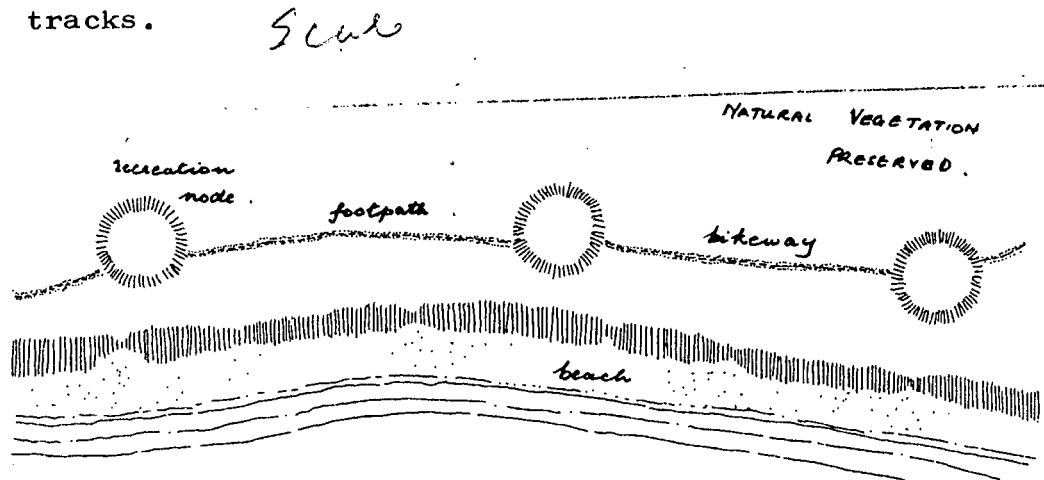
There are different levels of activity at the recreation nodes depending on environmental suitability



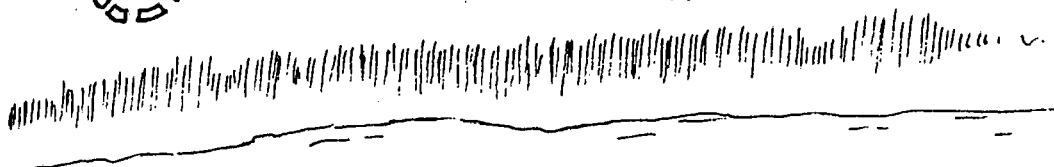
Access to the recreation clusters will be provided by a system of feeder roads from Baden Powell Drive



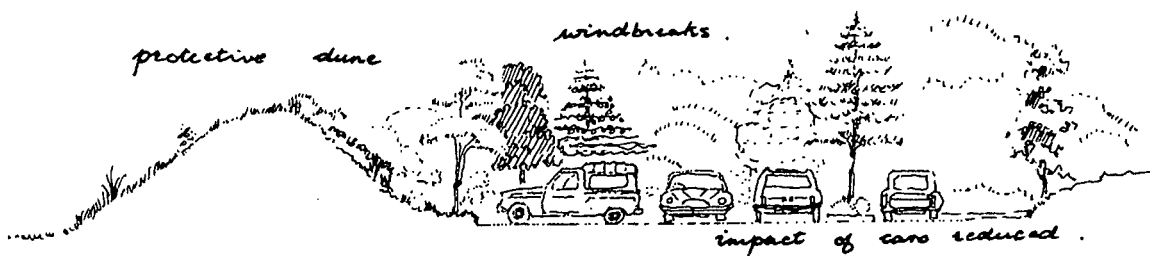
The recreation nodes are connected by trails and cycle tracks.



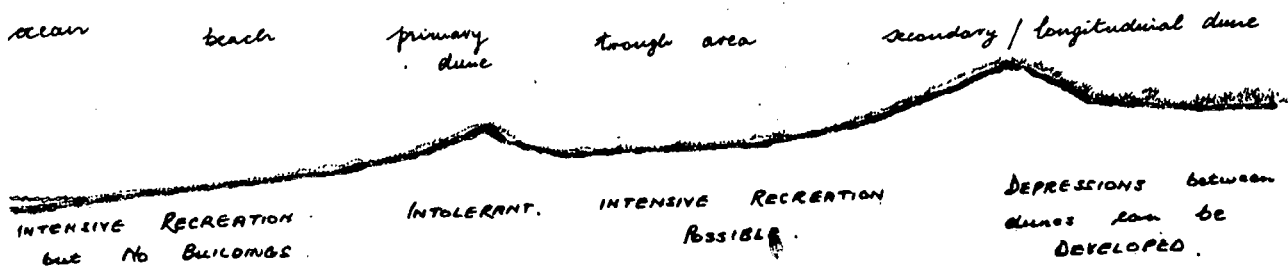
Parking areas at the recreation nodes will be located well away from the primary dune.



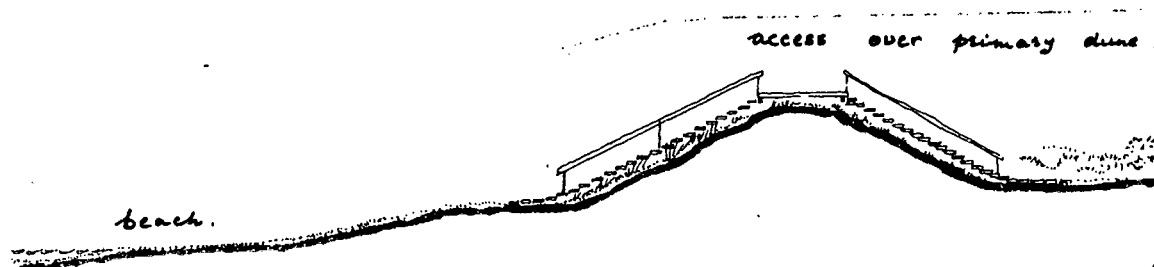
Trees will be used to minimize the visual impact of large parking areas.



In the location of facilities the different tolerance levels of the environment will be respected -

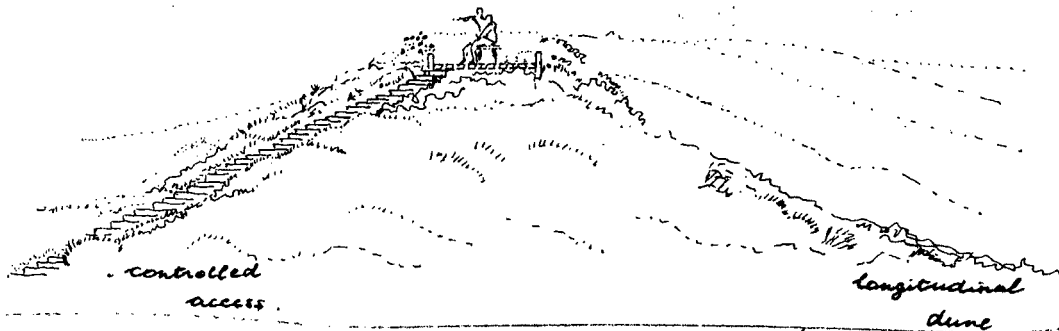


Access to the beach will be provided over and not across the primary dune.



