ILEMBE DISTRICT
CURRENT PUBLIC TRANSPORT RECORD

By

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Submitted in partial fulfilment of the requirements of the
National Land Transport Transition Act (NLTTA),
Act 22 of 2000

FINAL DRAFT

12 November 2004

ABSTRACT

With the promulgation of the National Land Transportation Act (NLTTA), act 22 of 2000, it has become a requirement of every district municipality to prepare a Current Public Transport Record (CPTR). According to the TPR4 guidelines, the CPTR may exist in two forms, a basic form, i.e. where only essential information is captured or an expanded version were data that would be relevant for future public transport plans are also captured, processed and presented in the report. The data collection approach adopted was that of a planned, qualitative approach. The method of presentation of data was that of an electronic GIS format and manual.

PREFACE

The function of this document is to serve as a record of public transport services and usage for the Ilembe district. The report has been prepared in accordance with guidelines of Government Gazette vol. 445, July 2002, No.23659. However, an expanded approach was adopted to assist with the formulation of the Public Transport Plan (PTP).

STRUCTURE OF DOCUMENT

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LIST OF ABBREVIATIONS

CPTR	Current Public Transport Record
GIS	Geographic Information System
KZN DOT	Kwa-zulu Natal Department of Transport
LTPS	Land Transport Permit System
NLTTA	National Land Transport Transition Act
OLS	Operating Licences Strategy
RAS	Registration Administration System

CHAPTER 1

1. INTRODUCTION

1.1 Background

The National Land Transport Transition Act (NLTTA), Act 22 of 2000, promulgated in August 2000 requires metropolitan and service councils to prepare a record of public transport operations in their area of jurisdiction.

Iliso Consulting has been appointed by the district municipality to prepare the Current Public Transport (CPTR). The CPTR report is the documentation of the study methodologies adopted to capture the data, background to the study area and finally a record of the data itself.

1.2 Objective

The aim of preparing a CPTR is to quantify the trilogy of movements illustrated in Figure 1. This would serve as a primary source of information for the preparation of an Operating Licences Strategy (OLS), and provide detailed input for future public transportation planning. In addition, the CPTR would also provide information that could be used for performance monitoring of the public transport system.

1.3 Scope

The scope of the CPTR is merely to provide a record of captured data. The data captured forms an inventory of all public transport infrastructure and services that may be present in the area of study. The report is envisaged to provide a snap shot of the current public transport situation in the study area and to disseminate information that is necessary for the formulation of the Public Transportation Plan (PTP).

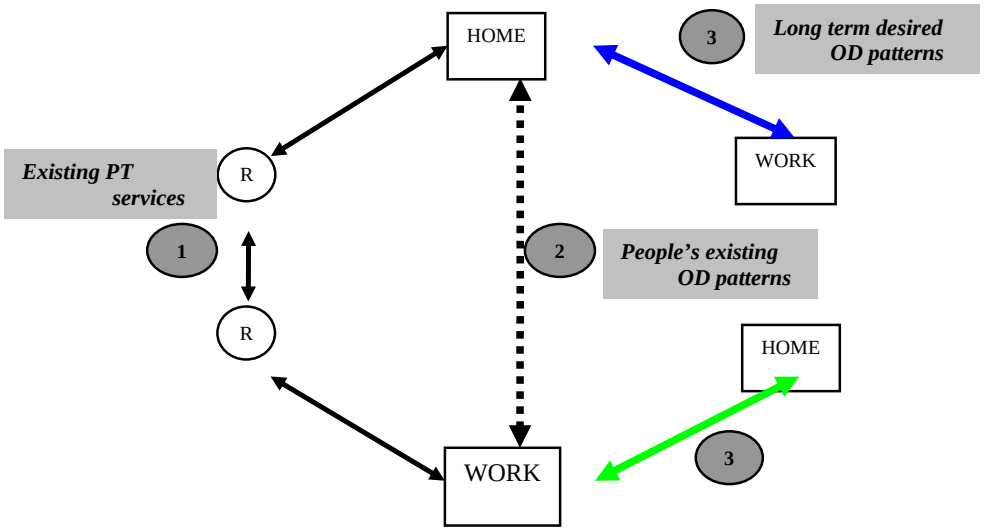

Figure 1: Trilogy of movement

1.4 Approach

The KZN DOT have chosen a planning approach to the collection of Current Public Transport Record (CPTR) as opposed to the data driven approach suggested in the TPR4 guideline document.

The guiding objective for all transport planning in the province is *"to endeavour to minimise the cost of transport that is necessary to satisfy people's requirements for carrying out activities."*

With this objective as background, the following principles have been adopted to guide the CPTR process;

- *"Actions taken in the short term should not conflict with/compromise long term plans.*
- *Transport is about moving people between Origin and Destinations (O-D).*
- *The actual pattern of movement (ito # of person trips between each O-D pair) will be a direct function of the pattern of land use development and the transport systems/services provided.*
- *Before a long term movement pattern can be established, it is necessary to start with knowledge of the current movement pattern.*
- *This shows what people ARE doing at the moment and it provides the basis for identifying inefficiencies (primarily high costs) in the current pattern of land use development and transport services.*
- *Having identified these inefficiencies the land use and any other changes needed to increase efficiencies can be evolved."*

The CPTR should provide information that quantifies the trilogy of movements as illustrated below;

- Part 1: Existing Public Transport (PT) services
- Part 2: people's existing OD patterns
- Part 3: long term desired OD patterns

The CPTR therefore must ensure that the information relevant to the above is collected to ensure that the subsequent Public Transport Plan (and Operating Licence Strategy) assists in the migration of movement patterns from the existing service distribution (Part 1) to the long-term desired OD patterns (Part 3).

In order to achieve this, a two-stage CPTR has been proposed;

- **Stage 1: Scoping** - To gain an idea of the nature and size of the PT trip situation: the generators and attractors, significant interchanges etc. Also locating suitable data sources and finding out who to speak to.

- **Stage 2: Collection of CPTR and Planning Data -** In essence this stage would be dealing with dynamics of towns and settlements above a certain size only.

The KZN DOT has appointed Iliso Consulting to carry out Stage 1, which is currently underway for the entire province.

1.5 Chapter Overview

The CPTR report consists of four (4) Chapters as follows:

- Chapter 1: Introduction
  This chapter serves to introduce the reader to the study or the CPTR and outlines the background information and a general approach adopted to the study.
- Chapter 2: Methodology
  This chapter supplies insight into the procedures used to obtain the required data. This is important as the methodologies employed often reveals the

limitations to the application of the data obtained aside from providing solid bases for the validity of the data record presented in chapter 3.

- Chapter 3: This chapter in essence is the current public transport record and is a mere representation of all data collected. The data presented in this chapter is also that which is relevant to the Operating Licensing Strategy and Public Transport Rationalisation Plan.
- Chapter 4: Comments are made for the data presented in chapter 3 without carrying out a full analysis of the data collected. Recommendations are also made as to the manner in which the outcomes of the CPTR maybe utilised for future planning processes.

CHAPTER 2

2. METHODOLOGY

2.1 Review of Terms of Reference

The KwaZulu Department of Transport has embarked on a process to provide a provincial framework for the implementation of the package of plans in a practical and consistent manner. Consultants have been appointed to assist with;

- *"an analysis of planning requirements for current transport plans, an operating licence strategy, public transport plans and rationalisation plans in terms of the National Land Transport Transition Act, 2000 and assessment of these requirements in terms of other existing or concurrent national and provincial legislation;"*
- *"a determination of the practical provincial and municipal implementation of planning requirements, including but not limited to the utilisation of planning in the delivery of the Local Road Transportation Board /Public Transport Board ; and ".*
- "*an investigation into the most cost-effective data collection and modelling methodologies to assist the Department with the practical implementation of planning requirements and development of an operating licensing strategy".*

Consultants are also requested to comment on the terms of reference with suggestions for improvements where necessary.

2.2 Description of Methodology

There are two important components of generating a CPTR and these are as follows:

- The collection of data to be recorded
- The dissemination of the recorded data.

Before describing the data capture methodology it is essential that a precise understanding of the information needed be attained. Since the nature of the information required ultimately dictates the methodology to be used.

The information that is needed to be conveyed in the CPTR is as follows:

- Person trips spread across the different public transport modes

- Capacity provided by the modes on the routes or corridors they follow
- Capacity utilisation on those routes
- A check of percentage illegal operations on a particular route
- Passenger waiting times
- Passenger origin destination information
- Trip purpose
- Trip Frequency

Some of this data are more compatible with each other in terms of efficiency in acquisition. For example some data such as origin destination information may take longer to acquire as it requires some verbal communication with users whereas information related to capacity provision and utilisation needs to be acquired by visual inspection and counting. This counting has to be at a consistent pace and the enumerators cannot be distracted by conversation, etc or vital information may be lost or go un-captured.

Clearly all the data required could not be acquired at once. It was therefore decided to group data requirements together that have similar acquisition requirements and develop unique data gathering strategies for each of these groups.

There were three distinct groups identified and hence three different acquisition strategies were to be used. The final method for data acquisition involved conducting a survey that had three unique components or survey forms. Sample survey forms may be found in Annexure D.

2.2.1 Form 1

Form 1 or component 1 of the field survey was intended to address the following group of data:

- Person trips spread across the different public transport modes
- Capacity provided by the modes on the routes or corridors they follow
- Capacity utilisation on those routes
- A check of percentage illegal operations on a particular route (not included)

Form 1 achieved this by acquiring the following data over a twelve hour period at each of the public transport facilities identified in the phase 1 CPTR for the Ilembe district:

The survey location followed by the public transport route and destination was recorded. The vehicles using that route and their registration numbers, vehicle type, vehicle capacity, departing passenger load and departure times.

The vehicle capacity would assist in providing the aggregated and disaggregated public transport capacity. In conjunction with the departing passenger load, service capacity utilisation was also estimated.

Vehicle type assisted with the person trip spread across the different public transport modes. Whereas the registration numbers recorded would assist in the future identification of illegal public transport operations.

2.2.2 Form 2

- Form 2 or component 2 of the survey initiative was intended to address passenger waiting times.

