THE POTENTIAL OF INTRA-URBAN DEFENCE LAND

Andrew Louw. Thesis 1968
Department of Urban and Regional Planning
University of Cape Town

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University of Cape Town

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my wife

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YSTERPLAAT AERODROME

Location Scale :1":200,000

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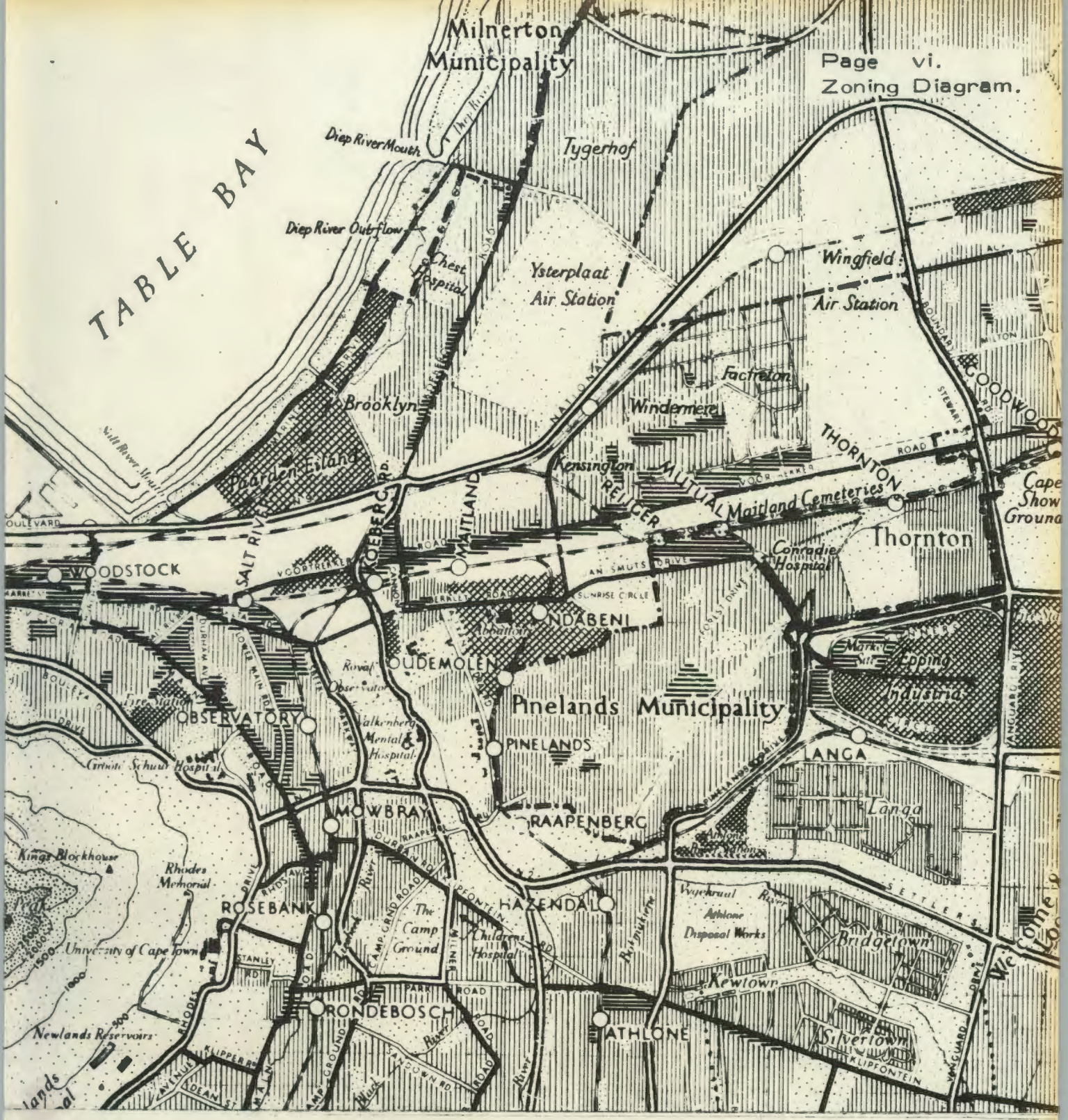


MAP OF CAPE TOWN AND ENVIRONS
SHOWING PROVISIONAL TOWN PLANNING PROPOSALS

KEY

ARTERIAL ROUTES

RESIDENTIAL AREAS

AGRICULTURAL AREAS

OPEN SPACES ETC.

MAIN ROADS

BUSINESS & COMMERCIAL AREAS

INDUSTRIAL AREAS

CAPE TOWN MUNICIPAL BOUNDARY

1 : 50,000

1 ½ 0 1 2 3

Scale of Miles

THE POTENTIAL OF INTRA-URBAN DEFENCE LAND.

Subtitle: An examination of lands in external defence use within a metropolitan area with a view to achieving the optimum alternative uses.

1.0 Introduction.

1.1 Definitions.

For the purposes of this study:

Potential shall be taken to mean "possessing resources which are latent; having possibilities that have not been manifested."

Intra-urban shall mean "that which is within the confines of an urban area; or, that which is not outside an urban development."

Defence Land shall refer to that land which is in the ownership or control of the Department of Defence.

1.2 Stimulus.

Many western nations have developed two complementary defence techniques based upon, firstly, civilian participation for local defence and, secondly, professional forces for external defence. It is postulated that the former is yet another function of urban society and should, in the same way as other urban functions, be catered for in locations of special appositeness to the urban fabric. External defence, however, requires more remote locations.

Recent examples of external warfare, in particular the Israeli - United Arab Republic conflict, highlight the hazardous implications of external defence installations in an urban area. Other factors connected with technological development militate against such locations. Primarily these factors are radio and radar interference, noise, radiation hazards, and the extensive space required by heavily laden aircraft for their safety. In addition external defence installations within a metropolitan area present the civilian defence with additional security obligations which are wasteful of its manpower.

1.3 Intention.

If it is intended that this category of defence installations

be relocated to those areas beyond the urban periphery, the question arises of the value of the vacated land in another use. This thesis seeks to indicate the means by which this potential can be estimated.

1.4 Precedents.

Precedent for the proffering of a spacially-extensive defence area, which has become enveloped by urban development, at relatively short notice to the community exists in most Western cities. Perhaps the most famous example occured with the demolition of the surrounding walls in Vienna and the construction of the Ring-strasse and its numerous gardens and monuments.

1.5 Assumption.

From the urban economist's point of view the above example shows a degree of non-economic use, which probably reflects the interests of the governmental authorities of that period. In contradistinction, this study will not assume that any authority shall have arbitrary right to exclude the land from the operation of the market mechanism in any degree beyond that already circumscribed by local ordinances.

2.0 The Setting and the Future.

2.1 The Setting: Metropolitan Cape Town Today.

The growth of Cape Town as a port city in a hostile hinterland was characterized by successions of defences at its expanding periphery. This type of site for defence installations persisted into the 20th century but the location-determining factors were no longer the dangers from the surrounding countryside but, rather, the convenience to the railway network, the flatness of terrain, the distance from mountains and hills, and low initial land cost.

Metropolitan growth has encompassed this formerly external or peripheral defence land and three extensive areas, in particular, are now within the urban development: Ysterplaat, Wingfield and Youngsfield aerodromes. The latter is, of the three, the least sancrosact, being used by flying clubs and commercial aircraft operations, as well as for training of active citizen forces. For these reasons it is excluded from this consideration.

Ysterplaat and Wingfield aerodromes, however, lie abreast

of the main national route to Johannesburg, equidistant with the inner residential suburbs from the C.B.D.

Three recent developments have drawn these aerodromes within the built-up areas of the metropolis.

Firstly: the rapid growth of the suburbs towards the interior.

Secondly: the petrochemical industrial complex at Rietvlei.

Thirdly: the growth of car ownership and car use, together with an expanding freeway network.

Intentionally, or otherwise, these two areas also serve as buffers between the racial group areas, whereas elsewhere in the metropolis this function is performed by the suburban railway system.

Wingfield has recently been developed in part as a residential estate for parliamentary employees: "Acacia Park". The question arises: Is this the most desirable or most needed use to which the disused aerodrome could have been put?