Elevated areas eg. crests of dunes can serve as vantage points.

- . needs careful management
- . needs controlled access
- . not on the primary dune



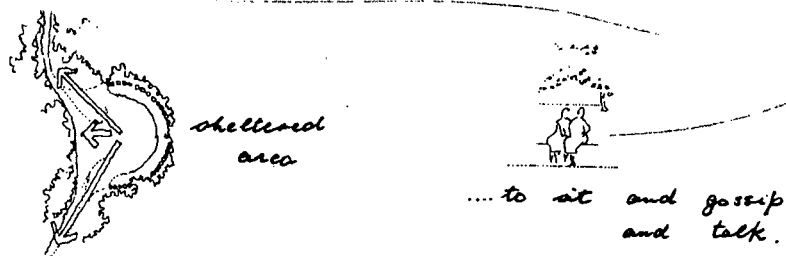
Inland water features can be developed (because of the high water table) to improve the quality of the environment.



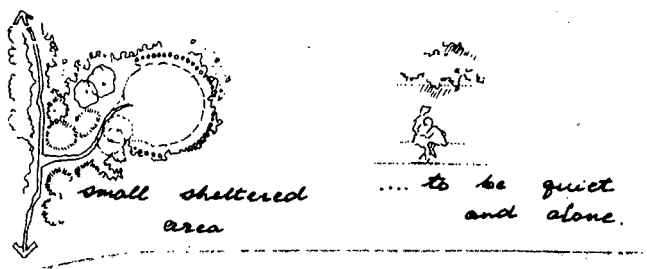
Along the footpaths and bicycle tracks a number of quiet places will be provided giving the user (particularly the older one who appreciate solitude) the opportunity for restful repose.

The user may be rewarded by the provision of a variety of special places along the feeder roads, footpaths or cycle tracks.

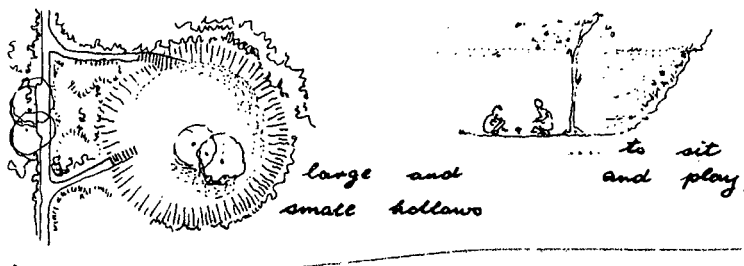
To be able to observe all those passing. Area just off main path



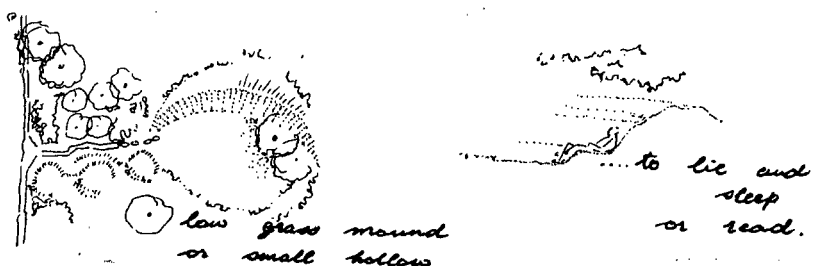
Away from and screened from the main path.



In view of main path but sufficiently far away for non interference



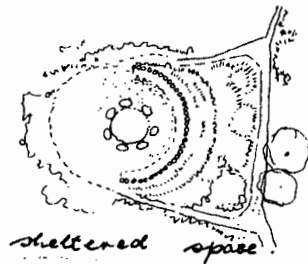
Away from the noise of the main path - in the sun or partially sheltered



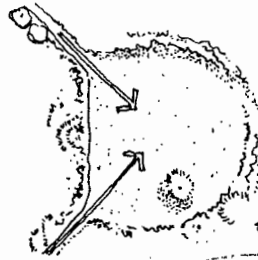
Adjacent to main path- facing away from it- open views and views enclosed by foliage.



Facing away from
main path-
partly enclosed-
good views.

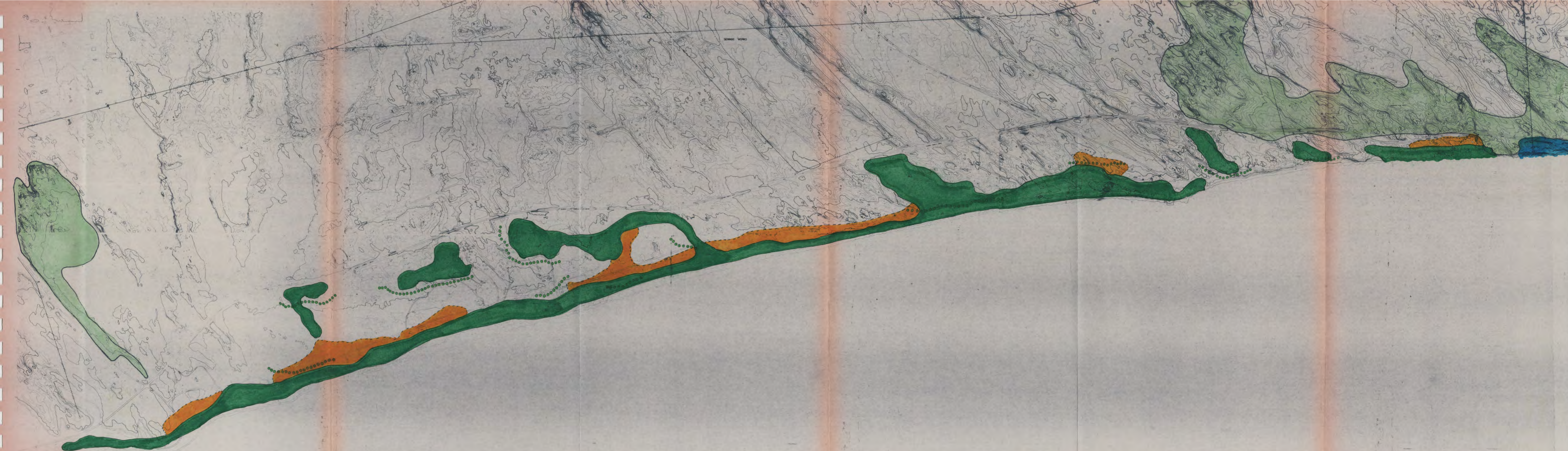


Open to the sun,
clear of the main
path.



