

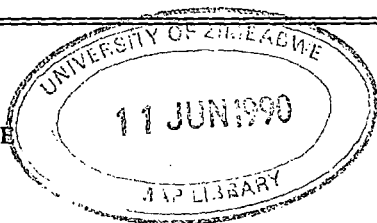
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**MEASURES OF INDUSTRIAL
DISTRIBUTION IN ZIMBABWE**



D.S. Tevera

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**SERVICE CENTRES AND SERVICE
REGIONS IN THE MAGISTERIAL DISTRICTS
OF INANDA AND LOWER TUGELA, NATAL**

R.A. Heath

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Notes on Contributors:

- Dr D.S. Tevera is a Lecturer in Geography at the University of Zimbabwe
- Mr J.R. Whitlow is a Lecturer in Geography at the University of Zimbabwe
- Dr G. Child is the Director of the Department of National Parks and Wildlife Management
- Mr J. Cowley is a Senior Lecturer in the Department of Education (Geography) at the University of Bophuthatswana, Bophuthatswana.
- Mrs R.A. Heath is a Lecturer in Geography at the University of Zimbabwe.

The authors alone are responsible for the opinions expressed in these articles. Articles intended for publication and all correspondence regarding Proceedings should be addressed to the Hon. Editor, c/o Department of Geography, University of Zimbabwe, P.O. Box MP 167, Mount Pleasant, HARARE, Zimbabwe. (Tel. 303211-265).

DISTRICTS OF INANDA AND LOWER TUGELA, NATAL

by

R.A. HEATH

University of Zimbabwe

Inanda and Lower Tugela Magisterial Districts are located on the North Coast of Natal, adjacent to the metropolitan area of Durban. The coastal plain, in this area, is relatively narrow and rises steeply in the west to hilly and dissected country which coincides roughly with the KwaZulu border. The low-lying area of the coastal plain is subjected to considerable land-use pressure. Not only does it comprise the premier sugar producing area of Natal, with high grade agricultural land, but it also forms a major transport corridor between Durban and Richards Bay. In addition, the continuing outward growth of the metropolitan area has created pressure on agricultural land and 'informal settlements', housing people who are unable to obtain accommodation within the city, are developing with alarming rapidity, largely on the highly subdivided land owned by Indian farmers and small-holders. This development has not only removed valuable agricultural land from production, but has placed a heavy burden upon the existing infrastructure of the Natal North Coast.

The Metropolitan Durban Draft Guide Plan of 1974 recommends that 'local growth centres be provided in the region, some distance from Durban, at which overspill population, urban growth and employment can be accommodated'. (T.R.P.C., 1974). The Natal Town and Regional Planning Commission has undertaken a series of studies in order to determine a regional development strategy for the Natal North Coast (T.R.P.C., 1979) and during 1981 and 1982 an analysis was made of the existing service provision in the Lower Tugela and Inanda Magisterial Districts, in order to contribute to that series of studies (Heath, 1985).

From the analysis of the existing provision of services, it was possible to determine the level of services and amenities provided by different centres. Service provision was found to vary markedly, depending on the nature and locational attributes of each centre. The variation enables the grading of centres according to their functional complexity and the creation of a hierarchy of service centres, based upon the nesting of smaller centres within the service regions of larger centres. Using this information, it is possible to determine both potential 'growth centres' in the study region and to indicate those areas which are inadequately served and require additional infrastructure.

THE NATURE OF THE CENTRES.

The entire study area is dominated by metropolitan Durban. The centres within Inanda and Lower Tugela Magisterial Districts provide only limited services for the local population. Even the larger centres are not as well

developed and economically self-sufficient as they would be if they were located at a greater distance from the metropolitan region.

There are five different types of centre in the study area. Stanger is a market town, dominating the northern half of the area. Situated approximately in the centre of Lower Tugela Magisterial District, Stanger provides a range of services and amenities which far exceeds those provided by any other service centre in the study region, acting as a focus and a nodal point for the surrounding countryside.

Along the line of rail, small towns have been established by the sugar companies, usually in association with sugar mills. Tongaat and Darnall are examples of centres of this nature. While the activities of the sugar companies are of paramount importance in these towns, which are established to serve the sugar industry, they also provide a service function to the surrounding rural areas and, in the case of Tongaat, may provide a wide range of services.

Also along the line of rail are small market towns such as Ottawa, Verulam, Shakaskraal and Newark. These range in size from tiny settlements like Fraser, to small towns like Verulam, but all provide some services to the surrounding rural areas and all are important links for both goods and people along the main transport corridor to Durban.