Ysterplaat Aerodrome will be examined on the assumption that it may be made available for an alternative use. Its proximity to Wingfield may indicate whether the Acacia Park development is a squandering of the potential that Wingfield possesses. (See Map 2; page 4)

2.2 The Future: Metropolitan Cape Town Tomorrow.

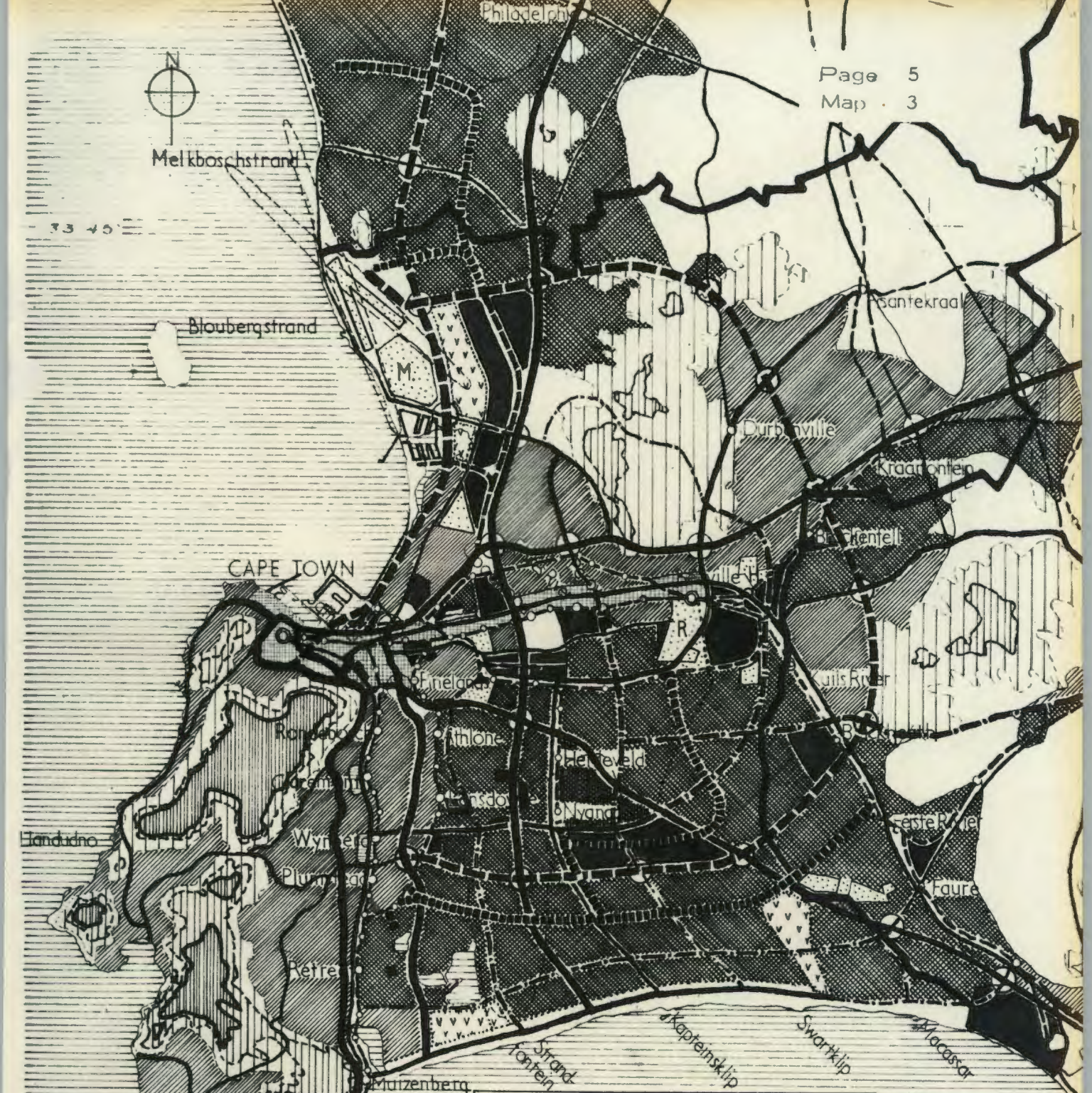
In the course of a study carried out by the students of the M.U.R.P. Course in 1966, the future expansion of Cape Town was seen to be relatively limited in all directions compared to the opportunities northwards.

That study proceeded to project information gathered in 1966 to the year 2000 and this thesis will adopt the two dates as base year and target year respectively. When need and desirability are postulated, it will be against the background of the changes expected during that period.

Reference is made to the plan for the future form of Metropolitan Cape Town (as set out in the author's project 1967/2/1) including the amendments proposed by L. Anthony Barac. (See Map 3; page 5)

The following tables summarize the population and residential land space requirements:-


Table View
Killarney
Page 4.
Map 2.
NORTH
Rietvlei
Montague
Gardens
Ascot
MILNERTON
Sewe
Pannetjies
Tygerhof
Acacia Park
Rugby
Goodwood
Ysterplaat
Aerodrome
Wingfield
Facreton
Windermere
Brooklyn
Paarden Eiland
Kensington
Maitland
Woltemade
Thornton
Ndabeni
Soutrivier
Epping
Observatory
PINELANDS
Langa
Mowbray
YSTERPLAAT AERODROME
Locality Plan Scale 1: 50,000
Rondebosch
Athlone
Silvertown



MAP 3 METROPOLITAN CAPE TOWN A.D. 2000

W. C. B.	Residential Development
	Industrial Development
	Commercial Development
	Sewage Treatment New Sites
	Military & Other Govmt. Develpt.
	New Roads
	New Railway Lines
	Railway Lines & Stations
	Water
	Economic Region Boundaries

TABLE 2.2

Metropolitan Cape Town.

Population Growth 1965 - 2000.

	1965		2000	
	Total	%	Total	%
White	383,000	36	697,000	19
Coloured	587,000	54	2,600,000	73
Other	108,000	10	277,000	8
TOTAL :	1,078,000	100	3,574,000	100

Metropolitan Cape Town.

Space requirements (in acres) for residential land.

	Area developed 1960		Total required 2000		New area required 2000	
	Total	%	Total	%	Total	%
White	42,000	68	51,000	40	11,000	16
Coloured	18,000	29	70,000	55	52,000	78
Other	2,000	3	6,000	5	4,000	6
TOTAL :	62,000	100	127,000	100	67,000	100

2.3 The Future Land Use Pattern of Metropolitan Cape Town.

The effect of these changes on the land use pattern of the future Cape Town metropolis has been described as follows:-

"The total built-up area will more than double by the

end of the century. Of the additional residential land, over three-quarters will be required for Coloured people. Whereas Coloured now inhabit less than one-third of the total stock of residential land and less than one-half of the area Whites do, by the year 2000 Coloureds will occupy over half the total and one-and-a-third times the amount Whites occupy. The White population will require only a small addition to their stock of land, particularly if renewal of inner areas formerly occupied by Coloureds proceeds and the densities in White areas keep on increasing." 1

2.4 The Future Form of Metropolitan Cape Town.

The form of the future metropolis has been described as conforming to the following model:-

"The choice of a model ..... (in which present trends are extended) ..... seems be far the most likely. Cape Town resembles the star prototype rather closely : four arms radiate from the centre along old arterial routes, those to the west and south following along the suburban railway routes as well. Of the four spaces between the arms three are occupied by nature : Table Mountain, the sea and Tygerberg. The fourth, to the south-east, is the area of non-white residence.

Application of the space requirements of the year 2000 to this model reveal the following. White development along the arm to the south can frill out the ribbon as far as Simonstown; the western arm can expand somewhat, as can the eastern both for Whites. The arm to the north, however, is likely to be blocked beyond Milnerton by the need to find land for Coloured. Outside of these four arms the metropolitan pattern consists in the main of two uses : the residential land for Coloureds and natural barriers to growth. Broadly speaking it is a pattern of white arms with a brown and green infilling." 1

2.5 The Future Density of Metropolitan Cape Town.

The relatively compact city foreseen in the year 2000 required that there be a continuing tendency to live at higher density by the White and Coloured sectors of the population.

In the case of the White population this may derive from a demand for more flatted accommodation by an increasing proportion of all households due to such factors as a longer life expectancy. In the case of the Coloured population, however, it derives from the assumption that the greatest proportion of the accommodation will be provided by public authorities.

1. Beinart, J. : Urban Form and the Growth of Cities : 4th Conference : Institution of Municipal Engineers of South Africa, Cape Town, 1968. 8/

This tendency is illustrated in this table:-

	Density 1960	Density 2000	Change 1960 - 2000
	Persons per acre	Persons per acre	1960 x factor
White	8.3	13.7	x 1.65
Coloured	26.4	37.2	x 1.41
Other	47.5	46.1	x 0.97
TOTAL:	14.9	28.1	x 1.87

If this assumption holds good, the population will occupy an area within approximately 45 minutes travelling time by road from the central business district. Should they choose to live at lower densities, and still form part of the metropolitan body, they will have to travel both further and faster to maintain the same 45 minute journey time.

2.6 The Alternative Future Forms of Metropolitan Cape Town.

The presence of established towns beyond the borders of the existing metropolis suggests, however, that should development follow this trend it will result in the development of a form which can be best described as "a metropolis with satellites."

2.7 The Implications of Alternative Future Forms for Metropolitan Cape Town.

From the point of view of this thesis, one of the implications of these two alternative forms concerns the tributary areas which could be served by facilities located on the erstwhile defence land at Ysterplaat, for increases in travel distance and speed imply increases in costs of transportation to be borne by the consumer attracted to such facilities.

