

Formal segregation and population distribution in Port Elizabeth

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A CONSIDERABLE BODY of literature has been built up on the impact of legislated segregation in South Africa. Models of urban form have been propounded and tested on a number of the major centres of the country.¹ The purpose of this article is to examine the course of the experience of the population of Port Elizabeth with regard to legalized segregation and its impact upon urban morphology. The city clearly exhibits the imprint of colonial and later regulations which result in a highly complex landscape yet relatively ordered distribution of population which are of considerable significance, and may be taken as an illumination of the features distinguished in other South African cities.

THE COLONIAL INHERITANCE

The site of Port Elizabeth had been guarded by Fort Frederick since 1799, but it was only in 1815 that a formal township was laid out and a further five years before it received its name. It is one of the distinguishing features of the city that it was a British foundation, administered by British officials, appointed and later elected, from its inception.² It may therefore be expected that the city would have exhibited many of the characteristics of British colonial cities throughout the world, not least in its approach to the housing of a multi-ethnic population. Singapore, founded only four years later (1819), clearly demonstrated an attention to detail in the planning of separate sectors of the town for the several differing ethnic communities which were expected to settle there.³ However, at first no such grand plan was envisaged at Port Elizabeth as the town was not expected to grow to metropolitan proportions. In fact, the European, Cape Malay and other immigrant communities settled in the town according to economic and social status rather than as a result of formal prescription. Even in 1855 the population had only reached 4 793 of whom 3 509 were Whites (Table 1).⁴

TABLE 1 : POPULATION OF PORT ELIZABETH 1855-1985

Year	Whites (000s)	Coloureds (000s)	Asians (000s)	Blacks (000s)	Total* (000s)
1855	4	1	-	1	5
1865	7	2	-	2	11
1875	9	2	-	2	13
1891	14	6	-	4	24
1904	23	10	2	7	41
1911	20	12	1	8	41
1921	27	14	1	12	54
1936	54	28	2	30	114
1951	80	46	4	71	200
1960	95	68	4	121	288
1970	120	95	5	167	387
1980	120	106	6	296	428
1985	131	131	7	233	502

*Totals may not agree due to rounding

Nevertheless the presence of groups of indigenous persons in the vicinity of the town and the immigration of others led to the introduction of a formal system of segregation. The first evidence of this was the establishment of a separate congregation for the indigenes by the London Mis-

sionary Society in 1825. Nine years later a formal township was laid out to house this congregation.⁵ The settlement was situated approximately half a kilometre to the north-west of the original town, beyond the cemeteries.

In 1847 the Cape Colonial government issued regulations for the establishment of greater municipal control over the indigenous inhabitants and encouraged the setting aside of distinct "native locations" to be built some "one or two miles" (1,6-3,2 kilometres) from the main part of the town.⁶ In 1855 the Port Elizabeth authorities established the first municipal location, adjacent to the London Missionary Society's station. The indigenous inhabitants were further forbidden to live outside the location, unless housed by their employers or were exempt from the laws restricting the indigenous population.⁷ Exemption and the franchise were gained through the acquisition of fixed property or prescribed income levels. Appropriately called the Native Strangers Location, it was indicative of the official concept that the indigenous Blacks were only a temporary part of the urban population.

In the ensuing decades new municipal locations were established as the population grew and existing accommodation became overcrowded. Thus a series of sites to the west of the city was established which housed approximately half of the Black population of the settlement. One private location, Gubb's Location, was established and run independent-

¹ See for example R.J. DAVIES, The spatial formation of the South African city, *GeoJournal* (supplementary issue) 2, 1981, pp. 59-72; J.J. OLIVIER and P.S. HATTINGH, Die Suid-Afrikaanse stad as funksioneel-ruimte-likesisteem, in F.A. VAN JAARSVELD (ed.), *Verstedeliking in Suid-Afrika* (Pretoria, 1985), pp. 45-61; J. WESTERN, *Outcast Cape Town* (Minneapolis, 1981).

² A.J. CHRISTOPHER, Race and residence in colonial Port Elizabeth, *South African Geographical Journal* 69, 1987, pp. 3-20.

³ S.E. TEO and V.R. SAVAGE, Historical overview of housing change, Singapore, *Singapore Journal of Tropical Geography* 6, 1985, pp. 18-20.

⁴ G.42:57 CAPE OF GOOD HOPE, *Abstract of population returns, 1855*; G.20:66 CAPE OF GOOD HOPE, *Census of the Colony ... 1865*; G.42:76 CAPE OF GOOD HOPE, *Census ... 1875*; G.6:92 CAPE OF GOOD HOPE, *Census ... 1891*; G.11-1904 CAPE OF GOOD HOPE, *Census ... 1904*; Transvaal Archives Depot, Pretoria (TAD), STK 077-080, STK 411-413 and STK 1052-1060: Population censuses and enumerators' summary books, Port Elizabeth district, for 1911, 1921 and 1936 respectively; Central Statistical Services, Pretoria (CSS), STK 2112-2124: Population census, 1951 ..., Port Elizabeth district, and also unpublished enumerators' returns and plans for the 1960, 1970, 1980 and 1985 population censuses.

⁵ LONDON MISSIONARY SOCIETY, *The report of the Directors to the forty-first general meeting of the Missionary Society* (London, 1835).

⁶ *Cape of Good Hope Government Gazette*, 29.7.1847 (Government Notice, dated 7.7.1847, concerning Native Locations).

⁷ *Eastern Province Herald*, 29.5.1855 (Municipal regulations re Native Strangers Location).

ly. Here the Black population was permitted to build traditional-style houses and brew beer, both of which activities were banned in the municipal locations. By the end of the century this was by far the largest location, possibly on account of the freedom which was afforded its residents.