Along the coast lie centres of a very different nature. The seaside resorts vary from well developed and complex towns like Umhlanga Rocks and La Lucia, to the small, simple villages of Zinkwazi Beach and Blythedale Beach. As service centres, however the resort towns all have one thing in common. The services which they provide are geared specifically to the needs of tourists and holiday makers. They provide little in the way of services for the surrounding rural areas, are off the mainstream of movement of goods and people and, except for offering limited employment opportunities, play virtually no part in the daily life of the majority of people living in Inanda and Lower Tugela.

In the west of the study region, away from the line of rail, lie small service centres of purely local significance. These places have, in some cases, grown up around sugar mills, as has occurred at Glenmill and Doringkop. In other instances, the arbitrary location of one or two services has attracted others to the same location. This has happened at Kearsney and Glendale, for example. Alternatively, a large rural population occurring where intensive land subdivision has taken place or where informal settlements have developed will attract low order services and lead to the development of a small service centre. Examples of this type of service centre are Ashville, Spioenkop and Sinebe. Whatever their origin, these centres are small and generally offer only a few low order services.

While it is possible to make general statements about the nature and location of service centres in the study area, a more rigorous analysis is necessary if any meaningful conclusions are to be drawn concerning their influence on the surrounding countryside.

ORDERING THE CENTRES ACCORDING TO FUNCTIONAL COMPLEXITY

The services provided at each and every centre were obtained through interviews with a variety of Government, Local Authority and para-statal

organisations, supplemented by a telephone directory search for services provided by private individuals and organisations. In this way, a comprehensive list of all services occurring was drawn up for every place.

However, it is unrealistic to assume that all services have the same significance, and some account should be taken of the relative centrality, or drawing power, of different services. A hospital, for example, will draw patients from a far wider area than will a clinic and therefore a centre containing a hospital should achieve a higher index of centrality than that containing only a clinic.

The ranking of services by means of the frequency with which they occur is an acceptable procedure. Implicit in an analysis of service centres and service provision is the concept that low order services serve limited populations and therefore occur frequently, whereas high order services serve larger populations and occur less frequently. In order to achieve an index of centrality for each service centre, each type of service was allocated a score of 1, 2, 3, 5 or 10, based upon the frequency of occurrence of that service and hence its relative centrality or drawing power. The less frequently the service occurred, the higher the score allocated to that service. The actual method of allocating scores to services is similar to that used in Zimbabwe (Heath, 1979) and Transkei (Hawkins et al. 1981).

In this way, low order services which occur frequently are awarded a low score of 1 or 2, while high order services occurring less frequently and drawing people from a far wider area are awarded a high score of 10. It is not always necessary to allocate scores to services, and Table 1 which indicates both the number of services and the weighted service score (or index of centrality) for each service centre shows that grading of centres could have been equally satisfactorily achieved without weighting the services. However, in the study area the services available in the smaller centres are frequently very limited, providing only the basic essentials for the rural community. Thus some differentiation between the relative importance of the services is considered necessary in order to give a true representation of the degree of complexity of services offered by a centre and hence its attractive properties with regard to the rural areas and its overall centrality.

For each of 80 potential service centres, the number of services was ascertained and a total weighted service score (index of centrality) was calculated for each place. Sixty-one centres scored a weighted service score of 10 or more and these are included as service centres in Table 1.

Once the weighted service score has been ascertained, it is possible to group the centres into five grades, according to their degree of centrality, using nearest neighbour analysis. Stanger, the only grade V centre, shows a markedly greater degree of centrality than do the five grade IV centres of Tongaat, Verulam, Umhlanga Rocks, La Lucia and KwaMashu.

Table 1: The grading of service centres in Inanda - Lower Tugela Magisterial Districts