Far enough from
the main path not
to be distrubed,
direct access to
main path, small
enclosed areas.





- Key**
- REHABILITATION AREAS
 - URBAN PARK
 - GULL SANCTUARY
 - SPECIAL MANAGEMENT AREAS
 - SHELTER PLANTING

North ↑
Scale 1:10 000
Date July 1978
Development Proposals
-conservation

11

Strandfontein
Coastal
Development



Key

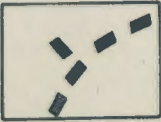
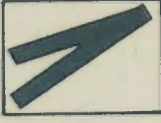
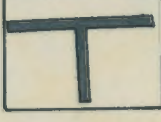
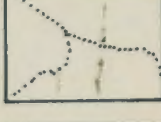
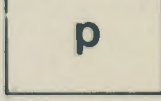
tc	TENT CAMPSITES
hc	HOLIDAY CABINS
lrs	LEASED RECREATION SITE
cp	CARAVAN PARK
h	HOTEL SITE
dpa	DAY PICNIC AREAS
cpg	CHILDREN'S PLAYGROUNDS
ipa	INFORMAL PLAY AREAS
pf	FORMAL PLAYING FIELDS
msc	MAJOR SPORTS CENTRE
ff	PERMANENT FUNFAIR
ac	ACQUATIC CENTRE
a	ADMINISTRATION BUILDINGS
s	RESTAURANT/CAFE
ss	SAFE SWIMMING
	SURFING
	ANGLING
	BOAT LAUNCH

North ↑
 Scale 1:10 000
 Date July 1978
 Development Proposals
 -recreation

12

**Strandfontein
 Coastal
 Development**



- Key**
-  RAILWAY
 -  FREEWAYS
 -  MAJOR ROADS
 -  WALKWAYS and BIKEWAYS
 -  MAJOR PARKING AREAS

North ↑
 Scale 1:20 000
 Date July 1978
 Development Proposals
 - movement

13

Strandfontein Coastal Development

FINAL DEVELOPMENT PROPOSALS

The final development proposals are shown on map 11 conservation, 13 movement and 12 recreation. Map 14 of a synthesis of all the development proposals.

9.2 CONSERVATION PROPOSALS (read with map 11)

The following categories of conservation are recommended and range from total prohibition of public use to controlled human use with varying degrees of management in between.

9.2.1 SANCTUARY

The gull sanctuary requires absolute restriction of human use.

9.2.2 NATURE RESERVE/ REGIONAL PARK

The area north of Baden Powell Drive at the eastern edge of the site is recommended as a nature reserve. The area has a wide diversity of vegetation species. Indigenous fauna could also be preserved within this area.

The western part of this area is situated adjacent to the rail terminal planned for Mitchells Plain. This area is also characterized by high species diversity, scenic attraction, steep slopes and topographic variety as well as being in close juxtaposition to future residential areas. It has potential for both conservation and passive recreation. An urban park is proposed for this location.

At the western edge of the site along Strandfontein road is an area with similar scenic interest. This area is also suitable for development as an urban park.

9.2.3 REHABILITATION AREAS

These areas are located mainly along the primary dune system and within certain longitudinal valleys which are exposed to

the wind. Stabilization of the disturbed eco-systems in these areas is required with absolute restriction to public access until such time as the areas can withstand controlled use.

9.2.4 SPECIAL MANAGEMENT AREAS.

These areas are highly susceptible to erosion and require continuous and long term management and strictly controlled access. Where these areas lie adjacent to zones of high intensity of recreation use they may have to be fenced off with selected pedestrian routes traversing them at intervals.

9.2.5 INTERSTITIAL RESERVES

Certain areas which are not categorized above and which are not highly suitable for recreation will be retained in their natural state for possible future expansion.

9.3 RECREATION PROPOSALS

Three nodes of recreation activity are proposed.

9.3.1 THE POINT

This area will be developed further because:

- . it has excellent environmental qualities
- . swimming conditions are favourable (it has the best swimming conditions on the site)
- . The Point already has some infrastructure which has involved considerable expenditure and cannot be discarded.
- . there is considerable environmental damage in this area and development of this site would satisfy environmental as well as recreation objectives.

The emphasis at The Point will be on passive recreation activity.

The major development will include:

- a) the phasing out of the road which is badly located on the beach
- b) expansion of the existing camping area across Baden Powell Drive. Ancillary facilities for campers eg. ablution, cafe.
- c) a caravan park adjacent to the overnight camping area.
- d) day picnic sites behind the primary dune including childrens playgrounds and braaivleis pits.
- e) reconstruction and fencing of the primary dune.
- f) an outdoor sports complex which could include informal game courts, floodlit courts, sportsfields and formal game courts (tennis, netball etc.)
- g) a hotel or motel
- h) residential component
- i) an administrative centre.

9.3.2 MIDDELBANK

This area will be developed into the major entertainment node at Strandfontein. Middelbank will have the image of a major metropolitan "fun" centre.

- . there is already a considerable amount of infrastructure.
- . environmental conditions are extremely favourable for intensive development.
- . adjacent overnight facilities and housing can help to ensure the viability of the place.
- . a problem is that swimming is unsafe.

A swimming pool (inland) or a tidal pool is therefore a priority.

The major activities will be:

- a) a major children playground which will tie together the existing isolated playgrounds and provide a "fun" node

- specifically designed for children.
- b) an entertainment centre (including permanent funfair and cinema, restaurant)
 - c) an aquatic centre which includes a swimming pool, diving tank, toddler's pool.
 - d) extension and improvement of the existing tent camping area.
 - e) northward extension of the holiday cabins to link with the leased recreation sites.
 - f) a caravan park. - the holiday accommodation will assist in supporting the entertainment and night - life activities which will locate at Middelbank.
 - g) Service facilities - restaurant, cafe, hire shop (sports equipment, bicycles etc.)
 - h) major sports centre - including indoor sports facility for wide range of formal and informal types of sport.
 - i) reconstruction of the primary dune and rehabilitation of disturbed areas.
 - j) landscaped areas for day picnics.
 - k) residential component
 - l) administrative centre.

9.3.3 MNANDI BEACH

Mnandi Beach is proposed as a third activity node because

- it has considerable topographic and scenic interest and does not require much design input to become an attractive recreation area.
- the existing infrastructure provides a useful platform for further development.
- residential development is already taking place adjacent to the site.
- the Mitchells Plain rail terminal will be less than 1 km from Mnandi. This improves the metropolitan accessibility of Mnandi Beach.