2.8 The Limitations of Urban Form Generalizations.

Broad generalizations of urban form are insufficient for the

calculation of potential. Both the kind and quality of development by location must be considered.

3.0 Method of Investigation.

As perspectives from which to examine the data gathered, the following aspects of urban process will be considered:-

3.1 Displacement.

In a developing metropolis, such as Cape Town, increasing rentals and congestion of space in the central business district displace certain activities which seek to relocate themselves elsewhere in the urban fabric. These activities are primarily industries, food retailers, wholesalers and comparison shopping. (See 6.3, 6.9, 6.10 and 6.11)

3.2 Threshold.

Allied to the concept of displacement is that of threshold which arise from absolute increases in population, purchasing power, changes in taste, or fashion. Threshold is also influenced by technology in so far as the tributary population or area-served is concerned. (See 8.2 and 8.3)

3.3 Tributary Area.

The tributary area or trade area is that area within which a facility provides its services or from which it draws its custom. Factors influencing the tributary area are the means whereby goods are ordered and delivered, the form in which goods are marketed, the way in which they are advertised, and the frequency with which consumers purchase the goods. (See 8.0)

3.4 Component Economic Activity.

Displacement of central business district activities, and changes in threshold, are accompanied by changes in the component structure of urban activities. Absolute metropolitan population growth is frequently accompanied by a change in the proportion of employment in the service components. These service components comprise both concentrated and distributed facilities. (See 6.0)

3.5 Communications.

The state of communications bears upon the intensity with

which facilities are used and the amount of activity that can be conducted by the inhabitants.

Recently acquired and interpreted data on the effect of road transportation on urban development and catchment areas can be reinterpreted in the Cape Town Metropolitan context. Data on the distribution of vehicles within the population can be projected for estimates to be made of future mobility. By analogy with American experience the state of mass transit communication with its problems of concentrated peaks can be anticipated. The changing journey-to-work patterns and parking patterns can also be derived from the same sources.

Associated with the communications network of Cape Town the potential consequent upon changing modes of transport by the different sectors of the population can find expression in terms of time-distance to and from the site. (See 7.0)

3.6 Allied Studies.

The value of the following studies to the Cape Town Metropolitan situation will be considered:-

Donald Foley; in connection with his study of population destinations in the central business district;

Homer Hoyt; in connection with his study of the patterns of movement in residential rental neighbourhoods;

Charles Hayes; in connection with his study of land values along the C.B. & Q. rail road. (See 9.0)

3.7 Economic Resources of the Community and Investment Time Period as a Parameter.

The Ysterplaat area might require a very large development, such that it cannot be invested in at one shot without overtaxing the resources of the metropolitan community. This examination of the potential of the study area will, therefore, consider that the development might take place over either a short or long period. (See 10.9)

3.8 Desired End Result as a Parameter.

Ideally planning advice should be a readily available service and not limited to crises situations for the comparatively wealthier communities; one of the desirable end results of planning being to apply small corrections to development in a cybernetic, relatively painless and surgeryless manner.

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3.9 Limitations of Available Data as a Parameter.

Recognising:

(i) the paucity of censal information due to the non-standard nature of the decennial national census in the local context;

(ii) the relative short period before amends are made for this in the 1970 census;

(iii) the relatively embryonic state of data-gathering and storage, and planning theory and practise in the local, regional and national context;

this thesis will seek to formulate a technique for the estimation and presentation of potential within the bounds of available data and concepts of urban process.

4.0 Analysis: The Site. (See Map 4; page 12)

4.1 Nature of Terrain.

The site is some 632.5 acres in extent, characterized by extreme flatness, and is very well-drained due, in part, to the nature of the soil.

4.2 Nature of Soil.

The soil structure is of a compact, loamy nature, overlayed upon a sub-structure of "ouklip".

4.3 Micro-climate.

Due to the absence of shelter from the mountain, the site receives the full effect of the south-easter and north-wester prevailing winds. However, there is no over-shadowing from mountains to shorten the daylight hours enjoyed by the area.

5.0 Analysis: Services.

5.1 Water.

Water supply for the area will derive from a new break-pressure tank on the Plattekloof face of the Tygerberg.

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YSTERPLAAT AERODROME

Site Plan Scale 1:18,000

5.2 Sewers.

The capacity of the pumping stations which serve the aerodrome is insufficient for any intensive development of the site.

There are two potential sewer treatment sites at Rietvlei and in the Council scheme at Athlone. The capacity of the former is limited because of its low tolerance of chloride impurity.

5.3 Surface water drainage.

The flows of surface water drainage in the Black River have reached capacity and surface water from the site will have to flow into the Atlantic via the Rietvlei area.

5.4 Electricity.

The site adjoins the access route of the Escom power supply from the north.

5.5 Railways.

The existing and proposed railway line structure for the area make access to the site by rail spurs a relatively simple proposition. The position of the site within the rail system promises effective service from it to both the harbour and the goods yards at Bellville.

5.6 Roads, National.

The Ysterplaat site is flanked by the National Road from Cape Town to Johannesburg. At present access into Ysterplaat is achieved by an interchange at Koeberg Road.

5.7 Roads, Express and Freeways.

In terms of the local express and freeway network Ysterplaat is on the northern end of the Kromboom and Black River freeway, running between the two southern suburban railway lines, and to the west of the proposed north-south express way on Vanguard Drive extension, bisecting the space between the two non-white suburban railway lines.

5.8 Roads, Local.

The local road structure and the connections to the aerodrome are shown on the site map. (See Map 4)

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6.0 Analysis: Economic Activity.

6.1 Economic activity: employment in:

The census of economic activity for 1946 and 1960 gives a fourteen year wide base for estimation of changes. Two sectors show interesting changes:

"Manufacturing" employment appears to be increasing, whilst

"Government, Business, Recreation and Personal Services" are decreasing.

Compared to United States cities which are of similar size, these trends are <u>towards</u> rather than <u>away</u> from the typical employment pattern.

See page 15; Table 6.0.

The "Government, Business, Recreation and Personal Services" sector showed a higher proportion of White than Coloured employees in the 1960 census whilst "Manufacturing" has a higher proportion of Coloured than White employees.

See page 16; Table 6.1.

Whereas 77,000 persons were in "Manufacturing" employment in 1960 it is estimated that there will be 424,000 in a.d. 2000. This represents a growth rate per annum of 4.4%. Allowing for its limitations, this technique shows that the greatest single growth rate of locationally fixed employment is in the "Manufacturing" sector.

If the "Construction" industry becomes progressively more industrialized, this activity will be more fixed in location and the amount of land needed for the "Manufacturing" sector will, consequently, increase.

6.2 Industrial activity: location of:

In terms of the number of industrial establishments in various locations, Ysterplaat is close to Paarden Eiland, Maitland and Salt River which are characterized by large numbers of establishments relative to other centres.

See page 17; Table 6.2.

6.3 Industrial activity: growth of:

In the period between 1964 and 1967 the number of establishments in Paarden Eiland, Maitland and at Ndabeni, Epping and Parow immediately to the south-east increased more rapidly than elsewhere in the metropolis.

See page 18; Table 6.3.

TABLE 6.0 Percentages of gainfully employed in selected activity groups;
Extrapolation to a.d. 2000 based on rate between 1946 and 1960;
Forecast by analogy with rate of change due to growth of population found from study of 497 U.S. cities; see reference.

	Popula-tion.	Manufac-turing.	Con-struct.	Commerce[2] & Finance Transport[2] & Storage Communic.	Governmt. Business Recreation Personal Services
A.D. 1946 Census:					
Cape Town	486,000	24.89%	6.78%	31.53%	34.07%
U.S. Cities	-500,000	28.10%	Omitted	34.17%	22.48%
A.D. 1960 Census:					
Cape Town	805,964	26.16%	7.70%	30.34%	31.78%
U.S. Cities	-1,000,000	27.21%	Omitted	37.15%	20.85%
A.D. 2000 Projection based on rate of change between 1946 and 1960:					
Cape Town	3,574,800	29.79%	10,07%	26.94%	25.24%
U.S. Cities	+1,000,000	30.86%	Omitted	32.57%	22.31%
A.D. 2000 Projection[3] based on average factor of change of each activity group's percentage in the U.S. cities of +1,000,000 compared to those cities of 500,000 - 1,000,000; this factor applied to Cape Town 1960 percentages:					
Cape Town 1960	805,964	26.16%	7.70%	30.34%	31.78%
Factor		x 1.13	Omitted	x 0.88	x 1.06
A.D. 2000	3,574,800	29.60%	----	26.70%	33.70%
Comparison between projections by extrapolation and by analogy with U.S. cities:					
Extrapolation		29.79%	10.07%	26.94%	25.24%
Analogy		29.60%	----	26.70%	33.70%
Notional Estimate (Extrapoln + Analogy) ÷ 2		29.70%		26.82%	29.47%
(Extrapoln + 1960 %) ÷ 2			8.21%		
Estimated employment in future metropolitan region of Cape Town at a.d. 2000 if economically active population: 42% and unemployment: 5%:					
A.D. 2000	3,574,800	423,624	117,103	382,546	420,344

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TABLE 6.0 (Continued) References, Notes and Assumptions.