| Rank | Centre | No. of Services | Weighted Service Score (Index of Centrality) | Grade |
|------|---------------------------|-----------------|----------------------------------------------|-------|
| 1. | Stanger | 539 | 3 472 | V |
| 2. | Tongaat Township | 361 | 1 995 | |
| 3. | Verulam | 274 | 1 751 | |
| 4. | Umlhlanga Rocks | 221 | 1 431 | IV |
| 5. | La Lucia | 129 | 974 | |
| 6. | KwaMashu | 144 | 844 | |
| 7. | Umlhali | 89 | 595 | |
| 8. | Glen Ashley | 91 | 574 | |
| 9. | Ballito | 72 | 437 | |
| 10. | Glen Anil | 53 | 375 | |
| 11. | Inanda | 67 | 320 | III |
| 12. | Darnall | 54 | 297 | |
| 13. | Shakaskraal | 62 | 277 | |
| 14. | Kearsney | 29 | 172 | |
| 15. | Newsel-Umdloti Beach | 25 | 135 | |
| 16. | Groutville | 15 | 98 | |
| 17. | Duffs Road | 16 | 96 | |
| 18. | Salt Rock | 14 | 94 | |
| 19. | Glenmill | 14 | 91 | |
| 20. | Canelands | 10 | 77 | II |
| 21. | Ottawa | 12 | 76 | |
| 22. | New Guelderland | 15 | 71 | |
| 23. | Glendale | 12 | 65 | |
| 24. | Doringkop Compensation | 16 14 | 62 62 | |
| 26. | Gledhow | 7 | 56 | |
| 27. | Fraser | 6 | 53 | |
| 28. | Zinkwazi Beach | 8 | 52 | |
| 29. | Spioenkop | 6 | 42 | |
| | Sinembe | 6 | 42 | |
| 31. | Tugela | 4 | 40 | |
| 32. | Chakas Rock | 8 | 38 | |
| 33. | La Mercy | 6 | 37 | |
| 34. | MeIville | 5 | 36 | |
| | Blythedale Beach | 8 | 36 | I |
| 36. | Newark | 8 | 35 | |
| 37. | Waterbosch | 5 | 34 | |
| 38. | Tinley Manor | 6 | 32 | |
| 39. | Sheffield Beach | 5 | 29 | |
| 40. | Mt. Moreland | 4 | 24 | |
| 41. | Cottonlands | 4 | 22 | |
| 42. | Vlakspruit | 3 | 21 | |
| 43. | Tinley Manor Beach | 5 | 20 | |
| | Waterfall | 2 | 20 | |
| | Coleraine Estate | 2 | 20 | |

| | | | |
|-----|---------------|---|----|
| 46. | Tongaat Beach | 3 | 15 |
| 47. | Spitzkop | 3 | 14 |
| | Ocean View | 3 | 14 |
| 49. | Havelock | 2 | 11 |
| 50. | Ashville | 1 | 10 |
| | Coniston | 1 | 10 |
| | Willard Beach | 1 | 10 |
| | Charlottedale | 1 | 10 |
| | Mt Albert | 1 | 10 |
| | Selection | 1 | 10 |
| | Sans Souci | 1 | 10 |
| | Thrings Post | 1 | 10 |
| | Wewe | 1 | 10 |
| | Zinkwazi | 1 | 10 |
| | Gledhow Rail | 1 | 10 |
| | Kahlamba | 1 | 10 |

Figure 1 indicates the number of services of each order occurring in each grade of service centre, and it is obvious how much Stanger outranks all other service centres in the study area with almost 2 1/2 times the number of services provided by the average grade IV centre.

An interesting point shown in Figure 1 is the fact that, in each grade of service centre, there are more order 3 services than there are order 1 or 2, and more order 5 services than there are order 4. This is in direct conflict with theory which states that low order services should occur more frequently than high order services, and represents the fact that low order services, particularly low order commercial services, are scattered over the study area in single units and not concentrated in the service centres. The same factor applies to the order 4 services of Church/Temple/Mosque and Black primary school which are widely scattered and affect the numbers of this order of service in the service centres.

Having graded all service centres, it is possible to order them into a hierarchy, based upon their service regions.