However, the growth of the city resulted in White and Coloured suburbs being built adjacent to the Black locations. Demands for the removal of Blacks began in the 1860s and grew in intensity as the 19th century progressed.⁸ Intercommunal riots in the 1880s resulted in the acceptance of a plan to remove those locations situated close to the centre of the town.⁹ Financial constraints and disputes over property rights, however, stalled the proposed removals. White attitudes to racial separation hardened in the late 19th century and were focused upon the 'sanitation syndrome'. This related the mixing of the races with the prevalence of disease, while segregation, it was believed, would leave both Whites and Blacks less liable to its incidence. Each outbreak increased the level of White demands for action.¹⁰

Finally, in 1901 bubonic plague broke out in the city and the opportunity arose for the municipality to engage government assistance. Contaminated houses were demolished and the Black population removed from the central locations. Two options were open to the Black people who were evicted: they could either migrate to a new government location at New Brighton (some 8 kilometres to the north of the town), or they could buy or rent property outside the municipal boundary at Korsten.¹¹ The latter settlement was the site of an unsuccessful speculative venture where plots were available at low cost and not subject to municipal bylaws.



Red Location, New Brighton, 1988.*

By 1910 all Blacks not housed by their employers or able to purchase property, were relocated outside the central area of the city. Furthermore, nearly half were accommodated in formal locations or barracks-style housing, erected by the Harbour Board, while a further 30% lived in Korsten. The Black population of Port Elizabeth was thus highly segregated and subject to a major body of legal restraints on residential options (Figure 1).¹²

POPULATION GROWTH AND INCREASING SEPARATION (1910-1950)

The Union period in Port Elizabeth was one of considerable growth. The population grew from 42 000 in 1911 to 200 000 in 1951 as a result of the massive influx of people attracted by the opportunities offered by a broadening industrial base. The city expanded rapidly in area as new formal suburbs were laid out, and as a result of the erection of populous shanty towns during and immediately after the Second

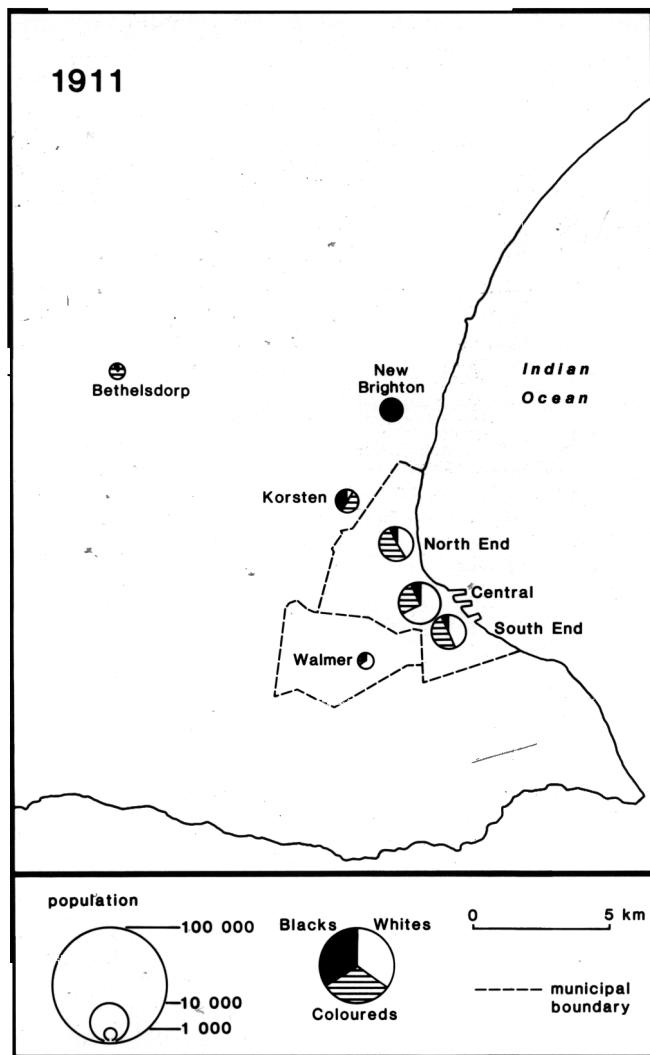


Figure 1: Distribution of population, 1911.

World War. Growth was accommodated within the predetermined colonial framework to which new determinants were added as the central government assumed an increasing role in regulating urban development.

Several new measures restricted the residential options of Port Elizabeth's growing population. First, the laws governing Black residence and occupation were tightened, notably under the Natives (Urban Areas) Act of 1923 and subsequent amendments.¹³ The municipality assumed responsibility for establishing and maintaining Black townships, which were subject to strict controls limiting the influx of migrants from the rural areas. Restrictions on the purchase of property by Blacks outside demarcated Black locations enacted under

⁸ CAPE OF GOOD HOPE, *Blue Book of the Colony*, 1872 (Cape Town, 1873), p. JJ17 (Report of the Civil Commissioner of Port Elizabeth).

⁹ A.10'83 CAPE OF GOOD HOPE, *Report of the Select Committee on the Port Elizabeth Native Strangers Location Bill*.

¹⁰ M. SWANSON, The sanitation syndrome: bubonic plague and urban native policy in the Cape Colony 1900-1909, *Journal of African History* 18, 1977, pp. 387-410.

¹¹ A.15-1903 CAPE OF GOOD HOPE, *Report of the Select Committee on the Native Reserve Location Act*.