The major development proposed for Mnandi are:

- a) proper integration of the housing and recreation environment. *How?*
- b) extensive areas with facilities for day picnicking and childrens playgrounds and informal play areas.
- c) a tidal pool
- d) service facilities - cafe, ablution etc.
- e) sports facilities
- f) fencing and rehabilitation of disturbed areas, particularly the primary dune.

At all three nodes the facilities have been located well behind the primary dune system. With careful management the primary dune can now be reconstructed. Effective rebuilding of the primary dune will lend greater privacy to the beach area and in this manner enhance the quality of the beach environment

9.3.4 OTHER USES

- a) The residential component has already been mentioned. The co-existence of housing with recreation will avoid seasonality and ensure continuity of use at the resort. The fixed residential population will therefore reinforce the recreation environment. This will be the first housing environment of its kind for Blacks in the metropolitan region.
- b) Baden Powell Drive will function as a scenic route. Along the routes, particularly at the less developed interstitial areas, will be picnic places. Some of these places will offer views across the resort area to the beach as well as pedestrian paths leading to the beach and the resort.
Baden Powell Drive therefore becomes an east-west link and does not separate the resort activities to any great extent.

- c) At the eastern edge of the site a Nature Reserve which will include the gull sanctuary is proposed. Public access to this area will be restricted and carefully controlled.
- d) The area adjacent to the rail terminal is extremely rich in terms of topography and vegetation. An urban park is proposed for this location. The emphasis would be on passive recreation but a number of facilities could be included within the park
- eg. . open air theatre
 - . playgrounds
 - . landscaped day picnic areas.
 - . nature walks
- large inland water feature with facilities for boating.
- A facility similar to Wynberg Park is envisaged.

9.4 MOVEMENT PROPOSALS

9.4.1 METROPOLITAN LINKS

At present access to the coast is via Strandfontein Road, Weltevreden Road and Swartklip Road. When the Mitchells Plain road network is completed there will be three additional major roads terminating at the coast namely the Vanguard Drive Freeway Eisleben Road and Stock Road. These roads will terminate in Baden Powell Drive and parking areas will be located in close proximity to avoid congestion within the resort area.

It is recommended that the Cape Flats Freeway and the Provincial Main Road 53 (see map 13) be built to standards that will accommodate the major share of east-west traffic so that Baden Powell Drive can serve as a local scenic route.

The Mitchells Plain railway terminates less than 1km from Mnandi Beach. This railway will bring large parts of the Cape Flats into close contact with the coast. Beach amenities will be developed at Mnandi in response to the rail terminal.

*Insufficient recognition of
the station*

9.4.2 LOCAL LINKS

The internal movement system is one of north-south roads and walkways linking Mitchells Plain with the resort. Baden Powell Drive is the major east-west link connecting the three recreation nodes. The nodes are also linked by pathways and cycle trails.

9.5 FUNDING OF THE DEVELOPMENT PLAN

At the moment the entire resort area falls within the Cape Town municipal boundary. This means that the Cape Town City Council is solely responsible for development and maintenance at Strandfontein. The branches of the municipality which are directly responsible for management at Strandfontein are:

Bathing Amenities and
Parks and Forests (a division of the Building and
Production Branch).

Nearly all the facilities at Strandfontein and Mmandi Beach have been paid for out of Council revenue funds. The Council should be responsible for the bulk of the costs of the new proposals because:

- it already owns all the land within the resort boundary
- the emphasis is on the provision of facilities for low income persons. There may be very little financial return.
- privately sponsored recreation facilities could become exclusive. The municipality is in a position to provide recreation for all income groups.
- if the project helps to generate a more social environment on the Cape Flats, the expenditure will be worthwhile.
- since all the people will benefit either directly or indirectly, the cost burden should be distributed among the whole community.
- the City is in a position to provide recreation at much lower cost than would otherwise be possible.

But its a neto facility.

*World dependently
Need private
funding.*

- . the local authority can ensure that there is continuity in the provision of facilities. The private sector works on a supply and demand basis.
- . the local authority possesses the expertise to deal with problems such as maintenance, roads and services.

What about the committee

The Development Plan for Strandfontein will now be submitted to the City Engineers Department of the Cape Town City Council. If the plan is approved by the City Engineer it is to be submitted to the Amenities Committee. Copies of the plan will also be submitted to the Cape Metropolitan Planning Board. This submission would be merely for comment since the Board cannot review the plan in terms of a wider metropolitan recreation plan and also since it plays no implementational role. From the Amenities Committee it will be forwarded to the Executive Committee and finally to the full Council. This process normally takes about three months.

If the plan meets with the approval of all these committees the Town Clerk will submit copies of the proposals to the Administrator and place the cost estimates outline above on the DRAFT CAPITAL ESTIMATES for 1979. Because of the severe restrictions on capital; the Building and Production engineer, who is responsible for drafting the cost estimates, may decide to exclude some of the recommendations. This proposal will also be weighed up against other schemes, within the municipal area in terms of priority.

The Administrator normally takes about 2 months to decide on issues of this matter. Capital expenditure authority is then given by the Administrator.

The Council can raise the money for the project from municipal raise or by raising a loan. The loan will be repaid out of Council Revenue.

Because of the heavy financial commitments of the City Council various other PUBLIC organizations will be approached to obtain financial assistance for the project.

- . The Department of Community Development - The D.C.D. has recently made money available for the provision of recreation facilities inside City Council housing schemes.

Since Strandfontein is not physically part of a housing scheme it does not qualify for financial assistance by the D.C.D. ✓ *Subsidized by City Council*

- . The Department of Sport and Recreation - the resort at Strandfontein is a regional recreation amenity. During the summer holiday period people are attracted from various parts of the country. The additional facilities will attract more people. There would, therefore, seem to be a strong argument in favour of funding by a national public agency.

The same motivation could be used in an approach to the Cape Provincial Administration for funding. The City Council did, in fact, approach the Provincial Administration in 1974. A subsidy of R555600 was offered but the City Council found the conditions attached to the subsidy too restrictive and therefore withdrew its application.

The Administrator has the power to subsidise municipally-owned resorts if these resorts have sufficient regional, provincial or national significance. The following conditions must, however, be complied with:

- . the resort must be fenced in
- . the number of staff and their salaries are subject to Provincial approval.
- . fees must be approved by the Provincial Administration
- . there must be a master plan which makes provision for
 - a community centre
 - a swimming pool
 - a community hall
 - picnic areas for day visitors
 - barbecues
 - caravan park with ablution blocks
 - camping area for tents
 - holiday houses containing 6 beds
 - staff housing, maintenance and storage facilities.