1. References: Nelson, Howard J.: "A service classification of American Cities"; Readings in Urban Geography, Mayer & Kohn; Chicago University Press; Chicago; 1959; p.p. 141; Table 3.

2. Note: "Commerce", "Finance", "Transport, Storage & Communication" are combined to avoid the change of components from one to the other category in compiling the Census of 1946 and 1960.

3. Assumptions: That the % employed in activity groups change with absolute population size, and that factors of change with growth can by calculated and applied to the population percentage in each group at base year.

TABLE 6.1 Percentages of each race group's economically active population employed in each category of economic activity.

	White	Coloured	Bantu	TOTAL
Agriculture, forestry and fishing	1.42%	3.54%	6.70%	3.21%
Mining and quarrying ...	.14%	.03%	1.52%	.28%
Manufacturing	19.30%	25.88%	21.25%	22.80%
Construction	4.54%	7.22%	10.60%	6.71%
Electricity, gas and water	.98%	1.11%	.49%	.97%
Commerce and finance ..	29.83%	11.45%	15.26%	18.77%
Transport, storage and communication	11.67%	4.84%	7.03%	7.67%
Government, business, recreation and personal services	27.25%	26.41%	26.40%	26.72%
Unemployed	4.78%	19.52%	10.74%	12.87%
Economically active	40.91%	39.63%	64.27%	42.44%
TOTAL	100%	100%	100%	100%
Economically active	124,844	165,622	48,336	338,802
Population	305,155	417,881	75,200	798,236

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TABLE 6.2 NUMBER OF INDUSTRIAL ESTABLISHMENTS IN EACH INDUSTRIAL ACTIVITY GROUP BY LOCATION.

	Cape Town	Salt River	Paarden Eiland	Maitland	Ndabeni	Epping	Parow	Elsies River	Bellville
Group 1 Builders materials & allied industries.	3	3	4	3	1	6	4	1	4
Group 2 Chemicals, pharmaceutical products.	10	3	8	2	3	5		6	3
Group 3 Clothing and apparel.	34	22	4	11	1	1	7	8	
Group 4 Engineering & metal products, transport equipment and services.	16	6	33	10	2	12	6	3	7
Group 5 Finance, insurance, and managerial consultants.	2								
Group 6 Food products, beverages and tobacco.	14	7	8	5	5	9	3	2	3
Group 7 Footwear and leather products.	10	5	1	3				2	1
Group 8 Furniture, electrical and household appliances.	15	6	5	7	2	1	2	1	2
Group 9 Jewellery, toys and fancy goods.	20		1						
Group 10 Packaging, printing, paper products and publicity.	9	1	7	9	3	3	2		4
Group 11 Textile & allied products & services.	15	3	2	8		1	5	3	2
TOTAL	148	56	73	58	16	38	29	26	26

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TABLE 6.3 Growth in number of firms by location 1964 - 1967:

Location	Number of firms 1964	1967	Gains or losses	Change
Paarden Eiland	58	73	+ 15	x 1.26
Maitland	50	58	+ 8	x 1.16
Epping	31	38	+ 7	x 1.23
Parow	23	29	+ 6	x 1.26
Salt River	53	56	+ 3	x 1.05
Woodstock	41	44	+ 3	x 1.07
Ndabeni	14	17	+ 3	x 1.21
Bellville South	24	26	+ 2	x 1.08
Claremont	15	17	+ 2	x 1.13
Elsies River	25	26	+ 1	x 1.04
Diep River	8	6	- 2	x 0.75
Cape Town	173	148	- 25	x 0.82
TOTAL	515	538	+ 23	x 1.045

Note:-

All data set out in Table 6.0 to 6.5 is drawn from the information gathered by students in Project 1967/2/1 under heading data 4.1.1; the source being the Cape Chamber of Industries.

It is estimated that the data represents 80% of the total as some 20% of local industries are not members of the Chamber.

-

6.4 Industrial activity: diversity of:

The diversity of types of industry in the industrial areas flanking the eastern access of Cape Town is greater than elsewhere in the metropolis. Of a possible eleven categories Paarden Eiland has 9, and Maitland, Ndabeni, Epping, Parow, Elsies River, and Bellville have 8.

6.5 Industrial activity: size of firms:

Relative to the typical firms in the regions 01, 02 and 03, most firms in these locations are smaller than average in numbers of persons employed. Larger firms, which presumably impute less to economies deriving from proximity of other establishments, appear to locate in more peripheral positions.

See page 20; Table 6.5.

6.6 Industrial activity: land value:

To compare the relative value of industrial land to that of residential land, the following table has been constructed from survey data gathered in 1967:

	Industrial land.	Residential land.
Central City	R1.60 plus	40-80c per sq. ft.
Salt River	R1.60 plus	20-40c per sq. ft.
Paarden Eiland	80c - R1.60	10-20c per sq. ft.
Maitland	40c - 80c	10-20c per sq. ft.
Ndabeni	40c - 80c	20-40c per sq. ft.
Epping	20c - 40c	10-20c per sq. ft.
Parow	80c - R1.60	10-20c per sq. ft.
Bellville	40c - 80c	10-20c per sq. ft.

6.7 Economic Activity: Government, Business, Recreation and Personal Services.

Whilst employment trends between 1946 and 1960 in the Region 01 showed a relative decline in the percentage of persons employed in the above components, observable changes have occurred since 1960 which await quantification and analysis.

TABLE 6.5 INDUSTRIAL ESTABLISHMENT SIZE RELATIVE TO REGIONAL (01, 02 & 03) AVERAGE.

	Cape Town	Salt River	Paarden Eiland	Maitland	Ndabeni	Epping	Parow	Elsies River	Bellville
Group 1 Builders materials & allied industries.	.7	.7	.5	.5	1.6	.5	2.4	.2	2.5
Group 2 Chemicals, pharmaceutical products.	.8	.7	.6	.5	2.6	.8		.3	1.1
Group 3 Clothing and apparel.	.6	1.3	1.0	.9	1.1	.4	1.1	1.0	
Group 4 Engineering & metal products, transport equipment and services.	.6	.3	.4	.4	.7	1.5	.3	6.3	1.5
Group 5 Finance, insurance, and managerial consultants.	1.0								
Group 6 Food products, beverages and tobacco.	2.1	1.1	.2	3.1	.8	.6	.4	.1	.8
Group 7 Footwear and leather products.	.2	1.0	.6	2.3				2.1	.2
Group 8 Furniture, electrical and household appliances.	.5	.4	.5	.5	7.1	4.0	1.5	.2	3.9
Group 9 Jewellery, toys and fancy goods.	.6		5.2						
Group 10 Packaging, printing, paper products and publicity.	.02	.01	.4	1.5	4.0	.9	.4		1.7
Group 11 Textile and allied products & services.	.3	.8	.2	.4		1.5	.2	.4	5.3

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6.8 Economic Activity: Government Services.

A visual survey of projects under construction in the two capitals suggests that central government facilities are expanding more rapidly in Pretoria than Cape Town. It is considered unlikely that there will be a local demand by government for land on as extensive a scale as that required for instance, for the C.S.I.R. in Pretoria. Such a demand would add a further alternative use for the Ysterplaat aerodrome site.

6.9 Economic Activity: Business Services.

Mechanisation and automation of many business services is in progress leading to a speeding-up of these services and the freeing of man-power for other activities, e.g. "Rank Xerox".

Some tendency to decentralize large insurance and financial activities has taken place generally to suburban locations which have ready access to public transport and are in close proximity to a high level of retail activity, e.g. "Southern Life".

6.10 Economic Activity: Retail Services.

Decentralization of central city departmental stores to suburban locations is taking place, e.g. "Stuttafords". In the food retailing sector, intercepting locations have frequently been chosen by new discount operators such as "Pick 'n Pay".

6.11 Economic Activity: Wholesale Services.

Decentralization of wholesale outlets to Woodstock and Paarden Eiland, in particular, has occurred: e.g. "Jaggers", "Woolworths", "O.K. Bazaars".

6.12 Economic Activity: Tourist Services.

The ascendancy of air over sea passenger traffic and the closure of the Suez Canal appear to have emphasized those facilities catering to passing-through tourist and immigrant traffic. At the national level, the growth of light car ownership and increases in one-day car-trip-capability appear to favour resorts closer to the Witwatersrand, particularly the Natal coast.

6.13 Economic Activity: Entertainments.

Due, in part, to the local ban upon television, cinemas have not changed in quantity or quality to the extent they have oversea. However, the Drive-in type cinema has established itself in the past decade.

In respect of spectator sports, there has been growth in professional sport following, notably football. In participation sports: golf, putting and water sports.

Demand for exposition facilities is being met, with considerable reserve capacity, (albeit in unpretentious form), by the Goodwood Showgrounds.

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7.0 Analysis: Transportation and Communications.