This survey was only conducted during the peaks since the person trip demand is greatest at this time and information on waiting times during this period would largely assist in estimation of over supply or under supply along a particular route. At the start of the survey, or when time, T = 0, the following procedure was adopted;

STEP 1: ALL BUSES / TAXIS AT BOARDING POINT WITH PASSENGERS INSIDE:

	BUS/TAXI # 1	BUS/TAXI # 2	BUS/TAXI # 3	TOTAL
Registration #	…….	…….	…….	
Passengers inside	……..	……..	…….	= Po
*Count of # of passengers in the queue at this boarding point: ……..				= Qo

STEP 2: At first sampling interval (3 minutes) T = 3 mins - repeat STEP 1 and continue

	BUS/TAXI # 1	BUS/TAXI # 2	BUS/TAXI # 3	
Registration #	…….	…….	…….	
Passengers inside	……..	……..	…….	= P1
*Count of # of passengers in the queue at this boarding point: ……..				= Q1

The above procedure provided an estimate of passenger waiting times at each rank / boarding point surveyed.

Length data was obtained by the same procedure noting that queue lengths of over 100 passengers have been observed in KZN. Since some of the queue lengths were such that it could not be unequivocally enumerated from a position at the head of the

queue (probably a maximum of around six passengers), the enumerator then walked at a steady pace to the back of the queue - counting passengers - and recorded the number obtained on arriving at the back of the queue.

2.2.2 Form 3

Form 3 or component 3 of the surveys was intended to address the following group of data:

- Passenger origin destination information
- Trip purpose
- Trip Frequency

This data was acquired through interview surveys conducted in peak periods. It should be noted that the number of people interviewed were not of a particular sample size , but were merely as many people as could be interviewed at random at the facilities in question.

The interviewer involved asking the following questions:
Where did you come from? (Origin)
What were you doing there? (Purpose)
What was your mode of transport?
What is your final destination? (Destination)
What activity will you conduct at this destination? (Purpose)
How often do you do this trip per week? (Trip Frequency)

2.3 Problems

During the survey phase, public transport related unrest in some areas of the Ilembe district prevented the gathering of data at certain locations. Due to concerns over safety of the enumerators and interviewers only ten of the seventeen identified facilities were surveyed. These ten sites were mainly concentrated in the north of the Ilembe district and included; Mangethe, Slengeni, Tugela Beach, Chappies, Gcaleka, Sundumbili Plaza, Bhamshela, Makwaneni, Island and Machibini Tribal Authority

CHAPTER 3

3. RESULTS

3.1 Description of Area

Ilembe District Municipality is located on the east coast (Dolphin Coast) of the Republic of South Africa. It forms one of the eleven district municipalities in the Province of KwaZulu-Natal (KZN). KZN is one of the largest and most populated provinces of South Africa with a population of approximately nine million and a geographic area of almost 91,500 square kilometres of which Ilembe constitutes approximately 3,260 square kilometres.

The Ilembe District consists of four local municipalities, Maphumulo, Endondakusuka, Ndwedwe and Kwadukuza which share 28 percent, 18 percent, 35 percent and 19 percent of the land respectively. Ilembe is boarderd by eThekwini Municipality to the south, Uthungulu to the north with Umgungundlovu & Umzinyathi to the west. Ilembe is directly linked to Durban & Richards Bay by National Road 2.

The district Municipality therefore enjoys good access to two of Africa's largest harbours, Durban and Richard's Bay, as well as good access to the existing Durban International Airport and the future King Shaka International Airport.

The population of Ilembe District Municipality is about 535,000 people. Approximately 21 percent live in eNdondakusuka, 25 percent in KwaDukuza, 31 percent in Ndwedwe and 23 percent in Maphumulo. The current growth rate is approximately 1.75 percent per annum. The majority (87 percent) of the population use Zulu as their first language. English is commonly spoken as second language although only 9 percent indicate it as their first language.

There are four urbanised towns in the area: Ballito, KwaDukuza / Stanger, Mandeni and Nkwazi. Ballito is characterised by high income residential units and holiday homes with KwaDukuza characterised by mainly the primary and secondary business sectors. Mandeni is mainly characterised by secondary sector industries; whereas Nkwazi is dominantly if not entirely characterised by sugarcane processing facilities. Maphumulo and Ndwedwe are emerging villages with nodal functionality for the surrounding rural communities.

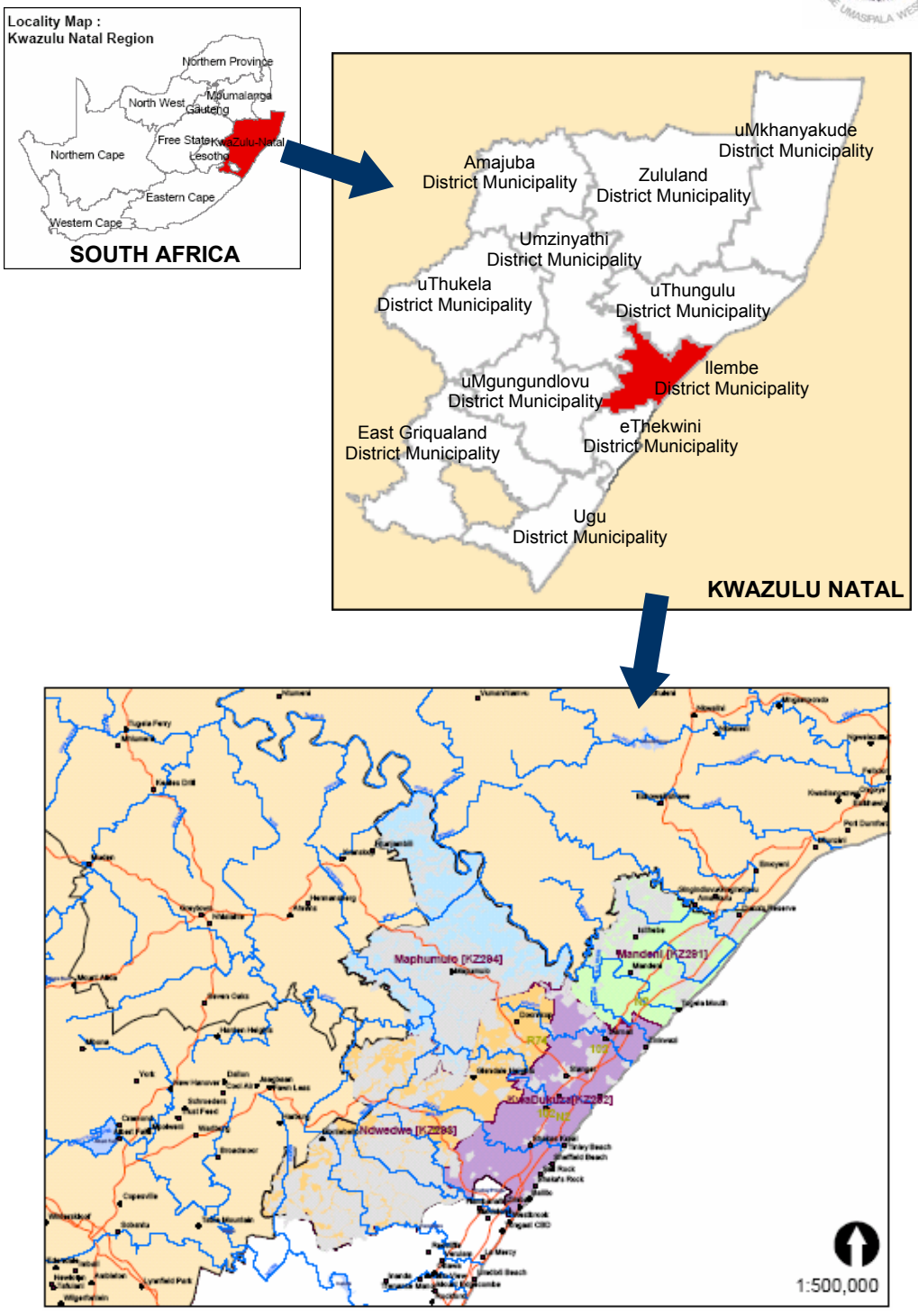

Figure 2: Locality map of Ilembe District Municipality

3.2 Modes Serving the Area

The Ilembe district has a public transport person trip demand of 15,230 persons per weekday twelve hour period. This demand is satisfied by three public transport modes serving the district with a combined service capacity of 15,620 person trips per weekday twelve hour period and includes bus, minibus taxi and bakkie taxi.

Figure 3 is a graphical representation of the person trip demand is shared between the modes. It should be noted that rail transport is a fourth mode of public transport in the area, but has been excluded from this analysis due to a lack of reliable data.

It can be clearly seen that minibus taxis are the dominant public transport mode utilized with 84 percent of the trips followed by bakkie taxi (10 percent) and buses (6 percent. Furthermore, with a service capacity of 15,620 person trips and a demand of 15,230 person trips during a weekday 12 hour period, a high level of capacity utilization is being attained. The service utilisation on an aggregated basis, for the entire public transport system, is approximately 97 percent.

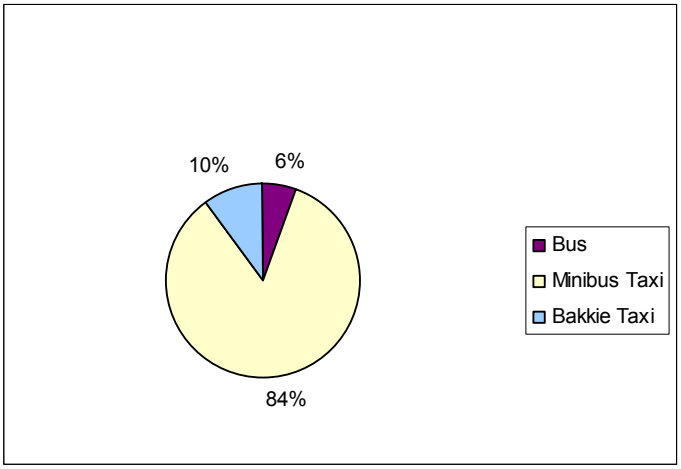

Figure 3: Graphical representation of person trip spread across the various public transport modes during a 12hr period

The conditions discussed above tend to be considerably different during the AM peak period when demand patterns tend to be the highest.