¹² TAD, STK 077-080: Population census, 1911, and enumerators' summary books, Port Elizabeth district.

¹³ T.R.H. DAVENPORT, *The beginnings of urban segregation in South Africa: the Natives (Urban Areas) Act of 1923 and its background* (Grahamstown, 1971).

*All photographs by Anne Christopher.

the Native Trust and Land Act of 1936, prevented the establishment of new independent Black residential areas. Black political rights, exercised earlier in the century when Korsten had been purchased by Black people displaced from the centre of the city, were extinguished, preventing any recurrence of the move.¹⁴ New housing for Blacks was to be provided entirely within officially designated areas adjacent to the New Brighton and Walmer locations.

Secondly, responsibility for housing the poor was placed upon the municipality under the Housing Act of 1920. In order to qualify for central government loans to erect economic and sub-economic housing schemes, the municipality was under the obligation to build separate estates for each of the different race groups "in their own areas".¹⁵ No overall plan was adopted in Port Elizabeth to define the meaning of "own areas", with the result that Coloured and White housing schemes were often sited adjacent to one another on municipal land. However, they were separated by buffer strips and initially no direct road links were made between the estates of different groups. Thus single race suburbs for Whites and Coloureds were built for the first time in the 1920s. By 1940 some 1 402 European, 2 038 Coloured and 2 648 Black houses had been approved.¹⁶

Thirdly, private township developers inserted racially restrictive clauses into their title deeds to prevent ownership or occupation of plots by people other than of the 'desired' racial group. In the vast majority of cases the clauses restricted ownership and occupation to Whites. Thus the proprietors of Newton Park, the Fairview Suburban Estate Company, inserted a clause prohibiting ownership or occupation by any "Coolie, Chinaman, Arab, Kafir or other such Coloured person".¹⁷ Others prescribed that only "full blooded Europeans" could occupy or purchase property.¹⁸ However, a fairly standard form of clause was evolved:

This erf or any portion thereof shall not be transferred, leased or in any other manner assigned or disposed of to any Asiatic, African Native, Cape Malay or any person who is manifestly a 'Coloured' person, as also any partnership or Company (whether incorporated or otherwise) in which the management or control is directly or indirectly held or vested in any such person. Nor may any such person other than the domestic servants of the registered owner or his tenant reside on this erf or in any other manner occupy the same.¹⁹

Open townships, without racial covenants, thus attracted Coloured and Asian residents as the only new suburbs available to them. The result was again an increase in segregation as all-White suburbs came into existence, except for the Coloured and Black servants housed by the owner. Significantly the municipal authorities did not include such clauses in the townships they laid out for private ownership, although some government agencies, such as the Harbour Board, prevented non-White occupation.

In the period from 1910 to 1950, although no overall segregationist philosophy was adopted, the various urban population groups thus became more separated from one another with many of the features of segregation noted elsewhere in the world. Although all-Black suburbs were of early colonial origins, all-White and all-Coloured suburbs date only from the 1920s. Mixed suburbs continued in existence although a decreasing proportion of the population lived within them as most new extensions to the city were basically single-race in residential make-up (Figure 2).²⁰

GROUP AREAS AND ITS IMMEDIATE IMPACT IN THE 1950s

In 1950 two of the most significant pieces of legislation in South Africa's history were placed on the statute book, laying

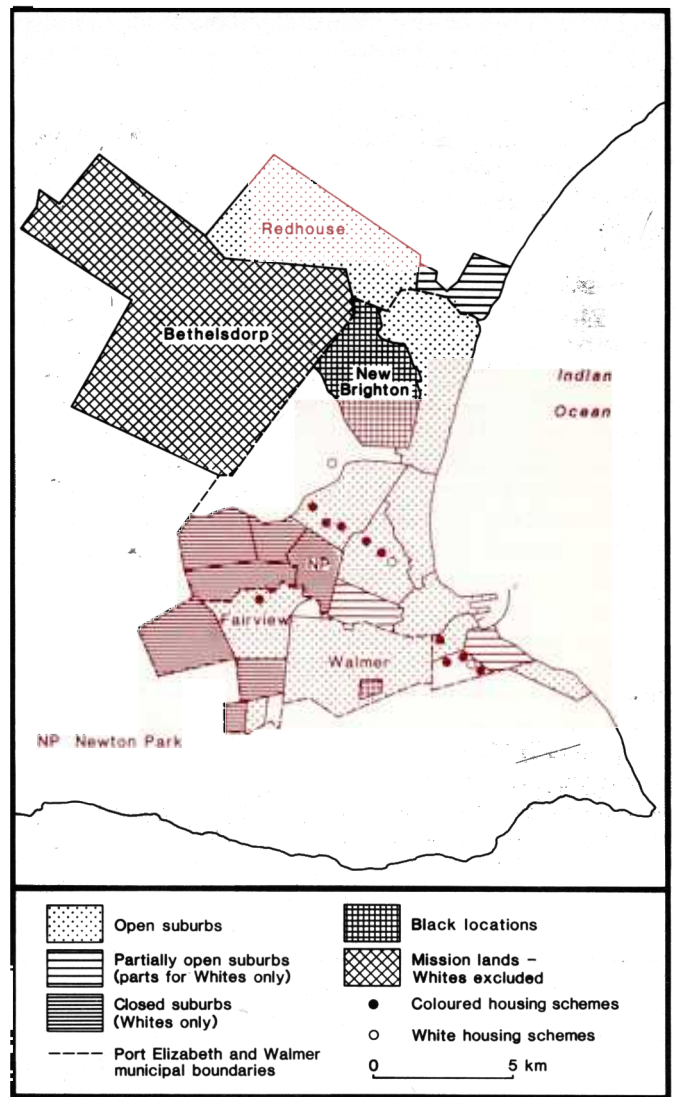


Figure 2: Racial status of suburbs, 1950.