THE HIERARCHY OF SERVICE CENTRES

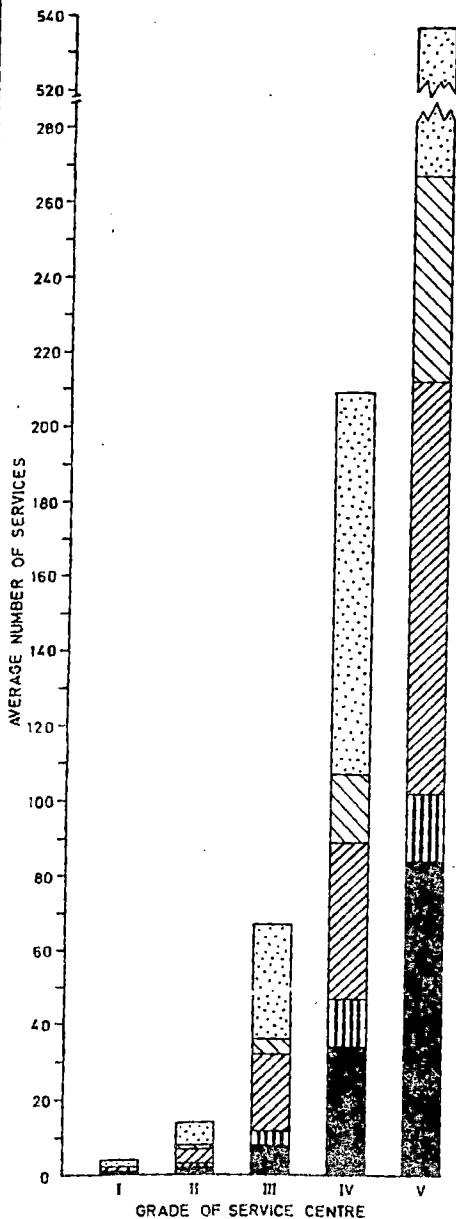
The movement of people and goods may be used to assess the rural area which is served by any centre. Large service centres with a marked degree of complexity will serve large rural areas. Within those larger service regions will lie smaller service centres, each with their own smaller service region. People using the smaller centres for low order goods or services will travel to the larger centre to obtain higher order goods and services.

A delimitation of the service regions of all the centres listed in Table 1 is shown on Figure 2. From this map, it is evident that service regions of the higher grade centres are aligned largely along an east-west axis. The pattern reflects the effect of the incised valleys of the major rivers on transport routes and the movement of goods and people. The larger rivers also act as boundaries to, or barriers between, service regions.






Stanger is the major service centre for all but the south west of Lower Tugela Magisterial District. This, again, is a function of routeways.

AVERAGE PERCENTAGE OF TOTAL SERVICES OF EACH ORDER WITHIN EACH GRADE OF SERVICE CENTRE

| GRADE OF CENTRE | ORDER OF SERVICE | | | | | Total |
|-----------------|------------------|------|------|------|------|-------|
| | 1 | 2 | 3 | 4 | 5 | |
| I | 0,1 | 0,02 | 0,1 | 0,01 | 0,2 | 0,4 |
| II | 0,3 | 0,06 | 0,5 | 0,06 | 0,8 | 1,7 |
| III | 1,0 | 0,5 | 2,3 | 0,5 | 3,7 | 8,0 |
| IV | 4,1 | 1,5 | 5,2 | 2,1 | 12,3 | 25,2 |
| V | 10,1 | 2,2 | 13,3 | 6,6 | 32,5 | 64,7 |
| Total | 15,6 | 4,25 | 21,4 | 9,25 | 49,5 | 100 |



ORDER OF SERVICE SCORE

-  — 10 points
-  — 5 points
-  — 3 points
-  — 2 points
-  — 1 point

RM/RAH

FIG. 1 THE AVERAGE NUMBER OF SERVICES OF EACH ORDER OCCURRING IN EACH GRADE OF SERVICE CENTRE IN INANDA AND LOWER TUGELA MAGISTERIAL DISTRICTS