It is possible to make representations to the Provincial Administration to waive certain of these conditions.

The Provincial Administration gave grants for R55 000 in 1969 and R40 000 in 1973 towards development at Strandfontein and Mnandi.

All additional activities which were not placed on the cost estimates should be funded by PRIVATE AGENCIES. These include:

- . commercial institutions
- . industry
- . voluntary organizations such as churches, the Rotary Club, the YMCA, the Sable Club
- . finance and insurance companies.

There is an increased tendency for sports clubs to be sponsored by business establishments. This type of sponsorship will be sought to fund facilities such as

- the aquatic centre
- tidal pools
- boat launching ramp
- holiday cabins
- indoor sports hall

Most of the facilities, such as the hotel, cinema and restaurant are expected to be built by private developers. The Coloured Development Corporation can also be approached if sufficient private funds are not available.

Since the Development Plan has such a strong CONSERVATION bias a number of conservation agencies could be approached for their expertise and, perhaps, financial assistance. These include

- . The Botanical Society of South Africa
- . The Society for the Protection of the Environment
- . The Wild Life Protection and Conservation Society.
- . The South African National Foundation for the Conservation of Coastal Birds.

These agencies could help to fund projects such as landscaping, fencing, stabilization, fencing of the gull sanctuary, provision of footpaths in sensitive areas such as the primary dune.

Agencies such as :

- . The Western Province Underwater Union
- . The National Sea Rescue Institute of South Africa
- . The False Bay Conservation Society

could help to fund projects like the tidal pools, the boat launching ramp, an underwater coastal reserve, research into the feasibility of a small craft harbour and general research related to marine conditions along the Strandfontein coastline.

9.6 PHASING

The development plan for Strandfontein will be implemented in three stages.

During the first stage the major emphasis will be at The Point. This node will be developed first because

- . environmental conditions are favourable and attractive development will give a psychological "push" to the scheme.
- . there is considerable environmental damage in this area. This should be remedied as a matter of priority.
- . there are already 3000 people living immediately north of The Point.

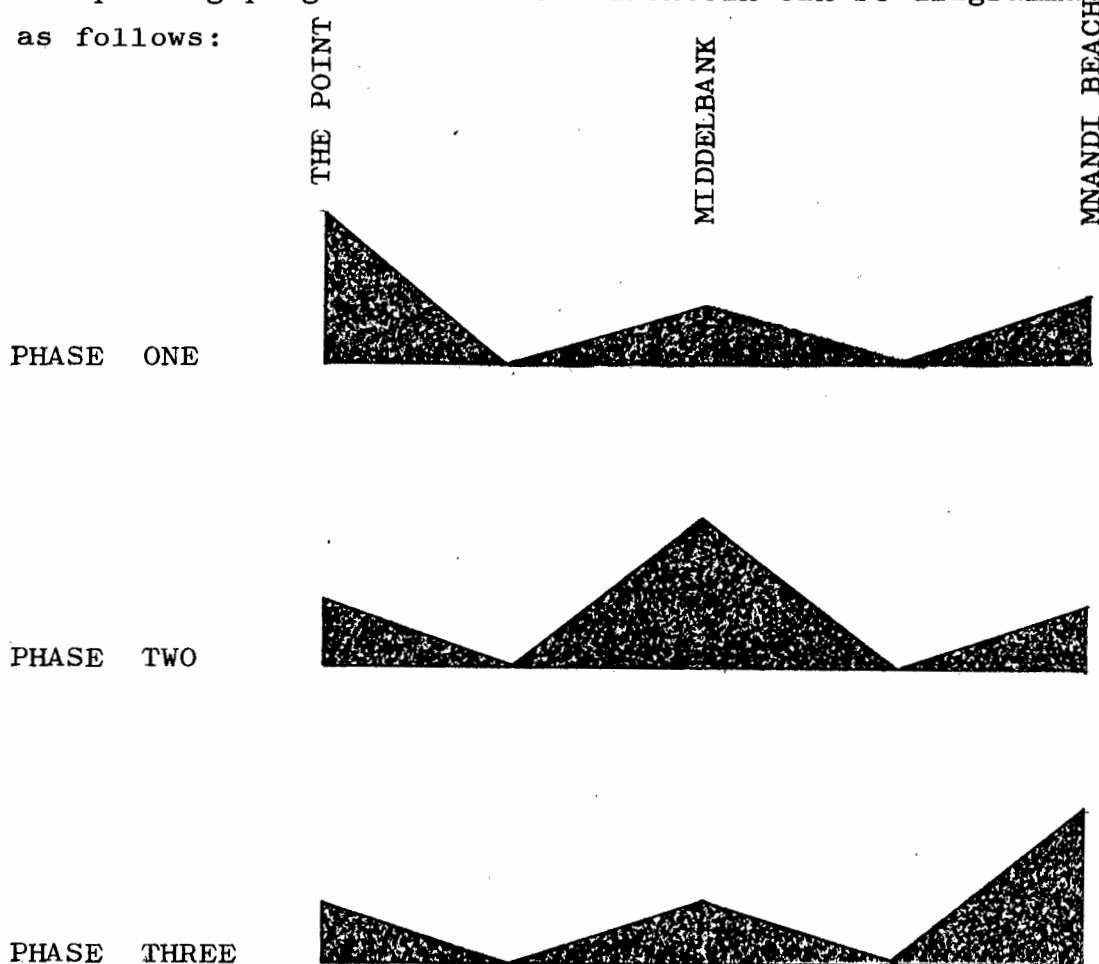
Development at the other two nodes will be less intensive during the first phase.

The second phase is the development of Middelbank. By this time there should be sufficient confidence by the public sector to ensure that large scale investment can be secured. Development at Middelbank will be financed primarily by public funds. The

population of the adjacent Strandfontein Housing Area should be close to its planned capacity of 28 000.

The third phase is intensive development at Mnandi Beach. During phases one and two the major emphasis at Mnandi was on landscaping and environmental rehabilitation. The major recreation facilities will be made available during the third development phase.