the foundations of the present apartheid city. The first, the Population Registration Act, provided for the legal classification of the population into distinct racial groups. The second, the Group Areas Act, required that these groups live within areas designated for their exclusive use. Thus a series of separate single-ethnic areas were to be demarcated for every town and city, and the population was to be transferred in order to fit the new pattern of group areas. The officially stated purpose of the Act was to reduce racial conflict which was felt to be endemic in mixed areas but absent in segregated areas — an updated version of the 'sanitation syndrome'. The importance of the Act was underscored by Dr T.E. Dönges, Minister of the Interior, who guided the Bill through parliament. He stated that the Bill had been introduced because "we do not believe that the future of

¹⁴ C.M. TATZ, *Shadow and substance in South Africa: a study in land and franchise policies affecting Africans, 1910-1960* (Pietermaritzburg, 1962).

¹⁵ *Cape Times*, 19.6.1920 (Sir Thomas Watt, Minister of Public Health, introducing the Housing Bill, 18.6.1920).

¹⁶ U.G.19-1941 UNION OF SOUTH AFRICA, *Reports of the Central Housing Board, 1940*.

¹⁷ Port Elizabeth Municipality (PEM): Terms and conditions of township establishment, Newton Park.

¹⁸ Deeds Office, Cape Town, Erf 2825 Korsten: Title deed conditions (Fowler township, 1930).

¹⁹ PEM: Terms and conditions of township establishment, Algoa Park.

²⁰ Map compiled from the records of the Deeds Office and Surveyor-General's Office, Cape Town.

South Africa will be that of a mixed population, and this is one ... of the major measures designed to preserve white South Africa".²¹

The proclamation of group areas in Port Elizabeth was a complex and emotional issue as the inner parts of the city were occupied by the various groups in an integrated society dating back to colonial times (Figure 3).²² The more peripheral regions dating from the present century were already segregated to a large extent. However, the official plans provided that the inner suburbs and the Central Business District were proclaimed White.²³ Furthermore, those Coloured housing estates which lay in the southern and central parts of the city were incorporated into the large compact blocks of White proclaimed land. Segregation was designed to be achieved in broad sectors rather than on an individual township or suburb basis. The process of group areas proclamation continued from the first broad framework laid down in 1960 until the present time.²⁴ The resultant plan provided the basis for the subsequent organization of the city (Figure 4).²⁵ It is noticeable that the proclamations only provided for some of the prescribed buffer strips. Most of the strips separating suburbs of different groups were established by leaving waste land areas within the proclaimed group area.²⁶

The changes which accompanied the proclamation of group areas in 1960 began earlier, in anticipation of the proclamation, and in terms of other legislation affecting Blacks. Thus municipal townships for private sale laid out after 1949 all included racially restrictive clauses for occupation and

Figure 3: Distribution of population, 1951.

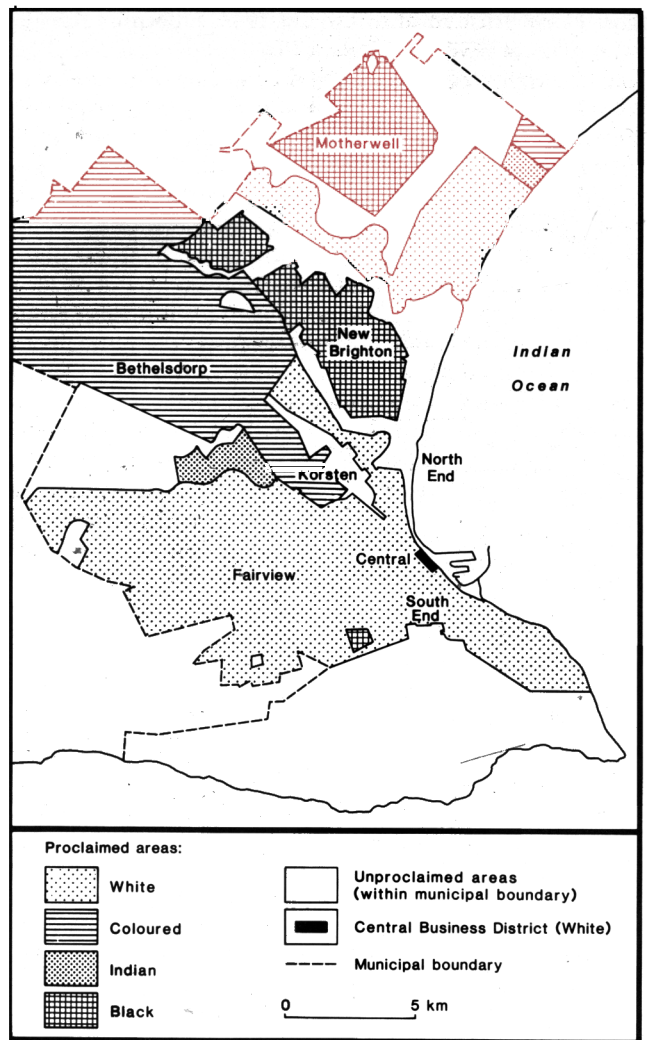
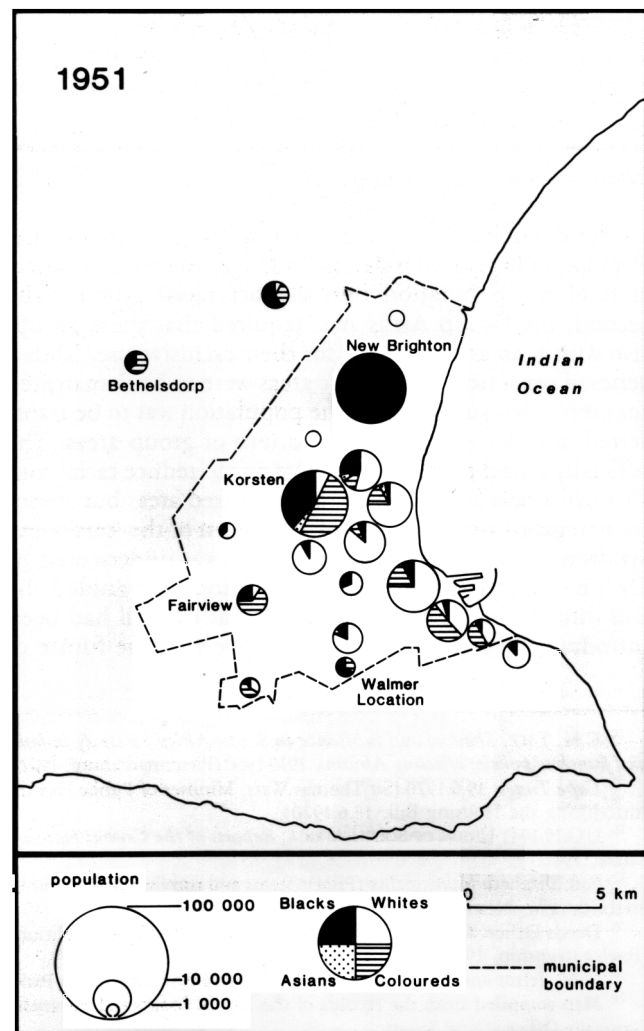