Firstly, the AM peak period was assumed to be between five o'clock and nine o'clock in the morning. This is due to the fact that public transport users may predominantly belong to the primary and secondary employment sector and being a rural to semi rural

area, the peak travel periods does differ to that of their metropolitan counterparts employed in other sectors of the market.

During this peak period, an aggregated service capacity of 5,870 was estimated against a demand of 5,960. It is clear that an undersupply of public transport by about two percent is evident. Figure 4 is a graphical representation of the peak period demand between modes.

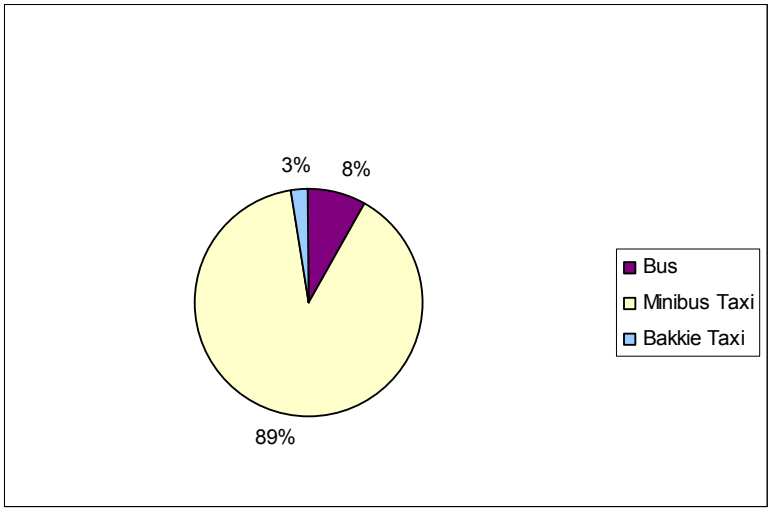

Figure 4: Graphical representation of person trip spread across the various public transport modes during the AM peak period

As before the minibus taxi is the dominant mode at 89 percent followed by bus (8 percent) and bakkie taxi (3 percent) during the AM peak periods

3.3 Inventory of Infrastructure

The following tasks had already been completed for the Ilembe District Municipality, i.e. phase 1 of the CPTR;

- *Collection of relevant settlement polygons from Water Service Provider and compare with Provincial Data.*
- *Meeting with the district municipalities to ascertain status of infrastructure data collection and co ordinate collation of data.*
- *Develop public transport networks*
  - *Collate all data in GIS form*
  - *Collect provincial network*
  - *Create local road network where necessary*

– *Create point – point public transport links between major ranks (from infrastructure review)*

3.3.1 Public Transport Termini

From phase 1, seventeen ranks were identified, inclusive of formal and informal minibus taxi ranks as well as bus ranks within the Ilembe District Municipality. Figure 5 illustrates the locality and status of these seventeen ranks. Further details of these facilities are provided in Table 1, Table 2, Table 10 and Table 11 contained in Annexure A. A large proportion, approximately 71 percent of these ranks is informal and only four of them are shared with buses with no exclusive bus ranks.

In addition, to the above mentioned seventeen public transport facilities, there are seventeen railway stations of which only eight are being used for passenger transport with the remaining nine being utilised for goods transportation. Details of the rail facilities are contained in Table 1B in Annexure A.

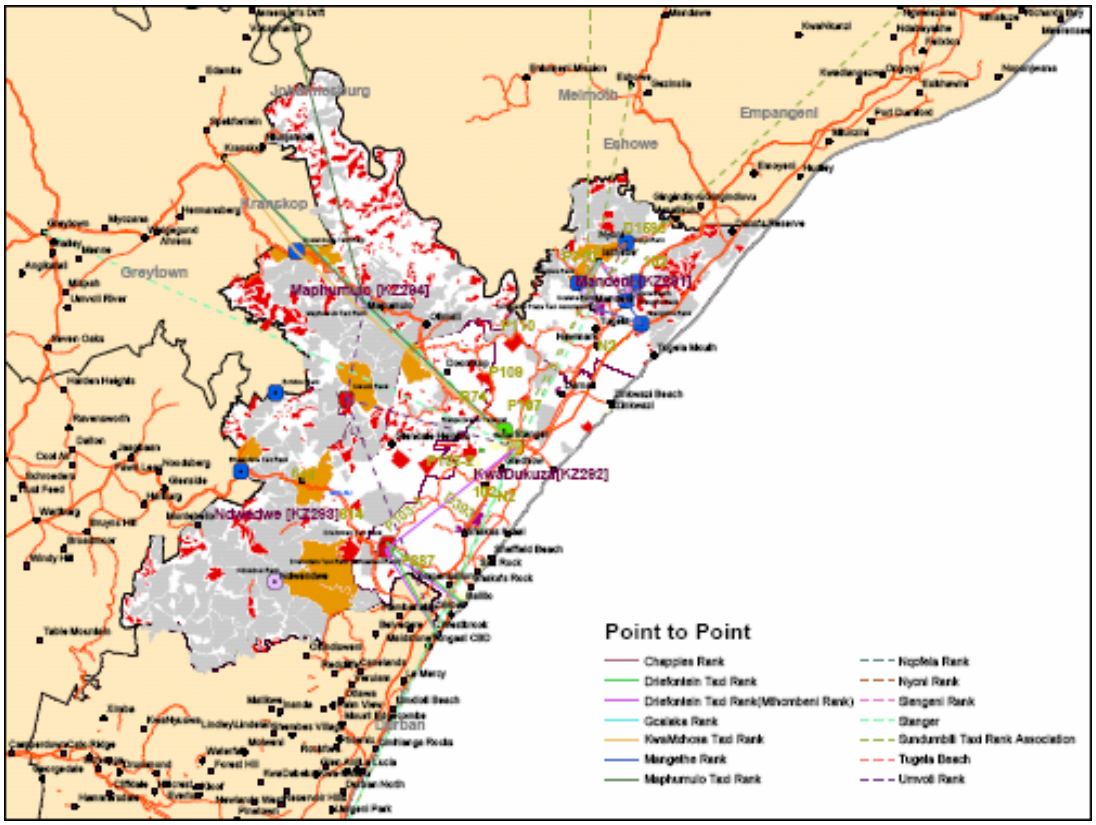

Figure 5: Facility locality and status for the Ilembe District

3.3.2 Routes

A total of 39 routes including bus and taxi routes were identified. These routes were identified by destination groupings of vehicles at the ranks and were confirmed by verbal communication with commuters. Figure 6 and Figure 7 are representations of these routes in a point to point form and as operated on the road network respectively. Written descriptions of these routes are contained in Annexure A, Table 4.

3.3.3 Capacity Utilisation of Corridors

Capacity utilisation of routes was first examined on an aggregated basis. That is considering all modes of public transport and how the collective service capacities of these modes satisfy the person trip demand of a particular route or corridor. This will enable a broader overview of the public transport systems and its efficiency in satisfying these demands. Capacity utilisation was then examined on a disaggregate bases i.e. for each public transport service mode on a particular route / corridor which follows under the relevant sections.

Figure 8 and Figure 9 provides a graphical representation, of the aggregated route utilisation on the road network for a twelve hour period and is given using the following colours to illustrate the levels of utilisation on each route.

- Utilisation > 90% RED
- 50 ≤ Utilisation ≤ 90% GREEN
- Utilisation < 50% PURPLE

Figure 8 depicts the point to point utilisation of the route, whereas Figure 9 depicts the actual route travelled on the road network.

Figure 10 and Figure 11 conveys the same information as for Figures 8 & 9, but for the AM peak period.

Figure 12 and Figure 13 provides an indication of the extent of over or under utilisation during the twelve hour and AM peak periods respectively.

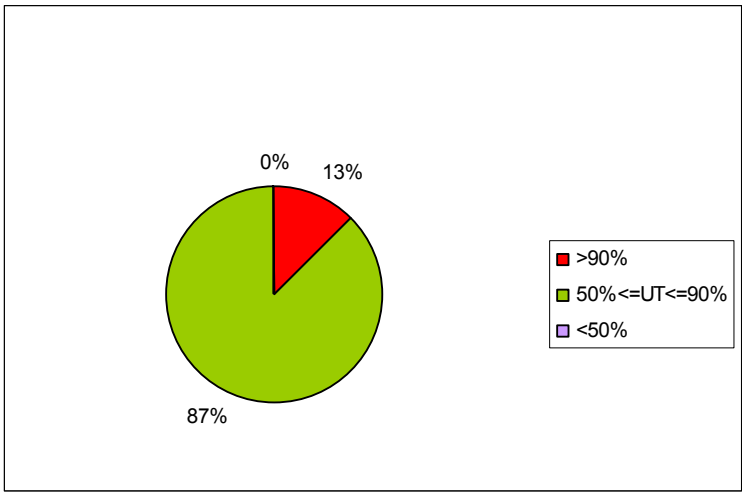

Figure 12: Route utilisation over a twelve hour period

It can be seen from the above that 13 percent of the routes are over utilized whereas the majority of the routes fall within the utilisation range of 50 percent to 90 percent. None of the routes surveyed fell below a 50 percent level of utilisation.

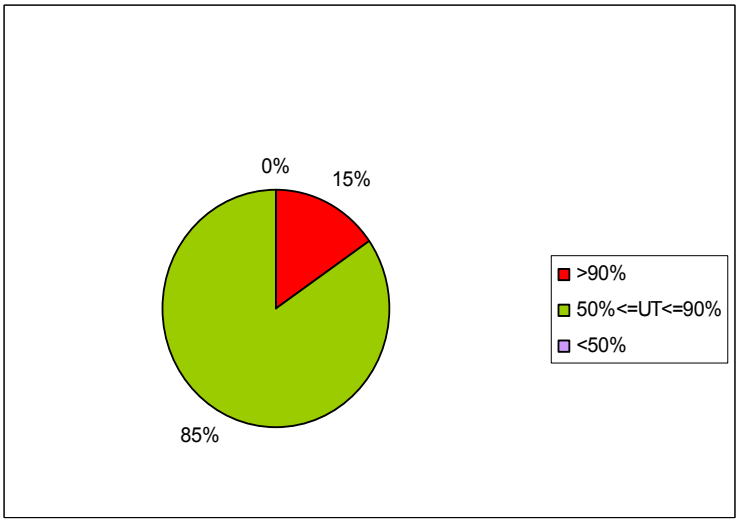

Figure 13: Route utilisation during the AM peak period

The chart for AM peak period route utilisation presented above indicates that during the AM peak period, 15 percent of the routes are over utilized whereas the majority of the routes (85 percent) fall within the utilisation range of 50 percent to 90 percent. None of the routes surveyed fell below a 50 percent level of utilisation.