The phasing programme for Strandfontein can be diagrammatised as follows:



APPENDIX 1

THE BEAUFORT SCALE of WIND

Beaufort number	Descriptive term	Velocity equivalent at a standard height of 10m above open flat ground		SPECIFICATIONS	
		Mean velocity knots	m/s	LAND	COAST
0	Calm	1	0,0-0,2	Calm; smoke rises vertically	Calm
1	Light air	1-3	0,3-1,5	Direction of wind shown by smoke drift but not by windvanes.	Fishing smack just has steerage way
2	Light breeze	4-6	1,6-3,3	Wind felt on face leaves rustle; ordinary vanes moved by wind	Wind fills the sails of smacks which then travel at about 1-2 knots
3	Gentle breeze	7-10	3,4-5,4	Leaves and small twigs in constant motion; wind extends light flag	Smacks begin to careen and travel about 3-4 knots
4	Moderate breeze	11-16	5,5-7,9	Raises dust and loose paper; small branches are moved	Good working breeze, smacks carry all canvas with good list
5	Fresh breeze	17-21	8,0-10,7	Small trees in leaf begin to sway; crested wavelets form on inland waters	Smacks shorten sail
6	Strong breeze	22-27	10,8-13,8	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty	Smacks have double reel in mainsail; care required when fishing

Beaufort number	Descriptive term	Velocity equivalent at a standard height of 10m above open flat ground		SPECIFICATIONS	
		Mean velocity knots	m/s	LAND	COAST
7	Near gale	28,33	13,9-17,1	Whole trees in motion;inconvenience felt when walking against wind	Smacks remain in harbour and those at sea lie to
8	Gale	34-40	17,2-20,7	Breaks twigs off trees;generally impedes progress	All smacks make for harbour,if near
9	Strong gale	41-47	20,8-24,4	Slight structural damage occurs (chimney pots and slates removed)	-
10	Storm	48-55	24,5-28,4	Seldom experienced inland;trees uprooted; considerable structural damage occurs	-
11	Violent storm	56,63	28,5-32,6	Very rarelt;experienced accompanied by wide-spread damage	-
12	Hurricane	64-71	32,6	-	-

VEGETATION CHECKLIST

Coastal Soils:

Chenolea diffusa	Tetragonia decumbene
Plantago carnosia	Helichrysum crassifolium
Arctotheca nivea	Hebenstreitia cordats
Cnidium suffruticosum	Senecio elegans
Sporobolud virginicus	Agropyron distichum
Passerina ericoides	Metalasia muricata
Chrysanthemoides monilifera	Passerena palacea
Psoralea	Carpobrotus
Pelargonium capitatum	Anthericum

Subsoils:

Senecio elegans	Zalusianskya villosa
Silene clandestina	Dischisma ciliata
Ehrarta sp.	Manulea tormentosa
Crassula glomerata	Nemesia vericolor
Hemimeris sabulosa	Matricaria suffruticosa
Capnophyllum africanum	Senecio Burchelli
Ifloga reflexa	

Dunes and Slopes: i) Exposed to the S.S.E. wind.

Metalasia muricata	Passerina palacea
Helichrysum maritimum	Psoralea fruticans
Restio eliocharis	Anthosperum procumbens
Zygophyllum flexuosum	Phylica sp.
Senecio arenaciflorus	Pentaschistis spp.
Ehrarta spp.	Ficinia dumensis
Helichrysum retortum (often on dune crests)	Mundia spinosa
Dianthus albens	Olea exasperata
Rhus glauca.	

ii) Moderately sheltered slopes, coastal areas:

Pterocelastrus tricuspidatus	Helichrysum maritimum
Mystroxyton maritimum	Rhus glauca

iii) Sheltered and very sheltered slopes:

Euclea racemosa	Salvia aurea
Rhus glauca	Rhus lucida
Rhus crenata (most sheltered place only)	

Colpoon compressum	Mystroxyton maritimum
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Flats and Valleys:

Adenocline violifolia	Adenocline ovalifolia
Gineraria geifolia	Senecio elegans
Geranium purpurium	an unidentified grass
A few Rhus	Euclea and Acacia seedlings
Rhabdomys pumillio	Ehrharta villosa
Ehrarta calycina	geniculata
Pentaschistis angulate	Restio eliocharis
Tetraria	Tetragonis fruticosa
Rhus mucronata	Aspalathus hispida
Zygophyllum flexuosum	Ifloga reflexa

Limestone areas - outcrops on flats and dunes:

i) Ericoid vegetation:

Erica coarctata	Disprage sp.
Selago Dregii	Aspalathus divaricatus
Muraltia sp.	Struthiola Salteri
Roella sp.	Helichrysum ericaefolium and member of the Rutaceae.

Other non-ericoid plants associated with Limestone are

Indiogofera brachystachya	Hermannia trifoliolate
Aristea africana	Psoralea decumbens
Othonna quinquentata	Myrica quercifolia

ii) sand overlying limestone:

Cliffortia falcata	Diosma hirsuta
Pentaschistis sp	Stipagrostis Zeyheri
Chondropetalum microcarpum	Leptocarpus fruticosus

iii) perennially damp low lying limestone outcrops:

Myrica quercifolia	Lightfootia tenella
Othonna quinquidentata	Selago Dregii
Cymbopogon marginatus	Senecio halimifolia
Zygophyllum fulvum	Schoenus nigricans
Monopsis lutea	Lobelia setacea and Danthonia cincta

Perennially damp soils, bog or marshland: There is only one true
example of this habitat This is in area "N"
bordering Strandfontein road.

Plant species of damp areas form a distinct community.

Senecio halimifolia	Pelaegonium grossularioides
Scirpus nodosus	Juncus Kraussianus
Zantedescia aethiopica (arum lily)	Conyza pinnatifids
Sonchus asper	Helichrysum orbiculare and Falkia repens.

APPENDIX 3.

PROPOSED TYPES OF TREES TO BE PLANTED IN THE STRANDFONTEIN AREAS.

NAME OF TREES.	REMARKS
EUCALYPTUS GOMPHOCEPHELA	Gumtree
EUCALYPTUS LEHMANNII	Bushy gum and is 20' high. Drought resistance and used as wind break under coastal conditions.
AGONIS FLEXUOSA	Weeping willow type and very tough
ARAUCARIA EXCELSA	Norfolk Island Pine.
CASUARINA EQUISETIFOLTA	(Coastal beefwood) 25 - 30' high. Can withstand considerable exposure under coastal condition.
CUPRESSUS MACROCARPA	Monterey cypress and 50' high Fast growing and useful as a windbreak.
DODONAEA VISCOSA	Height up to 15'. Also known as the purple hopbush. A fast growing evergreen tree with attractive long narrow foliage and used as windbreaks in exposed positions.
METROSIDEROS TOMENTOSA	N.Z. xmas tree. 25' high and useful as a windbreak.
MYOPORUM INSULARE	(Manitoka) 12' shrub. Fast growing withstands coastal wind and drought.
MYOPORUM LACTRUM	12' high with red purple berries
PITTOSPORUM CRASSIFOLIUM	Thrives in a sandy soil and under coastal conditions and is evergreen.
SIDEROXYLON INERME	Milkwood.
TAMRIX HISPIDA	Hairy tamarisk 5' shrub. Grows sandy soil conditions.
PINUS HALEPENSIS	(Jerusalem pine) 40' high suitable for cultivation in limestone areas.
PHOENIX CANARIENSIS	(Palm tree) from (Canary Island) needs deep sandy soil and is 20' high.