Figure 4: Group Areas, Port Elizabeth.

ownership, specifying that it was intended for Europeans, Asiatics or Coloureds, whereas previously no such restrictions had been included.²⁷ This action was noted in the Assembly debate on the Group Areas Bill in 1950 as a voluntary forerunner of the central government scheme.²⁸ The major state programme in the 1950s, however, was concerned with the removal of Blacks from throughout the city to new townships adjacent to New Brighton. As a result this suburb grew in population from 35 000 to 97 000 in nine years (1951-1960). By 1960 some 83,6% of the Black population lived in designated locations. The extensive shanty towns were

²¹ UNION OF SOUTH AFRICA, *Debates of the House of Assembly*, 13.6.1950, col. 8834 (Dr T.E. Dönges, Minister of the Interior, summing up the debate on the Group Areas Bill).

²² CSS, STK 2112-2124: Population census, 1951, enumerators' summary books, Port Elizabeth district, and relevant maps.

²³ W.J. DAVIES, *Patterns of non-White population in Port Elizabeth, with special reference to the application of the Group Areas Act (Port Elizabeth, 1971)*.

²⁴ J.G. NEL, *Die geografiese impak van die Wet op Groepsgebiede en verwante wetgewing op Port Elizabeth* (M.A., UPE, 1987).

²⁵ PEM: Map of Group Areas in Port Elizabeth.

²⁶ A.J. CHRISTOPHER, *Apartheid planning in South Africa: the case of Port Elizabeth*, *Geographical Journal* 153, 1987, pp. 195-204.

²⁷ PEM: Terms and conditions of township establishment, Summerstrand; PEM: Report by the City and Water Engineer on Summerstrand Extension No. 2, 14.2.1950.

²⁸ UNION OF SOUTH AFRICA, *Debates of the House of Assembly*, 29.5.1950, col. 7446 (Dr T.E. Dönges, Minister of the Interior).

largely demolished and few Blacks remained in Korsten, whereas there had been some 17 000 resident there in 1951. This massive change, involving the housing of an additional 64 000 people in Black locations in nine years, was the first and most spectacular manifestation of the new sense of urgency and commitment in government circles to segregation as a policy to be enforced to its logical conclusion, namely total residential separation.

Removal of Blacks to the designated Black areas was facilitated by the long inheritance of Black segregation with separate housing areas physically removed from the remainder of the town. These areas could be extended to accommodate the demands made upon them through the acquisition of land on the periphery of the city. The White areas again presented few problems as only 1% of the White population was subject to displacement because virtually all areas inhabited by Whites were declared to be White group areas (Table 2). However, only half the Coloured population lived in areas proclaimed Coloured and a new area in its entirety was required for the Asian population.

TABLE 2 : DISTRIBUTION OF POPULATION IN PORT ELIZABETH 1951

Population group	Resident in group areas as eventually proclaimed				
	White area	Coloured area	Asian area	Black area	Total
White	78 622	733	-	153	79 508
Coloured	23 534	18 436	-	3 547	45 517
Asian	3 313	659	-	88	4 060
Black	14 938	15 525	-	40 235	70 698
TOTAL	120 407	35 353	-	44 023	199 783



Victorian house built c. 1890 in the then still unsegregated central suburbs of Port Elizabeth.

Coloured and Asian group areas were established on the edge of the built-up area between the White and Black sectors. The Asian population was divided into two, Chinese and Indian, the majority. New housing programmes were begun prior to the formal declaration of the group areas although progress was slow, when measured against the Black programme. Thus the number of Coloureds and Asians living in areas intended for White occupation increased slightly between 1951 and 1960, reflecting the priorities of government planners (Table 3).