3.4 Minibus Taxis

3.4.1 Routes

Section 3.4.1 is similar to Section 3.3.2; however, instead of examining routes on an aggregated basis, the individual modes of the public transport system are examined. In this section we are only concerned with minibus taxis and despite the similarity in the data output format with that of the aggregated analysis, it should be clear that the data is only representative of that of minibus taxis.

A total of 39 routes including bus and taxi routes were identified. However, all 39 of these routes do have minibus taxis operating on them. Figure 14 is a point presentation of these routes whereas Figure 15 is the route taken by the minibus taxis on the actual road network.

3.4.2 Route Capacity Utilisation

Peak hour utilisation of available service capacity is essential since it will indicate the relative under – or over supply of services on that particular route. This will facilitate the decision making process as whether or not to award an operating licence along a particular route.

The capacity utilisation may vary along the route. However, attempting to measure capacity utilisation over every segment was not practical as it would result in large masses of information to filter through. Capacity utilisation was therefore measured at the taxi rank. On certain routes where there were no origin ranks, or where the majority of passengers were picked up on the route, cordon counts where used to ascertain the maximum loads. This data was used in the absence of ranks.

Section 3.3.3 examined issues such as capacity utilisation, etc. However, even though this is essential in understanding the performance of the public transport system as a whole it is imperative that the individual components that constitute this system be examined. Capacity utilisation of mini bus taxi routes for a twelve hour period was therefore examined and the results are presented in Figure 16 and Figure 17. The colour coding and description for these figures is similar to that of Section 3.3.3 except that the routes shown are only that of minibus taxis.

Figure 18 and Figure 19 conveys the same data as Figures 16 & 17, but for the AM peak.

Similar to Figure 12 and Figure 13, Figures 20 & 21 provides an indication of the extent of over or under utilisation during the twelve hour and AM peak periods respectively.

Figure 20 shows that 13 percent of all minibus taxi routes are over utilised with the majority of routes (87 percent) having utilisation of between 50 to 90 percent with no routes having utilisation less than 50 percent.

Figure 21 conveys the same data as Figure 20, but for the AM peak period. Here it can be seen that there is an increase in the number of routes that are over utilised. 15 percent of the minibus taxi routes are now over utilised in the AM peak period as compared to the 13 percent during the twelve hour period.

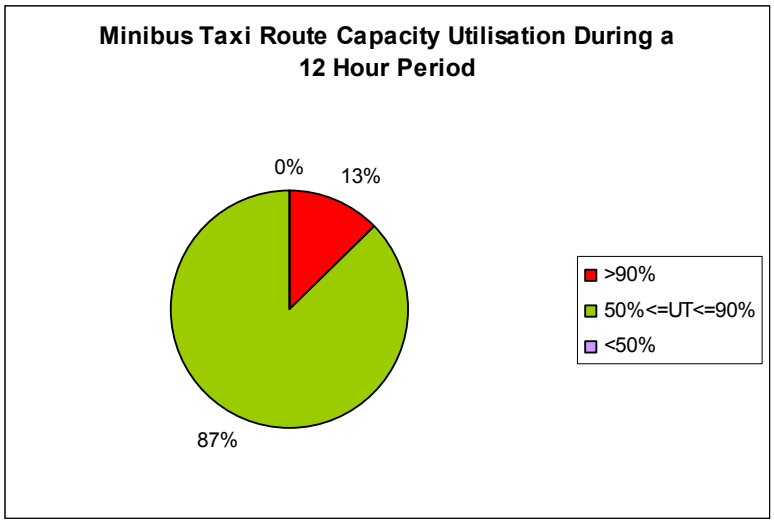

Figure 20: Route utilisation over a twelve hour period for minibus taxis

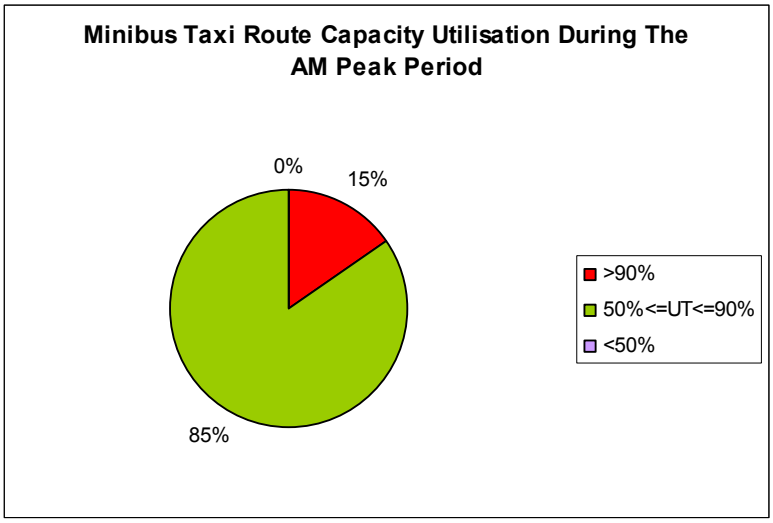

Figure 21: Route utilisation during the AM peak period for minibus taxis

3.4.3 Passenger Origin-Destination and Trip Purpose

Surveys were conducted (see Section 2.2.2, Form 3) to obtain origin and final destination data in as much detail and as accurately as possible. Section 3.4.3 deals entirely with trips made predominantly by minibus taxi, Trips made utilising other modes will be dealt with under their relevant sections. Simply O-D data as defined was captured along with trip purpose and frequency of trip making were gathered to assist in providing an insight into rural travel patterns.

The data collected is presented in summarised form in Figure 22 showing, the percentage of Home Based Work (HBW), Home Based Other (HBO), Non Home Based (NHB) trips & Home Based School (HBS).

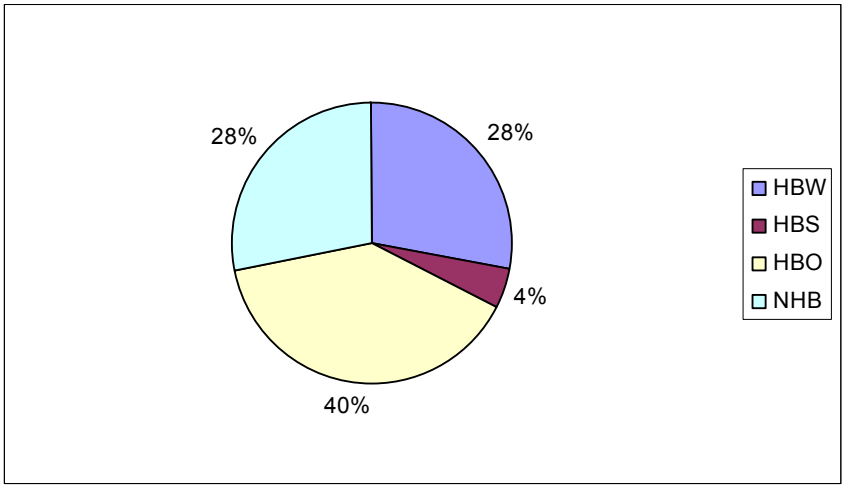

Figure 22: Trip purpose composition for minibus taxis

From Figure 22, HBW trips account for 28 percent of the trips followed by HBO, NHB & HBS accounting 40 percent, 28 percent respectively and 4 percent respectively. Figure 19 provides a further breakdown of HBO trips the data is summarised to show, the percentage of major trip purposes (visit clinic, shopping, etc). Annexure 1 contains the data in a matrix format. A total of four matrices was produced one for each trip purpose i.e Home Based Work (HBW). It should be noted that the HBW matrix excluded trips made by scholars as these trips are to be presented in a separate matrix, Home Based Other (HBO) and finally Non Home Based.

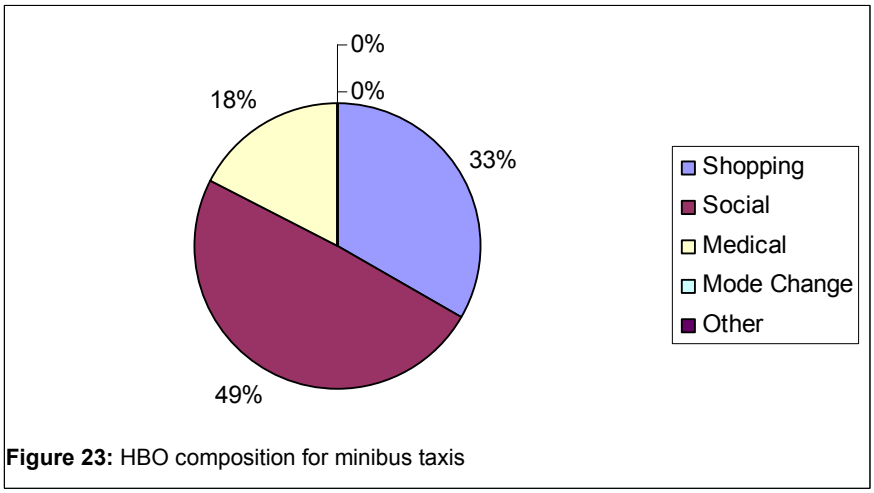

Figure 23: HBO composition for minibus taxis

The resulting desire lines from the data obtained are illustrated in Figure 24 below.