7.1 The port and hinterland.

The volume of cargo handled in Cape Town harbour is growing at a slower rate than Durban or Port Elizabeth. Victualling and bunkering are experiencing a boom; but the reopening of Suez and growth of deep-draught carriers augers ill for this trade. Containerization is not yet being catered for; and will require new port facilities as well as adjustments in bulk-breaking centres.

The hinterland of Cape Town is largely agricultural, and, (in terms of the National Economic Development Programme) not liable to rapid growth rates. Growth of port traffic for this sector is therefore likely to remain slow.

7.2 The railways; goods traffic.

Proposed changes in the railway tariff structure should improve Cape Town's share of the national market for manufactured goods.

7.3 The railways; suburban passenger traffic.

There has been a marked increase in the volume of non-white suburban passenger traffic, particularly since the last war. See Page 09, Fifty Years of Union Statistics, The Government Printer, Pretoria, 1961 and Page 23 Planning Report No. 3 The Greater Cape Town Region, Cape Provincial Administration, 1968.

New Railway lines towards the petro-chemical complex at Rietvlei and to the north of Bellville promise greater accessibility for commuters to these area. Map 5 shows the travelling time within Region 01 for train commuters to the C.B.D. based upon the S.A.R. time tables and an assumed 4 m.p.h. walking speed from up to 1 mile distance from the station. (See page 23; Map 5)

7.4 Roads and car traffic.

Although growth rates have been estimated for car ownership amongst the white group (See Welgemoed, P.J. Some aspects of the use and ownership of motor vehicles in South Africa: Transport Research Centre: Stellenbosch: 1967 p.p. 112 - 117), no estimates have been prepared for the coloured group.

The method by which an estimate of coloured car ownership has been obtained for this thesis is set out in table 7.4.0 - 7 in the Appendix: see pages 39 - 42.

MAP 5 TRAIN TRAVELLING TIME TO C.B.D.

- 15 minutes or less to Cape Town Station
- 30 minutes
- 45 minutes
- 60 minutes
- 75 minutes
- More than 1 mile to a station
- Built-up areas 1966
- Railway Lines & Stations

It will be seen that by 1988 - 1993 the number of vehicles owned by the coloured group will reach parity with that owned by the white, (Table 7.4.4) and that there will be more than one car per household if local total annual vehicle registration growth is maintained at 6.6% per annum. See Table 7.4.7. This high ownership rate must, in part, be attributed to the large number of persons (5.35) per coloured household.

Nevertheless, the possession of a car may allow an increasing proportion of the coloured group to live at greater distances from their places of work due to reduced travelling times. The reduced dependence of this group upon public transportation should also tend to favour those facilities which are accessible by car. (See page 25; Map 6)

7.5 Aircraft and air traffic.

By 1972 - 3 Cape Town will be some 6½ hours flying time from continental Europe or 5 hours by direct flight. The effect of this accessibility cannot readily be gauged, as overall accessibility to the Southern Hemisphere will be similarly improved. A relative advantage for face-to-face interaction may arise from the official use of English (and Afrikaans) which is more widely understood in the economically advanced European nations than Spanish or Portugese.

At present many flights are convenient for week-day and business trips; but there is a growing sector catering for freight and for tourists.

The micro-climate of Ysterplaat is unsuitable for tourist activities; but its location suggests that air-freight oriented warehousing and light industry should be considered, particularly if the principal Airport is relocated to the north of Cape Town.

8.0 Analysis: Tributary Area.

In theory, other things being equal, for maximum tribute a location should be in the centre of gravity of the population served. However, populations are not homogeneous in tastes, needs, distribution or incomes and the centre of gravity is affected by time, distance, transport costs, and other items which affect aggregate accessibility.

At present the C.B.D. and Ysterplaat are geographically off-centre; but the direction of population settlement in Cape Town is tending to make the C.B.D. even more so. This change in the centre of gravity of Cape Town can partly be ascribed to the,

MAP 6	CAR TRAVELLING TIME TO C.B.D. 1975
	15 minutes or less to Cape Town Centre
	30 " " " " " " "
	45 " " " " " " "
	60 " " " " " " "
	Elevation 1500' plus
	" 1000'-1500'
	" 500'-1000'
	" less than 500'

growth of the coloured sector and the allocation of the Cape Flats as a coloured group area.

According to Verschoyle, D.[1], the Cape Flats area will be insufficient for the land needs of the coloured group by 1985. Development of residential areas thereafter for the group is restrained by group area boundaries to the south-east and north; but, should the latter be relaxed, the Ysterplaat area will occupy an increasingly more central position to total settlement.

8.1 Tributary Populations in Terms of Travelling Time.

Tributary populations are summarized in Table 8.1 which is based upon Maps 5 and 6. The existing and potential population derive from studies by the Provincial Administration's Town and Regional planning section. (See Appendix: Page 43)

8.2 Tributary Populations in Terms of Income.

According to Smith, Larry; metropolitan retail facilities can expect to derive from 10% - 20% of their turnover from beyond their tributary area. By inflating expected sales by this amount, the floor area required can be calculated.

However, no reliable data is available upon which to base projections of income per capita for either the white or coloured group in the metropolitan region or the regions beyond the metropolitan area.

Table 8.2 sets out the results of questionnaire surveys and attempts to estimate the white and non-white per capita income growth. (See Appendix: Page 44)

It will be seen that per capita income of the white group appears to be growing at a rate of 5.2% per year if the increase in consumer prices is taken into account.

The data for coloured group income calculations is inadequate, but is set out in order that it can be re-examined against that revealed by the 1970 census.

8.3 Tributary Population in Terms of Expenditures.

The pattern of income expenditure varies from suburb to suburb, from income group to income group and from region to region.

1. Verschoyle, D. : The Cape Flats : Report to the Joint Town Planning Committee, Cape Town, 1967.

Available findings on expenditure patterns are set out in Table 8.3. (See Appendix: Page 45)

The surveys from which this data is gathered were framed with a view to revising the provision of floor space for shopping under local town planning schemes and is quoted here as a guide for assessing the effect upon local shopping space if the Ysterplaat aerodrome is set aside for residential development.

If the feasibility of a regional shopping centre at Ysterplaat were to be considered this data would require verification and amplification by further surveys.

9.0 Analysis: Allied Studies.

9.1 The daily movement of population into central business districts.

The study of typical American cities with the above title by Foley, Donald L. [1], suggests that the number of persons entering the C.B.D. daily relative to total metropolitan population decreases with growth in size which he accounts to the "relatively greater concentration of functions in the smaller city's C.B.D".

There is sufficient coincidence between Foley's findings and the situation in Cape Town (see: Planning Report No. 3 : Public Transport : The Greater Cape Town Region : The Cape Provincial Administration, Cape Town, 1968, p.p. 25) to infer that absolute growth in population will be followed by a reduction in the proportion entering the C.B.D. An examination of the proportions of functions located in the C.B.D. after Smith; Larry : (Journal of the American Institute of Planners, February, 1961, p.p. 40) suggests that there will be a displacement from the C.B.D. of industry, major comparison shops, departmental stores, and warehousing.

The analysis has already indicated that this is occurring.

1. Foley, Donald L. : The Daily Movement of Population into Central Business Districts, American Sociological Review XVII October 1952, p.p. 538 - 543.

   Reprinted in:

   Mayer and Kohn : Readings in Urban Geography. University of Chicago Press, Chicago, 1965, p.p 447 - 453.

9.2 The Structure and Growth of Residential Neighbourhoods.[1]

The findings of project 1966/1/2 by M.U.R.P. students at U.C.T. suggest that Ysterplaat is partially contained within a sector of industrial land use. The geographical form of Cape Town distort this sector so that it converges upon a funnel between the sea and mountain at Salt River / Woodstock.

Beyond Ysterplaat the sector continues in the form of further industrial land at Montague Gardens and the Rietvlei/Milnerton petro-chemical complex.

9.3 Suburban Residential Land Values.

Hayes, Charles R.[2], finds that residential land values rise in the neighbourhood of railway stations and dip between stations; each successive rise tending to be a little higher as one approaces the city. The railway actually runs in a value trough or valley extending about a quarter mile on each side of the tracks. Almost without exception residential land values are depressed within about a half mile of industrial centres; but elevated from one-half to one-and-one-half mile distant from the industrial areas.

Other considerations of topography, micro-climate, and land need apart, these findings suggest that the Ysterplaat aerodrome site is suitably located vis-a-vis the local railway line to Rietvlei to warrant considering its development for a high land-value residential area.

10.0 Diagnosis.

In order that the facts gathered in the analysis can be assessed in terms of priorities, they will be classified into component groups and ranked according to relative significance.

1. Hoyt, Homer: The Structure and Growth of Residential Neighbourhoods in American Cities: Washington: Federal Housing Administration 1939, p.p. 112 - 122.

2. Hayes, Charles R: Suburban residential land values along the C.B. & Q. railroad: Land Economics; Volume XXXIII May 1957, p.p. 177 - 181.