TABLE 3 : DISTRIBUTION OF POPULATION IN PORT ELIZABETH 1960

Population group	Resident in group areas as eventually proclaimed				
	White area	Coloured area	Asian area	Black area	Total
White	94 253	344	-	290	94 887
Coloured	24 989	41 629	-	1 428	68 046
Asian	3 336	945	104	63	4 448
Black	10 776	4 545	1	105 792	121 114
TOTAL	133 354	47 463	105	107 573	288 495

The outcome of the 1950s was a markedly more ordered city in terms of group areas occupation. Whereas in 1951 some 31,3% of the population lived in the 'wrong' area, by 1960 this had been reduced to 16,2%. Some 47 000 people however remained in areas designated for groups other than their own (Figure 5).²⁹

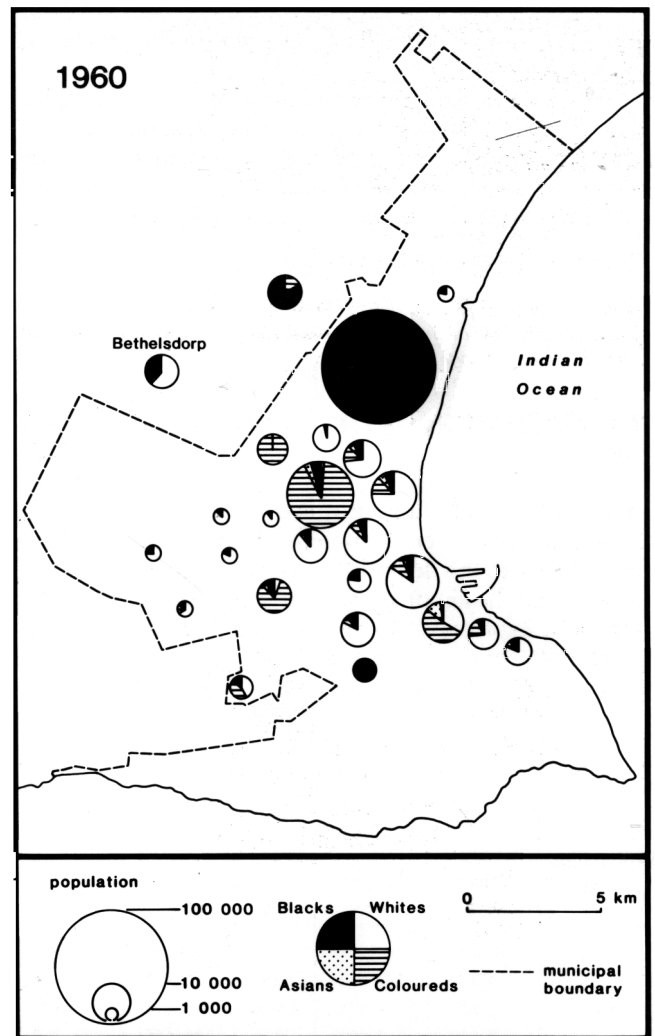


Figure 5: Distribution of population, 1960.

The problems of definition in terms of the Population Registration Act included the attempt to define a separate Cape Malay population and area. However, in no part of the town was there a Cape Malay majority, even adjacent

²⁹ CSS: Population census, 1960, enumerators' summary lists, and relevant enumerators' tract maps.

to the mosques in South End. The attempt at the time of the 1951 census to determine the extent of the Cape Malay population did not therefore lead to the establishment of a separate area for this group, although the presence of approximately 1 000 Chinese prompted the establishment of a separate Chinese area adjacent to the White and Indian group areas. (This was abolished in 1984 when the Chinese population was reclassified as White.)



Rudolph Street mosque, South End, in the 1980s. Since Islamic law decrees that no mosque may be demolished, it remained standing when the suburb became a White group area. (See cover photograph.)

IMPLEMENTATION OF THE GROUP AREAS ACT (1960-1985)

In the 25 years following the proclamation of the first group areas in the city, attempts were made to fit the population more closely to the desired pattern of group areas. This was largely brought about by 1985 as a result of a number of large-scale expropriations and rehousing schemes. By 1985 a mere 3,3% of the population lived outside their respective group areas (Figure 6; Table 4).³⁰

TABLE 4 : DISTRIBUTION OF POPULATION IN PORT ELIZABETH 1985

Population group	Resident in group area as proclaimed				Total
	White area	Coloured area	Asian area	Black area	
White	130 932	101	5	13	131 051
Coloured	3 574	126 712	284	579	131 149
Asian	175	1 805	4 936		6 916
Black	7 640	2 095	131	223 466	233 332
TOTAL	142 321	130 713	5 356	224 058	502 448

Major building programmes in each of the group areas provided residential accommodation. Much of the building in the Indian, Coloured and Black areas was undertaken by the municipality and the central government. The result was the construction of a number of uniform suburbs extending outwards from the initial core of the group area. Blocks of land were set aside for private housing in each case, but the