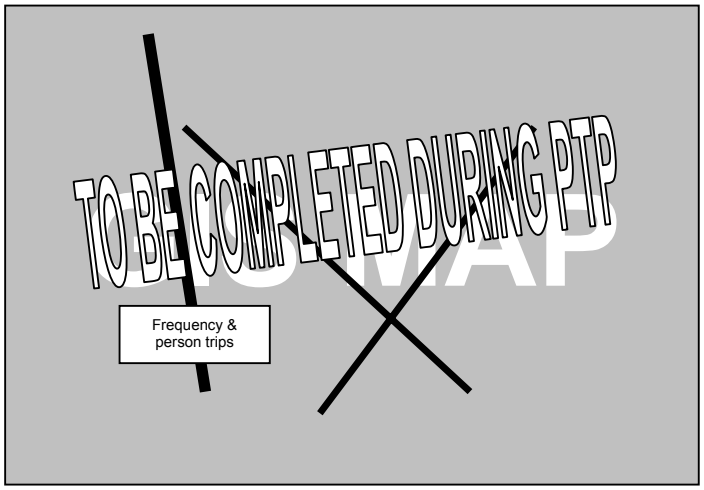

Figure 24: Desire lines

3.4.4 Waiting Time per Route (TPR4, 2001)

Queuing passengers at boarding points during peak periods is an indication of undersupply. The surveys were conducted using Form 2 (see Section 2.2.2). Estimation of queuing lengths was conducted at the same location as those for capacity utilization. Waiting times was then derived from this data using the methodology contained in Annexure C. Table 9 is the desired summarised format of the findings included in Annexure A. Table 1 provides a summary of average waiting times per taxi rank.

Table 1: Summary of average waiting time of passengers per taxi rank

No	Rank Code	Rank Name	Average Waiting Time (min)
1		Mangethe Rank	2.08
2		Slengeni Rank	ND
3		Tugela Beach	ND
4		Nqofela Rank	ND
5		Nyoni Rank	ND
6		Chappies Bank	3.14
7		Gcaleka Rank	10.88
8		Sundumbili Plaza Taxi Ass	3.22
9		Stanger Rank, Maphumulo and Mandeni Rank	ND
10		Echibini Rank	ND
11		Bhamshela Taxi Rank	ND
12		Ndwedwe Rank	ND
13		Driefontein Taxi Rank	ND
14		Driefontein Taxi Rank (Mthombeni Rank)	ND
15		Umvoti Rank	ND
16		Maphumulo Taxi Rank	ND
17		KwaMxhosa Taxi Rank	ND

Note: ND-no data

3.4.5 Terminal Capacity Utilisation (TPR4, 2001)

The availability of rank or termini capacity indicative of its ability to accommodate new, both in terms of loading facilities during peak periods, and holding facilities (in the case of mini-bus taxis in particular), during the off peak.

Rank and termini capacity utilisation was estimated, by generating an inventory of the available facilities at a particular rank or terminus (Phase 1 CPTR). Secondly, the number of unique vehicles observed requiring the use of a particular facility at any time during the peak hour, and the maximum occupation of holding bays in the off-peak were determined. The division of the maximum observed number of unique vehicles requiring the use of the particular facility by the total number of bays that are available is an indication of the capacity utilisation, which can be expressed either as a ratio, or a percentage. Table 8, contained in Annexure 1 is a detailed presentation of data of this nature. As a summary Figure 21 provides information on the percentage of the ranks that have a utilisation greater than 90 percent, between 50 and 90 percent and finally less than 50 percent.

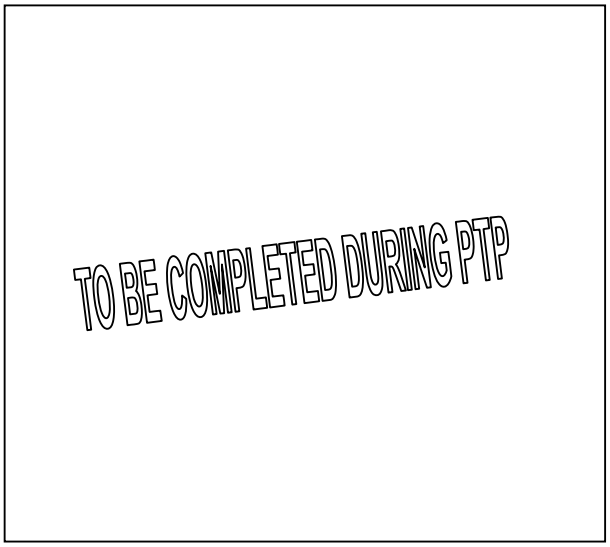

Figure 25: Facility utilisation

3.5 Buses

3.5.1 Routes

Section 3.5.1 is similar to Section 3.4.1; however, instead of examining routes concerned with minibus taxis, only routes used by buses are assessed and despite the similarity in the data output format with that of the minibus taxi analysis, it should be clear that the data is only representative of that of buses.

As outlined in Section 3.4.1 a total of 39 routes including bus and taxi routes were identified. However, not all of these routes have buses operating on them. Of the 39 routes, only 14 of them have buses operating. During the second phase only two of these routes were surveyed due to reasons outlined in Section 2.3. Figure 26 is a point presentation of these routes whereas Figure 27 is the route taken by the bus on the actual road network.

3.5.2 Route Capacity Utilisation

As for Section 3.4.2. Figure 28 and Figure 29 provide a summary of the point to point and actual travelled bus route capacity utilisation for a twelve hour period respectively. Whereas, Figure 30 and Figure 31 provide the same information respectively but for the AM peak period.

Figures 32 & 33 provide an indication of the extent of over or under utilisation during the twelve hour and AM peak periods respectively.

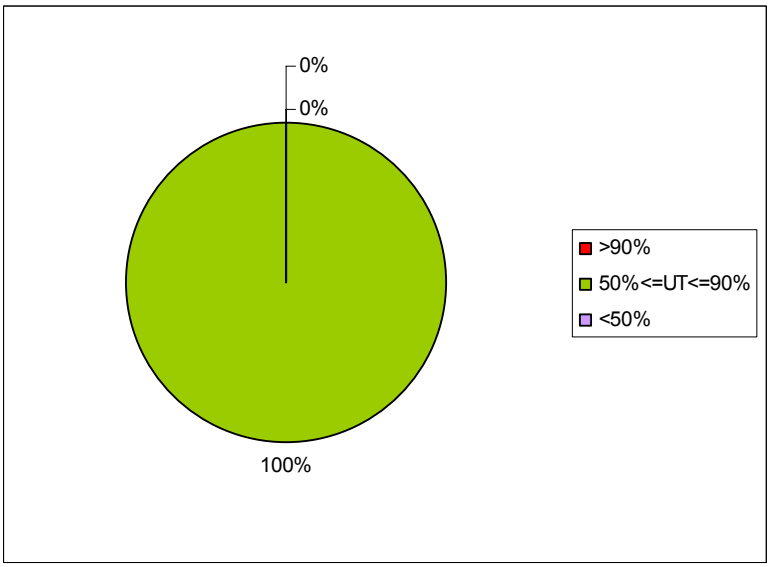

Figure 32: Route utilisation over a twelve hour period for buses: 12 hour period

Figure 32 illustrates that all identified bus routes during a twelve hour period has an utilisation of 50 percent to 90 percent. The AM peak period utilisation shown in Figure 33 indicates an identical scenario.

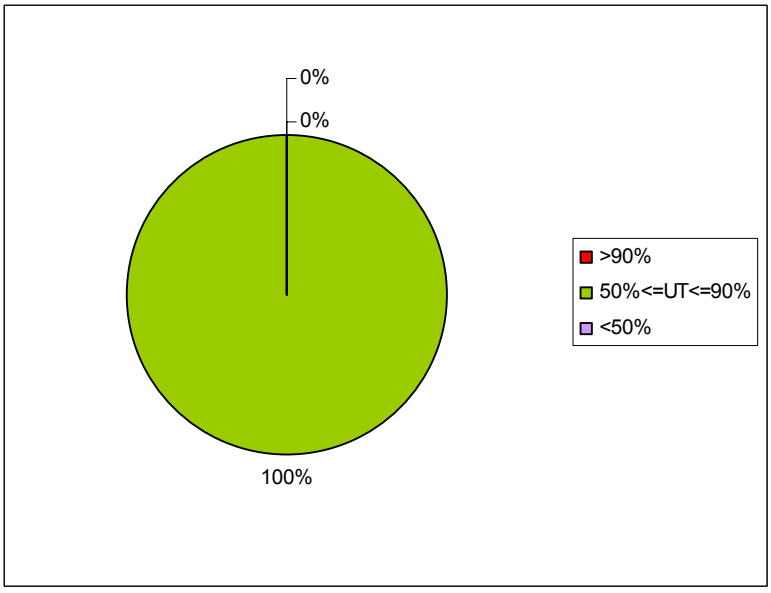

Figure 33: Route utilisation over a twelve hour period for buses: am peak period

3.5.3 Passenger O-D's and Trip Purpose

As for Section 3.4.3 this section is intended on conveying origin-destination and trip purpose data for buses only.

The data collected is presented in summarised form in Figure 34 showing, the percentage of Home Based Work (HBW), Home Based Other (HBO), Non Home Based (NHB) trips & Home Based School (HBS). From Figure 34, HBW trips account for 14 percent of the trips followed by HBO, NHB & HBS accounting 48 percent, 38 percent respectively and 0 percent respectively. Figure 29 provides a further breakdown of HBO trips the data is summarised to show, the percentage of major trip purposes (visit clinic, shopping, etc). Annexure 1 contains the data in a matrix format; a total of four matrices was produced one for each trip purpose i.e. Home Based Work (HBW) -it should be noted that the HBW matrix excluded trips made by scholars as these trips are to be presented in a separate matrix, Home Based Other (HBO) and finally Non Home Based.