BIRDS LIST

Roberts No.	Coastal Cliffs and Beach	
47	White Breasted Comorant	<i>Phalacrocorax carbo</i>
48	Cape Comorant	<i>Phalacrocorax neglectus</i>
123	Rock Kestrel	<i>Falco tinnunculus</i>
287	Black Backed Gull	<i>Larus dominicanus</i>
289	Hartlaub's Gull	<i>Larus hartlaubii</i>
311	Rock Pigeon	<i>Columba guinea</i>
380	Black Swift	<i>Apus barbartus</i>
524	Raven	<i>Corvultur albicollis</i>
686	Cape Wagtail	<i>Motacilla capensis</i>
733	European Starling	<i>Sturnus vulgaris</i>
745	Redwing Starling	<i>Onychognathus morio</i>

COASTAL MACCHIA

123	Rock Kestrel	<i>Falco tinnunculus</i>
130	Black Shouldered Kite	<i>Elanus caeruleus</i>
154	Steppe Buzzard	<i>Buteo buteo</i>
167	Marsh Harrier	<i>Circus ranivorus</i>
181	Cape Francolin	<i>Francolinus capensis</i>
275	Cape Dikkop	<i>Burhinus capensis</i>
311	Rock Pigeon	<i>Columba guinea</i>
316	Cape Trutle Dove	<i>Streptopelia capicola</i>
380	Black Swift	<i>Apus barbartus</i>
386	Alphine Swift	<i>Apus melba</i>
390	Speckled Mousebird	<i>Colius striatus</i>
493	European swallow	<i>Hirundo rustica</i>
524	Raven	<i>Corvultur albicollis</i>
543	Cape Bul-Bul	<i>Pycnonotus capensis</i>
576	Stone Chat	<i>Saxicola torquata</i>
581	Cape Robin	<i>Cossypha caffra</i>
583	Karoo Robin	<i>Ergthropygia corpyphau</i>

618	Grass Bird	<i>Sphenoeacus afer</i>
622	Bar-throated Apalis	<i>Apalis thoracica</i>
638	Grey-backed Cisticola	<i>Cisticola subruficapill</i>
651	Karoo Prinia	<i>Prinia maculosa</i>
703	Cape longalaw	<i>Macronyx capensis</i>
707	Fiscal Shrike	<i>Lanuis collaris</i>
722	Bokmakierie	<i>Telophorus xeylonus</i>
733	European Starling	<i>Sturnus vulgaris</i>
745	Redwing Starling	<i>Onychognathus porio</i>
746	Pied Starling	<i>Spreo bicolor</i>
760	Lesser Double Collared Sunbird	<i>Cinnyris shalybeus</i>
775	Cape White-eye	<i>Zosterops pallidus</i>
786	Cape Sparrow	<i>Passer melanurus</i>
799	Cape Weaver	<i>Ploceus capensis</i>
808	Red Bishop	<i>Euplectes orix</i>
857	Cape Canary	<i>Serinus consollis</i>
865	White throated Seed eater	<i>Crithagra albigularis</i>
866	Yellow Canary	<i>Crithagra flaviventris</i>
873	Cape Bunting	<i>Fringillaria capensis</i>

The numbers quoted are from Roberts "Birds of South Africa"
second edition 1965.

MAMMAL LIST

RODENTIA

Bathyergidae

Bathyergus suillus	Cape dune Mole-rat
Cryptomys hottentotus	Common Mole-rat
Georchus capensis	Cape Mole-rat, Blesmol

GERBILLINAE

Tatera afra

Gerbillunus paeba	S.A. Pygmy gerbil
Gerbillurus sp.aff. paeba	Known only from D.F. Malan airport, possibly a new species

LAGOMORPHA

Leporidae

Lepus capensis	Cape Hare
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LIPOTYPHLA

Chrysochloridae

Amblysomus hottentotus	Hottentot Golden Mole
Chlorotalpa duthiae	Dutheis Golden Mole
Chrysochloris asiatica	Cape Golden Mole.
Eremitalpa granti granti	Grant's Desert Golden Mole

CARNIVORA

Viverridae

Herpestes pulverulentus	Cape Grey Mongoose
Genetta tigrina	Large spotted Genet
Genetta rubignosa	Rusty spotted Genet

ARTIDACTYLA

Raphicerus campestris	Steenbuck
Raphicerus melanotis	Cape Grysbok

SOURCE: Smithsonian Institute Preliminary Identification
Manual for African Mammals. No's 20,21,23,16,17,18,19

APPENDIX 6

SPACE STANDARDS FOR RECREATIONAL FACILITIES

FACILITY	DENSITY STANDARD	SOURCE
Caravans	30 stands per usable Ha. (Allows for ablution blocks, road spaces etc.)	S A B S : Code of Practice for Caravan Parks (092.1971).
	33 Caravan sites per Ha. of land which is suitable for this purpose, including provision for open space.	Dept. of Health Regulations regarding camping grounds and caravan parks. Government Gazette, 1973 -04-05.
	25 sites per Ha.	Silverstroomstrand
	16 sites per ha. 20 sites per ha.	Soetwater Sonesta
Camping	83 persons per ha. (a family unit of 4 persons.) + 21 sites per ha.	Department of Health Regulations regarding camping grounds and caravan park. Government Gazette, 1973-04-05.
	170 persons per ha. at 6 per tent site. + 28 sites per ha.	Silverstroomstrand
	200 persons per ha. at 6 per tent site. 33 sites per Ha.	Soetwater
	30 sites per ha.	Strandfontein
Cabins	15 cabins per ha.	Silverstroomstrand
	36 cabins per ha.	Strandfontein
	15 cabins per ha.	Sonesta
Parking	33m ² per day	
	333 spaces per ha.	

 ESTIMATES FOR PARKING SPACE IN STRANDFONTEIN

Because the road system can only deliver a limited number of vehicles to the recreation areas during a demand period, the combined capacity of the parking area must be related to the peak flow patterns and road capacity (as well as to limits set by the environment)

It is expected that during the holiday season, heavy peak arrival flows will occur between about 09h00 and 13h00, with peak departures building up from about 13h00 and 16h00, during which interval the carparks would be filled to capacity. In the same period, the accumulation of bus arrivals would also be at its highest.