Reprinted in:

Mayer, H.M. and Kohn, C.F. : op. cit : p.p. 499 - 510 and 556 - 560.

Of all alternative uses to which the site could be put, seven categories are pre-eminent: Residential, Industrial, Business (e.g. shopping and offices), Commercial (e.g. warehousing and storage), Government Institutional (e.g. police department, defence, educational and health facilities), Private open space (e.g. cemeteries, exhibition and show buildings, and sports clubs), or Public open space.

10.1 Social Considerations: National Policy: Group Areas.

Although the National Road forms a small buffer between the coloured group area and the site, social considerations suggest that Ysterplaat aerodrome be developed for industrial, business, commercial or government rather than residential or open space use, so that the buffer is extended in depth.

10.2 Social Considerations: Local Policy: Coloured Employment.

The policy of fostering the growth of employment opportunities for the coloured at a few concentrated locations [1] suggests that the site be developed for industrial, business or government use as these accounted for nearly two-thirds of all coloured employment in 1960 and the location of the site is within the area in which 65 per cent of all journeys to work are concentrated. [2] (See Appendix Page 46.)

10.3 Social Considerations: Public Interest: Social Class.

In terms of its position in the concentric zonal structure of Cape Town, the site approximates that which contains the working men's homes. [3] However, as pointed out in 9.3, it can be seen as lying within the radiating sector of industrial land. These considerations favour its development for industrial use, alternatively for commercial, government or business use.

10.4 Social Considerations: Compatibility.

On its western and northern sides, Ysterplaat aerodrome abuts residential areas in which aircraft flight paths have

1. See: The Greater Cape Town Region: op.cit : Planning Report No. 2 : p. 39.

2. See: The Greater Cape Town Region: ibid: Planning Report No. 3 : p. 27.

3. See: M.U.R.P. Student Project 1966/1/2, Dept. of Urban and Regional Planning, U.C.T. Cape Town. Unpublished student project.

restricted the height to which buildings have been developed.

In terms of compatibility with this type of development, the aerodrome should be developed for residential or public open space use.

Less desirable would be private open space or government institutional use.

Without ameliorative measures, development for business, commerce or industry would be undesirable.

10.5 Economic Considerations: Developed Value.

The difference between the site development cost and the market value represents the developed value. Assuming development costs for industrial land of 13c per sq. ft. and medium density residential land of 3c per sq. ft., any difference in market value greater than 10c per sq. ft. would favour development for industrial purposes.

Examination of paragraph 6.6 indicates that only in the Epping area is this difference approached.

Thus, where developed value is the criteria, it can be assumed that the site should be developed for industrial or commercial, rather than residential use.

As the site is unusual in an urban area in that it is free of development, consideration should be given to its use for public or private open space. The proximity of the Atlantic Coastline, the Goodwood Showgrounds, the Milnerton Golf and Turf Clubs, and the open spaces adjacent to the Black River, together with potential conflicts due to the adjacent coloured group area, suggest that the site need not be reserved as public or private open space.

10.6 Economic Considerations: Construction Costs.

Development of the local infrastructure apart, consideration must be given to the nature of the site as it affects construction costs.

Ysterplaat aerodrome is a pre-levelled, compacted, and drained site, ideally suited for the development at low first cost of spatially-extensive buildings with rail and road access by nearly level gradients which make for economy and safety in handling.

As such it is desirable that it be set aside for industrial or commercial rather than business use. Level sites are

not in demand in the market for residential development. [1]

10.7 Economic Considerations: Urban Infrastructure.

Every site within an urban area is endowed with advantages springing from investments in the urban infrastructure.

The capacity of arteries, and the scale and specialization of services in the Ysterplaat area are capable of extension or adaptation to absorb what, in more peripheral areas, would constitute high volumes of activity. Thus it is more appropriate that the site be developed to make use of the road, rail and waste treatment network than to ignore it. (See also 10.2)

In descending order of appropriateness this criterion suggests development for industrial, commercial, business, institutional, or high density residential use.

10.8 Economic Considerations: Locational Factors.

The land uses competing for the site because of displacement from the C.B.D. can be arranged, according to their need for locations that are population-central, have bilateral market areas and are intercepting of traffic, in the following order:-

Business	-	especially food and comparison shops;
Commerce	-	especially warehousing;
Industry	-	especially bakeries, dairy produce and transport services;
Government	-	especially police and hospital services.

Interception and bilaterality of market:

Whilst the site is located in an intercepting position vis-a-vis the road access to the C.B.D. from the north and east, it will lack a fuller bilaterality of market area until after 1985 (see 8.0) and may lose some intercepting ability with the development of a northbound National Route on the Table Bay Coast.

Population centrality:

In terms of centrality to the population served, it is less

1. See: Grigsby, W.G. : Housing Markets and Public Policy: Pennsylvania University Press: Philadelphia 1963.

favourably located than the proposed shopping development on the corner of Voortrekker Road and De la Ray Street, Parow.

These factors will tend to diminish the appeal of the site for business use, whilst for warehousing the site is slightly more remote than the Paarden Eiland facilities from the harbour. As an institutional site, prior decisions have already located the major hospital development at Tiervlei and police activities at Lavistown. The area lacks suburban shopping and such natural amenities as would tend to attract business activities of the insurance headquarters type.

Thus, in descending order of desirability for uses displaced from the C.B.D., the site is favoured for industry, commerce, business and government respectively.

10.9 Efficiency Considerations: Shape and Size of Site.

The shape and size of the site corresponds with the Paarden Eiland and Epping developments and represents an area which is within the bounds of recent experience of development and marketing by the responsible local authority.

Its shape is regular and similarly broad, allowing the design to feature a central rail spine if developed for industry and commerce.

The shape and size of the site do not appear to deny development in any particular alternative use.

10.10 Efficiency Considerations: Linkages.

In terms of the opportunities for external economies by contracting out functions, for linkages with allied activities, for competing for skilled labour and management in an attractive, expanding market, and similar advantages deriving from economies of agglomeration, the site is advantageously located for development of industry. (see 6.2, 6.3, 6.4 and 6.5)

10.11 Amenity Considerations: Microclimate and Soil Fertility.

The exposed, wind-swept and relatively barren site does not commend the development of residential, open space or institutional use. These factors also tend to operate against a successful business interpretation.

10.12 Health Considerations: Wastes, Noises, Dust, Vibrations and Pollutants.

In terms of the prevailing winds, in summer the site lies

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to the lee of the Athlone power station and sewage treatment works, and in winter, to the lee of the Paarden Eiland power station and Black River outflow.

Noise, dust and vibration generated by traffic on the National Route N9 is not deflected by natural features.

Any pollutants produced on the site will require to be treated at the Rietvlei or Athlone works. (See 5.2)

10.13 Diagnosis: Classification According to Relative Importance.

These considerations can be arranged in an order which represents their relative importance when deciding to which use the Ysterplaat aerodrome site should be put. Within that arrangement the alternative uses, in turn, have greater or lesser degrees of desirability which allow them to be ranked. This is illustrated in the following table:-

TABLE 10.13 ALTERNATIVE USES.

Categories considered:-	Residential	Industrial	Business	Commercial	Government	Private open space	Public open space
National policy: group areas	7	1	1	1	1	5	6
Local policy: employment	5	1	1	1	1	6	7
Public interest: social class	5	1	2	2	2	6	7
Compatibility	1	7	5	6	3	3	1
Developed value	4	1	1	1	5	6	7
Construction costs	6	1	3	1	3	3	7
Urban infrastructure	5	1	3	1	4	6	7
Locational factors	6	1	3	2	4	5	7
Shape and size	1	1	1	1	1	1	1
Linkages	5	1	3	1	3	6	7
Amenity	7	1	3	1	4	5	6
Health	7	1	3	1	4	5	6
TOTAL	59	18	29	19	36	57	69

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Consider the totals of each vertical column:

As the most desirable quality in each category is awarded the lowest number, the sum of all such most desirable qualities could, in theory, be the same as the number of categories - that is: 12.

The lowest is, however, that of "Industry" at 18 closely followed by "Commerce" at 19. From this it can be inferred that the most favoured alternative, within the range offered and the categories considered, is not entirely desirable.

An examination of the "Industry" column reveals that the least desirable aspect of Industry is its lack of "compatibility" with adjacent development. If this could be ameliorated, the score might be significantly reduced.

A further examination of the category "compatibility" reveals that other uses which are nearly as desirable, such as "commerce", are more compatible.

Recourse to the data 10.4 reveals that the lack of compatibility springs from the existing residential development on the western and northern sides of the site.

Strategies recommended to enhance the desirability if the site is developed for industry, are:

the interposition of a belt of open space at the boundary,

backed onto by a zone of commercial development;

the denial of vehicular access to the residential area;

the imposition of performance standards on the industries to curb noise, dust, odours and wastes.

10.14 Weighting of data.

If the Table 10.13 is modified so that each category is weighted according to its importance the following table: 10.14 could be constructed. It is assumed here that the categories of social, economic, efficiency, amenity and health considerations represent an order of descending importance.