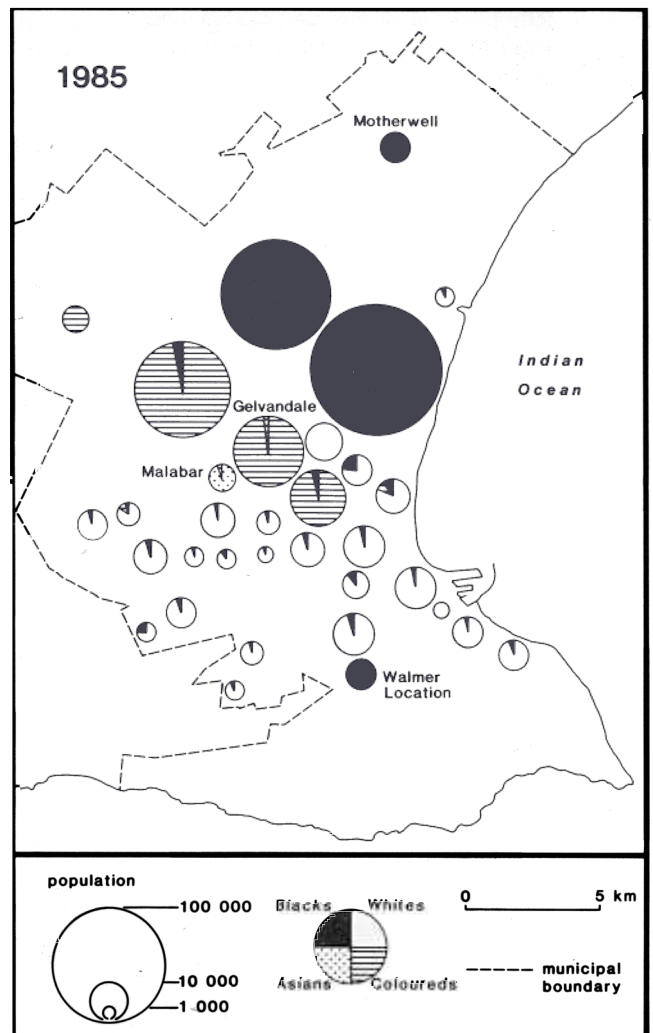


Figure 6: Distribution of population, 1985.

plans and layouts were supervised by the authorities, effectively preventing the emergence of smallholdings or low-density suburbs, as appear in the White group area.

Families were transferred from one municipal housing scheme to another. Thus the inhabitants of the various housing estates provided for Coloureds throughout the designated White areas were moved to the new Coloured suburbs and the evacuated estates were either occupied by Whites or demolished. (The last such estate, Willowdene, was only evacuated and demolished in 1984.)

Properties owned or occupied by persons of groups not qualified to reside in proclaimed group areas were placed under restrictions, which restricted transfer either to a person of the appropriate group or to the authorities. Thus individual families in the inner parts of town were forced to move to their designated group area and their houses were occupied by Whites. Similar transfers took place in other group areas. In some suburbs (notably South End and in limited parts of North End) all properties regardless of ownership were demolished in order to provide for comprehensive redevelopment schemes, which were occupied by Whites.

Building programmes, particularly in the Black areas, were insufficient to meet the needs of the growing population and shanty towns were rebuilt or expanded. These have provided a fringe element to the town which had previously

³⁰ CSS: Population census, 1985, enumerators' summary lists, and relevant enumerators' tract maps.

been significant after the Second World War. Control over services and sites has been exercised in varying extents creating a distinctive urban landscape.

There were a number of restrictions upon the degree to which the segregation levels could be increased. First, the greatest exception to total segregation was the continued provision of accommodation for domestic servants on White-owned properties. Thus significant numbers of Blacks and Coloureds amounting to over 10% of the population of some suburbs remained legally in the White group area. Secondly, problems of definition left a number of Asians and Blacks living with the Coloured population where marriages and family relationships survived the upheavals of relocation. Finally, there were members of various groups who made use of the system of appeals against evictions and of permits to remain in houses in which they were technically no longer entitled to live.³¹ There was little evidence of the survival or re-creation of the 'grey areas' noted in some other metropolitan areas.³²

THE DEGREE OF SEGREGATION

The reorganization of South African cities to achieve the segregation of the various population groups since the colonial era can be monitored through the calculation of segregation indices for the various groups and indices of dissimilarity comparing the distribution of one group with another. The indices are shown on a numerical scale from 0 to 100, with 100 representing total segregation or dissimilarity. The indices are calculated for the various censuses using the information gathered by enumeration tract. These are the basic areal units in a census containing on average approximately 500 to 1 000 people. In the 1985 census Port Elizabeth was covered by some 690 enumeration tracts, compared with only 84 in 1911.³³

TABLE 5 : PORT ELIZABETH INDICES OF SEGREGATION
1911-1985

Index	1911	1921	1936	1951	1960	1970	1985
White	57,67	61,10	72,13	78,61	88,90	94,11	97,32
Coloured	50,16	48,48	56,10	68,02	83,85	91,68	95,97
Asian	*	48,22	57,01	61,35	75,42	83,40	88,29
Black	71,81	73,53	72,08	75,25	87,80	92,43	96,08

*Asians included with Coloureds in enumerators' returns, 1911

Soweto, Port Elizabeth, 1980s.



The indices of segregation calculated for the censuses from 1911 to 1985 exhibit a number of significant features (Table 5).³⁴ Blacks were markedly segregated when compared with the Whites and Coloureds at the end of the colonial era. However, Whites through retreat to newly established all-White suburbs were able to increase their levels of segregation by 1921. This practice, allied to the provision of all-White municipal housing estates in the 1920s and 1930s, resulted in rising levels of segregation until by 1951 Whites were more segregated than Blacks. Blacks in the meanwhile



Built in 1930, originally for Coloureds, Lea Place was occupied by Whites after the proclamation of the Group Areas Act in 1951.

³¹ See NEL, *Geografiese impak van die Wet op Groepsgebiede*, for a discussion of the permit system.

³² M. RAJAH, *The future of residential Group Areas* (Johannesburg, 1986).

³³ Cf. the sources listed in notes 12 and 30 above.