1.0 ALTERNATIVE 1:

Peak day - maximum 100 000 day visitors

1.1 Public Transport

1.1.1 Assuming 10% of day visitors arrive by public transport: 10 000 persons

at 50 persons / bus : 200 bus arrivals
 Over 4 hour arrival period : 50 buses/hour
 Over 3 hour departure period : 66 buses/hour

1.1.2 Assuming 25% of day visitors arrive by public transport: 25 000 persons
 at 50 persons/bus : 500 bus arrivals
 Over 4 hour arrival period : 125 buses/hour
 Over 3 hour departure period : 166 buses/hour.

1.2 Private Transport

1.2.1 Assuming 90% of day visitors arrive by private transport 90 000 persons

Assuming that 75% of private transport users arrive by private car and 25% arrive by van/truck/pick-up:

Total persons arriving by private car:	67 500 persons
" " " " van/truck/pick-up :	22 500 persons

At 4 persons per private car and 10 persons per van/truck/pick-up:

Total private cars :	16 875
Total vans/trucks/pick-ups :	2 250
Total private vehicles :	19 125

Assuming a turnover factor of 1,3 for 20 000 private vehicles/day, the total parking requirements: 15 000 bays.

At 333 parking spaces per Hectare.
Total space requirements : 45 Hectares.

1.2.2

Assuming 75% of day visitors arrive by private transport: 75 000 persons

Assuming that 75% of private transport users arrive by private car and 25% arrive by van/truck pick-up.

Total persons arriving by private car:	56 250 persons
" " " " van/truck/pick-up:	18 750 persons

At 4 persons per private car and 10 persons per van/truck/pick-up

Total van/trucks/pick-ups :	1 875
Total private cars :	14 062
Total private vehicle :	15 937

Assuming a turnover factor of 1,3 for 16 000 vehicles per day, the total parking requirements: 12 250 bays

At 333 parking spaces per hectare.
Total space requirements: 37 hectares.

2.0 ALTERNATIVE 2

Peak Day - Maximum day visitors : 150 000

2.1 PUBLIC TRANSPORT

2.1.1 Assuming 10% of day visitors arrive by public transport 150 000 persons.

At 50 persons/bus : 300 bus arrivals

Over 4 hour arrival period: 75 buses/hour

Over 3 hour departure period: 100 buses/hour

2.1.2 Assuming 25% of day visitors arrive by public transport:

37 500 persons.

At 50 persons/bus : 750 bus arrivals

Over a 4 hour arrival period: 187.5 buses/hour

Over a 3 hour departure period: 250 buses/hour.

2.2 PRIVATE TRANSPORT

2.2.1 Assuming 90% of day visitors arrive by private transport : 135 000 persons.

Assuming that 75% of private transport users arrive by private car and 25% arrive by van/pickup -

Total persons arriving by private car : 101 250

Total persons arriving by van/pick-up/truck : 33 750

As 4 persons per private car and 10 persons per van/truck/pick-up:

Total private cars : 25 312

Total vans/trucks/pick-ups : 3 375

Total private vehicles : 28 687

Assuming a turnover factor of 1,3 for 29 000

private vehicles/day, total parking

requirements: 22 500 bays.

At 333 parking spaces per hectare,
Total space requirements : 67 heactares.

2.2.2 Assuming 75% of day visitors arrive by
private transport : 112 500 persons.

Assuming that 75% of private transport
useres arrive by private car and 25% by
van/truck/pick-up :

Total persons arriving by private car : 84 375 persons.

Total persons arriving by van/truck
pick-up : 28 125 persons.

At 4 persons per orivate car and 10
perons per van/truck/pick-up:

Total private cars : 21 094

Total vans/trucks/pick-ups : 2 813

Total private vehicles : 23 907

Assuming a turnover factor of 1,3 for
private vehicles/day, the total parking
requirements : 18 500 bays.

At 333 parking spaces per hectare,
Total space requirements : 55 hectares.

COST ESTIMATES FOR STRANDFONTEIN

	MATERIALS	UNIT COST	AMOUNT NEEDED	TOTAL COST
1.	FOOTPATHS (width.8metre)	unit paving stabilized paving	R5per m ² ± 16 km	R85 000
2.	FEEDER ROADS (w - 5metres)	gravel concrete macadam	R25 per run.M R20 " " " R35 " " "	R75 000 R60 000 * R105 000
3.	BIKEWAYS (w - 1.8m)	stabilized gravel bitumen emulsion	R1 per m ² ± 14 km R3.30 p.m ²	R25 2000* R83 160
4.	FENCING	brushwood and thorn cuttings 3 strand barbed wire (re-usable)	R3 per run.m ± 2.6 km R4 per run.m	R7 800 * R10 4000
5.	STABILIZATION	straw gravel	25c per m ² 80 per m ²	10 000 m ² R2 500 * R8 000
6.	HOLIDAY CABINS		R5000 p.cabin say 100	R50 000
7.	CARAVAN PARK -	to accommodate 100 caravans		R277 000
8.	CAMP SITES includes roads, ablution facilities, stabilization etc.		R10 4000 per 3½ ha.site. ± 120 000m ²	R350 000
9.	PLANTING trees grassed play areas/ roll on grass		R7-R20 p.tree ± 8000 m ² x 10 ₂ R2 per m ² 2500 m ²	R10 000 R15 000
10.	PLAYGROUNDS - grass and for children play equipm.		7000m ² R10000 3000m ² R7500 3 2	R20 000 R15 00

	MATERIAL	UNIT COST	AMOUNT NEEDED	TOTAL COST
11.	DAY PICNIC SITES.	grass, bins fireplaces parking areas	R2,75 p.m ²	14 sites R10 5000
12.	SPORTSFIELDS	grass	R15 000 per field	R60 000
	2 soccer/ 1 hockey/ rugby			
	2 netball	grass	R2790 per court	R55 80
13.	PARKING AREAS	gravel or reinforced grass	R2.75 per m ² R8.00 per m ²	R220 000* R640 000
14.	REGIONAL PARK		size of park AB in Mitchells Plain	R180 000
15.	INLAND WATER FEATURES		includes cost of dredging, bulldozing, well points.	R160 000
16.	NURSERY			R75 000
	Alternatives: i)	plants can be grown on contract		
	ii)	municipal nursery at Marina da Gama could be used.		
17.	OCCASIONAL BENCHES		R75	say 20 R15 00
18.	BOAT LAUNCHING RAMP	ribbed concrete		R15 000
19.	TIDAL POOLS	boulders and r/c piles	3000 m ² + R $\frac{1}{2}$ m.	3 R1 $\frac{1}{2}$ mill.
20.	LIFESAVERS LOOKOUT TOWERS	wood	R300	6 R18 000
21.	LIGHTING	underground cables	R205 p.m	2000metres R410 000
		post with lantern top	R127	say 200 R25 400
				* lowest cost method
			TOTAL COST	<u>R3.582 280</u>

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