The lowest sum would again represent the most desirable alternative, with a theoretical minimum of 78.

If this total is reduced by $^{1}/_{6.5}$ comparability with Table 10.13 is possible:

TABLE 10.14 ALTERNATIVE USES: WEIGHTED.

Categories considered:-	Weights	Residential	Industrial	Business	Commercial	Government	Private open space	Public open space
National policy : group areas	x 12	84	12	12	12	12	60	72
Local policy : employment	x 11	55	11	11	11	11	66	77
Public interest : social class	x 10	50	10	20	20	20	60	70
Compatibility	x 9	9	63	45	54	27	27	9
Developed value ...	x 8	32	8	8	8	40	48	56
Construction costs .	x 7	42	7	21	7	21	21	49
Urban infrastructure	x 6	30	6	18	6	24	36	42
Locational factors .	x 5	30	5	15	10	20	25	35
Shape and size ...	x 4	4	4	4	4	4	4	4
Linkages	x 3	15	3	9	3	9	18	21
Amenity	x 2	14	2	6	2	8	10	12
Health	x 1	7	1	3	1	4	5	6
TOTALS	72	372	132	172	138	200	380	453
divided by 6.5								
CORRECTED TOTALS:		57	20	26	21	31	59	70

TABLE 10.15 WEIGHTED AND UNWEIGHTED TOTALS

	Residential	Industrial	Business	Commercial	Government	Public open space	Private open space
Unweighted total ...	59	18	29	19	36	57	69
Weighted total	57	20	26	21	31	58	70
Difference	- 2	+ 2	- 3	+ 2	- 5	+ 1	+ 1

10.15 Comparison of Weighted and Unweighted Totals

It can be inferred that:-

(i) where the totals are lower when weighted: the alternative use is well-endowed in categories considered relatively important.

(ii) where the totals are higher when weighted: the alternative use is poorly-endowed in categories considered relatively important.

Thus:-

(iii) "Industrial" and "Commercial" are poorly-endowed in categories considered relatively important.

(iv) "Business" is well-endowed in categories considered relatively important.

Examination of the Table 10.14 reveals that, in the heavily-weighted categories, these three alternative uses are very similar until the "compatibility" consideration, where "Business" has a lower, and therefore, better score. Although, in individual categories, other uses have desirable characteristics, it is in respect of "total desirability" that the public interest will be best served.

Therefore:-

(v) If the objective is to accommodate "Industry" within the environment by interposing an alternative use

Then:-

(vi) After "Commerce", the most desirable alternative would be "Business" and not "Open Space" as suggested in the final paragraph of 10.13.

However, the need for "Business" use, when limited to a "buffer strip" in size and location, is not the same need as expressed in the table, which, under the categories of "Developed Value"; "Locational Factors"; Shape and Size", and "Linkages", was considering a spatially-extensive, decentralized facility with a metropolitan-wide tributary population, which it would intercept ên route to the C.B.D.

Thus:-

(vii) The Alternative Uses must be seen as Total Alternatives.

(viii) Examination of the columns in the tables:

can pin point where the alternative use is well or poorly-endowed in categories considered relatively important; but

cannot offer a solution by way of portions or mixtures of uses without a reappraisal of all the categories considered.

11.0 Conclusions.

11.1 The Use of Ysterplaat Aerodrome: Estimated Potential.

In as much as the Ysterplaat Aerodrome is one of three extensive areas of defence land being encompassed by urban development, it is a resource to the urban community.

This resource may be denied its fullest potential if, like Wingfield's "Acacia Park" housing scheme for parliamentary employees, it is merely transferred from one form of government institution use to another.

"Government institution" use is but one of at least seven possible alternative categories of land-use and, according to the analysis undertaken in this thesis, is only fourth in order of desirability for the Ysterplaat aerodrome site.

11.2 The Use of Statutory Authority Land.

An assessment of the alternative uses to which land held by statutory authorities can be put will reveal the opportunities forgone by the nation in terms of the optimum utilization of resources.

11.3 Findings regarding the ranking and summing methodology adopted for the examination of the alternatives.

The examination of alternatives is facilitated by ranking them against a catalogue of criteria and summing the ranks attained by each.

11.4 Findings Regarding the Weighting Methodology.

(i) Weighting the criteria in order of significance and comparing the weighted and unweighted sums aids the recognition of the important shortcomings and strengths of each individual alternative.

(ii) Weighting distinguishes those alternatives that are well-endowed with important characteristics.

(iii) Ranking, summing and weighting aids decision-making [1]:-

where many disciplines are involved and must interact to reach a co-operative decision,

where changes in possession, management, policy, emphasis, quantity, quality, resources, space, time, tastes or interests occur.[2]

where multifarious data in involved.

(iv) Ranking, summing and weighting allows the subsequent re-examination of the desirableness of the decisions.

1. Bross, Irwin D. J. : Design for Decision : The Free Press : New York, 1965, p.p. 255 - 264.

2. Compare with the categories of Aristotle:
possession, action, passion, posture, quantity, quality, substance, place, time, relation.

APPENDIX

TABLE 7.4.

Growth of Car Ownership in Region 01.

Method: Car ownership amongst the White population group is projected forward at the same rate as the vehicle registration in South Africa from

(a) 1950 to 1962 (5.5% per annum)

(b) 1950 to 1965 (6.6% per annum)

Car ownership amongst the Coloured population group is projected forward at the same rate per thousand as at 30th June, 1962.

After the ownership rate amongst the White group reaches "saturation point" (450 motor cars per 1,000 population) ownership of surplus cars is assumed to be transferred to the Coloured population group.

Assumptions:

(i) That vehicle registration growth takes account of new and second hand purchases as well as vehicle life and scrapping age.

(ii) That the Coloured population group will own motor cars at a constant rate per thousand.

(iii) That when the White population car ownership rate reaches saturation, older cars will be transferred to the second hand market and replaced by newer cars at a rate similar to the growth rate in vehicle registration.

Sources: Welgemoed, P.J.; Some aspects of the ownership and use of motor vehicles in South Africa; Transport Research Centre, University of Stellenbosch; 1967.

p.p. 9 Car ownership saturation rate.

p.p. 16 Table 2.4. Adjusted mid-year estimates of total numbers of South African motor vehicles.

p.p. 58 Table 3.13 number of motor cars per 1,000 of the population at 30th June, 1962.

p.p. 112 - 117 Motor vehicle projections.

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TABLE 7.4.1.

Number of Cars in White Ownership at 6.6% per annum Growth Rate in Region 01:

Date.	Cars.	White Population x 450/1000 Saturation		Surplus Cars.
30.6.1962	97,820			
1965	118,488	383,147	172,416	
1970	163,111	418,560	188,352	
1975	224,540	456,709	205,519	19,021
1980	309,102	497,807	224,010	85,092
1985	425,510	542,081	243,936	181,574
1990	585,757	589,778	265,400	320,357

TABLE 7.4.2.

Number of Cars in White Ownership at 5.5% per annum Growth Rate in Region 01:

Date.	Cars.	White Popultaion x 450/1000 Saturation		Surplus Cars.
30.6.1962	97,820			
1965	114,864	383,147	172,416	
1970	150,123	418,560	188,352	
1975	196,204	456,709	205,519	
1980	256,430	497,807	224,010	32,420
1985	335,144	542,081	243,936	91,208
1990	440,300	589,778	265,400	174,900
1995	578,448	641,162	288,523	289,925

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TABLE 7.4.3.

Number of Cars in Coloured Ownership in Region 01:

Date.	Population	x 16/1000	Plus surplus from white saturation at 6.6%	at 5.5%
1965	587,107	9,393	9,393	9,393
1970	728,144	11,650	11,650	11,650
1975	902,498	13,540	32,561	13,540
1980	1,119,187	17,906	102,998	50,326
1985	1,386,994	22,191	203,765	113,399
1990	1,715,900	27,454	347,811	202,354
1995	2,117,837	33,850	Not calculated	323,775

TABLE 7.4.4.

Comparison of Car Ownership by Race in Region 01:

Date.	At 6.6% per annum growth.		At 5.5% per annum growth.	
	White	Coloured	White	Coloured
1965	118,488	9,393	114,864	9.393
1970	163,111	11,650	150,123	11,650
1975	205,519	32,561	196,204	13,540
1980	224,010	102,998	224,010	50,326
1985	243,936	203,765	243,936	113,399
1990	265,400	347,811	265,400	202,354
1995	Not calculated		288,523	323,775

TABLE 7.4.5.

Number of Cars in White and Coloured Ownership combined in Region 01:

Date.	At 6.6% per annum growth.	At 5.5% per annum growth.
1970	174,761	161,773
1975	238,080	209,744
1980	327,008	274,336
1985	447,791	357,335
1990	613,211	467,754
1995	Not calculated	612,298

TABLE 7.4.6 Rate of car ownership per thousand population by race in Region 01.