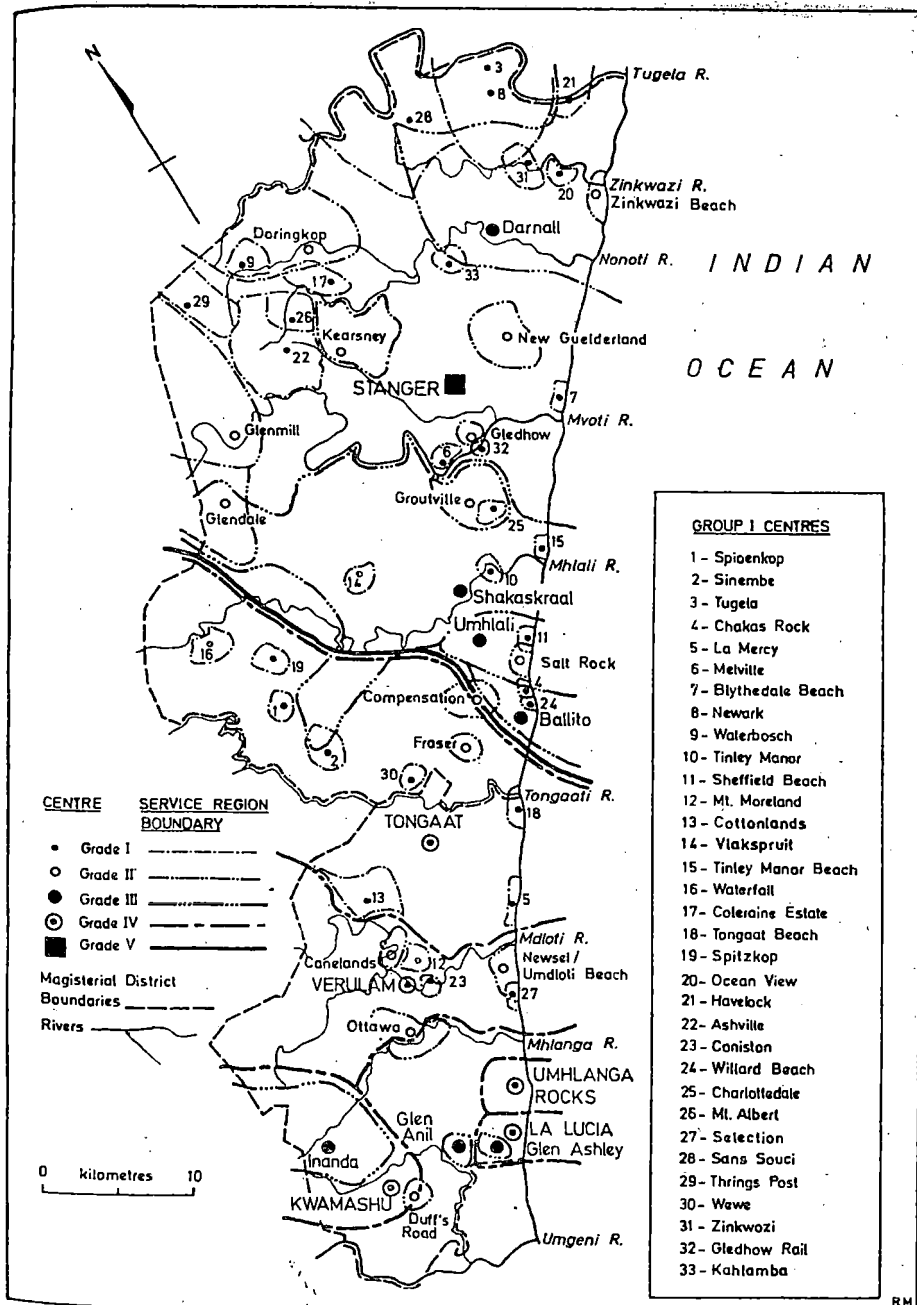


FIG. 2 SERVICE CENTRES AND SERVICE REGIONS IN THE INANDA AND LOWER TUGELA MAGISTERIAL DISTRICTS 1982.

The main route linking Waterfall, Spitzkop, Spioenkop and Sinembe is the route between Tongaat and Umvoti in KwaZulu, causing these small service centres to fall within Tongaat's service region.

Stanger is the only Grade V centre in the study region, and there are no Grade IV centres in Lower Tugela. In Inanda Magisterial District, no centre is high enough to reach a Grade V, but there are five Grade IV centres, comprising the seaside resorts of Umhlanga Rocks and La Lucia; the sugar company and market town of Tongaat; Verulam, which is an important nodal centre and small market town; and KwaMashu which has grown because of its peculiar situation as a dormitory town for metropolitan Durban, located in KwaZulu.

The service regions of the Grade IV centres are smaller than that of Stanger, as would be expected, but three of the Grade IV centres still serve fairly extensive rural areas. In contrast, Umhlanga Rocks and La Lucia have small service regions, reflecting their concentration upon services for holiday makers and their lack of involvement with the surrounding rural areas.

Grade III centres vary markedly in service region characteristics. Darnall and Shakaskraal cover substantial areas (bigger than some of the Grade IV service regions in the south) and show a degree of nesting of smaller service centres and their service regions within those areas. This nesting represents an approximation of normal service centre development and a logical provision of services. Ballito shows the sea-side resort pattern of a restricted service area, although with a limited amount of nesting, while Uahlali represents a small town on the line of rail serving the sea-side resorts of Salt Rock and Sheffield Beach.

In Inanda Magisterial District, Grade III centres, in most cases, have unusually small areas. Glen Anil and Glen Ashley are dormitory suburbs for metropolitan Durban, providing limited services for their own residents and having no effect on the surrounding countryside. Only Inanda has a service region of any size, providing low order services for a large area of 'informal housing'.