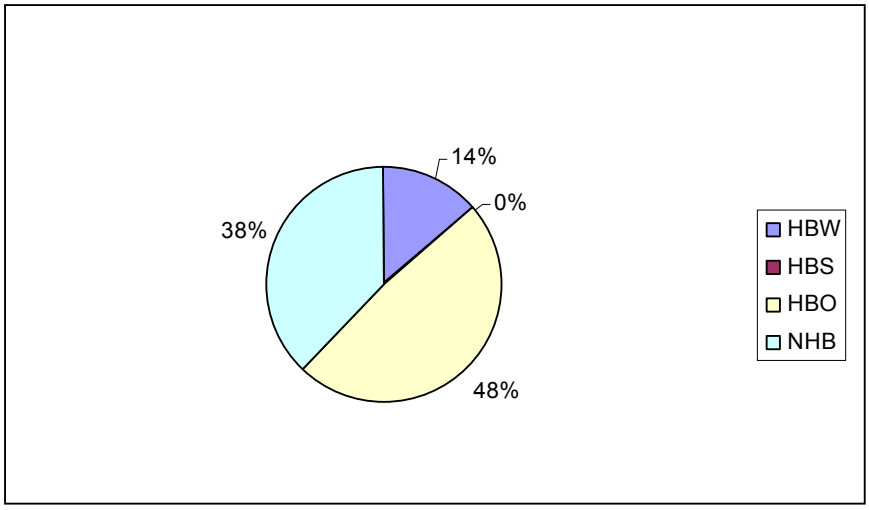

Figure 34: Trip purpose composition for buses

From Figure 34, HBW trips account for 14 percent of the trips followed by HBO, NHB & HBS accounting 48 percent, 38 percent respectively and 0 percent respectively. Figure 35 provides a further breakdown of HBO trips the data is summarised to show, the percentage of major trip purposes (visit clinic, shopping, etc). Annexure 1 contains the data in a matrix format; a total of four matrices was produced one for each trip purpose i.e. Home Based Work (HBW) -it should be noted that the HBW matrix excluded trips

made by scholars as these trips are to be presented in a separate matrix, Home Based Other (HBO) and finally Non Home Based.

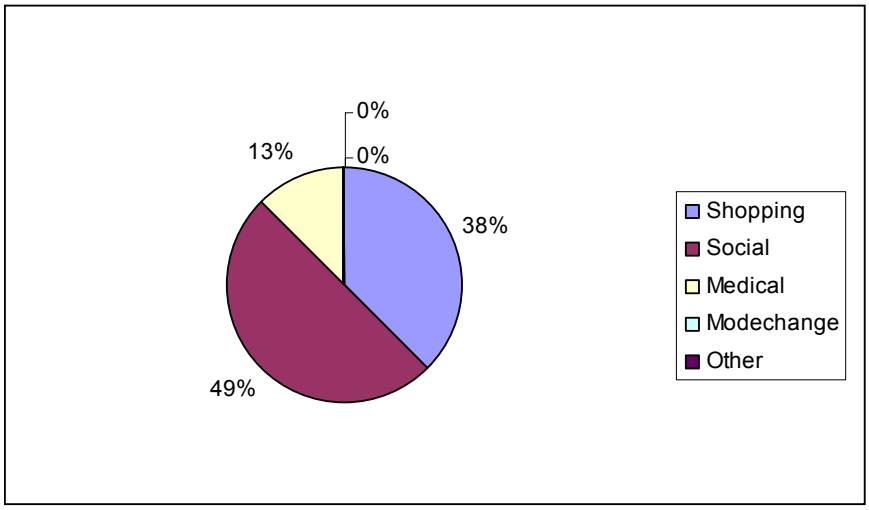

Figure 35: HBO composition for buses

The resulting desire lines from the data obtained are illustrated in Figure 36 below.

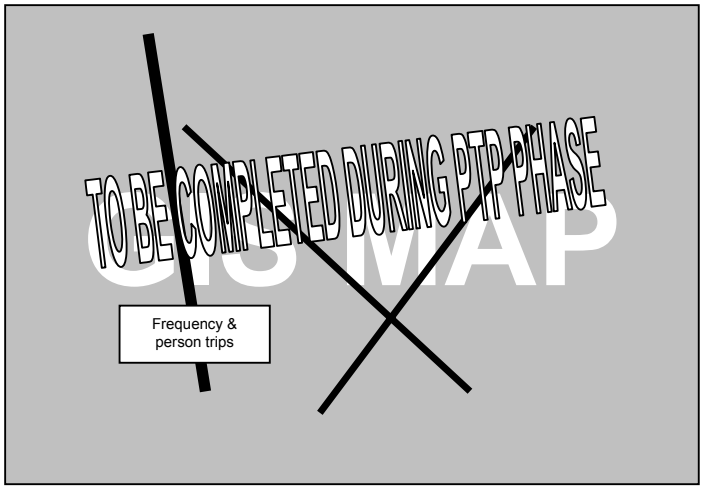

Figure 36: Desire lines (buses)

3.5.4 Waiting Time per Route (TPR4, 2001)

Similarly to section 3.4.4., waiting times were derived using the methodology contained in Annexure C. However, only buses were considered. Table 9 is the desired summarised format of the findings included in the annexure. Table 2 provides a summary of average waiting times per bus rank.

Table 2: Summary of average waiting time of passengers per bus terminal

No	Rank Code	Rank Name	Average Waiting Time	Fares		
				Single	Weekly	Monthly
1						
2						
3						
4						
5						
n						

TO BE COMPLETED DURING PTP

Note: To be completed in PTP phase

3.5.5 Terminal Capacity Utilisation (TPR4, 2001)

Similar to Section 3.4.6., Figure 37 provides information on the percentage of the bus ranks that have an utilisation greater than 90 percent, between 50 and 90 percent and finally less than 50 percent.

TO BE COMPLETED DURING PTP

Figure 37: Facility utilisation (buses)

3.6 Trains

From the phase 1 CPTR for the district, trains infrastructure does exist in the district and detail of such facilities and routes have be included in Annexure A in Table 1B and Table 4B. Detailed surveys have not been conducted during the second phase of the CPTR due to reasons outlined in Section 2.3. However, the interview surveys conducted has revealed a smaller amount of public transport users, approximately 0.7% percent, utilise the train

CHAPTER 4

4. FARES

Data collected regarding fares paid by users should are summarised in this chapter. In order to present a the fares paid in a manner that would allow for a comparison to be made among the different routes, the following method was used.

The fare paid / kilometre for each route for each mode of public transport was estimated. For example the fare to travel from Durban to Tongaat by minibus taxi is R15.00 and the distance is approximately 40km therefore the cost per kilometre of using a minibus taxi on that route is R0.38. This data is presented graphically in the form of a bar chart in Figure 38.

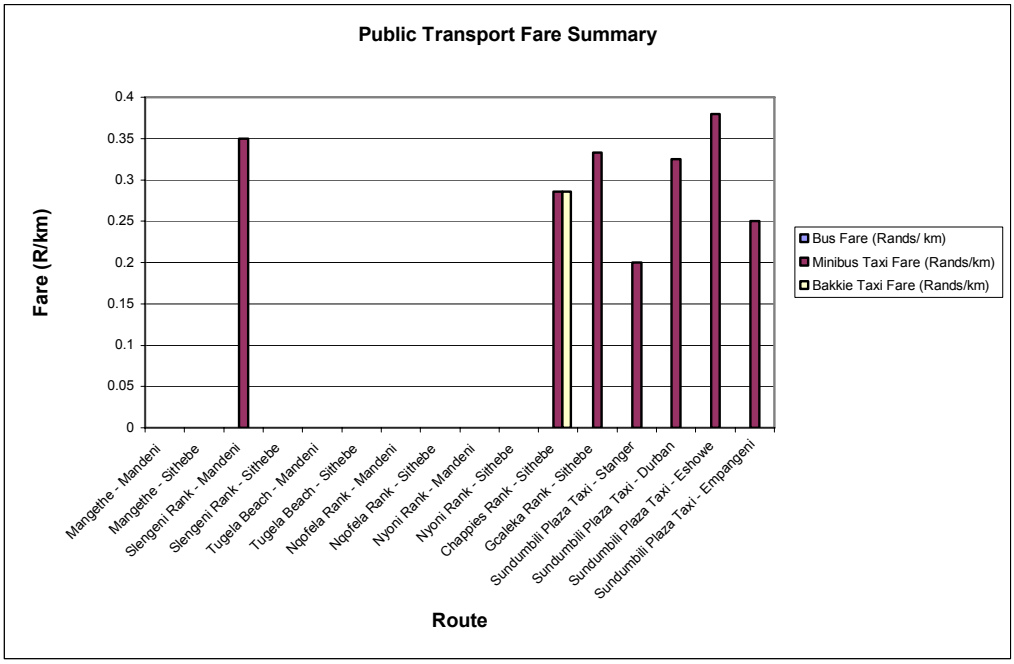

Figure 38: Fares paid per kilometre per route

The data used to prepare Figure 38 is contained in Table 9 in the appendix.

CHAPTER 5

5. SUMMARY / CONCLUSIONS

The outcome of the Ilembe District CPTR can be considered to be largely successful in the methodologies developed for surveying, capturing and analysis of data. The information collected has been able to provide an insight into the public transport system and the extent to which operations are efficient in satisfying the demand.

However, due to issues such as unrest in many of the areas, only 50 percent of the proposed survey sites were actually surveyed. This was unfortunate as it has left considerable gaps in analysis of facilities and routes identified by the phase 1 CPTR. Nevertheless these locations will be surveyed as part of the Public Transport Plan to be conducted in the near future. Table 3 is a summary of outstanding data.