³⁴ Compiled using the population census figures for enumeration tracts and applying the standard formulae:

(a) Index of Dissimilarity (ID):

$$ID_{xy} = \frac{\sum(X_i - Y_i)}{2}$$

(where X_i represents the percentage of the X population in the i th tract; Y_i represents the percentage of the Y population in the i th tract, and ID_{xy} represents the ID between the spatial distribution of the X and the Y populations), and

(b) Index of Segregation (IS):

$$IS_{xz} = \frac{ID_{xz}}{1 - \frac{\sum X_i}{\sum Z_i}}$$

(where ID_{xz} represents the ID between the total population, Z, and the subgroup, X; $\sum X_i$ represents the total number of subgroup X in the city, and $\sum Z_i$ represents the total population of the city).

remained at virtually the same level of segregation as in 1911. Coloureds and Asians, however, followed White trends, albeit more slowly. The construction of all-Coloured suburbs in the 1920s and 1930s resulted in Coloured levels of segregation reaching values not far below the Black and White indices by 1951.

The 1950s, as may be expected, witnessed a substantial rise in segregation levels for all groups. Despite the initial direction of government attention towards Black housing, White segregation levels remained higher than those of the Blacks. This is not surprising as the motivation for the entire programme came from the White electorate. After 1960 the continuance of the programmes resulted in remarkably high levels of segregation being recorded, although no group reached the ultimate state of total segregation. The Asian population remained the most integrated group. However, the index values recorded are remarkably high when compared with studies undertaken in other countries, suggesting the tremendous impact of the legislative component upon the creation and maintenance of residential segregation in South Africa. In general, the arbitrary index value of 50 has been taken as representing the boundary distinguishing segregated from non-segregated populations.³⁵ However, a recent study in North America suggested an index value of 25 as marking this significant divide.³⁶ Judged by either of these criteria, all population groups in Port Elizabeth have been markedly segregated since colonial times.

TABLE 6 : PORT ELIZABETH INDICES OF DISSIMILARITY 1911-1985

Index	1911	1921	1936	1951	1960	1970	1985
White-Black	79,53	81,33	83,21	85,12	93,02	95,44	97,24
White-Coloured	51,67	54,45	69,07	77,14	87,25	94,30	97,58
White-Asian	*	58,45	67,49	72,21	81,73	84,74	97,84
Coloured-Black	68,76	68,58	61,26	72,75	87,98	93,06	96,98
Coloured-Asian	*	39,10	47,28	50,38	61,50	77,07	79,55
Asian-Black	*	80,62	79,80	80,53	93,43	96,66	99,11

*Asians included with Coloureds in enumerators' returns, 1911

Indices of dissimilarity between the various groups show a similar set of trends, notably the high Black-White index indicative of the initial driving force of segregation in the city (Table 6). The steady increase in this, as with other indices, reflects the move to segregation in the present century. A number of anomalies require comment. High levels of Asian-Black dissimilarity reflect the exclusion, from colonial times, of Asians from Black locations. The policy of segregating Blacks from Asians was pursued to the extent that in 1985 this index of dissimilarity was the closest to 100 of all indices. Coloured indices with regard to Blacks and Asians also exhibit some peculiarity. The decline in the Coloured-Black index to reach a trough in 1936 reflects contemporary urbanization and exclusion from White suburbs. However, the Coloured-Asian index suggests a closely integrated society — a fact recognized in the 1911 census when Asians were regarded as Coloureds in the enumerators' returns. Problems of group definition in situations of intermarriage were such that segregationist philosophy could not be pursued so relentlessly among the Coloureds as in the case of Whites.

CONCLUSION

Formal legislated and regulated segregation has been a fea-

ture of the development of Port Elizabeth, as with all South African towns throughout most of its history. The urge to segregate first Blacks and then other groups from the politically and economically dominant White group has resulted in the emergence of cities which are structurally distinct, when comparison is made with Western, Socialist and Third World cities.

Port Elizabeth exhibits many of the features of its history of segregation. The vast new municipal and government housing estates for the various racial groups separated by extensive buffer strips are but some of the more remarkable of these features. Nearer to the core of the city, seemingly incongruous remainders in the form of mosques previously serving Cape Malay and other Moslem communities resident adjacent to them indicate significant changes. Modern suburban, commercial and governmental building zones on the edge of the Central Business District indicate major comprehensive redevelopment schemes which swept away areas of mixed or non-White settlement. In an old established town such as Port Elizabeth, similar removals in the colonial era are evident in features such as street blocks of Edwardian housing built on old location sites surrounded by earlier Victorian houses and mission churches. The extension of a programme of legislated segregation has profoundly affected not only the population of the city but its form and visual detail.

Successive measures to achieve ever higher levels of segregation in Port Elizabeth have resulted in the virtually total residential separation of the various officially defined race groups from one another. Although Blacks were segregated throughout the city's history, formal segregation of the other groups is more recent in origin. However, in the post-1950 era, the city has experienced both rapid growth and markedly more rigorous measures to advance levels of segregation. The result has been the conversion of a colonial city into an apartheid city. □

³⁵ O.D. DUNCAN, and B. DUNCAN, A methodological analysis of segregation indices, *American Sociological Review* 20, 1955, pp. 210-217; J. O'LOUGHLIN and G. GLEBE, Residential segregation of foreigners in German cities, *Tijdschrift voor Economische en Sociale Geografie* 75, 1984, pp. 273-284; R.I. WOODS, Aspects of the scale problem in the calculation of segregation indices, London and Birmingham, 1961 and 1971, *Tijdschrift voor Economische en Sociale Geografie* 67, 1976, pp. 169-174.

³⁶ R.W. WIDDIS, With scarcely a ripple: English Canadians in northern New York State at the beginning of the twentieth century, *Journal of Historical Geography* 13, 1987, pp. 169-192.