Grade II service centers have small service regions, although they are generally larger in Lower Tugela than they are in Inanda, where they serve only as local service centres for the immediate population, because of competition from metropolitan Durban and the Grade IV centres. In Lower Tugela, the overall lack of service provision gives Grade II centres a greater significance and centrality than they merit in terms of actual services provided. The only significant nesting of smaller service centres within a Grade II service region occurs at Doringkop.

Grade I centres occur mainly in Lower Tugela, with a limited number in Inanda, north of the Mhlanga river. This is due to the excellent public transport services in the south of the study region and the relative proximity of metropolitan Durban and the Grade IV centres. Even in Lower Tugela, where there are more Grade I centres, there is very little nesting of these service centres within the service regions of larger places. They provide minimal local services to the immediate population, who otherwise travel to Stanger for higher order goods and services.

Substantial areas within the study area fall only within the service regions of the Grade IV or V centres. In some instances, this reflects

the sparse population of the larger sugar estates, but lack of services also occurs in areas of small holdings and 'informal settlement'.

Table 2 indicates the hierarchy of service centres determined from the analysis of service regions, and shows the linkages between those service centres. As with Figure 2, the most outstanding feature shown on this table is the lack of linkages between low and middle grade service centres, reflecting the lack of nesting of low grade centres within the service regions of higher grade places. This reflects an overall lack of development of the service centre hierarchy and of the provision of services.

Poorly developed lower and middle grade centres are a common characteristic of Third World countries with dual economies. The wealthier sector of the community has no need for low grade centres and travels directly to the larger places for goods and services, while the poorer sector has a very low purchasing power and so is not able to encourage a close network of lower grade service centres. In Inanda and Lower Tugela Magisterial Districts, the problem is compounded by the effect of metropolitan Durban and the relative ease of transport to that city. This means that most service centres fulfil the role of the corner shop for the immediate population, and higher order goods and services are obtained in the metropolitan area. The end result is that both Inanda and Lower Tugela are characterised by a poorly developed hierarchy of service centres.

CONCLUSION

The analysis of actual services provided, and of the service regions, indicates that the western part of the study area is poorly served. This is particularly so in western Lower Tugela, which is the most remote part of the study area. The provision of additional infrastructure and the upgrading of low grade service centres such as Ashville, Glendale and Waterfall or Spitzkop would do much to alleviate the real service deprivation suffered by these communities.

Further service provision is also required at Inanda. An extremely large population, much of which is living in 'informal housing', is served by scattered, largely commercial, low order facilities. In order to obtain higher order services, these people have to travel to KwaMashu or to Durban, entailing a journey which is both time consuming and expensive. Considering that the inhabitants of the Inanda service region are amongst the poorest members of the community, thought should be given to upgrading existing services and to providing additional infrastructure in the area.

Service provision is also badly needed wherever there are large 'informal settlements' located on heavily sub-divided land. Lack of services in these areas has resulted in the over-extension of services provided in the nearest service centres, until they can no longer handle the demands placed upon them. This is especially true as far as clinics and health services are concerned.

Of the higher grade centres, only Stanger appears to have the necessary centrality to enable it to function as an increasingly important service centre, outside the immediate influence of metropolitan Durban. Tongaat and the other Grade IV centres located in Inanda Magisterial District would be more logically included in any overall development plan for the

Gurban

Stanger

Darnall

Zinkwazi Beach

Inqela and Newark

Ocean View

Bayelock

Kaniabaa

Sans Souci

Zinkwazi

Charlottedale

Groutville

Glendale

Tinley Manor

Vlaaspruit

Tinley Manor Beach

Shakirraal

Balitto

Chats Rock

Hillard Beach

Salt Rock

Sheffield Beach

Dorington

Waterbosch

Coleraine Estate

Gleadow Rag

Gleadow

Kearney

Glenhill

New Guelderland

Nelville

Blychedale Beach

Ashville

Mt. Albert

Thrings Post

Coopersation

Fraser

Spruonlop

Sinebe

La Hercy

Cottonlands

Katerfall

Tongaat Beach

Splittop

Heve

Newel-Uadlatti Beach

Canelands

Ottawa

Mt. Moreland

Comiston

Inanda

Duifa Road

Glen Ashley

Umbanga Kocis

Glen Anil

Tongaat

Verulaa

Kwakhshu

La Lucia

Umbanga Kocis

Greater Durban Metropolitan Area, thus recognising the realities of existing service provision and the subordinate role that these centres play to the city of Durban.

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