Table 3: Data Availibilty for Ilembe Current Public Transport Record

Source	No.	Facility Name	Form 1		Form 2 (Queue Length Survey)		Form 3 (Interview Survey)	
			COMPLETED IN PHASE 2 CPTR	TO BE COMPLETED IN PTP	COMPLETED IN PHASE 2 CPTR	TO BE COMPLETED IN PTP	COMPLETED IN PHASE 2 CPTR	TO BE COMPLETED IN PTP
Termini From Phase 1	1	Mangethe Rank	Yes		Yes		**No**	
	2	Slengeni Rank	Yes		**No**	√	**No**	√
	3	Tugela Beach	Yes		**No**	√	**No**	
	4	Nqofela Rank	**No**	√	**No**	√	**No**	
	5	Nyoni Rank	**No**	√	**No**	√	**No**	
	6	Chappies Bank	Yes		Yes		**No**	
	7	Gcaleka Rank	Yes		Yes		**No**	
	8	Sundumbili Plaza Taxi Ass	Yes		Yes		Yes	
	9	Stanger Rank, Maphumulo and Mandeni Rank	**No**	√	**No**	√	**No**	√
	10	Echibini Rank	Yes		**No**	√	**No**	
	11	Bhamshela Taxi Rank	Yes		**No**	√	**No**	
	12	Ndwedwe Rank	**No**	√	**No**	√	**No**	√
	13	Driefontein Taxi Rank	**No**	√	**No**	√	**No**	
	14	Driefontein Taxi Rank (Mthombeni Rank)	**No**	√	**No**	√	**No**	
	15	Umvoti Rank	**No**	√	**No**	√	**No**	
	16	Maphumulo Taxi Rank	**No**	√	**No**	√	**No**	√
	17	KwaMxhosa Taxi Rank	**No**	√	**No**	√	**No**	
Additional Termini Identified from Phase 2	18	Recken	Yes		**No**	√	**No**	
	19	Sundumbili Plaza Taxi Bakkie Rank	**No**	√	Yes		**No**	
	20	Emkhwaneni	Yes		**No**	√	**No**	
		Island rank	Yes		Yes		**No**	

Notes: The tick (√) symbol indicates the surveys that need to be undertaken as part of the Public Transport Plan phase for the Ilembe district

One of the major outcomes was that of minibus taxis being the dominant mode of public transport. Generally the public transport service capacity matches the demand during a 12hour period. However, during the peak period, the demand actually outstrips service capacity. In both scenarios, the minibus taxi mode service capacity was consistently exceeded by demand.

The remaining public transport modes accommodate a small percentage of the person trip demand and are generally not utilised beyond their capacity limits.

REFERENCES

Department of Transport (2001), NLTTA: TPR4: Non Metropolitan Current Public Transport Record

Iliso Consulting (2004), Stage 1 CPTR for Each District Municipality

Iliso Consulting (2004), Generic Brief for Kwa-zulu Natal

ANNEXURE A: CAPTURED DATA

LIST OF TABLES IN ANNEXURE A

Table 1A: Listing of Minibus Taxi and Bus Facilities in the Ilembe District

No.	Facility Name	Physical Location [1]	Mode	Type of Service	Code [2]
1	Mangethe Rank	Farm Lot: 15828 Portion Sub: 15828 Mandeni Old Main Road, behind Renkens Spar.	Minibus Taxi	Commuter	RA-130
2	Slengeni Rank	Farm Lot: 15828 Portion Sub: 15828	Minibus Taxi	Commuter	RA-111
3	Tugela Beach	Not available	Minibus Taxi	Commuter	RA-110
4	Nqofela Rank	Farm Lot: 15828 Portion Sub: 15828	Minibus Taxi	Commuter	RA-112
		On road to Gingindlovu			
5	Nyoni Rank	Mandeni Old Main Road, Amatikulu, next to Renkens Spar.	Minibus Taxi	Commuter	RA-113
6	Chappies Bank	At 'T' junction of Amajuba and Igugu Rds	Minibus Taxi	Commuter	RA-114
7	Gcaleka Rank	Farm Lot: 677 At 'T' junction of Nkonjane and Msomuhle Roads.	Minibus Taxi	Commuter	RA-115
8	Sundumbili Plaza Taxi Ass	Mandeni Old Main Road, between Renkens Spar and Shoprite	Minibus Taxi	Commuter / Long distance	RA-116
9	Stanger Rank, Maphumulo and Mandeni Rank	Farm Lot: 2389 Cnr Cato / Balcomb Str. Stanger	Minibus Taxi / Bus	Commuter / Long distance	RA-109
10	Echibini Rank	Not available	Minibus Taxi	N/A	RA-117
11	Bhamshela Taxi Rank	Farm Lot: 4667 Portion Sub: 30	Minibus Taxi	N/A	RA-118
12	Ndwedwe Rank	Farm Lot: 4667	Minibus Taxi	N/A	RA-119
13	Driefontein Taxi Rank	Not available	Minibus Taxi / Bus	Commuter	RA-101
14	Driefontein Taxi Rank (Mthombeni Rank)	Not available	Minibus Taxi / Bus	Commuter	RA-102
15	Umvoti Rank	Farm Lot: 4667 Portion Sub: 27	Minibus Taxi / Bus	Commuter / Long distance	RA-103
16	Maphumulo Taxi Rank	Farm Lot: 16514	Minibus Taxi	Long distance / Inter-provincial	RA-104
17	KwaMxhosa Taxi Rank	Farm Lot: 16594 Farm name: Mabomvini	Minibus Taxi	Commuter / Long distance	RA-105

1 - Physical location details was provided by Ilembe District Municipality GIS Unit based on the latest cadastral information available.
2 - Codes indicated are those allocated during the process of fieldwork and used as a reference in the District's GIS.

Table 1B: Listing of Rail Facilities within the Ilembe District

No	Facility Name	Physical location [1] (description)	Mode	Type of Service
1	Magnolia	Farm Lot: 14018 Farmname: Lot 38 Inyoni	Rail Service	Trains for transport of goods only
2	Nyoni	Farm Lot: 16575		
3	Isithebe	Not available		
4	Mandeni / Sundumbili	Not available		
5	Tugela	Farm Lot: 9		
6	Newark	Farm Lot: 6069 Portion Sub: 5 Farmname: Carlton 6069		
7	Zinkwazi	Farm Lot: 1810 Portion Sub: 13		
8	Darnall	Farm Lot: 1804 Portion Sub: 8 Farmname: Chantilly 1804		
9	New Guelderland	Farm Lot: 1404 Portion Sub: 85 Farmname: New Guelderland 1404 (eNtwashini)		
10	Stanger	Farm Lot: 267 (Balcomb Street)		Commuter
11	Gledhow	Farm Lot: 77 Portion Sub: 1 Farmname: Charlotte Dale 6014		Commuter
12	Charlottedale	Farm Lot: 6014 Farmname: Charlotte Dale 6014		Commuter
13	Groutville	Farm Lot: 163 Farmname: Charlotte Dale 6014		Commuter
14	Tinely Manor	Farm Lot: 1559 Portion Sub: 28		Commuter
15	Shakeskraal	Farm Lot: 114 Portion Sub: 1		Commuter
16	Umhlali	Farm Lot: 1524 Portion Sub: 26		Commuter
17	Compensation	Farm Lot: 868 Portion Sub: 40 Farmname: Compensation 868		Commuter

1 - Physical location details were provided by the Ilembe District Municipality GIS Unit based on the latest Cadastral information available.

Table 2: Description of Facilities for Buses and Minibus Taxis

No	Facility Name	Status [1]		Type [2]		On / Off Street			Paving		Code
		F	I	T	R	H	On	Off	Yes	No	
1	Mangethe Rank		√		√		√			√	RA-130
2	Slengeni Rank	√			√		√			√	RA-111
3	Tugela Beach		√		√		√			√	RA-110
4	Nqofela Rank		√		√		√			√	RA-112
5	Nyoni Rank		√		√		√		√		RA-113
6	Chappies Bank		√		√		√			√	RA-114
7	Gcaleka Rank		√		√		√			√	RA-115
8	Sundumbili Plaza Taxi Ass	√			√			√	√		RA-116
9	Stanger Rank, Maphumulo and Mandeni Rank	√		√	√			√	√		RA-109
10	Echibini Rank		√		√		√			√	RA-117
11	Bhamshela Taxi Rank		√		√		√			√	RA-118
12	Ndwedwe Rank	√			√			√	√		RA-119
13	Driefontein Taxi Rank		√	√	√		√			√	RA-101
14	Driefontein Taxi Rank (Mthombeni Rank)		√	√	√		√			√	RA-102
15	Umvoti Rank		√	√	√		√		√		RA-103
16	Maphumulo Taxi Rank	√			√			√	√		RA-104
17	KwaMxhosa Taxi Rank		√		√		√			√	RA-105
n		**5**	**12**	**4**	**17**	**0**	**13**	**4**	**6**	**11**	

1 as regards status, F = formal and I - Informal
2 as regards type, T = Terminus for buses; R = Rank for minibus taxis and H = Holding area only

Table 3: Routes as Identified by Facility (all day)

No	Mode	Origin rank / terminus	Destination rank / terminus	Route Code	Route * Distance km
1	Minibus Taxi	Mangethe Rank	Route 1: Mandeni Route 2: Sithebe	Not available	11 20
2	Minibus Taxi	Slengeni Rank	Route 1: Mandeni Route 2: Sithebe		10 17
3	Minibus Taxi	Tugela Beach	Route 1: Mandeni Route 2: Sithebe		9 15
4	Minibus Taxi	Nqofela Rank	Route 1: Mandeni Route 2: Sithebe		12 18
5	Minibus Taxi	Nyoni Rank	Route 1: Mandeni Route 2: Sithebe		13 6
6	Minibus Taxi	Chappies Bank	Route 2: Sithebe		7
7	Minibus Taxi	Gcaleka Rank	Route 2: Sithebe		6
8	Minibus Taxi	Sundumbili Plaza Taxi Ass	Route 1: Stanger Route 2: Durban Route 3: Eshowe Route 4: Empangeni Route 5: Melmoth		40 80 50 80 210
9	Minibus Taxi / Bus	Stanger Rank, Maphumulo and Mandeni Rank	Route 1: Maphumulo Route 2: Mandeni Route 3: Durban Route 4: Tongaat Route 5: Kranskop Route 6: Greytown Route 7: Doringkop		37 39 75 40 73 130 19
10	Minibus Taxi	Echibini Rank	No information available		
11	Minibus Taxi	Bhamshela Taxi Rank	No information available		
12	Minibus Taxi	Ndwedwe Rank	No information available		
13	Minibus Taxi / Bus	Driefontein Taxi Rank	Route 1: Tongaat Route 2: Ballito		27 17
14	Minibus Taxi / Bus	Driefontein Taxi Rank (Mthombeni Rank)	Route 1: Tongaat Route 2: Ballito Route 3: Dukuza		17 16 34
15	Minibus Taxi / Bus	Umvoti Rank	Route 1: Tongaat (bus) Route 2: Tongaat (taxi) Route 3: Stanger (bus) Route 4: Stanger (taxi) Route 5: Maphumulo (taxi)		60 60 35 35 17
16	Minibus Taxi	Maphumulo Taxi Rank	Route 1: Johannesburg Route 2: Stanger Route 3: Kranskop		600 37 37
17	Minibus Taxi	KwaMxhosa Taxi Rank	Route 1: Stanger Route 2: Kranskop		54 20

* Route distances are given as estimates

Table 4B: Rail Routes as identified by facility (all day)

Origin Rank / terminus	Route Taken to Destination rank / Terminus **
Durban	**Mon to Friday -** 16 trains per day from Monday to Friday transport passengers from Durban to Stanger station, stopping along the way at Compensation, Umhlali, Shakaskraal, Tinley Manor, Groutville, Charlottedale and Gledhow before reaching Stanger.
Stanger	**Mon to Friday -** 16 trains per day from Monday to Friday transport passengers from Stanger to Durban station, stopping along the way at Gledhow, Charlottedale, Groutville, Tinley Manor, Shakaskraal, Umhlali and Compensation before reaching Durban Station.