Mid-year Date.	White Group.		Coloured Group.	
1962	268 per thousand.		16 per thousand.	
Growth Rate.	6.6%	5.5%	6.6%	5.5%
1965	309	299	16	16
1970	389	359	16	16
1975	450	429	36	16
1980	450	450	92	45
1985	450	450	147	82
1990	450	450	203	118
1995	450	450	Not calculated	153

TABLE 7.4.7 Number of cars per coloured household in Region 01.

Date.	Dwellings*	No. of cars		Cars per dwelling	
		at 6.6%	at 5.5%	at 6.6%	at 5.5%
1970	110,023	11,650	11,650	.10	.10
1980	178,506	102,998	50,326	.58	.35
1990	304,076	347,811	202,354	1.14	.66

* Estimates taken from Louw, A ; Metro 2000: M.U.R.P. Project 1967/2/1 Table A.2.4.5. sum of items d, e, n & o.

TABLE 8.1

1960 : PUBLIC TRANSPORT : ACCESSIBILITY TO C.B.D.

	White.	Coloured.	All.
0 - 15 minutes	27% 94,826	18% 85,180	21% 190,017
15 - 30 minutes	29% 101,257	34% 160,331	32% 295,968
30 - 45 minutes	22% 75,749	24% 115,133	22% 207,245
0 - 45 minutes	78% 271,832	76% 360,644	75% 693,230
Population	350,277	476,183	921,768

2000 : CAR : ACCESSIBILITY TO C.B.D.

	White	Coloured.	All.
0 - 15 minutes	70% 485,548	9% 245,696	20% 731,244
15 - 30 minutes	55% 386,317	27% 694,245	31% 1,110,098
30 - 45 minutes	10% 72,393	64% 1,661,065	48% 1,733,458
0 - 45 minutes	136% 944,258	100% 2,601,006	100% 3,574,800
Population	696,518	2,601,006	3,574,800

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TABLE 8.2 Income per Capita: Growth Rates.

	Consumer Price Index	Region 01 Whites	Region 01 Coloureds	Claremont/Newlands Whites	Wynberg Whites
a. June '60	102.1	R783	R147	R1,135	R689
b. June '65		R1,139	R230 [f]		
c. May '66				R1,942	
d. May '67					R1,192
e. June '68	132.2				
Growth Rate	2.3%	7.5%	9.4%	9.4%	8.1%
Corrected Growth Rate	0.0%	5.2%	6.1%	6.1%	5.8%

Sources:

a. Cape Provincial Administration: Greater Cape Town Region: Planning Report No. 2 : ibid : 1.1. 22, 23.

b. Bureau of Statistics : Report No. 11-06-01 : November, 1966.

c, d. U.C.T. Department of Urban and Regional Planning project surveys.

e. Bureau of Statistics: Monthly Digest of Statistics : Government Printer, Pretoria.

f. Market Research Bureau (University of South Africa) : Income and Expenditure of Coloured Households: 1965 : Report No. 9. Craft Pers, Pretoria, 1965, p.p. 64. (Income quoted is projected forward from Jan. 1964.)

TABLE 8.3 Retail Expenditures.

Breakdown of National Retail Expenditure: 1967.
After Taxation and Savings.

	R m	Percentage.
Food, Drink and Tobacco	2,125	56%
Clothing, Footwear	659	17%
Furniture	462	12%
Services	277	7%
Personal Care	286	8%
TOTAL	3,809	100%
Food only	1,642	43%
Drink only	278	7%
Tobacco only	205	5%

Retail Compared to Total Expenditures:

Retail Expenditures less Drink and Tobacco, as a proportion of Total Expenditures.

	R m	Percentage.
Retail	3,326	57%

Source: S.A. Reserve Bank.

Suburban Percentage Share of Retail Expenditure: Parow 1966:

Food	84%
Clothing and Footwear	76%
Furniture and Appliances	66%
Services	91%
Pharmaceuticals and personal care	88%

Source: Parow Survey: Plan Medewerkers, Pretoria.

Appendix to:-

10.2 Social Considerations: Local Policy: Coloured Employment.

The following is extracted from:-

The Cape Provincial Administration: The Greater Cape Town Region : Planning Report No. 2 : Population : 1968 : p.p. 38 - 39.

"Thus it can generally be said that the residences of Whites are relatively dispersed and jobs concentrated, whilst for non-Whites the reverse applies.

Ideally this situation may demand mutually opposing patterns of transportation media. For the Whites, a few main routes pick up all minor feeders and deliver into the main employment concentration.

On the other hand, the non-Whites retain a large number of main routes emanating from their residential concentration from which feeders branch off to their widespread employment locations. The non-Whites are of course the least able to pay for a more comprehensive pattern, and thus have to be subsidised, the cost of which is borne by the State.

The logical conclusions to be drawn from this is that a policy of fostering the growth of employment opportunities for Coloured at a few concentrated locations should be adopted."

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Summary to:

"THE POTENTIAL OF INTRA-URBAN DEFENCE LAND".

Whilst investigating the structure and future form of the metropolis of Cape Town by the year 2000 A.D., (a project undertaken by the second year Urban and Regional Planning students in 1967), it was observed that future expansion would have to leap-frog over land that is held by various government bodies. In most instances the extent of the land held is considerable, particularly that held by the Department of Defence.

For reasons of security the actual use to which defence land is put is unknown to most local authorities. The recent conversion of part of Wingfield aerodrome to a housing estate suggested that there may be a tendency for government institutions to transfer land to one another and that this procedure may not always act in the best interests of the community.

In his address to the general meeting of the Institute of Town Planners, Professor Melvin M. Webber outlined the development of "Planning, Programming and Budgeting" systems in the United States; how the success of their application to military programme planning led President Johnson to order all departments of the Federal Government to adopt them, and how, in turn, State and Local Governments have adapted them to their own use. [1] He hopes that "the thoughtways that attend this sort of economizing approach to planning" will mean that once-separate programmes with "segmental, ad hoc, disjointed-and-incremental approaches" will find overlapping areas where they can co-operate for economy and efficiency. [2]

Assuming that statutory authorities adopt similar thoughtways and wish to show how the resources they control can achieve the optimum utility for the nation, this thesis seeks to find the best alternative use for lands which have outlived their usefulness for defence purposes due to their location or to changes in technology.

1. Webber, Melvin M: The New Urban Planning in America : Journal of the Town Planning Institute : Volume 54 No. 1 : January, 1968 : Pages 6 - 7.

2. Jordan, Radford: An integrated view of efficiency in government : Lecture 9, Law and Public Administration : Department of Urban and Regional Planning, University of Cape Town, 1968.

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The method used has been by way of:-

Section 1.0	:	A statement of intent (pages 1 - 2);
Section 2.0	:	The factors taken as given (pages 2 - 8);
Section 3.0	:	The proposed method of investigation (pages 9 - 11);
Section 4.0 to 9.0	:	The analysis of the data[3] gathered (pages 11 - 28);
Section 10.0	:	A diagnosis (pages 28 - 36); and
Section 11.0	:	Conclusions (pages 37 - 38).

Selected theoretical concepts of urban process have been used for the isolation and analysis of relevant information. It will be noted that no statement has been made of shortages of land for various purposes in terms of proportions of existing zones taken up into their entitled use under the local town planning schemes; rather, market demand in various locations has been indicated by comparing the price paid for one sort of zoned land to another.

As a framework for alternative uses for the site, a condensed series of the local use zones[4] has been adopted. These have been ranked (on page 33) against a series of considerations which attempts to incorporate the exhaustive Aristotelian Categories and the statutory requirementsof a Town Planning Scheme as set out in paragraph 35 (1) of the Township's Ordinance No. 33 of 1934.

To test the conclusions drawn from this method, a weighting system is suggested and applied to the ranked series (on pages 34, 35). It is concluded that this system may facilitate the interaction of the many disciplines and authorities which could be involved in a matter as important as the alternative use of such large areas of land, prior to a co-operative decision being reached.

By extending or restricting the number of categories considered and the range of alternative uses, different conclusions can probably be arrived at regarding the best alternative use. Some

3. Data is drawn from that assembled by students in project 1967/2/1

4. Set out in: The Cape Town Municipality : Town Planning Scheme : Revised Final Statement.

limitations of the operational use of the tables are indicated (under paragraph 10.15, pages 36 - 37). Nevertheless, it would appear that the methodology proposed holds promise for decision-making.

If the optimum utilization of all available resources is a national goal, it would appear from this isolated examination that there may be some benefit to be derived by the examination of all land held by statutory authorities with a view to their alternative uses.

Each succeeding project during the course has stimulated further enquiries, and this thesis is no exception. However, in order to limit the thesis to its terms of reference, matters for further enquiry and some initial findings have been relegated to the Appendix. [5]

Signed

ANDREW LOUW.

5. See Pages 39 - 42:

The growth of car ownership amongst the coloured group;

See Page 43:

The effect of group area restrictions on accessibility to the C.B.D.;

See Page 44:

The relative growth by race group of income per capita in Region 01.