** The above details of Train time tables was supplied telelphonically by Mr. Van den Berg of Metrorail.

Table 5: Service capacity and capacity utilisation of routes (bus & minibus-taxi only)

No	Route Code	Survey Location	No. of Vehicle Trips	Average Vehicle Capacity	Service Capacity	No. of passengers	% Utilisation
1		Mangethe					
2		Mangethe					
3		Slengeni Rank	10	11	112	62	55
4		Slengeni Rank					
5		Tugela Beach					
6		Tugela Beach					
7		Nqofela Rank					
8		Nqofela Rank					
9		Nyoni Rank					
10		Nyoni Rank					
11		Chappies Rank	103	14	1426	1313	92
12		Gcaleka Rank	163	14	2286	2399	105
13		Sundumbili Plaza Taxi	98	14	1370	1596	116
14		Sundumbili Plaza Taxi	14	14	196	210	107
15		Sundumbili Plaza Taxi	3	14	42	45	107
16		Sundumbili Plaza Taxi	3	14	42	45	107
17		Sundumbili Plaza Taxi					
18		Stanger Rank, Maphumulo and Mandeni Rank					
19		Stanger Rank, Maphumulo and Mandeni Rank					
20		Stanger Rank, Maphumulo and Mandeni Rank					
21		Stanger Rank, Maphumulo and Mandeni Rank					
22		Stanger Rank, Maphumulo and Mandeni Rank					
23		Stanger Rank, Maphumulo and Mandeni Rank					
24		Stanger Rank, Maphumulo and Mandeni Rank					
25		Driefontein Taxi Rank					
26		Driefontein Taxi Rank					
27		Driefontein Taxi Rank (Mthombeni Rank)					
28		Driefontein Taxi Rank (Mthombeni Rank)					
29		Driefontein Taxi Rank (Mthombeni Rank)					
30		Umvoti					
31		Umvoti					
32		Umvoti					
33		Umvoti					
34		Umvoti					
35		Maphumulo Taxi Rank					
36		Maphumulo Taxi Rank					

37		Maphumulo Taxi Rank					
38		KwaMxhosa Taxi Rank					
39		KwaMxhosa Taxi Rank					

Table 7: Service capacity and capacity utilisation of routes (commuter rail) (05:00-09:00)

No	Route Code	No. of Trains	Train Capacity	Service Capacity	Utilisation		% Utilisation
					No. of Passengers	Observation	
1	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
2	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
3	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
4	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
5	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done
n	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done	Not Done

Table 8: Rank / Termini utilisation of loading or holding facilities (05:00-09:00)

No	Facility			*No. of Bays	Utilisation		**% Utilisation
	Name	Code	Loading / Holding Combined		Max. no. of Vehicles Departing	**Time of Maximum Utilisation	
1	Mangethe Rank	N/A		60	36		
2	Slengeni Rank	N/A		13	10		
3	Tugela Beach	N/A		15	N/A		
4	Nqofela Rank	N/A		15	N/A		
5	Nyoni Rank	N/A		80	N/A		
6	Chappies Bank	N/A		53	56		
7	Gcaleka Rank	N/A		55	155		
8	Sundumbili Plaza Taxi Association	N/A		64	581		
9	Stanger Rank, Maphumulo and Mandeni Rank	N/A		N/A	N/A		
10	Echibini Rank	N/A		N/A	N/A		
11	Bhamshela Taxi Rank	N/A		N/A	N/A		
12	Ndwedwe Rank	N/A		7	N/A		
13	Driefontein Taxi Rank	N/A		N/A	N/A		
14	Driefontein Taxi Rank (Mthombeni Rank)	N/A		N/A	N/A		
15	Umvoti Rank	N/A		1	N/A		
16	Maphumulo Taxi Rank	N/A		1	N/A		
17	KwaMxhosa Taxi Rank	N/A		N/A	N/A		
n							

1 as regards status, F = formal and I - Informal
2 as regards type, T = Terminus for buses; R = Rank for minibus taxis and H = Holding area only
* Due to some of the ranks not have clearly demarcated bays, it was assumed that a mini bus taxi would occupy 15 square meters of space. The area of the loading area was than divided by this to obtain the number of bays.
** Arrival rate of vehicles need to be surveyed

Table 9: Passenger waiting times (5:00 - 9:00)

No	Route Name	Route Code	Passenger Number	Average Waiting Time (min)	Fare		
					Single	Weekly	Monthly
1	Mangethe - Mandeni	To be completed by KZN DOT	49	2.08	R -	R -	R -
2	Mangethe - Sithebe				R -	R -	R -
3	Slengeni Rank - Mandeni				R 3.50	R 17.50	R 70.00
4	Slengeni Rank - Sithebe				R -	R -	R -
5	Tugela Beach - Mandeni				R -	R -	R -
6	Tugela Beach - Sithebe				R -	R -	R -
7	Nqofela Rank - Mandeni				R -	R -	R -
8	Nqofela Rank - Sithebe				R -	R -	R -
9	Nyoni Rank - Mandeni				R -	R -	R -
10	Nyoni Rank - Sithebe				R -	R -	R -
11	Chappies Rank - Sithebe		1299	3.14	R 2.00	R 10.00	R 40.00
12	Gcaleka Rank - Sithebe		395	10.88	R 2.00	R 10.00	R 40.00
13	Sundumbili Plaza Taxi - Stanger		1045	3.86	R 8.00	R 40.00	R 160.00
14	Sundumbili Plaza Taxi - Durban		166	3.03	R 26.00	R 130.00	R 520.00
15	Sundumbili Plaza Taxi - Eshowe		165	3.05	R 19.00	R 95.00	R 380.00
16	Sundumbili Plaza Taxi - Empangeni		180	2.94	R 20.00	R 100.00	R 400.00

Table 10: Amenities at Taxi / Bus Facilities

No	Facility Name	Electricity		Telephone		Office		Ablustions	
		Yes	No	Yes	No	Yes	No	Yes	No
1	Mangethe Rank		√		√	√	√		√
2	Slengeni Rank		√		√		√		√
3	Tugela Beach		√		√		√		√
4	Nqofela Rank		√		√		√		√
5	Nyoni Rank		√		√		√		√
6	Chappies Bank		√		√		√		√
7	Gcaleka Rank		√		√		√		√
8	Sundumbili Plaza Taxi Ass	√			√	√		√	
9	Stanger Rank, Maphumulo and Mandeni Rank	√			√	√		√	
10	Echibini Rank		√		√		√		√
11	Bhamshela Taxi Rank		√		√		√		√
12	Ndwedwe Rank	√			√		√	√	
13	Driefontein Taxi Rank		√		√		√		√
14	Driefontein Taxi Rank (Mthombeni Rank)		√		√		√		√
15	Umvoti Rank		√		√		√	√	√
16	Maphumulo Taxi Rank		√		√		√	√	√
17	KwaMxhosa Taxi Rank		√		√		√		√
n		**3**	**14**	**0**	**17**	**3**	**14**	**3**	**14**

1 as regards status, F = formal and I - Informal
2 as regards type, T = Terminus for buses; R = Rank for minibus taxis and H = Holding area only

Table 11: Dimensions of Taxi / Bus Facilities

No	Facility Name	Min. shelter Roof height (m)	Min. loading bay width (m)	Ave. loading bay length (m)	Min. turning clearance from loading bays (m)
1	Mangethe Rank	N/A	30.00	30.00	N/A
2	Slengeni Rank	N/A	10.00	20.00	N/A
3	Tugela Beach	N/A	15.00	15.00	N/A
4	Nqofela Rank	N/A	15.00	15.00	N/A
5	Nyoni Rank	N/A	15.00	80.00	N/A
6	Chappies Bank	N/A	20.00	40.00	3.00
7	Gcaleka Rank	N/A	20.00	41.00	10.00
8	Sundumbili Plaza Taxi Ass	2.10	12.00	80.00	10.00
9	Stanger Rank, Maphumulo and Mandeni Rank	N/A	N/A	30.00	10.00
10	Echibini Rank	N/A	N/A	N/A	N/A
11	Bhamshela Taxi Rank	N/A	N/A	N/A	N/A
12	Ndwedwe Rank	10.00	5.00	20.00	8.00
13	Driefontein Taxi Rank	N/A	N/A	N/A	N/A
14	Driefontein Taxi Rank (Mthombeni Rank)	N/A	N/A	N/A	N/A
15	Umvoti Rank	4.00	3.50	6.00	N/A
16	Maphumulo Taxi Rank	N/A	3.50	6.00	N/A
17	KwaMxhosa Taxi Rank	N/A	N/A	N/A	N/A
n					

1 as regards status, F = formal and I - Informal
2 as regards type, T = Terminus for buses; R = Rank for minibus taxis and H = Holding area only

ANNEXURE B: BASE MAPPING OF ILEMBE DISTRICT

ANNEXURE C: PASSENGER WAITING TIME METHODOLOGY

ANNEXURE D: SAMPLE SURVEY FORMS